PHILIP PEARSSALL CARPENTER (1819-1877)
TYPE SPECIMENS OF MARINE MOLLUSCA DESCRIBED BY P. P. CARPENTER FROM THE WEST COAST (San Diego to British Columbia)

BY
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The photograph of Philip Carpenter (frontispiece) is a copy of an enlarged one in the Redpath Museum. A similar photo is in the Mollusca Division, Museum of Comparative Zoology; two other pictures of Carpenter are in the latter institution. The writer wishes to thank the authorities of both institutions for the privilege of having copies made.

The librarian of the University of California also allowed a microfilm made of the manuscript of West Coast conchology by J. G. Cooper which is in the library of the University of California.
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Philip P. Carpenter ranks next to W. H. Dall and Paul Bartsch in the number of marine molluscan species described from the West Coast, San Diego to British Columbia. More than 270 Carpenter species, fossil and Recent, and many more names are involved in the present study. Illustrations of more than 190 types and of many original specimens with pertinent data are included. Only 4 of about 50 pelecypod species and only about one-fifth of the types of the gastropods have had the types figured previously. Authentic whereabouts of the types have been determined, lists regarding depositories of types, type localities, evaluation of names, analysis of available Carpenter material, and historical background have been included. Because Carpenter was one of the important figures in early American conchology, the historical background presents a partial picture of that time (ca. 1841-1870). The fossil distribution of each Recent species where known is included. A stratigraphic distributional chart is inserted. This reveals the relationship between the fauna of the Miocene, Pliocene, Pleistocene, and Recent species of the area studied. The importance of the illustration of the large number of heretofore unfigured types of common species, fossil and Recent, may be reflected in more refined taxonomic, ecological and paleoecological, statistical, and distributional studies of the late Cenozoic mollusks.
INTRODUCTION
PURPOSE

Those who are familiar with the marine molluscan fauna of the West Coast do not need an explanation for placing on record, for the first time in most cases, the figures of Carpenter's types. For the benefit of those less well acquainted, the following facts may give a brief résumé of the problem involved.

The area of the species under discussion is confined to the West Coast of the United States from San Diego northward. It is the province covered by Dall in U. S. National Museum Bulletin (1921) No. 112 and that of the lists appearing in the Minutes of the Conchological Club of Southern California. Those lists make a convenient accompanying guide. Such a unit excludes those species described by Carpenter from south of San Diego, except where they range into the northern province. The southern areas from Panama north deserve a separate publication or publications. Illustrations and data have been accumulated with this in mind. Carpenter's Mazatlan Catalogue (1857) is a work unto itself and would be best illustrated with a series of plates to accompany the already printed text. The types of the species described in that catalogue are in the British Museum (Natural History). Because of the magnitude of the problem it appeared proper to limit the area involved so that the major portion of the whole project could be completed in a reasonable length of time.

Of 496 species of pelecypods in the region involved (the number which Dall compiled up to 1921 in Bulletin 112), nearly half were described by Dall. Carpenter described about 50 species or nearly one-tenth of the total number. Conrad is the only other worker who described a number (about 45\(^1\)) comparable to that of Carpenter. Dall\(^2\) is the author of about half of the specific names of gastropods which he recorded from the same area, and Bartsch is the author of less than one-fifth of the same number. Carpenter ranks next in importance with about 176 species. No other person is credited with authorship of more than 40 species.

There are approximately 270 species (including those of Carpenter and others) and many more names involved in the present study. Only 4 of the 50 pelecypod species described by Carpenter have had the types figured, and some of these figures are not adequate. Of about 176 gastropod species concerned probably only about one-fifth have had the types illustrated. Because of the extensive monographic work of Pilsbry and early efforts of Dall, the Amphineura described by Carpenter, either published or in manuscript, have been generally illustrated. Further discussion in regard to the chitons will be given under that group.

The conspicuous lack of illustrations of the Carpenter types has been a stumbling block to the identification and interpretation of the many Carpenter species. Philip Carpenter described more than 500 new species and published

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\(^1\) Figures, except those of Carpenter, derived by count in Bulletin 112.

\(^2\) Including species of joint authorship with Bartsch. The same species are also counted under Bartsch authorship.
voluminous notes, yet only two of his papers include illustrations, and only one new species was figured by him, except for sectional drawings of several new species. The absence of figures in Carpenter's works has been a source of criticism of otherwise exceedingly deserving efforts. Less careful and less brilliant conchologists of his day have not been so severely judged, for they included illustrations in their works.

The chiton manuscript which was not complete at the time of Carpenter's death did contain the series of drawings which had been executed under Carpenter's supervision. Those drawings were deposited in the Smithsonian Institution, where fortunately the illustrations were available to Pilsbry, and many were published in his chiton monographs. These manuscript illustrations, as well as a series of drawings of the species of the Mazatlan Catalogue, are preserved in the archives of the United States National Museum. Some of the drawings were published by Dall and Bartsch. Letters in the files of the Redpath Museum reveal that Carpenter was concerned over the illustration of the West Coast fauna and that he and J. D. Whitney of the Geological Survey of California were negotiating in 1871 plans for drawings for a West Coast conchological publication. Carpenter's death and the vicissitudes of the California Survey prevented such a fundamental project from being completed.

The second detrimental factor involved in the problem of the identification of species described by Carpenter from the West Coast has been misinformation and lack of information regarding the types.

It has been assumed by many workers that Carpenter did not designate types and that most of the specimens have been lost. Neither of these assumptions is correct. An examination of Carpenter's original collections with original labels intact shows that type designations are marked: some specimens are labelled "unique type." In many cases no holotype is designated, but several syntypes are stipulated as types. The writer has included under discussion of the types in each species the quotation of the label. This in many instances may be tied into the data as given in the original description. Unfortunately, in some cases more than one locality is included on the type label. One cannot, therefore, differentiate which specimens belong to the respective localities. Duplicate sets of types have been discovered in the U. S. National Museum and the Redpath Museum. Frequently Carpenter's use of the word type would be equivalent to what modern authors term paratype. Although the collection at the Redpath Museum has remained intact since Carpenter's death, material at other institutions has been moved or rearranged. Hence, there could have been mixtures, and there has been loss of specimens.

Carpenter had access to large collections on both sides of the Atlantic as well as the accumulation of an extensive one of his own. He received by gift or exchange shells from chief collectors of his day, including such men as Cuming, Pease, Morch, Jefferys, Tristram, M'Andrew, Henry Adams, Jewett, Newcomb, Cooper, Gould, Stearns, Gabb, Dall, Hemphill, and others. He identified the collections for the Smithsonian Institution at the headquarters and abroad, where the bulk of the shell collections were shipped to him. After he was established in
Montreal and affiliated with McGill University, his conchological studies continued. Besides that bequeathed to McGill, collections were set him by the Smithsonian Institution, the Geological Survey of California, the Boston Society of Natural History, and individuals who wished the benefit of his wide experience. It is consistent, then, that specimens which he used as the basis of the description of new species might be scattered when his death occurred in the midst of such activity. As can be seen from the itemized list of type depositories included herein, the greater number of Carpenter types are in the United States National Museum and the Redpath Museum. To avoid further confusion attention must be called to the fact that Mrs. Oldroyd in her worthy manual (1924–1927) based the listing of many type depositories on false assumptions. In addition, she used the original statement of the location of types as basis for actual location at the time of her writing. In many cases the two are not the same. Such statements in Oldroyd as “Mrs. Boyce of Utica, New York” (continued by Soot-Ryen, 1955, p. 62) and the “California Geological Survey” are particularly misleading and cause a great deal of unnecessary searching. In both cases the specimens at the time of Carpenter’s description belonged in such categories, but through unaccountable changes such statements mean little or nothing in regard to the present whereabouts of the specimens. Mrs. Boyce was Colonel Jewett’s daughter, and none of her collection exists in Utica today. Most of the specimens of the “California Geological Survey” which might be identified with the above are in the United States National Museum. Some are in the Museum of Paleontology, University of California.

The chief purpose of this report has been, therefore, to investigate, locate, and illustrate the types of the marine molluscan West Coast species described by Philip Pearsall Carpenter and to bring the data together to form a foundation on which researchers on the fauna can evaluate the original data in the light of more extensive information.

In this report concentration on the study of the types of Carpenter’s marine molluscan species does not mean that the author regards the principle of the establishment of types as an end in systematics. It is only a means and a tool in taxonomy and an aid in refined methods of biological analysis of organisms. It is, however, a necessary implement, as is any original work, in the determination of taxonomic names. There are many examples shown in this paper where considerable writing and energy could have been saved if all the original data in the problem had been available—for example, in _Arca pernoides_ vs. _A. bailyi_. In some cases nude names have been carried in lists, and one or more generic names applied to the same species. Obviously any statistics based on such data would be of little value. An extreme case of that point is that of _Alvania aequisculpta_ "Cpr” [Keep] given in the same list under three generic names.

Schenck (1945, p. 518, 519) enumerated similar examples and pointed out the kind of taxonomic data needed for biometrical analysis of molluscan assemblages. It is the purpose of this report to provide such data, particularly the too long-delayed illustration of the Carpenter types.
The writer has not pretended herein to make specific discriminations which must be based on large collections of the forms from the West Coast. Such work must be done by those who are situated in the area or have available the proper material. It has been the plan herein to make available to those distant workers the facts which are not accessible to them.

PREPARATION

In 1921 when arranging collections in Paleontological Laboratory of Cornell University the writer discovered two of Carpenter's lost molluscan types from the Pleistocene inland from Santa Barbara (Van Winkle, 1921, p. 1–5, Pl. 15, figs. 6–11). These were in the scattered material of the Jewett Collection which Ezra Cornell purchased about 1865.

Twenty-three years later 93 Carpenter “types” were located (Palmer, 1945, p. 97–102) in the Peter Redpath Museum, McGill University, Montreal, Canada. The whereabouts of those types were previously unknown. Details of the Carpenter shell collection in the Redpath Museum are given below under that heading. Photographic negatives were made of the specimens in the Zoology Department at McGill by J. W. Pollack, and the prints later finished by the writer.

A grant (No. 788) in 1945 from the American Philosophical Society (Palmer, 1946, p. 122–133) provided aid for the search of the remainder of the material; two additional trips to McGill were included, and more types were found. Before 1946, examinations also had been made in the Redpath Museum, in the Academy of Natural Sciences in Philadelphia, American Museum of Natural History, New York State Museum, Museum of Comparative Zoology at Harvard University, Cornell University, and the Division of Mollusca, United States National Museum.

Inquiries to the Department of Geology, Stanford University, and the Department of Paleontology, California Academy of Sciences, San Francisco, California, revealed that no Carpenter types existed there. Four trips were made to the Division of Mollusca, United States National Museum, where the greatest number of types are preserved. Examination, notes, and checking were accomplished, and the specimens were photographed by the museum's photographic staff.

The search for and verification of the existence of types in the Gould Collection at the New York State Museum in Albany was facilitated by the employment of the author as temporary expert in zoology during 1945–1946. This allowed a first-hand examination of the extensive molluscan collection of that organization. A catalogue of the first duplicate series of the Reigen Collection of Mazatlan shells was published as a result of part of the work (Palmer, 1951).

At the request of Dr. Harald Rehder a paper entitled “Illustrations of Carpenter West Coast Molluscan Types” was read before the American Malacological Union on August 15, 1946.

A visit was made to the Redpath Museum in the spring of 1949 for the examination and photographing of types which had been found subsequently and to check queries concerning previous notes.
Through the generosity of Mr. Lovell G. Mickle of Montreal, the molluscan collections of the Redpath Museum were reorganized in 1950–1951. The work was directed by the author, assisted by Vicenté Condé of Cuba. This allowed further examination of the Carpenter Collection, and more types and pertinent specimens were discovered.

Examination was made in 1951 of collections in the Chicago Museum of Natural History and the Chicago Academy of Sciences. The former contains a large set of specimens, identified by Carpenter, of species described by him.

The author has been aided by the late G. L. Wilkins of the Zoology Department of the British Museum (Natural History). He checked the collections of that institution for possible types, provided the information from the labels on such specimens, and arranged for the photographing of them. Without his aid the data concerning the pertinent specimens in England could not have been included in this report. Harald Rehder, J. Wyatt Durham, H. A. Pilsbry, and John C. Armstrong co-operatively checked the collections and data in regard to queries and provided photographs of specimens in their respective institutions.

In the course of the search for types and pertinent original material of Carpenter's West Coast species the authorities of the Redpath Museum brought to light about 140 letters in the Carpenter files of that institution. They represent communications from leading conchologists in America and abroad to Carpenter during the period 1859 to 1877. They contain facts concerning scientists, collections, and natural history not compiled in printed accounts. Similar letters were inspected from the archives of the Boston Society of Natural History and the Museum of Comparative Zoology. More letters probably will be found. The writer hopes to complete a separate report describing details from original sources of a stage in American conchology not hitherto published.

PHILIP PEARSALL CARPENTER

LIFE

Philip Pearsall Carpenter, an English Presbyterian minister, was one of the chief figures in the second period of American conchology, which the late W. H. Dall termed the Gouldian Period (about 1841–1870). Carpenter was born on November 4, 1819, in Bristol, England. He occupied the pulpit at Stand (1841–1846), near Manchester, and at Warrington from 1846 until 1858. At that time he made his first visit to America. He came with large boxes of shells from the Reigen Mazatlan collection which were destined for the State Cabinet of Natural History (Museum) at Albany, New York (Palmer, 1951, p. 5). He spent about a year and a half in America and travelled about 12,400 miles from Quebec to Falls of St. Anthony, Minnesota, to Charleston, South Carolina. After his return to England, he married a German lady, Minna Meyer. At the same time they

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Carpenter's father was an eminent Unitarian preacher, Dr. Lant Carpenter; a brother Russel was a minister, another brother was the celebrated scientist, Dr. W. B. Carpenter, and a sister Mary was the active philanthropist and reformer.
adopted an American orphan boy who had helped Philip in the Smithsonian Institution and whom Carpenter befriended there. Contacts both scientific and human drew him back to America, and in November, 1865, he and his family returned to Montreal. There he ran a school for boys. He entered energetically into civic and religious life of the city and carried on his scientific pursuits, studying and arranging his extensive shell collection which he had brought from England and donated to McGill University. He died in Montreal May 24, 1877, and was buried in Mount Royal Cemetery. On his trip to the United States (1860) Carpenter was given the first degree of Doctor of Philosophy granted by the Regents of the State of New York. From the time of his visit to America he ceased to occupy a regular pulpit, but his activities in helping his fellows by lecturing, preaching, organizing, or by kind deeds never lessened. He was a vehement prohibitionist and abolitionist, a vegetarian, and an energetic worker for sanitation and reforms in conditions of the poor and illiterate. He was respected and loved by all, whether they agreed with his doctrines or not.

**SCIENTIFIC CAREER**

Philip Carpenter seemed to have had a natural love for shells. He was initiated into the study of mollusks in his early teens by the association with Samuel Stutchbury (1797–1859), zoologist, and Samuel Worsley 4 [not known] geologist, at the Bristol Institution. This museum had rich collections of fossils and shells. Philip in 1832 arranged cabinets in that museum. A specimen of *Macrocallista chione* (Linnaeus) preserved in the Chicago Natural History Museum, bears the label, "This identical specimen was the first beginning of my collection of shells, being offered by my sister Mary and earned by me, as a prize for order! I think in June, 1832 (31)." In 1833, he was helping Mr. Stutchbury 3 or 4 hours a day, working particularly on chitons. In the same year Carpenter became acquainted with Dr. J. E. Gray, Keeper of Mollusca in the British Museum, who was a strong influence in the beginning of Carpenter's scientific career. In 1836, the British Association for Promotion of Science met at Bristol, and Philip helped arrange the conchological collection. He had at that early age developed a discriminating judgment of species determination.

In spite of his fondness for natural history, Carpenter continued his training for the ministry. He was ordained in 1841. In 1842, when contacts were made again with scientists of kindred interest at a meeting of the British Association for the Advancement of Science in Manchester, his old love was revived. He visited with Robert Patterson (1802–1872), biologist, John Fleming (1785–1857), zoologist, G. B. Sowerby (1812–1884), zoologist, C. W. Peach (1800–1886), geologist, G. W. Wood (M.P.), Dr. William Buckland (1794–1856), geologist, Dr. C. G. B. Daubeney (1795–1867), botanist and chemist, and Prof. Baden Powell (1796–1860), mathematician. When the same association met at York (1844) he went with his brother, the esteemed scientist, Dr. W. B. Carpenter. He again accompanied the same brother to the meeting at Cambridge in

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4 Carpenter (1858, p. 438) wrote, "It was to serve as eyes [Worsley was blind] to guide his knowledge, that I commenced the study of shells."
1845. From 1846-1858 he preached at Warrington. To help unemployed factory workers he founded an industrial school. To carry on the activities of the school as well as teach a trade, he managed to acquire an antiquated press and type and to learn printing. This was the beginning of the "Oberlin Press," on which he printed for himself and other reformers tracts and extended papers on sanitation, teetotalism, religious and school reports, or anything which Carpenter believed would better human conduct and conditions of life. Better machinery, type, and experience were gradually gained until in 1855-1857 his 552-page Catalogue of the Reigen Collection of Mazatlan Mollusca in the British Museum was printed by P. P. Carpenter at the Oberlin Press, by order of the Trustees of the British Museum. This was the largest single report that Carpenter published.\(^5\) He had in 1855, with the aid of a brother-in-law, purchased the famous Reigen Mazatlan shells. This became the turning point in his life. The events and his scientific labors in connection with those specimens occupied more of his time. A description of the Mazatlan collection was included by Carpenter (1857b, p. 241-265; 1957a; 1860, p. 23-27; 1864b, p. 542, 548; 1872, p. 28-34; Palmer, 1951, p. 5) in his report to the British Association in 1856 (1857b) and again in 1863 (1864b) and in the introduction to the Mazatlan Catalogue as well as to the catalogue of the first duplicate Mazatlan Collection presented to the State Cabinet of Natural History (Museum). Those publications are rare. Because a brief survey of the collection and Carpenter's association has been given by the author in a catalogue (Palmer, 1951) of the duplicate material at the New York State Museum, further details will not be included here. Carpenter thought that a small industrial town such as Warrington was not a proper place to house permanently the primary selection of the material, including the types of new species described. Through the persuasion of Dr. J. E. Gray the original suite, about 8873 specimens, was deposited in the British Museum. Material several times that amount, from which he made up duplicate sets, was retained.

Although at that time Carpenter was a novice in conchology there seemed no one better available to study the material. In addition, he was asked to prepare a report in 1855 for the British Association for the Advancement of Science, "on the Present State of our Knowledge with regard to the Mollusca of West Coast of North America." Thus he began scientific pursuits, not only by examining thousands of shells but by forging into a thorough and laborious compilation of the voluminous and scattered literature in which any mention was made of west American molluscan species. His abstracts, delineated with lists of species and references, were meant to include all original sources from the collection of Dombey, 1778 (Peru), to Bridges, 1856 (Panama), and of all other pertinent writings and monographs. The résumés were followed by detailed geographic tables in which were embodied the data which had been extracted from the literature and analysis of the species in the faunal districts. This report of 318 pages (4 plates) was followed in 1863 (1864) by a supplementary report to the British Association on the Mollusca of the same area. In the supplement he corrected old

\(^5\) The chiton manuscript which remained unfinished at his death would have exceeded the Mazatlan catalogue in size and importance.
errors, noted previous omissions, gave additional information on collections, expeditions, and original notes gained from his examination of previously identified material and from unidentified and undescribed species of shells that were sent to him through the Smithsonian Institution or directly to him by collectors on the West Coast. Those two papers are a wealth of concise information of eastern Pacific conchological literature from Linnaeus to Carpenter's time. Their usefulness is impaired by the rarity of the publications which also include the Smithsonian Institution reprint (1872) of the 1863 (1864) report. The latter could well be reprinted again. The reprint of Carpenter's papers by the Smithsonian Institution is referred herein as Reprint, 1872. (See bibliography.)

The extensive size of the Mazatlan material induced and riveted the carrying on of Carpenter's natural-history bent. He made up duplicate sets of the Mazatlan material. One set was accepted by the New York State Cabinet of Natural History (State Museum) at Albany, New York, on condition that Carpenter would bring the shells to America and arrange them (Palmer, 1951, p. 5–8). The details of the Albany collection have been written up by the author and will not be repeated here.

Carpenter sailed for America December 8, 1858, and did not return until June, 1860. During that time he had arranged the collection at Albany and made a firm friend of Col. Ezekiel Jewett, curator of the State Cabinet of Natural History. Carpenter later described new species from Jewett's collection of West Coast mollusks. He visited Montreal three times and lectured at McGill University at the request of Sir William Dawson, principal. Common interests and respect were formed between Dawson and Carpenter and resulted in permanent friendship and eventual association in Montreal in the museum at McGill University.

One of his chief objects in coming to the United States was to examine types of described species, particularly western American species, in order to compare them with those specimens in England. His natural-history bent led him to Dr. A. A. Gould in Boston, Louis Agassiz at Cambridge, the C. B. Adams collection at Amherst, Massachusetts, the Bland collection in Brooklyn, Binney's collection of land shells in Burlington, Vermont, the Academy of Natural Sciences in Philadelphia, Professors McCrady, Ravenal, and Gibbs in Charleston, South Carolina, and John G. Anthony at Cincinnati; he made a collecting trip for Unionidae with Alphens Hyatt in the Green River in Kentucky. He was employed for 5 months in the winter of 1859–1860, by Joseph Henry, Secretary of the Smithsonian Institution, in unpacking and arranging the shells of that institution. When he returned to England in June, 1860, large quantities of shells were sent to him from the Smithsonian for comparison with types in England, especially with those of Hugh Cuming.

He spent a large portion of the time in the next 5 years in the museum at Warrington, where he built up natural-history collections, worked on Smithsonian shells, published the description of new Pacific Coast mollusks, attended
meetings of the British Association for Advancement of Science, where he was of great help in arrangements, and continued lecturing and some preaching.

On October 26, 1865, he and his family sailed from England for Montreal where he spent the remainder of his life except for one trip Home in 1874. In 1866, he was approached in regard to a professorship of natural history at Cornell University, Ithaca, New York. But his ties were too strong in Montreal for him to shift to Yankeeland. His health declined gradually until he finally succumbed to typhoid fever, May 24, 1877.

In exchanging Mazatlan shells and in the extensive arrangement of duplicate sets for the Smithsonian Institution, Carpenter accumulated an extensive collection of his own. Although he had mounted and arranged the greater portion of his collection, which is in the Redpath Museum at McGill University, his death ended the work. His early death also prevented the finishing of a large and authoritative work on the chitons which was to have been published by the Smithsonian Institution. The work was in manuscript form with the illustrations drawn, but it had not reached the final written stage for publication. Much of the information was published by Dall, in his smaller chiton articles, and by Pilsbry, in his chiton monographs. Both had access to Carpenter's manuscript and illustrations, and both used his notes freely, with appreciative acknowledgment, and with more credit to Carpenter than a strict application of international zoological nomenclatural rules will allow.

Philip Carpenter, in addition to the Ph. D. granted by the Regents of the University of the State of New York, was a corresponding member of the Academy of Natural Sciences of Philadelphia, the California Academy of Sciences, and the Lyceum of Natural History in the City of New York. He was an honorary member of the Natural History Society of Northumberland, Durham, and Newcastle-on-Tyne.

ASSOCIATION WITH INSTITUTIONS AND COLLECTIONS

Mazatlan collection.—In the spring of 1855, with the help of his brother-in-law, Mr. Herbert Thomas, Carpenter purchased for 50 pounds the famous Mazatlan Collection of shells. Up to that period, with the exception of Hugh Cum-

The collection contained few strays, and large numbers of individuals of the species made it a unique series to illustrate suites of variation. For details of the collection and the catalogue which Carpenter published on it, see Carpenter's Report to British Association for 1856 (1857b), the Mazatlan Catalogue (1857a), Report to British Association for 1863 (1864b), and Palmer (1951).

Carpenter described 222 new species in the Mazatlan Catalogue (1857) and listed 694 species. The first collection consisted of 8873 specimens mounted on
2529 tablets. This primary collection was deposited in the British Museum (Natural History). Drawings were made of the specimens of the species described in the catalogue. A set of these drawings is in the United States National Museum, but no complete set of illustrations of the Catalogue was ever printed.

The first duplicate series of shells (6584 specimens) and pictures of Mazatlan material were brought to America by Carpenter and deposited in the New York State Cabinet of Natural History (Museum). (See Palmer, 1951.) The Redpath Museum has a large and partially mounted series. Other museums have duplicates from the Reigen collection through distribution by Carpenter.

Illustrations of the types of the species described by Carpenter from Mazatlan are not included in this report. The figuring of the already printed catalogue would constitute a separate major work.

A list of the species described by Carpenter from Mazatlan, which range northward into the California area is included herein.

British Museum (Natural History).—Although never in residence at the British Museum, Philip Carpenter began his scientific career under the inspiration of Dr. J. E. Gray, Keeper of Mollusca of that institution. Through Gray's influence the first set of the Reigen Mazatlan collection was presented to the British Museum. In consequence of this, Carpenter was asked to write the catalogue of that collection in the British Museum (1857b). Friendly and mutually profitable relations continued through Carpenter's life not only with the Museum but with the eminent conchologists of his day. He received advice, help, and unrestricted use of collections and library from Hugh Cuming, J. E. Gray, R. M. Andrew, J. D. Gaskoin, L. Reeve, W. Clark, W. Bean, S. Hanley, J. Alder, R. D. Darbishire, W. Baird, H, and A. Adams, T. Hincks, S. P. Woodward, G. B. Sowerby, and F. Archer. Labels in his collection testify to the associations he established and to the confidence he inspired.

U. S. Exploring Expedition and A. A. Gould.—In the Report to the British Association for Advancement of Science for 1856 (1857a, p. 208-213) Carpenter listed the dates, the ships used, the localities visited and the species described and determined by Dr. A. A. Gould. Again in 1863 (1864b, p. 529-532, 578, 582, 583), in a report to the same body of British scientists, he enumerated from first-hand information the trials connected with the making of the Gould collections. At the request of Joseph Henry, secretary of the Smithsonian Institution, Carpenter was employed in 1859 to arrange the shell material of the above expeditions. Previously Gould had, as Carpenter acknowledged in the Mazatlan Catalogue (1857a, p. iv, footnote) "... intrusted to my care, and to the perils of the Atlantic, the whole of his collections and notes from W. American coast, for comparison with those known in this country." Gould's and Carpenter's names were linked in joint authorship in 1856 (Gould and Carpenter, 1856, p. 198-208).

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6 Tablets containing a numbered suite of shells are recorded in sequence in the published catalogue. Hence, a collection so mounted and numbered can be tied in definitely with the published notes.
New York State Cabinet of Natural History (Museum).—Carpenter’s association with the New York State Cabinet of Natural History was consummated by his donation and arrangement of the first duplicate series of the Reigen Collection of Mazatlan shells (1859). The story and analysis of that collection have been published (Palmer, 1951).

Smithsonian Institution.—A brief summary of the general activities of the Smithsonian Institution is presented by Carpenter (1864b, p. 578). A list of the sources of the collections in the Smithsonian at that time was included. The sources included material from eight expeditions, beginning with the U. S. Exploring Expedition, 1837–1840, through the expedition of the U. S. North-West Boundary Survey, 1857–1861, under Com. A. Campbell, with Dr. C. B. R. Kennerley and George Gibbs as collectors. Sixteen private collectors up to the same period had provided additional critical material to the collections of the Smithsonian. Many new forms found by several of those collectors were described by Carpenter. He spent 5 months (1859–1860) in Washington, D. C., living in the Smithsonian Institution building. The work on the collections could not be completed in that short time. Arrangements were made, and the specimens were shipped to England. Carpenter compared the specimens with named forms in the Hugh Cuming Collection in the British Museum (Natural History), with the help of Cuming. A special label “Named by Hugh Cuming, Esq. for the Smithsonian Institution, Washington, D. C.” was printed to indicate such service. This is one of several printed labels associated with Carpenter’s labors on the collections which may be found in the U. S. National Museum, and in institutions, such as the New York State Museum and the Redpath Museum, which acquired material from the Smithsonian Institution.

Warrington Free Museum and Library.—After Carpenter’s return from America to Warrington in June 1860, he arranged with the Warrington Museum for the use of an unoccupied room and rented three rooms from a house adjoining. There he worked on the collections which were sent from the Smithsonian, large collections he had made in America for the Warrington Museum, and his own. He had purchased all the remaining shells of the Reigen Mazatlan stores, part of the C. B. Adams material from Panama, Jamaica, St. Thomas, and Bermuda. He also became agent for some leading naturalists in negotiating transactions in connection with their duplicates. About half of Carpenter’s papers were written at Warrington, including his valuable and comprehensive Supplementary Report on the Present State of our knowledge with regard to the Mollusca of the West Coast of North America, which was reprinted, with 13 of his other articles, by the Smithsonian Institution in 1872. He remained at Warrington until his departure for Montreal in October 1865. J. R. le B. Tomlin wrote (Personal communication, November 11, 1947) that he did not believe the Warrington Museum contained any types. J. R. Rimmer, Director of the Municipal Museum and Art Gallery, Warrington, examined the list of missing types of Carpenter species, as included herein, and reported (Personal communication, October 2, 1956) that there are no types of Carpenter species in that Museum.
Redpath Museum, McGill University.—McGill College (University) accepted the Carpenter collection October 26, 1867, on condition that Carpenter arrange the material, and this he worked on until his death in 1877. He had taken 33 years to form the collection, and its monetary value had been estimated by Sowerby as 1000 pounds. Although it contained few expensive shells it was valuable because so many specimens had been compared with types. It is important to students of the West Coast fauna in particular because of its large number of undisturbed types of species described by Carpenter. Present-day collections contain greater numbers of shells, better preserved, and more carefully collected, but the importance of the Carpenter collection is its pertinence to taxonomy. It contains duplicate shells from original collection of species, such as those described by Adams from Japan (Kuroda and Habe, 1954) which have never been illustrated and which from lack of original material are obscurely known today. The Redpath Museum molluscan stores have been discussed briefly elsewhere (Palmer, 1945, p. 97-102; Cleghorn, 1950, p. 70).

COLLECTORS OF WEST COAST SPECIES DESCRIBED BY CARPENTER

Philip Carpenter was never on the Pacific Coast of North America and did not collect any of the shells of the species he described. Such published statements as that of Kelsey (1902, p. 144) in a note on *Serridens oblongus* Cpr. in which he quoted Dall as saying, "the single valve found by Dr. Carpenter at San Diego, in 1866, was on record," are misleading. Kelsey misunderstood words of Dall in regard to the record. Collections referred to as Carpenter Collections have been inferred by some persons unfamiliar with the history of West Coast associations to be material collected by Carpenter. Such a denotation in association with collections may indicate that either the material was of Carpenter's transactions or identification.

Most of the shells from the area of this report, from which Carpenter segregated and described new species, were obtained through the Smithsonian Institution and/or the California Geological Survey. The collectors of such material were listed by Carpenter (1864b, p. 579). Those pertinent to this monograph are briefly given below:

(1) "James G. Swan, from Port Townsend, Cape Flattery, Neeah [sic] Bay, and the neighboring shores of Vancouver; at intervals, during many years."

(Also, Carpenter, 1864b, p. 606)

Mr. Swan, as Indian teacher at Neeah Bay, N.W.T., trained the children to gather shells. Appropriate labels printed by the Smithsonian Institution may be found in the collections distributed by that institution following the identification of the species by Carpenter. These labels read, "Collected by the Indian children at Neeah Bay [sic] W. T. and Vancouver by Mr. J. G. Swan (Teacher)."

The following new species collected by Swan were described by Carpenter (1864d, p. 423-429; 1865a, p. 28-32). See text for discussion of each. Additional
localities with accompanying data are in brackets. The collector or source of the collection is in parentheses.

*Macra salmonca* [San Francisco (Pacific Railway Explor. Exped.) ; Monterey (Cooper)]

*Aulacops variegatus* [Monterey, Catalina (Cooper)]

*Miodon prolongatus* [Monterey (Taylor)]

*Adula styliina* [Shoalwater Bay (Cooper)]

*Axinea (? septentrionalis, var.) subobsoleta*

*Siphonaria Thorsites*

*Mopalia (Kennerley, var.) Swanii [sic]*

*Margarita cidaris*

*Gibbula parcipecta* [Santa Cruz (Rowell)]

*G. succineta* [Lower California (Rowell)]

*G. lacunata*

*G. funiculata*

*Hipponyx cranioides*

*Bivonia compacta*

*Lacuna porrecta*

*L. ( ? solidula, var.) compacta*

*L. variegata*

*Isapis fenestrata* [San Diego, Santa Barbara Island (Cooper)]

*Alvania reticulata*

*Alvania filosa*

*? Assiminea subrotundata*

*? Paludinella castanea*

*Mangelia crebricostata*

*M. interfossa*

*? M. tubulata*

*? Daphnella fissa*

*Odostomia saturata*

*O. (? var.) Gouldii*

*O. nuciformis*

*O. (? var.) avellana*

*O. tenuisculpta*

*Scalaria Indianorum*

*S. (? Indianorum, var.) tintca* [Cerros Island (Ayres) ; San Pedro (Cooper)]

*S. (Opalia) borcalis* Gould [Puget Sound (United States Expl. Exped.)]

*Cerithiopsis munita*

*C. columna* [Monterey (Cooper)]

*Cancellaria modesta*

*L’elutina prolongata*

Specimens collected by J. G. Swan were included in the proterotypes of *Ostrea lurida, Bittium (? var.) esuriens*, and *B. attenuatum* (Carpenter, 1865g).

(2) "Dr. J. G. Cooper, early private collections from Shoalwater Bay and various stations in California and from Panama; and lately dredged collections of the California State Geological Survey, of which a portion were sent in advance by Dr. Palmer." (Carpenter, 1864b, p. 579).

Carpenter (1864b, p. 607, 608, 610) presented a discussion of J. G. Cooper’s
collection and his relation to the "California State Geological Survey" under the direction of J. D. Whitney and W. M. Gabb, palaeontologist of the same survey. Cooper sent shells and wrote copious notes to Carpenter in regard to the specimens found. Many of those records, with drawings, are preserved in the Redpath Museum. Cooper material which was used in the preparation of the descriptions of new species is enumerated in the other lists following, inserted in parenthesis.

The following new species were described by Carpenter (1864e-1865b, p. 155-159) from the source discussed above:

- Calliostoma formosum
- C. splendens
- Solariella peramabilis
- Margarita acuticostata
- M. salmoena
- Liotia fenestrata
- Amycla undata
- Leptonyx (sanguinens, var.) purpureum
- L. bacula
- Corbulia lutcola
- Plectodon scaber
- Macoma indentata
- Oedalina (Cooperella) scintillacformis
- Semele incongrua
- Psephis salmoena
- Astarte fluctuata
- Cardium (? modestum, var. centifilorum)
- Lepton meroënm
- Pristiphora oblonga
- Leda hamata
- Acanthopleura fluxa
- Ischnochiton veredentiens
- Lepidopleurus pectinatus
- L. scabricostatus
- Trachydermon Gothicus
- Leptochiton nexus
- Nacella (? paleacea, var.) triangularis
- ? N. subspiralis
- Acmaea (? pileolus, var.) rosacea
- Scurria (?) juniculata
- Puncturella Cooperi
- Gibbula optabilis
- Calliostoma suprarramosum
- Ethalia supravallata
- E. var. invallata
- Galerus contortus
- Cacum crebricinctum
- C. Cooperi
- Turritella Cooperi
- ? Mesalia tenisculpta
- Isapis obtusa
- Rissoina interfossa
- Rissoa acutelirata

State Collection 615a
State Collection 630a
State Collection 1025
State Collection 354
State Collection 352
State Collection 1006
State Collection 1067
State Collection 1056
State Collection 587
State Collection 1062
State Collection 365
State Collection 533a
State Collection 1061
State Collection 1068
State Collection 1060
State Collection 381
State Collection 984
State Collection 518a (bis)
State Collection 1073
State Collection 1071c
State Collection 518a
State Collection 1071a
State Collection 416c
State Collection 416b
State Collection 466d
State Collection 1029
State Collection 369
State Collection 388
State Collection 667a
State Collection 564
State Collection 666a
State Collection 682
State Collection 387b
Collectors of west coast species described by carpenter

Fenella pupaoida
Amphithalamus lacunatus
Diala acuta
D. marmorea
Styfisferina turrita
? Jeffrey'sia translucens
Cythina albida
Chrysallida pumila
C. cineta
Chemnitzia chocolata
C. subeupsidata
Eulima (? var.) compacta
E. (? var.) rutila
Scalaria bellastrata
S. subcoronata
S. crebricostata
Opalia spinioida
O. retiporosa
Nassa insculpta
? Amyela chrysalloidea
Anachis subfurrata
Trophon triangularis
[Kennerlia bicarinata] (Carpenter, 1864c)

(3) Dr. Kennerley, collector for United States Northwest Boundary Survey under Com. A. Campbell

The following new species in Kennerley’s collections from Puget Sound were described by Carpenter (1865e, p. 54–64):

(Shaenia [sic]) Sphaenia ovoida
Neaera pectinata (Catalina and Santa Barbara, Cooper)
Kennerlia filosa (1864) (San Diego, Cooper)
Psammobia rubroradiata (Nuttall ms.)
Macoma goldiformis
M. (? var.) expansa
(Tellina) angulus modestus (Neah Bay, Swan; San Pedro, Cooper)
? Clementia subdiaphana (Vancouver, Forbes)
Venus kennerleyi (Neah Bay, Swan)
Astarte (? compressa, var.) compacta
Lucina tenuisculpta
Cryptodon serricatus (Vancouver, Swan)
Pythina rugifera
Tellmya tumida (Neah Bay, Swan; San Diego, Cooper)
Cylichna (? cylindracea, var.) attonsa (California, Jewett, Cooper)
Dentalium rectius
Mopalia kennerleyi
? M. sinuata
? M. imporertata
Ischnochiton (Trachydermon) retiporosus
1. (Trachydermon) trifidus
1. (Trachydermon) pseudodentium (Vancouver, Lord; San Diego, Cooper)
1. (Trachydermon) flectens (Vancouver, Lord; Monterey, Taylor; San Diego, Cooper)
Lepeta caecoides (Farallon Islands, Darbishire)
Calliostoma (? var.) variegatum
Margarita (? var.) tenuisculpta (Neah Bay, Swan)
M. lirulata
M. lirulata var. subelevata (Neah Bay, Swan)
M. lirulata var. obsoleta (Neah Bay, Swan)
M. lirulata var. conica
M. inflata (Vancouver, Lyall; Neah Bay, Swan)
Mesalia lacteola (Vancouver, Forbes)
M. (? lacteola var.) subplanata (Neah Bay, Swan)
Rissoa compacta (Neah Bay, Swan)
Drillia incisa (Neah Bay, Swan)
D. cancellata
Mangelia levidensis (Neah Bay, Swan)
Rola excavata
Eulima micans (Neah Bay, Swan; San Pedro, San Diego, Catalina, Cooper)
Ocinebra interfossa (Neah Bay, Swan; Vancouver, Lord)
O. interfossa atropurpurea
? Chrysodonius rectirostris

(4) Mr. A. S. Taylor, from Monterey, and Mr. Andrew Cassidy from San Diego. Species described by Carpenter (1865g, p. 129-149) included specimens from those collectors and from Cooper, Ayres, Newberry, and Xantus. The following are based on shells from Taylor or Cassidy only:

Kellia rotundata Monterey, Taylor
Cylichna planata San Diego, Cassidy
? Daphnella asperr Monterey, Taylor

(5) Rev. J. Rowell of San Francisco provided material for a few Carpenter species, from Farallon Islands and especially from Panama and Gulf of California (Carpenter, 1865d, p. 278-281). They are not included in this report unless the species extends into the northern regions.

(6) Mr. John Xantus, of the U. S. Coast Survey, from Cape San Lucas. Most of the species from Xantus material were described by Carpenter (1864a). They are not included in this report unless they range northward. For details of Xantus collecting see Carpenter (1864b, p. 616, 617).

(7) The material collected by Col. E. Jewett from the West Coast formed his private collections. At the time of Carpenter’s writing (1864b) the shells belonged to Jewett’s daughter, Mrs. Boyce of Utica, New York. They were scattered during the period following, and most are now in the U. S. National Museum, Redpath Museum, Cornell University, or lost. (See Carpenter, 1864b, p. 535-539.) Many belong to the fauna south of the region involved in the present paper.

The following new species from Jewett’s collections were described by Carpenter (1865i; 1866b). Material involved in the description of the species which came from other sources is in parenthesis.

Solen (? sicarius, var.) rosaccus (San Pedro, Cooper)
Lazaria subquadtrata (Monterey and San Pedro, Cooper. State Collection 403)
Modiola fornicata (Monterey, Taylor)
DEPOSITORIES OF TYPES

The following is a list of the location of types of the marine molluscan species described by Carpenter from the West Coast (British Columbia to San Diego). Unless otherwise stated the type or types are understood to be the holotype or syntypes.

AcaDeMy of NaTural ScienceS of Philadelphia

Amphineura

Leptochiton rugatus Pilsbry [Carpenter ms.], No. 35586
Ischnochiton aceror Pilsbry [Carpenter ms.] No. 35702
I. conspicus Pilsbry [Carpenter ms.] No. 35709. See also “Dall.”
British Museum (Exclusive of Mazatlan Collection)

Pelecyphoda

Humilaria kennerleyi (Reeve) = [Carpenter ms.], described as Venus
Gari rubroradiata (Nuttall ms. Carpenter), described as Psammobia and/or Sanguinolaria = G. californica (Conrad)
"Venus (Chione) excavata" = young of Chione undatella Sowerby

Gastropoda

Callopora ? fluctatum var. depressum
Cerithidea hegevischer albonodosa, described as C. albonodosa
Crepidula rugosa Nuttall ms., Carpenter = C. onyx Sowerby
Pissurella ornata Nuttall ms., Carpenter = F. volcano Reeve
Olivella intorta
Ocenebra poulsoni, described as O. Poulsoni

Amphineura

Chiton acutus = Mopalia acuta
Cyanooplax hartwegii nuttallii, described as Chiton nuttallii
Ischnochiton regularis, described as Chiton
Chiton montereyensis = Mopalia lignosa (Gould)

Museum of Paleontology, University of California

Gastropoda

Altvania acutelirata, described as Rissoa. No. 15572
Ocenebra squamulifera (Carpenter in Gabb), described as Trophon. No. 15459
Trophonopsis triangulatus, described as Trophon. No. 12572 lectotype; also U.S.N.M.
Admete gracilior, described as Cancellaria. No. 15530-15531
Acteocina planata, described as Cylichna. No. 33501

Paleontological Laboratory, Cornell University

Gastropoda

Opalia insculpta, described as O. (? crenatoides var.). No. 4950
Ocenebra tenuisculpta, described as Trophon. No. 4951
Amphineura
Mopalia plumosa = M. acuta. No. 25530, Newcomb Collection

Redpath Museum, McGill University

Pelecyphoda

Ostrea lurida. No. 125
Modiolus fornicatus, described as Modiola. No. 3133
Miodontiscus prolongatus, described as Miodon. No. 2377; also U.S.N.M.
Axinopsida serpentica, described as Cryptodon. No. 112; also U.S.N.M.
Pristes oblongus. No. 15372; also U.S.N.M.
Psephidia salmonca, described as Psephis. No. 115; also U.S.N.M.
Darina declivis. No. 101

Gastropoda

Acmaea triangularis (casta ms. as Nacella). No. 2370; also U.S.N.M.
Bittium armillatum. No. 4851; also U.S.N.M.
Opalia bullata = O. spongiosa. No. 76
Chemnitzia crebrifilata Carpenter = Turbonilla tenuicula (Gould). No. 2363
Turbonilla stylina, described as Chemnitzia. No. 5729. Also U.S.N.M.
DEPOSITORIES OF TYPES

Mitrella tuberosa, described as Amycla. No. 73
Gibberulina pyrifor mis, described as Volutella. No. 83 (as Gibberula); also U.S.N.M.
Cystiscus jevettii, described as Marginella. No. 80 (as Gibberula)
C. regularis, described as Marginella, No. 82 (as Gibberula); also U.S.N.M.
Cystiscus subtrigona, described as Marginella, No. 81 (as Gibberula)
Siphonalia fuscotincta=Kelletia kelletii (Forbes). No. 3138
Mangelia angulata= M. barbarensis Oldroyd. No. 90
M. interfossa. No. 94; also U.S.N.M.
M. nitens, described as M. ? variegata var. No. 93
M. variegata. No. 92; also U.S.N.M.
Propebela tabulata, described as ? Mangelia. No. 89
M. variegata. No. 92; also U.S.N.M.
Mitromorpha filosa, described as Daphnella and/or Mitromorpha. No. 96
Volulella cylindrica, described as Volula. No. 2364

Amphineura

Cyanoplax hartwegii. No. 68
Chaetopleura gemma Dall or Pilsbry [Carpenter ms.]. No. 49
Ischnochiton corrugatus Carpenter in Pilsbry. No. 37
I. conspicuus "Dall." No. 65. See also Pilsbry
I. fallax Carpenter in Pilsbry. No. 64
I. newcombi Carpenter in Pilsbry. No. 19
I. radians Carpenter in Pilsbry. No. 25, also U.S.N.M.
Ischnochiton auricotinctus Carpenter in Pilsbry. No. 26
I. pectinatus. No. 70. See I. californiensis Berry
I. sinudentatus Carpenter in Pilsbry. No. 27
Callistochiton palmulatus Carpenter in Pilsbry No. 48
Mopalia inporcata. No. 57, also U.S.N.M.
M. siniata. No. 58, also U.S.N.M.
Dendrochiton gothica, described as Ischnochiton. No. 13; also U.S.N.M
Acanthochiton avicula. No. 72

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Pelecypoda

Nuculana hanata described as Leda. No. 107420
Huxleyia munita (Dall) [=Pleurodon munita Carpenter ms.]. No. 23243
Glycymeris subobsoleta described as Axinaea. No. 15594
Philobrya setosa described as Bryophila. No. 16187
Pecten circularis aequisulcatus described as P. ventricosus var. aequisulcatus. No. 15645
Pandora bicarinata Carpenter=P. bilirata Conrad. No. 592440
Pandora filosa described as Kennerlia. No. 4542
Cuspideria pectinata described as Neaera. No. 4506
Leionyca scabra described as Plectodon. No. 592441
Astarte compacta. No. 4509
Eucrassatella fluctuata described as Astarte. No. 1060
Glaes subsquareata described as Lazaria. No. 15681
Miodontiscus prolongatus described as Miodon. No. 15472; also Redpath Museum
Axinopsida sericata described as Cryptodon. No. 5249; also Redpath Museum
Lucina tensisculpta. No. 5244
Kellia laperousii chironii. No. 15460
Mysella tumida, described as Tellimya. No. 5242
Pristes oblongus No. 15592
Pseudopythina rugifera, described as Pythina. No. 4445
Lepton meroeum, described as Lepton. No. 15591
Nemocardium centifilosum, described as Cardium. No. 15262
Compsomya subdiaphana, described as ? Clementia. No. 4541
Psephidia salmonca, described as Psephis. No. 15578; also Redpath Museum
Petricola tellinyalis, described as Psephis. No. 15554
Cooperella subdiaphana, described as Oedalia. No. 3563
C. scintillaeformis = C. subdiaphana. No. 15669
Tellina modesta, described as Angulus. No. 4245
T. buttoni Dall [ = Angulus? var. obtusus Carpenter]. No. 19429
T. carpenteri Dall [ = Angulus variegatus Carpenter]. No. 15467
M. yoldifonnis. No. 4507
M. expausa. No. 3910
M. indentata. No. 15229
Sphenia ovooidea. No. 4552
Corbula luteola. No. 14897

Gastropoda

Puncturella cooperi. No. 11848
Acmaca funiculata, described as Scurria. No. 14799; [= Scurria muta tenuisculpta, nomen nudum. No. 15490]
A. rosacea, described as A. (? pilcolus var.). No. 15273
A. triangularis. No. 14802; also Redpath Museum
Lepta caccoides. No. 11849
Margarites lacunatus, described as Gibbula. No. 15535b
M. acuticostatus, described as Margarita. No. 16280
M. funiculatus, described as Gibbula. No. 15534b
M. inflatus Dall = Margarita inflata Carpenter No. 4494
M. lirulatus, described as Margarita. No. 4191
M. lirulatus conicus, described as Margarita. No. 4191a
M. lirulatus obsoletus, described as Margarita. No. 15537e
M. lirulatus subelevatus, described as Margarita. No. 15537
M. optabilis, described as Gibbula. No. 15287
M. parcipictus, described as Gibbula. No. 31114
M. salmoncus, described as Margarita. No. 16279
M. rhodia Dall = Margarita inflata Carpenter in part. No. 15585, lectotype
M. succinclus, described as Gibbula. No. 15562
Cidarina cidaris (Adams in Carpenter), described as Margarita. No. 15600
Solariclla peramabilis. No. 16281
Calliostoma gemmulateum = C. formosum. Questionable type, No. 16261
C. supragranosum. No. 14925
C. splendens. No. 16278
C. variegatum. No. 4201
Tegula funebralis subaperta, described as Chlorostoma. No. 123496
Halistylus pavoideus described as Fenella. No. 14824
Cythia albida, described as Cythia. No. 15569
Teinostoma supercavatum, described as Ethalia. No. 15574
T. infullatum, described as Ethalia. No. 15574b
Arene acuticostata, described as Liottia. No. 16282, lectotype
Liottia fenestrata. No. 16283, lectotype
Homalopoma baculum, described as Leptonyx. No. 16284
Imperator serratus Carpenter = Astraea nudosa (Wood) young. No. 11832
Phasianella striata, described as P. (Eucosmia) (? variegata, var.). No. 11829
P. compta punctulata. No. 11288
P. pulloides. No. 14814 (16285–16386)
P. pulloides elatior. No. 16287
Lacuna solitula compacta. No. 15530b
L. porrecta craequata. No. 15532
L. porrecta effusa. No. 15533
L. porrecta. No. 15549b
L. unifasciata. No. 16257
L. variegata. No. 15531
“Littorina castanca.” No. 16290. Described as ? Paludinella
L. subrotundata, described as Assimina. No. 15586
Amphithalamus inclusus. No. 15573x
A. lacunatus. No. 15564
Alvania filosa. No. 36632
A. carpenteri (Weinkauff) = [A. reticulata Carpenter] No. 17728, lectotype
A. compacta, described as Rissoa. No. 4338
Barlecia haliotiphila. No. 15558
B. marmorca, described as Diala. No. 14821
Tachyrhynchus lacteolum, described as Mesalia. No. 4195
T. lacteolum subplanatum described as Mesalia. No. 4193b
Petalocochus compactus, described as Bizonia. No. 13580
Caecum californicum Dall=C. cooperi Carpenter, No. 15719
Micranellus crebricinctum, described as Caecum. No. 14930
Diala acuta. Early California State Survey. No. 390
Bittium attenuatum. No. 15584; [=B. esuriens, No. 14832]
B. purpureum, described as Cerithiopsis. No. 14823
B. quadrifilatum. No. 14849 (14935)
B. rugatum. No. 7154
B. interfossa, described as Rissoina. No. 224860
B. munitum, described as Cerithiopsis. No. 15501a, b
Alabina tenuisculpta, described as Mesalia. No. 14933
A. turrita, described as Stylierina. No. 15566
Cerithiopsis columna. No. 14823b
Epitonium indianaorum, described as Scalaria. No. 15521, lectotype
E. subcoronatum, described as Scalaria. No. 14830b (15732)
E. inunctum, described as Scalaria. No. 19510, lectotype
E. bellistriatum, described as Scalaria. No. 14831b, lectotype
Opalia pluricosta ms. Carpenter=O. montereyensis Dall. No. 23397
Opalia spongiosa. No. 14830; =O. retiporosa. No. 11843=O. bullata Redpath Museum. No. 76
Balcis compacta, described as Eulima. No. 13517b
B. thersites, described as Eulima. No. 11795
B. rutila, described as Eulima. No. 14928
B. micans, described as Eulima. No. 14850
Odostomia callimorpha Dall and Bartsch=Chryssallida plumila Cpr. No. 15565
Odostomia cineta, described as Chryssallida. No. 15730
O. inflata. No. 15521b, lectotype (=O. jevetti Dall and Bartsch)
O. tenuisculpta. No. 15520 (See also O. satira)
O. gouldii. No. 22821
O. avellana. No. 15517b
O. nuciformis. No. 15517a
O. satira. No. 15520 (See also O. tenuisculpta.):=O. pupiformis. No. 15520a
O. jevetti Dall and Bartsch=O. inflata Carpenter in part. No. 15521c
“Chemnitzia subcuspidata”=Turbonilla tenuicula Gould in part. No. 14829
Turbonilla virgo, described as Chemnitzia. No. 73993
T. aurantia, described as Chemnitzia. No. 4493b
T. stylina, described as Chemnitzia torquata var. stylina. No. 14829. Also Redpath Museum
T. tridentata, described as Chemnitzia. No. 15315b
Iselica fenestrata, described as Isapis. No. 15772 and 15775
I. obtusa, described as Isapis. No. 14814 (14936)
Calyptroca contorta, described as Galerus. No. 11846
Hipponix tumens. No. 14929 (14817b, 15293, 15652, 15715)
H. antiquatus cranioides. No. 15508 (15508Q)
Volutina prolongata. No. 11842
Ocenebra interfossa. No. 4636
O. interfossa atropurpurea. No. 15528b
Trophonopsis triangulatus, described as Trophon. No. 11839 paratype; also Univ. California
Exilioidae rectirostris, described as Chrysodonomus. No. 4515
Amphisssa undata, described as Amycla. No. 23284
Anachis penicillata. No. 15776, lectotype
A. subtorriformis. No. 14952
Aesopus chrysalloides, described as Amycla. No. 14953 (15325C)
Gibberulina pyriformis, described as Volutella. No. 14950, lectotype; also Redpath Museum
Cystiscus regularis, described as Marginella. No. 55391, lectotype; also Redpath Museum
Ophiiodermella incisa, described as Drilina. No. 6320
"Mangelia" levidensis. No. 4487
M. crebricostata, No. 15512b
M. interfossa. No. 22818; also Redpath Museum
M. variegata. No. 11798; also Redpath Museum
Pseudometatoma moesta, described as Drilina. No. 14942
P. torosa, described as Drilina. No. 3286
P. torosa aurantia, described as Drilina. No. 15310
Granotoma excurvata, described as Bela. No. 4493C
Propebela tabulata, described as ? Mangelia. No. 19403; also Redpath Museum
Mitromorpha aspera, described as ? Daphnella. No. 22816
Adnete modesta, described as Cancellaria. No. 16238
Terebra "philippiana" Dall═Myurella simplex Carpenter. No. 4943
Acteon punctocaelatus, described as Tornatella. No. 14914
Alys costa. No. 4014.
Cylichna attonsa, described as C. (? cylindricea var.). No. 4495
Williamia peltoides, described as Nacella. No. 4023; also Redpath Museum
Nacella subspiralis═Williamia peltoides. Lost

Scaphopoda

Dentalium rectius. No. 5283

Amphineura

Leptochiton internexus Carpenter in Pilsbry, described as Lepidopleurina. No. 30750
L. nexus. No. 16270
Nuttallina fluxa, described as Acanthopleura. No. 15690b
Ischnochiton radians Carpenter in Pilsbry. No. 19471, also Redpath Museum
I. rettoporusus. No. 4499
I. scabriocostatus. No. 16268
I. trifidus, described as Trachydermon. No. 30946.
I. veredentium. No. 16259
LIST OF TYPES NOT FOUND

Deudérochiton gothica, described as Ischnochiton, No. 16271; also Redpath Museum
Mopalia imporcata. No. 4499; also Redpath Museum
M. simnata. No. 4473; also Redpath Museum

LIST OF TYPES NOT FOUND

The types of the following molluscan species described by Carpenter from the West Coast (San Diego to Puget Sound) have not been found.

Pelecypoda

Ostrea lurida expansa
O. lurida laticaudata
O. lurida rufoides
Pecten Hindsi, see P. rubidus Hinds
Modiola nitens
Adula stylina Cpr. [=Adula californiensis (Philippi)]
Kellia rotundata
Protothaca lacinata, described as Tapes
P. staminea (Conrad) forma orbella
P. tenerrima, described as Tapes
Solen rosaceus

Gastropoda

Acmaea limatula
“Acmaea strigillata Nuttal”
Margarites tenuisculptus, described as Margarita (? v. [Vahlil]) tenuisculpta
Calliostoma formosum=C.gemmatum, type questionable
Trochites convexus=Norrisia norrisii (Sowerby), young
Lacuna unifasciata aurantiaca
Barlecia subtenuis
B. subtenuis rimata
Assiminea translucens, described as Jeffreyia
Turritella cooperi
T. jewettii
Aletes squamigerus
Diastoma fastigiatum, described as Bittium
“Epitonium crebricostatum,” described as Scalaria
E. tiara, described as Scalaria
Turbonilla laminata, described as Dunkeria
T. chocolata, described as Chemnitzia
Calicanthus fortis, described as Pisania
Mitrella gouldii
Nassarius insculptus, described as Nassa
Ophiodermella cancellata, described as Drilla
“? Daphnella effusa”
Siphonaria thersites

Amphineura

Ischnochiton decipiens Carpenter in Pilsbry
Mopalia muscosa kennerleyi
M. swanii
Basilochiton flectens, described as Ischnochiton
PRESENT-DAY CARPENTER MATERIAL
SPECIES AS LISTED BY DALL (1921) AND THE PRESENT REPORT

Names in roman type are synonymus.

Dall, 1921 (by generic name) Present Report (by generic name)

**PELECYPODA**

*S. valulus*  
*Nuculana hamata*  
*Huxleyia munita* (Dall)  
*G. subobsoleta*  
*P. setosa*  
*O. lurida laticaudata*  
*O. lurida*  
*O. lurida expansa*  
*O. conchaphila*  
*P. rubidus* (Hinds)

*Pecten hiudsi*  
*P. puncicosatus*  
*P. circularis acquisulcatus*  
*Modiolus fornicatus*  
*Asthenothaerus virlosior*  
*Kennerlia filosa*  
*Cuspidaria pectinata*  
*Plectodon scaber*  
*Astartea compacta*  
*Crassatellites fluctuatus*  
*Cordita subquadra*ta  
*Venircardia prolongatus*  
*Axinopsis sericatus*  
*Diplodonta subquadra*ta

*Parvilucina tenuisculpta*

*Rochefortia tumida*  
*Serriden oblonga*  
*Pseudopythina rugifera*  
*Lcpton merochum*  
*Protocardia centifilosa*  
*Marcia kennerleyi* Carpenter, Reeve  
*M. subdiaphana*  
*Protothyca tenerima*  
*P. staminea lacinata*  
*P. staminea orbella*  
*Psephidia salmonca*  
*Ptericola denticulata* Sowerby, Dall in part  
*Cooperella subdiaphana*  
*Tellina lamellata*  
*T. salmonca*  
*T. carpenteri* Dall=Angulus variegatus Carpenter  
*T. modesta*  
*T. buttoni* Dall=Angulus obtusus Carpenter  
*Metis alta* Conrad

* Species, the type locality of which is not in the limits of the present report.
PRESENT-DAY CARPENTER MATERIAL

Macoma expansa
M. yoldiformis
Macoma indentata
Semele incongrua
Gobraeus regularis*
Solen rosaceus
...................
Sphenia fragilis*
S. ovoidea
Corbula lutelia
Martesia intercalata*

Dentalium rectius

Acteon punctococelata
Acteonina carinata*
A. planata
Volvolella cylindrica
Atys casta*
Cylichnella attonsa
Melampus olivaceus*
Siphonaria thersites
Williamia peltoides*
Melampus olivaceus
Terebra pedroamini philippianum Dall = T. simplex Carpenter
Clathrodrillia incisa
C. rhines Dall = Drilliia cancellata Carpenter
Pseudomelatoma moesta
P. torosa
P. aurantia
Lora tabulata
L. excrurata
Mangilia angulata
M. pulchrior Dall
M. interfossa
M. crebricostata
M. leviedenis
....................
Cytharella fusconotata
Cancellaria modesta
Admete couthouyi gracilior
Olitella boetica
Marginella jecvetti
M. subtrigona
M. regularis
Cypracolina pyriformis
Mitromorpha aspera
M. filosa
....................
Exilia rectirostris

M. expansa
M. yoldiformis
M. indentata
S. incongrua
Gari regularis*
S. rosaceus
Tagelus politus*
S. fragilis*
S. ovoidea
C. lutelia
M. intercalata*

Scaphopoda

D. rectius

Gastropoda

A. punctococelatus
Coleophysis carinata*
A. incula (Gould)
V. cylindrica
A. casta*
Cylichna attonsa
M. olivaceus*
S. thersites
W. peltoide* (includes Nacella subspiralis)
M. olivaceus
T. "philippiana Dall"

Ophiodermella incisa
Ophiodermella cancellata
P. mocsia
P. torosa
P. torosa aurantia
Propebela tabulata
Granotoma excrurata
Mangelia barbarensis Oldroyd et al.
Mangelia nitens
M. interfossa
M. crebricostata
"Mangelia" leviedenis
Mangelia variegata
C. fusconotata
Admete modesta
Admete gracilior (fossil only)
O. baetica Marrat in Sowerby
Cystiscus jecvetti
C. subtrigona
C. regularis
Gibberulina pyriformis
M. aspera
M. filosa
"? Daphnella effusa"
Exilioidea rectirostris
Alectrion insculptus  
Anachis penicillata  
Anachis subturrita  
Columbella tuberosa  
Nitidella gouldii  
Aesopus eurytoides*  
A. chrysalloides  
Amphissa undata  
Tritonalia lurida munda  
T. squamulifera  
T. polsoni  
T. interfossa  
T. interfossa (alpha) (Carpenter) Dall  
T. interfossa (beta) (Carpenter) Dall  
T. interfossa atropurpurea (Carpenter) Dall  
Trophon triangulatus  
T. tenusculpta  
Coralliophila hindseii*  
Epitonium spongiosum  
E. retiporosum  
E. bellistriatum  
E. indianorum  
E. tinctum  
E. subcoronata  
E. crebricoastata  
E. tiara  

Melanella therstites  
M. micans  
Alabina tenusculpta  
Bittium attenuatum  
B. rugatum  
B. quadrifilatum  
B. armillatum  
B. purpureum  
B. interfossa  
B. munitum  

Micranellum crebricinctum  
Bivonia compacta  
Aletes squamigerus  
Petaloconchus macrophragma  
Turritella jewetti  
T. cooperi  
Tachyrhynchus lacteolus  
T. lacteolus subplanatus  
Littorina subrotundata  
L. castanea  

Lacuna porrecta  
L. porrecta effusa  

Nassarius insculptus  
A. penicillata  
A. subturrita  
Mitrella tuberosa  
M. gouldii  
A. eurytoides*  
A. chrysalloides  
A. undata  
T. lurida munda Dall in Williamson  
Ocenebra squamulifera  
O. polsoni  
O. interfossa  
[Dall, not Carpenter]  
[Dall, not Carpenter]  
[Carpenter, not Dall]  
Trophonopsis triangularis  
Ocenebra tenusculpta (fossil not Recent)  

Opalia spongiosa  
See O. spongiosa  
E. bellistriatum  
E. indianorum  
E. tinctum  
E. subcoronatum  

E. tiara  
Opalia insculpta  
Balcis therstites  
Balcis micans  
A. tenusculpta  
B. attenuatum  
B. rugatum  
B. quadrifilatum  
B. armillatum  
B. purpureum  
B. interfossa  
B. munitum  
Cerithidea hegowski albonodosa  
M. crebricinctum  
Petaloconchus compactus  
P. squamigerus  
P. macrophragma  
T. jewetti  
T. cooperi  
T. lacteolus  
T. lacteolus subplanatum  
L. subrotundata  
"L. castanea"  
L. scutulata pullata*  
L. porrecta  
L. porrecta effusa  

* Species, the type locality of which is not in the limits of the present report.
PRESENT-DAY CARPENTER MATERIAL

L. porrecta exaequata
L. porrecta puteoloides (Carpenter ms.) Dall
L. divaricata Fabricius
L. variegata
L. unifasciata
Lacuna unifasciata aurantiaca
Fossarum parcicipicus
Iselta fenestra
I. obtusa
Diala acuta
D. marmorea
Barleeia halotiaphila*
B. subtenuis
B. subtenuis rimata
Amphythalamus inclusus
A. lacunatus
Alvania carpenteri Weinkauff = A. reticulata Carpenter
A. filosa
A. compacta
A. acutelirata
Syncera transluces
Hippionix serratus
H. antiquatus cranioides
H. tumens
Calyptraea contorta
Velutina prolongata
Lepeta caecoides
Acmaea mitra foniculata
A. cassis monticola
A. scutum cribaria
Acmaea limatula
A. persona striigillata
A. rosacea
A. triangularis
........................
Phasianella compta punctulata
P. pulloides
P. pulloides elatior
P. substriata*
Leptothyra carpenteri Pilsbry = L. sanguinea Cpr.
L. bacula
Liotia fenestra
L. acuticostata
Halistyhus subpupoides
Tegula funebralis subaperta
Calliostoma variegatum
C. gemmulatum
C. supragranosum
C. splendens
Cidarina cidaris A. Adams
Solariella peramabilis

L. porrecta exaequata
L. puteoloides Dall
“L. solidula Dall” in part
L. variegata
L. unifasciata
L. unifasciata aurantiaca
........................
I. fenestra
I. obtusa
D. acuta
Barleeia marmorea
B. halotiaphila*
B. subtenuis
B. subtenuis rimata
A. inclusus
A. lacunatus
A. carpenteri Weinkauff
A. filosa
A. compacta
A. acutelirata
Assiminea transluces
(H. serratus)
H. antiquatus
H. tumens
C. contorta
V. prolongata
L. caecoides
A. foniculata
A. cassis monticola, nomen nudum
A. [fenestra] cribaria
A. limatula
A. strigatella
A. rosacea
A. triangularis
A. atrata*
P. compta punctulata
P. pulloides
P. pulloides elatior
P. substriata*
Homalopoma carpenteri (Pilsbry)

Homalopoma baculum
Liotia fenestra
Arene acuticostata
H. pupoides
T. funebralis subaperta
C. variegatum
C. gemmulatum
C. supragranosum
C. splendens
C. cidaris (Adams in Carpenter)
S. peramabilis
Margarites salinoneus
M. rhodia Dall = M. inflata Cpr. in part
M. succinctus*
M. juniculatus
M. optabilis
M. lacunatus
M. parcipictus
M. inflata Dall = M. inflata Carpenter in part
M. lirulatus
M. lirulatus conicus
M. lirulatus obsoletus
M. lirulatus subelevatus
M. acuticostatus
M. (vahlii var.) tenuisculptus
Teinostoma supravallata
T. invallata
Lucapinella callomarginata (Carpenter ms.) Dall
Diadora murina (Carpenter ms.) Dall
Puncturella cooperi

Lepidopleurus rugatus*
L. internexus
L. nexus
Lepidochitona flectens
L. hartwegii
Nutallina fluxa
Ischnochiton fallax
I. acrior
I. conspicua
Ischnochiton retiporosus
I. radians
I. scabricostatus
I. aurocinctus
I. veredentiens
I. newcombi
I. serratus*
I. corrugatus
I. cooperi
I. cooperi acutior* (Carpenter ms.) Dall
I. decipiens
I. sinusdentatus

Leptochiton rugatus*
L. internexus Carpenter in Pilsbry
L. nexus
Basilichiton flectens
Cyanoplax hartwegii
N. fluxa
I. fallax Carpenter in Pilsbry
I. acrior Pilsbry
I. conspicus "Dall" Pilsbry
I. retiporosus
I. radians Carpenter in Pilsbry
I. scabricostatus
I. aurocinctus Carpenter in Pilsbry
I. veredentiens
I. newcombi Carpenter in Pilsbry
I. serratus*
I. corrugatus Carpenter in Pilsbry
I. cooperi "Dall" Pilsbry
I. cooperi acutior "Dall"*
I. decipiens Carpenter in Pilsbry
I. sinusdentatus Carpenter in Pilsbry
I. californiensis Berry = I. pectinatus Carpenter
I. regularis
I. trifidus
Chaetopleura gemma
C. beani*
C. parallela*

* Species, the type locality of which is not in the limits of the present report.
The following list was compiled in 1945 by Dr. Fritz Haas, Curator of Lower Invertebrates. The nomenclature is that used by Carpenter. Information regarding locality and number of specimens was added by the author in January 1951.

The Chicago Natural History Museum (then Field Columbian Museum of Chicago) purchased in 1895 a first set of duplicates of the “Philip Carpenter Collection of Shells” from the Peter Redpath Museum, McGill University. The collection consisted of 4039 specimens (Haas, personal communication, Dec. 27, 1944; see Haas, 1944, and anonymous, 1895).

No types were found among this material. Many of the specimens had early Smithsonian Institution labels and were collected by Jewett, Xantus, Swan, and J. G. Cooper. The collection is important in that it is a primary source of Carpenter identifications of specimens made by the original collectors. Where the type has not been found, as in *Turritella cooperi*, the shells would be available from which to choose a neotype. The collection would also furnish additional specimens of original material by which one is able to obtain a better concept of what Carpenter considered the species to be if only the holotype or a few syntypes were available. The list is inserted to give the present location of source material for those who are interested in comprehensive work on species or genera.

The spelling, abbreviations, and punctuation of the specific names and localities are given as on the original labels.

<table>
<thead>
<tr>
<th>Genus and Species</th>
<th>Number of Specimens</th>
<th>Locality</th>
<th>Catalogue Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acmaea [? pileolus, Midd.] var. rosacea</td>
<td>1 double</td>
<td>Monterey</td>
<td>5868</td>
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<tr>
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<td>Between Vancouver &amp; Calif.</td>
<td>6250</td>
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<tr>
<td>Alaba supralirata</td>
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<td>Alvania excurrata</td>
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<tr>
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<td>Genus and Species</td>
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<td>Locality</td>
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<tr>
<td>Caecum cooperi</td>
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<td>Caecum erubescens</td>
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<td>Chryssalida telescopium</td>
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<td>Genus and Species</td>
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<td>Locality</td>
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<tr>
<td>Litorina pullata</td>
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<tr>
<td>Lucina undata</td>
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<td>Gulf of Calif.</td>
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<tr>
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<td>Catalina Is. 30 fms.</td>
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<td>Vancouver, Swan</td>
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<td>Mangelia levidens</td>
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<td>Neah Bay, Swan</td>
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<td>Mangelia tabulata</td>
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<td>Margarita acuticostata</td>
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<td>Monterey</td>
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<td>Margarita var. salmona</td>
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<td>5715</td>
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<td>Margarita tenuisculpta</td>
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<td>Monterey</td>
<td>7336</td>
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<td>Marginella margaritula</td>
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<td>Mazatlan</td>
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<td>Melioceras cornubobis</td>
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<td>Monterey</td>
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<td>Modiolus fornicatus</td>
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<td>Mazatlan</td>
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<td>3 doubles</td>
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<td>Mazatlan</td>
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<tr>
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<td>Mytilus abacincia</td>
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<td>Mazatlan, 4526, 4531</td>
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<td>5901, 5901A-19468</td>
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<td>Nitidella goaldi</td>
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<td>Ocenebra interfossa</td>
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<td>Vancouver Swan</td>
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<tr>
<td>Ocenebra lurida var. munda</td>
<td>15</td>
<td>Neah Bay</td>
<td>4744</td>
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<tr>
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<tr>
<td>Omphalius ? rugosus var. rufolimbus</td>
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<tr>
<td></td>
<td>1 valve</td>
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<td>6058</td>
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<td>Planorbis tumens</td>
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<td>4476, 7817</td>
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<td>Rissoina woodwardii</td>
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<tr>
<td>Scalaria indiana varum</td>
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<td>8454</td>
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<td>Truncaria eurytoides</td>
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<td>C. S. L.</td>
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<tr>
<td>Turritella cooperi</td>
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<tr>
<td>Vanikoro cryptophila</td>
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<td>Mazatlan</td>
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</tr>
</tbody>
</table>

Museum of Comparative Zoology
Identified by P. P. Carpenter*

At the Museum of Comparative Zoology at Harvard University, there are specimens which represent original Smithsonian Institution and California Geo-

*This list includes only those specimens pertaining to the area of this report. Compiled by the author in 1946 from original labels. Spelling and form are as on labels.
logical Survey (J. G. Cooper) material. Some were included in the C. B. Adams collection and acquired from Amherst College. Some came from the Peabody Museum at Salem. The specimens were labelled “cotypes,” but they do not belong in that category. Some have the original Smithsonian labels, such as “collected by Indian children at Neeah [sic] Bay, W. T. and Vancouver by Mr. J. G. Swan teacher.” These labels, as has been explained previously, definitely date the collections and source, but they cannot, unless otherwise indicated, be classed as Carpenter types. By comparing the list included with that of the missing types, a few might serve as a source of neotypes. There were about 19 at the time of an examination of the collection in 1946. More specimens may be found later which were originally labelled or indicated by Carpenter as “type.” Some had original notes signed by Carpenter. The specimens were either of extraneous, obscure, or manuscript types which did not enter into the subject of this report.

<table>
<thead>
<tr>
<th>Genus and Species</th>
<th>Number of Specimens</th>
<th>Locality</th>
<th>Catalogue Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kellia Laperousii Desh.</strong></td>
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<td></td>
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<tr>
<td>var. chironiti</td>
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<td>Cooper Coll. 144</td>
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<td><strong>Moera obtusa</strong></td>
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<td>Str. Fuca to San Diego</td>
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<td>S. Diego, J. G. Cooper</td>
<td>Cooper Coll. 58</td>
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<td><strong>Macoma indistincta</strong></td>
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<td><strong>M. yoldiformis</strong></td>
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<tr>
<td><strong>Ostrea (¿ lurida Cpr. var.) rufoides</strong></td>
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<td><strong>Pectunculus (¿ septentrionalis, var.) subosboletus</strong></td>
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<td>Swan and Indian children</td>
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<td>[original Smithsonian label]</td>
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<td>Cooper 482</td>
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<td></td>
<td>12</td>
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<td>Cal. Geol. Sur. 482</td>
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<tr>
<td><strong>Leptothyra sanquinea</strong></td>
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<td>St. Fuca</td>
<td>Cooper Coll.</td>
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Miscellaneous Collections

The American Museum of Natural History has two collections, Haines and Crooke, which contain Carpenter marine molluscan species. The Haines Collection was bought in about 1894, and the Crooke Collection was probably acquired at an earlier date. Although the material includes a considerable number of specimens of Carpenter species there is no record that they were identified by Carpenter except in the case of 11 species in the Haines Collection, none of which came from the area of this report. Characteristic spelling and places suggest that some of the “northwest” specimens came from original material.

The Chicago Academy of Sciences (Accession No. 35) purchased in 1894 or 1895, 3000 specimens of mollusks, worldwide, land, fresh water, and marine,

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7 The figures in the reference (Anonymous, 1895, p. 55) would not be 3000 “species” but specimens [1376 species].
from the Boston Society of Natural History. The shells had been identified by P. P. Carpenter. Accession No. 10 of the Chicago Academy represents 3000 specimens received from the Academy of Natural Sciences at Philadelphia in 1894. A few Carpenter species are represented in that material. An examination of the records does not reveal any original Carpenter material. The specimens of Carpenter’s species were acquired after Carpenter’s death and probably after 1900.

There are in the Redpath Museum duplicate specimens of species described by Carpenter from the West Coast. The Redpath Carpenter collection is in the process of rearrangement and cataloging. Many specimens were scattered, so that a complete list of Carpenter’s species of this area cannot yet be made. More types will probably turn up before the work is finished (Table 1).
<table>
<thead>
<tr>
<th>Species</th>
<th>Neah Bay</th>
<th>Puget Sound</th>
<th>Vancouver Island, British Columbia</th>
<th>Shoalwater Bay, Washington</th>
<th>Islands off California</th>
<th>Santa Barbara</th>
<th>San Pedro</th>
<th>Monterey</th>
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* Roman = in synonymy
† Type locality not definite
Table 1.—Type localities of species described by Carpenter from the West Coast (Continued)
(San Diego to Puget Sound)

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<th>Vancouver Island, British Columbia</th>
<th>Shoalwater Bay, Washington</th>
<th>Islands off California</th>
<th>Santa Barbara</th>
<th>San Pedro</th>
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Gastropoda

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<th>Vancouver Island, British Columbia</th>
<th>Shoalwater Bay, Washington</th>
<th>Islands off California</th>
<th>Santa Barbara</th>
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* roman = in synonymy
† type locality not definite
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<td><strong>E. tinctor</strong></td>
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*Data extracted from a page dealing with marine molluscs described by T. P. Carpenter.*
| Species                        | Pleistocene, Santa Barbara | O. spongiosa | Balcis compacta | B. thersites | B. rutita | B. micans | Odostomia pumila Carpenter* | O. cineta | O. inflata | O. inflata* | O. tenusculpta | O. gouldii | O. avellana | O. nuciformis | O. satura | Turbonilla laminata† | T. crebrifluilata* | T. virgo | T. aurantia | T. chocolate† | T. tridentata | Iselica fenestralata† | Calyptraea costata | Hippocochlis tumens† | H. antiquatus cranioides | Ocenebra interfossa | O. interfossa atropurpurea | O. squamulifera | O. tenuisculpta | Pleistocene, Santa Barbara | Trophonopsis triangulatus | Calicanculus fortes | Pleistocene, Santa Barbara | Mitrella gouldi | M. tuberosa | Pleistocene, Santa Barbara | Amphisella undata |
|-------------------------------|-----------------------------|---------------|-----------------|--------------|-----------|-----------|----------------------------|------------|-----------|--------------|-----------------|-------------|-------------|----------------|-----------|-------------------|-----------------|-----------|-------------|-----------------|--------------|----------------|----------------|----------------|----------------|------|----------------|----------------|
|                               |                             |               |                 |              |           |           |                             |            |           |              |                 |             |             |               |           |                   |                 |           |             |                 |             |                |               |                 |                |     |                |                |
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*roman = in synonymy
†type locality not definite
MARINE MOLLUSCA DESCRIBED BY

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P. P.

CARPENTER


| Nacella subspiralis* | . | . | . | x |
| Siphonaria thersites | x | . | . | . | . | . | . | . |
| Scaphopoda | . | . | . | . | . | . | . | . |
| Dentalium rectus | x | . | . | . | . | . | . | . |

**Amphineura**

| Leptochiton interexus | . | . | . | . | . | . | . | . |
| Carpenter in Pilsby | . | . | . | . | . | . | . | . |
| L. nexus | . | . | . | . | . | . | . | . |
| Cyanoplax hartwegii | . | . | . | . | . | . | . | x |
| Nuttallina fluxa | . | . | . | . | . | . | . | x |
| Chaetopleura gemma | . | . | . | . | . | . | . | x |
| Ischnochiton newcombii | . | . | . | . | . | . | . | . |
| I. radians Carpenter in Pilsby | . | . | . | . | . | . | . | x |
| I. scabricostatus | . | . | . | . | . | . | . | x |
| I. veredenticus | . | . | . | . | . | . | . | x |
| I. corrugatus Carpenter in Pilsby | . | . | . | . | . | . | . | x |
| I. fallax Carpenter in Pilsby | . | . | . | . | . | . | . | . |
| Bodega Bay, California | . | . | . | . | . | . | . | . |
| I. aureotinctus Carpenter in Pilsby | . | . | . | . | . | . | . | . |
| I. decipiens Carpenter in Pilsby | . | . | . | . | . | . | . | x |
| I. reliporosus | x | . | . | . | . | . | . | . |
| I. sinudentatus | . | . | . | . | . | . | . | . |
| I. regularis | . | . | . | . | x | . | . | . |
| I. trisitus | . | . | . | . | . | . | . | . |
| Callistochariton palmulatus | . | . | . | . | . | . | . | x |
| Mopalia acuta | . | . | . | . | . | . | . | x |
| M. muscosa kennerleyi | x | . | . | . | . | . | . | . |
| M. swani Tatooch Island, Washington | . | . | . | . | . | . | . | . |
| M. imporata | x | . | . | . | . | . | . | . |
| M. sinuata | x | . | . | . | . | . | . | . |
| Dendrochiton gothicus | . | . | . | . | . | . | . | . |
| Aanthochiton avicula | . | . | . | . | . | . | . | x |

*Roman = in synonymy
†Type locality not definite
TYPE LOCALITIES SOUTH OF SAN DIEGO

The following are species whose type locality is below San Diego (except Mazatlan) but whose range extends north.

PELECYPODA

Solemya calculosa. Type locality, Cape San Lucas; type not found

Astenothaerus villosior. Type locality, Cape San Lucas; type, No. 16292, U.S.N.M.

Gari regularis described as Psammobia. Type locality, Cape San Lucas; type, No. 19407, U.S.N.M.

GASTROPODA

Acmaea atrata. Type locality, Cape San Lucas; type, No. 4019, U.S.N.M.

Acmaea strigata. Type locality, Cape San Lucas; type, No. 12594, U.S.N.M.

"Phasiangella carpenteri" Dall = Eucosmia punctata Cpr. Type locality, Cape San Lucas; type not found

Littorina scutulata pullata, described as "Litorina." Type locality, Cape San Lucas. [Type information not completed.]

Barlecia halotiphila. Type locality, Lower California; type, No. 1558, U.S.N.M.

Odostomia acquisculta. Type locality, Cape San Lucas; type, No. 16221, U.S.N.M.

Aesopus eurytoideus, described as Truncate. Type locality, Cape San Lucas; type No. 4148, U.S.N.M.

Cytherea fusonotata, described as Cithara. Type locality, Cape San Lucas; type, No. 4081, U.S.N.M.

Atys casta. Type locality, Cape San Lucas; lectotype, No. 4014, U.S.N.M.

Williamia peltoidea, described as Nacella. Type locality, Cape San Lucas, lectotype and paratype, No. 4023, U.S.N.M. Also Redpath Mus., paratype, No. 1156

AMPHINEURA

Chaetopleura parallela, described as Ischnochiton. Type locality, Cape San Lucas; type, No. 4017, U.S.N.M., Redpath Mus., No. 46

Chaetopleura prasinata, described as Ischnochiton. Type locality, Cape San Lucas; type, No. 15892, U.S.N.M.

Pallochiton lanuginosa "Dall." Type locality, Todos Santos Bay; type Redpath Mus., No. 66; or if species is credited to Pilsbry, type locality Pt. Abreojos; type, No. 35684, A.N.S.P.

Ischnochiton conspicus "(Dall)" Pilsbry. Type locality, La Paz, type, Redpath Mus., No. 65. San Diego, California, type, A.N.S.P., No. 35709

"I. cooperi acutior" Dall. Type locality, Todos Santos Bay; type, No. 30734, U.S.N.M.

I. serratus. Type locality, Cape San Lucas; type, No. 16204, U.S.N.M., lost; also Redpath Mus., No. 98

I. decoratus Pilsbry [Carpenter Dall, ms.] type locality, Todos Santos Bay; type, A.N.S.P., No. 118687

SPECIES DESCRIBED FROM MAZATLAN WHICH RANGE NORTH

Of the molluscan species described by Carpenter from Mazatlan the range of the following has been extended into the area north of Lower California. The types of the species should be in the Reigen Collection in the British Museum. The illustration of the types of these species should be included in the future illustration of the types of the Carpenter Mazatlan Catalogue (1857a).

PELECYPODA

Ostrea conchaphila

Mytilus multififormis
Lucina excavata  
Tellina lamellata  
Taras subquadratus  
Tagelus politus  
Sphenia fragilis  
Martesia intercalata  

**Gastropoda**  
Barlecia alderi, described as *Jeffreysia*  
Petaloconchus macrophragma  
Pyramidella Adamsi  
Turbonilla muricata (fossil)  
Hipponix serratus  
Coleophysis carinata, described as *Tornatina*  
Melampus olivaceus  

**Amphineura**  
Chaetopleura beanii, described as *Lepidopleurus*  

**NOMINA NUDA**  

The following names are those which were manuscript designations of Carpenter. Some have been utilized by later authors and, therefore, were validated as of that author. Some were on museum labels and have appeared in lists from that source. Others are museum labels and may or may not have been used in later identification. The list is included herein so that workers may become aware of their status readily and discontinue the use of the names in the literature.  

**Pelecyphoda**  
*Nucula suprastriata*. Not *N. suprastriata* Arnold. See *N. exigua* Sowerby, this report.  
*Cyrilla munita*. See *Huxleyia munita* (Dall), this report.  
*Modiola planata*  
*Crassatella marginata*  
*Lasaea rubra subviridis*. See *Lasaea subviridis* Dall.  
*Lutricola alba* (Carpenter, 1864b, p. 639) error for *L. alta* Conrad. See *Apolymetis biangulara* Carpenter, this report.  
*Tiveca marginata*  
*Tapes gracilis*  

**Gastropoda**  
*Acmaea cribaria*  
*A. mitra tenuisculpta*. See "*A. mitra tenuisculpta* Dall" and *A. funiculata* (Carpenter), this report.  
*Patella monticola* and/or *P. monticula* Nuttall, ms.  
*Clypidella callomarginata*. See *Lucapinella callomarginata* (Dall), this report.  
*Calliostoma costatum laqueatum*  
*Fissurella (Glyphis) murina*. See *Diodora murina* Arnold, this report.  
*Phastanella rubrilineata*, See *P. rubrilineata* Strong, this report.  
*Lacuna porrecta puteloides*. See as of Dall, this report.  
*"Altavania notabilis* Cpr." in Baker (1902)  
*"Altavania aequisculpta Cpr." in Keep (1887) and Baker (1902). Also *Rissoa aequisculpta* and *Rissoina aequisculpta* in Baker (1902)

SCAPHOPODA

Cadulus nitentior. See C. nitentior Arnold, this report. Siphonodentalium 4-fissatum. See Cadulus quadrifissatus Pilsbry and Sharp, this report.

AMPHINEURA

Leptochiton crassus
L. rugatus. See L. rugatus Pilsbry, this report. Chaetopleura gemma. See C. gemma Dall or Pilsbry, this report. Ischnochiton acrior. See I. acrior Pilsbry, this report. Mangerella conspicua. See I. conspicua ("Dall") Pilsbry, this report. Ischnochiton cooperi. See I. cooperi "Dall" Pilsbry, this report. "I. cooperi acutior." See I. cooperi "Dall," this report. Type locality, Todos Santos Bay; type, No. 30734, U.S.N.M.

Chiton (Callistochiton) decoratus. See Ischnochiton decoratus Pilsbry, this report. Callistochiton fimbriatus
Placiphorella velata. See P. velata Dall, this report.

EXTRANEOUS SPECIES

The following names were applied to species which were described as of the area under discussion but belong elsewhere.

Barbatia pernoides. Error in original label.

Pecten paucioccstatus. Lower California. See P. tumbezensis d'Orbigny, under heading P. paucioccstatus Carpenter, this report.

"Pecten squarrosus"

"Modiola nitens"

Macrocallista brevisphonata (= M. chishimana Pilsbry). Japan.

Corbula polychroma Carpenter in Gould and Carpenter = C. biradiata Sowerby. Panama or Acapulco.

"Columbella" sana-barbarea. Lower California.

Patella (? torecia) tenilirata "(= Cellana radians Gmelin)." New Zealand.


STRATIGRAPHIC DISTRIBUTION OF THE SPECIES

The following tables are a compilation of the records of geologic range of species described by Carpenter for the area of this monograph. This list is not intended to represent original research nor a verification of specific determinations
as given by the 37 authors from whose works the list is compiled. The lists are given for reference to papers which report occurrence of the species other than Recent. Unless otherwise stated the mark of occurrence refers to California. Grant and Gale (1931) included the compilation of range; in many cases a note refers to their monograph. The definite localities will be found in each author's paper. In addition to the list of authors given workers should consult Burch (1947, p. 1-18) which is a discussion with charts of comparison between the mollusks of Pleistocene beds (Los Angeles County, California) with the Recent fauna.

The value of the stratigraphic column depends on the correct identification of the species. The writer cannot verify the identification made in these lists. As stated herein, it is hoped that the illustration of the type specimens will be a means of checking the identifications made in these lists. Many may be modified thereby. The list is not intended to be complete.

The following is the key to the numbers used in the stratigraphic distribution of species (Table 2).

1. Woodring, Bramlette, and Kew (1946)
2. Grant and Gale (1931)
3. Oldroyd (1925)
4. Stephens (1929)
5. Waterfall (1929)
6. Arnold (1903)
7. Carpenter in Cooper (1888)
8. Cooper (1888)
9. Chace and Chace (1919)
10. Berry (1908)
11. Jordan (1926)
12. Strong (1928)
13. Willett (1937)
14. Woodring and Bramlette (1950)
15. Clark (1931)
16. Merriam (1941)
17. Dall (1892)
18. Bartsch (1911)
19. Durham (1937)
20. Moody (1916)
22. Bartsch (1917)
23. Howe (1922)
24. Baily (1935)
25. Dall in Grant and Gale (1931)
26. Oldroyd (1924)
27. Howard (1935)
28. Jordan and Hertlein (1926)
29. Nomland (1917)
31. Woodring (1938)
32. Clark (1915)
33. Hertlein (1934)
34. Emerson and Addicott (1953)
35. Durham (1950)
36. Berry (1922)
37. Chace (1917)
Table 2.—Stratigraphic distribution of species

<table>
<thead>
<tr>
<th>Species</th>
<th>Miocene</th>
<th>Pliocene</th>
<th>Pleistocene</th>
<th>Recent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solenya valculus</td>
<td></td>
<td>x 6</td>
<td>x 6, 26</td>
<td>x</td>
</tr>
<tr>
<td>Nuculana hamata</td>
<td></td>
<td>x 2, 6</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Glycymeris subobsoleta</td>
<td></td>
<td>x 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haeckelia manila</td>
<td></td>
<td>x 1, 2</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Philobrya selosa</td>
<td></td>
<td>x 27</td>
<td>x 1, 3, 4, 5, 6, 11</td>
<td>x</td>
</tr>
<tr>
<td>Ostrea lurida</td>
<td></td>
<td></td>
<td>Mexico, 13</td>
<td></td>
</tr>
<tr>
<td>Pecten circularis</td>
<td>x 2*</td>
<td></td>
<td>x 5, 6, 28</td>
<td>x</td>
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<tr>
<td>Aequiuliscatus</td>
<td></td>
<td></td>
<td>Mexico, 34</td>
<td></td>
</tr>
<tr>
<td>Modiolus fornicatus</td>
<td>x 6, 29</td>
<td></td>
<td>x 6, 11</td>
<td>x</td>
</tr>
<tr>
<td>Asthenothyra villosior</td>
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<td></td>
<td>Mexico, 15, 34</td>
<td>x</td>
</tr>
<tr>
<td>Pandora bitrata (Conrad)</td>
<td></td>
<td></td>
<td>x 6</td>
<td>x</td>
</tr>
<tr>
<td>P. filosa</td>
<td>x 14cf.</td>
<td>x 14cf.</td>
<td>x 6, 15</td>
<td>x</td>
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<tr>
<td>Cuspidaria pectinata</td>
<td></td>
<td></td>
<td>x 6, 15</td>
<td>x</td>
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<tr>
<td>Plectodon scabra</td>
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<td></td>
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<td></td>
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<tr>
<td>Astarte compacta</td>
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<td></td>
<td>x 1</td>
<td>x</td>
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<td>Encrassatella fluctuata</td>
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<td></td>
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<td>Glans subquadrate</td>
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<td>x 1, 2, 6, 9, 11</td>
<td>Mexico, 13</td>
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<tr>
<td>Miolidiscus prolongatus</td>
<td>x 14cf.</td>
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<td>x 1, 2, 3</td>
<td>x</td>
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<td>Axinopsida serricata</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Lucina tenuisculpta</td>
<td>x 2*, 14cf.</td>
<td>x see</td>
<td>2, 6, 3, 15</td>
<td>x</td>
</tr>
<tr>
<td>Kellia laperousii chironii</td>
<td></td>
<td>x 14</td>
<td>x 2, 11</td>
<td>x</td>
</tr>
<tr>
<td>Mysella tumida</td>
<td></td>
<td></td>
<td>Mexico</td>
<td>x</td>
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<tr>
<td>Pristes oblongus</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Pseudopythia rugifera</td>
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<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Lepton mercenari</td>
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<td></td>
<td>x</td>
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<tr>
<td>Nemocardium centifilosum</td>
<td></td>
<td>x 15, 30</td>
<td>x 1, 5, 6, 8, 13, 15</td>
<td>x</td>
</tr>
<tr>
<td>Compsomyxa subdiaphana</td>
<td>x 14cf., 31cf.</td>
<td>x 2*, 14cf.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humilia renkleri (Reeve)</td>
<td></td>
<td>x 11</td>
<td>x 11</td>
<td>Mexico</td>
</tr>
<tr>
<td>Protobrachia laciniata</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>P. staminea</td>
<td>x 14cf.</td>
<td>x 2*, 14cf.</td>
<td>x 2*, 11</td>
<td>x</td>
</tr>
<tr>
<td>P. te听rina</td>
<td></td>
<td></td>
<td>Mexico, 13</td>
<td>x</td>
</tr>
<tr>
<td>Psephidia salmonsea</td>
<td>x 6</td>
<td>x 6, 8</td>
<td>x</td>
<td></td>
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<tr>
<td>Petrosa tellimydis</td>
<td></td>
<td>x 13</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Cooperella subdiaphana</td>
<td></td>
<td>x 13</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Tellina modesta</td>
<td>x 11</td>
<td>x 11 Mexico</td>
<td>x See 2</td>
<td></td>
</tr>
<tr>
<td>T. buttoni Dall [= T. obtusa (Carpenter)]</td>
<td>x 11 Mexico</td>
<td>x See 2</td>
<td></td>
<td></td>
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<tr>
<td>T. carpenteri Dall [= T. variegata (Carpenter)]</td>
<td>x See 2</td>
<td></td>
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</tr>
<tr>
<td>T. salmonsea</td>
<td>x 32</td>
<td>x 3, 6</td>
<td>x</td>
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<tr>
<td>Apolymetis biangulata</td>
<td>x? 2*</td>
<td>x? 2*</td>
<td>x 2*, 13, 34</td>
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<td>Macoma expansa</td>
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<td>x 2*, 14cf.</td>
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<td>M. yoldiformis</td>
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<td></td>
<td>Mexico, 13</td>
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<td>M. indentata</td>
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<td>x 2*, 14cf.</td>
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<tr>
<td>Semele incongrua</td>
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<td>x 3, 15</td>
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<td>Cari regularis</td>
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<td>Solen rosaceus</td>
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<td>x 2*, 11</td>
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<td>Sphenia fragilis</td>
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<td>Mexico</td>
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<td>S. ovidea</td>
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</table>

*See for additional localities.
Table 2.—Stratigraphic distribution of species (Continued)

<table>
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<th>Species</th>
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<th>Pleistocene</th>
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<td>Mexico, 35</td>
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<td>Lower Calif-</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>ornia</td>
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<td><em>Scathropoda</em></td>
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<tr>
<td>Dentalium rectius</td>
<td>7 23</td>
<td>x 23</td>
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<tr>
<td></td>
<td></td>
<td>Oregon</td>
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<td>Oregon</td>
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<td><em>Gastropoda</em></td>
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<td>Puncturella cooperi</td>
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<td>x</td>
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<td>x</td>
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<td>M. tenueculptus</td>
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<td>M. rhodia Dall</td>
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<td>M. salmoneus</td>
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<td>x</td>
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<td>M. sucinculus</td>
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<td>x</td>
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<td>Cidarina cidaris</td>
<td>(x?) 2, 7</td>
<td>x 6, 15</td>
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<td>Solarisella peramabilis</td>
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<td>C. splendidens</td>
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<td>C. subpragranosum</td>
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*See for additional localities.
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Table 2.—Stratigraphic distribution of species (Continued)

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AMPHINEURA

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<td>nutallii</td>
<td></td>
<td>x 36</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>C. dentiens (Gould) = [C.</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>pseudodentiens (Carpenter)]</td>
<td></td>
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<tr>
<td>Nuttalina flusa</td>
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<td></td>
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<td>x</td>
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<tr>
<td>Chaetopteru beani</td>
<td></td>
<td>x 9, 36</td>
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<td>x</td>
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<tr>
<td>C. gemma “Dall”, Pilsbry</td>
<td></td>
<td>x 36</td>
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<td>x</td>
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<tr>
<td>C. parallela</td>
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<td>x</td>
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<tr>
<td>C. praasinata</td>
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<td>x</td>
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<tr>
<td>Ischnochiton newcombi</td>
<td></td>
<td>x 36</td>
<td></td>
<td>x</td>
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<tr>
<td>Carpenter in Pilsbry</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I. scabricostatus</td>
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<td>x</td>
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<td>I. veredentiens</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>I. acerius (Pilsbry)</td>
<td></td>
<td>x 36</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>I. conspicuus “(Dall”, Pilsbry</td>
<td>? 36</td>
<td>x 9, 36, 37</td>
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<tr>
<td>I. corrugatus Carpenter in Pilsbry</td>
<td></td>
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<td></td>
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<tr>
<td>I. fallax Carpenter in Pilsbry</td>
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<tr>
<td>I. aureotinctus Carpenter in Pilsbry</td>
<td></td>
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<tr>
<td>I. cooperi “Dall” Pilsbry</td>
<td></td>
<td>x 9, 36</td>
<td></td>
<td>x</td>
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<tr>
<td>I. radians Carpenter in Pilsbry</td>
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<tr>
<td>I. retiporosus</td>
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<td>I. serratus</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
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<tr>
<td>I. sinudentatus Carpenter in Pilsbry</td>
<td></td>
<td>x 36cf.</td>
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<td>I. regularis</td>
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<td>I. trifidus</td>
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<td>Callistochiton decoratus Pilsbry</td>
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<td>x 36</td>
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<td>C. palmatus Carpenter in Pilsbry</td>
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<td></td>
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<td>Mopalia acuta</td>
<td></td>
<td>x 13, 36</td>
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<tr>
<td>M. imporcata</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>M. lignosa (Gould) = M. montereiyensis (Carpenter)</td>
<td>x 9, 36</td>
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</table>

*See for additional localities.
**Table 2.**—Stratigraphic distribution of species (Concluded)

<table>
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<th>Species</th>
<th>Miocene</th>
<th>Pliocene</th>
<th>Pleistocene</th>
<th>Recent</th>
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<tbody>
<tr>
<td>M. muscosa kennerleyi</td>
<td></td>
<td>x 36cf.</td>
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<tr>
<td>M. sinuata</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>M. swanii</td>
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<td></td>
<td></td>
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<tr>
<td>Dendrochiton gothicus</td>
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<tr>
<td>Basilochiton flexens</td>
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<tr>
<td>Acanthochiton avicula</td>
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<td></td>
<td>x 36</td>
<td></td>
</tr>
</tbody>
</table>

**GENERIC NAMES DESCRIBED BY CARPENTER**

The following is a list of molluscan generic names of which Carpenter is the author. Because of the nonuniformity of authorship of manuscript chiton names which Dall or Pilsbry validated after Carpenter's death (1877) such names are included. Equivalent, preoccupied, and manuscript names of Carpenter are in roman. The author who validated them is given. For complete reference of authors not included in the bibliography, see Neave (1939-1940).

Aletes Carpenter, 1857a, p. 301 (Vermetidae); not Aletes Rafinesque, 1815 *nomen nudum*; not of Chapuis, 1874, or of Lohmann, 1899

Amiantis Carpenter, 1864b, p. 536, 540, 553, 620, 640, 665; Reprint, 1872, p. 22, 26, 39, 126, 151 (Veneridae)

Amphilamus Carpenter 1864b, p. 614, 656; Reprint, 1872, p. 100, 142 (Rissoidae)

Angasia Carpenter ms. = Dall, 1882, p. 283; = Phacellozoa Pilsbry, 1894a, p. 139 = Craspedochiton Shuttleworth, 1853 (Cryptoporidae); not Angasia Bates, 1864

Anelium Carpenter, 1857a, p. 319 as section; 1859, p. 423 [as section] (Caecidae)

Arthuria Carpenter ms. = Dall, 1882, p. 284 (fide Pilsbry, 1892, p. 256) = ? Pallochiton Dall, 1882, p. 283 (Ischnochitonidae); not of Servain, 1891

Asthenothera Carpent. 1864a, p. 311; Reprint, 1872, p. 209 (Thraciidae); see this report

Beania Carpenter ms.; Dall, 1882, p. 287 = Beanella Dall, 1882, p. 284 = Midendorfia Carpenter ms. = Dall, 1882, p. 287 (Lepidochitonidae); not Beania Johnston, 1840

Bryophila Carpenter, 1864a, p. 314; Reprint, 1872, p. 212 = Philobrya Cooper, 1867, p. 12 (Limopsidae); not Bryophila Treitscke, 1825; see this report

Callistochiton Carpenter ms. = Dall, 1879, p. 297 (Ischnochitonidae); see this report

Callistoplax Carpenter ms. = Dall, 1879, p. 297; Dall, 1882, p. 283 (Ischnochitonidae)

Ceratohorus Carpenter ms. = Dall, 1879, p. 297, Dall, 1882, p. 286 = Ceratozoa Dall, 1882, p. 283 (Mopaliidae); not Ceratophorus Shuckard, 1837; Gistl, 1848; Diesing, 1848

Chonechiton Carpenter ms. in Dall, 1882, p. 280; Lower Carboniferous, Dinantian, Visé, Belgium

Chitoniscus Carpenter ms., Dall, 1879, p. 299; not of Herrmannsen, 1846, or Stål, 1875, or Waterhouse, 1876

Choneplax Carpenter ms. = Dall, 1879, p. 299; Dall, 1882, p. 285 (Cryptoporidae)

Choristes Carpenter in Dawson, 1872, p. 392; monotype C. elegans Carpenter in Dawson, 1872 (Choristidae)

Chrysallida Carpenter, 1856c, p. 170 (Pyramidellidae); see this report

Clisthurella Carpenter, 1857a, p. 399 (Turridae); see this report

Clistiodora Carpenter, 1864b, p. 613, 627, 638; Reprint, 1872, p. 99, 113, 124; 1864c, p. 596; Reprint, 1872, p. 225. Carpenter's first mention of this generic name was in connection with C. punctata [Conrad], pages 613 and 627, which would make the species a monotype if page preference is the basis of type species determination. On page 638, 1864b and page 596, 1864c, Carpenter stipulated *Pandora clavicularia* Carpenter, 1855, as type species. (Pandoridae)

Coelodon Carpenter, 1864c, p. 599 = Frenamyta Iredale, 1930 (Pandoridae); not Coelodon Lund, 1838

Cooperella Carpenter, 1864b, p. 611, 639 (Petricolidae); see this report; not Cooperella Gunnell, 1933 = Deiroplepis Wells, 1944

Cycladella Carpenter, 1865b, p. 270 (Montacutidae)

Cymatodus Carpenter ms., Dall, 1882, p. 286 = Lepidochepon Risso, 1820; not Cymatodus Newberry and Worthen, 1870; not of Trautschold, 1879

Cytilinia Carpenter, 1864a, p. 478 (Melanellidae ? or Stiliferidae ?); see this report
Dawsonia Carpenter ms. = Midddendorfia Dall, 1882, p. 287 (Lepidochitonidae); not Dawsonia Hirtt, 1868; Nicholson, 1873; Fritsch, 1879.

Deshaysiella Carpenter ms. = Dall, 1879, p. 314 (Lepidopleuridae).

Dinoplax Carpenter ms. = Dall, 1882, p. 284 (Ischnochitonidae).

Dunkeria Carpenter, 1857a, p. 433 (Pyramidellidae).

Elephantulum Carpenter, 1857a, p. 314 [as section]; 1859, p. 419 [as section] (Caeediae).

Euconsmia Carpenter, 1864a, p. 475; Reprint, 1872, p. 214 = Eulidithium Pilsbry, 1898, p. 60; not Euconsmia Stephens, 1829 (Turbinidae).

Fartulum Carpenter, 1857a, p. 325 [as section]; 1859, p. 431 [as section] (Caeediae).

Francis Carpenter ms. = Dall, 1882, p. 284 = Acanthopleura Guilding, 1829 (Chitonidae); not Francisia Paladilhe, 1872.

Glandinaria Nuttall ms., Carpenter 1857a, p. 467 = Olivella.

Glyphis Carpenter, 1857a, p. 220 = Diodora Gray, 1821 (Fissurellidae); not of Agassiz, 1843.

Guildingia Carpenter ms. = Pilsbry, 1893, p. 312, 329 = Plaxisphora Gray, 1847 (Mopaliidae).

Haplococchias Carpenter, 1864a, p. 476; 1864b, p. 618 (Trochidae).

Hemphillia Carpenter ms. = Dall, 1882, p. 287 = Pallochiton Dall, 1882, p. 287; see this report (Ischnochitonidae); not Hemphillia Bland and Binney, 1872.

Hemiarthrum Carpenter in Dall, 1876, p. 44 (Lepidopleuridae).

Heterozona Carpenter ms. = Dall, 1879, p. 331 (Ischnochitonidae).

Homalopoma Carpenter, 1864b, p. 587, 588, 627 (Leptonyx Carpenter, 1864b, p. 612, 627, 652 (Turbinidae)); see this report.


Ischnoplax Carpenter ms. = Dall, 1879, p. 330 (Ischnochitonidae).

Ischnoradsia Carpenter ms. = Dall, 1879, p. 331; not of Shuttleworth, 1853.

Kennella Carpenter, 1864b, p. 602 (Pandoridae); see this report.

Lecania Carpenter, 1866c, p. 343 = Lottia (Gray) Sowerby, 1833 (Acmaeidae).

Lepidoradsia Carpenter ms. = Dall, 1879, p. 331 = Ischnoradsia Shuttleworth, 1853 (Ischnochitonidae).

Leiosoleus Carpenter, 1857a, p. 130.

Leptonyx Carpenter, 1864b, p. 612, 627, 652 = Homalopoma Carpenter, 1864b, p. 507, 588, 627; not Leptonyx Swainson, 1833 or 1837; Gray, 1837; Lesson, 1842; Hitchcock, 1865; see this report.


Lepidopleuridae Carpenter ms., Dall, 1879, p. 332; not of Risso, 1826, or Claparéde, 1868, or Duncan and Sladen, 1885.

“Lutricola Cpr.” in Salisbury, 1934, p. 76 is a nomen nudum. The “L. alba” Carpenter, 1864b, p. 639, No. 58 is typographical error for L. alta Conrad.

Loricites Carpenter ms. in Dall, 1882, p. 281; Lower Carboniferous Dinantian, Visé, Belgium.


Macrochlamys Carpenter, 1857a, p. 308 (Vermetidea).

Maugerella Dall (Carpenter ms.), 1879c, p. 296 = Stenoplax Dall, 1879; see Ischnochiton conspicus.

Meioceras Carpenter, 1859, p. 438 (Caeediae).

Middendorfia Carpenter ms., Dall, 1882, p. 287; not Dawsonia.

Miodon Carpenter, 1864b, p. 611, 627, 642, 682 = Miodontiscus Dall, 1903, p. 14; not Miodon Dummeril, 1859 (Carditidae); see this report.

Mitromorpha Adams in Carpenter, 1865 (Turridae); see this report.

Netastoma Carpenter, 1864a, p. 529, 540, 605, 635, 637, 684; Reprint, 1872, p. 15, 26, 91, 121, 123, 170; not Netastoma Rafinesque, 1810 (Pholadidae).

Nettastoma Carpenter, 1865a, p. 202; Reprint, 1872, p. 250 = Netastoma Carpenter, 1864 (Pholadidae); not Nettastoma Facciola, 1914.

Nettastoma Carpenter ms. in Pilsbry, 1892, p. 290 = Ceratozona Dall, 1879, p. 297; 1882, p. 283 (Mopaliidae); not Neovetorta Pfeiffer, 1854.

Nutcallina Carpenter ms. = Dall, 1871, p. 134 (Lepidochitonidae); see this report.

Oedalia Carpenter, 1864b, p. 611 = Cooperella, 1864b, p. 611; not Oedalia Meigen, 1820 (Petricolidae); see this report.

Oedalia Carpenter, 1865b, p. 208 = Cooperella Carpenter, 1864 (Petricolidae); see this report.

Pliciphora Carpenter, ms., Dall, 1879, p. 298; error for Plaxisphora Gray, 1847 (Mopaliidae).

Placiphorella Carpenter ms. = Dall, 1879, p. 298, 303, 306 (Mopaliidae); see this report.

Plectodon Carpenter, 1864b, p. 638 (Cuspidariidae); not Plectodon Giglioli, 1873; see this report.

**Polyspirella** Carpenter in Gould, 1861a, p. 407 = *Cingulina* A. Adams, 1860 in part *fide* Dall and Bartsch, 1909 (Pyramidellidae)

**Pristiphora** Carpenter, 1866, p. 210 = *Serridens* Dall, 1899; not *Pristiphora* Latreille, 1810 (Erycinidae); see this report

**Pristes** Carpenter, 1864b, p. 611, 643 = *Pristophila* Carpenter, 1866, p. 210; not *Pristis* Linck, 1790, nor Brulé, 1846, nor Redtettbacher, 1895 (Erycinidae)

**Protolemata** Carpenter ms. in Dall, 1882, p. 281, 283; Devonian of Vilmar (Dall)

**Psophis** Carpenter, 1864, p. 640 = *Psophis* Dall, 1902, p. 243; not *Psophis* Guéény, 1854 nor Felder and Rogenhofer, 1875 (Erycinidae); see this report

**Ptterochiton** Carpenter ms. in Dall, 1882, p. 281, 283; Lower Carboniferous, Dinantian, Visé, Belgium

**Sclerocliton** Carpenter ms. = Dall, 1882, p. 284, no type = *Pilsbry*, 1892, p. 188 = *Squamospleura* Nierstrasz, 1905; not *Sclerocliton* Kraatz, 1859

**Spongiochiton** Carpenter ms. = Dall, 1882, p. 283 = *Notoplax* H. Adams, 1862 (Cryptoplacidae)

**Stenoplax** Carpenter ms. = Dall, 1879c, p. 296 (Ischnochitonidae); see this report

**Stecitopax** Carpenter ms. = Dall, 1882, p. 284

**Stenouradia** Carpenter ms. = Dall, 1879, p. 296 = *Stenoplax* Dall, 1879 (Ischnochitonidae)

**Stenochiton** Carpenter ms. = Dall, 1882, p. 286 = *Trachryadisa* Carpenter ms. = Dall, 1879 (Lepidochitonidae)

**Stimpsoniella** Carpenter, 1873, p. 155 = *Amicula* Gray, 1847 (Mopaliidae)

**Streblonoceras** Carpenter, 1859, p. 440 (Caecidae)

**Streptochiton** Carpenter ms. = Dall, 1882 = *Frembleyia* H. Adams, 1867 (Mopaliidae)

**Strobocella** Carpenter, 1860, p. 3 = *Lottia* (Gray), Sowerby, 1833 (Acmaeidae); see *Lecania* Carpenter, 1866, p. 343

**Tecturina** Carpenter, 1860d, p. 219; 1861, p. 71 [separate]

**Tonicella** Carpenter, 1873, p. 154 (Leptochitonidae)

**Trachydermon** Carpenter, 1864, *Basilichiton* Berry, 1918; see this report (Mopaliidae)

**Trachryadisa** Carpenter ms. = Dall, 1879a, p. 1

**Tubaria** Carpenter, 1857a, p. 365

**Vitrimula** Gray in Carpenter, 1857, p. 237 = *Vitrinella* Gray, 1855, p. 65, not C. B. Adams, 1850 = *Otesta* H. and A. Adams, 1858, p. 642 (Limaciidae); see *Pilsbry*, 1945, p. 67

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**TYPE SPECIES DESCRIBED BY CARPENTER**

The following list may not be complete.

<table>
<thead>
<tr>
<th>Type Species</th>
<th>Genus or Subgenus</th>
<th>Family</th>
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<tr>
<td><em>A. inclusus</em></td>
<td><em>Amphithalamus</em> Carpenter, 1864</td>
<td>Rissoidae</td>
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<tr>
<td><em>Scalarea bellistriata</em></td>
<td><em>Aspericella de Boury, 1909</em></td>
<td>Eptoniidae</td>
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<td><em>A. villosior</em></td>
<td><em>Asthenothecus</em> Carpenter, 1864</td>
<td>Thraciidae</td>
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<td><em>D. paneilirata</em></td>
<td><em>Dunkeria</em> Carpenter, 1857</td>
<td>Pyramidellidae</td>
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<td><em>Dunkeria subangulata</em></td>
<td>(= <em>Pyrisculus</em> Monterosato, 1884)</td>
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<td><em>Chrysallida convexa</em></td>
<td><em>Besia</em> Dall and Bartsch, 1904</td>
<td>Pyramidellidae</td>
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<td><em>B. scitosa</em></td>
<td><em>Bryopila</em> Carpenter, 1864</td>
<td>Limopsidae</td>
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<td><em>Tapes tenerrima</em></td>
<td><em>Callithaca</em> Dall, 1902</td>
<td>Veneridae</td>
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<td><em>C. elegantra</em></td>
<td><em>Choristes</em> Carpenter in Dawson, 1872</td>
<td>Choristidae</td>
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<td><em>C. cidaris</em> (A. Adams in Carpenter)</td>
<td><em>Cidaria</em> Dall, 1909</td>
<td>Trochidae</td>
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<td><em>C. claviculata</em></td>
<td><em>Clydiophora</em> Carpenter, 1864</td>
<td>Pandoroidae</td>
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<td><em>Saxidomus gibbosus</em> Gabb</td>
<td><em>Compsomyax subdiaphana</em> (Carpenter)</td>
<td>Veneridae</td>
</tr>
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</table>
Cooperella subdiaphana

Chiton hartwegii

Volutella pyriformis

C. asteriaphila

Cacum heptagonum

[hexagonum sic correction, Bartsch, 1947, p. 104]

Parthenia lacunata

E. variegata Carpenter typica

Dall

Chrysalidia photos

II. cyclophoreus

II. setulosum Carpenter in Dall

Lucina richthofeni Gabb

= L. excava Carpehn, 1857

Parthenia armata

K. filosa

Drillia eburnea

Siphonaria thersites

Margarites lurulus

??Chrysalidia clausiliformis

M. nitidum Bean ms. Carpenter

= M. nitidum (Stimpson)

Cacum crebricinctum

M. filosa

M. prolongata

Petaloconchus macrophragma

Lucina tenuisculpta

P. setosa

P. oblonga

Drillia penicillata

Dentalium rectius

Acteon punctoacutus

Chiton regularis

Pristiphora oblonga

Trachydermon trifidus

Cooperella Carpenter, 1864 (not Cooperella Gunnell, 1933)

Cyanoplax Pilsbry, 1892

(= Mopaliopsis Thiele, 1893)

Cypracolina Cerulli-Irelli, 1911 =

Merovia Dall, 1921 = Gibberula Monterosato, 1884

Cynthia Carpenter, 1864

Elephantanellum Bartsch, 1921

Egila Dall and Bartsch, 1904

Eucosma Carpenter, 1864

= Eulithidium Pilsbry, 1898

Haldra Dall and Bartsch, 1904

Haplococchias Carpenter, 1864

Hemiarthrum Carpenter in Dall, 1876

Here Gabb, 1866

Ividia Dall and Bartsch, 1904 =

Miralda A. Adams, 1864

Kevereria Carpenter, 1864

Laevisectum Dall, 1919

Liriala Dall, 1871

Lirularia Dall, 1909

Lysacme Dall and Bartsch, 1904

Meioceras Carpenter, 1859

Merovia Dall, see Cypracolina

Micranelium Bartsch, 1920

Mitromorpha Adams in Carpenter, 1865

Miodon Carpenter, 1864

= Miodontiscus Dall, 1903

Macrophragma Carpenter, 1857

Parvulicina Dall, 1901

Philobrya Cooper, 1867

(= Bryophila Carpenter, 1864)

Pristiphora Carpenter, 1866

= Serridens, Dall, 1899

Pseudomelatoma Dall, 1918

Rhabdus Pilsbry and Sharp, 1897

Rictavis Dall, 1871

Rhombochiton Berry, 1919

Serridens Dall, 1899

Triplox Berry, 1919

Cooperella Carpenter, 1864 (not Cooperella Gunnell, 1933)

Cyanoplax Pilsbry, 1892

(= Mopaliopsis Thiele, 1893)

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Rhombochiton Berry, 1919

Serridens Dall, 1899

Triplox Berry, 1919
SYSTEMATIC DESCRIPTIONS
EXPLANATORY REMARKS

Mrs. Ida Oldroyd’s four-part manual (1924-1927) Marine Shells of the West Coast of North America has furnished and will continue to be a comprehensive universal reference for West Coast workers. Original descriptions of the majority of Carpenter’s species are included in that text, and such quotations are not repeated in this report. On comparing the quoted descriptions in Oldroyd with the originals one finds that the last remarks including the localities of the original descriptions are omitted in nearly every case. Since the original locality and final remarks are in many cases the crux in deciding debatable questions that portion of the remarks must be included in original data. Attention is called to such omissions and quotation of the same herein. Opinion 52, International Rules of Zoological Nomenclature stipulates:

“The citation of the type locality of a species is not sufficient to establish a name under Article 25a of the Code. If specific characters are given in addition to the type locality, the type locality becomes a part of the description and is to be considered as an important element in determining the identity of species.”

To anyone who has followed Mrs. Oldroyd’s text and that of Dall (1921) it becomes apparent that she followed Dall in details of reference, authors, and remarks. Where typographical errors, omissions, and errors of fact are in Dall, they are repeated in Oldroyd. In a large number of the copies in Oldroyd of the Carpenter original descriptions, typographical mistakes are numerous. Such corrections are inserted in the text of the discussions of the species in this paper. This has not been done in a spirit of criticism but only so that time and labor may be saved for others who do not have access to the original articles of Carpenter. Even the 1872 Reprint by the Smithsonian Institution of many of Carpenter’s papers is out of print and unobtainable by most people.

Measurements in Carpenter’s text are referred to as poll. (pollex = thumb) or without such designation. In the Preface to the Mazatlan Catalogue, the explanation states that, “all measurements of length are given in inches and decimal portions.” Where “poll.” is not inserted in his data, the writer assumed the measurements to be in inches and used 25.4 mm. to an inch to convert the measurements into modern usage. In the article on the new species from California (1865g, p. 133, footnote) Carpenter defined pollex as 2.53 cm. Hertlein and Strong noted (1946, p. 76) that Dr. Teng-Chien Yen investigated the length of pollex while at the British Museum and stated the measurement to be approximately 2 cm. Since the writer used Carpenter’s measurements it would seem that one would arrive nearer his results by using his definition of pollex. The differences are slight between the three figures for the type of measurements involved.

In the Mazatlan Catalogue, Carpenter (1857, p. III) defined measurements for the bivalves as: “long, from the umbo to the middle of the ventral margin; lat. from the anterior to the posterior ends; alt. the thickness of the closed valves.” But in his later papers (1864a, p. 311, footnote) he changed this defini-
tion in regard to "long": "The measures of length [long.] are taken from the anterior to the posterior margins." Unless one notes the difference of definition in these two specifications it is confusing when trying to reconcile the two systems of measurements used by Carpenter.

There appears to be a difference of opinion concerning the procedure to be used when renaming a preoccupied scientific name as to the type of the new name. Dall, and he has been followed by some modern workers, when applying a new name under the above circumstances frequently chose a new type for the species. If the new name is definitely supplied for an old one, as such, it would seem more logical and less confusing to the interpretation of the species if the type of the original name is retained. In this view the writer agrees with Strong (1928b, p. 197, footnote) that the type of *Eucosmia variegata* Carpenter when renamed by Dall remained the type established by Carpenter and not a new one designated by Dall. Strong, however, reversed his method when substituting with Hertlein (Strong and Hertlein, 1945, p. 105) a new name for the preoccupied *Lucina undata* Carpenter (not of Lamarck, 1819). Those authors chose a new shell from modern collections as the type of the new name. In this case there might be an exception because the original locality was not definite. However, the writer believes that the first endeavor would be to try to locate the original specimen in the Cuming Collection upon which the diagnosis of Carpenter’s species was said to have been written (Carpenter, 1865d, p. 279; 1872, p. 272). In this matter of retaining the original type for the new name, the writer concurs with Dr. Fritz Haas (Personal communication, March 2, 1945).

If new types are selected (see case of *Tellina buttoni* Dall) possibly the subsequent author might not have the same species. In that case the new name would represent a new species, and the preoccupied name would still be unnamed. If the type of the preoccupied name is still in existence, it would seem better to retain the original type. If the original type were lost the same procedure would be followed as in the case of choosing any neotype—i.e., designating a topotypic shell if possible (see also the case of *Tellina buttoni* Dall). Therefore, in this paper, where the original type of a renamed species is in existence the original is retained as the type and any later type designation disregarded.

The designation and use of neotypes have been customary in molluscan studies. During the course of study of this monograph the term was provisionally used in a few cases. Neotypes should be designated in those cases where it is known now that the original types have been lost. However, because of the conditions provided in the Rules of Zoological Nomenclature, 1953, it is not feasible to propose neotypes in this paper which is ready for the press. According to the decisions (Copenhagen, 1953, p. 30, 31) the designation of a neotype must be published in the Bulletin of Zoological Nomenclature, and its status is not legalized until it remains unchallenged for a period of "5" years. Consequently, neotypes should be designated and publicized during the preparation of a paper and not in a finished report. Suggestions have been made herein as to specimens which would qualify as neotypes.

The following institutions have been contacted, and examinations of the speci-
mens have been made by the writer or inquiries have been answered by persons in authority. Where the notation in regard to the depository of type in the text of this report is given as "Not found," such a statement means that it is not known in any of these institutions. These organizations are those which were possible sources of Carpenter material.

Academy of Natural Sciences at Philadelphia
American Museum of Natural History
Boston Society of Natural History
British Museum (Natural History)
California Academy of Sciences
Chicago Academy of Sciences
Chicago Museum of Natural History
Cornell University
Museum of Comparative Zoölogy
New York State Museum
Redpath Museum, McGill University
Stanford University
United States National Museum
University of California
Warrington Free Museum (Municipal Museum)

To reduce the printing of oft repeated references the following are written in the synonymy of species with author, date, page, and, if any, plate, only. The complete reference for each author is given in the bibliography.

Abbott, 1954
Arnold, 1903
Carpenter, 1864b
Carpenter, Reprint, 1872
Dall, 1921
Grant and Gale, 1931
Keen, 1937
Odlroyd, 1924b; 1927

Unless for some special reason the types which have been figured previously are not reillustrated herein. This would apply mainly to the pyramidellid, melanellid, turrid, and species of Bittium figured by Dall and/or Bartsch.

The locality of the type is given in the text and rarely repeated in the explanation of the plates; the measurements of the types are included in the figure explanatory data and infrequently duplicated in the text.

Carpenter used a form of shorthand (Rich, 1764) in his labels and notes which was utilized by English Presbyterian ministers (1860–1870 ca.). The chiton manuscript which remained unfinished at Carpenter's death was replete with the shorthand notations, much to Dall's regret. Fortunately, R. D. Darbishire in England deciphered the script, which allowed a better understanding of the thesis by Dall and Pilsbry than would otherwise have been possible.
Carpenter’s own collection and notes which he made are in many cases accompanied by his monogram. In the case of the mounted specimens, the monogram is placed in the upper right-hand corner. A copy of the form is inserted on the frontispiece of this paper.

Under the distribution of species, the age of the distribution is understood to be Recent if it is not specified. Reference at end of paragraph is inserted for a pertinent illustration of that species.

**Phylum MOLLUSCA**

**Class PELECYPODA**

**Family SOLEMYIDAE (Solemyacidæ)**

**Genus SOLEMYA** Lamarck, 1818


Subgenus *PETRASMA* Dall, 1908

*Petrasma* Dall, 1908, *Nautilus*, vol. 22, no. 1, p. 2


*Solemya* (Petrasma) valvulus Carpenter


A copy of the original description with translation was republished by Oldroyd (1924, p. 11). The following corrections should be inserted in Oldroyd's copy: line 6, insert "postice elongato" between "ligamento" and "antice"; read "cicatricibus" for "cicatricibus"; add "Long. .85, lat. .25, alt. .14 poll."

The synonymy and discussion of the species is not intended to be complete.

*Holotype.* Not found. The type is not in the U. S. National Museum as reported by Oldroyd.

*Distribution.* Cape San Lucas, Lower California (type); San Pedro, California, to Punta Penasco, Sonora, Mexico (Hertlein and Strong)

**Family NUCULIDAE**

**Genus NUCULA** Lamarck, 1799


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8Neotype designated prior to the official recognition of "neotype" by the 14th Inter. Congress of Zoology (Copenhagen, 1953) may be validated by conforming to the provisions for establishing neotypes as formulated by that congress. (See Copenhagen decisions on Zool. Nomen., 1953, p. 28-32.)
Nucula exiqua Sowerby

(Pl. 1, figs. 6, 7)


Nucula suprastriata Carpenter, ms. type U. S. Nat. Museum, No. 23247 nomen nudum; Redpath Museum, no. 15373

Not Nucula suprastriata Arnold, 1903, p. 96, pl. XVIII, fig. 6


As Grant and Gale (1931) and Schenck (1939) determined, Arnold (1903) must be credited with the name Nucula suprastriata and not Carpenter. The Pleistocene specimen figured by Arnold is the holotype (lost) of that species.

There is a manuscript type, no. 23247 in the U. S. Nat. Museum, of N. suprastriata consisting of two specimens labelled, "Catalina 30 fms. Cooper." The shells are opposite valves with the margins broken. The smaller and more complete of the two is figured herein. The photo shows the amount of reticulation in the sculpture. On the larger fragment the reticulation is stronger near the margin. The specimen figured falls within the measurements of N. exiqua Sowerby as enumerated by Schenck, but the length of the second type would reach at least 6 mm. There are in the Redpath Museum 6 specimens (including both valves), no. 15373, labelled "Nucula suprastriata Catalina Is. 30 fm. Cooper type," in Carpenter's handwriting.

The name of Carpenter has no nomenclatural status, and as suggested by Schenck the Recent specimens of Carpenter probably belong to N. exiqua Sowerby.

Schenck limited N. suprastriata Arnold to the Pleistocene forms. Woodring, Bramlette, and Kew suggested that the California Recent and Pleistocene shells be separated from the living southern N. exiqua as a subspecies.

The figures and notes of the original specimens of "N. suprastriata Carpenter, ms." are included, because the name has been brought into literature by authors with conjecture as to its proper identity.

Family Nuculanidae (Leditae)

Genus Nuculanula Link, 1807

(Leda Schumacher, 1817)


Subgenus Thestyleda Iredale, 1929

Thestyleda Iredale, 1929, Rec. Australian Mus., vol. 17, no. 4, p. 158, 187

Type species by original designation, Leda ramsayi E. A. Smith, 1885, Challenger Rept., Zool., vol. XIII, p. 241, pl. XX, figs. 3-3a. Recent. Off Sydney, New South Wales, 950 fathoms

Nuculanula (Thestyleda) hamata (Carpenter)

(Pl. 2, figs. 4-6)


9Type locality, "Bay of Caracas," [Ecuador]. Carpenter, (1857b, p. 168), located the Bay of Caracas in Ecuador, at .5°S. It is not to be confused with Caracas, Venezuela, or Curaçao. The original notes of Sowerby stated, "Hab. ad Columbian Occidentalem (Bay of Caracas)." See also Opinion 184, Int. Com. Zool. Nomen., vol. 3, pt. 3, 1944.
p. 12; Sowerby, 1871, Conch. Icon., Laida, vol. 18, species 56, pl. 9, fig. 56 exterior; Dall, 1902, U. S. Nat. Mus., Proc., vol. 24, p. 558, pl. XL, fig. 9 exterior; Arnold, 1903, p. 97, pl. 17, fig. 4; Packard, 1918, Univ. California, Pub. Zool., vol. 14, p. 247, pl. 14, fig. 5 exterior; Dall, 1921, p. 11; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 7, pl. 25, fig. 4 copy Dall; 1924b, p. 23, pl. 6, fig. 4 copy Dall, pl. 37, fig. 5 exterior.

*Nuculana hamata* (Carpenter), *Grant and Gale, 1931*, p. 125, pl. 1, figs. 14, 15 exterior; Bailey, 1935, West Coast Shells (Keep), p. 43, 44, fig. 18 copy Dall; Keen, 1937, p. 23.


“Santa Barbara; Cat. Is., 20-60 fms.; common.” [Carpenter, 1864b, p. 612]

“Like Steenstrupi and pernoides, but very hooked, sculpture strong. 20-60 fm. c. *Cp.*” [Carpenter, 1864b, p. 644]

“*L.* cf. *L. candatae similis*, sed valde hamata; planata, valde inaequilaterali; umbonibus angustioribus, laevibus, ad trichenum sitis; marginibus, dors. post. maxime incurvato, ant. parum, ventr. valde excursivus; parte postica valde rostrata, rostro biangulato, curvato, angustiore, biangulato; sulcis et costis validis, concentricis, supra rostrum continuos, dorsum versus postice obsoletis.

“Long. 0.37, lat. 0.10, alt. 0.10.

“State Collection, No. 984.” [Carpenter, 1866a, p. 210].

The type material is in the U. S. National Museum, Cat. 107420, and consists of specimens in two vials. One vial contains two valves loose and two broken opposite valves. They have a label “*Cp. 984*” which is the original “State Collection” number. The entire valves measure 9 mm., length; 5 mm., height; 1 mm., thickness (one valve) which corresponds fairly closely to Carpenter’s measurements; 9.39 mm., long.; [lat. 0.10]11; 2.5 mm., t. (both valves), and also to the length indicated by Dall. The other vial in the same suite contains a double specimen with the label “*type fig’d.*” The specimens measure 10 mm., length; 5 mm., height; 2½ mm., thickness (both valves). The label suggests that it was the specimen figured by Dall, but the measurement given by Dall is closer to that of the other specimen (*Cp. 984*).

According to the U. S. National Museum Catalogue, No. 107420 should include only one specimen. This suggests that the original specimen is the broken shell and that the complete specimens were added later, possibly by Dall who figured one. The specimen (pl. 2, fig. 6) is, therefore, chosen as the lectotype.

Although the exterior of the shells of this species has been frequently illustrated, the interior has not been figured heretofore. Dall (1916a, p. 397) named a subspecies limata off Santa Rosa, California.

Lectotype.—U. S. National Museum, No. 107420 [“*Cp. 984*”].

Distribution.—Recent. Catalina Island, California 20-60 fathoms (type); Santa Barbara, California; off Farallon Islands, 39–815 fathoms (*Stackard*); off San Juan, Washington, 25-35 fathoms (*Oldroyd*); east of Cedros Island, Mexico, 45 fathoms (*Hertlein* and *Strong*). Pliocene. California (Arnold; Oldroyd, 1924). Pliocene. California (*Arnold*).

Family ARCIDAE

Genus *Barbatia* Gray, 1842


*Barbatia pernoides* (Carpenter)

(Pl. 1, figs. 4, 5)


11 Appears to be an error here, for the height of the shell would not equal the thickness as indicated by Carpenter.
Barbatia pernoides (Carpenter), 1864b, p. 616; Reprint, 1872, p. 102 error original label; Maury, 1922, Paleont. Amer., vol. I, no. 4, p. 40.

Acar pernoides (Carpenter), Strong, 1932, Nautilus, vol. XLVI, no. 1, p. 28 in part

Not Barbatia (Acar) pernoides (Carpenter), Reinhart, 1939, San Diego Soc. Nat. Hist., Trans., vol. IX, no. 10, p. 42, pl. 3, fig. 3a, 3b, 3c, 3d = A. bailyi Bartsch, 1931, U. S. Nat. Mus., vol. 80, no. 2909, p. 2, pl. 1, 5 central figures


Arca (Acar) pernoides Carpenter, Burch, 1944, no. 34, p. 6, in part, not fig.

Not Arca pernoides Carpenter, Burch, 1945, no. 45, p. 5 = A. bailyi Bartsch; Burch, 1947, no. 75, p. 6

"I valve. 'Lieut. Webb.'" [Carpenter, 1857b, p. 283]

"B. t. subquadrata, planata, albida, epidermide spongiosa fusca induta; striis exilibus, radiantis, conferfissimis; minutissime tuberculosis; umbonibus obtusis, antice sitis, area parva; intus linea dentium maxima arcuata; dentibus extremis valdillis, interioribus parvis, conferfis, quadratis; cicatr. musc. rotundatis, politis; pagina interna, intra lineam pallii, radia-tim striata; margine simplici; ligamento fossis quadratis minutis confertis, haud dentibus convenientibus, sito, aream quoque tegente.

"Long., 68, lat. 53, alt. 32.

"Hab. San Diego (Dr. Webb). Valv. unic. in Mus. Gould."

"Somewhat resembling the fine variety of B. solida, but squarer, and known at once by the teeth and ligament. This is (under the glass) in minute pits, as in Isognomon, but with an extra layer covering the whole area." [Gould and Carpenter, 1856c, p. 202]

The critical reference in regard to this form is that of Carpenter (1864b, p. 616), in which he noted that the specimen, as well as that of 13 other names, had never been collected by Dr. Cooper or by members of the California Survey. In regard to B. pernoides Carpenter added that it was "very probably an error in Dr. Gould's label." In a letter from J. G. Cooper to Carpenter dated March 14, 186412 Cooper included a list of molluscan species which did not occur on the California coast. "Byssocara pernoides" was one of them.

This shell is undoubtedly extraneous, and Carpenter was right in assigning the label of "San Diego" as an error.

There is a right valve in the Carpenter Collection in the Redpath Museum which has the label "Barbatia ? pernoides Cpr. PZS 1856, p. 202 ? Panama."

The shells measure 17 mm. length, 12 mm. height, and 5 mm. thickness. Carpenter's measurements of the holotype would be 17.2 mm. length, 13.4 mm. width, and 8.3 mm. thickness.13 With the exception of the thickness the shell measures practically the same. It could well be the shell Carpenter described. In lieu of any authentic specimen this individual could serve as a neotype. A specimen labelled as type has not been found. The above-mentioned specimen is illustrated herein. This is not the A. pernoides illustrated by Burch nor specimens which the writer has obtained from collectors labelled "A. pernoides Strong." Those shells are much smaller and are different generically. They are the Acar bailyi Bartsch.

B. pernoides belongs more to the subgenus Oliquarca Sacco, 1898, by the arrangement of the ligamental area than it does to Barbatia, s.s. (Reinhart, 1935, p. 24, pl. II, figs. d,d').

Holotype.—not found

Specimen figured.—Redpath Museum

Distribution.—Correct locality unknown; not "San Diego;" ? Panama (Carpenter)

Family Glycymeridae

Genus Glycymeris da Costa, 1778

Glycymeris da Costa, 1778, Historia Naturalis Testaceaorum Britanniae, p. 168-170


Glycymeris subobsoleta (Carpenter)

(Pl. 1, figs. 8-10)

Arinacea (? septentrionalis, Middl. var.) subobsoleta Carpenter, 1864b Aug., p. 627, 644;

12 In collection of Carpenteria, Redpath Museum, McGill University.

13 See introduction to systematic descriptions. Carpenter's measurements would be multiplied by 25.3 mm. or 25.4 mm.


Glycymeris septentrionalis (Middendorff) variety subobsOLEta (Carpenter), Grant and Gale, 1931, p. 134 in part

"Sculpture much fainter than in Midd.'s fig." [Carpenter, 1864b, p. 644]

A copy of the original description is in Oldroyd (1924b) with a translation in Packard (1921) which was reprinted in Oldroyd (1924; 1924b, vol. 1). The following original lines should be added to those printed by Oldroyd to make the copy complete:

"Hab. Neeah Bay (Swan): Shoalwater Bay (Cooper)." "Middendorff's shell is figured with much stronger ribs, but may have been described from decorticated specimens." [Carpenter, 1864d, p. 237]

Correct line seven to read: "validis" for "validid"

Even allowing for variation, the specimens illustrated by Oldroyd seem to have several points of difference with the types. In review of this species the Oldroyd shell would bear critical examination.

Willett (1944, p. 111) diagnosed a change in the shell of the species of southern California.

The syntypes consist of two specimens labelled "Cotypes Neeah Bay, W. T., J. G. Swan."

Syntypes.—U. S. National Museum, No. 15594, two specimens

Distribution.—Recent. Neeah Bay, Washington (type); Aleutian Islands, Alaska, to Lower California (Burch, 1945). Pleistocene. Southern California (Grant and Gale, 1931).

Family Limopsidae

Genus Huxleyia A. Adams, 1860


Not preoccupied by Huxleyia Dyster, 1858, or of Claparede and Lachmann, 1858 (for references see Neave, 1939–1940). Cyrilla A. Adams, 1860, Ann. Mag. Nat. Hist., ser. 3, vol. 5, p. 478 was a substitute name for Huxleyia given by Adams who thought Huxleyia was preoccupied by Huxleyia H. munita (Carpenter), herein discussed, has been known as Cyrilla munita.


Huxleyia munita (Dall)

(Pl. 1, figs. 1–3)


Nucinella munita (Dall), Keen, 1937, p. 23, p. 20 under Cyrilla


Nucinella (Huxleyia) munita Dall, Vokes, 1956, Jour. Paleont., vol. 30, no. 3, p. 667

This species was not described by Carpenter. The syntypes consisting of three specimens are in the U. S. National Museum. These were specimens Cooper collected and Carpenter labelled. Dall used Carpenter’s name in 1898 and referred to the species as of Carpenter. Others have followed Dall (Howard, 1953). The species name should be credited to Dall only.

There are in the Redpath Museum no. 15374 two specimens labelled “Nuculina munita Catalina Is. 30 fms. Cooper type.” These specimens cannot be termed syntypes because Dall did not have access to them when he described the species. They would be valuable topotypes because they came from the Cooper collection.

H. munita is not typical *Huxleyia*, but it belongs in that genus more than in *Nucinella*. The species lacks anterior teeth.

Oldroyd repeated Dall’s description of the species (Oldroyd, p. 36). Rehder and Schenck pointed out that *Nuculina petriola* Dall is synonymous with *C. munita*.

Howard (1953) reported the species to be viviparous.

**Syntypes.—** U. S. National Museum, no. 23243, three specimens, label “30 fms. Cooper, Catalina Is."

**Distribution.—** Recent. Catalina Island, 30 fathoms (type); Santa Rosa Island, California, 53 fathoms (*H. petriola*); Santa Rosa Island, California to ? Lat. 34° S. (Hertlein and Strong). Pleistocene (Woodring, Bramlette, and Kew).

**Genus Philobrya** Cooper, 1867


The name *Philobrya* was constructed by Carpenter and intended by him as a substitute for his preoccupied term *Bryophila*. Carpenter first published the name *Philobrya* in the index (1872) to the Smithsonian Reprint of many of his papers. Carpenter has always been credited as author of the generic name. However, as sometimes happens by an interchange of unpublished names between workers, Carpenter’s replacement name of *Philobrya* was first published by Cooper (1867). Cooper, is, therefore, the author of the name. There is no indication in the Cooper list that the name is a manuscript name of Carpenter, so that there is no authority for crediting “Carpenter in Cooper.”

Cotton and Godfrey (1938) placed this genus in the special family Philobryidae.

**Philobrya setosa** (Carpenter)

(Pl. 1, figs. 11-16).


The original description (with translation) of this interesting species has been given by Oldroyd, and details of the hinge have been discussed and illustrated by Bernard.

The following original lines should be added to the copy by Oldroyd to make it complete:

"Long. 13, lat. 2, alt. 1 poll.

"Like a minute *Pinna*, or a transverse *Margaritiphora* without ears, or an *Isognomon* without pits. Differs from the other Aviculids in being viviparous, like some other minute bivalves." [Carpenter, 1864a, p. 314] Line 4, correct "rectus" to read "rectis"; line 8, space following "marginem"
The type collection in the U. S. National Museum consists of 9 double specimens still on the original glass mounting of Carpenter with Carpenter's label "type" "C. S. Lucas."

Howard (1939) added further evidence to Carpenter's statement that the species is viviparous but agreed with Bernard that it is not parasitic as supposed by Dall.

**Dimensions.**—Length, 4 mm.; width, 3 mm. largest syntype; length, 1 mm.; width, .75 ± mm. next to smallest syntype

**Syntypes.**—U. S. National Museum, no. 16187

**Distribution.**—Recent. Cape St. Lucas, Lower California (Xantus) (type): Santa Barbara, "20 fm. Cp." (Carpenter); for California collecting data, see Burch, 1944, no. 34, p. 10; Forrester Island, Alaska, to Gulf of California (Dall). Pleistocene. San Pedro cut, Los Angeles County, California (Grant and Gale; Woodring, Bramlette, and Kew)

**Family Ostreidae**

**Genus Ostrea**15 Linnaeus, 1758


**Ostrea conchaphila** Carpenter


Although the range of this species extends into the California territory, the type is from the Mazatlan fauna. The illustration of the type, therefore, belongs with the figuring of the Mazatlan Catalogue and further discussion is retained for that report.

**Holotype.**—British Museum (Natural History)

**Distribution.**—Mazatlan, Mexico (type); Redondo Beach, California, to Panama (Burch, 1945)

**Ostrea lurida** Carpenter

*(Pl. 5, figs. 4-6)


15 Placed in official list by Int. Com. Zool. Nomen., Opinion 94

16 Title page of volume is dated 1856, but the article was published in 1857, because in the paper Carpenter refers to Mazatlan Catalogue (1857)

The list of references for this common West Coast oyster is not intended to be complete.

“Ostrea edulis, Coop. [non Linn.: = O. lurida, Cpr.] De Fuca and Puget Sound, Gibbs; Shoalwater Bay, Cooper. ‘Small in Puget Sound; finer in Shoalwater Bay, which supplies S. Francisco market; large at Vancouver’s Island; very large near mouth of Hood’s Canal.’” [Carpenter, 1864b, p. 599]

“Ostrea lurida. Esquimalt Harb., Lord. Dredged-up by Indians in small handnets with long handles, in 2-3 ft., on mud-flats.” [Carpenter, 1864b, p. 606]

“Ostrea. The same species throughout to S. Franc.; S. Diego, Cooper. [Besides the typical northern shell, O. lurida, are well-marked ? var. laticaudata, rufoides, and expansa.]” [Carpenter, 1864b, p. 615]

“Ostrea lurida, n.s. Shape of edulis: texture dull, lurid, olivaceous, with purple stains. 2-3 ft. on mud flats, Lord.” [Carpenter, 1864b, p. 645]

Oldroyd gave the first paragraph of Carpenter’s original description. The remainder follows herewith:

“Animal flavore cupreo tintum.

*Var. laticaudata, Nutt. ms.: t. omnino purpurea, margine producto, undato; cardinum versus, demulis conscious instructo.*

“Hab. Vancouver Is., 2-3 toises sur fond de vase, Lord; Shoalwater Bay, Cooper; Needh Bay et Tatooche Is., Swan (Var.) Monterey, Nuttall.

.......

“Les Huitres de Californie, dans leur état ordinaire, comme on les trouve au Shoalwater Bay (Oregeon), ont à peu près la couleur et l’aspect de petites Ethéries. Les individus des mers plus chaudes ont l’air d’être très-distincts; mais, d’après le docteur Cooper, qui a une grande expérience de la matière, ce ne sont que des variétés. Je ne pouvais pas prendre pour nom spécifique celui que le professeur Nuttall avait donné en manuscrit à une forme accidentelle. Quant aux autres formes, assez constantes dans leurs diverses localités, je leur ai donné des noms qui pourront servir à les désigner soit comme espèces, soit comme variétés, lorsque, plus tard, la connaissance d’un plus grand nombre d’individus permettra d’avoir une opinion définitive en ce que les concerner. La variété rufoides a beaucoup de l’aspect de l’O. Virginica (Max. Cat., no. 212). Elle est désignée sous le nom ? rufa par le docteur Gould; mais je suis porté à croire que l’espèce de Lamarck est une variété des Huitres Atlantiques, attendu que les coquilles de la haute Californie n’étaient pas connues à l’époque où il a écrit.” [Carpenter, 1865g, p. 137]

Of the material from several localities listed originally by Carpenter, two specimens from “Shoalwater Bay,” collected by Cooper and labelled as type by Carpenter, are in the Redpath Museum at McGill University. Shoalwater, Willapa Harbor, Washington, therefore, becomes the type locality. The types have a greenish hue on the interior of the shell.

The specimen figured by Sowerby in Conchologica Iconica as O. lurida and said to come from Mazatlan is typical in shape, but either the locality or specific determination is incorrect.

**Syntypes.—Redpath Museum, No. 125**

**Distribution.—Recent. [Cape] Shoalwater [“Bay”] northern Willapa Harbor, Washington (type); Sitka, Alaska, to Cape San Lucas, Lower California (Dall). Individual records may be referred to under Williamson (1892), Arnold (1903), Packard (1914). Grant and Gale (1931) list reference for ? Miocene-Pleistocene, but Keen and Bentson (1944) vouch only for Howard (1935) Pliocene, Pleistocene, San Pedro sand, Palos Verdes Hills, California, Woodring, Bramlette, and Kew (1946, p. 81).

**Ostrea lurida forma expansa** Carpenter

*Ostrea lurida var. expansa* Carpenter, 1864b, p. 615, 646; Reprint, 1872, p. 101, 132; 1865, Jour. de Conchyl., XIII, p. 138; Reprint, 1872, p. 306; Keep, 1887, West Coast Shells, p. 164 in part; Williamson, 1892, U. S. Nat. Mus., Proc., vol. 15, p. 193; Keep, 1911, West Coast Shells, p. 56; Dall, 1921, p. 18; Oldroyd, 1924, p. 50; Baily, 1935 West Coast Shells, (Keep) p. 49; Keen, 1937, p. 23; Burch, 1944, no. 34, p. 11; Burch, 1945, no. 45, p. 6

**Ostrea (conchaph. var?) expansa** Carpenter, Cooper, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 13
“Ostrea . . . [Besides the typical northern shell O. lurida, are well-marked ? vars., lati-
caudata, rufoides, and expansa].” [Carpenter, 1864b, p. 615]

“Ostrea ? var. expansa. Flat, affixed to whole surface, like Columbiensis. Round, or
winged to left, or right, or both, like Mallena. Also passes into 167. Ostrea conchaphila, Cpr.
Maz. Cat. no. 214. From Southern fauna.” [Carpenter, 1864b, p. 646]

“? Var. expansa: t. omnino plantata, per totam superficiem affixa; extus, marginem versus
laminatam, purpureo radiata; intus, olivaceo-rufa, ligamento parvo, in medio undato, solidiore.
“Hab. S. Pedro, Cooper.”” [Carpenter, 1865g, p. 138]

The types of this forma have not been found. The Carpenter Collection in the Redpath
Museum includes one double and an additional value labelled by Carpenter from San Pedro,
collected by Cooper. Since these are topotypes and in addition were collected by the original
discoverer and identified by the original describer, one might well be selected as a neotype.
They are flat, thin, and have a yellow hue.

Dimensions.—Length 55mm.; height 52 mm.

Type.—Not found

Distribution.—Recent. San Pedro, California (type); between San Pedro and San Diego,
California (Carpenter); Monterey to San Diego, California (Burch)

**Ostrea lurida forma laticaudata** Carpenter

*Ostrea lurida var. laticaudata* Carpenter, 1864b, p. 527, 615, 646, Reprint, 1872, p. 13, 101,
132; 1865, Jour. de Conchyl., vol. 13, ser. 3, vol. V, p. 137, Reprint, 1872, p. 303; Cooper,
34, p. 11; Burch, 1945, no. 45, p. 6; Hertlein and Strong, 1946, Zoologica, New York
Zool. Soc., vol. 31, pt. 2, p. 55 form usually referred to as O. palmula Carpenter, see
Dall, 1921, p. 18; Oldroyd, 1924, p. 51; Grant and Gale, 1931, p. 152 in part

For Carpenter’s remarks (1864b, p. 615) see under *O. lurida expansa*.

“Ostrea var. laticaudata, Nutt. MS. Purple, winged, waved: denticles near hinge. Passes
towards palmula, Maz. Cat. No. 214, b.” [Carpenter, 1864b, p. 646]

See also the original description of *O. lurida*.

Type.—Not found

Distribution.—Puget Sound, Washington, to Gulf of California (Burch). (Type locality,
southern part of range of the species, Station?)

**Ostrea lurida forma rufoides** Carpenter

*Ostrea lurida var. rufoides* Carpenter, 1864b, p. 592, 615, 646; Reprint, 1872, p. 78, 101, 132;
1865, Jour. de Conchyl., vol. XII, p. 138; Reprint, 1872, p. 306; Keep, 1911, West Coast
Shells, p. 56; Dall, 1914, Nautilus, vol. 28, no. 1, p. 2; Baily, 1935, West Coast Shells
(Keep), p. 49; Burch, 1944, no. 34, p. 11 color form *O. lurida*

*Ostrea (Conchaph., var. ?) rufoides* Carpenter, Cooper, 1867, Geog. Cat. Moll., Geol. Sur.
California, p. 13

“... Another species, elongated, solid, allied to *Virginica* var. [rufoides]. San Diego.”
[Carpenter, 1864b, p. 592]

“Ostrea ? var. rufoides = rufa, Gld. (non Lam.). Passing toward *Virginica*, jun. Thin,
with umbos hollowed: reddish in scar-region. Also fossil.” [Carpenter, 1864b, p. 646]

“? Var. rufoides: t. ‘*O. Virginicae’* jun. similis; sed tenuissima, luteo-rufa, intus rufa
incura; umbonibus concavis.

“Hab. S. Diego, Cassidy, Cooper. Fossile à San Pablo, 20 pieds au-dessus de la haute
marée, Newberry.” [Carpenter, 1865g, p. 138]

In the Carpenter Collection in the Redpath Museum are the following three suites of
specimens labelled by Carpenter as this *forma*. The characters of the specimens correspond
to the original remarks, but (3) is the only one which might be of the original collection.

1. Glass mount of 5 specimens; San Diego Bay, 8 fathoms Hemphill
2. Glass mount of 6 specimens; Catalina Island, 30 fathoms Cooper
3. Glass mount of specimen; fossil; San Pablo; Newberry

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17Not in British Museum (Natural History) (G. L. Wilkins, Mollusca Section, May 22,
1950, personal communication).
Number (3) is probably the specimen listed by Carpenter in the original description ("also fossil"). If this specimen were not the fossil and in this case the supplementary material, it would be the logical specimen for the neotype. It seems better to select a Recent specimen for that category. In choosing a neotype from this material, one must balance the relative merits of suites (1) and (2). Specimens of (1) are topotypes but not by the original collector (Cassidy, Cooper), whereas specimens from (2) are by the original collector but not from the type locality. The Redpath Museum Collection is so far the only one which has yielded specimens identified by Carpenter. The U. S. National Museum does not contain specimens of the *forma* collected by Cassidy, Cooper, or Blake (H. A. Rechder, May 29, 1950, personal communication).

_Type._—Not found  
_Type locality._—San Diego, California

**Family Pectinidae**

**Genus Pecten** Müller 1776

*Pecten Müller*, 1776, Zoologiae Danicæ Prodromus, p. XXXI, 248


**Subgenus Chlamys** Roeding in Bolten, 1798


**Pecten (Chlamys) rubidus** Hinds

(Pl. 3, figs. 4-6)


*Pecten Fabricii* Gould not Philipp, *Carpenter*, 1864b, p. 574; Reprint, 1872, p. 60


*Pecten (Chlamys) hastatus* Sowerby var. *Hindsii* Carpenter, Arnold, 1906, U. S. Nat. Mus., Prof. Paper, no. 47, p. 111, pl. XLIII, figs. 1, 2, 2a


*Pecten (Chlamys) hindsii* Carpenter, Dall, 1914, Nautilus, vol. 27, no. 11, p. 122; 1921, p. 709 in part; *Oldroyd*, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 17, pl. 23, figs. 3, 4; *Oldroyd*, 1924b, p. 53, pl. 7, figs. 3, 4; *Burch*, 1944, no. 35, p. 6; *Burch*, 1945, no. 45, p. 6

"Pecten rubidus Hinds," *Keep*, 1911, West Coast Shells, p. 41


*Pecten hindsii navaricus* Dall, Bailey, 1935, West Coast Shells (*Keep*), p. 52

"... *Non P. Fabricii Gld. = P. Hindsii, jum.*" [Carpenter 1864b, p. 574]

"*Pecten rubidus*, Hds." Vanc. Is., Lyall. [Hind's type in Br. Mus. appears to be the ordinary form, of which *P. hastatus = hercicus* is the highly sculptured var. This shell, which is more allied to *Islandicus*, may stand as *P. Hindsii*.]" [Carpenter, 1864b, p. 606]

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18 For information on the *Pecten* Osbeck problem, see Tomlin (in Burch, 1944, p. 3)
"Pecten (? var.) Hindsii. Broader, ribs close, small, smooth, bifurcating. Passes from hastatus toward Islandicus." [Carpenter, 1864b, p. 645]

*Pecten rubidus* Hinds, 1844, was described from a specimen from Alaska (no definite place). This is not the *P. rubidus* Martyn (1784) Dall (1905, p. 415; Griffen, Sherborn, and Marshall, 1936, p. 30; Winickworth, 1929, p. 228) = *P. islandicus* Müller, 1776. Although Hinds (1844) and Reeve (1853) figured the species their illustrations do not reveal the fine details of sculpture.

Dall (1898) renamed *P. rubidus* Hinds because of the use of the name by Martyn (1784). Dall gave the new name *navarchus* to the species and designated it as a subspecies of *P. hericus* Gould (1850). Martyn's name is eliminated because his work (1784) is nomenclatorially inadequate, Hinds's name is available and stands for the species. Dall's name of *navarchus* is unnecessary and falls in synonymy with *P. rubidus* Hinds. Chenu's republication in 1845 of Martyn does not validate the name of *P. rubidus* Martyn, Chenu, over *P. rubidus* Hinds, because it was a year later than that of Hinds.

*Pecten Hindsii* was the name given by Carpenter to the specimen identified by Dr. Wm. Baird as *P. rubidus* Hinds. The shell was from Vancouver. It had been collected by Dr. Lyall of H. M. Ship "Plumper" and had been deposited in the British Museum (Vancouver and Californian Table, sixth column, no. 28, *fide* Carpenter, 1864b, p. 604-606). The Lyall specimen Carpenter thought was not the same as *P. rubidus* Hinds. It is the Lyall specimen which would be the type of *P. Hindsii* Carpenter. Apparently that shell has been lost, for it is not in the British Museum (Natural History) now. But *P. hindsii* Carpenter is now regarded as synonymous with *P. navarchus* Dahl = *P. rubidus* (Burch, 1944, no. 35, p. 6) Hinds, so that the type of the former would become the type of the species. The type of *P. rubidus* Hinds has also been lost. Hinds's shell came from Alaska (33 fathoms), which limits the type locality to the Alaskan area.


The 3 Redpath Museum specimens from Sitka, Alaska, measure respectively, 19 mm., 29 mm., 15 mm., width; 22 mm., 32 mm., 18 mm., height; 3 mm., 5 mm., 3 mm., thickness. Photographs of the 3 specimens are included herein.

In 1865 Carpenter included under *P. Hindsii* specimens collected by Kenmerley from Puget Sound and Vancouver shells of Lord.

The above is not intended to be a discussion of *Pecten rubidus* Hinds, 1844, but only the history of the shells which Carpenter named which might be identified with Hinds's species.

**Types.—**Unknown. In Carpenter's day (1863) they were in the British Museum (Carpenter, 1864b, p. 605, 606)

**Distribution.—**Alaska (type); Bering Sea to San Diego, California (Burch)

*Subgenus Plagiocentium* Dall, 1898


Type species by original designation *Pecten ventricosus* Sowerby, 1842 (1847), Thes. Conch., vol. 1, p. 51, pl. 12, figs. 18, 19, 26. Recent. West Coast Mexico and Central America


L. R. Cox (*fide* litt.), W. J. Rees, and J. R. le B. Tomlin searched in the British Museum (Natural History) for the type of the *Pecten* in question. For Hinds's shell of the Bache collection see Tomlin, (1941, p. 158). Grant and Gale's (1931) statement that both *P. hindsii* and *P. navarchus* = *P. rubidus* Hinds were based on the same specimen is not correct.

Regarded as not separable from *P. circularis* Sowerby (1835, p. 110) by Arnold (1906, p. 125), Hertlein (1935, p. 313), and M. Smith (1944, p. 52).
Pecten (Plagiocentenium) circularis aequisulcatus Carpenter

(Pl. 3, figs. 1-3)


Pecten aequisulcatus var. s.l.s. Carpenter, 1864b, p. 645, 669, 684; Reprint, 1872, p. 131, 155, 170


Pecten (Plagiocentenium) ventricosus Arnold, 1903, p. 114, pl. XI, figs. 3, 3a, 6, 6a

Pecten (Plagiocentenium) newsoni Arnold, 1903, p. 113, pl. XI, figs. 1, 1a

Pecten circularis var. aequisulcatus Carpenter, Keep, 1911, West Coast Shells, p. 39, fig. 19

Pecten (Plagiocentenium) circularis Sowerby var. aequisulcatus Carpenter, Arnold, 1906, U. S. Geol. Surv., Prof. Paper, no. 47, p. 132, pl. L, figs. 1, la text figs. 1, 2 synonymy; Dall, 1914, Nautilus, vol. 27, no. 11, p. 122; Oldroyd, 1924b, p. 58, pl. 42, figs. 1, 2 Arnold's figs. section; Burch, 1944, p. 35, p. 11, fig.; Burch, 1945, no. 45, p. 6

Not? Pecten (Aequipecten) aequisulcatus Carpenter, Dautzenberg and Bavay, 1912, Siboga-Expedition, Les Lamellibranches, LIIIb, p. 19

Pecten (Chlamys) circularis aequisulcatus Carpenter, Dall, 1921, p. 19 section Plagiocentenium

Pecten (Aequipecten) gibbus Limnaeus var. circularis Grant and Gale, 1931, p. 218 in part


Plagiocentenium circularis aequisulcatus (Carpenter), Finch, 1953, California Fish Game Marine Fish., Fish Bull., no. 90, p. 42, fig. 8

For other references, see Arnold, 1906; Grant and Gale, 1931, in part; Keen, 1937, p. 19 under Chlamys; Hertlein and Strong, 1946, p. 58

The types of this species consist of one valve, left marked "type," and one double specimen, in the U. S. National Museum, no. 15645, with the label "San Diego." In regard to the statement of Mrs. Oldroyd concerning the Boyce Collection, see the introduction to this paper. The note as to the whereabouts of the types in the British Museum in Grant and Gale was a supposition. Arnold gave a fine photograph of a typical specimen in the U. S. Nat. Museum, no. 172703, but that specimen is not the type. Oldroyd (1924b) copied Carpenter's original description (1865h). In addition to that description Carpenter stated:

"Hab. Sta. Barbara (Jewett); S. Diego (Cassidy, Newberry, Cooper)."

He identified the species amongst the collection of Major Rich, from "Near S. Pedro." [Carpenter, 1864b, p. 540]

Dimensions.—Length, 84 mm.; height, 80 mm.; thickness (1 valve), 14 mm. left valve, "type;" length, 69 mm.; height, 64 mm.; thickness (double), 35 mm.

Synotypes.—U. S. National Museum, no. 15645

Distribution.—Recent. San Diego, California (type); Monterey Bay, California, to Cape San Lucas, Lower California (Finch, 1953). For Pliocene and Pleistocene, see Table 2 for stratigraphic distribution.

Subgenus Leptopecten Verrill, 1897


Type species by original designation, Chlamys monotimeris (Conrad), 1837, Acad. Nat. Sci., Philadelphia, Jour. vol. 7, p. 238, pl. 18, fig. 10. Recent. Monterey, California, to Gulf of California. Oldroyd, 1924b, pl. 40, figs. 1, 2

Pecten (Leptopecten) paucicostatus Carpenter

**Pecten (Plagiocetenum)** *pangicostatus* Carpenter, *Arnold*, 1906, U. S. Geol. Sur., Prof. Paper, 47, p. 137, pl. XXXIX, figs. 3, 3a, 4 types

**Pecten (Chlamys)** *pangicostatus* Carpenter, *Dall*, 1921, p. 19, section *Leptoptecten*; *Oldroyd*, 1924b, p. 56, pl. 41, figs. 4, 5, section *Leptoptecten*

**Pecten (Acquitecten)** *tumbezensis* d'Orbigny, *Grant and Gale*, 1931, p. 206 in part


Arnold’s (1906) doubt concerning the correctness of the original label of “Santa Barbara,” and lack of specimens in later collections from California, has led authors to believe that this species has not been found north of the Gulf of California, Grant and Gale (1931), Hertlein (1935), and Keen (1937, p. 19) made a reasonable inclusion under *P. tumbezensis* d’Orbigny, 1846.

Two syntypes of *P. pangicostatus* Carpenter, No. 15643b, labelled “Types Sta. Barbara Jewett Cooper Catalina Id.,” are in the U. S. National Museum. There are also two syntypes in the Redpath Museum, No. 121, labelled by Carpenter “Type” Sta. Barbara “Jewett (? Nicaragua).” Thus Carpenter had doubt about the shells coming from Santa Barbara. Arnold figured the U. S. National Museum types, and writer has photographs of those which are at McGill University. The illustrations and further discussion are reserved for that of the Carpenter types from the fauna south of California.

**“Pecten (?) var.) squarrosus”* Carpenter

(Pl. 2, figs. 1-3)

**Pecten squarrosus** Carpenter, 1864b, p. 536; Reprint, 1872, p. 22


“P. testa orbiculari, aequilaterali, rubida, albido, maculata; valva dextra convexa; costis XVIII, aequalibus, testa jun. approximatis, testa adulta interstitiis aequalibus; costis et interstitiis regulariter undatis, striis crebris squamosis radiantibus ubique ornata; auriculis magnis, latissimis, subaequalibus; antica anguste fissata, serrata, postica sinuata; auriculis ambabus et regione contigua scabrose striatis: intus alba, linea cardinali alte sulcata. Long. 1.82, lat. 1.79, alt. 9.


“Resembles a shell in Mus. Cuming, marked ‘exasperatus, var.‘, but does not agree with the diagnosis of that species. All Col. Jewett’s valves were dextral. The locality needs confirmation.” [Carpenter, 1865h, p. 179]

This species apparently does not belong in the West Coast fauna, but its proper place has not been established. Reference has not been made to it since Carpenter (1865h). At that time he doubted its proper locality. In the Redpath Museum there are three specimens, two right and one left valve marked type by Carpenter, with “Sta. Barbara Jewett.” In addition Carpenter labelled the specimen “Also really Florida.”

Carpenter in the original description stated that all Col. Jewett’s specimens were dextral. The left valve at McGill would then be eliminated from type material. Photos of the McGill right valves are included herein. They represent two different species. The shell of Figures 2 and 3 of Plate 2 bears a resemblance to the holotype of *P. heliacus* Dall (1925b, p. 119-120) as figured in Maxwell Smith (1937, pl. 9, figs. 5a, 5b) and the specimen of Figure 1 to the holotype of *P. acanthodes* Dall (in Smith, 1937, pl. 9, fig. 3). If either of the specimens under Carpenter’s name proved conspecific with one of Dall’s, Carpenter’s name would have priority.

**Family Limidae**

**“Lima orientalis” Carpenter**

Family Mytilidae

Genus Modiolus Lamarck, 1799

(Modiolus) Scopoli, 1777, p. 397


Type species by absolute tautonymy, Mytilus modiolus Linnaeus, 1758, Syst. Nat., p. 706.

Living, Circumboreal. Northern Europe, western Atlantic from the Arctic to northeast Florida (Abbott, 1954); Eastern Pacific from the Arctic to San Pedro, California (Dall, 1921). REeve, 1857, Conch. Icon., Modiola, vol. X, pl. I, fig. 1, fig. 2; Abbott, 1954, p. 351, fig. 26

For extended bibliography of Modiolus modiolus (1.), see Dautzenberg and Fischer (1912, p. 363-366), as Volsella.

Modiolus fornicatus (Carpenter)

(Pl. 4, figs. 10-12)


Modiola fornicatus (Carpenter), Arnold, 1903, p. 120; Keep, 1911, West Coast Shells, p. 36 (“Gld.”); Dall, 1921, p. 22; Oldroyd, 1924b, p. 69; Keen, 1937, p. 22; Soot-Ryen, 1955, Allan Hancock Pac. Exped., vol. 20, no. 1, p. 6, pl. 6, fig. 26

Volsella fornicata (Carpenter), Grant and Gale, 1931, p. 251; Burch, 1944, no. 36, p. 14; 1945, no. 45, p. 8; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, p. 171

“Short, swollen, like large M. marmorata; but smooth, not crenated.” [Carpenter, 1864b, p. 643]

The description of 1865 of this species was reprinted by Oldroyd. Her statement that the type is in Mrs. Bryce collection in Utica, New York, is out of date and should not be continued.

The following should be added to make the copy in Oldroyd complete:

"Long. 1.4, lat. .76, alt. .95.

"Hab. Sta. Barbara (Jewett); Monterey (Taylor)." [Carpenter, 1865h, p. 179]

The holotype, one specimen of both valves, is in the Redpath Museum. The glass tablet upon which it is mounted has in Carpenter’s handwriting, “Type. Col. Jewett, Sta. Barbara.”

The holotype, therefore, represents the first specimen mentioned by Carpenter, i.e., the one collected by Col. Jewett.

Holotype.—Redpath Museum, no. 3133

Distribution.—Recent Santa Barbara, California (type); Monterey, Trinidad to San Pedro and Cortez Bank, California (Dall, 1921). Reported from Pliocene and Pleistocene of California and Pleistocene of Lower California (Grant and Gale, 1931).

“Modiola planata” Carpenter

“Modiola planata” Carpenter is a nomen nudum. The type material consists of three double valves in the Redpath Museum (No. 108). They are on the original glass mounts and were labelled by Carpenter “MS. type Beach at Panama Bradley.” Photographs of the types are in the author’s collection. The discussion of the name will be reserved for the paper on the Carpenter types of the Panama and Lower California region. Tomlin used the name in his list (1928, p. 192), stating that he had taken the name from the British Museum collections. The name, of course, has no validity. The specimens belong in the group of Modiolus of “Modiola speciosa” (Dunker) (Reeve, 1857, vol. X, Modiola, pl. VII, fig. 35).

“Modiola” nitens Carpenter


1860, Smith Misc. Coll., vol. 2, art. 6, p. 2; 1864b, p. 535, 564, 616; Reprint, 1872, p. 21, 50, 102

This specific name and description which Carpenter inserted in literature in 1857 pertained to specimens in the Gould collection labelled from California. That information was stated by Carpenter (1864b), in three respective notations, to be probably an erroneous Cumingian label. Carpenter (1864b, p. 535) suggested that the species was = *M. subpurpuratus* Mus. Cum.

*Volsella subpurpuracea*, a specimen in the Cuming Collection, was described by Dunker (1856, p. 362) from Senegal. The Mus. Cuming specimen was figured by Reeve (1857, *Modiola*, vol. X, pl. V111, fig. 44). That specimen may be the one referred to by Carpenter in comparison. It is not the same as the species figured by Reeve (1857, pl. V, figs. 23, 24) as *Modiola nitens* Carpenter, which name was applied to other specimens in the Museum Cuming. Reeve referred *M. nitens* Carpenter to the Mazatlan Catalogue which is not the place of description. The type of *M. nitens* was from the Gould Collection. Its whereabouts has not yet been traced.

**Genus Adula H. and A. Adams, 1857**


**Adula californiensis** (Philippi)

(Pl. 4, figs. 1-4)

*Modiola californiensis* (Eschscholtz), Philippi, 1847, Zeitschr. Malak. 1847, 4 p. 113

*Lithophagus* sp. ind., *like falcatus* Wm. Cooper, 1860, N. Pac. R.R., Rept. Mollusca, app. no. 6, p. 360 *fide Carpenter*, 1864b, p. 399


*Botula (Adula) californicuicaris* Philippi, *Dall*, 1916, Nautilus, vol. 30, no. 1, p. 2; *Dall*, 1921, p. 22; *Oldroyd*, 1924b, p. 71, pl. 27, fig. 5 same fig. as *Packard*; *Burch*, 1944, no. 37, p. 6; *Burch*, 1945, no. 45, p. 8

*Adula californicaunis* Philippi, Soor-Ryen, 1955, Allan Hancock Pac. Exped., vol. 20, no. 1, p. 90, pl. 9, fig. 50, text figs. 73-74

"M. testa subcylindrica, laevigata, rufofusca, in medio ab umbonibus ad marginem ventralem utrinque impressa; costa elevata, obtusa, ab apice ad extremitatem posticam decurrete; apicibus ad 1/7-1/8 longitudinis sitis. Long. 17°, alt. 4½"; crass. 5½°."

"Modiola (Pholas lapis) calami) californicuicaris Eschsch. in Musaeo Dorpatensi.

"Patria: California, legit cl. Eschscholtz.


"Shorter, broader; epidermis brown, glossy." [Carpenter, 1864b, p. 644]

"A. testa cylindracea, lithophagoidea, laevi, tenuissima, parum arcuata, subnacea, albita, postice interdum livido tincta; epidermide nitene, laevi, solidiore, nigro-fusca: testa jun. typice modiolaformi, umbonibus subantices, obtusissimis; margine dorsi antice (rarissime paululum, testa minima, postice) tenuiter creulato: testa adula marginitibus dors. et ventr. fere parallelis, ant. et post. rotundatis: umbonibus detritis, haud conspicuis, circiter sextantum antice sitis: incrustatione hand solida, tenue: spongiosa, areaw posticae diagonalem ten- gente, supra valvas prolongata, appressa; ligamento interno, postice valde prolongato; pagina intera pallida: cicatr. add. postica tumida, pyriformis, antica (quoad familiam) maxima, hand impressa, oblongo: cicatr. pedali antica magna, circulare, impressa; callositate subum- bonal (testa jun.) cicatr. pedalem versus conspicua. Long. 155, lat. 4, alt. 5."
"Variat t. magis arcuta; et in *A. falcata*, antice tumodiore, subangulata.
"Variat quoque teste attenuata.
"Variat interdum ventraliter late biaute.
"Hab. Neah Bay, abundant (Swin.) Monterey (Taylor).
"On smashing a large lump of hard clay, bored by Pholads, Petricolids, etc., large numbers of this species, with a few of *A. falcata*, of all ages from .06 onwards, were found in situ. Several struggled for room in a single crypt. The umbos are abraded by the wide opening of the valves." [Carpenter, 1864d, Dec., p. 425]

The translation as given by Oldroyd is that of Carpenter's (1864d, Dec., p. 425) description and not of Philippi as she indicated. There is a large amount of text omitted from the Latin description of Carpenter as published by Oldroyd. The complete original description of Carpenter, and the description of Philippi are therefore included herein.

The specimens marked by Carpenter as type of *Adula stylina* Carpenter and preserved in the Redpath Museum are from San Diego collected by Hemphill. The lot consists of 16 double specimens. These are not from the two localities, Neah Bay, Washington, or Monterey, California, mentioned in the original description. Strictly, therefore, these specimens are not from the type locality. Hence in choosing a neotype that material from San Diego, California, cannot be used. The value of the material is that it was identified and labelled by Dr. Carpenter. Specimens from either Neah Bay or Monterey designated as type have not been found. The type locality of *M. californiensis* is California and not Vancouver Island, as stated by Oldroyd.

**Type.—** *B. californiensis* Philippi unknown; *B. stylina* Carpenter unknown

**Distribution.**—Recent, California (type), *B. californiensis*; Neah Bay, Washington, or Monterey, California (type), *B. stylina*; Vancouver Island, British Columbia, to San Diego, California (Burch)

**Family Thracididae**

**Genus Asthenothaerus** Carpenter, 1864


This American genus is limited to the type species of the genus and two species from the Recent, Floridian region. The subgenus *Bushia Dall* (1886, p. 309) is represented by the living *A. elegans* Dall (1886, p. 309; 1889, pl. XXXIX, fig. 1) in Florida and the West Indies, *A. duboisi* Fulton (1930, p. 17) from Argentina, and *A. panamensis* Dall (1890a, p. 275).

**Asthenothaerus villosior** Carpenter

(Pl. 4, figs. 5-9)


The original description of this species is included in Oldroyd.

As may be noted by the illustrations of the holotype, the shell of this species is thin and fragile. There are no teeth, and the hinge line and margins of the shell beneath the beak are synonymous. The white spongy ossicle inside beneath the beak, extending posteriorly, may be seen on the holotype, if the shell is tipped.

**Holotype.**—U. S. National Museum, no. 16292. The specimen was attached to Carpenter’s original glass mount and bears his writing, “Type C. S. L.”
Distribution.—Cape San Lucas, Lower California (type); San Pedro, California, to Cape San Lucas (Dall)

Family Pandoridae

Genus *Pandora* Hwass in Chemnitz, 1795

*Pandora* HWASS in Chemnitz, 1795, Neues Syst. Conchyl. Cab., vol. 11, p. 211


Subgenus *Pandorella* Conrad, 1863

*Kennerlia* Carpenter, 1864


Because the name *Kennerlia* is so entrenched in the literature the explanation of details connected with the name is not out of place.

Vokes (1956, p. 763) showed that *Pandorella* Conrad, 1863, preoccupies the well-known name of *Kennerlia* Carpenter, 1864. If the type species of *Pandorella, P. arenosa* Conrad, is accepted as conspecific with *K. bilirata* Conrad (*K. bicarinata* Carpenter) as indicated by Dall (1903), Johnson (1934), Gardner (1943), and Aguayo and Jaume (1948) then *Kennerlia* falls in synonymy with *Pandorella*. It is not true (Vokes, 1956, p. 763) that *P. arenosa* has been accepted by all subsequent authors as *Kennerlia*. The most recent publications (Poirier, 1952; Abbott, 1954; Perry and Schwengel, 1955) do not have the species so classified. The character of the shell and hinge are similar to "*K." bilirata* (Conrad).

(See pl. 6, figs. 1–3.)

*Pandora* (Pandorella) *bilirata* Conrad

(Pl. 5, figs. 1–3)


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23 Int. Com. Zool. Nomen., Opinion 184, 1944
24 Jeffreys, J. G.: (1865, p. 23) might be construed as a designation of type although he did not mean his statement to be so. He regarded the type species as originally designated. The designation of Children (1823) same species as above, was for *Pandora* LAMAREK, 1799.
25 Winckworth (1934, p. 53) regarded the Mediterranean as the locality for *P. inaequilvis*. He limited the Atlantic distribution, often included for Linnaeus species, to *P. albida* (Roeding).
26 Regardless of whether the spelling of the name of this subgenus should conform to the spelling of the name of Dr. Kennerley (spelled both Kennerley and Kennerly by Carpenter, 1864b, p. 601–602; Reprint, 1872, p. 85, 86; 1864c, p. 602–603; Reprint, 1872, p. 231, 232 footnotes) the original spelling of Carpenter should be maintained. Carpenter spelled the name *Kennerlia* in many and all instances so that he apparently preferred and meant that combination.

Dall emended the emendation of Fischer (1887, p. 1158) from *Kennerleya* to *Kennerleyia* and *Kennerlyia*. Apparently the revisers could not agree on the proper spelling. Dall returned to the original spelling in 1921 and has been followed by authors since.

Carpenter’s first mention (1864b, p. 602) of *Kennerlia* included only the species *K. filosa*, but the specific name was still a manuscript name. In the next references (1864b, p. 638; 1864c, p. 602) more than one species was identified.

Pandora filosa Carpenter, Sowerby, 1870, in Reeve, Conch. Icon., Pandora, vol. 19, pl. 11, fig. 10a., 10b; Packard, 1918, Univ. California, Pub. Zool., vol. 14, no. 2, p. 261, 1919, figs. 2a, 2b

Pandora (Gennerlia) filosa Carpenter, 1869, Cat. Family Pandoridae, Acad. Nat. Sci. Philadelphia, p. 71; Arnold, 1903, June, p. 124, pl. XVIII, fig. 3


Kennerlia filosa Carpenter, Oldroyd, 1924b, p. 88, pl. 33, figs. 2a, 2b same fig. as Packard, 1918, Univ. California Pub. Zool., vol. 14, no. 2, p. 19, figs. 2a, 2b

Kennerlia filosa Carpenter, Dall, 1921, p. 26; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 28, pl. 37, figs 2a, 2b same fig. as Packard, 1918; Grant and Gale, 1915, U. S. Nat. Mus., Proc., vol. 49, no. 2116, p. 449; Oldroyd, 1924b, p. 89, pl. 53, figs. 8, 9


Conrad's original description was republished by Oldroyd (1924b, p. 89) and Grant and Gale (1931, p. 261). Carpenter suggested that his species might be the same as *P. bilirata* Conrad.

The original description and illustration of the holotype of *P. bicarinata* Carpenter are included to assist in the verification of the synonymy of the species. The type of *P. bilirata* Conrad has been lost (A. A. Olsson and John D. Parker, May 10, 1950, personal communication). The type is not at the Academy of Natural Sciences, Philadelphia, Pennsylvania.

The synonymy and discussion of *P. bilirata* is not intended to be complete.

"K. t. 'K. filosae' similis, sed haud rostrata; postice latiore; carinis in valva convexa duabus, in valva plana una, ex umbonibus postice decurrentibus; lamina prismatica radiatum sulcata, haud spongiosa; valva convexa tenuer intundata; ligamento elongato, tenuissimo. Long., lat. 25, alt. 0.60 poll."

"Hab. in insula Californii, 40-60 uhl., rara (Dr. J. G. Cooper, State Geological Survey Coll. No. 1063; Mus. Smithsonian Inst.)."

"The shape and keels at once distinguish this beautiful little species from its Northern ally, with which, in the hinge and threading of the outer layer, it exactly agrees. The ligament in both species is extremely thin, holding the valves together from the umbo to the posterior end. The fossil *Pandora bilirata*, Conr., may prove identical with this recent species; but the diagnosis, figure, and type specimens are so imperfect that it would be too hazardous to affiliate them." [Carpenter, 1864c, p. 603]

Holotype.—*P. bilirata* Conrad, lost. *P. bicarinata*, U. S. National Museum, No. 592440 ("Cp. 1063"). The holotype consists of both valves on Carpenter's original glass mount with the original label, "Type Sta. Catalina Cooper."

Distribution.—Catalina Island (type, *P. bicarinata* Carpenter); "California" (type, *P. bilirata* Conrad); Drier Bay, Prince William Sound, Alaska, to Point Abreojos, Lower California (Eyerdam and Dall)

Pandora (Pandorella) filosa Carpenter

(Pl. 6, figs. 9-14)


"(adult of bicarinata?)"
The description (1864c Nov.) was copied by Oldroyd (1924b, p. 88), to which the following should be added to make her copy complete:

"... Long.—8, lat. 4, alt. 12 poll.
Hab. in sinu Pugetiano (Kenmerley)." [Carpenter, 1864c, Nov., p. 602]

The interior or shelly plate of the middle area of "Kenmerlia" is attached to the central ligament in both valves. The portion of the splinter or ossicle may, therefore, when preserved be attached to the ligament of one or the other valve. In the type of "P. bicarinata Carpenter," it is preserved in the left valve; in one of the syntypes of K. filosa it is preserved in the right valve.


**Distribution.—** Recent. Puget Sound, Washington (type). Nunivak Island, Bering Sea to Todos Santos Bay, Lower California (Burch, 1945). See Table 2 for stratigraphic distribution.

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**Family Cuspidariidae**

**Genus Cuspidaria** Nardo, 1840

(In part Neaera Griffith and Pidgeon, 1834, pl. 22, fig. 5, facing p. 420; not Robineau—Desvoidy, 1830, Diptera)


Type species by original designation27 *Cuspidaria typus* Nardo ms. = *Tellina cuspidata* Olivi, 1792, Zool. Adriatico, p. 101, pl. 4, fig. 3. Living. Mediterranean

**Subgenus Cardiomya** A. Adams, 1864


**Cuspidaria** (Cardiomya) *pectinata* (Carpenter)

(Pl. 6, figs. 1-5)


*Cuspidaria pectinata* (Carpenter), Dall, 1921, p. 28 section Cardiomya; Oldroyd, 1924b, p. 101 section Cardiomya; Keen, 1937, p. 20


*Cuspidaria pectinata* (Carpenter), Burch, 1944, no. 38, p. 13; 1945, no. 45, p. 10

"Neaera pectinata, n.s. One sp. living." [Carpenter, 1864b, p. 602]

"Neaera pectinata, n.s. Principal ribs about 12; beak smooth. Like sulcata. 40-60 fm. Cp."

[Carpenter, 1864b, p. 637]

"N. t. globosa, albida, subdiaphana, epidermide tenui induta, ventraliter antica produdent: postice subito augustato, rostro, rostro laudo insculpto, duabus inter quinque partes totius longitudinis acuminet; parte globosa acute costata; costis posticis paulum majoribus, magis distantibus; margines dorsales versus obsoletis; interstitiis latis, quadratis, minutissime concentricis striatis; costis principalibus t. jun. XI-XV, adulta, alis crebre intercalantibus, circ. XXX., quorum primi maxores: intus, lamina cartilaginea curta, subumbones celata: dente postico satis elongato, regione adductorius intus claviculato; cicatricibus adductoribus subrotundatis, deorsum sitis; sinu pallii parvo, lati: margine ad costis pectinato. Long. 24, lat. 14, alt. 12.

"Hab.—In sinu Pugetiano specimen junior legit Kenmerley. Apud insulam Catalinam et Sanct. Barbarae adultum piscavit Cooper." [Carpenter, 1865, p. 54]

The holotype consists of one double shell in the U. S. National Museum with the label "Neaera pectinata. Type. Puget Sound, W. T."

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Puget Sound is unquestionably the type locality. Dall overlooked this fact in 1921 although he had access to the holotype, for he limits the northern range of the species to Monterey. Oldroyd, in spite of stipulating Puget Sound as the type locality of *C. pectinata*, did not include the species in her monograph on the marine shells of Puget Sound. Grant and Gale (1931, p. 265) stated that Mrs. Oldroyd “dredged many specimens in ten to twelve fathoms in Puget Sound.”

The specific rank of *C. californica* Dall (1866b, p. 296) and its relation to *C. pectinata* is still unsettled.

The variability of the number of the radiating ribs was originally brought out.

_Holotype._—U. S. National Museum, no. 4506

_Distribution._—Recent. Puget Sound, Washington (type); Puget Sound, Washington, British Columbia, to Panama Bay (Oldroyd), East of Cedros Island, 45 fathoms (Hertlein and Strong). See Table 2 for stratigraphic distribution.

**Genus Leiomya** A. Adams, 1864


Tadashige Habe (Feb. 25, 1950, personal communication) informed the writer that specimens of this species have not been rediscovered. The Adams specimens are not in the British Museum (G. L. Wilkins, Mar. 14, 1950, personal communication).

**Subgenus Plectodon** Carpenter, 1864


_Type species_ by monotypy, _P. scaber_ Carpenter, 1866, California Acad. Sci., Proc., vol. III, p. 207. Recent Catalina Island to Lower California. Pl. 6, figs. 6–8; _Keen and Frizzell_, 1939, West North American Pelecypod Genera, p. 12, fig. 6

_Leiomya (Plectodon) scabra_ Carpenter

(Pl. 6, fig. 6–8)


“_Plectodon scaber, n.g. and n.s. Cat. Is.; 2 similar valves, 40–60 fm_.” [Carpenter, 1864b, p. 611]

“_Plectodon scaber, n.g., n.s. Shape of _Theora_: dorsal margins twisted-in spirally inside umbos. Lateral teeth laminated, with internal cartilage hidden, appressed. 2 r. valves, 40–60 fm. _Cp_.” [Carpenter, 1864, p. 638]

The description of this species (Carpenter, 1866a) was copied by Oldroyd and will not be repeated here except to complete the copy. The word “usque” should be included between “oblique” and “ad” in line four of the Oldroyd copy.

Add:

“Hab. Catalina Island, two right valves, 40–60 fms. _Cp_.

“This very distinct genus has the aspect of _Theora_, and appears allied to _Neaera_. It is probable that the cartilage was strengthened by an ossicle. The great peculiarity is the twisting-in of the dorsal margin, which ascends the umbo in a very loose spiral.” [Carpenter, 1866a, p. 207, 208]
The holotype is broken. The external posterior area is encrusted with Bryozoa as are the dorsal and ventral margins of the interior. Carpenter originally had two right valves.

_Holotype._—U. S. National Museum, 592441 (Cp. 1062). The specimen was on the original Carpenter glass mount with the original label "Type Cp. 1062 Plectodon scaber, _Cpr._ Catalina Is. Cooper." The number coincides with the original number of the State [California] Collection which adds to the authenticity as type.

_Distribution._—Catalina Island, 40-60 fathoms (type); Catalina Island, California, to Santa Inez Bay, east coast of Lower California (Hertlein and Strong, 1946)

**Family Astartidae**

**Genus Astarte** Sowerby, 1816


Type species by original designation, _Venus scotica_ Maton and Rockett, 1807, Trans. Linn. Soc., vol. VIII, p. 81, pl. 11, fig. 3 = _Astarte sulcata_ (da Costa), 1778, British Conch., p. 192. It seems as though Sowerby's statement is as to the type of the genus is definite enough for a type designation. It is unnecessary to induce the designation of Stoliczka, 1871 (Grant and Gale, 1931, p. 266). Recent. Nova Zembla, Norway, Great Britain to Spain. Fischer, 1887, Man. de Conchyl., pl. XX, fig. 1; Dautzenberg and Fischer, 1912, Res. Campagnes Sci. Albert I Prince de Monaco, Moll., fasc. XXXVII, p. 412-416

_Astarte compacta_ Carpenter

(Pl. 7, figs. 13-15A)


"Astarte compacta, n.s. Like compressa, but closer; dorsal margins straight, at right angles." [Carpenter, 1864b, p. 642]

The original description (1865c) has been reprinted by Oldroyd. The additional line of the description should be added.

"Hab.—In sinu Pugetiano specimen unicorn piscavit Kennerley." [Carpenter, 1865c, p. 57]

Correct in Oldroyd: Following "Long.," read ".4" for .56".

Dall stated in 1921 that the species was rare.

_Holotype._—U. S. National Museum, no. 4509, one double specimen

_Distribution._—Puget Sound, Washington (type); Forrester Island, Alaska, to Puget Sound, Washington (Dall)

**Family Crassatellidae**

**Genus Eucrassatella** Iredale, 1924


28 "... are Venus Scotia, (which may be taken for the type of the Genus) ..." (Sowerby, 1816, p. 85)

29 No date on pages. Date taken from last dated previous page.
PELECYPODA

Eucrassatella fluctuata (Carpenter)

(Pl. 7, figs. 5-7)


Crasstelleites fluctuatus (Carpenter), Dall, 1921, p. 31; Oldroyd, 1924b, 109; Keen, 1937, p. 20

Crasstella fluctuata (Carpenter), Burch, 1944, no. 39, p. 8; 1945, no. 45, p. 11

Eucrassatella fluctuata (Carpenter), Woodring, Bramlette, and Keew, 1946, U. S. Nat. Mus., Prof. Paper 207, p. 81, pl. 31, figs. 1-8

"Astarte fluctuata, n.s. Cat. Is.; 2 similar valves; 40 fm. (Very like the Crag fossil, A. omalia, jun.; but Dr. Cooper considers it a Crassatella.)" [Carpenter, 1864b, p. 611]

"Astarte fluctuata, n.s. Very close to Omalia, jun. of Coralline Crag. 2 right v. 30-40 fm. Cpt." [Carpenter, 1864b, p. 642]

Oldroyd reprinted the major portion of the original description. The following original lines should be added to complete her copy:

"Long. 0.33, lat. 0.26, 0.10.


"Only dead right valves having been found, it is not known whether this species be an Astarte (according to Messrs. Adams and Hanley) or an abnormal Crassatella. It scarcely differs from the young of Astarte omalia, from the Coralline Crag." [Carpenter, 1866a, p. 209]

The holotype is mounted on the original glass with label by Carpenter in white ink "fluctuata, Cpr. Cp. 1060 Catalina Is. (Cooper), type 'Cooper'."

Holotype.—U. S. National Museum, No. 1060 (California State Collection, No. 1060)

Distribution.—Recent. Catalina Island, California, 30-40 fathoms (type); Santa Barbara Islands, to San Pedro, California (Burch). Lower Pleistocene. California (Woodring, Bramlette, and Kew)

"Crassatella marginata" Carpenter


? Crassatellites marginata "Cpr.", Keew, 1887, West Coast Shells, p. 179; Lamy, 1917, Jour. de Conch., vol. LXII, p. 204 footnote

The name Crassatella marginata Carpenter is a nomen nudum. Therefore, it is difficult to determine just what the various authors meant unless they followed Keep. See Burch (1944, no. 39, p. 9) for notes on the name. The writer separates the references in Keew as the foundation of a valid specific name with Keep as the author. The test will be if there is a species of Crassatella in the California fauna which needs this berth. Keep and others must have had some specimen to which they were applying Carpenter's ns. name.

Crassatella marginata Keep

Crassatella marginata "Cpr.", Keep, 1887, West Coast Shells, p. 179


Keep published a brief description adequate to validate the specific name if specimens are available to determine what Keep had in mind. The specific name must be credited to Keep and not to Carpenter. A type should come from specimens which Keep used at the time of his edition of 1887, but apparently those are not available. According to Mr. Joshua Baily (March 9, 1950, personal communication) they may turn up in the Baker-Kelsey Collection at the Scripps Institute of Oceanography at La Jolla.
Family Carditidae

Genus *Glans* Mergerle von Muhlfeld, 1811

(*Cardita* Bruguière, 1792, in part)

*Glans* Mergerle von Muhlfeld, 1811, Gesell. Natur. Freunde Berlin, Mag., year 5, p. 68


*Glans subquadrata* (Carpenter)

(Pl. 7, figs. 1–4)


*Cordita (Carditamera) Carpentieri* Lamy, 1922, Jour. de Conchyl., vol. LXVI, p. 264, new name

*Glans* (*Glans*) *carrpentina* (Lamy) Keen, 1937, p. 21; Burch, 1944, no. 39, p. 11; 1945, no. 45, p. 11

*Glans minuscula* Grant and Gale, 1931, p. 277, new name, see also for additional synonomy; Baily, 1935, West Coast Shells (Keep), p. 73, fig. 39

*Glans subquadrata* (Carpenter), Woodeing, Bramlette, and Kew, 1946, U. S. Geol. Surv., Prof. Paper 207, p. 82

Since the original name given by Carpenter, *Lazaria subquadrata*, the new name *carpentina* is not necessary unless the *Cardita subquadrata* Conrad (1847, p. 298) or *Cardita subquadrata* Gabb, 1860, p. 303 = *C. perantiquata* Conrad (1865, p. 8) is placed in *Glans* or *L.* "subquadrata" Carpenter is defined as *Cardita*. In that case Lamy’s name is available. *Glans minuscula* Grant and Gale (1931) is superfluous.

"*Lazaria subquadrata*, n.s. Hinge of *Lazaria*: outside like *Cardita variegata*, jun." [Carpenter, 1864b, p. 642]

The copy of the description of 1865 and translation has been given by Oldroyd. The following original lines make the copy complete:

"*Hub.* Sta. Barbara (Jewett); Monterey, and along the coast to S. Pedro (State Coll. no. 403) (Cooper),

"The outside of this remarkable little species is typically carditoid; the hinge is intermediate between *Lazaria* and *Cypricardia*." [Carpenter, 1865a, p. 178]

Correct in Oldroyd (1924b): "lat., 23" to read "lat., 25"

The types in the U. S. Nat. Museum consist of two double valves. The label states, "Type Monterey Cooper cp. 403." Such notes identify the specimens as the second locality listed in the original description (see above), and, therefore, limits the type locality to Monterey. The type locality of Santa Barbara as given by Oldroyd (copied by Burch, 1944) would pertain to the Jewett specimen, which is not consistent with the first part of Oldroyd’s note in regard to the type. The California State Collection, no. 403, refers to Cooper’s specimen from Monterey, California. Since the first-mentioned specimens, Santa Barbara, are not to be found, and the Monterey types are, circumstances settle the matter of the election of a type locality.

On the type label there is also marked "Type Neah Bay J. G. Swann." This notation may refer to the specimen which Carpenter listed (1864b, p. 627). The label has been crossed off, indicating that it does not belong to the present specimen in the box. The number "Cp. 403" is also numbered 15551, 14783, 16233, stipulating U. S. Nat. Museum equivalent numbers. The Cp. 403 refers to Monterey, with no mention of Santa Barbara.
The types have a well-impressed lunule and escutcheon. There are a posterior and an anterior lateral in the right valve and a central and posterior cardinal.

**Syntypes.**—U. S. National Museum, No. 15681 ("California State Coll. 403")

**Distribution.**—Recent. Monterey, California (type); Queen Charlotte Islands to Todos Santos Bay, Lower California (Dall). Pleistocene. California (Grant and Gale, 1931; Arnold, 1903; Chace and Chace, 1919) Mexico (Jordan, 1926). Pliocene (Woodring and Bramlette, 1950)

**Genus Miodontiscus** Dall, 1903


Type species by original designation**30** *M. prolongatus* Carpenter (1864b, p. 627). Recent. West Coast United States, Alaska, to San Diego, California (Pl. 8, figs. 1–7)

**Miodontiscus prolongatus** (Carpenter)

(Pl. 8, figs. 1–7)


*Venericardia* (Miodontiscus) *prolongatus* (Carpenter), Dall, 1921, p. 32; Oldroyd, 1924b, p. 115, pl. 2, figs. 5, 6; 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 36, pl. 16, figs. 5, 6

*Cardita* (Miodontiscus) *prolongata* (Carpenter), Grant and Gale, 1931, p. 276


"Miodon prolongatus. (Neeah Bay, Swan.) Identified from tracing only." [Carpenter, 1864b, p. 611]

"Miodon prolongatus, n. subg., n.s. Several valves of this curious shell, intermediate between *Lucina* and *Venericardia*, accord with forms not before eliminated, from the Coralline Crag and Inferior Oolite." [Carpenter, 1864b, p. 627]

"Miodon prolongatus, n.s. Outside Lucinoid; hinge and scars nearer to *Venericardia*. Congeneric with *Astarte orbicularis*, J. Shy. Min. Conch. pl. 444, f. 2, 3 (non ejusdem, pl. 520, f. 2). G. Oolite; and with the Crag *Cardita corbis." [Carpenter, 1864b, p. 642]

A copy of the description (Carpenter, 1864d) has been published by Oldroyd. The following should be added to complete that copy: "Long. .23, lat. .24, alt. .16."

Four specimens at the Redpath Museum are labelled "type" in Carpenter’s handwriting, and they are on Carpenter’s original mount. There are also five specimens in the U. S. National Museum, no. 1547231, also labelled "type" by Carpenter. Both suites have the label "Neeah Bay Swan." The writer retains all the types as syntypes and therefore leaves a lectotype designation open in case the species is later thoroughly studied. It may then seem desir-

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30 The writer considers the use of "n. subg. n.s." (Carpenter, 1864b, p. 627) as an original designation of type species (Opin. 7, Int. Rules Zool. Nomen.) rather than the type designated by monotypy, since Carpenter did bring into his discussion a second species. Either method of type designation produces in this case the same type species for the genus.

31 Stearns, (1891, p. 217) meant this number, but the figures were transposed in printing to 15742.
able to have one specimen as a lectotype, and by such study the most fitting specimen can be designated.

**Syntypes.**—U. S. National Museum, no. 15472; Redpath Museum, no. 2377

**Distribution.**—Recent, Neh Bay, Washington (type); Middleton, Alaska, to San Diego, California (Dall). Pleistocene (see Grant and Gale, 1931; Woodring, Bramlette, and Kew, 1946.)

**Genus Axinopsida** Keen and Chaven in Chavan, 1951


*Axinopsis* Sars is preoccupied by *Axinopsis* Tate (1868, see Neave, 1939-40) new name for *Schizodus* King (1844, see Neave, 1939-1940)

**Axinopsida serricata** (Carpenter)

(Pl. 7, figs. 16-18)

*Cryptodon serricatus* Carpenter, 1864b, p. 602, 643 serricatus; Reprint, 1872, p. 88, 129;

Cooper, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 9 serricatus

*Axinopsida serricata*2 (Carpenter), Dall, 1901, U. S. Nat. Mus., Proc., vol. 23, n. 1237, p. 791, 819, pl. XL, fig. 2; Dall, 1921, p. 34; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 38, pl. 26, fig. 4; Oldroyd, 1924b, p. 123, pl. 4, fig. 4; Burch, 1944, no. 39, p. 22; 1945, no. 45, p. 12

*Axinopsida serricata* Keen, 1937, p. 18

"*Cryptodon serricatus*, n.s. One living sp." [Carpenter, 1864b, p. 602. Puget Sound, Dr. Kennerley]


There is some question as to the true type of this species. The first specimen which Carpenter noted (1864b, p. 602) was a specimen collected by Dr. Kennerley from Puget Sound. There is a question whether that shell is the one now labelled type in the U. S. National Museum (no. 5249) and figured by Dall (1901b). That specimen is labelled, "Dr. Kennerly [sic] Puget Sound." There are, however, in the Redpath Museum, two broken specimens labelled "type. Dr. Kennerly [sic] Puget Sound."

Carpenter did not give a complete description of this form, but with the few descriptive words by Carpenter (see above) the locality is stated to be "? Catalina Island."

The Puget Sound specimens are not the primary types, but the questionable Catalina Island specimen noted by Carpenter has not been found. The first locality mentioned (1864b, p. 602) in connection with the specific name was Puget Sound. Therefore, it would seem logical to designate as the lectotype a specimen which had been labelled by Carpenter and collected from Puget Sound by the original discoverer, Dr. Kennerley. In the first mention of the species, Carpenter wrote, "one living sp." Hence, there would be a question as to which is the authentic original shell, one of those of the U. S. National Museum or of the Redpath Museum. Since the Redpath Museum specimens are broken, the writer designates the specimen figured by Dall (1901), U. S. National Museum, no. 5249, as the lectotype of the species. There are three specimens under no. 5249. Dall (1901b) explanation of pl. XL, fig. 2) refers to the specimen as the type.

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2 Axinopsida, Greek, feminine gender. Following Dall, this specific name has been incorrectly written in the masculine when written with *Axinopsis*. Probably Carpenter when he stated "epidermis silken" and named the species serricatus [sic] meant the Latin word serricus ("clothed in silken garments"). Hence, the original spelling of the specific name could be considered a lapsus and the name be corrected to serricus as Dall did in 1921. The reasoning opposed to this change is that Carpenter consistently spelled the specific name with two r's, and Carpenter was also a Latin student.
Burch (1944, no. 39, p. 22) was justified in being puzzled over the differences, if any, between *A. serricata* and *A. viridis*. Dall distinguished *A. viridis* as "orbicular" (1901b, p. 791) and *A. serricata* as "ovate." However, Carpenter defined *A. serricata* as "circular," which would confine his species in the realm of what Dall later called *A. viridis*. The lectotype of *A. serricata* has about the same height as length, 4.5 mm. to 4 mm. Specimens in collections identified as both or either species have the oblique form.

The two broken specimens in the Redpath Museum labelled "type" are white, smooth, greenish, and lighter in the center. The U. S. National Museum shell marked "type" is white and chalky. Either the McGill shells represent what Dall named *A. viridis*, or the color difference is not specific.

*Lectotype.—*U. S. National Museum, no. 5249 (Dall, 1901b, pL XL, fig. 2). Three specimens of same number, including the lectotype, are labelled "type" in the U. S. National Museum; two broken specimens labelled "type" are in the Redpath Museum.

*Distribution.—*Puget Sound, Washington (type). Aleutian Islands, south and east to Puget Sound, Washington, and Catalina Island, California (Dall)

**Family Diplodontidae**

**Genus Taras Risso, 1826**

*(Diplodonta Bronn, 1831)*


Chavan (1952, p. 121) discussed the *Taras-Diplodonta* problem in detail and believed that the type species of *Taras* should be rejected as a *nomen dubium*. Such a decision by the International Commission on Zoological Nomenclature would restore *Diplodonta* to usage.

**Taras subquadratus** (Carpenter)


This species was described from Mazatlan, and although the write up was not in the Mazatlan Catalogue, the illustration of the holotype would properly belong as a supplement to that work. The synonymy is not meant to be complete.

Dall listed the species from Catalina Island. Burch (1945) gave the range from Santa Monica, California, to Panama, but Hertlein and Strong limited the specific range to San Ignacio Lagoon, Lower California, to Gorgona Island, Colombia, and the Galápagos. Durham (1950) reported the species from the upper Pliocene and Pleistocene of Lower Californi-

**Family Lucinidae**

**Genus Lucina Bruguère, 1797**


Stewart (1930) and Chavan (1937) presented a detailed discussion of the problem of the nomenclature of *Lucina*. Chavan monographed the family (1937-1938, V1 pts.). He used

Lucina Lamarck (1801) with Lucina jamaicensis Spengler (in Chemnitz) as the type species. In 1952, he further analyzed the discrepancies in type designations for Lucina Bruguière and reaffirmed the type designation of Gray (1847). To settle the nonconformity in the use of the type species of Lucina the validation of the type species should be established by the International Commission on Zoological Nomenclature.

Subgenus *Here* Gabb, 1866

*Here* GABB, 1866, Geol. Surv. California, Palaeontology, vol. 11, sect. 1, pt. 1, p. 28


Lucina (*Here*) excavata Carpenter

Lucina (*Here*) excavata Carpenter, 1857, Cat. Mazatlan Moll., p. 98

Lucina (*Here*) Richthoferi GABB, 1866, Geol. Surv. California, Palaeontology, vol. II, sect. 1, p. 29, pl. 8, fig. 49, a, b

Lucina (*Here*) excavata Carpenter, HERTLEIN, and STRONG, 1946, Zoologica, New York Zool. Soc., vol. 31, pt. 3, p. 113

For complete synonymy see Stewart (1930, p. 181) and Grant and Gale (1931, p. 290)

This species was described from Mazatlan by Carpenter and is now identified as ranging as far north as San Pedro, California. The form is not illustrated herein because it properly belongs with the illustration of the Mazatlan Catalogue. The holotype should be in the British Museum (Natural History). The range of the species is stated under the subgenus.

Subgenus Parvilucina Dall, 1901


Lucina (Parvilucina) tenuisculpta (Carpenter)

(Pl. 8, figs. 8–12)


Phacoides (Parvilucina) tenuisculpta (Carpenter), DALL, 1901, U. S. Nat. Mus., Proc., vol. 23, no. 1237, p. 806, 828, pl. XI., fig. 5; DALL, 1921, p. 35; DALL, 1915, U. S. Nat. Mus., Proc., vol. 66, no. 2554, p. 23, pl. 20, fig. 5; OLDROYD, 1924, Publ. Puget Sound Biol. Station, vol. 4, p. 39, pl. 3, fig. 14; pl. 37, figs. 1a, 1b; 1924b, p. 128, pl. 15, fig. 6; pl. 33, figs. 1a, 1b

Phacoides tenuisculptus (Carpenter), Packard, 1918, Univ. California Pub. Zool., vol. 14, no. 2, p. 264, pl. 19, figs. 1a, 1b

Lucina (Myrtea) tenuisculpta (Carpenter), GRANT and GALE, 1931, p. 288, section Parvilucina, see for additional synonymy.

Lucina (Parvilucina) tenuisculpta (Carpenter), Burch, 1944, no. 40, p. 8; 1945, no. 45, p. 12; ABBOTT, 1954, p. 387, fig. 78b

"Lucina tenuisculpta, n.s. "Two living specimens, of which one had the surface disintegrated." [Carpenter, 1864b], p. 602, Vancouver district"

"Lucina tenuisculpta, S. Diego, living in 4 fm. (also Puget Sound, Kommerley.) Var., dead in 120 fm. Cat. Is. (approaching *L. Mazatlantica*, Maz. Cat., no. 144)." [Carpenter, 1864b, p. 611]

"Lucina tenuisculpta, n.s. Like Mazatlantica, Cat. 144, more convex, with finer sculpture. 4 fm. living, Cp. The island var. is intermediate. 120 fm. dead. Cp." [Carpenter, 1864b, p. 642]

"L. t. "L. Mazatlantica" formà simili; sed magis convexâ sculpturâ multo teneri; epidemide olivaceo-cinerea incutì; t. juniores laevi; postea, rugis incrementi concentrici, plus minusve conspicuus, distantibus, irregularibus; costulis radiantibus subobsoletis, latis, cre-
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brioribus, antice et postice evanidis; area postica vix subquadrata, haud definita: intus, dentibus cardinalibus et lateraliibus normalibus, satis extantibus; ligamento externo, elongato; cicatrice antica normaliter prolongata; marginis crenulato. Long. 23, lat. 21, alt. 13.

"Hab.—In sinu Pugetiano legit Kenmerley." [Carpenter, 1865e, p. 57]

Apparently Dall overlooked Carpenter's description (1865e) as Oldroyd also did in following Dall.

Holotype.—U. S. National Museum, no. 5244.

Distribution.—Recent. Vancouver Island, B. C. (Kenmerley) (type); Nunivak Island, Bering Sea to the Coronado Island, California (Dall). Pleistocene and Pliocene (Grant and Gale, 1931)

Family Leptonidae

Genus Kellia Turton, 1822

(Chironia Deshayes, Rev. Zool, 1839, v. 2, p. 357)

Kellia Turton, 1822, Conchylia Insularum Britannicarum, p. 56


Carpenter (1864b, p. 643) identified West Coast specimens with this European species as well as specimens of West Coast Lasaca (Carpenter, 1864b, p. 643) with the European L. rubra. Authors have followed Carpenter until recent writings. (Burch, 1944, no. 40, p. 14). Keen (1938, p. 25) separated the West Coast forms from the European.

Kellia laperousii*25 chironii Carpenter

(Pl. 9, figs. 6-10)


"Kellia (var.) Chironii. S. Diego. (Also Neех Bay, Swan.)." [Carpenter, 1864b, p. 611]

"Kellia (var.) Chironii. A few valves." [Carpenter, 1864b, p. 627]

"Kellia var. Chironii. Thinner, less transverse, margins rounded [Than K. laperousii Deshayes]." [Carpenter, 1864b, p. 643]

"Kt, 'K. Laperousii' similis; sed tenuiore, minus transversa, ventraliter excurvata; epidermide palliido; umbonibus angustioribus; dentibus multo minoribus, haud extantibus. Long. 76, lat. 62, alt. 41 poll. Hab. Neех Bay, Swan; San Pedro, Cooper.

"Cette variété est assez distincte de la forme typique du K. Laperousii; mais la suite d'individus que j'ai eu occasion d'examiner comparativement m'a permis de me convaincre que l'espèce varie beaucoup." [Carpenter, 1865g, p. 136]

There are three syntypes in the United States National Museum from "Ne ecx Bay, J. G. Swann." They are presumably the specimens mentioned by Carpenter in his description (1865g) first. They are figured herein to give original evidence in the determination of the relationship of Kellia laperousii and the so-called "K. suborbicularis" Montagu.

There is one good double specimen at the Museum of Comparative Zoology labelled "Coll. J. G. Cooper 144 San Francisco."

Syntypes.—U. S. National Museum, no. 15460 (three specimens)

Distribution.—Neecx Bay, Washington (type); San Diego, California (Carpenter); San Francisco, California (Cooper); common (Burch)

Kellia rotundata Carpenter


*24 Winckworth (1934, p. 52)

*25 Deshayes, 1839 [1840], p. 357

"Kellia rotundata, n.s. Larger, flatter, and less pearly than suborbicularis. Margins circular." [Carpenter, 1864b, p. 643.]

"K. T. temnissima, orbiculari, sativis convexa, aequilateralis, laevi, epidermide subnitente, pallide olivacea; umbonibus augustis, sativis prominentibus; marginebus omnino regulariter excavatis: intus, dentibus cardinalibus 2 tenuibus sativis conspicuis, claviculo hauzd exstante; dentibus lateralis sativis elongatis.—Long. .6, lat., .5, alt. .28, poll.

Hab. Monterey, Taylor.

Cette espèce est beaucoup plus grande, mais moins renflée que le K. suborbicularis, et se distingue facilement par sa forme presque complètement arrondie." [Carpenter, 1865g, p. 137]

The type of this form has not been found. In the analysis of the West Coast Kellias this species must be considered and as suggested by Keen the name is available if it is needed.

Genus Mysella Angas, 1877

(Rochefortia Velain,26 1877, not earlier than Nov.)


Mysella tumida (Carpenter)

(Pl. 7, figs. 8–12)


Mysella tumida (Carpenter), Dall, 1899, U. S. Nat. Mus., Proc., vol. 21, no. 1177, p. 881, 892, pl. LXXXVII, fig. 7 type; Abbott, 1954, p. 397, fig. 89b same fig. as Dall, 1899

Rochefortia tumida (Carpenter), Dall, 1921, p. 37; Oldroyd, 1924, p. 132, pl. 54, figs. 11–14; 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 40; Grant and Gale, 1931, p. 301, pl. 14, figs. 16, 17; Keen, 1937, p. 25; Burch, 1944, no. 40, p. 15; no. 41, p. 20; Burch, 1945, no. 45, p. 13

"Tellinum tumida, n.s. One sp. living." [Carpenter, 1864b, p. 602, Vancouver district.]

"Tellinum tumida, S. Diego. (Also Puget Sound, Kennerley.)." [Carpenter, 1864b, p. 611]

"Tellinum tumida, n.s. Between bidentata and substrivata: ossicle minute." [Carpenter, 1864b, p. 643]

"T. t. subtriangulari, subovata, laevi soliodiore, tumidiore, valde inaequilaterali; cinerea epidermide pallide olivacea, concentrice striata induta; marginebus dorsoalibus, subrectis, ventrali excurvato: intus, dentibus cardinalibus valva sinistra validissimis, curvis exantibus, postico longiore, valvix dextra callositibus marginalibus, dentibus nullis; cartilagine valdiori, ossiculor parvum in medio gerente; cicaetiribus adductoribus a caridine valde remotis. Long. .155, lat. .125, alt. .06.

"Hab.—In sinu Pugetiano specimen unicum legit Kennerley; apud Neah Bay, Swan; prope San Diegouem, Cooper." [Carpenter, 1865h, p. 58]

Although Dall, (1899), gave the reference to Carpenter’s original description, he omitted it in his 1921 summary. Oldroyd, following Dall, did not give the reference nor a copy of the original description. Thus the impression is gained that Carpenter did not describe the species in detail.

The holotype bears the label, “Puget Sound, Kennerley.” The specimen is of both valves, but the hinge of the right valve has a small obstruction in the umbonal area which photographed as a dark patch. The two cardinal teeth in the left valve are conspicuously large for the size of the shell.

Holotype.—U. S. National Museum, no. 5242

Distribution.—Recent. Puget Sound, Washington (type); Shumagin Islands, Alaska, to San Diego, California (Dall); to Scannons Lagoon, Lower California (Jordan, 1926). Pleistocene. California (Grant and Gale), Mexico (Jordan 1926). Pliocene (Woodring and Bramlette 1950)

Genus Pristes Carpenter, 1864 [1866]

(Pristiphora Carpenter, 1866a not Latreille, 1810; Serridens, Dall, 1899. For references see Neave 1939-40.)


Type species by monotypy Pristes oblongus Carpenter, 1864b, p. 611, 643; Reprint, 1872, p. 97, 129 nomen nudum, validated Carpenter, 1866a, p. 210. Recent. Monterey, California, to San Hipolito Point, Lower California. (Pl. 9, fig. 11-13).

Prior to the ruling of International Zoological Com., Copenhagen, 1953 (see Hemming, 1953, p. 78, Art. 34) Pristes Carpenter was considered preoccupied by Pristis Linck, 1790 (for reference see Neave, 1939-1940). Dall's Serridens, a substitute name for Carpenter's substitute preoccupied name of Pristiphora Carpenter, has been used for Pristes oblongus Carpenter.

Reinstating Pristes under the new ruling does not clear all technicalities as to the status of the name. See under Pristes oblongus for original indication of the genus. The type species is clearly stated. However, at the time of the presenting of the new generic name the type species P. oblongus was a nomen nudum. The writer does not regard the second statement (1864b, p. 643) adequate to describe the species (see Vokes, 1956, p. 768). In 1866a, the type species was described in detail as Pristiphora oblonga by Carpenter who gave the generic name as a substitute for Pristes. Because the problem does not involve generic names other than substitutes for the same name, and because the type species was indicated as the same in each case it seems best to maintain Pristes of either 1864 or 1866.

Pristes oblongus Carpenter

(Pl. 9, figs. 11-13)


Oldroyd included in her monograph a copy of the description of 1866. The following line should be added to complete that copy:

"Hab. San Diego; 1 worn valve among shell washings. Cooper." [Carpenter, 1866a, p. 210]

A specimen in the U. S. National Museum (no. 15592) on the original Carpenter glass mount has a Carpenter label in white ink, "Type S. Pedro. Cooper." This does not coincide with the original notes of Carpenter which gave the locality as San Diego only. Carpenter listed the species from "D" (1864b, p. 643) which stood for the "region between San Diego and San Pedro." This interpretation may account for the interchange of places in the locality names.

Another specimen marked "type S. Diego Hemphill" in Carpenter's writing is in the Redpath Museum (no. 15372). The locality is right for the type locality, but the collector is wrong. Hemphill collections were made after Cooper. The specimen is the same valve and same dimensions as the specimen in the U. S. National Museum. Neither specimen qualifies
for the holotype because part of the data given by Carpenter for each specimen is erroneous. The writer chooses the specimen U. S. National Museum, no. 15592 as the lectotype and the Redpath Museum specimen as a lectoparatype. The Redpath Museum specimen was found by Vicente Condé and sent to the writer during the editing of the manuscript.

Kelsey (1902) apparently misunderstood a portion of Dall's notes to him, for it was Cooper who found the shell and not Carpenter. Carpenter was never on the Pacific Coast.

Lectotype.—U. S. National Museum, no. 15592; lectoparatype, Redpath Museum, no. 15372.

Distribution.—San Pedro to San Diego, California [San Pedro] (type); Monterey, California, to San Hipolito Point, Lower California (Burch)

Genus Pseudopythina Fischer, 1878


Type species by monotypy, P. Mac-Andrési Fischer, 1867, Journ. de Conchyl., vol. XV, p. 194, pl. IX, fig. 1. Recent. Northern Spain and southwestern France. Portugal

Pseudopythina rugifera (Carpenter)

(Pl. 9, figs. 1-5)


Erycina (Pseudopythina) rugifera (Carpenter), Dall, 1899, U. S. Nat. Mus., Proc., vol. 21, no. 1177, p. 880, 887, pl. LXXXVII, fig. 4.

Pseudopythina rugifera (Carpenter), Dall, 1921, p. 37; Oldroyd, 1924, p. 136, pl. 15, fig. 9 = pl. 38, fig. 8, pl. 38, fig. 9 = Dall, 1899, pl. 87, fig. 4; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 40, pl. 27, figs. 8, 9; Daily, 1935, West Coast Shells, (Keep) p. 78, fig. 49 = Dall, 1899, pl. 87, fig. 4; Keen, 1937, p. 25; Abbott, 1954, p. 395, fig. 80a, same fig. as Dall, 1899.

Pseudopythina compressa Oldroyd, 1924, not Dall, 1899, pl. 11, fig. 11 noted by Willett and Keen in Burch, 1944, no. 40, p. 17; Burch, 1944, no. 40, p. 17; no. 41, p. 20; Burch, 1945, no. 45, p. 13.

"Pythina rugifera, n.s. Two living sp. Intermediate between Pythina and Kellia." [Carpenter, 1864b, p. 602]

"Pythina rugifera, n.s. Large, thin, slightly indented; teeth minute; epidermis shaggy." [Carpenter, 1864b, p. 643]

"P. t. majore, tenuissima, valde transversa, subquadraata, vix inaequilaterali; lineis incrementi et epidermide rugosa, confertissime laminata, ornata; unbonibus latis, valde prominentibus, antice fluentibus; marginibus, dorsalibus satis regulariter excurvatis, regione postica paulum majore; ventrali planato, suo medio concavo: intus, cardine maxime delicatulo; denti cardinali uno minore, clavicula antica laterali inconspicua; laterali postico nullo. Long. 77, lat. 44, alt. 3.

"Hab. In sinu Pugetiano specimen duo, (quorum unum fractum,) piscavit Kennerley. "Inter Pythinias typicas et Kellias locum tevet." [Carpenter, 1865c, p. 58.]

From the character of the type, which is concave in the midventral line, Willett and Keen (Burch, 1944, no. 40, p. 17) are correct in believing that Oldroyd was figuring P. rugifera in the reference. (Pl. 11, fig. 11)

Synonymy.—U. S. National Museum, no. 4445 (two specimens)

Distribution.—Puget Sound, Washington (type); Craig, Alaska, to San Barholome, Lower California (Willett in Burch, 1944). Commensal with Upogebia pugettensis (Dana) (ghost shrimp) and on the sea mouse, Aphrodita.

Genus Lepton, Turton, 1822

Lepton Turton, 1822, Conchylia Insularum Britannicarum, p. 61, pl. 6, figs. 1-3

Lepton meroeum Carpenter

(Pl. 10, figs. 12, 13)


"L. t. parva, subplanata, Meroe-formi; transversa, marginibus omnino excurravatis; antice valde producta; umbonibus acutis, prominentibus; dent. card. (V. sinistr.) uno, celato; lat. ant. prominente, post. subobsoleteto; fossa cartilaginali angusta; cic. adduct. remotis.

"Long. 0.11, lat. 0.08, alt. 0.03."

"Hab. San Diego, 1 broken valve among shell washings. Cooper." [Carpenter, 1866a, p. 210]

The holotype is a broken specimen in the U. S. National Museum, mounted on an original Carpenter glass and bearing a label in his handwriting, "Type- San Diego Cooper."

From Carpenter's original description quoted above, one notes that the holotype was broken originally. Additional breakage has occurred since Carpenter.

Dall overlooked Carpenter's original description (1866a). This was unfortunate, as Oldroyd, following Dall, missed the reference also.

Because the holotype is in bad condition good illustrations of it have not been made.

Holotype.—U. S. National Museum, no. 15391

Distribution.—San Diego, California (type); San Pedro to San Diego, California (Oldroyd); Puget Sound, Washington (Keen, 1937)

Lasaea subviridis Dall


The name used by Dall was a ms. name of Carpenter and therefore has only validity as of Dall.

Family Cardiidae

Genus Nemocardium Meek, 1876


For discussion of the range of the genus, see Keen (1950, p. 23-29; 1954, p. 10)

Subgenus Keenaea Habe, 1951


Nemocardium (Keenaea) centifilosum (Carpenter)

(Pl. 10, figs. 7-11)

Cardium var. centifilosum Carpenter, 1864b, p. 611, 642; Reprint, 1872, p. 97, 128; 1866,


*Cardium* (*Protocardia*) *centilisum* (Carpenter), Packard, 1918, Univ. California Pub. Zool., vol. 14, no. 2, p. 267, pl. 20, figs. 2a, 2b, 2c, 2d.

*Laevicardium (Nemocardium)* *centifilosa* (Carpenter), Grant and Gale, 1931, p. 311, pl. 19, figs. 9, 10, see for additional synonymy.

*Nemocardium centilisum* (Carpenter), Keen, 1937, p. 23; Burch, 1944, no. 41, p. 27; 1945, no. 45, p. 14.

*Cardium (Nemocardium)* *centilisum* (Carpenter), Hertlein and Strong, 1947, Zool., vol. 31, pt. 4, p. 141.


*Nemocardium* (s.g.) *centilisum* (Carpenter), Keen, 1950, Jour. de Conchyl., vol. XC, no. 1, p. 29.


"*Cardium (? modestum*, var.) *centilisum*. Cat. Is., 30–40 fm." [The differences between this and the Eastern Pacific shell are probably only varietal.] — [Carpenter, 1864b, p. 611].


"*Cardium* (? *modestum*, var.) *centilisum*. Cpr. State Collection 381.

"*C. t. parva*, tenuissima, inflata, subquadratim rotundata; umbonibus augustis, tumul-toribus; marginibus, dorsalis subalatis, antico et ventrali acquilator rotundatis, postico vix truncato, tota superficie, (nisi umbonibus et dorsum versus utroque latere laevibus,) tenue lirata; liris circ. centum, quoad magnitudinem extantibus, augustis; interstititis sub-aqualeus, subquadratis, interdum punctato—deco satis; parte postica a linea definita, lirulis minus conspicuis, laminis concentricis extantibus, crebrioribus eleganter exasperata; intus, dent. card. validioribus, lat. subdistantibus; cic. adduct. ovalibus, humd impressus.

"Long. 0.51, lat. 0.48, alt. 0.34.

"Hab. (modestum) Quelpart Island, China Seas, and Japan; A. Adams.

"(Centilisum) Monterey, 20 fms. alive; Santa Barbara 1, Catalina Island, 40 fm. Cooper.

"Rounder than *C. modestum*, Ad. & Rve., with fewer and sharper ribs; but the Eastern shells vary, and Mr. Adams considers them conspecific." [Carpenter, 1866a, p. 209].

Carpenter's description of this species was one of many which Dall overlooked and which other authors have neglected to refer to.

The holotype is in the U. S. National Museum. It is a double specimen and is accompanied by an original Carpenter label, "Catalina Id. Cooper Cp. 631." The locality of this type indicates Catalina Island as the type locality in place of Monterey as frequently quoted. The types from Monterey and Santa Barbara have not been found.

Holotype.—U. S. National Museum, no. 15262

Distribution.—Recent. Catalina Island (type); Farallon Islands to Lower California (Hertlein and Strong). Pleistocene (Keen, 1954). See Table 2 for stratigraphic distribution.

Family Veneridae

Genus *Amiantis* Carpenter, 1864


Genus *Macrocallista* Meek, 1876


Genus *Amiantis* Carpenter, 1864


Genus *Macrocallista* Meek, 1876

Type species by monotypy *Venus gigantea* Gmelin, 1791, Syst. Nat., 13 ed., t. VI, p. 3282 = *Venus nimbosa* [Humphrey], 1786, Portland Cat., p. 175. Living. Cape Hatteras, North Carolina, to Florida Keys and west to Texas.** Pliocene. Caloosahatchee beds, Florida; Pleistocene. North Carolina and Florida. Palmer, 1929, Paleont. Amer., vol. 1, no. 5, pl. X, fig. 15; pl. XIII, figures 1, 4; pl. XIV, fig. 18; Clench, 1942, Johnsonia, no. 3, p. 6, pl. 4

**Macrocallista brevisphonata** (Carpenter)


**Callista brevisphonata** (Carpenter), Habe, 1955, Pub. Akkeshi Mar. Biol. Sta., no. 4, p. 12, pl. 3, figs. 7, 8 see for synonymy and distribution

As suggested by Carpenter, and finally confirmed by J. R. Le B. Tomlin through examination of the type in the British Museum, this species is a Japanese form. Tomlin identified it as *Macrocallista chishimana* Pilsbry (1905), in which case Pilsbry's name would fall in synonymy. Carpenter seemed certain of the absence of a lunule on the shell he described. Lack of such a character would exclude the species from *Macrocallista* and hence would eliminate the species from *M. chishimana*. However, in the identification of *Macrocallista* by Tomlin one would assume that the shell had a lunule.

**Genus *Compsomyax*** Stewart, 1930


**Distribution of the Genus.**—?Miocene—Recent. West Coast.

**Compsomyax subdiaphana** (Carpenter)

(Pl. 10, figs. 1–6)


**Marcia** (Venerella) *subdiaphana* (Carpenter), Dall, 1902, U. S. Nat. Mus., Proc., vol. 26, no. 1312, p. 397

**Callista subdiaphana** (Carpenter). Arnold, 1903, p. 144, pl. XIII, fig. 4; Arnold, 1907, U. S. Nat. Mus., Proc., vol. 32, no. 1543, p. 544, pl. XLIX, fig. 3 as Callista


**Marcia subdiaphana** (Carpenter). Packard, 1918, Univ. California Pub. Zool., vol. 14, no. 2, p. 268, pl. 19, fig. 3; Dall, 1921, p. 42, section Venerella; Oldroyd, 1924, Publ. Puget Sound Biol. Station, vol. 4, p. 47, pl. 27, fig. 1; pl. 37, fig. 4 same fig. as Packard, 1918, pl. 19, fig. 3; Oldroyd, 1924b, p. 155, pl. 38, fig. 1 same fig. as Oldroyd, 1924a, pl. 27, fig. 1; pl. 33, fig. 3 same fig. as Packard, 1918, pl. 19, fig. 3, section Venerella


**See Wilkens (1955, p. 87, 88, pl. 17, figs. 16–17) for discussion of *Venus nimbosa* [Humphrey], 1786 versus Solander, 1786, and designation of lectotype of *Venus nimbosa* [Humphrey].

**Vicente Condé of Cardenas, Cuba, in extensive shell collecting on that island, never obtained this species. He doubts the Cuban record (Personal communication).**
Clementia (Compsomyax) subdiaphana (Carpenter), Grant and Gale, 1931, p. 334, pl. 17, figs. 10a, 10b, ⑨ 15, see for additional synonymy.


Katherinella (Compsomyax) aff. K. subdiaphana (Carpenter). Woodring, 1938, U. S. Geol. Sur., Prof. Paper 190, p. 11, 54, pl. 6, fig. 12, lower Pliocene. See for additional references for fossil occurrence.


"Clementia subdiaphana, n.s. Very rare, living. Intermediate between Clementia proper and the prora group of thin Callistæ." [Carpenter, 1864b, p. 602]


"? Clementia subdiaphana, n.s. Hinge normal, very thin, ashy." [Carpenter, 1864b, p. 640]

"? C. t. ovali, quoad genus valde transversa, tumida, tenuissima; pallide cmera, epidermide pallide straminea; subdiaphana, sed subcalcarea, haud porcellanae; laevo, nisi striis incrementi; haud lunulata, umbonibus satis prominentibus: intus, valva dextra, dentibus anticus duobus acutius, contiguis, elevatis, postico elongato, acuto, bifido, ligamento parallelo; valva sinistra dentibus anticus duobus umbonem versus junctis, acutis, divergentibus, postico elongato, acuto, simplici; sinu pallii, ut in Dosinia, angusto, angulato, per dimensionem interstitii umbones versus porrecto. Long. 72, lat. 58, alt. 34.

"Hab.—In sinu Pugetiano specimen quædam, plerunque juniora, piscavit Kenmerly: ex insula Vancouver, specimen fractum portavit Forbes.

"Textura Lucinopsei convenit; cardine, Clementiae; formâ, Saxidomo squalido juniori." [Carpenter, 1865a, p. 56]

Dall (1892) gave a detailed description and figured an adult shell of this species from Alaska. Carpenter's type was a young shell. The holotype is a double shell in the U. S. Nat. Museum, with the label, "? Clementia subdiaphana Cpr. Type. Puget Sound. Dr. Kennerly."

Woodring (1938, p. 54) doubted that the above type was the holotype, because he considered that the measurements of the specimen did not coincide with those given by Carpenter. However, the measurements correspond so closely that that factor does not seem valid. Woodring designated the type specimen as a lectotype. Since there is no other specimen which can qualify in the type catagory of this species, the U. S. National Museum, no. 4541 specimen remains the type regardless of what strick term is used.

The type is not in the British Museum, as Stewart (1930, p. 225) presumed. The following data regarding type material were furnished by G. L. Wilkins of the Department of Zoology, British Museum:

"I have searched for Clementia subdiaphana, Carpenter, but all we have is a specimen attached to a bright blue label (one of several such in the Cuming Coll.) with a printed statement 'named from the type specimen in the Smithsonian Institution, Washington, D. C.,' the name is written in M.S.S. with the locality 'Puget Sound.'"

The above cannot be included in syntypic material. It is one of the many thousands of specimens sent from the Smithsonian in the 1860's and 1870's with that standard label to the molluscan departments of the institutions of the world. If, as in some cases, the original material exists, such specimens will be useful from which to choose a "neotype."

Stewart united the fossil Saxidomus gibbosus Gabb, 1869, with this species, and Grant and Gale reported the species back to the Pliocene and possibly Miocene. They did not believe in an identity with Pitard orengensis (Conrad) which had been suggested. The general pitaroid form of various species suggests identity, but often such apparent similarities are misleading.

39 Carpenter's measurements, 72 long. and 58 lat., would equal 18.28 mm. long. (length) and 14.732 mm. lat. (height), which is practically the dimensions given by Woodring for the specimen, U. S. National Museum, no. 4541, "length, 18.5 mm.; height, 15 mm." Such a difference in mm. can be accounted for in the measurements by different individuals. For Carpenter's terms of measurements see notes under explanatory remarks, this paper.
ing. Woodring (1938, p. 54) discussed the possibility of an alliance of this species with "Venus" angustifrons Conrad (1849) from the Miocene of Oregon. In such a case Conrad's name would have priority over that of Carpenter which had been used for the Recent shells.

_Holotype._—U. S. National Museum, no. 4541


**Genus Humilaria** Grant and Gale, 1931


Type species by original designation, *Venus kennerleyi* "Carpenter in Reeve" = _H. perlaminoidea kennerleyi_ Carpenter in Reeve, 1863, Icon. Conch., vol. 14, pl. XII, fig. 41; Grant and Gale, 1931 = _H. kennerleyi_ (Reeve). Recent. Kodiak Island, Alaska, to Carmel Bay, California. Reeve, 1864, Icon. Conch., vol. 14, _Venus_, pl. XII, fig. 41; Oldroyd, 1924, pl. 8, fig. 4 (Pl. 9, figs. 14–15)

**Humilaria kennerleyi** (Reeve)

(Pl. 9, fig. 14, 15)


_Marcia kennerleyi_ (Carpenter ms.) Reeve, Dall, 1902, U. S. Nat. Mus., Proc., vol. 26, no. 1312, p. 396, pl. XIV, fig. 1 (Carpenter ms.) Reeve; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 47, pl. 24, fig. 4

_Marcia kennerleyi_ (Carpenter) Reeve, Dall, 1921, p. 42; Oldroyd, 1924b, p. 155, pl. 8, fig. 4

_Venerupis_ (Humilaria) perlaminoidea kennerleyi_ (Carpenter in Reeve), Grant and Gale, 1931, p. 325

_Venerupis_ (Humilaria) kennerleyi_ (Reeve), Baily, 1935, West Coast Shells, Keep, p. 90, fig. 61


"Shell oblong oval, somewhat square, dull opake white, concentrically plicately ribbed, ribs close-set, rather irregular, lunule and ligamentary area narrow."

"Carpenter, MS. in Mus. Cuming."

"Tlb.—?"

"A very characteristic chalk-white shell, strongly plicately concentrically ribbed, the ribs being very crowded and irregular." [Reeve, 1863]

Carpenter's complete description of this species was published in 1865 after Reeve described the form in 1863. As Carpenter explained, his description was written but delayed because of the American war. Carpenter's authorship was unfortunately lost because of the vicissitudes which prevail in publication. Reeve's description and figure hold the specific name so that Carpenter's description is not included in this case. Carpenter considered Reeve the author of the species.

Reeve did not record the locality of the species, but Carpenter furnished that information (1864b, p. 569, 602). The shell had been collected by Dr. Kennerley and, therefore, properly belonged in the Puget Sound—Vancouver Island district (Carpenter, 1864b, p. 569, 602, 641). The holotype in the British Museum (Natural History) is labelled from "Van Couver's [sic] Is. (Mus. Cuming)." 40 "Puget Sound" is written faintly on one of the valves.

_Holotype._—British Museum (Natural History)

_Distribution._—Vancouver Island, British Columbia (type); Kodiak Island, Alaska, to Carmel Bay, California (Burch)

40 (G. L. Wilkins, April 11, 1950, personal communication) The illustrations of the hinge of the holotype with a tracing of the valve for measurement were furnished by the British Museum (Natural History).
"Tivela ? marginata" Carpenter *nomine nuda*

"Tivela (?) marginata Cpr." in Berry, 1907, Nautilus, vol. 21, p. 20; Lam, 1917, Jour. de Conchyl., vol. LXII, p. 204; Burch, 1944, no. 39, p. 9

*Tivela marginata* Carpenter is a *nomine nuda*. The name was probably with a museum specimen, which was the basis for Dall's (1902, p. 386) remarks: [*Tivela delesserti* Deshayes, 1854, Lower California and Mexico] "the young fry were named *Tivela marginata* by Carpenter, but I do not find that this name has ever been defined in print." It is strange that Dall should have passed the name on to Berry in a faunal list. See also "*Crassatella marginata* Carpenter."

**Genus Protothaca** Dall, 1902


This genus is represented in the living and fossil fauna of New Zealand by the subgroup *Tuangia* (Marwick, 1927, p. 623; personal communication, January 19, 1951), [*T. crassicosta* (Deshayes)] which has not been found earlier than Pleistocene.

**Subgenus Callithaca** Dall, 1902


**Protothaca (Callithaca) laciniata** (Carpenter)


*Paphia (Protothaca) staminca* laciniata (Carpenter), Dall, 1921, p. 43, section *Protothaca* Paphia *staminca* laciniata (Carpenter), Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 48

*Paphia staminca laciniata* (Carpenter), Oldroyd, 1924b, p. 157, section *Callithaca* *Venerupis* (Protothaca) *staminca* Conrad variety *laciniata* (Carpenter), Grant and Gale, 1931, p. 331

*Protothaca laciniata* (Carpenter), Keen, 1937, p. 24; Burch, 1944, no. 42, p. 14; Burch, 1945, no. 45, p. 15; Finch, 1953, Dept. Fish and Game Marine Fish., Fish. Bull. no. 90, p. 68, fig. 34

"*Tapes laciniata*, n.s. Large, swollen, brittle, ash; sculpture pectinated." [Carpenter, 1864b, p. 641]

"T. t. 'T. staminca' similis, sed magiore, fragili, multo tenuiore; satis tumida, subovalis, regulariter excurvata, cinerea; lunula linea impressa, parum definita; marginibus, postico vix subquadrato, antico producto; ligamento haud prominentem; costis radiantis acutis, distantibus, ventraliter dimidium interstitiorum aequantibus, postice parvis, crebris, antice latis; laminis concentricis creberrimis, vix erectis, costas transseriis, a costis et interstitiis elegantius unidatis, haud nodosis; pagina interna albida; dentibus cicatrificatusque ut in 'T. stamnica' formatis; sinu pallii paulum longiore, acutiori.—Long. 2.4, lat. 2, alt. 1.4, poll.

"Hab. San Diego, Rich, Blake, Cooper."

The type of this species has not been found. The collections of the British Museum (Natural History) have been searched, as well as those in likely institutions in America.

Although Carpenter recorded the species from Monterey and the region between San Diego and San Pedro (1864b, p. 641), San Diego is given as the type locality in Carpenter's (1865g) description. There seems to be a difference of opinion among workers as to the specific rank of this form.

Mrs. Oldroyd and Grant and Gale omitted reference to the complete description by Carpenter of this species in 1865.

Type.—Not found

Distribution.—Recent. San Diego, California (type); Unalaska, Alaska, to Estero de Todos Santos Bay, Lower California (Burch). Pleistocene. Mexico (Jordan 1926)

Protothaca (Callithaca) staminea (Conrad)

(Pl. 11, figs. 1–5)

Forma orbella Carpenter

Tapes staminea var. orbella Carpenter, 1864b, p. 641; Reprint, 1872, p. 127; Cooper, 1867, Geol. Cat. Moll., Geol. Sur. California, p. 8; Cooper, 1888, 7th Ann. Rept. California State Min. Bur., p. 266


Paphia staminea (Conrad) var. orbella (Carpenter), Packard, 1918, Univ. California Pub. Zoology, vol. 14, p. 271, pl. 19, fig. 6

Protothaca staminea orbella (Carpenter), Dall, 1921, p. 43; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 48, pl. 37, fig. 6 same as Packard, 1918, pl. 19, fig. 6; Oldroyd, 1924b, p. 137, pl. 53, fig. 6 same as Packard, 1918, pl. 19, fig. 6; Burch, 1944, no. 42, p. 13


"Tapes staminea, Conr. . . . Var. orbella, rounded, globose." [Carpenter, 1864b, p. 127]

This form is regarded as an ecological accommodation to the animal’s habit of nesting in pholad borings. It is not considered a species, but because specimens identified by Carpenter were available the form is figured to show what Carpenter had in mind. The type was not found. The specimens figured are from Neah Bay, collected by J. G. Swan, and are contained in the U. S. National Museum. The suite consists of four double valves and one single right valve. One double specimen is abnormally produced anteriorly and shortened with a thickened knobly posterior.

A medium globose specimen is figured.

A type of "Tapes tumida" Con. Nutt. ms. Carpenter has not been found. It is not in the British Museum (Natural History), where it might be. (G. L. Wilkins, May 22, 1950, personal communication).

From an ecological study of more than 3000 specimens of P. staminea in the region of Victoria, British Columbia, Fraser and Smith (1928, p. 266) found that "there was much difference in shape in different localities: some long and narrow, others short and broad; some thin, with flat shells, others thick, with strongly convex shells."

Specimens figured.—U. S. National Museum, No. 15453

Distribution.—Kodiak Island, Alaska, to San Diego, California (Dall)

Protothaca (Callithaca) tenerrima (Carpenter)

"T. t. tenerrima, albido-fusca, obovali, compressa; marginibus aequaliter excurvatis; striulis radiantisus creberrimis, antice et postice fortiioribus, et lirulis acutis concentricis, plus minusve distantibus, eleganter ornatis; lunula vix stria majore definita; intus, dent. card. iii. radiantisus, quorum valva in altere ii. Altera i. bifidi sunt; sinu pallii maximo, elongato, laterum suberectis, parum divergentibus, apice cicatr. ant. contiguo, subrotundato; margine vix crenulato.

"Long. 94, lat. 1.13, alt. 38.


"Of this extremely elegant species, the two specimens sent were broken in transit. It is recognized at once by its fragility and delicate sculpture." [Carpenter, 1856c, p. 201]

"... proves to be the adult form of Tapes tenerrima, Cpr., P. Z. S. July 1856, which is a Californian and not a Panamic species, as has been supposed from Col. Jewett's label." [Carpenter, 1864b, p. 531]

The type of this species has not been recovered. Carpenter wrote (1856c) that the two original specimens were broken before they reached him in England. This suggests that the specimens became further damaged or lost and were not returned to America. They are not in the British Museum (Natural History) (G. L. Wilkins, personal communication).

The original description, following Jewett's label, stipulated Panama as the type locality. But Carpenter later corrected that statement and confirmed his idea that the shells came from California. However, no definite California locality could be given. Oldroyd apparently was not aware of Carpenter's correction of Jewett's Panama label, for she quoted "Panama" as the type locality. This was repeated by Grant and Gale.

The acceptance of Panama as the type locality probably accounts for the error of extending the distribution to Panama (Grant and Gale, 1931, p. 328).

Cooper (1867) corrected the locality from "Panama", to "Str. Fuca to San Diego".

The types are not in the Boston Society of Natural History as published by Oldroyd and copied by Grant and Gale.

Carpenter, in the description of Tapas laciniata (1865g, p. 136) parenthetically stated that this species had been described from a young individual.

Types.—Not found

Distribution.—Recent California (type); Vancouver, British Columbia, to Cape San Lucas, Lower California (Keen). Pleistocene and Pliocene. (See Grant and Gale, 1931) Pleistocene. Mexico (Jordan, 1926)

Genus Psephidia Dall, 1902

(Psephis Carpenter, 1864, not Psephis Gueneé, 1854 Insects)


Type species by original designation [Psephidia replaced Psephis], P. lordi (Baird), 1863, Zool. Soc. London, Proc., p. 69. Recent, Unalaska, Alaska, to Coronado Islands. California. Dall, 1902, U. S. Nat. Mus., Proc., vol. 26, pl. XVI, fig. 5; Grant and Gale, 1931, pl. 15, figs. 5–7


ide Carpenter, 1864b, p. 531

Tapas tenerrima Carpenter, Arnold, 1903, pl. XIV, fig. 6


Veneropsis (Callithaca) tenerrima (Carpenter), Grant and Gale, 1931, p. 327, pl. 18, figs. 9a, 9b
Psephidia salmonae (Carpenter)  

*(PL. 11, figs. 6–12)*


? *Psephidia salmonae* (Carpenter), Dall, 1921, p. 44; Oldroyd, 1924, p. 162 [not questioned]  

*Psephidia ? salmonae* (Carpenter), Grant and Gale, 1931, p. 338, see for synonymy  

*Psephidia salmonae* (Carpenter), Keen, 1937, p. 24; Burch, 1944, no. 42, p. 16; 1945, no. 45, p. 16

“Psephidia salmonae, n.s. S. Diego, Cat. Is., 30–40 fm.; rare.” [Carpenter, 1864b, p. 611]  

“Psephidia salmonae, n.s. Very small, rounded, teeth elongate; salmon-coloured. 30–40 fm. r. Cpr.” [Carpenter, 1864b, p. 641]

“Ps. t. Parva, subinflata, subaequilaterali, subtrigosa; colore salmonoe; extus nitida, minutissime et creberrime concentrice striata; margine ventrally excurrato; dorsalibus antico et postico subrectis: intus, dent. card. iii.–iii., quorum utraque valva anticus porrectus, quasi lateralis, centrales parvi; v. dextr. dente postico in marginem sulcatum decurrente; cicastr. adduct. satis conspicus, subtretundatis; linea pallii satis interna, vix obsoleta simulata.”  

“Long. 0.12, lat. 0.11, alt. 0.06.”

“Hab. Catalina Island, 30–40 fm., rare; Cooper.”  

“Placed under *Psephidia* by analogy; whether the animal be ovoviviparus has not yet been ascertained.” [Carpenter, 1866a, p. 209]

The syntypes of this species consist of two suites, one in the Redpath Museum, McGill University, and the other at the U. S. National Museum. The specimens in the Redpath Museum consist of five specimens on Carpenter’s original glass mount and labelled in Carpenter’s handwriting, “Type, Catalina Is, 30 fms, Cooper.” These are the specimens which are mentioned in the original description. The U. S. National Museum specimens, a syntype consisting of a double specimen, is also on a Carpenter original glass mount and labelled, “type S. Diego Cooper Cpr. 1068.” These are the specimens which are mentioned first by Carpenter (1864b, p. 611). The label “Cooper no. 1068” is that given as of the State Collection in his original description.

Oldroyd, followed by Grant and Gale, gave the type depository and type locality incorrectly.

**Syntypes.**—Redpath Museum, no. 115; U. S. National Museum, no. 15578 (Cp. 1068)

**Distribution.**—Recent. Catalina Island, California, 30 fathoms, (type); Farallon Islands, California, to San Martin Island, Lower California (Burch). Pleistocene (Arnold, 1903; Cooper in Arnold, 1903). Pliocene (Arnold, 1903)

“Tapes gracilis” Gould


This species has been identified by Dall as the young of *Saxidomus nuttallii* Conrad, 1837. Carpenter stated (1864b) that the type of *T. gracilis* Gould was not found at the Smithsonian Institution.

**Additional References:**—


*Saxidomus gracilis* Gould, Cooper, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 8 (= aratus Gld. ?)


*Saxidomus nuttallii* Conrad, Grant and Gale, 1931, p. 341 in part

“Venus (Chione) excavata” Carpenter  

*(Pl. 11, fig. 13)*

**Chione undatella** Sowerby, Young

This species was determined by Dall as the young of *Chione undatella* Sowerby (1835, p. 22).

The type is in the British Museum (Natural History) (*fide* G. L. Wilkins, March 2 and July 10, 1951, personal communication), and the photograph of the specimen has been provided by the officials of the British Museum (Natural History).

Additional references:

*Venus excavata* Carpenter, 1860, Smith, Misc. Coll., vol. 2, art. 6, p. 2; Grant and Gale, 1931, p. 322 in synonymy of *Chione succinta*


**Family Petricolidae**

**Genus Petricola** Lamarck, 1801

Petricola *Lamarck*. 1801, Syst. Animalia sans Vert., p. 121


**Subgenus Rupellaria** Fleuriau de Bellevue, 1802

Rupellaria *Fleuriau de Bellevue*. 1802, Jour. Physique, vol. 54, p. 347


**Petricola (Rupellaria) tellimyalis** (Carpenter)  
(Pl. 12, figs. 1–5)


Psephis *Petricola* *tellimyalis* Carpenter, Willett, 1931, So. California Acad. Sci., Bull., 30, no. 2, p. 39, pl. 17, figs. 1, 2


Petricola *(Rupellaria) tellimyalis* (Carpenter), Burch, 1944, no. 42, p. 19, figs.; 1945, no. 45, p. 16

Rupellaria *tellimyalis* (Carpenter), Abbott, 1954, p. 420, pl. 31t

"*Psephis tellimyalis*, n.s. Shape of *Tellimya*: central tooth minute; outside teeth long."  
[Carpenter, 1864b, p. 641]

"Ps. t. valde transversa, subquadra, tumidiore, valde inaequilaterali; umbonibus obtusis, vix prominentibus; pallide carnoalutescente, purpureo (maxime circa marginem denteque) tincto; epidermide tenuissime induta; tota superficie creberrime concentricae striata; marginibus, dorsali et ventrali subparallelis, antico rectiore, postico rotundato; lunula inconspicua: intus, dentibus centralibus minimis, anticis elongatis, posticis velocis elongatis: sinu pallii vix sinuato.—Long. 09, lat. 07. altit. 04, poll.

"Hab. Californiæ (sur la partie dorsale d'une *Halioitidea*, Roswell)."

"Le sous-genre *Psephis* se compose de très—petites coquilles vénériformes, dont l'animal est ovipare, comme celui des *Cyclas*, etc., des eaux douces, et des *Brvophila* parmi les *Lamellibranchiat* marins. La charnière porte trois dents; quelquefois elles ressemblent à celles des *Chione*: mais ordinairement les dents antérieures et postérieures se prolongent. Le *Psephis tellimyalis* se trouve sur les limites extrêmes du groupe. Il a l'aspect extérieur d'un *Tellimya bidentalis* et quelque chose aussi de sa charnière à cause du très-grand développement des deux dents terminales aux dépens de la dent centrale. Je n'en ai vu qu'un seul échantillon, qui appartiennent au révérend J. Rowell, pasteur à San Francisco."  
[Carpenter, 1865g, p. 135]
Willett (1931) changed the previous idea rendered by Dall (1900) that the species described by Carpenter was the young of *P. denticulata* Sowerby (1834). Willett figured specimens of both species. His figures justified a separation. The individuals figured by Willett (1931) are more triangular than the holotype. Burch in commenting on Willett's article included tracings of unidentified specimens in the Burch collection from San Martín Island, Mexico, which are closer in appearance to the shape of *P. tellimyialis* than are those of Willett or Pilsbry and Lowe (1932).

The holotype is in the U. S. National Museum on an original Carpenter glass mount with original label, consisting of: "Type Psphis tellimyalis, Cpr. California."

Carpenter stated originally that the specimens came from the back of haliotids (1865g, p. 135). He did not know the locality and suggested Lower California. The label in the type box states "San Diego Stearns Coll." That label is subsequent to the Carpenter glass mount, however. The writer does not believe that a locality other than California would be authentic for the original specimens.

The measurements of the holotype (2.5 mm.; 2 mm.) correspond to the dimensions originally stated of .09 poll (2.27 mm.) and .07 poll (1.77 mm.), with a negligible difference.

Holotype.—U. S. National Museum, no. 15554

Distribution.—Recent. California (type); Santa Monica, California, to San Martín, Mexico (Burch, 1945). See Table 2 for stratigraphic distribution.

Genus *Cooperella* Carpenter, 1864

*(Oedalia* Carpenter, 1864; *Oedalina* Carpenter, 1865)*


There was considerable juggling of names in connection with this genus, so that even though *C. scintilliformis* was the specific name used in the first mention of *Cooperella*, the name was a nomen nudum. It had not at the time been described. It was also the specific name used in the description of *Cooperella*. However, *C. subdiaphana* was the species with the first description of *Oedalia*, the description which precedes that of *Cooperella*. It seems best to maintain the designation of Dall, using the name *C. subdiaphana* for the species and for the type of the genus.

Besides the type species, a West Coast Recent and Pleistocene species, the genus is represented by one species from the upper Miocene (Yorktown) of Virginia and North Carolina (Dall, 1900, p. 1063); Gardner (1943, p. 119) and a species, *C. atlantica* Rehder (1943, p. 187) living at Peanut Island, Lake Worth, Florida.

*Cooperella subdiaphana* (Carpenter)

(Pl. 12, figs. 6-16)

*Oedalia* (*Cooperella*) *scintilliformis* CARPENTER, 1864b, p. 611, 639; Reprint, 1872, p. 97, 125; COOPER, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 6 *Cooperella*

*Oedalia subdiaphana* CARPENTER, 1864b, p. 639; Reprint, 1872, p. 125; 1865, Apr., Jour. de Conchyl., vol. 13, p. 134; Reprint, 1872, p. 302


"*Oedalia* (*Cooperella*) *scintilliformis*, n. subg., n.s. S. Diego, Santa Barbara Is." [Carpenter, 1864b, p. 611]
"Ocdalia subdiaithana, n.g., n.s. Thin, swollen, shape of Kellia, ligament surrounding beaks; hinge with 5 bifid teeth (3-2); no laterals; large mantlebend." [Carpenter, 1864b, p. 639]

"Cooperella scintillaciformis, n.s. New subgenus of Ocdalia. Cartilage semi-internal: only 1 tooth bifid." [Carpenter, 1864b, p. 639]

"Oe. t. albida, tenussima, subdiaphana, submargaritacea, tumente; laevi, stridulis incrementi exilimis; epidermide pallide straminea, tenussima, induta; suborbiculari, umbonibus tumentibus, prominentibus; marginibus omnino satis excruratis, antico rotundato, postico paululum porrrecto, lunula nulla; intus, valva sinistro dentibus cardinalibus 3 bifidis, radiantis, quorum centralis major, valva dextra 2 bifidis, intercalantibus; nymphis parvis, curtis, tenuibus; ligamento circa umbones excurrente; lamina cardinali dorsoalter parum clavulicata; cicatricibus adductoribus parvis, marginem dorsalem versus sitis, antica ovali, postica subrotundata; sinu pallii regulariter ovali, per duas trientes interstitii incurrante, longitudinaliter tenussimae corrugato; linea pallii antice a margine remota, diagonaliter reflexa.—Long. .52, lat. .44, alt. .26, poll.

"Hab. San Diego, Cassidy.

"Je n’ai vu qu’un seul échantillon de cette coquille fort remarquable. Après l’avoir examinée pour la seconde fois et avec beaucoup de soin au microscope, pour caractériser l’espèce et pour comparer ses caractères avec ceux du Cooperella scintillaciformis, j’ai eu le malheur de le laisser tomber à terre et de le briser; mais je puis attester l’exactitude de la description. Cette espèce a l’aspect externe d’un Kellia suborbicularis; l’inflexion pallaéale d’un Semile; le ligament circunbacional des Circe et des Psphias; et une charnière très complexe, contenant cinq dents, toutes bifides. Avec le sous-genre Cooperella, qui en diffère comme les Lutrilocia et les Maconia (le cartilage étant semi-internal) et peut-être avec les Cycladella, elle constitue un groupe particulier des Tellinidae." [Carpenter, 1865g, p. 134, Oe. subdiaithana]

"C. t. tenussima, subdiaphana, latiore; forma "Scintilae Cummingii" simulante; extus argenteo-iridescente, stridulis incrementi exilimis interdum undata; parte postica paulum majore rotundata; intus, valva dextra dent ii. laminatis, arcuatim divergentibus, extantibus, quorum anticis major, centraliter sulcatus; v. sinistr. iii. et post. laminati, arcuati, centralis triangularis, bifidus fossa cartilaginali parva, semi-interna, sub umbones angustiores, sitis, prominentes, sita; lamina ligamentali nulla, nymphis longioribus; sinu pallii oblongo, lato; linea pallii antica major minus declivi."

"Long. 0.60, lat. 0.48, alt. 0.32.

"Hab. San Diego; San Pedro, 2 dredged in 8-20 fms. Cooper."

"The types of both C. subdiaithana and C. scintillaciformis are preserved in the U. S. National Museum. The holotype of C. subdiaithana is broken. It is labeled "smashed type. San Diego Cassidy no. 3563." There are many fragments, but the hinge of each valve is intact, and each is figured herein. The fracture of the type dates to Carpenter, for he wrote of his misfortune in regard to the shell.

The syntypes of C. scintillaciformis consist of two double specimens and a single valve. Illustrations of the doubles, as well as enlarged figures of the hinges of each, are included herein.

Syntypes.—U. S. National Museum, no. 15669 (C. scintillaciformis); no. 3563 (C. subdiaithana holotype)

Distribution.—Recent, San Diego, California (type); San Pedro, California (C. scintillaciformis type); Queen Charlotte Island, British Columbia, to Gulf of California (Dall) See Table 2 for stratigraphic distribution.

Family Tellinidae

Genus Tellina Linnaeus, 1758


Subgenus Oudardia Montresosato, 1884


Type species by original designation, Tellina ouardari Payraudeau, 1826, Moll. Corse, p. 40.
Tellina (Oudardia) modesta (Carpenter)

(Pl. 13, figs. 4-9)


Mera modesta (Carpenter), Cooper, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 5

Tellina (Angulus) modesta (Carpenter), Tyron, 1869, Cat. Tellinidae, Acad. Nat. Sci., Philadelphia, p. 94


Tellina (Oudardia) modesta (Carpenter), Keen, 1937, p. 26; Burch, 1943, no. 25, p. 12; 1945, no. 43, p. 7

Tellina modesta (Carpenter), Abbott, 1934, p. 425, pl. 31u

"Angulus modestus, n.s., but closely allied to the eastern A. tener, Say. Two sp. living." [Carpenter, 1864b, p. 602]

"Angulus modestus, n.s. (Subg. of Tellina.) Like tener, Say., but with callositatem between mantle-bend and scar. White." [Carpenter, 1864b, p. 639]

Carpenter's (1865) description was reprinted by Oldroyd in 1924. The following typographical errors should be corrected in Oldroyd's copy: line 1 of description, read callositatem for callosulata; line 6, insert ventralis between margine and subplanata; line 7, read valva for va; line 8, read nullis for nullii; read callositatem for callosulata; line 9, read paulum for paulum. The following should be included to complete the copy of Carpenter's description:

"Hab. In sinu Pugetiano, specimena duo juniora legit Kenneyler." [Carpenter, 1865e, p. 56]

The type material consists of two valves, now broken.

Syntypes.—U. S. National Museum, no. 4245

Distribution.—Recent. Puget Sound, Washington (type): Vancouver Island, British Columbia, to Lower California (Dall). See Table 2 for stratigraphic distribution.

Tellina (Oudardia) buttoni Dall

(Pl. 13, figs. 10, 11)

Angulus ? var. obtusus Carpenter, 1864b, p. 639; Reprint, 1872, p. 125

Angulus modestus, var. obtusus Carpenter, 1865, Acad. Nat. Sci.


Mera obtusa (Carpenter), Cooper, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 5


Tellina (Angulus) buttoni Dall, Arnold, 1903, p. 157, pl. XVI, figs. 1, 2

Tellina buttoni Dall, Packard, 1918, Univ. California Pub. Zool., vol. 14, no. 2, p. 275, pl. 25, figs. 7a, 7b; Grant and Gale, 1931, p. 361 section Oudardia, see for additional synonymy

"Angulus ? var. obtusus. Inside like modestus; but beaks obtuse." [Carpenter, 1864b, p. 639]

"A. t. 'A. modesto' simili; sed majoro, umbonibus obtusis, vix donaciformi, marginibus dorsalisibus et ventralibus excruvatis; candidiore, vix diaphana; epidermide pallidissime straminea. Long. .72, lat. .44, alt. .15.

"Hab.—In sinu Pugetiano legit Kenneyler; apud 'Neeah Bay,' Swan; prope S. Pedro, Cooper." [Carpenter, 1865e, p. 56]

Details of the shell have been described by Dall (1900a; 1900c). Dall gave the new name to replace the preoccupied one of Carpenter. Carpenter's material therefore should remain
the foundation for the original conception of the species. It does not seem wise to follow Dall in defining new types for the species when Carpenter's were in existence and available to Dall. (See discussion in the introduction to this paper on the practice of choosing new types for species renamed.) In the case of this species Dall did not choose a type for his new name from the type locality of Carpenter's species. Hence there is a double opportunity for misidentifying the original species. The remaining types of “A.” obtusa Carpenter are those mentioned second by Carpenter from San Pedro. Dall chose a Lower California shell for the holotype.

Interpreting the renaming of “A.” obtusa as strictly a nomenclatural technicality, the writer retains Carpenter's types for the species as renamed, and the writer disregards Dall’s 1900 redesignation.

In the case of a name merely replacing a preoccupied term, if the original types have been lost neotypes would properly be designated. In such case it would seem fitting that they should be from the original locality of the species. (See Copenhagen Decisions on Zool. Nomen., Aug. 1953, p. 28-32.)

This species has coarser concentric striae than T. carpenteri Dall (T. variegata Carpenter).

The double specimen (type no. 19429) has the valves intact. The valves were not separated for photographing, lest the hinges be broken. The photographs do not include that of the hinge.

**Synotypes.**—U. S. National Museum, no. 19429 (one double and fragments of two single valves)

**Distribution.**—Recent. San Pedro, California (Cooper, type); Lituya Bay, Alaska, to the Gulf of California (Dall). Pleistocene. (See Grant and Gale, 1931)

Subgenus *Moerella* Fischer, 1887


*Tellina* (Moerella) carpenteri Dall

(Pl. 13, fig. 12–16)


*Moera variegata* (Carpenter), Cooper, 1867, Geol. Cat. Moll., Geol. Surv. California, p. 5


*Tellina* (Angulus) *carpenteri* Dall, 1900, U. S. Nat. Mus., Proc., vol. 23, no. 1210, p. 303, 320 new name; 1908, *Mussell Comp. Zool.*, Bull., vol. XLIII, no. 6, p. 421; 1921, p. 45; Oldroyd, 1924b, p. 166, not pl. 44, figs. 10a, 10b same as *Packard*, 1918, Univ. California Pub. Zool., vol. 14, no. 2, pl. 25, figs. 10a, 10b, pl. 29, fig. 2; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 51, not pl. 41, figs. 10a, 10b; *Keen*, 1937, p. 26; *Burch*, 1943, no. 25, p. 12; 1945, no. 43, p. 5, 7; no. 46, back page

Not *Tellina carpenteri* Dall, *Packard*, 1918, Univ. California Pub. Zool., vol. 14, p. 276, pl. 25, figs. 10a, 10b, pl. 46; Oldroyd, 1924b, pl. 44, figs. 10a, 10b; Oldroyd, 1924, Pub. Puget Sound Biol. Station vol. 4, pl. 41, figs. 10a, 10b same as *Packard* pl. 25, figs. 10a, 10b = *T. (Moerella)* arcnica Hertlein and Strong, 1949, Zoologica, New York Zool. Soc., vol. 34, pt. 2, p. 68

*Angulus variegatus, n.s.* Mont., Cat. Is., 20–60 fm.; rare. (Necah Bay, *Sequin.)* [Carpenter 1864b, p. 611]

*Angulus variegatus, n.s.* Shape of obtusus: no callus, rayed with pink and yellow. 20–60 fm. r. *Cp.* [Carpenter, 1864b, Aug., p. 539]

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41 New types designated by Dall (1900c, p. 320). U. S. National Museum, no. 42865a, have been copied by later authors (Oldroyd; Grant and Gale)
Oldroyd gave a copy of Carpenter’s description (1864b, Dec.), and it will therefore not be repeated here. To her copy should be added:  

“*Hab. Neeah Bay (Shawn); Monterey and Catalina Island, 20–60 fathoms, rare (Cooper).”  

[Carpenter, 1864b, Dec., p. 423]

The type material in the U. S. National Museum consists of one double and one single valve with the label bearing both Catalina Island and Neeah Bay, with no means of co-ordinating either specimen with its proper locality. Since the two localities are widely separated, a decision based on choosing a lectotype from the syntypes and identifying the locality as near as possible with toptypes from either of the two localities would seem to be a means of solving a technical dilemma. The decision may have to be arbitrary, but it will be necessary to furnish a definite type locality. The lack of toptypes prevents such a selection in the present study.

**Syntypes.—** U. S. National Museum, no. 15467 (one double and one single left valve)

**Distribution.—** Recent. Type locality, either Neeah Bay, Washington, or Catalina Island, California; Forrester Island, Alaska, to Panama (Dall) Pleistocene (See Grant and Gale, 1931.)

**Tellina (Moerella) meropsis Dall**


**Tellina (Moerella) meropsis Dall,** 1900, U. S. Nat. Mus., Proc., vol. 23, no. 1210, p. 303, 317, pl. 3, fig. 1; 1921, p. 45

Carpenter overlooked Hanley’s description of *Tellina gouldii*, a western Atlantic to Mexican species, and utilized the name for a west American form. Dall renamed the West Coast species and described it from a holotype from San Diego, California. The species ranges to the Gulf of California.

**Tellina (Moerella) salmoena (Carpenter)**

(Pl. 13, figs. 17–19)


**Tellina salmoena (Carpenter),** Reeve, 1867, Conch. Icon., vol. 17, Tellina, pl. XXIX, fig. 155

**Tellina (Moerella) salmoena** Carpenter, Tryon, 1869, Cat. Tellinidae, Acad. Nat. Sci. Philadelphia, p. 88

**Tellina (Moerella) salmoena** (Carpenter), Dall, 1900, U. S. Nat. Mus., Proc., vol. 23, no. 1210, p. 302; cf. Arnold, 1903, p. 157, pl. XIII, fig. 7; Dall, 1921, p. 45; Oldroyd, 1924b, p. 165, pl. 44, fig. 3a, 3b same as *Packard*, 1918, Univ. California Pub. Zool., vol. 14, pl. 25, figs. 3a, 3b; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 51, pl. 41, figs. 3a, 3b same as *Packard*, 1918, Univ. California Pub. Zool., vol. 14, pl. 25, figs. 3a, 3b; Baily, 1935, West Coast Shells (Keep), p. 99; Burch, 1943, no. 25, p. 11; 1945, no. 43, p. 6; no. 46, back page

**Tellina salmoena** (Carpenter), Packard, 1918, Univ. California Pub. Zool., vol. 14, p. 276, pl. 25, figs. 3a, 3b; pl. 46; Grant and Gale, 1931, p. 359, section *Moerella*, see for additional synonymy; Keen, 1937, p. 26; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, no. 8, p. 175

**Tellina (Peronidia) salmoena** (Carpenter) Oinomikado, 1934, Chikyu, vol. 22, no. 4, p. 37–39 text fig.

**Angulus (Peronidia) salmoena** (Carpenter), Otuka, 1935, Bull. Earthquake Research Institute, Tokyo Imperial Univ., vol. XIII, pt. 4, p. 898. Miocene—Recent, northern Japan

**Tellina salmoena** (Carpenter), Keen, 1941, 6th Pacific Sci. Cong., vol. 3, p. 480 no comment; Abbott, 1954, p. 426, pl. 31y

“*Maera salmoena*, n.s. (Scarcely differs from *Angulus*.) Small, subquadrate, glossy, salmon tinted. Beach—20 fm. C.”  

[Carpenter, 1864b, p. 639]

“M. testa parva, solida, compacta, subquadrata; laevi, nitente, epidermide tenui cinerea induta; extus pallide, intus vivide salmoeno tineta; marginibus dorabulis rectis, ad angulum

42 In the Oldroyd copy (1924), line 4, read *regulariter* for *regularites.*
120° separatis, unbonibus haud extantibus; marginibus antico et ventrali regulariter late excurratis; parte postica brevissima, haud angulata; intus dent. card. utraque valva ii, quorum unus hifidus; laterilibus v. dext. æquidistantibus, ant. extante, post. parvo; nymphis rectis, haud conspicuis; cicatr. add. post. subrotundata, ant. subhomboidia; sinu pallii satis regulariter ovali, per IV, inter v. partes interstitiali porrecto. Long. .57, lat. .43, alt. .11 poll.

"Variat testa aurantia, rarius albida, rosaceo inca.

"Tab. San Francisco (Pac. Rall. E. E.); Neeah Bay (Swan), plentiful; Monterey, 20 fathoms (Cooper).

"In shape almost close to Macoma crassula. Desh. (Arctic); but that species is thinner, not glossy or salmon-coloured, and has no lateral teeth." [Carpenter, 1864b, Dec., p. 423]

The specimens in the U. S. National Museum which were segregated with the Carpenter types may not be the true types. They have a label "P.P.C." "Vancouver and Neeah Bay, W.T.J.G. Swan." In the case of Carpenter authentic types, the original label includes the word "type." These specimens (two double specimens and two single left valves) would be proper specimens from which to designate a neotype, since the original types have not been found. The fact that the specimens bear Carpenter's initials, and they are Swan's material, would identify the suite as original and proper specimens from which to choose a neotype. A great deal of Swan material identified by Carpenter was distributed by the Smithsonian Institution to other museums.

Dimensions.—Specimens U. S. National Museum, no. 73449. Length 14 mm., height 10 mm., thickness (double) 5 mm.; length 14 mm., height 11 mm., thickness (double) 5 mm.; length 9 mm., height thickness (single) 1+ mm. (each), respectively.

Specimens.—U. S. National Museum, no. 73449. Specimen figured herein (pl. 9, figs. 17–19).

Distribution.—Recent. Neeah Bay, Washington, Vancouver Island region (type). Aleutian Islands to San Pedro, California (Dall). Gulf of California (Lowe in Burch, 1945, no. 46 back page). Pleistocene. Miocene (See Grant and Gale, 1931.)

Subgenus Merisca Dall, 1900

Merisca Dall, 1900, U. S. Nat. Mus., Proc., vol. 23, p. 290

Type species by original designation, Tellina crystallina Wood, 1815, Gen. Conch., p. 149, fig. Dall; Wood, 1828, Index Test., pl. 3, fig. 10a. Recent. South Carolina to West Indies. Lower California to Quayaquil. MAXWELL SMITH, 1937, East Coast Marine Shells, pl. 19, figs. 8a, 8b; 1944, Panamic Marine Shells, no. 834 (fig.)

The species is Tellina crystallina Spengler (1795). See Hertlein and Strong (1955, p. 198).

Tellina (Merisca) lamellata Carpenter

Tellina lamellata Carpenter, 1857, Mazatlan Cat., p. 37

Arcopagia lamellata (Carpenter), COOPER, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 6

Tellina (Arcopagia) lamellata Carpenter, Dall, 1921, p. 45 section Merisca

Tellina (Merisca) lamellata Carpenter, Burch, 1945, no. 43, p. 6; no. 45, p. 16

T. lamellata was described by Carpenter from Mazatlan. The holotype should be in the British Museum (Natural History), and the figuring of it belongs with illustrations of the Mazatlan Catalogue. Dall recorded the species from Mazatlan to San Diego, California. The synonymy is not intended to be complete.

Genus Apolymetis Salisbury, 192913


13 In regard to Capsa Bruguière, 1797, see Deshayes, 1830, p. 191. Schmidt (1818, p. 56) did not designate V. deflorata. Linna. as type of Capsa Bruguière. He merely cited the species. Schmidt did designate V. deflorata as type of Capsa Lamarck. For Capsa Bruguière 1797, see Dodge (1947a, p. 488, nomen nudum).

### Apolymetis biangulata (Carpenter)

(Pl. 14, fig. 5)


**Apolymetis biangulata** (Carpenter), Grant and Gale, 1931, p. 363 see for additional synonymy; Willett, 1937, San Diego Soc. Nat. Hist., Trans., vol. V11, no. 30, p. 390; Burch, 1943, no. 25, p. 16 synonymy, fig. p. 24; 1945, no. 43, p. 9; 1945, no. 43, p. 16, no. 46, back page; 1946, no. 59, pl. XXI, fig. 65; Durham, 1950, Geo. Soc. Amer., Mem. 43, p. 89, pl. 24, fig. 1; pl. 25, fig. 12; Finch, 1953, California Fish Game Marine Fish., Fish Bull., no. 90, p. 72, fig. 38.

Olsnyder published a copy of Conrad’s original description. As has been pointed out by several authors Conrad’s name is preoccupied by his own earlier naming. The next name available is that of Carpenter (1855, p. 230); hence the inclusion of the species in this report.

“? S. t. suborbiculacia, subaequilateralia, convexiuscula, striis concentricis vix regularibus, postice undata, anguis dubus subsolesitis; ligamento externo tenuissimo, in sulcos alte impresso, semiperiore sito; ligamento interno fossa trigoinali scalena sito, alteri adjacent; dentibus cardinalibus in utraque valva dubius, contugis, vix radiantis; ecaricirbes musculaibus subovalibus, sinu pallii maximo; alba, intus aureo tincta.

"Long. 1.5, lat. 1.78, alt. 8 poll.


"Differs from S. producta in form and texture, and also in the comparative size of the external ligament, which in this species is situated in a semi-internal furrow." [Carpenter, 1855, p. 230, S. biangulata]

"Tellina alta = [(from types) ? Scrobicularia biangulata, Cpr.]" [Carpenter, 1864b, p. 526].

Unfortunately the type of *Tellina alta* (H. A. Pilsbry, September 30, 1948, personal communication) is not extant. Information concerning the holotype of *A. biangulata* was furnished by G. L. Wilkins (March 2, 1951, and July 10, 1951, personal communication), and the photograph of the specimen was provided by the officials of the British Museum (Natural History).

**Holotype.**—British Museum (Natural History), 61.5.20.117.

**Distribution.**—Recent. Near Santa Barbara, California (*A. alta* (Conrad) type); Santa Barbara, California (*A. biangulata* (Carpenter), type); Point Conception, California, to San Quintin, Lower California (Finch). Pleistocene. Pliocene. Miocene. (See Grant and Gale, 1931.)

**Genus Macoma** Leach, 1819.

**Macoma Leach** in Ross, 1819, Voyage H.M.S. Isabella and Alexander Discovery Baffin’s Bay, 1st ed., app. II, p. LXII.

Distribution of genus.—Eocene—Recent; Eocene—Recent, Western Hemisphere; Miocene—Recent, Europe

**Macoma expansa** Carpenter

(Pl. 13, figs. 1-3)


"Macoma (? var.) expansa. Adult broken: young living. Belongs to a group of forms classed together by some writers under _lata_ or _proxima_, but the characters of the hinge and mantle-bend have not yet been sufficiently studied." [Carpenter, 1864b, p. 602]

"Macoma ? var. expansa Scars like _lata_ and _calcarca_ in Mus. Cumm., but teeth not bifid, very thin, glossy. Searcely differs from _lata_, Desh. in B. M. Greenland." [Carpenter, 1864b, p. 639]

The description of 1865 was republished by Oldroyd (1924, p. 177). To the portion reprinted should be added the remaining part of Carpenter’s description as follows:

"_Hab._—In sinu Pugetiano raissime legit Kennerley.


Dall (1900, p. 308) regarded the type material mixed as to specific identity. The species has been doubted by authors since Dall.

The specimens, two different valves, marked types in the U. S. National Museum, bear the label “Types. Dr. Kennerly. Puget Sound.” This label coincides with Carpenter’s original statement as to locality (1864b, p. 602, 639).

If Dall doubted what the characters of the species were, it does not seem logical to maintain, until the identity of the species is known, the extent of distribution as given by Dall. Arnold (1903, p. 161) furnished the information that specimens in the State Collection at the University of California labelled "M. expansa" were _M. calcarca_ Gmelin.

Burch (1943, p. 21) stated that the species is “unknown to any member of the Conchological Club of Southern California.” Considering that the type has never been figured and only general information is available concerning the shell, it is not surprising that the form is not known.

The hinge and unbonal area of the smaller specimen, a left valve, are broken. The right valve is figured herein.

_Type._—U. S. National Museum, no. 3910, two valves

_Distribution._—Puget Sound, Washington (Kennerley, type)

**Macoma yoldiformis** Carpenter

(Pl. 14, figs. 2-4)

_Macoma yoldiformis_ Carpenter, 1864b, p. 602, 611, 639; Reprint, 1872, p. 88, 97, 125; 1865, Acad. Nat. Sci. Philadelphia, Proc., vol. 17, p. 55; Cooper, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 5; Tryon, 1869, Cat. Tellinidæ, Acad. Nat. Sci. Philadelphia, p. 104; Dall, 1900, U. S. Nat. Mus., Proc., vol. 23, no. 1210, p. 309; Arnold, 1903, p. 165, pl. XVI, fig. 6; Packard, 1918, Univ. California, Pub. Zoology, vol. 14, p. 280, pl. 25, fig. 6; Dall, 1921, p. 48; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 54, pl. 41, fig. 6 same as Packard, 1918, pl. 25, fig. 6; Oldroyd, 1924b, p. 177, pl. 44, fig. 6 same as Packard, 1918, pl. 25, fig. 6; Grant and Gale, 1931, p. 373; Keen, 1937, p. 22; Burch, 1943, no. 25, p. 22, fig.; 1945, no. 43, p. 15; 1945, no. 45, p. 17; no. 46, back page
"Macoma yoldiformis, n.s. one valve." [Carpenter, 1864b, p. 602 Vancouver district]

"Macoma yoldiformis, S. Diego. (Puget Sound, Kennerley.)" [Carpenter, 1864b, p. 611]

"Macoma yoldiformis, n.s. Small, white, glossy, very transverse; ligament-area scooped-out." [Carpenter, 1864b, p. 639]

To the republished Carpenter description of 1865 in Oldroyd (1924, p. 176) the following should be added:

"Hab. In Pacífico Boreali primum piscavit Belcher; dein valvas duas in sinu Pugetiano Kennerley: postea prope San Diegoem, Cooper: rarissime." [Carpenter, 1865e, p. 55]

The "holotype" consists of one left valve labelled, "Type. Neah Bay, J. G. Swan." On the back of the label the inscription "also 14842-15587 San Pedro, Cooper. (Puget Sound)" is given.

Kennerley is stipulated as the collector of the original Puget Sound specimen mentioned by Carpenter. Since the present marked type has "J. G. Swan," it is apparent that the Swan specimen is not the individual specified in the original description.

Inasmuch as the present "type" is from the general type locality and no other specimen labelled "type" has been preserved, the specimen in the U. S. National Museum would be appropriate to be designated as a neotype.

Specimen figured.—U. S. National Museum, no. 4507


Subgenus Rexithaerus Conrad in Tryon, 1869


Distribution of subgenus.—Miocene—Recent. West Coast

Macoma (Rexithaerus) indentata Carpenter

(Pl. 16, figs. 1, 2)


Macoma (indentata Carpenter, var. ?) tenuirostris DALL, 1900, U. S. Nat. Mus., Proc., vol. XXIII, no. 1210, p. 309, 324; 1921, p. 48; OLDROYD, 1924b, p. 178

"Macoma indentata, n.s. S. Diego." [Carpenter, 1864b, p. 611]

"Macoma indentata, n.s. Like secta, jun, but beaked, indented, and ventrally produced." [Carpenter, 1864b, p. 639]

"State Collection, no. 365.

"M. t. 'M. sectae' similis; sed postice valde rostrata, sinu inter plicam et regionem ventral-lem valde expansam indentato.

"Long. 2.20. lat. 1.40. alt. 0.56.

"Hab. San Pedro, (young, living, Palmer;) large dead valves, Cooper.

44 Mr. J. G. Swan and the Indian children of Neah Bay, Washington, collected a large number of shells which were sent to the Smithsonian Institution. Many of Carpenter's types were from those collections. Duplicates were freely distributed to other organizations where the specimens are still available bearing the Smithsonian label with J. G. Swan as collector. (See Carpenter, 1864b, p. 626; Reprint, 1872, p. 112, 235.)
“Differs from *M. unibonella*, Lam., in its secta-like postligamental wing. This being rubbed off in the large dead valves, the shell has the aspect of a very distinct species.” [Carpenter, 1866, p. 208]

The holotype consists of a right valve collected in a dead but well-preserved condition. The specimen is labelled “Cotype San Pedro, Cooper.” The shell and label may thus be identified as that of Carpenter’s description of 1865. There is only the one specimen at present.

Dall described the “variety” *tenuirostris* of this species (1900, p. 309, 324). On the back of the label of the type of *M. indentata* is written “var. tenuirostris Dall.” Dall (1900, p. 324) stated, “For the rostrate form, pending the acquisition of more and fresh material, I would propose the varietal name of *tenuirostris*. It measures long. 55, alt. 33, and diam. 16 mm.” Those dimensions are the same (approximately of height and diameter) of the specimen no. 15229, which is the type of *M. indentata*, as indicated in the U. S. National Museum collections. The other specimens which Carpenter mentioned are not now available so that the specimen which Dall thought differed varietally from the typical is the lone type of the species. Willett (in Burch, 1945, no. 43, p. 16) doubted the validity of Dall’s subspecies.

Specimens in some collections labelled this species are higher and more rounded anteriorly than the holotype. This may be the difference which Dall accounted for.

*Holotype.*—U. S. National Museum, no. 15229

*Distribution.*—Recent. San Pedro, California (type); Puget Sound, Washington, to Lower California (Dall). Pleistocene, Pliocene, Miocene. (See Grant and Gale, 1931, p. 374, 375.)

Etherington (1931, p. 85, pl. 10, figs. 3, 4) described a subspecies of this species from the Astoria formation, middle Miocene, of western Washington.

**Family Semelidae**

**Genus Semele Schumacher, 1817**

_Sele Schumacher, 1817, Essais Nouv. Syst., p. 165

Type species by original designation, *Tellina reticulata* Speengler45 = *T. proficua* Pulteney, 1799, Hutchins Hist. Dorsetshire, p. 29, pl. V, fig. 4. Recent. Eastern United States, Virginia to West Indies. L. Perry, 1940, Bull. Amer. Paleont., vol. 26, no. 95, pl. 16, fig. 103; L. Perry and Schiengel, 1955, Marine Shells of Western Coast of Florida, pl. 16, fig. 103, same figure as in Perry.

*Semel incongrua* Carpenter

*(Pl. 14, figs. 7–10)*


“*Semel incongrua*, n.s. Catalina Is., 40–60 fm.; common.” [Carpenter, 1864b, p. 611]

“*Semel incongrua*, n.s. Like *pulchra*, with concentric sculpture differing in r. and l. valves: fine radiating striæ all over. 40–60 fm. c. Cp.” [Carpenter, 1864b, p. 640]

A copy of the original description is given in Oldroyd. To complete the copy the following should be added:

“Hab. Santa Barbara, 16 fm. 1 valve; Catalina Island, 40–60 fm., not uncommon; Cooper.” [Carpenter, 1866, p. 208]

Line 3, correct “radiitum” to read “radiatum.”

Oldroyd, followed by Grant and Gale, gave the type as in the California State Collection, no. 1061. Such information is merely the original number as stated by Carpenter and does not indicate the present whereabouts of the specimens. To date the type has not been found.

There is in the Redpath Museum a Carpenter glass mount with 7 specimens (2 pairs) of *Semele incongrua*. Besides the specific name the mount bears a Carpenter label of “Catalina Is. 40–60 ft. Cooper.” This material would be appropriate from which to choose a lectotype for the species.

The interior of the shell of the above specimens is pinkish, particularly at the hinge. The surface of the shell has coarse concentric lines which are coarser on the right valve. The concentric ribs are wider apart on the posterior end. They divide at the umbo and extend as two ribs over the remainder of the surface. Radiating microscopic lines are developed between the concentric ribs. There is a suggestion of brownish or pinkish rays over the exterior. One of the double specimens (broken) measures 17 mm. in length. Another specimen measures 18 mm. in length and 13 mm. in height.

A subspecies of this species from the Pleistocene of Deadman Island, San Pedro Harbor, was described by Arnold. In April, 1953, William K. Emerson of the Museum of Paleontology at the University of California sent to the writer 10 (2 doubles) specimens (no. 2389) of *S. incongrua* Carpenter from Santa Catalina Island which were marked as Cooper Collection. There are no other original marks on the label or specimen which identify any of the specimens as type or syntypes. One of the specimens is not *Semele* but a *Tellina*. The remaining 9 fall into the same category as that of the McGill specimens. In the University of California suite is 1 double which has about the measurements of Carpenter’s original dimensions, 0.58 long (14.74 mm.) x .40 lat. (10.16 mm.). The writer includes an illustration of that shell (pl. 14, figs. 7–10). The cardinal hinge area and interior umbo region are rose-tinted as originally described. There are three larger specimens, two right valves 24 mm. and 23 mm. length each, and a left valve, 20 mm. length. The whole interior of the largest specimen is rosy and rosy pink. The others are white or pinkish.

*Measurements, specimen figured.*—Length, 14.25 + mm.; height, 10 + mm.; right valve. Length, 14 mm.; height, 9 + mm., left valve.

*Type.*—Not found

*Specimen figured*—no. 33453, Museum of Paleontology, University of California

*Distribution.*—Catalina Island, California (type); Monterey, California, to the Coronado Islands, California (Dall). See Table 2 for stratigraphic distribution.

Family Garidae

Genus Gari Schumacher, 1817

*Psammobia* Lamarck, 1818, An. s. Vert., p. 511


Type species by tautonymy *Gari vulgaris* Schumacher = *Tellina gari* Schumacher not Linnaeus = *T. feroensis* or *T. feroensis* Gmelin, 1791, p. 3235. Recent. Northern Europe. *Schumacher, 1817, Essais Nouv. Syst. Habit. Vers Test.,* pl. IX, fig. 2 hinge; *Bucquoy, Dautzenberg, and Dollfus, 1895, Moll. Marins du Roussillon,* t. 2, pl. 70, figs. 10–16

Subgenus Gobraeus Leach in Gray, 1852


The use (Bucquoy, Dautzenberg, and Dollfus, 1895; Sacco, 1901; Makiyama, 1934; Habe, 1952; Abbott, 1954) of *Psammocola* Blainville, 1824, for *Gobraeus Leach in Gray, 1852,* is not verified by the record.

46 *S. incongrua montereyi* Arnold, 1903, p. 166, pl. 15, figs. 3, 3a (not 4, 4a). Described as *S. patchra montereyi* by Arnold.
Blainville (1824, p. 349) inaugurated Psammocola with three sections, with an example under each. Psammocola vespertinalis (“E.M. [Enc. Method.] pl. 231, f. 3, abc” [no “e” on plate]) was given under section “A”. Blainville (1825, p. 567) repeated the original description with specific reference but in addition to the same reference (E.M. [Enc. Method.] pl. 231, fig. 3 abc) he added another figure (pl. LXXVII, fig. 4). The two figures do not represent the same species. Bucquoy, Dautzenberg, and Dolfus (1895, p. 485) made the type designation for the genus, “P. vespertinalis Blainville (= vespertina = depressa”). This type designation was repeated by Sacco (1901, p. 10). The Sacco designation has been used by Malbyama (1934, p. 154) and Habe (1952, p. 203). However, that of Bucquoy, Dautzenberg, and Dolfus (1895) has priority.

The type designation of P. vespertina is not valid for the species P. vespertinalis Blainville, as typified by the only original reference given, and is not the same as P. vespertina (Gmelin). The second reference (1825) as illustrated does represent P. vespertina (Gmelin) (Chemnitz, 1784, pl. 7, figs. 59, 60), but that species was an after thought of Blainville and hence does not enter into the original description. Reeve (1856, pl. I) pointed out that Blainville’s figure (1824, pl. 231 under caption “Capsa”) represented a species like Venus deflorata Linn. (see Capsa in Reeve, 1856, pl. I). That observation is true. The species figured (Bruguieré, 1797) 3, a, b, pl. 231, Ency. Meth. is sculptured with coarse radiating ribs and is not the same species as Blainville figured later (1825, pl. LXXVII, fig. 4).

Psammocola Blainville, 1824, must stand on the original figure, and the name of Blainville, 1824, preoccupies Blainville, 1825. Hence the type designations of Bucquoy, Dautzenberg, and Dolfus (1895) and Sacco (1901) are not valid. Bucquoy, Dautzenberg, and Dolfus in the synonymy of P. vespertina (Gmelin) (= P. depressa (Pennant)) (1895, p. 485) did not include the P. vespertinalis Blainville, 1824, but gave “P. vespertinalis” Blainville, 1825 [in part], pl. LXXVII, fig. 4. This is indirect evidence that they did not regard the first reference as equivalent to P. vespertina (Gmelin).

Gari (Gobraeus) californica (Conrad)

Psammobia rubroradiata Nuttall ms., Carpenter

(Pl. 16, figs. 3-5, 7)


Psammobia californica Conrad, DALL, 1898, Acad. Nat. Sci. Philadelphia, Proc., vol. 50, p. 61 fide DALL; WEYMOUTH, 1920, California Fish Game Comm., Fish Bull. no. 4, pl. 14, fig. 1

Psammobia (Gobraeus) californica Conrad, DALL, 1921, p. 49; in part OLDROYD, 1924b, p. 185, pl. 43, fig. 5 copy of Conrad’s type figure

Gari (Gobraeus) californica (Conrad), GRANT AND GALE, 1931, p. 382 in part, which see for additional synonymy of G. californica (Conrad).

The first mention which Carpenter made to “Psammobia rubroradiata” (as Sanquinolaria) was as of Conrad from the Nuttall Collection from California. The vicissitudes of the publication of the Nuttall Collection of molluscan species is explained in detail by Carpenter.
(1857b, p. 192–202). By 1864 he realized that Conrad had not used Nuttall’s name in description. Also in 1864 Carpenter began to include Puget Sound-Vancouver Island specimens in the distribution of the species, for he then identified the species from Dr. Kennerley’s and J. G. Swan’s material. If the meagre lines of description of the species (1864b, p. 638) by Carpenter should constitute description the type locality could be either in Washington or California.

When Carpenter fully described the species (1865e) the material that from his description would qualify as type material was that of Dr. Kennerley from the Puget Sound region (see title of paper).

The above analysis is pertinent to establish a lectotype for the name Carpenter used for this species and hence verify its identity with that of the species previously named by Conrad.

Early material of the Carpenter species so far discovered are two specimens in the British Museum (Natural History), Mollusca Section (G. L. Wilkins, June 16, and July 10, 1950, personal communication) labelled Psammobia rubroradiata Nuttall from California, in the Cuming Collection with an ancient notation “Neiah Bay” on the back of the tablet bearing the shells. Mr. Wilkins wrote,

“I have further examined the two shells labelled rubroradiata and have come to the conclusion that there are two species on the tablet, the largest of which has pinkish radiations on the outside of the shell, inside pure white and came from the Cuming coll.

“There seems little doubt therefore that the shell was sent to Cuming by Nuttall or Jay with the manuscript label which is now attached to the back of the tablet, with the locality ‘Neiah Bay.’”

The Neah Bay label might identify one of the specimens from the Swan collection, for that is the material Carpenter referred to in 1864. Swan and the Indian children were the chief collectors of material which Carpenter worked on from Neah Bay, Washington. There could be a mixture of labels and specimens, and material from both areas could have been grouped together.

G. L. Wilkins wrote (March 2, 1951 and July 10, 1951 personal communication) that certain specimens of the Nuttall Collection were available and included “Sanguinolaria rubroradiata Conrad.” This shell was one of a lot purchased by the British Museum in 1861 from Nuttall’s executors. The specimen, of which a photograph is included, has on the front of the tablet which bears the specimen, “Sanguinolaria rubroradiata Con. Coll. Nuttall.” On the back is the following, “Sanguinolaria rubroradiata Con. I doubt whether this is the rubor of Conr. V his figure. It is at any rate = Psammobia lilacina Cpr. MSS. U. Cal. P.P.C.” [pencilled note by Cpr. and initialled by his monogram].

The enlarged photographs included here (pl. 16, figs. 3–5) were made through the courtesy of the British Museum. The writer chose one specimen as the lectotype of P. rubroradiata Carpenter. It is conspecific with Gari californica (Conrad).

Lectotype.—British Museum (Natural History), 61.5.20.88

Distribution.—California (type). Same as P. californica Conrad.

Gari (Gobraeus) regularis (Carpenter)

(Pl. 15, figs. 1–6)


Psammobia (Gobraeus) regularis (Carpenter), Dall, 1898, Acad. Nat. Sci. Philadelphia, Proc., vol. 50, p. 57; Dall, 1921, p. 49; Oldroyd, 1924, p. 184

Gari (Gobraeus) regularis (Carpenter), Keen, 1937, p. 20; Burch, 1945, no. 43, p. 21; 1945, no. 45, p. 17

A copy of the original description of this species is given in Oldroyd. The species was described from Cape St. Lucas. Dall (1921) extended the range to San Diego, California.
Burch does not report the species from the coast of the State of California. The type is figured in this report because of the possible extension into the California fauna.

Holotype.—U. S. National Museum, no. 19407 (one double shell)

Distribution.—Cape St. Lucas, Lower California, Xantus ("legit.") (type); San Diego, California, to Cape St. Lucas, Lower California (Dall).

Genus Tagelus Gray, 1847


Tagelus politus Carpenter

Solecurtus politus Carpenter, 1857, Cat. Mazatlan Shells, p. 27


Tagelus californianus Conrad, Smith, 1944, Panamic Marine Shells, p. 64 T. politus considered young of T. californianus Conrad

This species was described from Mazatlan by Carpenter. The type should be, therefore, in the Mazatlan Collection at the British Museum (Natural History). The illustration of the type would be properly with the figuring of that collection. The species is included herein because the range of the species has been described as extending north to the Santa Barbara region (Keen, 1937). Burch (1945, no. 43, p. 23) enumerated the problems involved in the questionable identifications of the species.

Family Solenidae

Genus Solen Linnaeus, 1758


Bucquoy, Dantzenberg, and Dollfus (1893, fasc. XXII, p. 498) pointed out that the Solen vagina of Linnaeus was a mixture of a European species (later named S. marginatusPennant, 1774) and an Indian species. The Linnaean reference in Rumphiuss is to a shell abruptly truncated anteriorly and rounded posteriorly. Authors such as Wood (1835, p. 210), although calling the European form S. vagina, admitted that the Linnaean references are to the Indian form [S. vagina Linn.]. Recent. East Indies. Sowerby in Reeve, 1874, Conch. Icon., vol. 19, Solen, pl. II, fig. 6 as S. brevis Gray. (Habitat probably not American as given.)

Solen rosaceus Carpenter


47 The reference to Schmacher given by authors as type designator is not valid. Although no designation was made, a single species, S. vagina Linn., was listed, so that the generic status remains the same as in the case of the Children designation.
"Solen ? var rosacea. Straight, narrower, longer, smaller, glossy, rosy." [Carpenter, 1864b, p. 638]

"S. testa S. sicario simili, sed minore; multo augustiore, elongata, recta, extus et intus rosacea; epidermide tenui, valde nitente. Long. .27, lat. .5, alt. .32 poll."

"Hab. Sta. Barbara (Jeffrey); S. Pedro (Cooper)." [Carpenter 1865h, p. 177]

The type of this species has not been found. It was never figured, and Weymouth (1920) and Finch (1933) seem to be the only ones who have presented a figure of the species. The type is not in the British Museum (Natural History) (G. L. Wilkins, May 22, 1950, personal communication) as stated by Oldroyd.

Through the kindness of William K. Emerson of the Museum of Paleontology at the University of California, a specimen of Solen rosaceus loc. "no. 42" from their early collections was examined and photographed. This specimen was a fossil embedded in fine hardened sand probably lower Pleistocene. The original description described the species as "glossy, rosy" and "epidermide tenui"; therefore, the types would have to have been Recent shells. Because the specimen which was photographed by Emerson could not be a type, the illustration is not included herein.

**Types.—Not found**

**Distribution.—**Recent. Santa Barbara or San Pedro, California (type); Humboldt Bay, California, to Mazatlan, Gulf of California (Finch). Pleistocene. Pliocene. Miocene. (See Grant and Gale, 1931.)

**Family Mactridae**

**Genus Darina** Gray, 1853


Type species by monotypy *D. solenoides* [King], 1831, Zool. Jour., vol. V, p. 335 as *Erycia*. Recurr. Straits of Magellan. Gray, Griffith and Pidgeon (Cuvier), 1834, Animal Kingdom, pl. 22, fig. 1 as Mesodesma; H. and A. Adams, 1858, Gen. Rec. Moll., III, pl. Cl, fig. 2, 2a; Lamy, 1914, Jour. de Conchyl., vol. LXII, p. 28, 29, fig. of hinge

**Darina declivis** Carpenter (Pl. 14, figs. 1, 1A)


"D. tenuissima, planata, elliptica, Machaeraceaformi, utroque latere hiante; cinerea, epidermide fortiori induta; marginibus regulariter excurratis; umbonibus haud conspicuis, ad duas inter quinque partes longitudinis postice sitis: intus cartilagine spathula elongata, dorsum versus utroque valva decliviter sita, a ligamento lamina extante tenuissima separata; dente cardinali laminato, extante, curtior; lateralibus vagina conspicuis; sinu pallii ovali, fere ad medium porrecto.

"Long. 1.77, lat. .85, alt. .34 poll.

"Hab. Vancouver's Island (Forbes).

"The only other species of Darina known is from the Straits of Magellan [sic]. The northern shell may have been passed over as the young of Machaera patula, to which it bears a strong external resemblance." [Carpenter, 1865a, p. 203]

The holotype of this species consists of one double specimen in the Redpath Museum at McGill University. The specimen is mounted on an original Carpenter glass mount with a Carpenter label of "(unique type) Vancouver Dr. Forbes."

There is no doubt of the authenticity of the holotype, but there is uncertainty as to the proper locality of the shell.

Carpenter brought out the fact of the unique distribution of the species but did not question that the shell came from Vancouver. The species has not been reported from the Northwest since the original citation, and Dall doubted the correctness of the original label, now that the shell is illustrated perhaps collectors may note its proper locale.

**Holotype.—**Redpath Museum, no. 101

**Distribution.—**"Vancouver Isl," British Columbia (type)
Family Myacidae (Myidae)
Genus Sphenia Turton, 1822

Sphenia Turton, 1822, Conch. insul. Brit., p. 36

Sphenia fragilis Carpenter

Sphenia fragilis Carpenter, 1857, Cat. Mazatlan Shells, p. 24; Dall, 1921, p. 53; Oldroyd, 1924b, p. 200; Burch, 1945, no. 44, p. 27; 1945, no. 45, p. 19

This species was described by Carpenter in his Mazatlan Catalogue. Since the illustration of the species properly belongs in that unit, a figure of the species has not been sought for this report. The type material consists of numerous specimens in the British Museum. Many specimens of the first duplicate set of this species are in the Mazatlan Collection in Albany, New York (Palmer, 1951, p. 13).

Dall (1921) reported the range of the species from Oregon to Mazatlan. Oldroyd (1924) stated that the distribution extended to Vancouver Island, but Keen (1937 and Burch (1945) agreed with Dall (1921) as to the northern range.

Sphenia ovoidea Carpenter

(Pl. 15, figs. 7-10)


"Sphenia ovoidea, n.s. Siphonal area small; front excurved; mantle-bend large." [Carpenter, 1864b, p. 637]

A copy of the description (1865c) was given by Oldroyd. The following lines which complete that description should be added:

"Hab. In sinu Pugetiano specimen unicum piscavit Kennerley.
“A Sph. ? Binghami ‘Searles Wood Crag, vix differt.’ [Carpenter, 1865c, p. 54]

The holotype is mounted on the original Carpenter glass mount with Carpenter label, "Type 4552." No locality is on the glass, but the label with the specimen states, "Puget Sound Kennerly [sic]." There is an additional vial in the same box with fragments.

Holotype.—U. S. National Museum, no. 4552

Distribution.—Puget Sound, Washington (type); Aleutian Islands to Puget Sound, Washington, and San Diego, California (Dall). Although Oldroyd (1924a, p. 62) included S. fragilis Carpenter in the fauna of Puget Sound she did not mention S. ovoidea Carpenter, the type locality of which is that area.

Family Corbulidae

Genus Corbula Bruguère, 1797.48

(Aloides Mergerle von Mühlfeld, 1811)


Type species by subsequent designation, Schmidt, 1818, Versuch. Einricht. Conchyl.-Sammrl., p. 77, 177, Corbula sulcata Lamarck, 1801, Syst. An. sans Vert., p. 137 for Corbula LAMARCK, 1801 = Bruguère, 1797; C. sulcata Lamarck, Bruguère, 1797, pl. 230, fig. 1, a, b, c (not named). Recent. Senegal. Reeve, 1843, Conch. Icon., vol. 2, Corbula, pl. 1, fig. 2

48 See Sherborn and Woodward (1906, p. 577-582) for correct dates of parts of Bruguère (1797)
For reference data of *Corbula*, see Gardiner (1926, 1928), Stewart (1930), Winckworth (1930) Grant and Gale (1931), and Vokes (1945). The settlement as to author and type species is now based on decisions made by the International Commission on Zoological Nomenclature, 1948 (Bull. Zool. Nomen., vol. 4, pts. 7–9, p. 159–160, 346; pts. 10–12, p. 255, 1950).


The specimens described under this name from the Cuming Collection and Jewett Collection were later identified by Carpenter (1863, p. 31; 1864b, p. 534, 553) as the same as *C. bireadiata* Sowerby. Carpenter (1863, p. 31) corrected Jewett’s locality label of “Santa Barbara,” and suggested that the specimens probably came from “Panama or Acapulco.” The name may be deleted from the list of specific names, and the record of an occurrence of such a *Corbula* from the upper California waters may be eliminated.

**Subgenus Lentidium** Cristofori and Jan, 1832

(*Corbulomya* Nyst, 1845)


The exact status of the genus (Vokes, 1945) or subgenus (Grant and Gale, 1931) is still indefinite, for there is doubt concerning the species of Cristofori and Jan. Vokes (1945, p. 23) made a new subfamily to include the genus. He figured the type species.

**Corbula (Lentidium) luteola** Carpenter

(Pl. 15, figs. 13–18)


*Corbula (Lentidium) lutecola* (Carpenter), Grant and Gale, 1931, p. 421, pl. 19, figs. 2, 7; Baily, 1935, West Coast Shells, (Keep), p. 119; Durham, 1950, Geol. Soc. Amer., Mem. 43, p. 94, pl. 25, figs. 15–16

*Aloides (Lentidium) luteola* (Carpenter), Keen, 1937, p. 18; Burch, 1945, no. 44, p. 28; 1943, no. 45, p. 19

"*Corbula lutecola*, n.s. S. Pedro—S. Diego; common near shore." [Carpenter, 1864b, p. 611]

"*Corbula lutecola*, n.s. Shape of young *bireadiata*; small, ashy yellow. Com. *Cp." [Carpenter, 1864b, p. 637]

The description by Carpenter of 1866 has been copied by Oldroyd, but by oversight she did not give the reference to the description. To the copy published by Oldroyd (1924) should be added the concluding line:

"Hab.—San Diego, San Pedro, 50, alive at low water." [Carpenter, 1866a, p. 207]

Line 3, read "definito" for "definito."

Carpenter listed the type material as "State Collection, no. 587." This number refers to
J. G. Cooper’s collection for the State Geological Survey of California (1864c, p. 155). The type material in the U. S. National Museum consists of eight specimens which bear a label, “San Pedro. Cooper” and on the back of the label, “15668 Cp 581.” The number appears to be Cp 581, but it probably should be “Cp 587,” the original number published by Carpenter.

Arnold’s (1903) figure does not represent this species. Perhaps the drawing was not well executed. At least it should not be used for identification.

*Syntypes.—U. S. National Museum no. 14897 (eight valves)*

*Distribution.—Recent. San Pedro, California (type); Monterey, California, to Magdalena Bay, Lower California (Dall). Pleistocene. California (Cooper; Arnold; Grant and Gale; Willett, 1937); Mexico (Jordan, 1926; Hertlein, 1934); Lower California (Durham, 1950). Upper Miocene. California (Grant and Gale)*

**Family Pholadidae**

*Genus Martesia* (Leach) Sowerby, 1824


*Martesia intercalata* Carpenter


This species was originally described from the Reigen Mazatlan Collection but it was later reported from the Farallon Islands by Carpenter (1864b, p. 628, 637). The illustration of the type belongs in the work on the figuring of the Mazatlan Catalogue. Turner included in her monograph of the Pholadidae, part II, an illustration of Carpenter’s drawing of the type shells in Hanley’s collection.

**Class SCAPHIOPODA**

**Family Dentaliidae**

*Genus Dentalium* Linnaeus, 175810

*Dentalium* LINNAEUS, 1758, Syst. Natura, 10th ed., p. 785


*Subgenus Rhabdus* PILSBRY AND SHARP, 1897

*Rhabdus* PILSBRY AND SHARP, 1897, Man. Conch., ser. 1, vol. 17, p. 112

Type species by original designation, *D. rectus* CARPENTER, 1864b, p. 648; 1865e, p. 59. Recent. Alaska to Panama Bay, pl. 17, figs. 1, 2

*Dentalium (Rhabdus) rectus* Carpenter

(Pl. 17, figs. 1, 2)


fig. 3; Grant and Gale, 1931, p. 437; Keen, 1937, p. 35; Burch, 1945, no. 46, p. 9, 13, pl. 1, figs. 19, 21; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, p. 178.

Dentalium (Rhabdos) rectius (Carpenter), Pilsbry and Sharp, 1897, Man. Conch., vol. XVII, p. 112, 113, pl. 21, fig. 45

"Dentalium rectius, n.s. Long, thin, slightly curved: like eburneum, Singapore." [Carpenter, 1864b, p. 648]

Carpenter’s description (1865c) of this species and supplementary notes by Pilsbry and Sharp, were republished by Oldroyd (1927). To Oldroyd’s copy the following lines should be added to complete the Carpenter description:

“Hab.—In sinu Pugetiano legit Kennerley.

"Varina D. eburneo, Singaporensi convenit; sed annulis falacibus caren, textura valde diffrirt." [Carpenter, 1865e, p. 59]

Holotype.—U. S. National Museum, no. 5283

Distribution.—Puget Sound, Washington (type); Stephens Passage, Alaska, to Panama Bay (Dall). See Table 2 for stratigraphic distribution.

Family Siphonodentaliidae

Genus Cadulus Philippi, 1844

Cadulus nitentior Arnold, 1897-1898, Man. Conch., vol. XVII, p. 142, 150, pl. 32, figs. 40-41


Cadulus nitentior Arnold

Cadulus nitentior Carpenter ms.

Cadulus nitentior “Carpenter ms.,” Arnold, 1903, p. 187, pl. VIII, fig. 15; ? Berry, 1907, Nautilus, vol. 21, no. 2, p. 22; Gripp, 1909, Nautilus, vol. 22, no. 12, p. 137, ms. name fide Berry (June 1950, personal communication) determination by Dall

“Cadulus nitentior Carpenter, ms. in Arnold, 1903”, Pilsbry, 1904, Nautilus, vol. 17, no. 9, p. 108 serpulid annelid

The name Cadulus nitentior has been used in literature as of Carpenter. The name, however, was a manuscript label of Carpenter which was used by Dall in determination of specimens (Berry, 1907; Gripp, 1909). Carpenter did not mention the species in his writings. There is a specimen in the Redpath Museum with a label, “Cadulus nitentior Cpr. Ms. Catalina Isl. 30 fm.” The label also has a printed form, “From the Smithsonian Institution, Washington, D. C.” This specimen is a Cadulus.

The name has valid status from Arnold (1903), and authorship should be attributed to Arnold only. The holotype would be the specimen figured by Arnold (1903, pl. 8, fig. 15) from the Pleistocene, “Lower San Pedro series” [San Pedro sand], Deadman Island, California.

One specimen, U. S. National Museum (no. 23729) (Harald Rehder, U. S. National Museum, Aug. 2, 1950, personal communication) is labelled “Cadulus nitentior Carpenter Ms. from 30 fathoms off Catalina Island, collected by Cooper.” in Carpenter’s handwriting. The entry in the U. S. National Museum catalogue was in 1871. This is probably the specimen with which Dall compared, and by which he identified material for correspondents. This specimen has no status in a type category, for Arnold in validating the specific name used a Pleistocene shell.

Cadulus quadrifissatus Pilsbry and Sharp

Siphonodentalium 4-fissatum Carpenter, ms. “label in Smithsonian Institution Collection” Pilsbry and Sharp, 1897, Man. Conch., vol. XVII, p. 131

Cadulus quadrifissatus (Carpenter), Pilsbry and Sharp, 1897-1898, Man. Conch., vol. XVII, p. 150, pl. 29, figs. 10-13

Pilsbry and Sharp described this species from Henry Hemphill material collected at San Diego, California. They used Carpenter’s manuscript name which Carpenter had attached to
material from San Pedro, collected by Cooper and deposited in the Smithsonian (U. S. National Museum, no. 19462).

As a courtesy to Carpenter, Pilsbry and Sharp credited the specific name to Carpenter. However, the name with Carpenter as author is a nomen nudum. The description and figures were first published by Pilsbry and Sharp who used the San Diego specimen in the Academy of Sciences of Philadelphia as the holotype.

The form is referred to here, not because of a Carpenter specific name or type but merely to present all pertinent data in connection with Carpenter names and clarify the status of the same. Synonymy is not intended to be complete.

Class GASTROPODA
Family Fissurellidae

Genus Puncturella Lowe, 1827


Type species by original designation, Patella noachina LINNAEUS, 1771, Mantissa Plantarum, p. 551. Living. Franz Josef Land, Arctic Ocean, to northern England, from Norway to Spain; Greenland south to Cape Cod. Farfanste, 1947, Johnsonia, vol. 2, no. 24, p. 138, pls. 60, 61

Puncturella cooperi Carpenter

(Pl. 18, figs. 16, 17)


“Outside like galeata, but without props to the lamina. 30-120 fm. not r. Cpr.” [Carpenter, 1864b, p. 651]

“—State Collection no. 1029.

“P. t. "P. galeatae," fere exacte simulante; sed lamina interna solida, planata, haud anti-

lace sinuata, haud suffulta."

“Long. 0.30, lat. 0.21, alt. 0.24, div. 70°.

"Hab. Catalina Island, not rare, 40 to 20 fms. Cooper, alive.

“Outside like P. noachina; but with the lamina like P. cucullata, without eye-holes. The latter species is extremely variable in sculpture, but never so fine as this; and the shape is less conical.” [Carpenter, 1866a, p. 214]

The holotype is labelled “Type Catalina Is. Cal. Cooper.” It has been heretofore unfigured.

Holotype.—U. S. National Museum, no. 11848

Distribution.—Recent. Catalina Island, California (type); Kasaan Bay, Alaska, to Santa Rosa Island, California (Dall), See Table 2 for stratigraphic distribution.

Genus Diodora Gray, 1821

(Diodora Gray, 1847)


Diodora murina (Arnold) 1903

Diodora (Glyphis) murina “Cpr.” Dall in Orcutt, 1886, U. S. Nat. Mus., Proc., vol. 8, p. 543 nomen nudum

Fissuridea murina (Carpenter) Dall, Williamson, 1892, U. S. Nat. Mus., Proc., vol. 15, p. 197 nomen nudum, see note by Dall concerning equivalence; Arnold, 1903, p. 339 de-
This species did not have a valid description until Arnold's in 1903, as pointed out by A. Myra Keen (in Burch).

The species is included herein for completeness as to Carpenter manuscript or valid scientific names. A full discussion of the form is not intended.

**Genus Lucapinella** Pilsbry, 1890

Lucapinella Pilsbry, 1890, Man. Conch., vol. XII, p. 179, 195
Type species by original designation, "Clypidella callomarginata" Carpenter, [Dall] 1871, Amer. Jour. Conch., vol. VII, p. 133, pl. 15, fig. 8
Clypidella callomarginata (Dall), Williamson, 1892, U. S. Nat. Mus., Proc., vol. 15, p. 198; Dall, 1921, p. 185; Oldroyd, 1927, vol. II, pt. III, p. 244, pl. 85, fig. 6; Keen, 1937, p. 38; Grant and Gale, 1931, p. 849; Burch, 1946, no. 60, p. 25


This species was a manuscript name, used by Cooper (1867) and described by Dall. The holotype is in the U. S. National Museum and was figured by Dall (1871). Reference to the name is included herein to save confusion in regard to Carpenter names. The synonymy and discussion is not intended to be complete.

Isabel Perez Farfante (1946, p. 23, fig. 406) recorded the species from Mayaguez, Puerto Rico, Playo Maldonado, Uruguay, and Boca del Rio Negro, Argentina (specimens U. S. National Museum and Museum of Comparative Zoology).

**Genus Fissurella** Bruguère, 1789

Fissurella volcano Reeve, (Pl. 18, fig. 19)

"Fissurella ornata" Nuttall MS." Carpenter
Fissurella volcano Reeve, 1849, Conch. Icon., vol. 6, Fissurella, pl. IV, fig. 2; Pilsbry, 1890, Man. Conch., vol. XI, p. 156


Carpenter (1856 [1857]) utilized a manuscript name of Nuttall, *F. ornata*. In 1864 he considered that the form was synonymous with *F. volcano* Reeve, and workers have continued to assign it as *F. volcano* Reeve.

Through G. L. Wilkins a photograph of the Nuttall specimen in the British Museum was furnished by that institution. Wilkins sent the notes of the label, which is with the specimen. He questioned it as the type, but it is the only specimen available which might qualify. (See explanation pl. 18, fig. 19.)
Family Acmaeidae

Genus Acmaea\(^5\) Eschscholtz (1830), 1833


For discussion of West Coast species of this genus see Test (1946).

Acmaea atrata Carpenter


Collisella atrata (Carpenter), Dall, 1871, Amer. Jour. Conch., vol. VI, p. 255, pl. 14, figs. 15, 15a

The three syntypes of this species are in the U. S. National Museum. They were figured by Pilsbry (1891). The type locality is Cape San Lucas; therefore, the details regarding the form are reserved for the report on the Carpenter types of that area. Burch (1946, no. 57, p. 15) recorded identifications of the species by Dall and Eyerdam in the California fauna. Test (1946) does not acknowledge the existence of the species on the California coast.

Syntypes.—U. S. National Museum, no. 4019

Distribution.—Cape San Lucas, Lower California (type); Santa Monica, San Pedro, California (Burch; Eyerdam, 1938; not in Test)

“Acmaea [fenestrata] cribaria” Carpenter


Acmaea cribaria Gld. ms. Carpenter, Pilsbry, 1921, Nautilus, vol. 36, p. 71 nomen nudum Acmaea cribaria Carpenter, Keen, 1937, p. 28


“A. patina, var. d., is internally almost always dark in the spectrum, with white sides. But sometimes there are concentric zones of dark, alternating with the white, in which state it is the ‘A. cribaria,’ Gld., ms., a very worn specimen of which was ‘purchased at the Sandwich Islands’ by the omnivorous naturalists of the United States Exploring Expedition. Sometimes the spectrum is well defined, nearly black; and the sides are dark brown. The intermediate forms and shades between the vars. Cumingii and Piniadina are very common. Sometimes the marginal edge grows light, with a dark belt inside; or the dark becomes more or less spotted.” [Carpenter, 1866c, p. 335]

The original data on this species are in an unsatisfactory state. The holotype is not available, and no definite type locality can be known. Carpenter intimated in the above discussion that the shell was from the West Coast. Carpenter first listed the species from “Columbia


\(^51\) Menke (1846, p. 70-74) full title, discussion; p. 74 on Acmaea Eschscholtz. Further discussion with species enumerated, Philippi (1846, p. 106-108)
River, San Francisco, De Fuca" (1857b, p. 211) and "Oregon and Upper California" (1857b, p. 319). There seems to be no doubt that the West Coast is its proper habitat.

The few remarks by Carpenter accompanying the name (1866c, p. 335) make a dubious valid description. Pilsbry regarded the name as a nomen nudum, which seems a legitimate deduction. Carpenter, therefore, is not the valid author of the name. No subsequent author has described the subspecies or species. The description published by Oldroyd as of "cribraria" was that for A. patina mut. fenestrata "Nutt."

If Test regarded the subspecies as biologically sound it would be appropriate for Test (ms. thesis, ms. Univ. California) to publish her description of the form designating a holotype and type locality. It would then date from such a description and author. Test (1946) referred the subspecies to Gould as author.

Type.—Not found

*Distribution.*—"Purchased at the Sandwich Isls." (Gould in Carpenter, 1866a) West Coast, United States (type); Alaska, Aleutian Islands, south to Cayucos, California (Burch)

**Acmaea funiculata** (Carpenter)

(Pl. 17, figs. 24, 25)


*Scurrria mitra tenuisculpta* Carpenter, 1866, Amer. Jour. Conch., vol. II, p. 346. See additional synonymy and notes under separate heading


"With rounded riblets, somewhat nodulous." [Carpenter, 1864b, p. 630]

Hanna and Smith have presented a thorough discussion with pertinent data on and illustration of the species and with copies of the various early descriptions of the species. Those descriptions are not repeated here.

The holotype is figured for the first time herein. The apex of the holotype is worn, but the radiating ribs, of which there are about 36, are strong. There are no secondary ribs, but the primaries, as well as the interspaces, are irregular in size.

Dall placed the variety named by Carpenter *tenuisculpta* (1866) as the same as *funiculata*. Marshall (in Hanna and Smith, 1931, p. 23), after comparing the types of both, agreed with Dall's consolidation. Test (1946) did not indicate *A. funiculata* as a distinct species. Burch (1946, no. 57, p. 6, 7) gave it as a separate form.

The type of this species was catalogued in the Smithsonian Institution (U. S. National Museum) by Carpenter as "Scurrria funiculata type." The specimen has a label, "Monterey Cooper". A note on the label, probably made by Dall, reads, "extreme var. of mitra?"

Holotype.—U. S. National Museum, no. 14799 (*A. funiculata*), no. 15490 (var. *A. tenuisculpta* "Carpenter")

*Distribution.*—Recent. Monterey, California (type, *A. funiculata*). Shumagin Islands, Alaska, to Magdalena Bay, Lower California (Dall); (not of Test, 1946). Pleistocene. California (Woodring, Bramlette, and Kew)

**Acmaea limatula** Carpenter


Pleistocene; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, p. 199; Abbott, 1954, p. 102, pl. 18, fig. 0

“Var. limatula of [A. scabra], sculpture stronger, border black: perhaps = Maz. Cat. no. 265.” [Carpenter, 1864b, p. 650]

“A well-marked variety seems to have an admixture of black blood, probably from intermarriage with the negro race of A. patina. With the same sculpture externally, the interior has the broad black margin of A. patina, (var. scutum), and a dark spot in the centre. One specimen is dark all over. Another stout dwarfed shell has a prettily tesselated border, and would (in a mixed collection) be taken for A. cymbiola, Gld., = P. parasitica, D’Orb.—As I have seen no intermediate specimens between the two forms, this may be described as var. limatula, “A. scabra, Nutt,” extus sculpturâ normali; seu int ensioiirulis quibusdam majori- lus, valde nodosis; intus albidâ, nitidâ; limbo lato nigro, seu rarius tesselato; spectro saepius fusco maculato.

“It is probably the Acmaea patina of the Mazatlan Catalogue, sp. 265, but the specimens were too much worn outside to decide with confidence.” [Carpenter, 1866c, p. 340]

Pilsbry (1891) figured “original” specimens of this species from Smithsonian Institution collections as stipulated in the explanation of his illustrations (pl. 3). The specimens of Figures 45 and 46 he stated in the text (p. 14) to be from San Diego. The first and only definite reference by Carpenter to the form was to a San Diego shell (Carpenter, 1864, p. 540). Although the types are not extant, the type locality is San Diego. A lectotype might well be selected from the specimens figured by Pilsbry.

Type.—Not found

Distribution.—Recent. San Diego, California (type). Puget Sound, to Maria Madre Island, Mexico, Gulf of California north to Coronados Islands (Test in Burch); Crescent City, California, to La Paz, Gulf of California (Test 1946). Pleistocene. California (Oldroyd, 1925; Stephens, 1929; Grant and Gale; Woodring, Bramlette, and Kew)

“Acmaea mitra tenuisculpta Dall”

(Pl. 18, figs. 11-13)

See also [under] A. funiculata (Carpenter).


Acmaea mitra tenuisculpta (Carpenter), Dall, 1871, Amer. Jour. Conch., vol. VI, p. 242;


“Acmaea mitra” (Carpenter), Hanna and Smith, 1931, Nautilus, vol. 45, no. 1, p. 23 notes by Marshall on type

This name of Carpenter is represented by 4 syntypes in the U. S. National Museum, no. 15490, labelled “Neeah Bay Swan.” If Dall’s (1871) brief comparison, using Carpenter’s name, with A. mitra be regarded as adequate to validate the name of a form of subspecific worth. Dall must be credited as the author and not Carpenter. Dall’s comments (1871, p. 242) were as follows:

“The striated variety (tennisculpta, Cpr.) [of A. mitra] appears very distinct from the smooth form, but every gradation may be found in a very large series. The unique type of Scuvria t funiculata, Cpr., now before me, differs from the smallest specimen of tennisculpta, only in having the riblets even more prominent, close, and rounded, and being thinner and smaller. . . .”

The types were regarded by Dall and Marshall as equivalent to A. funiculata. The notes concerning the name and specimens are included here in detail for completeness and readiness of reference and not as representing a subspecies.

Syntypes.—U. S. National Museum, no. 15490

Distribution.—Neeah Bay, Washington (type). Same as A. funiculata
Acmaea rosacea Carpenter


Collisella (?) rosacea DALL, 1871, Amer. Jour. Conch., vol. VI, p. 256

—Monterey to San Diego. This shell is named pilocolus Midd., in Mus. Cuming, but does not agree with the diagnoses. It can hardly be distinguished from Herm specimens of A. virginea. It was first brought by Col. Jewett, but referred to Panama. [Carpenter, 1864b, p. 614]

"Pink, small: like Herm specimens of virginea." [Carpenter, 1864b, p. 650]

The following lines should be added to Carpenter’s description (1866) as published by Oldroyd (1927), to make that copy complete:

Delete "poll."

"—div. 100."

"Hab. San Diego, 1 sp. jun. (Palmer): Monterey, I dead sp. Cooper."

"The absence of striae, very thin texture, and regularly conical growth, distinguish this shell from A. patina, a rare variety of which has a pinkish tinge. Specimens in Mus. Cuming are marked 'pilocolus, Midd.,' but do not accord with the diagnosis. It is almost exactly like Herm* specimens of A. virginea. Col. Jewett’s similar shells, marked “Panama” were perhaps West Indian." [Carpenter, 1866a, p. 213]

*A small island in the British channel."

Carpenter repeated (1866c, Oct.) his description (1866a, Feb.) and presented in detail the description of A. pilocolus Middendorf.

Pilsbry described the species and figured the holotype. Dall gave a detailed description based on the holotype. The holotype has a label "San Pedro, Dr. Palmer."

Dimensions.—Holotype, 5 mm. length; 4 mm. width; 2 mm. height.

Holotype.—U. S. National Museum, no. 15273

Distribution.—Recent. San Pedro, California (type); Ketchikan, Alaska, south to Panama (Burch). Pleistocene. Mexico. (Hertlein, 1934)

Acmaea strigatella Carpenter


Acmaea strigillata Carpenter, 1864b, p. 618; Reprint, 1872, p. 104 typographical error for A. strigatella


Acmaea (Patelloidea) persona strigillata Carpenter, Burch, 1946, no. 57, p. 10


The following corrections and lines should be added to the copy of the original description as published by Oldroyd to make the copy complete:

Read 9 for 9.; 74 for 74.; 3 for "3."

"Variat colore hic et illic aurantiaco tincto: strigis omnino tessellatis.

52 Carpenter (1866, Oct., p. 341) gave the same measurements in “poll;” in this case the "poll" would be admissible.
"According to Darwin, this might be regarded as a cross between the northern forms \emph{A. pelta} and \emph{A. patina}, about to change into the Gulf species, \emph{A. nicoleuca}. The dark variety resembles \emph{A. cantharus}, but the very delicate crowded striae will distinguish it when not abraded." [Carpenter, 1864a, p. 474]

Pilsbry presented a detailed description and illustration of the type which is in the U. S. National Museum. Burch (1946) has analyzed clearly and correctly the confusion in the names of \emph{strigatella} and \emph{strigillata}. The use of \emph{strigillata} by Carpenter (1864b) is easily dispensed with because it is a typographical error. Carpenter gave a description (1866c) using a manuscript name of Nuttall. He defined it as a variety of \emph{A. patina} and differentiated it from \emph{A. strigatella} of the Lower Californian fauna.

The form \emph{A. patina strigillata} "Nuttall," Carpenter is ambiguous as to type and type locality. Carpenter (1866c) intimated that it was from California or Vancouver. It is in part the \emph{A. persona strigillata} of Dall (1921), but until the type locality and type are defined a precise distribution is not authentic. The type has not been found.

The first use of \emph{A. strigillata} was a typographical error, hence a \emph{nomen nudum}, and therefore does not preoccupy the name as stated by Burch (homonym).

Burch's suggestion that \emph{A. persona (= A. persona strigillata "Nuttall" Carpenter)} is the northern form and \emph{A. persona strigatella} the southern seems feasible.

\textit{Holotype.}—U. S. National Museum, no. 19594 (\emph{A. strigatella})

\textit{Distribution.}—Cape San Lucas, Lower California (type); Monterey, California, to Lower California (Burch). Not included as California species by Test (1946).

\textit{Acmaea strigillata Nuttall} Carpenter

\textit{"Patella strigillata Nutt. ms. Jay's Cat. no. 2881."} Carpenter, 1856, Zool. Soc. London, Proc., p. 221 under \emph{A. pelta} pars; Carpenter, 1866, Amer. Jour. Conch., vol. II, p. 334, 337 P. \emph{strigillata} Nutt., pars under \emph{A. patina} not p. 332 under \emph{A. pelta}. Not \emph{Acmaea strigillata} Carpenter, 1864b, p. 618; Reprint, 1872, p. 104 error for \emph{A. strigatella}

\emph{Acmaea patina} var. \emph{strigillata} Carpenter, Burch, 1946, no. 57, p. 10

"Var. \emph{b. strigillata} [of \emph{A. patina}]: (= \emph{A. strigillata}, Nutt., pars = \emph{A. pelta} jun.) Part of the shells thus grouped by Gould, 'marginal rim narrower', may also be \emph{A. pelta}, jun. The colors run into stripes, radiating bifurcating. Under ordinary circumstances, this variety is not so elevated as \emph{A. pelta}; has not its faint, swelling ribs; but displays, instead, the typical, sharp, distant striae; and has a wider margin: but young shells with the outside abraded, are very difficult to determine or to separate from \emph{A. strigatella} of Cape St. Lucas; q. v. in Ann. Nat. Hist." [Carpenter, 1866c, p. 334]

For an analysis of the history of this name see also \emph{Acmaea strigatella} Carpenter. Jay (1852, p. 102, no. 2881) indicated the locality as "Upper California," for Nuttall's shell.

The type of this species has not been found. It is not at the British Museum Natural History (G. L. Wilkins, Oct. 17, 1950, personal communication) where some of Nuttall's material is preserved.

\textit{Subgenus Collisella} Dall, 1871

\emph{Collisella} Dall, 1871, Amer. Jour. Conch., vol. VI, p. 245


\emph{Acmaea} (\emph{Collisella}) \emph{triangularis} (Carpenter)

(Pl. 18, fig 18)

\emph{Nacella} (? \emph{paleacea}, var.) \emph{triangularis} Carpenter, 1864b, p. 612, 650; Reprint, 1872, p. 98, 136; 1866, California Acad. Sci., Proc., vol. III, p. 213; \textit{Keep}, 1887, West Coast Shells, p. 104


\emph{Acmaea} (\emph{Collisella}) ? \emph{triangularis} (Carpenter), \textit{Dall}, 1871, Amer. Jour. Conch., vol. VI, p. 254


Acmaea (Collisella) triangularis (Carpenter), Burch, 1946, no. 56, p. 35, no. 57, p. 5 per Test, p. 13


The following lines should be added to the copy of Carpenter's description (1866a) as published by Oldroyd (1927) to make that copy complete:

"—alt. 0.18, div. 90°.
"Hab. Monterey, 4 dredged dead. Cooper.

Probably a distinct species. The solitary shell sent by Dr. Cooper is shaped like a right-angled triangle, with five large brown spots near the base." [Carpenter, 1866a, p. 213]

Dall (1871) discussed this species in detail and introduced a manuscript varietal name casta of Carpenter. PILSBRY (1891) illustrated the holotype of each name. The specimen illustrated is not available. Therefore, the specimen labeled "type" in the Redpath Museum is logically eligible as lectotype. Neither author regarded the varietal name as necessary.

There are in the Redpath Museum 14 specimens with an original label, "Nacella casta Cpr. (var. = triangularis) type Monterey." There is a note with the specimen, "I think this series of specimens prove that they all belong to one species. I have two specimens (not worn) that are perfectly white. It is obvious then the name 'depicta' [Hinds] is not appropriate; nor is the name 'triangularis' unless it refers to the profile of the shell. C. A. CANFIELD MONTEREY NOV. 5, 1867."

One of the above shells is figured herein. Some of the shells are white, others are marked like the illustrated shell. All the specimens have a conspicuous brown spot just below the apex. Some have brown radiating spots over the surface. One individual has 5 spots on the posterior end. The external margins are all white with the marks above. A few specimens have a pinkish interior.

The type of A. triangularis was figured by PILSBRY (1891).

Syntypes.—U. S. National Museum, no. 14802 (A. triangularis); Redpath Museum, no. 2370 (casta Carpenter ms.).

Distribution.—Monterey, California (type); Sitka, Alaska, to the Gulf of California, on sea grasses (DALL); Monterey, California, on calcareous alga Amphiroa tuberculosa Decaisne (Clace in Burch; Smith and Gordon).

"Acmaea monticola (monticula)"


Acmaea (Collisella) pelta (Eschscholtz), Burch, 1946, no. 56, p. 34; no. 57, p. 10 monticola regarded as variant.


A. "monticola" ("monticula") is certainly a nomen nudum (or nomina nuda), because no description was given by Carpenter or Dall. The name has been credited to both authors. The only remark Carpenter made concerning the form (1866c) is, "In its [pelta] early adolescence, irregular decorticated shells are the A. monticola of Nutt. MS." That is not an adequate description. Dall (1921, p. 169) referred to the above reference of Carpenter, and
hence his name is no more valid than the initial remarks. There is also a confusion in the spelling which makes further confusion in the use of the name.

No types exist for the name. If it is to acquire proper status it must be described by some author subsequent to those already credited. It is assumed by workers to be synonymous with \textit{A. pelta}.

\textit{"Patella (\textit{?} toreuma) tenuilirata"} Carpenter

\textit{Patella (\textit{?} toreuma) tenuilirata} Carpenter, 1855, p. 233; 1857b, p. 288; \textit{Pilsbry}, 1891, p. 233 was described as from "Monterey."

Tomlin, (1925, p. 121) identified the syntypes of the species, which are in the British Museum, as "\textit{Cellana radians} Gmelin, the common New Zealand limpet" (Powell, 1937, pl. 1, fig. 10; \textit{Pl.} 1, fig. 10). The name can, therefore, be authentically eliminated from the list of California species.

\textbf{Family Lepetidae}

\textbf{Genus Lepeta} Gray, 1847


\textbf{Subgenus Cryptobranchia} Middendorff, 1851


\textbf{Lepeta} (\textit{Cryptobranchia}) caecoides (Carpenter)

(\textit{Pl.} 18, figs. 14, 15)


\textit{Lepeta} (\textit{Cryptobranchia}) caecoides (Carpenter), \textit{Burch}, 1946, no. 57, p. 5

"Like caeca, but apex turned back. Farallone Is. teste R. D. Darbishire." \textit{[Carpenter, 1864b, p. 651]}

The following lines should be added to the copy of Carpenter’s description (1865) in \textit{Oldroyd} (1927) to make the copy complete:

\textit{... div. 90°.}  
\textit{"Hab. Specimina juniora perpauca viventia in sinu Pugetiano piscavit Kenmerley: ex insulis Farallonibus adulta affertur, teste Darbishire."} \textit{[Carpenter, 1856e, p. 60]}

"The first perfect specimen of this shell was dredged by Dr. Kenmerley; a larger, broken shell, received before by Mr. R. D. Darbishire from the Farrowlones Islands, having been passed over as \textit{Scuiria mitra}. A number of small, but beautifully perfect specimens have lately been sent to the Smithsonian Institute from Sitcha. They are thin; white, tinged with greenish at the margin, and often with pink within; and very delicately sculptured. It is known at once from all the \textit{Asmaeae} by its semitransparent texture and white color; and from the young of \textit{Scuiria mitra} by its broad, flat shape, obtuse apex, and excurved posterior
profile. The striulae are more or less expressed, more or less distant, and rarely slightly granular; they are always most developed on the back, and subobsolete in front. The genus (as described by Forbes) is curiously like an *Emarginula* without a slit. The Sitcha specimens range to long .57, lat. .48, alt. .2. In color, sculpture, etc., it exactly resembles *L. cacea*; but that species, as dredged off Norway, by M'Andrew and as represented in the Cumingian collection, is conical, while *caecoides* is Ancyloid. Messrs. Adams figure *Prolithium ancyloide*, Forbes and Hanl., under the name of *Leptea cacea*; but the examples above quoted are widely different. My most reliable friend Mr. Arthur Adams, collected specimens both of *caecoides* and *cacea* in the Japanese waters. The shells collected by Dr. Stimpson in the North Pacific Exploring Expedition (Hakodati and Arctic Ocean) were marked *Leptea cacea, var. concentrica* Midd., by Dr. Gould: Smiths. Cab. no. 1718 *"* [Carpenter, 1866b, p. 347]

The holotype has a printed label, "Type Puget Sound Kennerley."

**Holotype.**—U. S. National Museum, no. 11849

**Distribution.**—Puget Sound (type); Arctic and Bering Seas to Hokodati, Japan, the Aleutian Islands, and south to the Farallon Islands, California (Dall); 10–30 fathoms (Willetts).

**Family TROCHIDAE**

**Genus Margarites** Leach in Gray, 1847


*Eumargarita Fischer, 1885. Man. de Conchylol., p. 825, pl. X, fig. 7 M. helicina (Fabricius)*


**Margarites lacunatus** (Carpenter)

(Plate 17, figs. 22, 23)


*Margarites lacunatus* (Carpenter), Keen, 1937, p. 39; Burch, 1946, no. 58, p. 9.

"Very small, nearly smooth, umbilicus hemmed-in by swelling of columella." [Carpenter, 1864, p. 653]

The following line should be added to the copy of Carpenter’s description (1864, Dec.) as republished by Oldroyd to make that copy complete:

"*Hab.* Neah Bay (Swan)." [Carpenter, 1864b, p. 425]

The label of the holotype reads, "Type Neah Bay, W.T.J.G. Swan."

**Holotype.**—U. S. National Museum, no. 15535b

**Distribution.**—Neah Bay, Washington (type), Neah Bay, Washington, to San Diego, California (Dall)

**Margarites tenuissculptus** Carpenter


53 Keen (1941, p. 481) did not include this species in the list of species common to Japan and western North America. Tadashige Habe (June 22, 1955, personal communication) stated that this species has not been found since the original discovery.

Margarites teniusculptus (Carpenter), Keen, 1937, p. 39

Margarites (Margarites) teniusculptus (Carpenter), Burch, 1946, no. 58, p. 11

"... Like obsolata, but operic. ribbed." [Carpenter, 1864b, p. 653]

"M. t. ‘M. Vahlii’ forma, colore, et opercula similimia; sed striulis spiralibus, plus minusve obsolitis cincta, quarian IV–VI in spira monstrantur. Long. .22, long. spir. .11, lat. 13, div. 70°"

"Hab.—Puget Sd., Kennerley, Neeah Bay, Swan.

Except in the very faint spiral sculpture, which does not always appear a constant character in Margaritae (v. M. undulata in Fbs. and Haml. Br. Moll.), these shells might stand for M. Vahlii, a ? variety of which was found sparingly by Dr. Kennerley. They are sometimes painted with infrasutural flammules of darker ash. Both the smooth and the striated forms have a prominent spiral rib on the whorls of the operculum." [Carpenter, 1865c, p. 61]

The holotype of this species has not been found. There is a specimen at the Academy of Natural Sciences of Philadelphia, no. 38192, bearing an original label, "Margarites ? var. teniusculpta Smithsonian Neeah Bay." This specimen is pasted on a small piece of cardboard, which in turn is pasted on an A.N.S.P. label. This specimen in lieu of a more authentic original Carpenter specimen might be selected as a neotype.

In early work Dall and Pilsbry considered this species synonymous with M. lirulata Carpenter, but in 1921 Dall listed it as separate from that form.

Holotype.—Not found

Distribution.—Puget Sound or Neeah Bay, Washington (type); Puget Sound, Washing-

Subgenus Pupillaria Dall, 1909


Margarites (Pupillaria) acuticostatus Carpenter


Margarites (Liricularia) acuticostatus (Carpenter), Dall, 1921, p. 180, pl. 18, fig. 5 type; Oldroyd, 1927; vol. 11, pt. III, p. 208


"Small, painting cloued: 3 sharp ribs on spine. 8–20 mm. Cp." [Carpenter, 1864b, p. 653]

The following should be added to the copy of Carpenter’s description (1864 July–Dec.) as republished by Oldroyd (1927) to make that copy complete:

"Hab. Santa Barbara, in kelp-root, 2, dead; Catalina Island, 8–10 fms. 20, some alive; Monterey, 20 fms. 4, dead.

"This shell might be taken for a delicate form of Gibbula parvipecta, which in painting it exactly resembles. It is known from Vancouver M. lirulata by the three sharp keels on the spine, between which are no others intercalating, and by the detailed of sculpture. The patches of color are very variable, sometimes scarcely appearing; and are generally deeper tinted on the keels, giving a false appearance of granulation." [Carpenter, 1864e, p. 158]

The syntypes consist of two specimens labelled, “Catalina Id. Cooper type.” Dall figured (1921) one of the specimens as type. The type locality thus becomes Catalina Island instead of Santa Barbara.

Lectotype.—U. S. National Museum, no. 16280

Distribution.—Catalina Island, California (type); Bodega Bay, to Guadalupe Island, Mexico (Burch)
**Gastropoda**

**Margarites (Pupillaria) funiculatus** (Carpenter)


*Margarites (Lirularia) funiculata* (Carpenter), Dall, 1921, p. 179, pl. 18, fig. 10 type; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 176.


*Margarites funiculatus* Keen, 1937, p. 39; Burch, 1946, no. 58, p. 8

"Shaped like Montagu: with rounded spiral riblets." [Carpenter, 1864b, p. 653]

The following line should be added to the copy of Carpenter's description (1864) as republished by Oldroyd (1927) to make that copy complete:

"Hab. Neeah Bay (Swan), specimen unicum." [Carpenter, 1864d, p. 425]

The holotype was figured by Dall (1921). The specimen measures 6 mm. height and 5 mm. greatest diameter, which is higher than the measurement given by Dall (1921). The label reads, "unique type Neeah Bay, W.I.J.G. Swan."

**Holotype.**—U. S. National Museum, no. 15534b

**Distribution.**—Neeah Bay, Washington (type)

**Margarites (Pupillaria) inflatulus** Dall

(Pl. 18, fig. 9, 10)

*Margarita inflata* Carpenter, 1864b, p. 603, 653, no. 300; Reprint, 1872, 89, 139 in part; in part Cooper, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 26

In part *M. rhodia* Dall, 1921


"Thin, whirls [sic] very swoftten; sculpture very fine; spiral hollow inside keeled umbilicus. [Carpenter, 1864b, p. 653, no. 300] For Carpenter description, 1865e, see *M. rhodia* Dall in this paper.

Dall (1919, p. 365; 1921, p. 179) in renaming *M. inflata* Carpenter, 1864, specified that his new name *M. inflatulus* applied to the above reference and that the new name *M. rhodia* Dall (1921) applied to *M. inflata* Carpenter (1865e, p. 62). However, the separation of the species on the above references is not so simple as Dall indicated. Dall stipulated as type of *M. inflatulus* the specimens labelled "Puget Sound, collected by Dr. C. B. Kenmerley" (Dall, 1919, p. 365). Since the description (1865e, p. 62) of *M. inflata* Carpenter and all Carpenter's references included material from Puget Sound (Kenmerley), Vancouver (Lyall), and Neeah Bay (Swan), Dall's selection of the Kenmerley specimen from Puget Sound as type of *M. inflatulus* automatically makes the description of 1865e, as well as 1864b, in part reference to *M. inflata*. Therefore the writer has, modified Dall's references to *M. inflata* Carpenter (in part) = *M. inflatulus* Dall and *M. inflata* Carpenter (in part) = *M. rhodia* Dall, in keeping with type material as indicated by Dall, rather than the specific date and page reference which he gave.

For remainder of discussion of *M. inflata* Carpenter, see *M. rhodia* Dall in this paper.

Specimens in U. S. National Museum, no. 4494, bears the label "type of *L. inflata* Carpenter pars = *inflatula* Dall. Type of both." This is the specimen indicated by Dall (1919, p. 365).

**Holotype.**—U. S. National Museum, no. 4494 (*M. inflata* Carpenter)

**Distribution.**—Puget Sound, Washington (type), Puget Sound, Washington, and Vancouver Island, British Columbia. [Carpenter]
Margarites (Pupillaria) lirulatus Carpenter

(Pl. 17, figs. 20, 31)


The following line and concluding paragraph should be added to the copy of Carpenter's 1865 description published by Oldroyd (1927) to make the copy complete:

"Hab.—Puget Sd., Kennerly."

[Description of var. _subelevata, obsoleta_ and _conica_, which see in this paper]

"The shells above described constitute what might be called a Darwinian group of specific forms. With the exception of the typical shells dredged by Mr. Kennerly, they are all in very bad condition. The Pugetian specimens are flattened, with open umbilicus, as might be expected from quiet water. Two specimens, however, form an exact transition to the Nehe Bay shells, of which a fair number (var. _a_) were sent by Mr. Swan, though worn and generally decorticated. They are more elevated, with fainter sculpture; and pass, by insensible gradations, into _M. conica_, the two principal spiral lines becoming evanescent, and a few others intercalating. In this state (var. _b_) the species can only be separated by the operculum, which is pale and thin, and destitute of the strongly expressed rib of the 'Vahlii' group. A third form (var. _c_) would certainly claim specific rank, but for the intermediate series of _a_ and _b_. The diagnostic characters for the whole series are the smooth operculum, the eight narrow riblets round the base, with angular umbilicus and the sharp, narrow, principal riblets above, with wide interspaces, smooth except from the lines of growth, which are principally visible in the epidermis. There may be three (so-called) species in the group, viz.: _lirulata, subelevata_ and _conica._" [Carpenter, 1865c, p. 61]

There are three specimens in the U. S. National Museum labelled "type Puget Sd. Dr. Kennerly." This label coincides with Carpenter's description. The middle-sized specimen of the three is figured herein.

_Synotypes._—U. S. National Museum, no. 4191

_Distribution._—Recent. Puget Sound, Washington (type); Port Etches, Alaska, to San Diego, California (Dall). Pleistocene (Grant and Gale; Waterfall, 1929). Pliocene (Waterfall, 1929)

_Margarites (Pupillaria) lirulatus conicus_ Carpenter


_Margarites (Lirularia) lirulata conica_ (Carpenter), _Dall, 1921_, p. 180, pl. 17, fig. 1 type; _Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 177; Burch, 1946, no. 58, p. 9

_Margarites (Lirularia) lirulata_ (Carpenter), _Oldroyd, 1927, vol. II, pt. III, p. 101, fig. 1 same as Dall, 1921 conica

_Margarites conicus_ (Carpenter), _Keen, 1937, p. 39

_Margarites lirulatus conicus_ (Carpenter), _Burch, 1946, no. 59, p. 9

"... var. _conica_, very tall, with intercalary ribs, like _G. tarpiciata._" [Carpenter, 1864b, p. 653]

"... var. _γ conica_; t. valde elevata; lirulis acutis, aliis interdum intercalantibus; umbilicus parvo, Long. 33, long. spir. .2, lat. .25, div. 58°.

"Hab.—Puget Sd., Kennerly, sp. un." [Carpenter, 1865c, p. 61]

The holotype in the U. S. National Museum has the label "unique type Puget Sd. Kennerly." It was figured by Dall (1921).

_Holotype._—U. S. National Museum, no. 4191a

_Distribution._—Puget Sound, Washington (type)
Margarites (Pupillaria) lirulatus obsoletus (Carpenter)

(Pl. 17, figs. 18, 19)


_Margarites obsoletus_ Carpenter, Keen, 1937, p. 39

_Margarites lirulatus obsoletus_ Carpenter, Burch, 1946, no. 58, p. 9.

"... var. _obsoletus_, sculpture evanescent:"

[Reprint, 1864b, p. 653]

"... var. β _obsoletus_; t. ut in? var. _subelevata_; lirulis evanescentibus; operculo planato, tenuissimo, suturis indistinctis.

_"Hab."—Neeah Bay, Swam."

[Reprint, 1865e, p. 61]

The syntypes consist of 8 specimens in the U. S. National Museum. The apices of all are rough and except in one young individual are worn. There are about three rough spiral ribs over the whorls of the spire, depending on age, with a smooth or roughened surface between the ribs; three spiral ribs over the body whorl above the basal carina; below the carina they are coarse but finer than the ribs above the carina. The label reads "Types, Neeah Bay, W. T. J. G. Swann."

_Syntypes._—U. S. National Museum, no. 15537

_Distribution._—Neeah Bay, Washington (type)

Margarites (Pupillaria) lirulatus subelevatus Carpenter

(Pl. 17, figs. 16, 17)


_Margarites subtreelevatus_ (Carpenter), Keen, 1937, p. 39

_Margarites subtreelevatus_ (Carpenter), Burch, 1946, no. 58, p. 10

"... Var. _subtreelevata_, raised, livid:"

[Reprint, 1864b, p. 653]

"? Var. _α subtreelevata_; t. elatioire; colore livido, intensiore; lirulis vix acutis.

_"Hab."—Puget Sd., Kennerley, Neeah Bay, Swam."_ [Reprint, 1865e, p. 61]

The type material consists of 12 specimens. The largest measures 7 mm. height and 6.5 mm. greatest diameter; the smallest measures 3 mm. height and 2.5 mm. greatest diameter. The label reads as follows: "Types, Neeah Bay, W. T. J. G. Swann."

_Syntypes._—U. S. National Museum, No. 15537

_Distribution._—Neeah Bay, Washington, (type); Neeah Bay, Washington, to San Pedro, California (Burch)

Margarites (Pupillaria) optabilis (Carpenter)


_Margarites (Lirularia) optabilis_ (Carpenter), Dall, 1921, p. 179, pl. 17, fig. 7, type; Oldroyd, 1927, vol. II, pt. III, pl. 101, fig. 6 same as Dall, 1921 not pl. 108, fig. 6 as stated; Willett in Burch, 1942, no. 16, p. 3


_Margarites (Pupillaria) optabilis_ (Carpenter), Woodring, Bramlette, and Keen, 1946, U. S. Geol. Surv., Prof. Paper, 207, p. 62

"Wider: decussated between ribs: 2 spiral lines inside umbilicus." [Reprint, 1864b, p. 653]

"G. t. parva, pulcherrima, subconica; lurida, fusco-purpureo maculata; anfr. v. sub quadratis, suturis distinctis; carinâ principalibus in spira ii., alia intercalante; carina fortiori peripheriali, et lirulis circ. VI. basâlibus, regulariter colore punctatis; lira postica subobsolete suturam attingente; alis minoribus intercalantibus; interstîlis ubique tenerimne et cre-
berrime decussatis; basi subtumente, ad carinarum peripheralaem fere rectangulato; apertura subquadrata; columella parum arcuata; umbilico magno, unduliformi, angulato; liris ii. intus spiralliter ascendentibus.

"Long. 0.19, long. spir. 0.10, lat. 0.19, div. 80°.

"Hab. San Pedro, Palmer, one specimen." [Carpenter, 1866a, p. 214]

The holotype of this species is labelled, "unique type San Pedro Palmer," which coincides with Carpenter's description (1866a, p. 214).

Although the explanation of the figure is not so labelled (Dall, 1921, pl. 17, fig. 7), the illustration by Dall is probably a drawing of the holotype. The measurements are the same, and the specimen is labelled, "fig'd."

Holotype.—U. S. National Museum, no. 15287

Distribution.—Recent. San Pedro, California (type); Santa Barbara, California, to Coronado Islands, California (Kelsey in Burch). Pleistocene (Woodring, Bramlette, and Kew)

**Margarites (Pupillaria) parcipictus** (Carpenter)

(Pl. 17, figs. 5, 6)


*Margarites (Lirularia) parcipictus* (Carpenter), Dall, 1921, p. 179, ref. "Proc. Cal. Acad. Sci., vol. 3, p. 157," change to p. 158; for proper reference see above; pl. 17, fig. 3 not good representation, Abbott, 1954, fig. 31c is the same fig; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 177; pl. 47, fig. 2 same as Dall, 1921; Oldroyd, 1927, vol. II, pt. III, p. 199 see note after Dall, 1921, for references; pl. 101, fig. 4 same as Dall, 1921


"Like strong growth of *M. lirulata*, var." [Carpenter, 1864, p. 653]

The following lines should be changed in the copy of Carpenter's description (1864, Dec.) as republished by Oldroyd (1927) to make the copy of that description complete:

Delete "poll".

Add:

"—div. 70°.

"Hab. Neah Bay (Swan); Santa Cruz (Rowell)." [Carpenter, 1864d, p. 426]

Oldroyd included a translation of Carpenter's Latin description.

The holotype in U. S. National Museum labelled "type" is the second specimen mentioned by Carpenter. The shell is labelled "Santa Cruz, Cal. Rowell." Since the first mentioned specimen, "Neah Bay," is apparently not now available, the type locality becomes Santa Cruz instead of Neah Bay, as stipulated in Oldroyd (1927) and Burch (1946).

Dall's (1921) drawing and the photograph of the type, herein included do not represent the same shell, or the drawing does not depict wholly the characters of the specimen. The holotype has only two primary spiral ribs on the whorls of the spire, as described by Carpenter; six basal spirals including the carina are on the body whorl; all the spirals are crossed by conspicuous longitudinal striations. These are not illustrated on Dall's figure.

Holotype.—U. S. National Museum, no. 31114

Distribution.—Santa Cruz (Island), 54 California (type); Sitka, Alaska, to San Martin Island and to Guadalupe Island, Mexico (Burch)

54 If the locality "Santa Cruz" of Carpenter's description (1864d, Dec., p. 426) is intended to supplement the locality data 1864b, Aug., p. 653), then Santa Cruz is the island of Santa Cruz, Santa Barbara Channel. The locality list in the latter reference included only the Farallon Islands and Santa Barbara group, other than Vancouver.
Margarites (Pupillaria) rhodia\(^{55}\) Dall


Not *M. inflata* Totten, 1834, Brown, 1839, or Morris, 1854, see under *M. inflatus* Dall for references

*Margarites (Pupillaria) rhodia* Dall, 1921 (not 1920 as in Dall), p. 179, pl. 17, fig. 4 lectotype; Oldroyd, 1927, vol. II, pt. III, p. 204, pl. 101, fig. 5 same fig. as Dall, 1921; Keen, 1937, p. 39; Burch, 1946, no. 58, p. 7

"Thin, whirls [sic] very swollen; sculpture very fine; spiral hollow inside keeled umbilicus." [Carpenter, 1864b, p. 653]

In part, see also under *M. inflatus* Dall.

The following line should be added to Oldroyd’s (1927) copy of Carpenter’s description (1865):


"Only two adult specimens of this remarkably elegant species have been seen. It resembles the shell from Greenland called *M. striata*, *Brod. and Stby.*, in the British Museum, but that under the same name from Behring Straits appears distinct. In many respects it is like *M. undulata*, but differs in the greater swelling of the whorls meeting at a nearly rectangular suture, in the far more delicate sculpture without waves the keeling of the umbilicus and the bend in the pillar which causes a slight spiral hollow inside the umbilical rib." [Carpenter, 1865e, p. 62]

In the U. S. National Museum specimen no. 5332 = 15585 is labelled "*M. inflata* Crp. Puget Sd." Another label with the same specimen reads "15585 Cotype *M. inflata* Neeah Bay W. T. J. G. Swan." "= *M. rhodia* Dall" is in pencil on the label. On the underside of the label is written, "One of the typical specimens Proc. Ac. Nat. Sci. Phila. Apr. 1865 p. 62."

Carpenter’s description (1865) stipulated specimens from Puget Sound collected by Kennerley and Neeah Bay collected by Swan. Dall (1919) definitely selected the Kennerley specimen from Puget Sound as the type of *M. inflatus* Dall (*M. inflata* Carpenter in part). The above notes reveal that the Swan specimen from Neeah Bay Dall designated as the type of *M. rhodia*. He did not indicate (1921, pl. 17) that the specimen figured was the type, but since there was only one specimen the figured shell would certainly be the Swan specimen. See the discussion under *M. inflatus* Dall.

**Dimensions.**—Lectotype: height, 10 mm. and greatest diameter, 11 mm.

**Lectotype.**—U. S. National Museum, no. 15585

**Distribution.**—Neeah Bay, Washington (type); Port Althorp, Alaska, to San Diego, California (Dall)

Margarites (Pupillaria) salmonesus (Carpenter)


*Margarites (Pupillaria) salmonesus* (Carpenter), Keen, 1937, p. 39; Burch, 1946, no. 58, p. 7


"Between *pupilla* and *undulata*: salmon-tinted, sculpture fine, not decussated: sutures not waved. 6-40 fin. Cm." [Carpenter, 1864b, p. 653]

The following paragraphs should be added to the copy of Carpenter’s description (1864e, p. 158( as republished by Oldroyd (1927):

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\(^{55}\) The specific name is left in the feminine because the writer is not sure of its origin.
“*Hab.* Monterey, 6—20 fms. 5, alive; Catalina Island, 30—40 fms. 2, alive. 

This shell differs from the common *Margarita* of the Vancouver district (*M. pupilla* Gld. = *callohostoma* A. Ad.), in its much deeper and salmon-tinted hue; its finer sculpture, absence of decussation, and want of distant lirae round the umbilicus. From the Norwegian specimens of *M. undulata* it is known by the absence of sutural waves, and by the finer basal ribs, of which the interstices are minutely sculptured across. The operculum differs from both, in its great thickness and smoothness. Additional specimens may better display its true relations.” [Carpenter, 1864e, July-Dec., p. 158]

**Specimens from Monterey, and one from the beach of the Farallone Islands, are intermediate between that described by Mr. Carpenter (Catalina Island specimen) and the northern *M. pupilla*. J. G. Cooper

Oldroyd included a translation of Carpenter’s Latin description.

Dall (1921) published a drawing of the holotype. The printed label of that specimen reads “Monterey, Cal. Cooper.”

**Holotype.** U. S. National Museum, no. 16279

**Distribution.** Monterey, California (type); Puget Sound, to Cayucos, California, San Luis Obispo County, California (Burch)

“**Section** Lirularia Dall, 1909


Dall originally described *Lirularia* as a section of the subgenus *Pupillaria*. In 1921 he raised the group to subgeneric rank. This classification has been followed by authors but apparently not with conviction that it is correct (Grant and Gale, 1931, p. 839; Burch, 1946, no. 58, p. 8). In analyzing such segregation as *M. rhodia* Dall in *Pupillaria* and *M. infulata* Dall in *Lirularia*, the writer does not see justification for the importance of subgeneric rank of *Lirularia*. The writer therefore returns to its use as a section and is aware that sections have no nomenclatural status in the International Rules of Zoological Nomenclature, except that the International Commission agreed to recommend that such groups be treated as having subgeneric status. (Bull. Zool. Nomen. vol. 4, pts. 13—15, 1950, no. 9, p. 441—443).

*Margarites* (*Pupillaria*) *succinctus* Carpenter


“Small, scarcely sculptured, with spiral brown pencillings.” [Carpenter, 1864b, p. 653]

The following line should be added to Oldroyd’s copy (1927) of Carpenter’s description (1864d, p. 427):

“*Hab.—Neah Bay (Swaan) ; Lower California, on Haliotis (Rowell).”* [Carpenter, 1864d, p. 427]

The syntypes consist of three specimens; according to their label they are the specimens Rowell got on the *Haliotis* in Lower California. The Neah Bay specimen is apparently not available. The type locality is, therefore, Lower California although not definitely stated where in that area.

The largest of the syntypes was figured by Dall (1921). The measurement given by Dall (explanation pl. 17, fig. 9) is 1 mm. larger than the writer’s measurement. The specimens have a large umbilicus. Numerous spiral ribs are present over the whorls, largest on the posterior part of the whorls.
Dimensions.—Height: 4 mm., 3 mm., 2 ± mm.; greatest diameter: 4 mm., 3 mm., 2 ± mm., respectively

Syntypes.—U. S. National Museum, no. 15562

Distribution.—Recent. Lower California on *Haliotis* (type); Sitka, Alaska, to San Martin Island, Lower California (Burch). Pleistocene (Woodring, Bramlette, and Kew)

Genus *Cidarina* Dall, 1909


Type species by original designation, *Margarita [cs] cidaris* (A. Adams in Carpenter), 1864b, Aug., p. 653. Recent, Alaska, to Cape San Quentín, Lower California (Pl. 17, fig. 13)

*Cidarina* cidaris (Adams in Carpenter)

(Pl. 17, fig. 13)


*Turciola* (?) *cidaris* (A. Adams, Carpenter), PILSBRY, 1889, Man. Conch., vol. 11, p. 331, copy original description

*Solaricella oxybasis* Dall, 1889, U. S. Nat. Mus., Proc., vol. 12, no. 773, p. 352, pl. 2, fig. 6

*Solaricella cidaris* (A. Adams), WILLIAMSON, 1892, U. S. Nat. Mus., Proc., vol. 15, no. 898, p. 202, pl. XXII, fig. 4; ARNOLD, 1903, p. 334 in part; pl. VII, fig. 11


*Cidarina* cidaris (Carpenter), BURCH, 1946, no. 58, p. 5

*Lischkea* cidaris (Carpenter), ABBOTT, 1954, p. 109, fig. 31h, same fig. as WILLIAMSON, 1892

"———. A. Ad. n.s. Large, knobby, like thin *Turciola*, with simple pillar and small umbilicus." [Carpenter, 1864b, p. 653]

Oldroyd republished (1924) Carpenter’s description (1864b, Dec.) of this species. The following corrections should be made in her copy:

Delete second “carinatus,” lines 4 and 5 of description.

"*Hab*. Neah Bay (Swan)

"Mr. A. Adams suggested the above expressive name for this very remarkable and unique shell." [Carpenter, 1864d, p. 426]

It is not expedient nor true to credit this species wholly to Adams as is commonly done. Adams suggested the name, but Carpenter executed the description. Credit to Adams alone when it is not in a publication by that author may be confusing, even though the original reference is given in Dall (1921) and Oldroyd (1924).

A similar case is that of *Assiminea grayana* Fleming (Leach in Fleming, 1828), type species of *Assiminea* Fleming (Leach in Fleming), which see. Leach sent Fleming a specimen so labelled which Fleming acknowledged in his description of the new species, new genus. Thus Leach would be the author of *Assiminea*. However, Fleming is rightfully stipulated in literature as the author.

The holotype has a label “Margarita cidaris A. Ad. Type Neah Bay, W. T. J. G. Swan.” *Holotype.—U. S. National Museum, no. 15600*

Distribution.—Recent. Neah Bay, Washington (type); Kasân Bay, Alaska, to Cape San Quentín, Lower California (Dall). Pleistocene. California (Arnold; Grant and Gale; Woodring, Bramlette, and Kew, 1946, p. 62). Pleistocene or Pliocene. California (Carpenter in Cooper, 1888; Grant and Gale)
Genus Solarieilla S. Wood, 1842


Solarieilla peramabilis Carpenter

(Pl. 17, figs. 3, 4)


"Subgenus of Margarita, with open, crenated, umbilicus. Species most ornate, with delicate sculpture. Umbilicus with 3 internal spiral lines, crossed by lirulae; operculum sculptured. Like Minolia aspersa, A. Ad. 40-120 fm. living. Cp." [Carpenter, 1864b, p. 653]

"S. t. tennissima, elegantissima sculpture, lvidia, rufus fusco pallide maculata; anfr. nucl. ii valde tumidis, laevibus, apice mammillato: dein anfr. norm. IV Tabulatis, suturis fere rectangulatis, supra spira bi-seu tri-carinatis, carinulis alis postea intercalantibus; tota superficie elegantissime et creberrime radiatum lirulata, liruluis acutissimis, extantibus, supra carinas subgranulosus, interstitia anfr. primis fenestrantibus, postea decussantibus; basi valde rotundata; carinulis circ. v., antica granulosa, sculptula; umbilico maximo, anfractus intus monstrate, lineis spiralibus circ. iii distantibus, et liruluis radiantium basi continuis, concinne ornato; aperture rotundata, a carinulis indentata, vix parieti attingente, intus iridescente, nacre: operculo tennissimo, multispirali, anfr. circ. x., radiatim eleganter rugulosis.

"Long. 0.38, long. spir. 0.19, lat. 0.42, div. 85°.

"Hab. Catalina Island, 30-120 fms. 20, both alive and dead.

"The name Solarieilla given to a crag fossil (tertiary) species by Searles Wood, which he afterwards reunited to Margarita, is here used as a subgenus, in the author's sense, for Margaritae with large crenated umbilicus. This is one of the many instances in which the North Pacific fauna carries out the ideas of the English crag. Unfortunately, the same appears in Add. Gen. I, 431, for a subgenus of Mowilea, with which these shells have only a limited affinity; and, accordingly, the true Solarieillas have been reconstituted as part of Minolia, A. Ad. That gentleman, however, fully accords with the present arrangement. The Solarieillas are known from Trenchisus, and from all forms of Solaritaeae, by the normal (not inverted) nuclear whirls [sic]; and from the Solarids, by the nacreous texture.

"Dr. Cooper's very lovely species of a very lovely group may possibly prove to be a variety of the Japanese 'Minolia aspersa A. Ad.' ms. in Mus. Cuming; but, until more specimens from each district have been compared, it is more prudent to keep them separate. It seems to have exhausted the powers of sculpture on its graceful habitation. Under the microscope, the sharp transverse lirulae, mounting over the keels, dividing the interspaces, and even ascending the wide umbilicus, are eminently beautiful. Even the operculum is sculptured with delicate waved radiating lines. It has the aspect of an extremely thin Torinia, with a funnel-shaped umbilicus. This is not only bounded by a granular keel, but has three other distant spiral lines crossing the liruca. The radiating sculpture is more distant on the upper whorls, where first two, then three keels appear, fenestrated by the lirulae, which afterwards become much closer, and are sometimes worn away behind the labrum." [Carpenter, 1864e, July-Dec., p. 156]

Pilsbry (1889) translated Carpenter's description (1866) and republished a portion of the English. Oldroyd republished Pilsbry's translation. The drawing published by Dall (1921) is apparently a figure of the lectotype, but it is not exact in details. The longitudinal ribs are stronger than in the Dall drawing as may be seen by comparing the photograph of the holotype herein included. There is one specimen in the U. S. National Museum labelled "Cotype Catalina Id. Cooper." Since there would, therefore, have been more than one type at sometime, the existing type is a lectotype.

Lectotype.—U. S. National Museum, no. 16281
**Distribution.**—Recent. Catalina Island, California (type). Forrester Island, Alaska, to San Diego, California, and the Coronado Islands, California, also Japan (Daily). See Pleistocene (Arnold). Pliocene (Waterfall, 1929)

**Genus Calliostoma Swainson, 1840**

*Calliostoma Swainson, 1840, Treatise on Malacology, p. 218, 351*


*Calliostoma costatum laguestum* Carpenter, ms.

The holotype of this nude name is in the U. S. National Museum, no. 15478. It is labelled, "Neah Bay, J. G. Swan." The name was never validated by Carpenter.

**Calliostoma gemmulatum Carpenter**

(Pl. 17, figs. 7, 8)


"Very swollen; painted like *eximum*; with 2 principal and 2 smaller rows of granules."

[Carpenter, 1864b, Aug., p. 653]

"From State Collection 615a.

"C. t. subelevata, brunnescens, fusco-purpureo nebuloa, sufr. VII valde tumentibus, suturis impressis; carinis majoribus in spira duabus, gemmatis, interdum brunneo hue et illuc tinctis; serie granulorum minorum prope suturam; serie quarta minimorum inter duas carinas; lirulis basaliis circ. IX, fusco maculatis; interstitii a lineis incrementi corrugatis; apertura subquadrata. Long. 0.47, long. spir. 0.34, lat. 0.43, div. 68°.

"Hab. San Pedro five; San Diego four dead on beach at low water—very rare. It is well distinguished by the two principal necklaces, with smaller rows intercalating. In coloring it resembles *C. eximum* Reeve (versicolor Menke, Mazatlan, Catal.), from the Gulf of California. [Carpenter, 1864e, Dec., p. 156, *C. formosum*]


"While the sheets of the Report were passing through the press, it was found that the name had been preoccupied by Forbes. As it happened the Californian sheet was being printed simultaneously, and there was no time to make the alteration." [Carpenter, 1866a, p. 215]

Carpenter’s statement (preceding paragraph) settles the question that *C. gemmulatum* is the new name for *C. formosum* Carpenter and not for *C. supragranosum* Carpenter (1866a, p. 214), as indicated by Pilsbry (1889, p. 370) and followed by Grant and Gale (1931, p. 836).

The writer made the following notes regarding the specimen labelled type in the U. S. National Museum and figured herein:

Nucleus is present, composed of about two and a half smooth whorls, followed by about three-quarters of a whorl which bears faint spiral ribs; the following whorls are sculptured with three large nodose spiral ribs, middle rib largest, the posterior the smallest on the whorls of the spire; faint spiral striae are present just above the suture. The body is carinated at base with four large nodose spirals above; shoulder spiral is largest, with the smallest just

56 Modified. Keen, (1941, p. 481). Tadashige Habe, June 22, 1955, personal communication, stated that this species has not been found since the original discovery.

57 Apparently there is a conflict in references in Pilsbry (1889, p. 370, 371), for *C. formosum* is also properly listed in *C. gemmulatum* Carpenter. Page 155 should be page 156 in *C. formosum* Carpenter reference.
below; faint revolving striae are below the first posterior nodose spiral. All revolving ribs are crossed by longitudinal striae. The 10 or 11 basal spirals are not nodose.

The validity of the holotype status of the specimen so labelled in the U. S. National Museum is doubtful or there has been an error in the labeling. The specimen bears a printed label "Catalina Id. Cooper type." The only localities mentioned by Carpenter in the original notes are San Pedro and San Diego. Original San Pedro or San Diego material is not available; hence it is difficult to choose a lectotype to replace the "Catalina Id." shell. The specimen catalogued as type is no. 16261, U. S. National Museum.

Type.—See above

Distribution.—Recent. San Pedro or San Diego, California (type): Cayucos, San Pedro, California, to Gulf of California (Burch). Pleistocene (Arnold; Grant and Gale). Pliocene (Arnold)

**Calliostoma splendens** Carpenter

(Pl. 17, figs. 11, 12)


"Orange chestnut with fleshy nacre; small, rather flattened, base glossy. 6-40 fm. Cp." [Carpenter, 1864b, p. 653]

The following lines should be changed in OLDROYD'S (1927) copy of Carpenter's description (1864, p. 156):

Delete "poll" and add, div. 87°.

Add:

"Hab. Monterey, 20 fms. dredged 2, dead; Santa Barbara, in roots of kelp growing in about 10 fms. 13, dredged in 16 fms., 2 dead; S. B. Island, 2, dead, on beach; Catalina Island, 30-40 fms. 2, alive; San Diego, 1, dead.

"The specimens here described are probably mature, and are well marked in character. The painting is richly lustrous, of a fleshy nacre inside; outside, of a rich orange-chestnut or red, variously laid on a light ground, sometimes with streaks of nacreous purple, often with dots on the ribs. The operculum is extremely thin and transparent." [Carpenter, 1864c, p. 156]

The syntypes have the printed label, "Type Catalina Id. Cooper." There are two specimens with the following dimensions, respectively: 5 mm. height and 5 mm. greatest diameter; 3 mm. height and 3.5 mm. greatest diameter. The larger of the two specimens is figured herein.

**Syntypes.**—U. S. National Museum, no. 16278

**Distribution.**—Recent. Catalina Island, California (type); Monterey, California, to Guadalupe Island, Mexico (Strong and Hanna in Burch). Pleistocene (Grant and Gale)

**Calliostoma supragranosum** Carpenter

(Pl. 17, figs. 14, 15)


"Swollen, with sharp ribs; posterior 1.4 granular." [Carpenter, 1864b, p. 653]

"C. t. parva; anfr. v. tumenibus; hirs acutis cincta, quarum mediae laeves, posticae gran- osae, basales IX minores.

"Hab. San Diego; Cooper."
"The single specimen sent differs as above from the young of the next species." [C. gem- 
mulatum] [Carpenter, 1866a, p. 214]

The holotype has the label, "Type San Diego Cp."

From an examination of the holotype this species is like a superaccelerated C. splendens
in the number of ribs and retention of beaded ribs. The nucleus consists of one or one and a
half smooth bulbous whorls followed by coarsely ribbed whorls; after about one whorl there
are three coarse spirals, and the spiral ribs are more strongly beaded on the shoulder of the
whorl; 6 spirals on the penultimate whorl and 11 on the body whorl with a basal carina; 10
plain spiral ribs on the base.

**Holotype.**—U. S. National Museum, no. 14925

**Distribution.**—Recent. San Diego, California (type); Monterey, California, south to Pe-
quena Bay, Lower California (Burch). Pleistocene (Chace; Woodring, Bramlette, and Kew)

**Calliostoma variegatum** Carpenter

(Pl. 17, fig. 9, 10)

*Calliostoma (? var.) variegatum* Carpenter, 1864b, p. 603, 652; Reprint, 1872, p. 89, 138;

*Calliostoma variegatum* Carpenter, DALL, 1902, U. S. Nat. Mus., Proc., vol. XXIV, p. 552,
pl. XXXIX, fig. 10; 1921, p. 176; OLDROYD, 1924, Pub. Puget Sound Biol. Station, vol. 4,
p. 172; 1927, vol. II, pt. III, p. 185, pl. 100, fig. 10 same as DALL, 1902, pl. XXXIX,
fig. 10; KEEN, 1937, p. 32; BURCH, 1946, no. 57, p. 30, 32; no. 58, p. 2; SMITH AND
1954, p. 116. fig. 33b same fig. as DALL, 1902

"Small, more conical, nodules more distant, white on rosy ground." [Carpenter, 1864b,
p. 652]

The following should be changed in the copy of Carpenter's description (1865) published
by Oldroyd (1927).

"Correct "13" to read ".13."

Add:

"Hub.—Puget Sd., sp. un legit Kenmerley. This may prove to be an extreme variety of
Cal. annulatum, Martyn." [Carpenter, 1865e, p. 61]

The holotype is a beautiful specimen with a tiny entire rosy protoconch consisting of one
or more smooth bulbous whorls with an indistinct line of demarcation followed by a large
rough whorl with spiral ribs, but the ribs are not nodose; the nodosity begins on the follow-
ning ribs. On the body whorl there is a fourth nodose interradial which on the whorls of the
spire is a faint cord; the nodes are white with brownish internodes.

The label of the holotype bears the following printed label, "Puget Sound, W. T. Dr.
Kennerly [sic] Type."

**Holotype.**—U. S. National Museum, No. "4201?"58

**Distribution.**—Puget Sound, Washington (type); Forrester Island, Alaska, to Cerros
Island, Lower California (Burch).

**Genus Tegula** Lesson, 1835

*Tegula* Lesson, 1835,59 Illustrations de Zoologie, liv. 17, pl. 51

Type species by monotypy *Tegula elegans* Lesson, 1835, Illustrations de Zoologie, liv. 17,
pl. 51, figs. 1, 2, A, and description = *Trochus pellis-serpentis* Woon, 1828, Suppl. Index
Testaceologicus, pl. 5, fig. 4a. Recent. West Coast Central America—Gulf of California.

PILSBRY, 1889 Man. Conch., vol. XI, pl. 20, figs. 1, 2

58 Oldroyd (1927, p. 186) stated "Type in United States National Museum, no. 122567."
The U. S. National Museum Catalogue reads for no. 122567: "Puget Sd. Coast of Washing-
ton, Sta. 2882, 68 fms. sd. 458 U. S. F. Com. Sta. Albatross July 25, 1891, 1 specimen,
figured specimen." A specimen collected in 1891 could not be an original type of a Car-
penter species, for Carpenter died in 1877. No. 122567 is probably the specimen figured by
DALL (1902).

59 Catalogue Books, Manuscripts, Maps, and Drawings in the British Museum, vol. III,
L-O, 1910, p. 1096; dates by livr.
Subgenus Chlorostoma Swainson, 1840

Chlorostoma Swainson, 1840, Treat. Malacol, p. 350

Tegula (Chlorostoma) funebralis subapertura (Carpenter) (Pl. 19, figs. 1, 2)

Chlorostoma funebralis subapertura Carpenter, 1864b, p. 627, 652; Reprint, 1872, p. 113, 138; Cooper, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 25; Dall in Williamson, 1892, U. S. Nat. Mus., Proc., vol. 15, no. 898, p. 200, pl. 21, fig. 6 type; Arnold, 1903, p. 325
Tegula (Chlorostoma) funebralis subapertura (Carpenter), Dall, 1921, p. 174
Tegula funebralis A. Adams, Smith and Gordon, 1948, California Acad. Sci., ser. 4, vol. XXVI, no. 8, p. 201 subapertura included under

"... funebralis ... with umbilical pits." [Carpenter, 1864b, p. 652]
The holotype is a shell with an operculum. The label is "Neah Bay J. G. Swan type."
The shell is blackish, partly smooth, smoothest over the spine and lower body whorl; strong sutural rib present just below the suture; spiral ribs on the upper body whorl; apex worn, blunt, base with spiral ribs; posterior groove on the labrum, large tooth on the labium; umbilicate; operculum horny, circular, spiralizing, and thin.
Dall (1892) figured the basal area of the holotype.
Some authors have expressed doubt as to the value of this subspecies. Burch stated that certain colonies seem to be umbilicate and others not.

Holotype.—U. S. National Museum, no. 123496
Distribution.—Recent. Neah Bay, Washington (type); Neah Bay, Washington, to San Diego, California (Baker in Grant and Gale, 1931). Pleistocene (Arnold)

Genus Halistylus Dall, 1889

Halistylus Dall, 1889, U. S. Nat. Mus., Proc., vol. 12, p. 341
Type species by original designation, H. columna Dall, 1889, U. S. Nat. Mus., Proc., vol. 12, p. 341, pl. IX, fig. 7. Recent. Rio de Janeiro, 50 fathoms; off Rio de la Plata, 10-12 fathoms
The type species of this genus is smooth. The West Coast species differs from the typical by the presence of fine spiral sculpture.

Halistylus pupoideus (Carpenter) (Pl. 19, fig. 4)

Cantharidus (Halistylus) pupoideus Dall, Williamson, 1892, U. S. National Museum, vol. 15, no. 898, p. 202, pl. XIX, fig. 2
Halistylus pupoideus (Carpenter), Grant and Gale, 1931, p. 825; Keen in Burch, 1946, no. 57, p. 34; Woodring, Brumlette, and Keen, 1946, p. 61; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, no. 8, p. 201
Halistylus subpupoideus [sic] (Carpenter), Burch, 1946, no. 57, p. 32
"Variegated, truncatelliform shape. 20 fm. rare C.P." [Carpenter, 1864b, p. 656] Listed from Monterey, California.
"... State Collection, no. 389"

"F. t. Truncatelliformis sed apice haud decollato; colore maxime variante; seu unicolori, albido, cinereo, viridescente, rubofuso, seu splendide rubro; seu varie fusco maculato; anfr.
nucl. iii. laevibus, globosis, vertice manillato; norm. v. rotundatis, fere aequalibus, plus minusve solutis, sutorius subimpressus; tota superficie tenue spiralter striata; striis in spira majoribus, circ. viii. distantibus, minoribus cuneiformis intercalantibus; circa basim rotundatae circ. x majoribus, contiguus, minoribus paucis; apertura circulari, peritemmati continuo, solida, ad sururam parum callosam appresso; umbilico nullo.

"Long. 0.23, long. spir. 0.16, lat. 0.09, div. 12."

"Hab. Monterey, 20 fm. 45, dead. Cooper." [Carpenter, 1866 a, p. 217]

There are two syntypes of this species in the U. S. National Museum, labeled from the "Bay of Monterey Cooper type." The types are not in the Academy of Natural Sciences at Philadelphia, as reported by Oldroyd and followed by Grant and Gale.

The whole surface of the shell is covered with fine spiral ribs with equal interspaces. Between some of the spiral ribs there are microscopic spiral striae; no umbilicus; round entire aperture with the margin thick and flaring below the umbilical area. Both specimens measure 5.5 mm. height and 2 + mm. greatest diameter.

Although this species was briefly described in 1864, Carpenter gave full notes in 1866. The type locality is definitely stated, and the types are available. Carpenter's name does not seem to be a homonym of F. papyoides Adams, 1860, so it may be retained.

Syntypes.—U. S. National Museum, no. 14824

Distribution.—Recent. Monterey, California (type); Forrester Island, Alaska, to Panama (Burch). Pleistocene (Grant and Gale; Woodring, Bramlette, and Kew)

Genus Norrisia Bayle, 1880

Norrisia Bayle, 1880, Jour. de Conchy., vol. 28, p. 241 new name for Trochicus Sowerby, 1838 not of Heyden, 1826 nor of Held, 1837 nor of Jacobley, 1879, for references see Neave, 1939-1940


Norrisia norrisii (Sowerby)

Trochicus convexus Carpenter


The synonymy is not intended to be for that of Norrisia norrisii (Sowerby). (See Grant and Gale, 1931, p. 824)

"Small, subturritted, whorls [sic] swollen: umbilicus with 2 ribs, the outer crenated." [Carpenter, 1864b, p. 652, Trochicus convexus]

"T. testa parva, subelevata, purpureo-fusca, tenuiter sculpta; anfr. nucl. ? sinistralibus, vertice quasi decollato; norm. IV., convexis, sutorius impressis; obtusissime bicarinatis, striolis convirtissimis, minimis, sub-obsoletis cinetis; umbilico majore, costis dubius cineto, quorum interior acuta, exterior rotundata, crenata; apertura circulari. Long. .15, long. spir. .06, lat. .15, div. 90."

"Hab. Monterey (Jewett)."

"The nuclear whorls in this unique little shell and in the typical species appear sinistral, as in Phorididae and Solaridaceae. The operculum also resembles that of Solarium rather than of Trochus. The genus may prove to belong to the Proboscidiidae, notwithstanding its nacreous texture." [Carpenter, 1865h, p. 180 Trochicus convexus]

Type.—Not found

Distribution.—Monterey, California (type of T. convexus Carpenter). For Norrisia norrisii, see Dall (1921, p. 174).

"Trochicus Jewetti Carpenter" nomem nudum

There is in the Carpenter Collection in the Redpath Museum a specimen (no. 2359) labelled "Trochicus Jewetti Monterey Jewett type." The name is a nomem nudum. The speci-
men measures 4 mm. height and 5 mm. greatest diameter, dimensions which are slightly larger than those given for *T. convexus* Carpenter but could qualify for the specimen of that name. It corresponds somewhat to the description of *T. convexus*. Because the name *T. jewettii* was never published by Carpenter an illustration of the type is not included herein.

Family *Vitrinellidae* (Cyclostomatidae)

Genus *Teinostoma* H. and A. Adams, 1853


Subgenus *Pseudorotella* Fischer, 1857

*Pseudorotella* P. FISCHER, 1857, Jour. de Conchyl., t. 6, p. 52.

Type species by monotypy, *Rottella semi-striata* d'OrBIGNY in SAGRA, 1845, Hist. fis. polit. nat. Isla de Cuba, Moluscos, t. V, p. 185; 1855, t. VIII (pl. XVIII, figs. 20–22. Recent. West Indies.

**Teinostoma (Pseudorotella) invallatum** (Carpenter)

(Pl. 19, figs. 8, 9)


*Ethalia invallata* Carpenter, COOPER, 1867, Geog. Cat. Moll., Geol. Surv. California, p. 25


*Pseudorotella invallata* (Carpenter), WOODRING, BRAMLETTE, AND KEW, 1946, p. 63

"... Without keel." [Carpenter, 1864b, p. 652]

The following lines should be added to Oldroyd's (1927) copy of the Carpenter's description (1866a) to make that copy complete:

"*Hab.* San Diego, Shell-washings, Cooper.

"These shells would have certainly been regarded as distinct, but for one specimen which began smoothly, yet after a fracture suddenly commenced a (not prominent) keel: an instructive lesson on variation in sculpture." [Carpenter, 1866a, p. 215]

The holotype is still glued to the original Carpenter glass mount with the original label, "type S. Diego." The printed label has "Cooper" in addition.

The specimen is well preserved. It has microscopic radiating striations over the body whorl.

*Holotype.—U. S. National Museum no. 15574b

*Distribution.—*Recent. San Diego, California (type); Monterey, California, to Gulf of California (Dall). Pleistocene (Woodring, Bramlette, and Kew)

**Teinostoma (Pseudorotella) supravallatum** (Carpenter)

(Pl. 19, figs. 6, 7)


*Teinostoma supravallata* (Carpenter), DALL, 1921, p. 182; KEEN, 1937, p. 46; BURCH, 1946, no. 58, p. 21, *supravallatum*

*Pseudorotella supravallata* (Carpenter), WOODRING, BRAMLETTE, AND KEW, 1946, p. 63

"Minute: with keel and furrow near suture." [Carpenter, 1864b, p. 652]

"E. t. parva, albida, nitidute, subdiaphana, planata: anfr. nucl. ii et dimidio, laevis, diaphanis, norm. uno et dimidio, rotundatis; postice carina valde extante, et fossa concava contigua
suturae tenus, supra spiram vix planatum ascendeunt, in medio basis rotundatae carina altera plus minusve extante; inter eas, circa peripheriam, lurulis radiantis minimis hau expressis, sub lente vix conspicuus; regione umbilicari parum concavo; apertura circulari; labro ad carinis angulato; columella, valde callosa, porrecta; callostatum pyriformi regionem umbilicari circumambientem.

"Long. 0.03, long. spir. 0. (?) lat. 0.45, div. 180°."

"Hab. San Diego, Cooper, shell-washings.

"Typical among the Vitrinelloid Ethalidé described in Maz. Cat. nos. 310, 318. Remarkable for the small number of turns in the nature shell as compared with the nucleus." [Carpenter, 1866a, p. 215]

Apparently by an oversight this species was omitted from the text of Oldroyd’s monograph. It is listed (Oldroyd, 1847, vol. II, pt. III, p. 7), and T. invariabilis is included. Since T. invariabilis was originally described as the “variety,” T. supravallatum would have priority in the preservation of names if the two forms were united.

The holotype is glued on a Carpenter original glass mount with a Carpenter label marked “type” and “San Diego.” The printed label bears “Cooper” in addition. The specimen is well preserved. The photographs of the holotypes reveal the differences in the colomellar callus of T. supravallatum and T. invariabilis, the strongly carinated base of T. supravallatum, and the microscopic striations on the body whorl of T. invariabilis.

Holotype.—U. S. National Museum, no. 15574

Distribution.—Recent. San Diego, California (type); Monterey, California, to the Gulf of California (Dall). Pleistocene (Woodring, Bramlette, and Kew)

Family Liotiidae

Genus Liotia Gray, 1847


Type species by monotypy, Delphinula cancellata Gray, 1828, Spicilegia Zoologica, pt. 1, p. 3, pl. 6, fig. 8. Recent. Arica to Coquimbo, Chile. Tryon, 1888, Man. Conch., vol. X, pl. 36, fig. 2; Pilsbry, 1933, Acad. Nat. Sci. Philadelphia, Proc., vol. 83, pl. 13, figs. 7, 7a, 7b; text fig. 3


The following lines should be added to Oldroyd’s copy (1927) of Carpenter’s description (1864e, p. 158):

"... State Collection, Species 1006.

"Hab. Catalina Island; beach to 40 fms. 20, dead.

"This strongly sculptured species varies greatly (in the two specimens sent to the Smithsonian Institution), in the declivity of the mouth and consequent size of the umbilicus, where the labium is, as it were, scooped out." [Carpenter, 1864b, Dec., p. 158]

Strong discussed and illustrated this species well. L. fenestra is similar in shell character to the type species of the genus, L. cancellata (Gray) (Pilsbry, 1934, pl. 13, figs. 7, 7a, 7b).

The lectotype is a specimen in the U. S. National Museum. The label states, “Type fig’d.” The writer has not found the reference where the type was figured. Probably it was an intention which was never fulfilled.
The lectotype (the second specimen mentioned by Carpenter has apparently been lost) has six large spiral ribs on the body whorl. The apical whorls are flat. The spiral ribs are crossed by equally large longitudinal ribs. The crossing of the two sets of ribs forms a large rectangular sculptural pattern. The umbilicus is large, deep, and the margin has a coarse rib. The shell was a dead specimen. Its occupant, a hermit crab, is still intact.

Lectotype.—U. S. National Museum, no. 16283

Distribution.—Recent. Catalina Island, California (type); Monterey, California, to San Martin, Lower California (Burch). Pleistocene (Woodring, Bramlette, and Kew, 1946, p. 63)

Genus Arene H. and A. Adams, 1854

*Arene* H. and A. Adams, 1854, Genera Recent Mollusca, vol. 1, p. 404


*Arene acuticostata* Carpenter

(Pl. 19, figs. 12, 13)


“Small. Sharply keeled, without radiating sculpture. 10–20 mm. *Cp.*” [Carpenter, 1864b, p. 652]

The following lines should be added to Oldroyd's copy (1927) of Carpenter's description (1864, p. 159):

"Long. 0.12, long. spir. 0.06, lat. 0.10, div. 95°.

"Hab. Catalina Island, 10–20 fms. 4, alive; Monterey, 4 dead, dredged?"

"This pretty little Cyclostomoid species is easily recognized by the sharp revolving keels, and the absence of radiating sculpture." [Carpenter, 1864b, p. 159]

On the lectotype there are seven large spiral ribs on the body whorl including the base where the last spiral rib continues into the umbilicus. Microscopic longitudinal striae cross the spiral ribs on the spire. The illustrations in Strong of *A. acuticostata bristolae* are more like those of the type of *A. acuticostata* than are the illustrations which Strong gave for typical *A. acuticostata*.

The absence of radiating sculpture, which Carpenter noted, and the character upon which Dall founded the subspecies *radiata* Dall (1918a, p. 8; Baker, 1927, p. 72; Strong, 1934, p. 438, pl. 29, figs. 13–15) (= *bristolae* Baker) are probably not so important as those authors believed. The radiating lines are fine and are seen on the type under the binoculars. Their absence in some cases may be due to decortication.

The lectotype of *A. acuticostata* in the U. S. National Museum has a label, "type fig'd." The writer has not found an illustration of the specimen previous to the ones herein. The figure Tryon (1888, pl. 36, fig. 1) might be the shell, but the writer doubts that identity. The explanation of the figure by Tryon (1888, pl. 36, fig. 1) described the individual as "specimen," and the execution of the drawing of the sculpture of the shell is not true enough for identification.

Since there were originally several syntypes (4:4) it seems more appropriate to refer to the remaining specimen as a lectotype than a holotype.

Lectotype.—U. S. National Museum, no. 16282

69 Sherborn and Woodward (1901, p. 219)
GASTROPODA

Distribution.—Recent. Catalina Island, California (type); Monterey, California, to Tres Marias Islands, Mexico (Burch). Pleistocene (Woodring, Bramlette, and Kew, 1946, p. 63)

Family TURBINIDAE

Homalopoma Carpenter, 1864, Aug.


New name for Leptonyx Carpenter, 1864


Type species by monotypy, H. sanguineus (Linnaeus) = Turbo sanguineus (type) (Pilsbry), 1837, Syst. Naturae, p. 763, Living, Mediterranean and Adriatic Sea. Pilsbry, 1888, Man. Conch., vol. X, p. 249, pl. 49, figs. 48, 49; pl. 64, figs. 60, 61

Although the monotype which Carpenter used when originating this generic name was a misidentification his citation of Linnaeus’ name confirms the Linnaean species as the type species. Even though Carpenter probably had the West Coast form in mind there is not conflict enough in regard to the generic name to warrant submission of the problem to the International Commission on Zoological nomenclature.

Homalopoma baculum (Carpenter)

(Pl. 19, figs. 14, 15)


Turbo pauci costatus “Dall, 1887” Sowerby, 1884, Thes. Conch., vol. 5, p. 229, pl. 13, fig. 172 not L. paucicostata Dall, 1871, Fide Pilsbry, 1888, and Grant and Gale, 1931


The following lines should be added to Oldroyd’s copy (1927) of Carpenter’s description (1865):

“Hab. Catalina Is., dead on beach; Cooper, no. 1056.

This unpretending little shell resembles on the back one of the small Helicinæ. It differs from L. sanguineus in its small size, ash color, flattened sutures, and nearly obsolete sculpture. A groove in the somewhat callous columella, continued slightly round the labrum, seems intended for the broad-margined operculum of the genus.” [Carpenter, 1864e, p. 177]

The holotype, in the U. S. National Museum, is labelled “type Catalina Is. Cooper.” There are the remains of a hermit crab within the shell. The shell is smooth with faint suggestions of spiral lines on the penultimate whorl.

Holotype.—U. S. National Museum, no. 16284

Distribution.—Recent. Catalina Island, California (type); Puget Sound to San Martin Island, Lower California (Dall). Pleistocene (Arnold, 1903; Grant and Gale; Woodring, Bramlette, and Kew). Pliocene (Arnold, 1903; Berry 1908)

Homalopoma carpenteri (Pilsbry)

Homalopoma sanguineum Carpenter, 1864b, p. 537, 588, 627, 652; Reprint, 1872, p. 23, 74, 113, 138
Leptonyx sanguineus [sic] “Lim.”, Keep, 1887, West Coast Shells, p. 87, fig. 73
Pilsbry renamed the Pacific Coast shells which Carpenter had identified as the Linnaean species from the Mediterranean. The original description dates from Pilsbry. Unfortunately Pilsbry did not specify the locality of the specimens figured; the type has not been separated. The type is not at the Academy of Natural Sciences at Philadelphia, as stated by Oldroyd and followed by Grant and Gale. The specimens from which a lectotype could properly be chosen is the material in the U. S. National Museum identified by Carpenter and studied by Pilsbry. There are many lots including hundreds of shells in the U. S. National Museum collections made by individuals since Carpenter's and Pilsbry's time. Those lots would not qualify for lectotype material. There are five specimens, U. S. National Museum no. 15536, possibly a type lot, labelled “Necah Bay, W. T. J. G. Swan.” The specimens are large and of the measurements provided by Pilsbry (8 mm. X 8.9 mm.). No. 14813b is a dark form, measuring 5mm. X 5 mm., which could be the specimen mentioned by Pilsbry. There is also one specimen, U. S. National Museum, no. 6186, labelled “Monterey, Cooper, Taylor.” These specimens definitely meet the required labels of Carpenter's description.61

By choosing a lectotype from lot no. 15536, the problem of the type locality would also be settled. Until a lectotype is chosen there is no basis for the statement that the type locality is “California.” Carpenter’s material came from Monterey, California, and Neah Bay, Washington. Pilsbry's remarks stipulated only the range of the species from “Cape St. Lucas, L. California to Vancouver Id.,” without selecting a type locality.

Technically this is not a Carpenter specific name, and the writer prefers not to select a lectotype at this time but leave the matter open to one who may study the species.

Type.—Lectotype to be selected
Distribution.—Recent. Sitka Sound, Alaska, to San Martin Island, Lower California (Burch), Pleistocene (Arnold; Chace and Chace; Grant and Gale; Woodring, Bramlette, and Keen); Mexico (Jordan). Pliocene (Berry)

Genus Turbo Linneaus, 1758
Subgenus Callopoma Gray, 1850

Turbo (Callopoma) fluctuosus Wood

Callopoma (Turbo) ? fluctatum var. depressum Carpenter
(Pl. 16, fig. 6)

Turbo fluctuosus Wood, 1828, Index Test. suppl., pl. 6, fig. 44

"C. t. valde depressa, anfractibus V., quaram ultimus tumidus, sutura impressa; liris spiralis circum circiter XXX., quaram plerumque V. majores sunt, subrugosis; viridi, punctis albis

transversim in liris subirregulariter dispositis; apertura ad basin posteriusoue producta; columnella paulum excavata, non umbilicata.

"Long. 2.92, lat. 2.04, lon. spir. .78, poll. ; div. 110°.


"Among many hundreds specimens examined of the true C. fluctuatus from the Mazatlan Collection, there was not one approaching this shell. Nevertheless, as there is in the British Museum a somewhat intermediate form, it may possibly be a variety of that species. The operculum is unfortunately wanting in Mr. C.'s specimens: until that has been examined, the point must remain in abeyance." [Carpenter, 1855, p. 234]

This form has not been noted in the California fauna since Carpenter described it except by Pilsbry (1888) who suggested that possibly the reference in Reeve (1848) should have been Figure 3c, of Plate IX.

The specimen figured is of the Carpenter type furnished by the British Museum (Natural History). G. L. Wilkins sent to the writer the following notes which are the label with the shell: "Callopoma? fluctuatum var. depressum. P.Z.S. Calif. Type. Mus. Cuming." It is a Nuttall label.

**Genus Astra**ea Roeding in Bolten, 1798

*Astraea Roeding in Bolten, 1798, Mus. Boltenianum, pt. 2, p. 79.**


**Subgenus Poma**ula (Gray in M. E. Gray, 1850)

*Poma**ula* Gray, J. E., in Gray, M. E., [dated 1859], issued 1850, Figures of Molluscaous Animals, vol. IV, p. 87


The first type designation was Herrmannsen. His statement supersedes that of Cossmann, 1918, who used the same species, *T. japonicus* Dunker.

*P. undosa* [Wood] and *P. japonicus* [Dunker] are the two species included in the original description.

**Astra**ea (*Poma**ula*) *undosa* (Wood) young

(Pl. 19, figs. 16, 17)

(?) *Imperator serratus* Carpenter


(?) *Imperator serratus* Carpenter, 1864b, p. 612, 652; Reprint, 1872, p. 98, 138

"(?) *Imperator serratus*, ? Sis. Monterey; Cat. Is., 10-20 fm. [Dr. Cooper thinks this shell probably the young of *Poma**ula*.]" [Carpenter, 1864b, p. 612]

"... Small, finely sculptured, base stellate, nucleus Planorboid: operc. flat, with more whirls. 10-20 fm. = 260 or 267 jun. teste C.F." [Carpenter, 1864b, p. 652]

The holotype of the Carpenter name is in the U. S. National Museum, no. 11832. It has the label, "Catalina Cooper." There is a note in Dall’s handwriting = "Turbo fluctuosus junior" with the specimen. The specimen is not the same nor is it related to that form of the reference in Dall (1909, p. 238) to "Wood, Index Test., Suppl., 1828, pl. 6, fig. 44." Carpenter, as well as Cooper, thought that the specimen might be the young of "*Poma**ula undosus* Wood" or *Pachypoma gibberosum* Chem. nos. 266 or 267 of Carpenter (1864b, p. 652). This interpretation seems to be correct. The identity may be verified by comparing

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62 Used by Woodring (1938, p. 22, footnote).
the illustrations herein (pl. 19, figs. 16, 17) with that of Pilsbry (pl. 58, fig. 70) of a young specimen of P. nudus (Wood).

_Holotype._—U. S. National Museum, no. 11832 (_Imperator serratus_ Carpenter)

_Distribution._—Catalina Island, California (type, _I. serratus_ Carpenter); Mugu Lagoon, California, to Cerros Island, Lower California (Burch)

**Family Phasianellidae**

**Genus Phasianella** Lamarck, 1804


_Subgenus Eulithidium_ Pilsbr., 1898


_Woodring_ (1928, p. 420) also designated _E. variegata_ Carpenter as the type species of _Eulithidium_. _Pilsbr_'s designation (1888) is explicit and adequate. It is not modified by his conception of the species which included "var." _substriata_ Carpenter.

_Phasianella_ (_Eucosmia_) _variegata_ Carpenter, 1864, is a homonym of _Phasianella variegata_ _Lamarck_, 1822.

_Phasianella_ (_Eulithidium_) _rubrilineata_ _Strong_ 

_Phhasianella rubrilineata_ _Carpenter_, _ms._, _Museum label_, California Acad. Sci., no. 3310, _Hemphill Coll._, "types"

_Phhasianella typica_ _Oldroyd_, 1927, vol. II, pt. III, pl. 91, fig. 9 not of _Dall_

_Phhasianella (Eulithidium) rubrilineata_ _Strong_, 1928, California Acad. Sci., _Proc._, ser. 4, vol. XVII, p. 197, pl. 10, figs. 8–10

_Phhasianella rubrilineata_ Carpenter is a _nomen nudum_. According to _Strong_ (1928) it consists of the label on three specimens from Cape San Lucas in the Hemphill Collection in the California Academy of Sciences. The name was validated by _Strong_ who became its author.

_Phasianella_ (_Eulithidium_) _substriata_ _Carpenter_

_(Pl. 19, figs. 20, 21)"

63 "_J'ai donné à ce genre le nom de phasianelle d'après celui d'une coquille qui m'a fourni l'occasion de l'établir, et qui est connue sous le nom de faisane (phasianus)._" _[Lamarck, 1804, p. 295]_

_Lamarck_ continued with a description of the living shell and ends the observations with mention of two fossil species from Grignon which he described. There is no doubt that _Lamarck_ meant the Recent shell ( _P. australis_ (Gmelin) to represent the genus. See also _Woodring_ (1928; 1957).

Tricolia substriata (Carpenter), Grant and Gale, 1931, p. 814 section Eulithidium

Oldroyd included a copy of the original description of this species (1927). Strong discussed this species in detail.

The holotype is on an original Carpenter glass mount with an original label, “type C.S.L.”

Holotype.—U. S. National Museum, no. 11829

Distribution.—Recent. Cape San Lucas, Lower California (type); Monterey, California, to Panama (Burch). Pleistocene Mexico (Jordau)

Phasianella (Eulithidium) typica Dall


Phasianella (Eulithidium) typica Dall, 1908, U. S. Nat. Mus., Proc., vol. 34, no. 1610, p. 255 new name for P. variegata Carpenter


As Strong (1928, p. 197) pointed out, the name P. typica was given by Dall to replace the name P. variegata Carpenter. Therefore, the type of the species is that of Carpenter’s name and not a subsequent specimen. The types of P. variegata Carpenter (= P. typica Dall) consist of three specimens from Cape San Lucas, U. S. National Museum no. 11836. The specimen figured as type by Oldroyd (1927, pl. 91, fig. 9) does not meet the proper requirements.

P. typica Dall does not extend into the upper California area, so that details regarding the species are not included herein.

Subgenus Tricolia Risso, 1826


“Phasianella (Tricolia) carpenteri” Dall


Phasianella (Tricolia) carpenteri Dall, 1908, U. S. Nat. Mus., Proc., vol. 34, no. 1610, p. 255, new name for P. punctata Carpenter not Risso

Phasianella (Tricolia [sic]) pulloides (Carpenter), Strong, 1928, California Acad. Sci., Proc. ser. 4, vol. XVII, p. 192 in part

The type of this form has not been discovered. Type locality is Cape San Lucas; hence further discussion will be included in the work on the illustrated Carpenter types of that area.

Strong regarded the form as individual variations of P. pulloides, which would extend the range to Puget Sound.

Phasianella (Tricolia) compta punctulata Carpenter

(Pl. 18, figs. 5, 6)


64 Reference to Serpularia
Phasianella (Tricola) compta punctulata Carpenter, Dall, 1921, p. 171; Oldroyd, 1927, vol. II, pt. III, p. 162
Phasianella (Tricola) pulloides Strong, 1928, California Acad. Sci., Proc., ser. 4, vol. XVII, no. 6, p. 192 in part, pl. 10, fig. 5; Keen, 1937, p. 44; Burch, 1946, no. 57, p. 17

"[P. compta]: var. punctulata, with close rows of dots; pillar chinked 8–20 mm. Cp."

[Carpenter, 1864b, p. 651]

The following corrections should be made in Oldroyd's (1927) copy of Carpenter's description (1865).
Read "24" for "24"; "12" for "12"; "14" for "14"; delete "poll."
Add:

"... div. 50."

"Hab. S. Diego (Jewett)"—[Carpenter, 1865h, p. 179]

The type material consists of 11 specimens with a label, "Type San Diego Jewett." The specimens are spotted or striped; a few stripes are not broken up into spots, some are mottled. There is a slight umbilical area.

The two type specimens of P. compta Gould (1855, p. 25; 1856b, p. 333, pl. XI, figs. 25, 26) are in the National Museum. P. compta has the fine oblique brownish stripes.

**Syntypes.**—U. S. National Museum, no. 11288

**Distribution.**—San Diego, California (type); San Diego, California, to Cape San Lucas, Lower California (Dall)

**Phasianella (Tricola) pulloides** Carpenter

(Pl. 19, fig. 30)


Phasianella (Tricola) pulloides Carpenter, Dall, 1921, p. 172 as pulloidea; Strong, 1923, Nautilus, vol. 37, no. 43 pulloidea; Oldroyd, 1927, vol. II, pt. III, p. 162; Strong, 1928, California Acad. Sci., Proc., ser. 4, vol. XVII, no. 6, p. 192 in part, pl. 10, fig. 7 "Tricola"(sic); Grant and Gale, 1931, p. 814; Keen, 1937, p. 44; Burch, 1945, no. 57, p. 17

Tricola pulloides (Carpenter), Woodring, Bramlette, and Kew, 1946, U. S. Geol. Surv., Prof. Paper 207, p. 64

"[P. compta] ... ? Var. pulloides, exactly like Herm shells." [Carpenter, 1864b, p. 651]

The following corrections should be made in Oldroyd's (1927) copy of Carpenter's description (1865):
Read .2 for 2; .1 for 1; .13 for 13; delete "poll."
Add:

"... div. 55."

"Hab. Sta. Barbara (Jewett); Monterey, 20 fathoms (State Coll, no. 353). Smaller var., 8–10 fathoms, Catalina Island (Cooper)."—[Carpenter, 1865h, p. 180]

The type material consists of 10 specimens, 9 whole and 1 fragment. They are pink or rosy, mottled or uniform. The whorls of the spire have longitudinal rosy and white stripes. There are large blotches on the body whorl which are finer on the base. There are also rosy stripes on the body whorl. There is a slight narrow umbilical groove.

The following label accompanies the syntypes, "Sta. Barbara Jewett (Monterey Cooper)."

Strong (1928) discussed this species and included the forms punctulata, punctata, and elatior.

**Syntypes.**—U. S. National Museum, no. 14814 (16285–16286)

**Distribution.**—Recent, Santa Barbara, California (type); Monterey, California, to Lower California (Dall). Pleistocene. California (Willett, 1937; Woodring, Bramlette, and Kew); Mexico (Jordan, 1926)
Phasianella (Tricola) pulloides elatior Carpenter

(Pl. 19, fig. 31)


Phasianella (Tricola [sic]) pulloides Carpenter, Strong, 1928, California Acad. Sci., ser. 3, vol. XVII, no. 6, p. 192

Phasianella pulloides Carpenter, Keen, 1937, p. 43

"[P. compta] . . . ? var. elatior, dwarfed, longer and flatter: . . ." [Carpenter, 1864b, p. 651]

The following corrections should be made in Oldroyd’s (1927) copy of Carpenter’s description:

Read .19 for 19; read .12 for 12; read .11 for 11; delete “poll.”

Add:

“. . . div. 40°.

“Hab. Sta. Barbara (Jewett).”

“P. compta, with a large proportion of the small shells of the genus, is included under P. pullus in Mr. Reeve’s monograph. In so difficult a tribe, it is judged better to name the distinct forms, and those from separated localities, until more is known.”—[Carpenter, 1865h, p. 180]

The suite of this form, segregated with types in the U. S. National Museum collections, consists of seven specimens. They have a label, “Phasianella var. elatior Cpr. ex auctor Sta. Barbara Jewett.” The shells are slender, rosny, striped or with large spots. The stripes are longitudinal, curved, and or spiral. The stripes on the body whorl are broadly zig-zagged with a fluting along the midline which partly shows in the included photograph of the largest specimen.

Synotypes.—U. S. National Museum, no. 16287

Distribution.—Santa Barbara, California (Dall)

Family Lacunidae

Genus Lacuna Turton, 1827

Lacuna Turton, 1827, Zool. Jour., III, p. 190


LACUNA CARINATA Gould


Lacuna divaricata carinata Gould, Grant and Gale, 1931, p. 782 includes L. compacta Carpenter

65 Table of correct dates of Gould’s publications in Proc. Boston Soc. Nat. Hist., II and III, see Oth Conch., p. 100. “Exped. Shells” is dated 1846, which causes confusion and is quoted incorrectly by authors. The dates range from 1846 to 1850, depending on the volume and page.
Because of the variability of the Lacunae as manifested in a small way by the examples of the Carpenter type material and the complexity of the names involved in the L. diricaricata-solidula—carinata—porrecta and variations—compacta problem, the writer has analyzed each Carpenter name and data separately. The reasonable suggestion that L. porrecta and variations may fall under L. carinata Gould led the writer to use the comprehensive heading of L. carinata for the group. Because there seemed to be considerable confusion in the Gould dates and references of L. carinata, the above list has been included.

**Lacuna porrecta** Carpenter

(Pl. 19, figs. 18, 19)


“Upper whirls flattened, effuse anteriorly; chink large.” [Carpenter, 1864b, p. 656]

The dimensions in Oldroyd’s (1927) copy of Carpenter’s description (1865) should be corrected as follows:

For 52 read .52; for 2 read .2; for 4 read .4; delete “poll.”

The following lines should be added to make the description complete.

"... div. 80°.

*Hab.* Necah Bay (Swam).

“The form *L. exaequata* is intermediate between the very different *L. porrecta* and *L. effusa*. The Lacunae vary so much (vide Forbes and Hanley *in loco*) that, even with a large multitude of specimens, it is not easy to state what constitutes a species.” [Carpenter, 1864d, p. 428]

The type material consists of 10 specimens of different ages. One of the specimens selected to figure herein is intermediate in age and best shows the white bands. The other specimens were more worn. Dall figured a larger specimen. Since he considered or designated the specimen as type in 1921, that specimen will be designated the lectotype.

The label, which is not original, is, “Type Necah Bay Wash. J. G. Swam.” The shells are thin and umbilicate.

The drawing in Dall (1921) seems to exaggerate the carination of the body whorl and umbilical channel more than a photograph does.

One doubts the propriety of maintaining the subspecies as named by Carpenter in a group such as *Lacuna*. They are enumerated separately in this paper so that the type data are readily accessible. Their headings are italicized to differentiate from the rank of recognized species.

**Types.—** Lectotype and syntypes, U. S. National Museum, no. 15549b

**Distribution.—** Recent. Necah Bay, Washington (type); Commander Islands, Bering Sea, southward and eastward to San Diego, California (Dall). Pleistocene. California (? Arnold; Grant and Gale)

**Lacuna porrecta exaequata** Carpenter

(Pl. 19, figs. 22, 23)

GASTROPODA


"... same shape but flattened." [Carpenter, 1864b, p. 656]

"Testa L. effusae similis sed anfr. planatis, suturis parum impressis. Long. .5, long. spir. .2, lat. .42, div. 80°." [Carpenter, 1864h, p. 428]

The dimensions as given by Oldroyd (1927) should be corrected to read as above.

The habitat and last paragraph of comparisons in the description (1864h) of the species applies also to this form.

The type material consists of 6 specimens of different ages. The label reads "Neah Bay Swan." All the specimens are worn. A photograph of the largest with the spire more elevated is included herein.

Syntypes.—U. S. National Museum, no. 15532

Distribution.—Neah Bay, Washington (type)

Lacuna porrecta effusa (Carpenter)

(PL. 19, figs. 24, 25)


Lacuna carinata effusa Carpenter, Burch, 1945, no. 55, p. 14

"Larger, taller, more swollen." [Than porrecta.] [Carpenter, 1864b, p. 656]

Oldroyd (1927) included a copy of Carpenter’s (1864) description. The following corrections in her measurements should be made:

For 65 read .65; for 25 read .25; for 42 read .5; delete “poll;” add “div. 60°.”

The final habitat and final remarks furnished herein under L. porrecta include this form as well.

The type material consists of 13 specimens of various ages. Some show wide bands. The spire is rufous, and the body whorl is lighter. Such color characteristics are also seen in the specimens of L. porrecta and the form L. exaerata. The largest specimen of the group in which the spire is the most elevated is figured herein. The label is, “Type Neah Bay J. G. Swan.”

Syntypes.—U. S. National Museum, no. 15533

Distribution.—Neah Bay, Washington (type); Strait of Juan de Fuca, Washington, to San Francisco, California (Dall)

Lacuna porrecta putaloides Dall


This name was an unpublished one of Carpenter and became valid on the publication of Dall, 1919. Therefore, Dall only is the author of the name.

Lacuna solidula compacta Carpenter

(PL. 18, figs. 3, 4)


Not Lacuna compacta Carpenter, Arnold, 1907, U. S. Geol. Surv., Bull. no. 321, pl. XI, fig. 2


Lacuna solidula carinata Gould, Strong, 1924, Nautilus, vol. 38, no. 1, p. 17

Lacuna divaricata carinata Gould, Grant and Gale, 1931, p. 782 in part
"L. testa L. solidulae, var., similii; parva, solida, compacta, angusta, subturrita, marginibus, spirae excurrativi: aurantiaca, interdum pallidiore zonata; anfr. subplanatis, suturis distinctis; tota superficie confertissime spiraliter striolata; basi valde angulata, subplanata spir. .1, lat. .17, div. 60°

"Variet testa elongata: variat quoque columella normaliter lacunata.

"Hab. Neeah Bay (Swan).

"Possibly an extreme form of the very variable L. solidula, Lov. (=L. carinata, Gld., non A. Ad., = Modelia striata, (Gabb), yet distinct in all ages. The young shells resemble small Litorinæ." [Carpenter, 1864, p. 428]

The type material consists of nine specimens labelled "Type Neeah Bay Swan." The body whorl of the shells has a sharp basal margin. The umbilicus is long; it has a sharp margin above and flares below. The surface is smooth with faint microscopic striae in some places. The largest specimen is figured herein.

In comparing the illustrations of the various types of the Carpenter named forms the dimensions of each should be borne in mind. The photograph of L. compacta is enlarged to greater magnification than the others, which are larger in actual measurements.

L. compacta has the whorls carinated stronger than any of the other Carpenter Lacunae shells, as well as the illustrations of L. carinata Gould or L. solidula Lovén.

L. compacta has been included under L. divaricata (Fabricius) by Tryon, probably by Dall and Oldroyd, as synonymous with L. solidula carinata Gould by Strong, and L. divaricata carinata Gould by Grant and Gale. Carpenter regarded L. solidula Lovén and L. carinata as synonymous as did Dall (1925, p. 18, Pl. 34, fig. 2, L. solidula Lovén). Grant and Gale maintained each as a distinct subspecies. Woodring, Bramlette, and Kew (1948) believed L. porrecta and L. carinata equal.

L. divaricatus (Fabricius) cannot be used. According to English writers it is equivalent to L. vineta Montagu.

**Dimensions.**—Syntypes: height 6 mm., greatest diameter 4 mm. (largest); height 2 mm.; greatest diameter 2 mm.

**Syntypes.**—U. S. National Museum, no. 15530b

**Distribution.**—Neeah Bay, Washington (type)

### Lacuna unifasciata Carpenter

(Pl. 19, figs. 26, 27)


Oldroyd included a copy of the original description of this species (1927). The measurements as they copied them should be corrected as follows:

For 23 read .23; for 11 read .11; for 15 read .15; add "alt. 45°;" delete "poll."

The following lines should be added:


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67 Typographical error of hyphen for comma in figure numbers may cause confusion unless rectified by comparing with plate explanation.
"This shell has the shape of Littorina angulifera, the general aspect of the small Phasianella, and the chink of Lacuna. Its operculum is unknown, all the specimens in Mus. Gould being dead."—[Carpenter, 1856d, p. 205]

See "var. aurantiaca" for Carpenter’s remarks (1864).

The type material consists of five specimens labelled "Cotypes Jewett Sta. Barbara." One of the specimens has a rough surface and an operculum. This individual is not consistent with Carpenter's original description, as he stated that the operculum was unknown. Woodring made the same observation and inserted a pencil note to the same effect with the type lot.

The specimen figured herein has a brown line just below and at the suture and continues on the body whorl along the same spiral line (carina). The carina is sharp. All of the other three syntypes are keeled but they do not have the color band. All the specimens are umbilicate.

Syntypes.—U. S. National Museum, no. 1625768 (four specimens).

Distribution.—Recent. Santa Barbara, California (type); Monterey, California, to Magdalena Bay, Lower California (Burch). Pleistocene. California (Oldroyd, 1925; Waterfall, 1929; Stephens, 1929; Grant and Gale; Willett, 1937); Mexico (Jordan, 1926)

**Lacuna unifasciata aurantiaca** Carpenter


The type has not been found. The type locality may be Santa Barbara, Farallon Islands, or the region between San Diego and San Pedro, as enumerated by Carpenter (1864b) for the species. Carpenter was definite as to the character for separation of the subspecies. However, such a feature is not always consistent.

Type.—Not found

Distribution.—Recent. Type locality not differentiated; Santa Barbara, California, to Point Abreojos, Lower California (Dall). Pleistocene. California (Oldroyd, 1925; Grant and Gale)

**Lacuna variegata** Carpenter

(Pl. 19, figs. 28, 29)


"Not common; resembles the Japanese *L. decorata.*" [Carpenter, 1864b, p. 628]

"Very tall, effuse, irregular with wide chink: clouded or with zigzag stripes: like decorata, A. Ad." [Carpenter, 1864b, p. 656]

Oldroyd (1927) supplied a copy of Carpenter’s description (1864d). The measurements in that copy should be corrected as follows:

For 3 read 3.; for 16 read .16; for 17 read .17; delete "poll."

The following lines should be added to make that copy complete:

"... Div. 50."

"Hab. Neah Bay (Swam)."

68 Dall (1919, p. 349) gave 60675 as the U. S. National Museum number. No. 60675 is not the type. Specimen 60675 is labelled, "Typical; figured," *fide* H. A. Rehder (Sept. 19, 1950, personal communication.)

69 Tryon, pl. 50, fig. 58 = *L. marmorata* Dall (1919) p. 348 *fide* Dall (1921, p. 154)
"Painted like L. decorata, A. Ad., which differs in having a normal growth, with very slight chink." [Carpenter, 1864d, p. 428]

The type material of this species consists of 23 specimens, which vary in size. They have a label, "Swan Neah Bay." Although Carpenter described the umbilicus as wide, that character varies in extent among the syntypes. Most have a large umbilicus with a sharp margin, but on one specimen the umbilicus is closed. The umbilicus is not consistent with age, for its size varies on individuals of similar age or size. The spire is elevated and twisted. The young specimens have a shorter and blunter spire. Two of the syntypes are figured herein. Both of those specimens are umbilicate (widely sunken). The photo of the apertural view does not show this well.

Syntypes.—U. S. National Museum, no. 15531


Family Littorinidae

Genus Littorina Ferussac, 1822


Subgenus Algamorda Dall, 1918


"Littorina (? Algamorda) castanea" Carpenter

(Pl. 18, figs. 7, 8)


Littorina "castanea" [Carpenter], Keen, 1937, p. 38


Not Littorina castanea Adams and Reeve, 1848, Zool. Voy. Samarang, Moll., p. 49, pl. XI, fig. 8

The following lines should be added to Oldroyd's (1927) copy of the original description of this species.

"Hab. Neah Bay; one specimen among Lacunae (Swan)."

"May be an aberrant Assiminea." [Carpenter, 1865a, p. 28]

The holotype has a thin brown horny operculum. There are microscopic widely spaced spiral lines over the body whorl faintly seen on the photograph. Color brown, body whorl lighter.

Holotype.—U. S. National Museum, no. 16290

Distribution.—Neah Bay, Washington (type)

Joshua Baily pointed out to me that he is not sure that this species belongs to Littorina. If it does it requires a new name, because the specific name Littorina castanea is preoccupied (see synonymy). If it is not a Littorina, the species need not be renamed unless the name is preoccupied in the genus in which it is reclassified. The species should not be renamed until the generic position is verified.
GASTROPODA

Littorina (Algamorda) subrotundata (Carpenter)

(Pl. 18, figs. 1, 2)


Littorina subrotunda [Carpenter], KEEN, 1937, p. 38

"Like a very thin Littorina: ashen, plain." [Carpenter, 1864b, p. 656]

Oldroyd (1927) published a copy of Carpenter's description (1865). However, the measurements as copied by her should be corrected as follows:

For "28" read "2.8" for 13 read "1.3"; for 2 read .2; delete "poll."

The following lines should be added to make that copy complete:

"... div. 65°.
"Hab. Neehay Bay; one specimen among Lacmae (Swan).
"May prove to be a large Hydrobia." [Carpenter, 1865a, p. 28]

The holotype is broken and worn (pl. 18, figs. 1, 2). The spire is pointed and elevated. Holotype.—U. S. National Museum, no. 15586

Distribution.—Neah Bay, Washington (type)

Subgenus Melarhaphe Menke, 1828

(Melarhaphe of authors)

Melarhaphe Menke, 1828, Synopsis Meth. Moll., p. 23; fide BEQUAERT, 1943, Johnsonia, [vol. 1], no. 7, p. 2

Type species by monotypy. M. alabrata = Turbo neritoides LINNAEUS, 1758, Syst. Nat., ed. X, p. 761; fide Bequaert, 1943, Johnsonia, [vol. 1], p. 2. Recent. Southern Europe; Madeira. MAXWELL SMITH, 1940, World-wide Sea Shells, p. 29, fig. 409

Littorina (Melarhaphe) scutulata pullata Carpenter


Littorina scutulata Gould, TAYLON, 1887, Man. Conch., vol. IX, p. 250 in part, pl. 45, fig. 3

Litorina (Melarhaphe) pullata Carpenter, BAILY, 1935, West Coast Shells (Keep), p. 199

Litorina (Melarhaphe) scutulata pullata Carpenter, BURCH, 1945, no. 55, p. 10, 12

This species was described from Cape San Lucas but is recorded by Burch as ranging to Monterey, California

Family Rissoidea

Genus Amphithalamus Carpenter, 1864


Type species by original designation, A. inclusus CARPENTER, 1864b, p. 614, 656. Recent. Catalina Island to San Diego, California. BARTSCH, 1911, U. S. Nat. Mus., Proc., vol. 41, p. 264, fig. 2

Scrobis Watson (1866, p. 612), applied to Australian and New Zealand species, has been regarded by some authors (TAYLON, 1887, BARTSCH, 1911, Suter, 1913) as synonymous with Amphithalamus. Both genera may have the unusual shelly reinforcement of the aperture in the parietal and columellar area, but that feature is not constant in either. Iredale (1915, p. 448, 449) maintained the distinctness of the two genera, and POWELL (1927, p. 545) aptly pointed out that

"the resemblance of the Austral shells to Amphithalamus is merely superficial, prejudiced by the presence of a depression separating aperture from body-whorl. In nuclear characters Scrobis is quite unlike Amphithalamus, this latter genus having protoconch sculptured with
about fifteen slender spiral threads crossed by numerous very fine axial threads, giving the surface a minutely pitted appearance, while in Scrubs the nuclear sculpture is in the form of numerous very fine stippled lines."

A. tenuis (Bartsch 1911, p. 264, Fig. 3) is another Californian Recent species of the genus. "A. lacunatus" Carpenter is not congeneric.

**Amphithalamus inclusus** Carpenter


*Rissoa inclusa* (Carpenter), Tryon, 1887, Man. Conch., vol. IX, p. 317, 340 section *Amphithalamus*

"Habit of minute Nematura; labrum not contracted, but labium in adult travels forward to meet it, leaving a chamber behind. Nucleus cancelled: base bluntly ribbed." [Carpenter, 1864b, p. 656]

The following lines should be changed in Oldroyd's (1927) copy of Carpenter's description (1866):

Delete "poll."

Add:

"... 60"

"Hab. Sta. Barbarea (Jevett): S. Diego (Cooper)."

"This very remarkable little shell bears the same relation to Rissoa that Stoastoma does to *Heliacina*. The peritreme resembles a figure 6 inverted, as on the face of the type. In the disproportionate size of the nuclear whorls it resembles *Feninella*". [Carpenter, 1865b, p. 181]

One of the syntypes [three (Bartsch)] is in the original Carpenter vial with the original Carpenter label in white ink on glass, "type S. Diego Cooper." Apparently this is the specimen which Bartsch figured. He presented a full description of the shell.

**Dimensions.**—Length 1.4 mm.; diameter 0.9 mm. (Bartsch)

**Syntypes.**—U. S. National Museum, no. 15573; lectotype, no. 15573X

**Distribution.**—Recent. San Diego, California (type): San Pedro and Catalina Island, California, to Gulf of California (Burch); San Martin Island, Mexico (Baker, 1902). Pleistocene (Woodring, Bramlette, and Kew, 1946)

**"Amphithalamus" lacunatus** Carpenter


*Rissoa lacunata* (Carpenter), Tryon, 1887, Man. Conch., vol. IX, p. 340

"Same nucleus [as *A. inclusus*]: base chinked, not keeled. (Adult not found.)" [Carpenter, 1864b, p. 637]

The following lines should be added to the copy of Carpenter's description (1866) as published by Oldroyd (1927):

"... div. 50."

"Hab. San Pedro. Cooper.

"Two dead specimens in the shell-washings of Dr. Palmer's consignment to the Smithsonian Institute might have been passed over as the young of *Barlevia subtenms*, but for the possession of exactly the same remarkable nucleus as *A. inclusus*. It is presumed, therefore, that they are congeneric; if so, the adult has not been seen." [Carpenter, 1866a, p. 218]

The holotype is preserved in the original Carpenter vial, on the glass with a label in Carpenter's handwriting, "type Calif. Cooper."

Bartsch figured the holotype and described the shell characters in detail.
As Woodring pointed out (Woodring, Bramlette, and Kew, 1946, p. 65) this species is not typical of *Amphithalamus*. It lacks the peculiar double peristome with a detached area from the columellar and parietal wall and the basal cord of that genus.

**Holotype.**—U. S. National Museum, no. 15564

**Distribution.**—Recent. San Pedro, California (type); San Pedro, to San Diego, California (Burch). Pleistocene. Woodring, Bramlette, and Kew, 1946)

**Genus Alvania** (Leach) Risso, 1826

*Alvania leachi* in Risso, 1826, Hist. Nat. de l'Europe Meridionale, t. IV, p. 140


**Alvania acutelirata** (Carpenter) (Pl. 22, fig. 14)

*Rissoa acutelirata* Carpenter, 1864b, p. 613, 656; Reprint, 1872, p. 99, 142; 1866, California Acad. Sci., Proc., vol. 111, p. 217; Cooper, 1867, Geog. Cat. Moll., Geol. Sur California, p. 39; Keep, 1887, West Coast Shells, p. 65; Tryon, 1887, Man. Conch., vol. 9, p. 361, pl. 66, fig. 41 acutelirata; Arnold, 1903, p. 305, IV, fig. 12 Pleistocene

*Alvania acutelirata* (Carpenter), Bartsch, 1911, U. S. Nat. Mus., Proc., vol. 41, no. 1863, p. 352, pl. 31, fig. 3 not type; 1917, U. S. Nat. Mus., vol. 52, no. 2193, p. 679; Dall, 1921, p. 159; Oldroyd, 1927, vol. II, pt. 111, p. 101, pl. 82, fig. 3 same as Bartsch, pl. 31, fig. 3; Grant and Gale, 1931, p. 768; Baily, 1935, West Coast Shells (Keep), p. 201; Keep, 1938, p. 29; Burch, 1946, no. 35, p. 30


“Alvanoïd: 15 sharp, distant, spiral ribs, travelling over 18 sharp distant ribs, obsolete in front.” [Carpenter, 1864 b, p. 656]

The following lines should be added to Oldroyd's (1927) copy of Carpenter's description (1866):

“Long. 0.09, long. spir. 0.05, lat. 0.05, div. 35°.

*Hab.* S. Diego; 1 sp. and fragment in shell-washings. *Cooper.*” [Carpenter, 1866a, p. 217]

Bartsch described the shell characters in detail and figured a specimen which in the explanation of the plate is designated as the “type.” But the text does not refer to the specimen figured as the type. The specimen in the U. S. National Museum in the Carpenter type collection is labelled “San Diego B. Drift Kelsey.” This specimen could not be an original type. Woodring (Woodring, Bramlette, and Kew, 1946, p. 65) also noted that the type is not in the U. S. National Museum.

Fortunately the holotype is in the University of California. Durham kindly furnished the measurements and a photograph of the specimen which is included herein.

**Holotype.**—Museum of Paleontology, University of California, no. 15572

**Distribution.**—Recent. San Diego, California (type); Monterey, California, south to San Martin Island, Lower California (Burch). Pliocene. California (Berry, 1908; Waterfall, 1929; Grant and Gale). Pleistocene. California (Arnold; Waterfall, 1929; Woodring, Bramlette, and Kew, 1946)

**Alvania aequisculpta** Keep, 1887

*Alvania aequisculpta* Carpenter in Keep (1887, p. 65) is a *nomem nudum* as far as Carpenter is concerned. The description dates from 1887 with Keep as author. (Bartsch, 1911, p. 358, pl. 32, fig. 7 paratype, U. S. National Museum, no. 219564 *fide* Bartsch.)

Baker (1902, p. 41) used the nude name of Carpenter in a triple capacity, as *Rissoa*, *Rissoina*, and *Alvania*. This adds two *nomina nudae* to the list.

70 *Fide* Bucquoy, Dautzenberg, and Dollfus (1884, p. 283)
Alvania carpenteri (Weinkauff)


Rissoa carpenteri Weinkauff, 1885, Conch. Cab., ed 2, p. 192 new name for Alvania reticulata Carpenter, 1864; Tryon, 1887, Man. Couch, vol. 9, p. 365

Alvania carpenteri (Weinkauff), Bartsch, 1911, U. S. Nat. Mus., Proc., vol. 41, no. 1863, p. 341, pl. 29, fig. 8; Dall, 1921, p. 158; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 153; 1927, vol. II, pt. III, p. 91, pl. 80, fig. 8 same as Bartsch, pl. 29, fig. 8; Keen, 1937, p. 29; Smith, M., Panamic Marine Shells, 1944, p. 16, fig. 181A same as Bartsch pl. 29, fig. 8; Burch, 1945, no. 55; p. 30, 33; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, p. 197

“Open network: radiating threads travelling over 12 stronger distant spiral threads.” [Carpenter, 1864b, p. 656]

The following corrections and additions should be made in Oldroyd’s (1927) copy of Carpenter’s description (1864d):

Line 6, read “exsulcata” for “exculpta.”

Line 7, read “Long. .085, long. spir. .05; lat. .04, div. 30°” for dimensions as given.

Add:

“Hab. Neeah Bay; two specimens in shell—washings (Stuw).” [Carpenter, 1864d, p. 429]

Bartsch described the shell of this species in detail and figured the type. Oldroyd (1927) included Bartsch’s description. According to Carpenter there were two specimens originally. The writer therefore designates the remaining syntype a lectotype.

The Carpenter name of the species is a secondary homonym, and Weinkauff’s name is only applicable as long as the two species are put in the same genus.

Dimensions.—Length 2 mm.; diameter 1.1 mm. (type, Bartsch)

Lectotype.—U. S. National Museum, no. 17728

Distribution.—Neeah Bay, Washington (type); Drier Bay, Knight Island, Prince William Sound, Alaska, to Monterey, California (Burch); San Martin Island, Mexico (Baker, 1902); Galapagos Islands (M. Smith, 1944)

Alvania compacta (Carpenter)

(Pl. 20, figs. 16, 17, 18, 18A, B, C, D, E)


“Sculptured like Beani, with short broad whirls [sic].” [Carpenter, 1864b, p. 656]

To make Oldroyd’s (1927) copy of Carpenter’s description (1865) complete the following lines should be changed:

Delete “poll.”

Add:

“. . . div. 45°.

“Hab.—In sinu Pugetiano satis abundanter legit Kennerley; prope Neeah Bay, Swanini discipuli.” [Carpenter, 1865e, p. 62]

The type material in the U. S. National Museum consists of four specimens with the original glass and label. The card label is, “Puget Sd Kennerly type.”

Bartsch figured a specimen from Alaska but not one of Carpenter’s syntypes. The explanation of the figure defined the specimen as “type” which would seem to be a confusion in
Alvania filosa Carpenter


Rissoa filosa (Carpenter) Tryon, 1887, Man. Conch., vol. IX, p. 365

“Turrited: pillar purple-stained: 18 close spiral striae, passing over very faint waved ribs.” [Carpenter, 1864b, p. 656]

The following lines should be changed in Oldroyd’s (1927) copy of Carpenter’s description (1864d):

Delete “poll.”
Add:
“... div. 20°.
"Hab. Neah Bay; one specimen in shell-washings (Swan.” [Carpenter, 1864, p. 429]

The holotype has the original Carpenter glass with the original label, “Neah Bay Swan type.”

Bartsch figured the holotype and discussed the specific characters in detail.

Dimensions.—Length 3.5 mm.; diameter 1.7 mm. (Bartsch)

Holotype.—U. S. National Museum, no. 36632

Distribution.—Neah Bay, Washington (type); Neah Bay north to Hoonah, Alaska (Burch)

“Alvania notabilis Cpr.”

“Alvania notabilis Cpr.” in Baker (1902, p. 41) is a nomen nudum. The “Cpr.” is an error for C. B. Adams who described the species from Panama (1852, p. 180) as Rissoa; Carpenter (1863, p. 353; Reprint, 1872, p. 189)

Genus Rissoina d’Orbigny, 1840

Rissoina woodwardi Carpenter

Cooper (1888, p. 262) reported Rissoina woodwardi Carpenter from the “Quaternary” of San Diego. This species was described by Carpenter (1857, p. 357) from Mazatlan, Mexico. Bartsch (1915, pl. 31, fig. 2, 5) figured a Carpenter drawing of a syntype. The species has not been reported, other than the Cooper reference above, from the California region, living or fossil. Cooper’s record, therefore, seems to be a misidentification.

(Family Barleciidae)

Genus Barlecia Clark, 1853


71 This original date antedates that of Clark, (1855, p. 391-395; (Bartsch, 1920a, p. 166-167), even though Clark (1855) described the genus as new.

72 There is some question as to whether the Turbo ruber John Adams (1797, p. 66, pl. 13, figs. 21, 22) is the same as that of Montagu (1803, p. 320) as Turbo ruber Adams fide Forbes and Hanley 1854 (probably). Winckworth (1932, p. 223) used Rissoa rubra as of Forbes and Hanley.
Barleeia alderi (Carpenter)

_Jeffreysia Alderi_ Carpenter, 1857, Mazatlan Cat., p. 362; 1864b, p. 623, 657; Reprint, 1872, p. 109, 143; Cooper, 1867, Geol. Cat. Moll., Geol. Sur. California, p. 31

*Barleeia alderi* (Carpenter), _Bartschi_, 1920, U. S. Nat. Mus., _Proc._, vol. 58, no. 2331, p. 175, pl. 12, fig. 6 type; _Burch_, 1945, no. 55, p. 23

This species described from Mazatlan by Carpenter was reported later by him from San Diego. That record was repeated by Cooper. This occurrence has not been verified by later collectors. The distribution so far is limited to Gulf of California to Tres Marias Islands (Burch). The synonymy is not intended to be complete.

Barleeia haliotiphila Carpenter


"Longer, narrower, much smaller. On _H. splendens._" [Carpenter, 1864b, p. 656]

The following changes should be made in Oldroyd's (1927) copy of Carpenter's description (1866):

Line 4: read "labio parum" for "labro parum"; delete "poll."

Add:

"... div. 30."

"_Hab._ Basse Californie, sur la partie dorsale d'une _Haliotide, Rowell._

"Cette espèce est voisine du _H. subleuca; elle s'en distingue par sa taille beaucoup plus petite, et sa forme plus élancée._" [Carpenter, 1865g, p. 144]

The holotype was figured by Bartsch, who gave a detailed description of the shell.

_Dimensions._—Altitude 2.5 mm.; diameter 1.3 mm. (Bartsch)

_Holotype._—U. S. National Museum, no. 15558

_Distribution._—Recent. Lower California on _Haliotis_ (type); Mendocino County, California, to Lower California (Dall). Pleistocene (Woodring, Bramlette, and Kew, 1946)

Barleeia marmorea (Carpenter)

_(Pl. 22, fig. 9)_


_Litiopia marmorica_ (Carpenter) _Tryon_, 1887, Man. Conch., vol. IX, p. 283, pl. 53, fig. 87


"Solid, glossy, clouded with red; base faintly angled." [Carpenter, 1864b, p. 657]

Oldroyd (1927) republished Carpenter's description (1866). To that copy the following lines should be added:

"Long. 0.17, long. spir. 0.11, lat. 0.08, div. 31°.

_Hab._ Monterey, S. Pedro; _Cooper_. Lower California, off _Haliotis, Rowell._

"The description is written from a single perfect specimen in Mr. Rowell's collection, and some fragments from the shell-washings of Dr. Cooper's." [Carpenter, 1866a, p. 218]

The holotype of this species is in the original vial of Carpenter with the original label, "Type S. Pedro."
The holotype has been drilled vertically by some animal which left a circular opening in the posterior columnar area under the overhang of the whorl. It is visible in the photograph and appears like a misplaced umbrilus.

Burch (1945 no. 55, p. 24) suggested that the listing of Diala marmorca by Baker (1902, p. 41) is a misidentification, as he believed D. acuta is the southern form, although in the range of B. marmorca, he extended the boundary to Lower California.

A comparison of the illustrations herein of the two above-mentioned species reveals the difference in the angulation of the body whorl of the forms.

**Holotype.**—U. S. National Museum, no. 14821

**Distribution.**—Recent. San Pedro, California (type); Queen Charlotte Islands, British Columbia, to San Pedro, California (Dall); San Martin Island, Mexico (Baker 1902). Pleistocene. California (Clark, 1931; Woodring, Bramlette, and Kew 1946) Pliocene. California (Berry, 1908)

**Barleeia subtenuis** Carpenter

(Pl. 20, figs. 1–3)

*Hydrobia ulvae* Carpenter, 1857, Cat. Mazatlan Shells, p. 361


"= Hydrobia ? ulvae, Maz. Cat. no. 417; but with normal Barleeoid operculum. On grass, *Cp.*" [Carpenter, 1864b, p. 656]

The following should be changed in Oldroyd’s (1927) copy of Carpenter’s description (1865):

Line 3: read “peritretena” for “periteretana”; line 4: read “lacunem” for “lacunenm”; line 6; read “extantia” for “extante”; “.11” for “11.”

Add:

"... div. 40°"

"Hab. S. Diego, Cassidy; sur l’herbe, Cooper.—Cape St. Lucas, Xanthis—Mazatlan, Reigen."

"Si l’on juge seulement d’après la coquille, on ne peut guère séparer cette espèce des petites variétés dégradées de l’Hydrobia ulvae d’Europe. J’avais rapporté à cette espèce quelques individus, en très-mauvais état, de la collection Reigen (Maz. Cat., no. 417). Mais les individus fraîch qui ont été recueillis, grâce au zèle du docteur Cooper, possèdent l’opercule remarquable des Barleeia.” [Carpenter, 1865g, p. 144]

Three specimens in the U. S. Nat. Museum (no. 32363) are now labelled “type” and stated to be figured by Bartsch. One label has “P.P.C.” with no locality. The three specimens are each figured herein. They are not labelled “type” in the catalogue, (U. S. National Museum), and they do not correspond to Bartsch’s statement (1920, p. 170) as to type.

Bartsch (1920) explained in the text concerning the species that the specimen figured is one of 147 of no. 56446, and that the shells came from San Diego. In the explanation of the figure in the same article (and in the column on p. 170), the figure is labelled “type.”

Since apparently a holotype selected by Carpenter is not available, the specimen figured by Bartsch could be designated as the neotype. This specimen is not a lectotype in the strict sense, for material from which it would be selected is not in the original collection.

**Specimens figured.**—U. S. National Museum, no. 32363

**Distribution.**—San Diego, California (type, based on neotype if and when selected); San Pedro, California.
**Barleeia subtenuis rimata** Carpenter

(Pl. 20, fig. 4)


"Whirls [sic] more swollen. [than subtenuis]: base chinked—[Carpenter, 1864b, p. 656]

"R.I. "B. subtenui" simili; sed paulum tumidiores; anfractibus minus planatis; rimae umbilicalis conspicua.

"Hab. S. Diego. Cassidy, Cooper.

"Peut-être cette forme se trouvera-t-elle constituer une espèce distincte, lorsqu'elle sera mieux connue." [Carpenter, 1865g, p. 144]

Two specimens, in the U. S. National Museum, are segregated with Carpenter types but are not marked "type." They are labelled "San Diego Cooper." For lack of more definite type material the better preserved of the two is figured herein, and the writer presumes that it may eventually be selected as the neotype of the subspecies if such classification seems warranted.

As far as the conspicuousness of the slight umbilical opening is concerned, that of the specimens noted would seem to be within legitimate variation of the species.

This name and data are arranged separately from that of the species for easier reference, rather than because the writer regards the subspecies as valid.

**Specimen figured.—** U. S. National Museum, no. 23734

**Distribution.—** San Diego, California (type)

**Genus Diala A. Adams, 1861**


Type species by subsequent designation, *Sutur*, 1913, (Man. New Zealand Moll., p. 227)*


Recent China, Korea, and Japan

Tryon (1887, p. 282) included *D. varia* Adams under *D. semistrata* Philippi (1849, p. 34).

Tadashige Habe wrote (Aug. 8, 1950, personal communication) that *Diala varia* A. Adams is not the same as *D. semistrata* Philippi.

**Diala acuta** Carpenter

(Pl. 22, fig. 15)


*Lituita acuta* (Carpenter), Tryon, 1886, Man. Conch., vol. IX, p. 284

*Barleeia acuta* (Carpenter), Baker, 1902, Nautluis, vol. 16, no. 4, p. 41; Burch, 1945, no. 55, p. 21, 22


Oldroyd (1927) republished the description of Carpenter (1866). The following lines should be added to Oldroyd’s (1927) copy of Carpenter’s (1866) description:

"... State Collection, no. 390"

"Hab. Catalina Is. 8—10 fms.; on beach to Monterey. Cooper." [Carpenter, 1866a, p. 218]

The holotype is in an original Carpenter vial with an original label, "Cp. (type) Cp. 390 Diala acuta Cp. Catalina Is."

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73 Fortunately this is an earlier selection of type species than that of Cossmann (1921, p. 56). He designated the same species, but a typographical error (fig. 88 for fig. 81) made his complete explanation confusing.
Dall’s reference (“? pl. 53, fig. 86” in Tryon, 1887) to *Litiopa leithi* Smith is not this species.

**Holotype.**—U. S. National Museum, no. 390 (early California State Survey number, see Carpenter description)

**Distribution.**—Recent. Catalina Island, California (type); Puget Sound, Washington, to San Martin Island, Mexico (Baker) to San Hipolito (Jordan; Burch). Pleistocene. California. (Oldroyd)

Family Assimineidae

**Genus Assiminea** Leach in Fleming, 1828

*Assiminea* Fleming,14 1828, History of British Animals, p. 275; *Assiminia*, p. 557 called vernacular by Fleming

Type species by monotypy *A. grayana* Fleming, 1828. History of British Animals, p. 275 Recent. Britain.

Because there seems to be doubt in the minds of workers who have not seen Gray (1821, p. 239) as to the status of *Syncera* (supposed to be proposed there as a genus) the following is a copy of the only writer can find in that work in regard to *Syncera*.

“*Nerita Syncera* Hepatica, N. S.—The animal of this shell differs from all the others of this order, by the eyes appearing to be at the ends of the tentacula; but, I believe, that they are placed on a peduncle as long as the tentacula, and the peduncle and tentacula are ordered [sic] together. . . .”

One cannot regard this name as a valid generic proposal,75 and hence the name *Syncera* as of that reference would not have priority over *Assiminea*.

**Assiminea translucens** (Carpenter)


*Hydrobia californica* Tryon, 1865, Amer. Jour. Conch., vol. 1, p. 221, pl. 22, fig. 11


“Possibly a Barlecia; pillar thickened, base rounded.” [Carpenter, 1864b, p. 657]

The following should be added to Oldroyd’s (1927) copy of Carpenter’s description (1866):

>“Long. 0.08, long. spir. 0.045, lat. 0.06, div. 55”.

>“*Hab. S. Diego*; in shell-washings. *Cooper*.

>“Only one specimen having been seen, without animal or even operculum, the genus is doubtful. In its slight labial deposit it resembles *Litiopa dubiosa*, C. B. Adams.” [Carpenter, 1866a, p. 219]

There are 20 specimens in the U. S. National Museum, no. 126645, which are segregated as Carpenter “type” material, one of which is labelled as the “lectotype” of Bartsch. The label of the specimens is “Vancouver Is. Taylor.” That specimen labelled lectotype is not the one figured as “type” by Bartsch (1920). The plate explanation defined the specimen as “type,” and in the text the specimen was to be described and figured was U. S. National Museum no. 271483 and came from San Diego, California. This specimen could be selected as a neotype whereas U. S. National Museum no. 126645 could not. The type locality is San Diego, as stipulated by Carpenter, and therefore a Vancouver shell (no. 126645) would not be eligible.

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14 Fleming stated that Leach sent him the shell with name [MS.] *Assiminea grayana*. Fleming described the species and genus.

75 Iredale (1922, p. 37) reprinted the above lines. Dall, at the same time (1922, p. 36) attested to the validity of the name.
In Bartsch's column of specimens examined, no. 126645 is the first of specimens listed, and no. 271483 has an indication as "type." There apparently has been some mixture of labels.

The specimens of no. 271483 are C. R. Orcutt San Diego material (427 shells) and therefore not the original individual which Carpenter had when he described the species. The Cooper specimen ("only one") has not been found. Bartsch's selection would be a neotype.

**Types.—** Holotype, not found. Specimen figured by Bartsch, U. S. National Museum, no. 271483

**Distribution.—** Recent. San Diego, California (type); Vancouver Island, to Lower California (Dall). Pleistocene. California (Oldroyd, 1925; Grant and Gale); Mexico (Jordan, 1926)

**Family Turritellidae**

**Genus Turritella Lamark, 1799**

*Turritella Cooperi* Carpenter

(Pl. 20, fig. 7)


"... S. Diego; Cat. Is.; common. [May prove identical with one of Conrad's imperfectly described fossils in P.R.E.E.]" [Carpenter, 1864b, p. 612].

"Extremely slender, with many narrow whirls. c. Cp." [Carpenter, 1864b, p. 655].

The following lines should be added to Oldroyd's (1927) copy of Carpenter's description (1866)

"... State Collection, no. 564. . .

"Hab. San Pedro, 60; San Diego, 16 dead on beach; Santa Barbara, 4 dead, in 16-20 fms. Cooper.

"As I have seen no complete list of the very numerous fossil species of this genus, it appears allowable, rather than risk a synonym, to name this graceful shell after its discoverer." [Carpenter, 1866a, p. 216]

J. Wyatt Durham furnished the following notes regarding specimens of *T. cooperi* in the Museum of Paleontology, University of California:

"With regard to the types of *Turritella cooperi* Carpenter, we have several specimens in the old California State collections under number 548. Carpenter originally described the species as number 564, but in Cooper's catalogue of the collection 564 is listed as *Goniobasis siliqua* and number 548 is the only *Turritella cooperi* listed by him. None of the specimens is designated as type, but two of them have been pasted on a card at one time. Of these two specimens, one is a fossil and the other appears to be a beach worn Recent specimen. Both fit the general description given by Carpenter in the Proc. Calif. Acad. Sci. description, except that neither one has the color markings noted by him. However, his description notes that Cooper had a large number of specimens, and I am wondering if the description may have been a composite.

"With respect to the measurements given by Carpenter the fossil specimen that had been pasted on the card fits them approximately. The apex of the specimen has had a slight amount broken off in recent years, and except for this, would appear to have just about the right altitude and right height of spire and has approximately the right diameter."

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76 Hanley (1855, p. 348); Brouquoy, Dautzenberg, and Dollfus, (1886, p. 225); Tryon, (1886, p. 197). The European *T. teretra* = *T. communis* Risso.
The holotype of this species has not been found, nor has original material other than the University of California specimens. One of those could be selected as a neotype. The figure included herein is a copy of the original drawing which Cooper sent Carpenter for identification. The original figure is with the Carpenter ms. notes in the Redpath Museum.

Merriam discussed fully and illustrated specimens of the species.

**Holotype.**—Not found

**Distribution.**—Recent. California (Type—depending on selection of neotype), Monterey, California, to Cerros Island (Baker); Miocene-Recent. California (Merriam)

**Turritella jewetti** Carpenter


Not *Turritella jewetti* Arnold, 1903, p. 300, pl. IV, fig. 13; Eldridge and Arnold, 1907, U. S. Geol. Surv., Bull. 309, pl. 41, fig. 15; Grant and Gale, 1931, p. 770 in part = *T. pedroensis* Applin ms. in Merriam, 1941, p. 121, pl. 35, figs. 1–9; Hanna and Herstein, 1941, California Div. Mines, Bull. 118, pt. 2, p. 174, fig. 64–2; Burch, 1945, no. 54, p. 46

"Like sanguinea, with very faint sculpture." [Carpenter, 1864b, p. 655]

Oldroyd (1927) furnished part of Carpenter’s description (1866), and Merriam (1941) supplied a complete copy. To Oldroyd’s copy the following lines should be added:

"Hab. Sta. Barbara, Pleistocene formation (Jewett). San Diego, on beach (Cassidy).

"This species comes nearest to *T. sanguinea* Rve., from the Gulf, but differs in the faintness of the sculpture. Mr. Cassidy’s specimens may be washed fossils, or very poor recent shells.” [Carpenter, 1866b, p. 276]

In 1921 the author discovered in the Jewett Collection of the Paleontological Laboratory at Cornell University two of the assumed lost types of the article in which *T. jewetti* was described. Unfortunately the type of *T. jewetti* was not found, nor has it turned up at Cornell or at any other institution.

The *T. jewetti* of Arnold and others from the Pleistocene of the San Pedro area was separated by Esther Richards Applin from the true *T. jewetti* because it did not conform with the original remarks. Her manuscript name, *T. pedroensis*, was published with description and illustration by Merriam (1941, p. 121).

The problem of locating topotypes which have been identified by Carpenter from which a neotype might be selected has not been satisfactorily solved.

Durham furnished the following information in regard to specimens at the University of California:

"There are two specimens in the old California State Collection under number 549 labeled as ‘Turritella jewetti’ Cpr., Santa Barbara: Jewett Coll. fossil?).’ These specimens still have the color markings and from the label the possibility appears to me that they might be a part of the Jewett collection, although the entire label is a printed label made up by Cooper with the notation ‘Coll. Cooper’ on it."

The writer has not investigated these specimens. Since the West Coast *Turritella* monographs were prepared from material in California, it seems the specimens might have been considered. However, it would be well that the specimens be examined to determine whether they are *T. cooperi* or not.

Woodring (in Woodring, Bramlette, and Kew, p. 69) described a specimen in the U. S. National Museum which probably had been examined by Carpenter. His final opinion was that the specimen was doubtless *T. cooperi*. The writer examined the specimen and agrees with Woodring that it is what has been identified as *T. cooperi*.

In the Redpath Museum there is a specimen (no. 3141) labelled by Carpenter, “*T. jewetti*, jun fossil Sta. Barbara.” The specimen, however, is not a young shell as stated. It measures
43 mm. length and 15 mm., greatest diameter. Because of the discrepancy the writer has not included the illustration of the shell. The shell is of the *T. cooperi* stock. It has a subquadrate aperture as described by Carpenter for both *T. cooperi* and *T. jewetti*.

A specimen of *Turritella* (no. 15834) in the Crooke Collection, American Museum of Natural History, is labelled "*T. jewetti* Carp. California." Although the Crooke Collection was acquired probably earlier than 1894 (John C. Armstrong, July 17, 1951, personal communication) there is no evidence that Carpenter identified this shell, and the locality is not adequate. An examination of the shell shows it to be the apical whorls of *T. cooperi* Carpenter. The specimen is a fossil.

Two suites of specimens of two each are in the Museum of Comparative Zoology, Cambridge, Massachusetts.

One set (no. 29399) has a printed label, "*Turritella jewetti* Cpr. Santa Barbara; (Jewett Coll., fossil?) 549 California Geol. Survey Jewett." These two specimens are fossil and most certainly from a lot of shells similar to those described by Durham, which are at present at the University of California. The specimens are presumably those sent out by Cooper, as Cooper was employed by the California Geological Survey. This suite, as well as the following second set, is at present labelled "cotypes," but since the two sets probably do not represent original Jewett specimens identified by Carpenter they cannot qualify as "cotypes."

The second set (no. 142385) consists of two Recent shells which have the original label, "*Turritella Jewettti* Cpr. Sta. Barbara, Cal. Cooper."

One shell of the first suite is too badly worn for accurate identification. The remaining three specimens are what is being identified as *T. cooperi* and equal specifically the other specimens enumerated under this discussion. All except the Redpath Museum specimen are apical whorls and are equivalent to the specimen figured by Merriam (pl. 33, fig. 1).

If *T. cooperi* and *T. jewetti* prove to be conspecific, *T. cooperi* has priority. Both names were first briefly described by Carpenter (1864b, p. 655). *T. cooperi* is listed first on that page. Carpenter's first descriptions (1864) of both consist of only one line, which is not adequate to validate the name of the species as of that date. *T. cooperi* was described in February (1866a), and *T. jewetti* in April (1866b). Merriam failed to include the 1866a reference in the synonymy of *T. cooperi*. That is the description which enumerates characters sufficiently for identification.

**Holotype.**—Not found

**Distribution.**—Pleistocene. Santa Barbara, California (type)

**Genus Tachyrhynchus**

*Tachyrhynchus* Mörch, 1868

*(Tachyrhynchus* Mörch, 1875)*


**Tachyrhynchus lacteolum** (Carpenter)

*(Pl. 20, fig. 5)*


***Mörch** (1875, p. 127) corrected the spelling to *Tachyrhynchus*. The name is derived from the Greek *rhynchos* (n.) beak, snout. The ending of the specific name is neuter instead of either masculine or feminine as often written. (*Note: After this paper was submitted for publication the International Commission on Zoological Nomenclature, Declaration 39, 1958, reversed its former decision and ruled that such endings are masculine.)

***Cossmann*** is 3 years before that of E. A. Smith (1915, p. 373 *T. reticulata* Mighels and Adams, 1842). The result is the same in both designations.
Tachyrhynchus lacteolum (Carpenter), Dall, 1921, p. 152, pl. 6, fig. 2; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 148, pl. 5, fig. 8; 1927, vol. II, pt. III, p. 58; pt. II, pl. 31, fig. 11 same as Dall; Keen, 1937, p. 46; Burch, 1945, no. 54, p. 48; no. 55, p. 9; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, p. 196


“May be a local var. of the circumpolar lactea, with altered sculpture: distinct, teste Cum- ing.” [Carpenter, 1864b, p. 655]

The measurements as given by Oldroyd in her copy (1927) of Carpenter’s description (1856) should be corrected as follows:

Read .33 for 33; read .24 for 24; read .14 for 14.

The following lines should be added:

“... div. 30°.

“Hab.—In sinu Pugetiano legit Kennerley. In insula Vancouver legit Forbes.

“Anne ‘M. lacteola’ varietas insignis, sculpturae indole satis discrepans.” [Carpenter, 1865e, p. 62]

The holotype of this species is in the United States National Museum. Dall did not state that the illustration which he included (1921) was of the type. The dimensions are the same, but the drawing presents a different aspect than that of the actual specimen or a photograph of the same. Dall’s drawing has an additional row of spiral ribs, and the nodes appear less sharp than they are. The specimen has intervening fine spiral threads not shown on Dall’s drawing or on the photograph of the holotype herein included.

The Dall drawing has an aspect of whorl shape as in the type species of the genus, T. recticulatum (Adams) (Clench and Turner, 1950, pl. 40, figs. 14–15), more than has the actual type of the Carpenter species.

The holotype has a label, “type Puget Sd. Dr. Kennerly [sic].”

Holotype.—U. S. National Museum, no. 4195

Distribution.—Puget Sound, Washington (type); Chignik Bay, Alaska Peninsula, east and south to Point Abreojos, Lower California (Dall)

Tachyrhynchus lacteolum subplanatum (Carpenter)

(Pl. 20, fig. 6)


Tachyrhynchus lacteolum subplanatus (Carpenter), Dall, 1921, p. 152; Oldroyd, 1927, vol. II, pt. III, p. 58; Grant and Gale, 1931, p. 776; Keen, 1937, p. 46; Burch, 1945, no. 54, p. 48

“Sculpture fainter: whirls flattened.” [Carpenter, 1864b, p. 655]

Oldroyd (1927) included a copy of Carpenter’s description (1865). The following lines should be added to make that copy complete:

“Hab.—In sinu Pugetiano specimen viventia sed maxime crosa legit Kennerley: juxta “Necah Bay” legerunt Indianuli, Swannii discipuli.” [Carpenter, 1865e, p. 62]

There is a plication on the labium of the holotype. The specimen is worn, but some of the epidermis remains. There is a strong intervening thread between the spiral ribs.

Holotype.—U. S. National Museum, no. 4195b

Distribution.—Recent. Puget Sound, Washington (type); Puget Sound, Washington, to San Diego, California (Dall). Pleistocene. Mexico (Jordan, 1926)

Family Vermetidae

Genus Petaloconchus H. C. Lea, 1843


Type species by monotypy P. sculpturatus Lea; Upper Miocene, Virginia, Carolinas and Florida. Antilles. Mansfield, 1930, Florida Geol. Sur. Bull. no. 3, pl. 14, fig. 10
Petaloconchus macrophragma Carpenter

**Petaloconchus macrophragma** Carpenter, 1856, Zool. Soc. London, Proc., pt. XXIV, p. 313, fig. 1 of section only; 1857, Mazatian Cat., p. 309; *Tryon*, 1886, Man. Conch., vol. VIII, p. 173, pl. 48; fig. 16; *Dall*, 1921, p. 151; *Burch*, 1945, no. 54, p. 44

This species was described from Mazatlan by Carpenter. The figuring of the type belongs with illustration of the Mazatlan Catalogue. The holotype should be in the British Museum. The synonymy is not intended to be complete. The species ranges from Panama to Catalina Island (Burch).

The holotype is in the U. S. National Museum. It has a label, “Bivonia compacta type Vancouver Id. J. G. Swan.” The photograph of the holotype was furnished by the authorities of the Smithsonian Institution.

**Holotype.—** U. S. National Museum, no. 13580

**Distribution.**—Barclay Sound, Vancouver Island, British Columbia (type); Vancouver Island, British Columbia, to San Pedro, California (Dall)

**Genus Aletes** Carpenter, 1857


*Aletes* Rafinesque, 1815, is a *nomen nudum*. Keen (1951, p. 8–15) presented the problem of *Scolixedion* Renier, 1807, 80 vs. *Serpulorbis* Sassi, 1827. She suggested (Jan. 18, 1951, personal communication) that she might regard *Aletes* as a subgenus of *Serpulorbis*.

**Petaloconchus compactus** (Carpenter)

(Pl. 20, fig. 15)


**Vermetus compacta** (Carpenter), *Tryon*, 1886, Man. Conch., vol. VIII, p. 177 list only

**Dofania compacta** (Carpenter), *Keen in Burch*, 1947, no. 67, p. 25

“Frequent on *Pachypona*; externally resembles *Petaloconchus macrophragma*.” [Carpenter, 1864b, p. 628]


The measurements as given in Oldroyd’s copy (1927) of Carpenter’s description (1865) should be corrected as follows:

Read .7 for 7; read .3 for 3; read .1 for 1; delete “poll.”

The following lines should be added:

“*Hab.* Barclay Sound, abundant on *Pachypona* gibberosum (Swan).

“Belongs to *Bivonia*, Gray (not Möörch). Has the aspect of *Petaloconchus macrophragma* on a large scale, but is entirely destitute of internal laminae. One specimen had a faint columnellar thread for two whirls only. Operculum normal, with thin edge, dark red.” [Carpenter, 1864d, p. 427]

A specimen from the Carpenter Collection in the Redpath Museum” collected by the Indian children” for J. G. Swan at Neah Bay and Vancouver Island, was sent to Myra Keen for examination. She vouched that it was the same form as the holotype and furnished the following remarks (1951, personal communication) concerning the topotype (Redpath Museum, no. 936):

79 See Iredale, (1916a, p. 36) on dates of Mazatlan Catalogue. The dates on individual pages for Mazatlan Catalogue are not true dates of publication.

"As to the vermetid—it is, I think, as much Petaloconchus as anything. One broken speci-
men shows faint columnar threads. I find we have about a dozen specimens of what is
probably this species. Ours, however, are not solitary. They all show the faint columnar
thread and the same manner of coiling which is characteristic of the genus. I wish I could
find an operculum, that would clinch the matter. Our specimens had been identified, pre-
sumably by Dr. Dall, as P. complicatus. They are not the P. complicatus we have from
southern California, which has very heavy internal laminae, but that is another problem.
This specimen of yours confirms a suspicion that has been growing on me that the name
Bivonia is unnecessary anyway and need not be replaced. I am beginning to feel certain that
we shall have to redefine Petaloconchus to include species with obsolete laminae, for I have
found specimens with Petaloconchus opercula and nuclear whorls which had no laminae, but
I shall have to do much more comparative work before I am positive."

**Aletes squamigerus** Carpenter

1860, Smith Misc. Coll., vol. 2, art. 6, p. 4; *Dall*, 1921, p. 151; *Oldroyd*, 1927, vol. II,
pt. III, p. 49; Grant and Antone, 1931, p. 777; *Keen*, 1937, p. 29; *Wenz*, 1939, Hand.
Paleozool., Bd. 6, Teil 3, p. 675, fig. 1928 copy *Tryon*, fig. 73; *Burch*, 1945, no. 54, p. 43;
1954, p. 144, pl. 20, fig. e

with var. *pennata*: Carpenter, 1864b, p. 557; *Reprint*, 1872, p. 43

**Vermeus (Thylacodes) squamigera** (Carpenter), *Tryon*, 1886, Man. Conch., vol. VIII,
p. 181, pl. 54, figs 73, 74

**Serpulobis squamigerus** Carpenter, 1864b, p. 557, 654; *Reprint*, 1872, p. 43, 140; *Cooper*,
1867, Geog. Cat. Moll., Geol. Sur. California, p. 27; *Keep*, 1887, West Coast Shells, p. 74;
*Cooper*, 1888, 7th Ann. Rept. California State Min. Bur., p. 264; *Williamson*, 1892,
U. S. Nat. Mus., Proc., vol. 15 no. 898, p. 204; *Arnold*, 1903, p. 299

The following lines should be added to Oldroyd's (1927) copy of Carpenter's original
description:

A fine group of this shell is in Mr. Nuttall's collection. It agrees in the main with the
Mazatlan species, but differs in colour and sculpture, Mr. Nuttall believes that he found an-
other species without scales." [Carpenter, 1856c, p. 226]

anello*, *Möcher*, P.Z.S. 1861, p. 359, is perhaps the young." [Carpenter, 1864b, p. 654]

The type is not in the British Museum (G. L. Wilkins, Oct. 17, 1950, personal commu-
nication).

**Type**.—Not found

**Distribution**.—Recent. Santa Barbara, California (type). Monterey, California, to Payta,
Peru, and the Galapagos Islands (Dall). Pleistocene. California (Cooper; Arnold; Chace,
1919; Oldroyd, 1925; Stephens, 1929; Grant and Gale; Willett, 1937). Mexico (Jordan,
1926; Hertlein, 1934)

**Note**.—"*Vermeus lituella* Cpr." in Berry, 1907, Nautilus, vol. 21, p. 43. The "Cpr." is an error for *Möcher*.

**Family Caecidae**

**Genus Caecum** Fleming, 1813

**Caecum Fleming**, 1813, Brewster's Edinburgh Encyclopaedia, vol. VII, p. 67 *fide Neave*
(1939-40) and Sherborn (1937); 1815, American ed., vol. 6, pt. 2, p. 689

Type species by subsequent designation, Gray, 1847, Zool. Soc. London, Proc., pt. XV, p. 203,
*Dentalium trachelum Montagu*, 1803, Testacea Britannica, pt. 2, p. 497, pl. 14, fig. 10, Liv-

**Caecum californicum** Dall

(Pl. 20, figs. 8, 9)

**Caecum Cooperi** Carpenter, 1864, p. 612, 655; *Reprint*, p. 98, 141; 1866, California Acad.

"Small, with 30–40 sharp narrow rings." [Carpenter, 1864b, p. 655]

"C. (Anellium) t. parva, satis tereti, alba; annulis crebris acutioribus, angustis, circ. XXXIV–XXXVIII, interstitiis subconcavis; septo subungulato; apice obtuso, hauvelato, margine laterali recto; apertura declivi, parum contracto et postice expanso; operculo? "Long. 0.09, lat. 0.025.

"Hab. San Diego and Catalina Island, 8–10 fms. 18, Cooper.

"Known from similar Mazatlan species by the very numerous but separated and somewhat sharp ribs." [Carpenter, 1866a, p. 216]

The syntypes consist of two specimens on the original Carpenter glass mounts with a Carpenter label, "S. Diego Cooper." The specimens are well preserved and measure 2 mm. and 1.75 mm. in length, respectively.

Syntypes.—U. S. National Museum, no. 15719 (C. coopei Carpenter)

Distribution.—Recent. San Diego, California (type); Monterey, California to Lower California (Dall). Pleistocene. California (Arnold; Oldroyd, 1925; Grant and Gale; Woodring, Bramlette, and Kew) Mexico (Jordan, 1926)

Caecum quadratum Carpenter

Caecum quadratum Carpenter, Berry, 1907, Nautilus, vol. 21, no. 1, p. 43 Monterey

Smith and Gordon (1948) doubt the identification of this species in the upper California fauna. It is not recorded by other authors from that region. The species was described from Mazatlan by Carpenter (1857, p. 322).

Genus Micranellum Bartsch, 1920


Type species by original designation, Caecum crebricinctum Carpenter, 1864b, p. 655; 1866, California Acad. Sci., Proc., vol. III, p. 215. Living. Monterey, California, to Lower California, in shallow water. (Pl. 20, figs. 10, 11, 11A)

C. alterum Meyer of the Jackson Ecocene, southern United States appears to be a typical Micranellum. This would lower the range of the genus as given by authorities (Wenz, 1939, p. 683). Miocene-Recent.

Micranellum was proposed by Bartsch as a genus of the Caecidae. Theile (1931, p. 188) and Wenz (1939, p. 683) limit the group to sectional subgeneric rank respectively.

Micranellum crebricinctum (Carpenter)

(Pl. 20, figs. 10, 11, 11A)


Caecum (Micranellum) crebricinctum Carpenter, Abbott, 1954, p. 147, fig. 37 m
"Large, with aspect of Elephantulum, but very fine close annular sculpture; plug subungulate. 8–20 fm. C. p." [Carpenter, 1864b, p. 655]

Oldroyd (1927) republished Carpenter's description (1866). To her copy the following lines should be added:

"State Collection, no. 388."

"Hab. San Diego, 8–10 fms., 12; Monterey, 20 fms., 20, some alive; Santa Barbara, 20 fms., 3 Cooper."

"Has the aspect, but not the sculpture, of an Elephantulum." [Carpenter, 1866a, p. 216]

The syntypes (two specimens) in the U. S. National Museum are on an original Carpenter glass mount with an original label "State Coll. 388".

Syntypes.—U. S. National Museum, no. 14930

Distribution.—Recent. San Diego, California (type); Forrester Island, Alaska, south to San Martin Island, Lower California (Baker). Pleistocene. California (Arnold; Oldroyd, 1925; Grant and Gale; Willett, 1937; Woodring, Bramlette, and Kew); Mexico (Dall, 1892; Jordan, 1926)

Family Potamididae

Genus Cerithidea Swainson, 1840

Cerithidea Swainson, 1940, Treatise of Malacology, p. 198, 203, 342; Bequaert, 1942, Johnsonia, no. 5, p. 1; Nautilus, 1942, vol. 56, no. 1, p. 20


Cerithidea hegewischi albonodosa Carpenter

(Ill. 20, fig. 19)


Cerithidea hegewischi albonodosa Carpenter, BEQUAERT, 1942, Nautilus, vol. 56, no. 1, p. 25; SMITH, M., 1944, Panamic Marine Shells, p. 18; DURHAM, 1950, Geol. Soc. Amer., Mem. 43, p. 120, pl. 33, fig. 19

"C. t. solida, C. varicosae similis, compacta, fusco-purpurea, varicibus et noduleis albis, fasciis spiralis intensioribus saepe ornata; anfr. XII parum convexus, sutura impressa; liris spiralis IV. in anfr. penult, et liris crebrerrimis transversis vix undatis, ad intersectiones nodosis, ornata; varicibus iii. in anfr. ii, apertura, subquadrata, sinu minimo, labio hauz expanso; operculo subplanato, nucleo mucronato, anfr. plurimus indistinctis, fusco, ad marginem tenuissimum diaphano.

"Long. .8, long. spir. .57, lat. .33, div. 20°.


"Known from C. varicosae var. Mazatlanica, by the light purplish brown tinge, the colour of which wears off at the varices and nodules, and by the details of sculpture." [Carpenter in Gould and Carpenter, 1856, p. 205]

G. L. Wilkins (British Museum) kindly furnished the following (Personal communication):

"We do not appear to have the specimen figured by Reeve, which is larger than that selected by Carpenter as the type on pp. 205–6, P.Z.S. 1856 but there is one that approximates to it (17 mm. in length). The label fits very well and runs C. albonodosa Carp. San Diego Dr. Webb and is from the Cuming Collection. If this does not prove to be the type it is probably a reliable paratype and may have been sent to Cuming by Gould."

The authorities of the British Museum have cooperatively furnished a photograph of the specimen mentioned. The writer selects the specimen as the lectotype of this species. No other authentic type material has been found.

Lectotype.—British Museum (Natural History), Department of Zoology, no. 1950.11.9.2.

Distribution.—Recent San Diego, California (type); San Diego, California, Magdalena
Bay, and Espiritu Santo Island, Lower California (Bequaert). See Table 2 for stratigraphic distribution.

Family Cerithiidae

Genus Bittium Leach in Gray, 1847


Subgenus Semibittium Cossmann, 1896


Bittium (Semibittium) armillatum (Carpenter)

(Pl. 22, fig. 10)


"Same aspect [asperum]: 3 nearly equal rows of knobs." [Carpenter, 1864b, p. 655]

Oldroyd (1927) republished Carpenter's description (1866). The following should be changed in that copy:

Page 26, 3d line, last word, delete last "ta."

Add:

"Hab. S. Barbara, Pleistocene, 1 sp. (Jewett). S. Pedro, S. Diego (Cooper).

The sculpture resembles Cerithiopsis; but the columella is pinched, not notched." [Carpenter, 1866b, p. 276]

Bartsch enumerated the details of the shell characters of this species and figured a syntype. The label of that syntype is as follows: "Pleistocene Sta. B. Jewett." Oldroyd included Bartsch's notes in her work. There is a well-preserved syntype in the Redpath Museum labelled, "type fossil. Sta. Barbara". A photograph of that specimen is included herein.

Woodring (in Woodring, Bramlette, and Kew) suggested that B. purpureum is a living form of B. armillatum, and that B. armillatum does not occur in the Recent.

Dimensions.—Length 9.5 mm.; diameter 3.2 mm. (syntype) (Bartsch); length 11 mm.; greatest diameter 3 mm. (syntype, Redpath Museum.)

Syntypes.—U. S. National Museum, no. 15653; Redpath Museum, no. 4851

Distribution.—Pleistocene. Santa Barbara, California (type) ["two miles from the coast and 150 feet high."]; (Bartsch; Grant and Gale; Woodring, Bramlette, and Kew). Recent. Santa Barbara and San Pedro, California, south to San Martin, Lower California (Baker; Burch).

Bittium (Semibittium) attenuatum Carpenter

Bittium quadrifilatum Carpenter, Arnold, 1903, p. 293 in part, pl. IX, fig. 2


Bittium (Stylidium) attenuatum Carpenter, ARBOTT, 1954, p. 156

"Like starved filosum, very narrow, adult scarcely sculptured." [B. var. esuriens, Carpenter, 1864b, p. 655]

"Like plicatum, A. Ad., or drawn-out esuriens, with threads instead of grooves." [Carpenter, 1864b, p. 655, B. attenuatum]

OLDROYD (1927) republished Carpenter's description (1865g) of B. attenuatum. Correct her copy as follows:

Last line, read .31 for 31; read .11 for 11.
Add:
"... div. 18°."

"Hab. Monterey, Taylor.—Neeah Bay, Sivan.
"Je n'ai vu qu'un seul échantillon en bon état de cette espèce. Elle a la taille du B. plicatum, A. Ad., mais la sculpture de la base est différente. [Carpenter, 1865g, p. 143, B. attenuatum]

"B. t. 'B. filos' simili, sed multo minore, graciliore, interdum valde attenuata; sculptura t. junioe ut in 'B. filos', sed t. adulta subobsoleta; interstititis hand insculptis. Long. .27, long. spir. .19, lat. .85, poll. div. .25°.


"Bien que j'ai vu beaucoup d'individus de cette forme, et un plus grand nombre encore du B. filosum, Gld. (= Turritella Eschrichti, Mdd. = Aëkta Eschrichti, Adams, Genera), je ne puis déterminer avec une certitude complète si c'est une véritable espèce, ou seulement une variété dégradée et, pour ainsi dire, affamée (esuriens) du B. filosum, qui d'ailleurs, ne varie pas. Comme le B. filosum, qui, d'ailleurs, ne s'étend pas aussi loin au sud, il est probable que les échantillons californiens doivent être considérés comme distincts, tandis que les individus de la région Vancouvérienne peuvent être réunis au B. filosum. Tous les individus qu'on a envoyés étaient très—roulés." [Carpenter, 1865g, p. 142, B. (? var.) esuriens]

Bartsch presented a detailed description and figured the syntypes of B. attenuatum, as well as the holotype of B. esuriens Carpenter, which he regarded as a young individual of B. attenuatum. This opinion appears reasonable from the illustrations. The writer includes original descriptions for completeness.

Dimensions.—Length 10.2 mm., 8.8 mm.; diameter 3 mm., 2.9 mm. respectively (syntypes, B. attenuatum).

Types.—U. S. National Museum, syntypes, B. attenuatum, no. 15584; holotype, B. esuriens, no. 14832. Lectotype, no. 15584 (Bartsch, 1911, pl. 54, fig. 5; selected by Woodring in Woodring, Bramlette, and Kew, 1946, p. 68)

Distribution.—Recent. Monterey, California; Neeah Bay, Washington (type localities). The syntypes from different localities have been deposited together without locality differentiation. Therefore, even if one of the two specimens were chosen as lectotype, the proper locality cannot be attached. Forrester Island, Alaska, to San Diego, California (Dall). Pleistocene. California (Bartsch, Oldroyd, 1925; Grant and Gale; Woodring, Bramlette, and Kew)

Bittium (Sembittium) purpureum (Carpenter)


"Stained with purple: nodules fine: base finely lirate." [Carpenter, 1864b, p. 660]

Oldroyd (1927) published a copy of Carpenter's description (1865). The measurements given by her should be corrected to read, "Long. 29, long. spir. 19, lat. 1, div. 20°.

The following line should be added to make the copy complete:

"Hab. Sta. Barbara (Jevett); Monterey, San Diego (Cooper)." [Carpenter, 1865i, p. 397]

Bartsch analyzed the characters of the species and distribution and included a figure of one of the four syntypes. Those specimens have the label "Monterey Sta. B." It is, therefore, impossible to select the type locality from the specimens.

Dimensions.—Length 7.3 mm.; diameter 2.5 mm. (syntype) (Bartsch)

Syntypes.—U. S. National Museum, no. 14823

Distribution.—Monterey and Santa Barbara, California (types); Monterey to San Diego, California (Dall)

Bittium (Semibittium) quadrifilatum (Carpenter)

Bittium quadrifilatum Carpenter, 1864b, p. 655; Reprint, 1872, p. 141


Bittium (Stylium) quadrifilatum Carpenter, Abbott, 1954, p. 156

"Broad: 4 threads, equal from beginning, coiling over strong radiating ribs." [Carpenter, 1865g, p. 143]

Oldroyd (1927) republished Carpenter's description (1865) of this species. There are many typographical errors in her copy; the following corrections should be inserted:

Line 2, insert question before "sinistrall": line 3, delete the comma after "normalibus" and insert "7": line 4, correct 15 to 16; line 6, read "angustis" for "sagistics"; line 8, read "labio parvo" for "libio purulo"; line 9, read .26 for 26, 18 for 16, .09 for 9; add div. 25°.

The following lines should be added to make the copy complete:

"Hab. S. Pedro, Cooper.—S. Diego, Cassidy.

"Dans cette espèce et dans quelques autres très voisines, les B. asperum et B. armillatum, par exemple, le nucléus, est très—différent de celui des Bittium typiques. Il est probable qu'elles n'appartiennent pas au même genre." [Carpenter, 1865g, p. 143]

Bartsch discussed this species and illustrated the holotype. That specimen was collected by Cooper at San Diego. This does not coincide with Carpenter's statement that the San Diego specimens were collected by Cassidy and that Cooper's specimen came from San Pedro. Therefore, one cannot tell whether the locality or the collector on the label is incorrect or whether the confusion was made by Carpenter in his description.

Dimensions.—Length 7 mm.; diameter 3 mm. (holotype); length 11.5 mm.; diameter 3.6 mm. (from Bartsch; specimen figured by Bartsch).

Holotype.—U. S. National Museum, no. 14849 (14935)
Distribution.—Recent, San Diego, California (type); Monterey, California to San Ignacio Lagoon, Lower California (Dall). Cooper (1888), Arnold, and Bartsch report the species from the Pleistocene (Arnold in Pliocene, fide Grant and Gale), but Woodring (Woodring, Bramlette, and Kew) limited the species to the Recent.

**Bittium (Semibittium) rugatum** Carpenter


“Same aspect: [B. quadrifilatum] upper whirs with 2 strong and 2 faint keels over less prominent ribs. Bch.—40 fm. C.P.” [B. asperum, Carpenter, 1864b, p. 655]


*Flab. Sta. Barbara, fossil in Pleistocene beds; abundant (Jevette).* S. Pedro, San Diego, Catalina Is. 30-40 fins. (Cooper), State Col. no. 591c.

“Mr. Gabb informs me that his *Turbonilla aspera* is a *Bittium*. Unfortunately the type is not accessible; and as the diagnosis would fit several closely allied species, it cannot be said with precision to which it rightfully applies. As this is the commonest of the group, it is presumed that it is the ‘Turbonilla’ intended. Should the type, however, be recovered, and prove distinct, this shell should take the name of *B. rugatum*, under which I wrote the diagnosis, and which was unfortunately printed in the Brit. Assoc. Report, p. 539. The fossil specimens are in much better condition than the recent shells as yet discovered.” [B. /asperum Carpenter, 1866b, p. 276]

Bartsch published a detailed description and illustrations, including a figure of the holotype of this species.

**Measurements.**—Length 12 mm. (holotype); length 10.5 mm.; diameter 3.5 mm.; specimens figured by Bartsch.

**Holotype.**—U. S. National Museum, no. 7154

**Distribution.**—Pleistocene (lower): Santa Barbara formation, Santa Barbara, California (type “two miles from coast and 150 feet high,” Carpenter, 1864b, p. 539; Arnold; Oldroyd, 1925; Bartsch; Grant and Gale; Willett, 1937; Woodring, Bramlette, and Kew): Mexico, (Jordan, 1926). Recent, San Pedro and Catalina Island, California (Dall), to Todos Santos Bay, Lower California (Jordan)

Subgenus **Lirobittium** Bartsch, 1911


Type species by original designation, *B. (L.) catalinense* Bartsch, 1907, Smith, Misc., Coll. (Quart.), vol. 50, pt. 4, p. 28, pl. 57, fig. 13; Recent and Pleistocene. California. Bartsch, 1911, U. S. Nat. Mus., Proc., vol. 40, no. 1826, p. 51, fig. 1

**Bittium (Lirobittium) interfossa** (Carpenter)


MARINE MOLLUSCA DESCRIBED BY P. P. CARPENTER


Bittium (Lirobittium) munatum (Carpenter), Grant and Gale, 1931, p. 760; Baily, 1937, West Coast Shells, (Keep), p. 194; Abbott, 1954, p. 156

"With 5 sharp keels crossing 14 strong ribs. 8–10 mm." [Carpenter, 1864b, p. 656]

"R. t. sat is magna, crossa, alba, sat is turrita, conspiciue sculpta; marginibus spirae rectis, vertice manillato; anfr. mucu.?..(detritis): norm. V. tumidis, angularis, saturas angulatum impressum; carinis spiralis validis, in spira ii.; altera postica interdum intercalate; anfr. ultimo duabus quoque peripheralibus, quinta axim circumcuncte; costis radiantis validibus, extantibus, circ. XIV., ad suturas contiguis, liris regularibus spiram ascendentibus, ad interseciones carinarum nodulosis, ad peripheriam continuis; intersitis quadratis, alte infossatis; apertura ovata.

"Long. 0.26, long. spir. 0.18, lat. 0.10; div. 28°.

"Hab. Catalina ls. 8–10 mm. 4; San Diego 1; Monterey. (var.) Cooper." [Carpenter, 1866a, p. 217]

"Sculpture open; strong basal rib." [Carpenter, 1864b, p. 660, C. fortior]

"C. testa C. purpureae simili, sed scuulptura multo fortiori, basi pallide; seriebus nodulorum spiralis testa adolescenti ii., postea iii.; costis radiantis circ. xii., interstitiis magnis; costis suturalibus validis, subnodosis; costa basali valida.

"Long. 3, long. spir. 2, lat. 11, div. 26°."

"Hab. Sta. Barbara, 1 specimen (Jeffett)." [Carpenter, 1865h, p. 397, C. fortior]

The type of C. fortior has not been found.

Bartsch discussed the shell characters in detail and illustrated the holotype and a more mature and less eroded specimen from the type locality. The holotype has the label "387a type Catalina Id. Cooper." This label coincides with Carpenter's description (1866) and verifies the authenticity of the type. Oldroyd reprinted Bartsch's discussion.

Dimensions.—Length 6.2 mm. (holotype); length 8.3 mm.; diameter 3.1 mm.; specimen figured by Bartsch

Holotype.—U. S. National Museum, no. 224860 [Early California State Geol. Sur., no. 387a]

Distribution.—Recent. Catalina Island, California (type); Monterey to San Diego, California (Dall). Pleistocene. Mexico (Jordan, 1926); California (Woodring, Bramlette and Kew)

Bittium (Lirobittium) munatum (Carpenter)


"Stout; strongly sculptured; base evenly ribbed." [Carpenter, 1864b, p. 660]

Oldroyd (1927) published a copy of Carpenter's description (1865). The measurements in her copy should be corrected as follows:

Read .34 for 34; read .24 for 24; read .11 for 11; delete "poll.

Add:

"div. 20°;"

"Hab. Neeah Bay; common (Scaev.)" [Carpenter, 1865a, p. 32]

31 The no. 56906 which Oldroyd gave as the type number is not that of the type but of the second specimen which Bartsch figured. (See Bartsch, p. 401, 402.)
Bartsch enumerated the shell characters and illustrated two of "ten" syntypes. At present in the U. S. National Museum there are 12 specimens in the lot which have a label, "type Neah [sic] Bay Wash. Swan."

**Dimensions.**—Length 7.8 mm.; diameter 3 mm.; length 7 mm. (syntypes) (Bartsch)

**Syntypes.**—U. S. National Museum, no. 15501 a and b

**Distribution.**—Neah Bay, Washington (type); Forrester Island, Alaska, to Cambria Pines, California (Burch)

Family Alabiniidae

Genus *Alabina* Dall, 1902


*Elachista* Dall and Bartsch, 1901, Nautilus, vol. 15, no. 5, p. 58; Not *Elachista* Trettischke, 1933, see Neave (1939–1940) for reference


As Woodring (1928, p. 338) pointed out, the name *Alabina* was supposed to be a substitute name, but a different type was chosen for it from that of the genus for which it replaced. It would seem that if the type species of *Alabina* is not congeneric with *Elachista*, the latter lacks a substitute name; or if *Alabina* is a substitute name, the type species of *Elachista* should become the type species of *Alabina*.

Dall (1923, p. 3) stated that *Alabina* Dall, 1902 = *Fenella* [*Finella*] A. Adams (1860, p. 336) not Westwood (1840, p. 54 see Neave 1939–1940).

*Alabina tenuisculpta* (Carpenter)

(Pl. 20, figs. 13, 14)

*Mesalia tenuisculpta* Carpenter, 1864b, p. 612, 655; Reprint, 1872, p. 98, 141; Cooper, 1867, Geog. Cat. Moll., Geol. Surv. California, p. 28; Keep, 1887, West Coast Shells, p. 73


*Fenella tenuisculpta* (Carpenter), Dall, 1923, U. S. Nat. Mus., vol. 63, p. 3 corrections to Bull. 112

"Very small, slender, whirls rounded, lip waved. Shoalwater. Cp." [Carpenter, 1864b, p. 655]

Oldroyd (1927) republished Carpenter’s description (1866). The following changes should be made in her copy.

"Delete “poll.”

"... State Collection no. 666a.

"... div. 15.

"Hab. S. Diego; 4-6 fms. 15, alive. Cooper.

"Intermediate in character between *Mesalia* and *Fenella.*" [Carpenter, 1866a, p. 216]

Bartsch described the species in detail and included an illustration which is probably a drawing of the holotype. There is no indication in Bartsch’s text as to what specimen the figure refers.

The holotype is in the U. S. National Museum and is labelled “San Diego, Cooper.”

**Holotype.**—U. S. National Museum, no. 14933 [not no. 40933 as in Bartsch, 1911]

**Distribution.**—Recent. San Diego, California (type); San Pedro, California to Magdalena Bay, Lower California (Dall); Pleistocene (Woodring, Bramlette, and Kew, 1946, p. 67)

*Alabina turrta* (Carpenter)

(Pl. 20, fig. 12)

Alabina lurrita (Carpenter), Bartsch, 1911, U. S. Nat. Mus., Proc., vol. 39, pl. 62, fig. 4 type; Oldroyd, 1927, vol. II, pt. 111, pl. 16, pl. 93, fig. 4 (type), same fig. as Bartsch, 1911, see also Aclis; Keen, 1937, p. 29 see also under Aclis; Burch, 1945, no. 54, p. 27 see also under Aclis.

Aclis (? Aclis) lurrita (Carpenter), Dall, 1921, p. 120; Oldroyd, 1927, vol. II, pt. II, p. 83, Keen, 1937, p. 28; Burch, 1945, no. 53, p. 17

"Minute, slender, base rounded." [Carpenter, 1864b, p. 657]

Carpenter’s description (1866) was republished by Oldroyd (1927). The following changes should be made in her copy.

Line two, p. 17, read space between “labro” and “postice”

Add:

"... div. 20°.

"Hab. S. Pedro, Cooper.

“A single specimen of this tiny shell was found in the shell-washings of Dr. Palmer’s consignments. The month is unfortunately choked up with a grain of coarse sand which I have not been able to extract.” [Carpenter, 1866a, p. 219]

Bartsch gave a description of this specimen and illustration of the holotype. The holotype is mounted on the original glass mount of Carpenter with Carpenter’s original label, “Type S. Pedro.”

The holotype has seven whorls plus the nuclear whorls. The nuclear whorls are pinkish. The specimen is white with the basal part of body whorl yellowish brown. The sutures are impressed. The aperture is filled with sediment. This condition was described by Carpenter.

**Holotype.—** U. S. National Museum, no. 15566

**Distribution.—** San Pedro, California (type); San Pedro to San Diego, California (Burch)

**Family Cerithiopsidae**

**Genus Cerithiopsis** Forbes and Hanley, 1853


**Cerithiopsis columna** Carpenter


“Very tall: nodules close, like strung figs.” [Carpenter, 1864b, p. 660]

The republication of Carpenter’s description (1865) has been included by Oldroyd (1927).

The following changes should be made in her copy:

Line 4: read supra for suprc; last line: .1 for 1; delete “poll.”

Add:

"... div. 10°.

"Hab. Neeah Bay; several worn specimens (Swan): Monterey; rolled fragment of larger shell (Cooper).

“Easily recognized, even in portions, by the ‘strung-fig’ pattern”—[Carpenter, 1865a, p. 32]

Bartsch discussed this species in detail and illustrated the holotype. There is one specimen labelled, “type Neeah Bay W. T. J. G. Swan.”

**Dimensions.**—Length 9.2 mm.; diameter 2.6 mm. (holotype) (Bartsch).

**Holotype.**—U. S. National Museum, no. 14823b

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[82] See Sherborn (1922, p. LIV) for dates of volumes and pages.
Distribution.—Neah Bay, Washington (type); Vancouver Island to Monterey Bay, California (Dall)

Genus **Diastoma** Deshayes, 1850


**Diastoma fastigiatum** (Carpenter)

(Pl. 20, figs. 20, 21)


“Small, slender: apex normal: sutures indented, anterior rib strong.” [Carpenter, 1864b, p. 655]

Oldroyd (1927) republished Carpenter's description (1865). The following changes should be made in her copy:

Last line: for 25 read .25; for 19 read .19; for 09 read .09; delete “poll.”

Add:

"... div. 20."

"Hab. Sta. Barbara (Jewett)." [Carpenter, 1865h, p. 181]

Nothing in Carpenter’s writings of this species indicates that the type was a fossil. Carpenter's statements concerning the habitat refer to the species as of the Recent. This is particularly indicated (1864, p. 655) in the column of localities of the species. After *B. asperum* and *B. armillatum*, *fs* is attached to the Santa Barbara symbol. This symbol is not attached to the localities of *B. fastigiatum*. Bartsch (1911) presented a composite drawing of two specimens in the U. S. National Museum collected by Col. Jewett from Santa Barbara and quoted by Bartsch as from the “Lower Pleistocene.” Dall, Oldroyd, Grant and Gale, and Burch followed Bartsch and repeated the Pleistocene age as original. Bartsch is the authority for such an age based on his examination of U. S. National Museum specimens, which are not types. If the type were found and determined to be fossil such a type locality would be valid.

Photographs of two specimens which were ideally figured by Bartsch are included herein. They are labelled “Sta. Barbara Jewett”. They are not marked types. The type of this species has not been found. Oldroyd’s statement about the type should be corrected as to place and number.

*Specimens figured.—U. S. National Museum, no. 16256*

*Distribution.—Santa Barbara, California (type); San Pedro, California (Strong in Burch)*

Family **Epitonidae**

Genus **Epitonium** Roeding in Bolten, 1798

*(Scala Humphrey, 1797, 84 Scalaria Lamark, 1801)*


Type species by subsequent designation, Suter, 1913, Man. New Zealand Moll., p. 319; *Turbo scalaris* Linnaeus, 1767, Hist. Nat. An. sans Vert., t. 6, p. 226, Living. Western Pacific. Tryon, 1887, Man. Conch., vol. IX, pl. 11, fig. 31; Durham, 1937, Jour. Paleont., vol. 11, no. 6, pl. 56, fig. 1

83 Not 162561, as in Bartsch (1911, p. 582) and Oldroyd (1927, p. 11)

84 Names in Humphrey, 1797, are not accepted by Int. Rules Zool. Nomen., Opin. Rend., no. 51.
Epitonium cumingii (Carpenter)


Scala cumingii (Carpenter), Orcutt, 1915, Molluscan World, p. 78


The type locality of this species is Panama. Although Carpenter reported the species from San Diego, Cooper questioned that occurrence, and the species is not included at present in the list of upper California fauna. Orcutt (1915) gave the range from Monterey to Panama. The discussion will be included in the report on the types of the Carpenter species from the Panamic area.

Subgenus Nitidiscala de Boury, 1909

Nitidiscala de Boury, 1909, Jour. de Conchyl., vol. LVII, p. 257

Type species by original designation Scaloria unifasciata Sowerby, 1847, Thes. Conch., vol. 1, p. 98, pl. XXXIII, fig. 68. Recent. West Indies. Tryon, 1887, Man. Conch., vol. IX, pl. 14, fig. 55

"Epitonium (Nitidiscala) crebricostatum" (Carpenter)

(Pl. 20, figs. 27, 28; Pl. 22, fig. 11)


"Mus. Cum. no. 32: 15 sharp reflexed ribs, coronated against the sutures." [Carpenter, 1864b, p. 660, Monterey and San Diego]

Oldroyd republished Carpenter's description (1866). The following changes should be made in her copy:

Line 5: delete mm.

Add:

"... State Collection 393."

"... div. 26°"

"Hab. Monterey, San Pedro, Cooper, common."

"... "Scaloria, unique" Mus. Cum. no. 32.

"Somewhat resembles S. tenus, Sby., but is not so turrited." [Carpenter, 1866a, p. 222]

If Carpenter's remarks (1864) are accepted as the original description, specimen no. 32 in the Cumings Collection, British Museum, is the holotype of this species. On inquiry in regard to that specimen, the authorities of the Mollusca Section, (G. L. Wilkins, Feb. 21, 1950, personal communication) British Museum (Natural History), furnished the following information:

"A search of the larger number of specimens in the B. M. collection has revealed a specimen labelled 'crebicosta' Cpr. California Mus. Cuming. This label is considered to be a 'lapsus-calami' for crebricostata Cooper, but unfortunately the specimen has no number, only a portion of the original label having been preserved, and, although several counts have been made, only 12 ribs appear to be present."

"In spite of the above rather disappointing details this shell seems to have the most likely claim to originality."

Through the courtesy of the British Museum (Natural History), a photograph of the above shell (B. M. 1950.3.29.1) is included herein.

The British Museum specimen corresponds in size, character of ribbing, shape, and number of varices ([11]-12) with those of the labelled "type" in the U. S. National Museum. The apex, however, is preserved in the British Museum shell.
There are two specimens, U. S. National Museum, no. 14831, labelled “Monterey Cooper type.” The apex of each specimen is missing. One of the specimens is figured herein. It has 11 varices, whereas the other individual has 12 varices. Both shells have the horny operculum in place. Both specimens measure: length 9 mm.; greatest diameter 4.5 mm. These measurements approximate that of the British Museum shell: length 8.7 mm. ±; greatest diameter 3.6 mm. ±.

In regard to the type depository, Oldroyd merely stated the no. [393] of the original California State Collection as given by Carpenter (1866). The early state numbers, if still retained, help to verify the authenticity of a type but do not indicate where the specimen might be at present or its modern number. Most of the original California State types are in the U. S. National Museum. Strong (1930) examined a lot in the University of California collection labelled “Epitonium crebricostatum Cpr., Cooper collection” and determined them as specimens of E. tintuctum, except one single shell with a larger number of varices, which he thought might be the young of another species.

A summary of the characters of available “type” sources yield only specimens which are at variance with Carpenter’s descriptions. They are as follows.—

Type locality.—The type locality is consistently mentioned as Monterey, with San Diego or San Pedro (Carpenter, 1864b, p. 613, 660; 1866, p. 222, Monterey, San Pedro; Cooper, 1867, Monterey to San Diego; 1870, Monterey to San Diego; 1888, Monterey to San Diego). Yet Smith and Gordon (1948), following Strong (1930), did not include the species from Monterey. Smith (in Burch, 1945), however, does admit that he has “one or two shells from Monterey that might possibly fit the requirements. . . .” The British Museum shell is labelled “California” only.


Measurements.—Carpenter (long. 0.7; lat. .18) = length 17.71 mm.; diameter 4.55 mm. U. S. National Museum no. 14831, each: length 9.9 mm.; diameter 4.5 mm.; British Museum shell: length 8.7 ± mm.; diameter 3.6 ± mm.

To choose a lectotype from the above specimens would mean that the Carpenter descriptions would be disregarded, and an analysis of the species would then be redrawn on the basis of the lectotype. In that case the species would probably be regarded as synonymous with E. tintuctum or a form of the same.

If one takes Carpenter’s notes at face value, the species is unknown and the riddle of its description unsolved. If the species is valid biologically, its presence is probably lurking under identifications of E. indianaorum or E. tintuctum. In that case specific separation would involve a selection of a neotype. The choice would best be made by one who is familiar with large suites of West Coast Epitoniums.

Until the name of this form has a firmer foundation than at present the writer sees no authority for type locality or range. Cooper, Arnold, and Oldroyd (1925) catalogued the species from the Pleistocene of California. The earlier authors apparently believed they knew what the species was and differentiated it from E. indianaorum and E. tintuctum.

Type.—Uncertain

Specimens figured.—U. S. National Museum, no. 14831; British Museum (Natural History), no. 1950, 3.29.1

Distribution.—Uncertain

Epitonium (Nitidiscala) fallaciosum Dall, 1921 =

E. hindssii Keep, 1911 = E. tintuctum Carpenter, 1864, 1865

Not Scalaria Hindssii CARPENTER, museum label Smithsonian Inst., no. 46222 “San Pedro, P.P.C.” = E. cooperi Strong, by lectotype selection, Woodring, 1931, Nautilus, vol. 45, no. 1, p. 31


*nomen nudum*


*Not Epitonium fallaciosum* Woodring, 1931, *Nautilus*, vol. 45, no. 1, p. 31 = *E. cooperi* Strong, 1930, p. 196 expl. fig. 7 paratype.

The points of the question of the validity of *E. fallaciosum* Dall (1917, p. 478) are clearly and adequately enumerated by Strong (1931 p. 70). Authors must agree with Strong that Dall (1917) did not give an adequate description of *E. fallaciosum*. Dall plainly stipulated why he was giving a new name and to what in general, but he did not give a description, figure, or type. Therefore, the name is a *nomen nudum* in 1917. The writer agrees with Strong that Dall’s “well-known form from California which has 11 to 14 varices” would not help in differentiating the species. Certain critical points of the history of *E. fallaciosum* are repeated. The specific name is included herein, because its identification is associated with two of Carpenter’s species, *E. hindsii* and *E. tinctum*.

Certainly in Dall’s first mention of *E. fallaciosum* (1917) the name is a *nomen nudum*. But Dall (1921) specified a description and illustration of the species when he gave the reference to Keep (1911, p. 183, Fig. 174). This reference satisfies the rules of nomenclature (Art. 25a and Opinion no. 1 and validates the specific name from Dall (1921, not 1917). This may change the original meaning of *Dall* (1917), but since that usage may have applied to Carpenter’s museum label it has no status under the International Zoological Code (Opinion no. 1).

Woodring’s (1931) designation of the museum specimen which Dall probably had in mind would not validate the species because it would lack a description and figure. In this case Woodring designated a specimen which had been, subsequent to Dall’s (1917) invalid mention of *Epitonium*, included under and figured as a paratype of a new species *E. cooperi* by Strong (1930, p. 194, Pl. 20, fig. 7). But Dall had already (1921) validated his species by a different selection. The specimen of Keep (1911, Fig. 174) is the holotype of *E. fallaciosum* Dall (1921). Keep’s description is included herein:

“In Figure 174 is shown the beautiful shell of *Epitonium hindsii*, Cpr., (Scala hindsii), the white Wentletrap.

“It is pure white in color, very delicate, and is generally less than an inch in length. The hinds are very distinct, finely rounded, and each one is crossed by about twelve thin, sharp ridges. These shells are so highly prized that they have been worn as the drops of ear-rings. . . . The white Wentle trap is found on the southern shores of California.”

Strong believed that *E. fallaciosum* Dall (1921, not 1917) is equivalent to *E. tinctum* Carpenter (1864, 1865). From a comparison of the illustration of the lectotype of *E. tinctum* with Keep (1911, Fig. 174) this view would seem to be justified.

**Holotype.**—Specimen of Keep (1911, Fig. 174), whereabouts unknown.

**Distribution.**—Southern California (Keep).

*Epitonium (Nitidiscala) indianorum* (Carpenter) (Pl. 20, figs. 23, 24)


Epitonium (Gyroscala) indianorum (Carpenter), Abbott, 1954, p. 165

"... Between Turtonis and communis: like "Georgettina, Kien. Mus. Cum. no. 34, Brazil." [Carpenter, 1864b, p. 660]

Oldroyd (1927) republished Carpenter's original description (1865) of this species. The following corrections and additional lines should be made in her copy:

Last line: read 8 for .08; delete "poll."

Add:

","... div. 28."

"Hab. Neeah Bay (Sivan)."

"Strung as ornaments by the Indian children. Intermediate between S. communis and S. Turtonis, and scarcely differs from 'S. Georgettina, Kien,' Mus. Com. no. 34, Brazil." [Carpenter, 1865a, p. 31]

The type material is in the U. S. National Museum and consists of five specimens (one a fragment of a body whorl). The label reads "Neeah Bay J. G. Swan." The specimen figured by Strong (1930) as type is apparently the same specimen as figured herein (Pl. 20, fig. 23). Another specimen of the type group is figured herein (Pl. 20, fig. 24). The apices of all the specimens are gone. All specimens are white and slightly worn. The varices vary respectively, 15 in the largest specimen, 10 varices on the next largest, 14 varices on the next, and 11 on the smallest individual. Therefore, the number of varices might vary from 10 to 15, if all the specimens are retained in the species. The maximum number is the same as in Carpenter.

Strong (1930) presented the details in regard to this species, as well as the other West Coast species of Nitidiscus.

Types.—Lectotype and paratypes: U. S. National Museum, no. 15521

Distribution.—Recent. Neeah Bay, Washington (type); Forrester Island, Alaska, to Todos Santos Bay, Lower California (Dall). Pleistocene. California (Arnold; Oldroyd, 1925; Waterfall, 1929; Grant and Gale; Durham; Willett, 1937). Miocene. California (Martin, 1916; Waterfall, 1929; Grant and Gale; Durham). Miocene. California (Durham)

Epitonium (Nitidiscus) subcoronatum (Carpenter)

(Pl. 22, figs. 12, 13)


Epitonium (Nitidiscus) tiuctum (Carpenter), Strong, 1930, San Diego Soc. Nat. Hist., Trans., vol. VI, no. 7, p. 187, p. 193 in part, pl. 20, fig. 4 type; Grant and Gale, 1931, p. 859 in part; Keen, 1937, p. 35; Durham, 1937, Jour. Paleont., vol. 11, no. 6, p. 488; Burch, 1945, no. 52, p. 28

"Like young communis, with more and sharper ribs, faintly coronated when adolescent." [Carpenter, 1864, p. 660]

Carpenter's description (1866) was republished by Oldroyd (1927). The following lines should be added to make that copy complete:

"... State Collection, no. 393a"

"... div. 38."

"Hab. Monterey; Cooper.

"Like S. communis, jun., but with the upper whorls slightly coronated." [Carpenter, 1866a, p. 221]

Delete "mm." in the Oldroyd copy.

The holotype of this species is in the U. S. National Museum. It is labelled "type Monterey Cooper." The holotype has been figured by Strong (1930) as well as herein. The species is regarded as synonymous with E. tiuctum Carpenter.
Holotype.—U. S. National Museum, no. 14830b (15732). The number in Strong (1930, p. 196, expl. Fig. 4) should be corrected from “13830b” to “14830b.”

Distribution.—Monterey, California (type); Vancouver Island, British Columbia, to San Diego, California (Dall)

**Epitonium (Nitidoscala?) tiara (Carpenter)**


This species described from Panama was listed by Dall from Catalina Island, California, to Todos Santos Bay, Lower California, with a “?” as to Panama. Burch also regarded the species from the San Diego and Catalina area.

G. L. Wilkins (Oct. 17, 1950, personal communication) informed the writer that there are:

“Three specimens of this shell in the Cuming Collection one of which agrees with the size given in P.Z.S. 1856. The locality given for the three is 'Matxlam' and not ‘Panama’ (In Sinu Panamensi) as in the P.Z.S. It is quite possible that the small one is the type, the other two, with a different locality being added by Cuming later. It is well known that he was careless in such matters.”

Type.—Not found

**Epitonium (Nitidoscala) tinctum (Carpenter)**

*Scalaria ? Indianorum var. Carpenter*, 1864b, p. 613; Reprint, 1872, p. 99. For additional synonymy and notes, see *E. tinctum* Carpenter, subheading

*Scalaria subcoronata* Carpenter, 1864b, p. 613, 660; Reprint, 1872, p. 99, 146. For additional synonymy and notes, see *E. subcoronatum* subheading

*Epitonium hindsii* Keep, 1911, West Coast Shells, p. 183, fig. 174 = *E. fallaciosum* Dall, 1921, p. 115 not *E. fallaciosum* Dall, 1917. For additional synonymy and notes, see *E. fallaciosum* Dall, 1921, subheading

So that the details of each of the names of the above may be more easily analyzed, the writer kept them under separate subheadings. All the data should be combined under the species *E. tinctum* (Carpenter).

Types—*E. tinctum*, s.s.: holotype not found; lectotype, U. S. National Museum, no. 19510. *E. subcoronatum* Carpenter: holotype, U. S. National Museum, no. 14830b; *E. fallaciosum* Dall, 1921: Keep, (1911, Fig. 174)

Distribution.—Recent. San Pedro, California (type, *E. tinctum*, s.s.); Vancouver Island, B. C., (as *E. subcoronatum*) to Gulf of California (*E. tinctum*, s.s.). Pleistocene. California (Cooper; Arnold; Oldroyd, 1925; Grant and Gale: Willett, 1937; Durham); Mexico (Jordan, 1926). Pliocene. California (Cooper, 1888; Grant and Gale; Durham)

**Epitonium (Nitidoscala) tinctum (Carpenter)**

*Scalaria ? Indianorum var. Carpenter*, 1864b, p. 613; Reprint, 1872, p. 99

*Scalaria ? var. tincta* Carpenter, 1864b, p. 660; Reprint, 1872, p. 146


same fig. as S. hindsii in Kepp, 1911, p. 183, fig. 174 = E. fallaciasum Dall, 1921; Keen, 1937, p. 36; Durham, 1937, Jour. Paleont., vol. 11, no. 6, p. 488; Burch, 1945, no. 52, p. 27

"... Purple-brown behind: like regularis, without spiral sculpture." [Carpenter, 1864b, p. 660].

"S. ? Indianorum costis acutis, haud reflexis anfractibus postice fuscopurpureo tinctitis.
"Hab. Cerros Island (Ayers) ; S. Pedro (Cooper).

"The Lower-Californian shell may prove distinct. It is like S. regularis, Cpr., but without the spiral sculpture." [Carpenter, 1865a, p. 31]

The holotype of this species has not been found. Oldroyd's statement that the type (original) is in the U. S. National Museum is not correct. If other conditions are equal, the type locality depends on whether one accepts Carpenter's (1864b) lines as adequate and the original description. If so, Lower California or San Diego would be the type locality. Carpenter's (1865) description adds "San Pedro." He did not give measurements. Strong (1930) figured the specimen, U. S. National Museum, no. 19510, which had been collected by Cooper from San Pedro and suggested that this specimen might be the one Carpenter had available (1865). This deduction seems reasonable, and in lieu of a holotype or other syntypic material this specimen is the proper shell to be chosen as a lectotype. The writer therefore chooses U. S. National Museum, no. 19510 (Strong, 1930, Pl. 20, fig. 3) as the lectotype of E. tinctum Carpenter. Durham (1937) would have had to go through the same process of selection to have determined the type locality as San Pedro.

Strong discussed this species thoroughly as to characters and literature. He figured the lectotype, and a figure is therefore not included herein.

Dimensions.—Length 10.5 ± mm.; greatest diameter 4.5 mm. ± (lectotype, Strong)

Lectotype.—U. S. National Museum, no. 19510

Distribution.—San Pedro, California (type, E. tinctum); Monterey, California, to Gulf of California (Dall)

Subgenus Asperiscala de Boury, 1909

Asperiscala de Boury, 1909, Jour. de Conchyl., vol. 57, p. 258

Type species by original designation, Scalaria bellistriata Carpenter, 1864b, p. 660. Recent. Monterey to San Diego, California. (Pl. 20, fig. 25, 26.)

Epitonium (Asperiscala) bellistriatum (Carpenter)

(Pl. 20, figs. 25, 26)


Scalaria bellistriata (Carpenter), Williamson, 1892, U. S. Nat. Mus., Proc., vol. 15, no. 898, p. 209; Arnold, 1903, p. 263, pl. IX, fig. 17; Cossmann, 1912, Essais de Paleocoenochologie Comp., liv. 9, p. 28, pl. II, figs. 42, 50 section Asperiscala


"Shape like pretiosa, jun.; ribs very close, spinous at shoulder, crossed by spiral riblets." [Carpenter, 1864b, p. 660].

Oldroyd (1927) republished Carpenter's description (1866). The following changes should be made in her copy:
Delete "poll," last word.
Add:
"... div. 40."... State Collection, no. 393, b.

"Hab. Monterey, a fragment: San Diego, 1; San Pedro, 3; Cooper.

"So different in sculpture from S. pretiosa and other species with which it agrees in shape, that there will be no difficulty in recognizing perfect specimens." [Carpenter, 1866a, p. 221]
There is a broken specimen in the U. S. National Museum which was labelled “type? Cooper.” Some later investigator added “?” in pencil and marked it “paratype.” However, the first specimen mentioned by Carpenter was a “fragment” from Monterey, which would coincide with the U. S. National Museum specimen. The syntypes from San Diego and San Pedro have not been found.

Arnold’s figure is a good representation of the species.

*Lectotype.—U. S. National Museum, no. 14831b*

*Distribution.—Recent. Monterey, California (type); Monterey to San Diego, California (Dall). Pleistocene.*

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**Opalia H. and A. Adams, 1853**

(*Psychrosoma Tapparone—Canefri, 1876.*)


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**Opalia evicta de Boury**

(Pl. 20, fig. 22)

*Opalia pluricostata* Carpenter, ms: Dall, 1917 = *O. evicta* de Boury, 1919, Jour. de Conchyl., vol. LXIV, p. 36

*Scalara (Cirostrena) [sic] montereyensis* Dall, 1907, Nautilus, vol. 20, no. 11, p. 128. For remainder of synonymy of this species see Berry, 1948, Jour. Ent. Zool., vol. 40, no. 1, p. 15, fig. 1–5; Burch, 1948, no. 79, p. 5. *Not S. hellenica montereyensis* de Boury, 1889 nor *Eptitonium montereyense* Dall, 1917 = *S. regionallana* Dall in de Boury, 1919

*Opalia pluricostata* Berry, 1907, Nautilus, vol. 21, no. 4, p. 42 no description; Dall, 1917, U. S. Nat. Mus., Proc., vol. 53, no. 2217, p. 473 museum label of Carpenter; not *O. pluricostata* de Boury, 1913, Jour. de Conchyl., vol. 61, p. 97

*Scalara (Opalia) evicta de Boury*, 1919, Jour. de Conchyl., vol. 64, p. 36 not vol. 44, as in Dall, 1921, or Berry, 1948; Strong, 1937, Nautilus, vol. 51, no. 1, p. 4, 6, pl. 2, fig. 11; Keen, 1937, p. 43; Burch, 1948, no. 79, p. 5

*Eptitonium (Opalia) evictum* (de Boury), Dall, 1921, p. 114; Oldroyd, 1927, vol. II, pt. II, p. 52; Burch, 1945, no. 52, p. 17

Three specimens of this species labelled “*Opalia boralis* var. *pluricostata*” Carpenter types Neah [sic] Bay, W. T. J. G. Swan,” are in the U. S. National Museum. They are the specimens used by Dall when he described the species.

*O. pluricostata* was one given by Carpenter on a label or in manuscript. A photograph of one of the syntypes has been co-operatively provided by the U. S. National Museum (Smithsonian Institution) authorities.

Oldroyd republished De Boury’s remarks concerning the history of the trivial name.

It has been suggested by Strong (1937; in Burch, 1945) that this name is synonymous with *O. montereyensis* (Dall)*86* (1907; 1917, p. 477 not p. 481) in that the type of the latter is young *O. evicta*. Berry (1948) after a restudy of the names and specimens involved agreed that *O. evicta* is an immature *O. montereyensis*. For further notes regarding that species see Berry. This discussion is only to incorporate the portion concerning the manuscript name of Carpenter.

The name *Scalara montereyensis* was first used by De Boury in 1889 (1919, p. 39) as a variety of “S.” *hellineca* Forbes (1844) which he later separated as a distinct species. Dall

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*86 Species not recorded by Durham (1937) is oversight. Durham, Oct. 2, 1950, personal communication.*

*86 Dall (1907, p. 128 as *Cirsotrema*; Strong, 1937, p. 7. Pl. 2, fig. 12 type)*
applied the name to a West Coast "Scala" (1907) and later to another species from the same region (1917).\textsuperscript{87} The \textit{Epitonium montereyense} Dall (1917, p. 481) was renamed \textit{S. [= Epitonium] regionomontana} Dall in De Boury (1919) (Keen in Burch, 1945, p. 31). This name is not accounted for in Berry (1948, p. 15), nor is the fact that \textit{E. montereyense} Dall (1907) is preoccupied by that of De Boury (1889). Fortunately the name of \textit{Opalia evicta} de Boury is available and to which the species may remain listed, the same as in Dall (1921, p. 114).

\textit{Dimensions}.—Length 16 mm.; diameter 5 mm. (Dall)

\textit{Syntypes}.—U. S. National Museum no. 23397 (Dall, no. 56054). \textit{O. pluricosta} Dall

\textit{Distribution}.—Neah Bay, Washington (type, \textit{O. pluricosta}); Forrester Island, Alaska, to Magdalena Bay, Lower California (Dall)

Subgenus \textit{Dentiscala} de Boury, 1889

\textit{Dentiscala} de Boury, 1886, Monographie des Scalidae vivante et fossiles, I, pt. 1, p. XXI

Type species by monotypy, \textit{D. crenata} (Linnaeus), 1758, Syst. Nat., p. 765 as \textit{Turbo}. Living. Mediterranean and Atlantic, Tryvon, Man. Conch., 1887, vol. IX, pl. 16, fig. 97; CLENCHE AND TURNER, 1950, Johnsonia, vol. 2, no. 29, pl. 100, fig. 4; pl. 101, figs. 1–3

\textbf{Opalia (Dentiscala) insculpta} Carpenter

(Pl. 22, figs. 4, 5)


\textit{Dentiscala crenatoides} (Carpenter), COSSMANN, 1912, Essais de Paléoncologiche Comp., 9 liv., p. 90 should have been \textit{var. insculpta}.


\textit{Dentiscala insculpta} (Carpenter), VAN WINKLE [Palmer], 1921, Bull. Amer. Paleont., vol. VIII, no. 36, p. 4, pl. 1, figs. 10, 11 holotype

\textit{Epitonium insculptum} (Carpenter), WILLET, Nautilus, vol. 52, no. 1, p. 10

\textit{Epitonium crenimarginatum} Dall, WILLET, 1938, Nautilus, vol. 52, no. 1, p. 10

\textit{Opalia (Dentiscala)} \textit{insculpta} (Carpenter), BURCH, 1945, no. 52, p. 18; BURCH, 1947, no. 74, p. 24; ABBOTT, 1954, p. 162

"Like the C. S. L. form and \textit{crenata}, but ribs closer, without spiral sculpture, sutural holes behind the basal rib."—[Carpenter, 1864b, p. 660]

"\textit{O. testa} \textit{cronatoides} similis; sed costis radiantisbus pluribus, XIII—XVI, in spira validis anfr. ult. obsoleteis; sculptura spirali nullis; punctis suturalibus minus impressis, circa fasciam basalem laevem postice, non antice continuas.

"\textit{Hab. Sta. Barbara, Pleistocene, I sp. (Jecovett).}

"Very closely related to \textit{O. cronatoides}, now living at Cape St. Lucas, and, with it, to the Portuguese \textit{O. crenata}. It is quite possible that the three forms had a common origin." [Carpenter, 1866b, p. 277]

The exterior of the shell of this type has been worn away except in the sutural region, hence the exact character of the longitudinal ribs cannot be described. However, prominent impressions of each reveal 14 ribs on the whorls.

This specimen has an original label which reads, "Drawn by Sowerby for the SL."

\textit{Dimensions of type}.—Length 14 mm.; greatest diameter 7 mm.

\textit{O. crenimarginata} (Dall) (1917c, p. 473) is thought, particularly by Strong (Baker, Hanna, and Strong, 1930; Smith and Gordon, 1948) to be a synonym of the fossil, \textit{O. insculpta} Carpenter. This combination is the basis of the range in the Recent fauna from "Monterey [?] to Puerto Libertad, West Mexico," for \textit{O. insculpta}. Those who are familiar with the Monterey shells doubt the existence of the species in that area (Smith and Gordon, 1948, p. 190).

The holotype of \textit{O. insculpta} is so badly worn that the writer questions Carpenter's authority for stating that there was no spiral structure. \textit{O. insculpta} has 14 longitudinal ribs.

\textsuperscript{87} Dall (1917, p. 481) not same \textit{Epitonium} as on page 477 = \textit{Opalia pluricosta} Cpr. ms. Dall (1917) = \textit{Scalaria (Opalia) evicta} de Boury (1919).
whereas O. creniformis has only 12. If the two forms are the same the description of such ribs in the species should be increased to include the larger number.

Holotype.—Paleontological Laboratory, no. 4950, Cornell University, Ithaca, N. Y.

Distribution.—Pliocene—Pleistocene, Santa Barbara formation, Santa Barbara, California (type). Recent. O. creniformis Dall, Monterey, California, to Puerto Libertad, west Mexico (Dall, modified by Willett and by Strong)

Subgenus Nodiscala de Boury, 1889


Opalia (Nodiscala) bullata Carpenter

≡ O. (Nodiscala) spongiosa Carpenter, which see

(Pl. 22, fig. 6)


“Shape of Rissoina: with sutural bosses: no basal rib.” [Carpenter, 1864b, p. 660]

“O. testa minore, alba, subdiaphona, turrita, gracilis; marginibus spirae subrectis; tota superficie minutissime et creberrime spiralius striolata; vertice nucleo subli; calato; dein anfr. ii., globosis, radiatim haud sculptis; dein v. normalibus, pianatis, suturis vix impressis; lirulis radiantis circ. XXVI., haud nisi in anfr. primis expressis, circa basin irregulariter rotundatum ad axim continuis; serie bullarum suturalium anfr. primis e lirulis extantibus formata, postea lirulis haud convenientibus, anfr. penult., circ. XVII., pianatis, super suturas parieti appressis, interstitionibus haud infossis; basi subangulata, haud costata; apertura subovali, sinistrorum subplanata; peritremata continuo, calloso; labro haud siiinato. Long. 3, long. spir. 21, lat. 09, div. 20°.

“Hab. Sta. Barbara, one specimen (Jewett).” [Carpenter, 1865i, p. 397]

Carpenter (1864b, p. 660) in describing “O. retiporosa” stated that the shell was similar to O. bullata but was different in sculpture.

The holotype of O. bullata is in much better condition than that of either O. retiporosa or O. spongiosa. It resembles the holotype of O. spongiosa more than O. retiporosa in the less angulated whorls.

The holotype is in the Redpath Museum. It is mounted on glass with the label, “type Sta. Barbara Jewett.”

O. spongiosa has priority in naming (see under that name). O. bullata is not preoccupied by Scalaria bullata Sowerby, as thought by Tapparone—Canevari, because Sowerby’s species is not an Opalia.

Holotype.—Redpath Museum, no. 76

Distribution.—Santa Barbara, California (type)

Opalia (Nodiscala) spongiosa Carpenter

The holotypes of O. spongiosa and O. bullata appear to represent the same species. O. retiporosa is defined by a holotype which has the whorls more angulated than the holotypes of the two former names. O. retiporosa has a varix.

O. retiporosa has been placed by workers (Dall, 1917; Oldroyd, 1927; Grant and Gale, 1931; Durham, 1937, Smith and Gordon, 1948) in Nodiscala. From a brief survey of species identified as Dentiscalis and Nodiscala and a comparison of the type species one wonders about the importance of separating Dentiscalis and Nodiscala. Dentiscalis has priority. Until examination of specimens of type species is available the writer retains the species in (Nodiscala).

58 See Cleanch and Turner (1950) for a fine series of pictures.
Opalia (Nodisca) spongiosa Carpenter

(Pl. 22, figs. 1–3, 6–8)


Scalaria spongiosum (Carpenter), Tryon, 1887, Man. Conch., vol. IX, p. 84


Scalaria retiporosa (Carpenter), Tryon, 1887, Man. Conch., vol. IX, p. 84


Opalia (Nodisca) retiporosa Carpenter, Durham, 1937, Jour. Paleont., vol. 11, no. 6, p. 505, pl. 57, fig. 19

Epitonium spongiosum Carpenter, Willet in Burch, 1943, no. 20, p. 13 = E. retiporosa. See also O. bullata Carpenter

“Like small, very slender granulata: surface riddled with deep punctures in spiral rows.” [Carpenter, 1864b, p. 660, O. spongiosa]

Carpenter’s description (1866) was republished by Oldroyd (1927). The following changes should be made in her copy:

Last line: delete “poll.”

Add:

“. . . div. 20°.

“Hab. Monterey, Cooper. From shell washings.

“The solitary specimen has the general aspect of O. granulosa on a very small scale.” [Carpenter, 1866a, p. 222, O. spongiosa]

The holotype of “O. spongiosa” is in the U. S. National Museum. It is labelled “type Cooper Monterey.”

There are microscopic punctuations over the whole shell. The apex on the holotype is gone. On the upper three whorls there are longitudinal ribs which extend the length of the whorl; on the next whorl the ribs do not extend the full length of the whorl, and they become less conspicuous in length on the lower whorls. The ribs have the appearance of being tucked in at the suture.

“Sculpture in network, with deep holes. 40 fm. d.r. Cp.” [Carpenter, 1864b, p. 660, O. retiporosa]

Oldroyd (1927) republished Carpenter’s description (1866). The following typographical errors and additions should be made to make the copy complete:

Line 2: add question mark after “nucl.”; line 6: read “retiporosa” for “retriporosa”; last line: delete ‘poll”, add “div. 20°

Add:

“State Collection no. 1014

“Hab. Catalina Island; 3 dead in 40 fm.; Cooper.

“The texture has a rotten appearance; yet one of the specimens was stained with purple, and contained the dried remains of the animal, with its operculum. In the endeavor to extract this, the shell gave way.” [Carpenter, 1866a, p. 222, O. retiporosa]

The holotype O. retiporosa is in the U. S. National Museum The label reads, “Type Catalina Cooper.” The type is not at the University of California, as surmised by Grant and Gale from the original data as presented by Oldroyd, nor is it lost, as suggested by Durham.
The holotype, as may be seen from the photograph, is badly worn with the body whorl broken. The break was occasioned by Carpenter as mentioned by him. The specimen has fine punctations like "E. spongiosum", but it has fairly strong longitudinal ribs. Inside the aperture the surface is flecked with bluish purple. This condition was noted by Carpenter.

A comparison made of the holotypes of O. spongiosa and O. retiporosa convinces one that the two forms are synonymous. This is in agreement with the collecting data and opinion of workers (Willett; Strong; Burch) that only one species exists. O. bullata is similar to O. spongiosa.

The writer arranged the data on each name separately, so that the facts could be evaluated more readily. In the original references the name and description of both species are on the same page. O. spongiosa is mentioned first in all cases, so that name has priority over O. retiporosa. In the original reference, it is also mentioned before O. bullata Carpenter. O. bullata was given a more detailed description by Carpenter (1865), before that of the other two names (1866).


Distribution.—Recent. Monterey, California (type, "O. spongiosa"; type, O. retiporosa, Catalina Island); off Oregon coast in 50 fathoms, to Lower California (Dall). Pleistocene (Moody, 1916)

Family EULIMIDAE (Melaneliidae)

Genus Balcis Leach in Gray, 1847


Balcis compacta (Carpenter)


Melanelia (Melanelia) compacta (Carpenter), Bartsch, 1917, U. S. Nat. Mus., Proc., vol. 53, no. 2207, p. 314, pl. 37, fig. 3 lectotype

Melanelia compacta (Carpenter), Dall, 1921, p. 118; Oldroyd, 1927, vol. II, pt. II, p. 77, pl. 40, fig. 3 same as Bartsch, 1917, lectotype; Keen, 1937, p. 40

Balcis compacta (Carpenter), Burch, 1945, no. 53, p. 6, 8, 11; Berry, 1954, Bull. Amer. Paleont., vol. 35, no. 151, p. 4

"Small, with blunt spire and elongated base." [Carpenter, 1864b, p. 659, locality between San Diego and San Pedro]

Oldroyd (1927) republished Carpenter's description (1866). The following changes should be made in her copy:

Line 1: read "tereti": for "terti," last line: delete "poll."

Add:

"... div. 22°."

"Hab. San Pedro; Cooper.

"A single dead shell was found in Dr. Palmer’s consignment.” [Carpenter, 1866a, p. 221 (? var.)]

Bartsch gave a complete discussion and illustration of the lectotype. The syntypes bear the label, "Type Cooper San Pedro." There are two specimens.

Dimensions.—Length 6.8 mm.; diameter 2.2 mm. (lectotype, Bartsch)

Lectotype and paratype.—U. S. National Museum, no. 13517b

Distribution.—San Pedro, California (type); San Pedro, California, to Point Abreojos, Lower California (Dall). Pleistocene. Long Wharf Canyon, Santa Monica (Berry)

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89 Two of the three species listed by Winckworth are new names.
**GASTROPODA**

**Balcis micans** (Carpenter)


*Melanella (Melanella) micans* (Carpenter), BARTSCH, 1917, U. S. Nat. Mus., Proc., vol. 53, no. 2207, p. 303, pl. 34, figs. 1-6 (6 = type)


*Melanella (Eulima) micans* (Carpenter), BAILY, 1935, West Coast Shells (Keep), p. 181, fig. 154


A republication of the original description (1865) was included by Oldroyd (1927). The following changes should be made in her copy:

Delete “poll.”

Add:

“... div. 25”.


“An Eu. politae varietas Pacifica?” [Carpenter, 1865, p. 63]

Bartsch gave a thorough discussion and figured the holotype of this species. The type was collected by Cooper at San Pedro.

**Dimensions.**—Length 9.5 mm.; diameter 3 mm. (holotype, Bartsch)

**Holotype.**—U. S. National Museum, no. 14850

**Distribution.**—Recent. San Pedro, California (type); Vancouver Island, British Columbia, to Point Abreojos Lower California (Dall), Pleistocene, California (Cooper, 1888; Arnold; Grant and Gale: Willett, 1937; BERRY, 1954): Mexico (Jordan, 1926)

**Balcis rutula** (Carpenter)


“Leiostracoid, rosy, base lengthened. Like *producta*, Maz. Cat. no. 551.” [Carpenter, 1864b, p. 659]

Oldroyd (1927) republished Carpenter’s description (1866). The following changes should be made in her copy:
Bartsch gave a complete discussion and illustration of the shell of this species. The holotype is labelled "Monterey."

**Dimensions.**—Length 6.8 mm.; diameter, 1.9 mm. (holotype, Bartsch).

**Holotype.**—U. S. National Museum, no. 14928

**Distribution.**—Recent. Monterey, California (type); Forrester Island, Alaska, to Magdalena Bay, Lower California (Burch). Pleistocene. California (Bartsch; Berry)

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**Balcis thersites** (Carpenter)


_Melanella (Balcis) thersites_ (Carpenter), Bartsch, 1917, U. S. Nat. Mus., Proc., vol. 53, no. 2207, p. 323, pl. 41, figs. 1-3 (2 types); Dall, 1921, p. 117; Oldroyd, 1927, vol. II, pt. II, p. 70, pl. 47, fig. 2 type copy Bartsch, 1917, also E. lowei fig. 1 and bistorta fig. 3 types

_Melanella thersites_ (Carpenter), Grant and Gale, 1931, p. 862; Dally, 1935, West Coast Shells (Keep), p. 181 and subspecies bistorta Vanatta; Keen, 1937, p. 40

_Balcis thersites_ (Carpenter), Burch, 1945, no. 53, p. 7, 9; Smith and Gordon, 1948, California Acad. Sci., Proc., vol. XXVI, no. 8, p. 192

_Balcis (Vitreolina) thersites_ (Carpenter), Berry, 1954, Bull. Amer. Paleont., vol. 35, no. 151, p. 4

"Very broad, short, twisted." [Carpenter, 1864b, p. 659]

Oldroyd (1927) republished Carpenter's original description of this species. The following changes should be made in her copy:

Delete "poll."

Add:

"... div. 40°.

"Hab. Sta. Barbara, 1 specimen (Jewett)."

"Preeminent for aberration among the distorted Eulimidae. A second specimen occurred from an uncertain source."

[Carpenter, 1865h, p. 396]

Bartsch fully discussed this species and illustrated the holotype. He also figured the types of _B. lowei_ (Vanatta) and _B. bistorta_ (Vanatta) which he regarded as synonymous with Carpenter's species. The holotypes of Vanatta's species are from Long Beach and Monterey, California, respectively.

The three forms as illustrated by their types show different degrees of flexing and thickness of the callost of the lips.

**Dimensions.**—Length 5.1 mm.; diameter 2.5 mm. (holotype, Bartsch)

**Holotype.**—U. S. National Museum, no. 11795

**Distribution.**—Recent. Santa Barbara, California (type); Monterey, California, to San Geronimo Island, Lower California (Dall). Pleistocene. California (Oldroyd, 1925; Grant and Gale; Berry); Mexico (Jordan, 1926)
Genus **Cythnia** Carpent., 1864

(*Cythnoa* Dall, 1924, new name)


Type species by monotypy, *C. asteriaphila* Carpent., 1864b, p. 478. Living. Lower California (Pl. 19, figs. 5, 5a)

**Cythnia albida** Carpent. (Pl. 19, figs. 3, 3a)


*Cithna* [sic] *albida* Carpent., 1864b, p. 657; Reprint, 1872, p. 143 *Cythna* in index; COOPER, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 31

**Cythnia albida** (Carpent.), TRYON, 1886, Man. Conch., vol. VIII, p. 293; BURCH, 1945, no. 53, p. 14

**Cythna albida** Carpent., DALL, 1921, p. 119; OLDROYD, 1927, vol. II, pt. 2, p. 80; KEEN, 1937, p. 35

“Very close to *C. tumens*, Maz. Cat. no. 421, but umbilicus angled, not keeled.” [Carpent., 1864b, p. 657]

Oldroyd (1927) reproduced part of Carpenter’s description (1866). The following changes should be made in her copy:

Last line: read “pariete” for “partiete.”

Add:

“Long. 0.03, long. spir. 0.015, lat. 0.025, div. 80°.

*Hab.* San Pedro; in shell-washings. *Cooper.*

“Known from *C. tumens*, Maz. Cat. no. 421, by the non-keeling of the umbilicus.” [Carpent., 1866a, p. 219]

The holotype is in the U. S. National Museum. It is on an original Carpenter glass mount in the original vial with the Carpenter label “Type. Genus 15569 *Cythna albida* Cpr. S. Diego Cp.”

**Holotype.—** U. S. National Museum, no. 15569

**Distribution.**—San Diego, California (type); Southern California; parasitic on starfishes (Dall)

Family *Fossaridae* "

**Genus Iselica** Dall, 1918

(*Isapis* H. and A. Adams, 1854)


The sculpture of *I. fenestrata* Carpenter is remarkably similar in detail to that of the type species of the genus.

**Iselica fenestrata** Carpent. (Pl. 21, figs. 15, 16)


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91 Dall (1924, p. 89). The new name is not necessary.

92 Theile (1929), Wenz (1940), and Aguayo and Jaume (1949) placed *Iselica* as a subgenus of *Phasianenora* S. Wood (1842) and in the family Pyramidellidae.

93 "*Isapis* Westwood, 1851," as quoted by Dall is not in Neave (1939–1940). The result is the same.

Fossarus fuscatora (Carpenter), Tryon, 1887, Man. Conch., vol. IX, p. 272, pl. 52, fig. 11 section Isapis

"Like ovoides, with sharp distant ribs." [Carpenter, 1864b, p. 656]

Oldroyd (1927) included part of Carpenter's description (1864d) of this species. However, through typographical errors so much of the Latin description was omitted that it seems best to copy here the entire description:

"I. testa I. ovoides forma et indole simili; carinis IX. acutis (quarum IV. in spira monstratur) cincta, interstitiis duplo latioribus, concinme quadratim decussatis, luribus radiantibus acutissimis; anfr. postice tumentibus, suturis valde excavatis; periretame continuo, labro a carinis pectinato; labio parietem parum attingente, medio calloso; umbilico angusto. Long. .18, long. spir. .13, lat. .19, div. 70°."

"Hab. Neah Bay (Swan); S. Diego and Sta. Barbara Island (Cooper).

"Dr. Cooper's shells are much smaller than those from the Vancouver district, which are white and eroded, varying much in the size of the umbilicus." [Carpenter, 1864d, p. 429]

The type material includes three specimens labelled "Sta. Barbara and S. Diego." These are obviously the specimens collected by Cooper. They are not segregated so that one cannot stipulate the type locality. But it makes the California area the type locality in place of that mentioned first in the expanded description.

Dimensions.—Height 5+ mm.; greatest diameter 3.5 mm. (largest specimen); height 3 mm.; greatest diameter 2.5 mm. (smallest specimen)

Syntypes.—U. S. National Museum, nos. 15772 and 15775

Distribution.—Recent. Santa Barbara and San Diego, California (type); Puget Sound to the Gulf of California (Dall). Pleistocene. California (Arnold; Oldroyd, 1925; Grant and Gale; Willett, 1937; Woodring, Bramlette, and Kew, 1946)

Iselica obtusa (Carpenter)


Fossarus obtusus (Carpenter), Tryon, 1887, Man. Conch., vol. IX, p. 273, pl. 52, fig. 12

"Whirls [sic] flattened behind; ribs swollen, uneven. 10–20 mm. CP." [Carpenter, 1864b, p. 566]

Oldroyd (1927) republished a copy of Carpenter's description (1866). The following changes should be made in her copy:

Delete "poll."

Add:

"... State Collection, no. 682."

"... Div. 60."

"Hab. S. Diego, 10 fm.; Sta. Barbara, 20 fm.; Cooper.

"The fortunate discovery of some perfect young specimens displays a nucleus so like Odosomia that, despite the resemblance of the shell to Fossarus, which has a tuberoid nucleus, it most probably belongs to Pyramidellidae." [Carpenter, 1866, p. 217]

The syntypes consist of four specimens with a label "10 fm. San Diego Cooper Cotype." The specimens collected by Hanham (1911, p. 112-114) at Maple Bay, Vancouver Island, were described as the new variety I. obtusa laxa by Dall (1919c, p. 351).

Syntypes.—U. S. National Museum, no. 14814 [14936]

Distribution.—San Diego, California (type); Puget Sound, Washington, to San Diego, California (Burch); Hanham, (1911) for habitat of I. obtusa laxa Dall).
Family Hipponicidae

Genus Hippionyx* Defrance, 1819

(Himalitha Schumacher, 1817 non Rafinesque, 1815)

Hippionyx Defrance, 1819, J. Physique, Chimie, Hist. nat., t. 88, Jan., p. 217, figs. 1, a-f.


Hippionyx tumens Carpenter

(Pl. 21, figs. 1-3)


Capulus tumens (Carpenter), Cooper, 1870, Amer. Jour. Conch., vol. VI, p. 64

Amalthea tumens (Carpenter), Williamson, 1892, U. S. Nat. Mus., Proc., vol. XV, no. 898, p. 204

Hippionyx subrufus tumens Carpenter, Abbott, 1954, p. 166

"Growth like Helcion: sculpture more open than barbatus." [Carpenter, 1864b, p. 654]

The above description was based on material from Monterey, San Diego, San Pedro, and Santa Barbara Islands.

The following corrections and additions should be made to the copy of Carpenter's description (1865) as published by Oldroyd (1927) to make that copy complete:

Line 1: read "rotundata" for "rotundara;" page 114, line 1: read "incrementi" for "incrementae;" line 3: read .7 for 7; .46 for 46; .33 for 33; delete "poll."

Add:

"div. 90°"

"Hab. Sta. Barbara (Jewett): S. Pedro (Cooper).


The type material consists of four specimens in the U. S. National Museum labelled, "San Diego Monterey Sta. Barbara." Largest specimen is figured herein.

Apparently the four specimens were concentrated under the no. 14929 without differentiating the locality of each specimen. The back of the present label bears numbers 14817b, 15293, 15652, 15715. It is, therefore, impossible to stipulate the exact locality of a lectotype. Oldroyd mentioned Santa Barbara, probably because it is mentioned first in the description (1865). Woodring, Bramlette, and Kew (1946) stated that the four specimens above came from Monterey. However, from the condition of the syntypes a selection of type locality would have to be arbitrary.

Dimensions, syntypes.—Greatest length from umbo to aperture 18 mm.; height 8 mm.; greatest diameter of aperture 12 mm. (largest); greatest length 5 m.; height 2 mm.; greatest diameter 5 mm. (smallest).

Syntypes.—U. S. National Museum, no. 14929 (14817b, 15293, 15652, 15715)

Distribution.—Recent. San Diego, Monterey, Santa Barbara Island, (type; syntypes are not separated as to exact locality of each); Crescent City, California, to Clarion Island [Re-villagigedo Islands] (Burch). Pleistocene. California (Arnold; Chace, 1919; Oldroyd, 1925; Grant and Gale; Willett, 1937; Woodring, Bramlette, and Kew); Mexico (Jordan, 1926; Hertlein, 1934)

*4 The original spelling is Hippionyx. Hippionyx Defrance (Blainville, 1819, p. 9) is only a notice of the original article, fide Smith (1906, p. 123).
Hipponix antiquatus cranioides Carpenter

(Pl. 21, figs. 4-6)


“Large, rough, flat, intermediate between *planatus* and *H. antiquatus* . . .” [Carpenter, 1864b, p. 654]

The following corrections should be made in the copy of the Carpenter’s description (1864d) published by Oldroyd (1927)

Line 5: read “contigua” for “continua;” read .85 for 85; .75 for 75; .3 for 3; delete “poll.”

Add:

“*Hab. Neah Bay (Swan)*.”

The type material consists of 150 specimens, all irregular in shape; some are flattish, others are high, and the majority are irregularly round. The specimen herein illustrated is a medium-flat shell which has the radiating striae developed best of all the specimens.

Many workers do not regard this form as of subspecific rank. It is retained here to formulate the original data of the name *cranioides* more concisely.

*Types.*—Syntypes, U. S. National Museum, no. 15508 (label no. 15508Q; specimens 15508)

*Distribution.*—Recent. Neah Bay, Washington (type); Vancouver Island, to San Pedro, California (Dall). Pleistocene. California (Cooper; *Arnold*; Oldroyd, 1925; Grant and Gale; *Willett*, 1937; *Woodring, Bramlette*, and *Kew*; *Keen in Cockerell*, 1939)

*Hipponyx serratus* Carpenter


*Hipponyx antiquatus* Linneaus, 1870, Amer. Jour. Conch., vol. VI, p. 64 includes "*serratus* Cpr.?” “Monterey south?”—S. America, Atlantic?


This species was described from Mazatlan. The illustration and discussion are reserved for the work on that fauna. The synonymy is not intended to be complete, except to point out references where the species has been recorded from Monterey. Some of the records are compilation and do not include original findings. Smith and Gordon doubt its existence at Monterey.

*Holotype.*—Probably in British Museum (Natural History) where the types were deposited

95 Woodring (Woodring, Bramlette, and Kew, 1946) gave the number as 44.

96 In Burch (1946, p. 9) *H. serratus* “Sowerby” seems to be a typographical error for “Carpenter.”
Family Calyptraeidae

Genus Calyptraea Lamarck, 1799

Calyptraea Lamarck, 1799, Soc. Hist. Nat. Paris, Mem., tab. facing p. 70, Calyptraea; no. 54, p. 78 Calyptraea


Calyptraea contorta (Carpenter)

(Pl. 21, figs. 13, 14)


"Whirls twisted: nucleus minute, prominent. 20–40 fm. Cp." [Carpenter, 1864b, p. 654]

The following lines should be added to Carpenter's description (1866) as published by Oldroyd (1927) to make that copy complete:

"...

"... State Collection, no. 369.


"The vertex stands out like a tiny Planorbis, and is more minute than in any species I have examined." [Carpenter, 1866a, p. 215]

The single remaining specimen of the original lot is from the third locality mentioned by Carpenter. The type has a label "Type Catalina Is. Cooper." The type locality is, therefore, Catalina Island instead of Monterey as indicated by Smith and Gordon.

Lectotype.—U. S. National Museum, no. 11846

Distribution.—Recent, Catalina Island, California (type); Catalina Island, California, to Gulf of California (Dall). Pleistocene. California (Cooper; Willett, 1937)

Genus Crepidula Lamarck, 1799

Crepidula onyx Sowerby

"Crepidula rugosa Nutt. ms." Carpenter

(Pl. 14, fig. 6)

Crepidula onyx Sowerby, 1825, Genera of Shells, no. 23, fig. 2


Jay assigned Nuttall's manuscript name to C. onyx Sowerby where it remains. Carpenter, however, described the Nuttall shell from "upper California" although he was not certain that its difference from C. onyx merited specific rank. He thought (1864b) it might be a northern "variety" of C. onyx.

A photograph of the interior of the type of "C. rugosa Nuttall" ms. is included herein through the courtesy of the British Museum (Natural History). Mr. Wilkins sent the following notes which are the label on the type:

"Crepidula rugosa Nuttall, U. Calif. (Nuttall label)."

Family Naticidae

Genus Natica Scopoli, 1777

"Natica ? Maroccana, var. Californica" Carpenter


Carpenter described this shell (1856) from "upper California," but he later (1864b) wrote, "The varietal name must be dropped. The shell certainly came from the Sandwich Islands."

Family Velutinidae

Genus Velutina Fleming, 1820


Velutina prolongata Carpenter

(Pl. 21, figs. 7, 8)


"Spire very small. Labrum produced in front." [Carpenter, 1864b, p. 661]

The following corrections and additions should be made in Oldroyd's (1927) copy of Carpenter's description (1865):

Line 2: read "dimidio" for "imidio"; read .1 for 1; read .15 for 15; delete "poll."

Add:

"... div. 140°.

"Hab. Neah Bay; rare (Swan)." [Carpenter, 1865a, p. 32]

There are four specimens in the type collection which are labelled, "Neah Bay Washington J. G. Swan." The specimen of the four which is figured herein is the best preserved and next to the largest of the group.

Dimensions, Syntypes.—Length 24 mm.; width 19 mm.; height 11 mm. (largest); length 9 mm.; width 7 mm.; height 4 mm. (smallest)

Syntypes.—U. S. National Museum, no. 11842

Distribution.—Neah Bay, Washington (type); Bering Strait to Monterey.99 California (Dall)

Family Muricidae

Genus Ocinebra Leach (ins.) in Gray, 1847

(Ocinebra Leach, 1852, error for Ocinebra Gray, 1847)


Ocinebra interfossa Carpenter

(Pl. 23, fig. 1)


99 Doubtful record (fide Smith and Gordon, 1948)
Murex (Ocenebra) interfossa (Carpenter), Tryon, 1880, Man. Conch., vol. II, p. 131, pl. 39, fig. 484

Tritonalia interfossa (Carpenter), Dall, 1921, p. 108, pl. 11, fig. 8; Oldroyd, 1927, vol. II, pt. 11, p. 21, pl. 30, fig. 2 same fig. as Dall, 1921; Grant and Gale, 1931, p. 710; Bailey, 1935, West Coast Shells (Keep), p. 237, fig. 233; Keen, 1937, p. 47


"Purple-brown, with latticed sculpture." [Carpenter, 1864b, p. 663, Monterey, Farallones, Puget Sound, and Vancouver area]

"O. t. satis elongata, purpureo—fuscus; anfr. nucleosis ii, laevibus, elongatis; anfr. normalibus convexit, suturis valde impressis; costis radiantibus subvaricos cirsic. XI., et spiralibus subaequantibus, quorum iii. in spira monstrantur, decussata; interstitiis alitis, quadratis, laminulis incrementi, et interdum costulis spiralibus obtusis intercalantibus, saepe ornatis; apertura ovata labro (t. adulta) intus dentato; canali satis longo, saepius clausa. Long. 85, long. spir. 4, lat. 45, div. 60°.

"Hab.—Neah Bay, Sitka; Vancouver, Lord, (named Fusus orpheus, as of Gld. in Br. Mus.)" [Carpenter, 1865e, p. 64]

Specimen no. 4636 (14889 R132), U. S. National Museum, is labelled, "Type Monterey Harbor." It is the specimen which Bormann (1946) figured and of which an illustration is included herein. The writer does not believe that the facts warrant saying (as Bormann stated, Burch, 1947, no. 71, p. 7), that the type was figured in Dall (1921) and repeated in Oldroyd (1927). The explanation of that figure reads, "typical," and the drawing, which may be a composite sketch, does not depict the exact features of the "type.

Carpenter unconsciously bequeathed an error in the matter of the type locality. In his first brief description (1864b), Carpenter included shells from Monterey, Farallones, and the Strait of Juan de Fuca. However, in the complete description (1865), the California localities are not mentioned.

To be able to validate the above-labelled type (no. 4636, U. S. National Museum), Carpenter's earlier description (1864) must be accepted as adequate. Those brief lines are hardly complete. If the specific description dates from 1865 it is not consistent to have a holotype or lectotype from a locality which is not mentioned in that description.

J. Wyatt Durham informed the writer that there are in the Department of Paleontology, University of California, two specimens (not the same species), no. 47–402, labelled Tritonia interfossa, which apparently had been segregated because they might be types. The writer doubts their status as types because of the absence of authentic type label. The lack of locality label would eliminate those specimens from availability as "lectotype."

The specimen, U. S. National Museum no. 4636, is the only "type" so far found. In spite of the inconsistency of its locale it would seem best to assume that the selection was made by Carpenter; therefore, the specimen is a holotype.

Holotype.—U. S. National Museum, no. 4636

Distribution.—Recent, Monterey, California (type); Semidi Island, Alaska, to Punta Santo Tomas, Lower California (Burch), Pleistocene, California (Arnold; Grant and Gale; Oldroyd, 1925; Woodring, Bramblet and, Kew, 1946). Mexico (Jordan, 1926). Pliocene, California (Berry, 1809; Grant and Gale); Oregon (Howe, 1922; Grant and Gale). Mio-
cene. Oregon (Howe, 1922; Grant and Gale)

Ocenebra interfossa atropurpurea Carpenter
(Pl. 23, figs. 2, 3, 3A, 13)


Ocenebra interfossa atropurpurea (Carpenter), Burch, 1945, no. 51, p. 49; Bormann, 1946, Nautilus, vol. 60, no. 2, p. 39, pl. 4, figs. 7-9; 1947, Minutes Conch. Club So. California, no. 71, p. 7 With description of O. interfossa Carpenter (1865e)

"Hab. Neeah Bay, Swan: Vancouver, Lord...
[Harb. for both O. interfossa and var. atropurpurea]
"Variat.: t. atropurpurea: costis spiralibus distantiis, in spirâ duabus, foives majoribus.
Variat quoque t. albido zonâtâ." [Carpenter, 1866e, p. 64]

This subspecies was described as above by Carpenter (1865). Apparently Dall forgot about the description when he made the statement (1919) that a description had not been published by Carpenter. Dall’s notes were no more complete than Carpenter’s, so that Dall’s name does not apply as author of the subspecies. The lectotype is figured herein for the first time. Bormann figured a specimen (1946) from White’s Point, Los Angeles County, California, which had been compared with the holotype by Rehder (in Bormann, 1946).

There are seven specimens (paratypes) in the original group in the U. S. National Museum, no. 15528b100 other than the one labelled “type.” The label includes “Neeah Bay.” The type is evidently a lectotype selected by Dall.

All the specimens, lectotype and paratypes, have the apical whorls worn. The suite includes young and mature individuals. Some are more slender than the “type,” but all have the coarse longitudinal lines of growth and deep squarish pits. The labrum is not thickened on the immature forms.

The measurements which Dall gave (1919) are not those of the lectotype but of a more elongate shell (see size of lectotype, explanation of pl. 23, figs. 2, 3A)

Lectotype.—U. S. National Museum, no. 15528b

Distribution.—Neeah Bay, Washington (type); Neeah Bay, Washington, to San Diego, California (Dall)

Ocenebra interfossa beta (Dall)


The subspecies were never mentioned in literature by Carpenter.

The holotype of O. beta was figured by Bormann (1946, pl. 4, fig. 15). O. interfossa minor was also a manuscript museum label name used by Carpenter. It was described by Dall (1919, p. 334) but not illustrated. Bormann (1946, Pl. 4, fig. 5) figured the holotype. O. beta Dall was also figured by Smith and Gordon (1948, holotype, Fig. 1, p. 189).

Ocenebra lurida munda Dall in Williamson


“Tall, with faint sculpture.”—[Carpenter, 1864b, p. 663]

The above are the brief remarks which constitute the only data that Carpenter published on the subspecies, except the names of numerous localities from California and Vancouver

100 The no. 155286 in Dall (1919, p. 334) is not correct. The “6” is a typographical error for “b.”
Island which were not definitely segregated from that of the species. The first sentence of the notes which Oldroyd (1927, p. 18) credited to Carpenter are not those of Carpenter. They are a portion of Tryon’s (1880, p. 131) remarks regarding the form.

Carpenter’s line does not seem adequate to validate the subspecific name. Carpenter’s type has not been found. The first to use the name with a figure, a type, and definite locality was Williamson. Therefore, if the form deserves subspecific rank, to preserve the name one must date it from Williamson. The identification of the form in her report was made by Dall.

Lectotype.—U. S. National Museum, no. 46708 (Williamson)

Distribution.—Recent. Catalina Island, California (type); Middleton Island, Alaska, to San Diego, Calif. (Dall). Pleistocene. California (Arnold; Grant and Gale; Woodring, Bramlette and Kew, 1946)

 Ocinebra poulsoni Carpenter

(Pl. 26, fig. 8)


Tritonalia poulsoni (Nuttall in Carpenter), Grant and Gale, 1931, p. 712, pl. 32, fig. 10; Keen, 1937, p. 47.

Tritonalia poulsoni (Nuttall), Baily, 1935, West Coast Shells (Keep), p. 238.

Ocinebra poulsoni (Carpenter), Burch, 1945, no. 51, p. 47; Abbott, 1954, p. 218, pl. 24, fig. K.

“Shape like M. monoceros, with brown spiral lines.” [Carpenter, 1864b, p. 663]

Oldroyd (1927) republished the Latin portion of Carpenter’s (1865) description.

The following changes should be made in her copy:

Line 6: for “lumentibus” read “tumentibus;” add “div. 35” at end of line.

Add:

“Hab. San Diego, Nuttall.—Cerros Is., Veatch.—Santa Barbara, Jewett.

“Je n’ai vu que trois individus de cette belle espèce: l’un d’eux, qui est typique, porte le nom de “Buccinum Poulsoni” dans la collection Nuttall qui fait partie du Musée britannique: un second, très-jeune, et d’un aspect fort particulier, bien qu’il apporte univement évidemment à la même espèce, a été recueilli par le colonel Jewett, probablement à Santa Barbara (mais, d’après son étiquette, à Panama): enfin celui du docteur Veatch provient de la basse Californie, et il est en très-nouveaux état. Le premier a été dessiné sur bois pour l’institution Smithsonian par M. Sowerby. Comme cette espèce intéressante est presque inconnue en France, j’ai cru devoir en donner une description suffisamment précise.” [Carpenter, 1865g, p. 149]

Carpenter’s description (1864b) indicated specimens from “California” (Nuttall),”? Santa Barbara” (Jewett), and “Lower California” (Smith, Inst.). They were used as the basis of the analysis. Those three sources are identical with the three mentioned by Carpenter in his description (1865). Fortunately, the Nuttall (G. L. Wilkins, Mar. 2, 1951, personal communication) specimen is in the British Museum. The officials of that institution provided a photograph of the synotype (“holotype”).

Type.—British Museum (Natural History), B. M. 61.5.18.22

Distribution.—Recent. San Diego, California (type): Santa Barbara, California, to Magdalena Bay, Lower California (Dall). Pleistocene. California (see Grant and Gale, 1931, p. 712); Mexico (Hertlein, 1934)

 Ocinebra squamulifera (Carpenter in Gabb)

Tritonalia squamulifera (Carpenter), Dall, 1921, p. 107; Oldroyd, 1927, pt. II, p. 18; Keen, 1937, p. 47
Tritonalia squamulifera (Carpenter in Gabb), Willett, 1938, Nautilus, vol. 52, no. 1, p. 10; Woodring, Bramlette, and Kew, 1946, U. S. Geol. Surv., Prof. Paper 207, p. 75, pl. 34, fig. 13
Ocenebra squamulifera (Carpenter), Burch, 1945, no. 51, p. 46, 52; Bormann, 1946, Nautilus, vol. 60, no. 2, p. 40, pl. 4, figs. 17, 18 holotype; Bormann, 1947, Conch. Club. So. California, Min. no. 71, p. 8

"T. satis turrita, pallide rufoscula; anfr. nuc. norm. IV tabulatis, tumentioribus, sutureis ad angulum 80°—100° acute impressis; costis rad. VI—VII vix varicosis, angustis, ad angulum posticum interdum spinosis, ad basin continuis; lirii spiralis primum iii fenestra- tis dein creberrinis, asperis, squamulatis, interstítiiis angustis, plus minusve incisis, canali longiori, rectiore, duabus tridentibus aperturae aequante, vix aperta; apertura ovali, labro incrassato, intus circ. V dentati; labio laevi, crassiore.

"Long. 9, long. spir. 35, lat. 51, div. 66."

"Hab. Living; Catalina Isd.; Post-Pliocene, Sta. Barbara.

"With the general aspect of T. teninsculpta, it is at once recognized by the difference in sculpture. The fossil (unique) specimen is much finer than the immature living one sent by Dr. Cooper. In this the varices are not so acute at the angle, and the spiral sculpture is stronger. The difference, however, does not appear to be specific." [Carpenter in Gabb, 1869, p. 44]

"The above description and notes were sent me by Dr. Carpenter, in a letter, and were based on a unique fossil specimen found by myself at Santa Barbara, and an immature recent one from Catalina Island, found by Dr. Cooper." [Gabb, 1869, p. 44]

J. Wyatt Durham (Personal communication) furnished the following notes in regard to the type of this species which is in the University of California, Museum of Paleontology:

"Trophon squamulifer Carpenter

"Univ. Calif. Mus. Paleo. no. 15459; marked Holotype; has old State Survey no. 63 on yellow gummed square; present label on box 10—15 years old; label in bottle older, but not too old; Trophon squamulifera Cpr. [Type]; back of label with measurements on it different writing than front. Label on box with notation: Carpenter, in Gabb, Pal. Calif., 1869, vol. 2, p. 44; Recent; Catalina Island, Calif.

"There is a possibility that the label in the bottle might be Rivers', but it certainly is not older than that, and might be younger."

This species was founded on two specimens, one from the Recent and one from the Pleistocene. Present workers seem to be in doubt whether the species occurs in the living fauna, because it has been assumed that the type was the Pleistocene shell.

However, if the label of the existing type is correct, the holotype (depending on whether it was originally selected by Carpenter) came from Catalina Island and is a Recent shell. Bormann (1946), in the explanation of the figure of the holotype, defined the shell from the "Pleistocene of Santa Barbara," but that is a confusion. Apparently the Pleistocene shell is not available.

If the holotype or lectotype is established on the Recent species and that is the locality which Carpenter mentioned first, the query by workers as to the presence of the species in the Recent fauna is settled. The problem would then be to identify living shells which may be at present classified under some other name. If the Pleistocene shells, heretofore called T. squamulifera, can be separated from the holotype of T. squamulifera as a distinct species or subspecies, the Pleistocene form would deserve a new name. Pleistocene (San Pedro sand) specimens which had been figured as "Ocenebra barbarensis Gabb" by Arnold have been assigned to this species by Willett. Woodring, Bramlette, and Kew agree with Willett in his identification.

Bormann (1946) figured the "holotype" of this species.

Holotype (or lectotype).—University of California, Museum Paleontology, no. 15459

Distribution.—Recent. Catalina Island, California (type); Santa Barbara to San Pedro, California (Dall); British Columbia, to Santa Barbara, California (Burch, 1955). Pleis- tocene. California (Carpenter) Santa Barbara (Arnold, 1903; Willett, 1938; Woodring, Bramlette, and Kew)
GASTROPODA

Ocenebra tenuisculpta (Carpenter)

(Pl. 23, figs. 9-12)


Trophon (Boreotrophon) tenuisculptus Carpenter, ARNOLD, 1903, p. 253

Boreotrophon tenuisculptus (Carpenter), DALL, 1902, U. S. Nat. Mus., Proc., vol. 24, no. 1264, p. 541 in part section Trophonopsis; VAN WINKLE [PALMER], 1921, Bull. Amer. Paleont., vol. VIII, no. 36, p. 5 copy of original description, pl. I, figs. 6-9 types

Not Neptuna tenuisculpta (Carpenter), DALL, 1921, p. 111, pl. 11, figs. 11, 12; OLDROYD, 1927, vol. II, pt. 2, p. 39, pl. 30, figs. 3, 7 copy of DALL, 1921, pl. 11, figs. 11, 12 = Trophon lasius DALL, 1919, U. S. Nat. Mus., Proc., vol. 56, p. 338; WILLET, 1938, Nautilus, vol. 52, no. 1, p. 10, pl. I, fig. 6 type

Trophon (Trophonopsis) tenuisculpta (Carpenter), GRANT AND GALE, 1931, p. 725 in part; T. lasius DALL

Trionicalia tenuisculpta (Carpenter), WILLET, 1938, Nautilus, vol. 52, no. 1, p. 10

"T. testa T. Barvicensi similis, sed sculptura minus extante; vertice nucleoso minimo; anfractibus uno et dimidio laevibus, apice acute; normalibus v., tumidibus, postice subangulatis, suturis impressis; costis radiantis x.-xiv., plerumque xii., haud varicosis, angustis, obtusis; liris spiralis majoribus, distantisibus, quorum ii.-iii., in spira monstrantur, aliis intercalantibus, supra costas radiantes undatibus transeuntibus; tota superficie lilulis incrementi, supra liris spirales squamosis, elegantior ornata; canali longiore, subrecta, vix clausa; labro acutior, postice et intus incrassato, denticibus circ. v. munito; labio conspicuo, laevi; columnella torsa.

"Hab. Sta. Barbara, Pleistocene formation (Jeqett).

"This very elegant shell is like the least-sculptured forms of T. Barvicensi from which it appears to differ in its extremely small nucleus. It is very closely related to T. simbritatulus, A. Ad., from Japan, but differs in texture, and is regarded by Mr. Adams as distinct. It stands on the confines of the genus, there being a slight columellar twist, as in Peristernia."

[Carpenter, 1866, p. 277]

Dimensions.—Length 16 mm.; greatest diameter 8 mm.; length 13 mm.; greatest diameter 7 mm. (syntypes)

There are two specimens of this species on the original card labelled "type." They are in the Paleontological Laboratory, Cornell University. The history of their preservation there is described by Van Winkle [PALMER] (1921).

WILLET (1938) in consultation with Grant and Strong, showed that the Recent form which had commonly been determined by authors and labelled in collections as this species was in reality something different and is what DALL (1919) named T. lasius. T. tenuisculpta Carpenter is not in the Recent fauna.

Syntypes.—No. 4951, Paleontological Laboratory, Cornell University Ithaca, New York.

Distribution.—Santa Barbara formation. Pliocene-Pleistocene,101 Santa Barbara, California (type); California (Arnold; Grant and Gale; Woodring, Bramlette, and Kew, 1946)

Genus Trophonopsis Bucquoy, Dautzenberg, and Dollfus, 1882

(Boreotrophon Fischer, 1884)


Trophonopsis triangulatus Carpenter


Trophon (Boreotrophon) triangulatus (Carpenter), Williamson, 1892, U. S. Nat. Mus., Proc., vol. 15, no. 898, p. 216; Arnold, 1903, p. 254; Grant and Gale, 1931, p. 724

Boreotrophon triangulatus (Carpenter), Dall, 1902, U. S. Nat. Mus., Proc., vol. 24, no. 1264, p. 548 section Austrotophon


Trophon (Neptuna) peregrinus Dall, 1921, p. 110, pl. 8, fig. 5; Oldroyd, 1927, vol. II, pt. II, p. 36, pl. 33, fig. 12

Trophon (Austrotophon) triangulatus (Carpenter), Dall, 1921, p. 109 in part; Oldroyd, 1927, vol. II, pt. II, p. 28, pl. 34, figs. 6, 7 type; Keen, 1937, p. 48

In part Trophon (Austrotophon) triangulatus (Carpenter), Baily, 1935, West Coast Shells (Keep), p. 244, fig. 244 = T. catalinensis Oldroyd, 1927, vol. II, pt. II, p. 29, pl. 34, figs. 1–5

Boreotrophon triangulatus (Carpenter), Dall, 1945, no. 51, p. 55, 60; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, p. 190; Abbott, 1954, p. 208, fig. 46b same figure as Dall, 1892, pl. 5, fig. 3

Boreotrophon peregrinus (Dall), Burch, 1945, no. 51, p. 58; Smith and Gordon, 1948, California Acad. Sci., Proc., vol. XXVI, no. 8, p. 234

“Cat. Is., 60 fm. Resembles the young of Murex centripigenus” [Carpenter, 1864b, p. 613]

“Typhoid shape: frills triangular, white 60 fm. Cpt.” [Carpenter, 1864b, p. 663]

The original description has been republished by Oldroyd (1927). The following corrections and additions should be made to make her copy complete:

“... State Collection, no. 580a.”
Page 29, line 3: insert “apertam” between “spinam” and “compressis.”
Insert before paragraph beginning “Resembles” the following:

“... div. 70°.
“Hab. Catalina Island, 60 fm.: 4 alive of equal size, Cooper.” [Carpenter, 1866a, p. 224]

Dall discussed this species in detail (1891) and figured the type (a young shell) and an adult individual from San Pedro. Dall later (1902) repeated his earlier statements.

J. Wyatt Durham furnished the following notes regarding the “types” (syntypes) in the University of California, Museum of Paleontology:


“This specimen still has the operculum with it. Otherwise the two are in equally good condition. Perhaps 12572 should be designated as the Lectotype.”

In referring to the specimen at the University of California as the type which he figured (1892), Dall described the specimen as containing the operculum. The writer therefore identifies no. 12572, University California Museum Paleontology as that shell and selects that specimen as the lectotype of the species.

A specimen in the U. S. National Museum, no. 11839, is labelled, “Catalina Id. Cooper Type fig’d.” The shell is 10 mm. length and 6 mm. greatest diameter; hence it is a young shell about the size of the lectotype. From the original description (1866) there could be syntypes, all from Catalina Island and of the same size. If the specimen in the U. S. National Museum was indicated as type in Dall’s day, it is odd that Dall did not describe that specimen and figure it instead of going so far afield. As the labels stand it can be regarded as a syntype and a lectotype can be chosen from the three syntypes, which is what the writer has done above.

Oldroyd figured both University California syntypes. The U. S. National Museum “syntype” apparently has not been figured, regardless of the label.

This species does not seem to be typical Troponopsis [Boreotrophon].

Dimensions.—Length 11.5 mm.; diameter 6.3 mm. (lectotype, Dall).
Types.—Lectotype, Univ. California, Museum of Paleontology, no. 12572; paratype, University California Museum Paleontology no. 12572; "paratype," U. S. National Museum, no. 11839.

Distribution.—Recent. Catalina Island, California (type); Monterey, California, to Catalina Island and San Pedro, to San Diego, California (Burch). Pleistocene. California (Cooper; Arnold; Grant and Gale).

Family Magilidae

Genus Latiasxis Swainson, 1840

Latiasxis costata hindsii (Carpenter)

_Trophon muricatus_ Hinds, 1844, Voy. Sulphur, Moll., p. 14, pl. 1, figs. 16, 17 not _Murex muricatus_ Montagu, 1803, Testacea Britannica, p. 262


_Latiasxis costata hindsii_ (Carpenter), Burch, 1945, no. 52, p. 11

The specific name of this Panama species was changed by Carpenter, because he thought the _Murex muricatus_ Montagu was congeneric (secondary homonym). Oldroyd (1929, p. 99) renamed shells _Coralliophila Oldroydi_ from Catalina Island which had gone under Carpenter's name. Burch enumerated the factors in regard to the identification of Oldroyd's and Hinds' (original) species. He believed that they are distinct and extended the range of _L. costata hindsii_ from Point Conception to Panama. The type of the species is a shell from the "Voyage of the Sulphur" and not one of Carpenter's. The name is included here only to explain Carpenter names.

Family Columbellidae

Genus Mitrella Risso, 1826


_Mitrella gouldi_ (Carpenter)


_Not Columbella gouldi_ Agassiz ms., Reeve, 1858, Conch. Icon., vol. 11, _Columbella_, pl. XXII, fig. 135

Oldroyd (1927) republished part of the original description of this species. To her copy should be added the following:

"... div. 37°.


"Closely resembling _N. erithria_; distinguished from _C. Sta.-Barbaraensis_ by the smooth whorls [sic] and apex, and the conspicuous labral teeth. The two specimens examined differ too much from each other in colour-markings to found specific characters upon these features." [Carpenter, 1856d, p. 208]

"Not to be confounded with Col. Gouldiana, Agass. which is probably _Amycla_." [Carpenter, 1864b, p. 535]

"Columbella Gouldii, Agass., MS. is Mus. Cum., Nov. 1858. [= _Amycla Gouldiana_ Atlantic; non Niditella Gouldii, Cpr.]" [Carpenter, 1864b, p. 567]

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102 Dall (1921, p. 113) gave incorrect reference to "Mazatlan Cat."

The holotype of this species has not been found. It is not reported in the types of the Gould Collection (27th Ann., Rept. New York State, p. 47), in Albany, New York. It is not in the British Museum (G. L. Wilkins, Oct. 17, 1930, personal communication).

Holotype.—Not found

\textit{Distribution}.—Recent. Santa Barbara, California (type); Kodiak, Alaska, to San Diego, California. Pleistocene. California (Oldroyd, 1925; Grant and Gale). Pliocene. California (Moody, 1916 \textit{fide} Grant and Gale; Grant and Gale)

\textbf{Mitrella tuberosa} (Carpenter)

\textit{(Pl. 26, figs. 9–12)}


\textit{Columbella (Mitrella) tuberosa} (Carpenter), Tryon, 1883, Man. Conch., vol. V, p. 135, pl. 50, figs. 40, 41

\textit{Astyris tuberosa} (Carpenter), Keep, 1887, West Coast Shells, p. 36

\textit{Columbella (Astyris) tuberosa} (Carpenter), Williamson, 1892, U. S. Nat. Mus., Proc., vol. 15, no. 898, p. 213, pl. XX, fig. 6; Arnold, 1903, p. 240, pl. V, fig. 7; 1907, U. S. Geol. Sur., Bull., no. 321, pl. XI, fig. 10

\textit{Columbella (Alia) tuberosa} (Carpenter), Dall, 1921, p. 103; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 97


"Very close to \textit{minor}, Scacchi, but with different nucleus. 8–10 fm. c. \textit{Cp.}" [Carpenter, 1864b, p. 662]

Oldroyd (1927) republished part of the original description of this species. To her copy should be added the following to make the notes complete:

". . . div. 30°."

"\textit{Hab.} Sta. Barbara, recent and fossil (Jewett); coast of California north to Monterey; Catalina Island, 8–10 fathoms (Cooper)."

"As this belongs to a group of closely allied species of Nassoid Columbellae, a minute diagnosis is given. The fossil specimens are larger, and have the remarkable nucleus more perfect than any of the recent shells yet seen. In appearance it scarcely differs from the small variety of the Mediterranean \textit{A. minor}, Scac.; but that (with \textit{A. corniculata}) has a Chrysodomid nucleus, the Californian an Alaboid." [Carpenter, 1865h, p. 398]

The type material of this species consists of five specimens on Carpenter original glass mounts in the Redpath Museum. They have an original label, "\textit{Astyris tuberosa Cpr. type Sta. Barbara fossil Jewett.}" The nuclear whorls are well preserved and consist of about 3⅓ whors, the first minute. The nuclear whorls are globose and differentiated from the postnuclear whorls. Carpenter commented especially on the fine preservation of the nucleus of the fossil shells.

\textit{Syntypes}103—Redpath Museum, No. 73

\textit{Distribution}.—Recent. Santa Barbara, California, to Forrester Island, Alaska, to Gulf of California (Dall). Pleistocene. Lower Santa Barbara formation, Santa Barbara, California (type): California Arnold; Oldroyd, "var." 1925; Grant and Gale; Willett, 1937; Woodring, Bramlette, and Kew; Mexico (Jordan, 1926). Pliocene. California (Cooper; Arnold; Berry, 1908; Grant and Gale; "var." Woodring and Bramlette, 1950). Miocene. California (Gale in Grant and Gale)

103 Statement in Oldroyd (1927), followed by Grant and Gale (1931) that the type might be in the British Museum is incorrect.
Genus Amphissa H. and A. Adams, 1853

*Amphissa* H. and A. Adams, 1853, Genera Recent Moll., vol. I, p. 111


*Amphissa undata* (Carpenter)

(Pl. 23, figs. 21, 22)


*Columbella undata* (Carpenter), Tryon, 1883, Man. Conch., vol. V, p. 177, section *Seminella Amphissa undata* (Carpenter), *Dall in Williamson*, 1892, U. S. Nat. Mus., Proc., vol. 15, no. 898, pl. XX, fig. 8; Dall, 1921, p. 105; Oldroyd, 1927, vol. II, pl. 1, p. 282; Baily, 1935, West Coast Shells (Keep), p. 234, fig. 227 same fig. as Williamson, pl. XX, fig. 8; Keen, 1937, p. 29; Burch, 1945, no. 51, p. 25, 27; Smith and Gordon, 1948, California Acad. Sci. Proc. ser. 4, vol. XXVI, p. 188; Abbott, 1954, p. 224, fig. 50c same fig. as in Williamson, 1892

"... Cat. Is., not rare in 40 ft." [Carpenter, 1864b, p. 613]

"Like stumpy, small *corrugata*, with waved sculpture. 40 ft. not r. Cp." [Carpenter, 1864b, p. 662]

Oldroyd (1927) republished a part of the original notes of this species. The following changes should be made in those notes:

Delete "poll" and add "div. 45°."

"The nuclear whirls in this shell resemble a minute *Paludina*. The only operculum in the specimens sent was broken in extraction, but appeared to be Nassoid. The sculpture consists of elongate knobs swelling in the middle; with spiral lines hanging as it were from pier to pier, as in a suspension bridge. The aperture is somewhat Columbelloid, the inner and outer lips joining at the suture; but neither are lirate within, although they have that appearance from the outside sculpture showing through." [Carpenter, 1864a, p. 159]

The holotype of this species is in the U. S. National Museum. It bears the label, "Cp. 1003 Catalina Isd. Cooper." That number does not coincide with the one given by Carpenter ("State Collection Species 1067").

The protoconch of the holotype consists of about four whorls, the first minute; the earliest three are smooth, and the last has longitudinal ribs.

**Holotype.—**U. S. National Museum, No. 23284

**Distribution.—**Recent, Catalina Island, California (type); Monterey, California, to Cerros Island, Lower California (Dall). Pleistocene. California (Woodring, Bramlette, and Kew, 1948)

Genus Anachis H. and A. Adams, 1853

*Anachis* H. and A. Adams, 1853, Genera Recent Moll., vol. I, p. 184


*Anachis penicillata* Carpenter

(Pl. 23, figs. 4-6)


*Columbella* (Seminella) *penicillata* (Carpenter), Tryon, 1883, Man. Conch., vol. V, p. 177, pl. 58, fig. 46 omitted


Anachis (Chauvetia) penicillata (Carpenter), Grant and Gale, 1931, p. 687; Baily, 1935, West Coast Shells (Keep), p. 232

"Small, with Metuloid sculpture. Beach—10 fm. Cp." [Carpenter, 1864b, p. 664]

Oldroyd (1927) republished Carpenter's (1865) description. The following notes should be added to make that copy complete:

"... div. 25°.

"Hab. Sta. Barbara (Jewett); S. Diego, Catalina Island, shore to 10 fathoms (Cooper).

"Neither of the specimens sent is quite mature. The mouth is that of an adolescent Anachis, but the sculpture is Metuloid." [Carpenter, 1865b, p. 398]

The types are in the U. S. National Museum labelled "San Diego—Sta. Barbara Cat. 1" consisting of two specimens. The specimens are not segregated as to each locality. The larger of the two is the nearest to the dimensions given by Carpenter (.21 = 5.3 mm.; .08 = 2.03 mm.). The writer, therefore selected the larger specimen (pl. 23, fig. 4) as the lectotype.

Types.—Lectotype and paratype, U. S. National Museum, No. 15576

Distribution.—Recent. San Diego—Santa Barbara—Catalina Island, California (type); Pescadero Point, San Mateo Co., Santa Barbara, California, to Gulf of California (Burch). Pleistocene. California (Oldroyd, 1925; Grant and Gale; Woodring, Bramlette, and Kew, 1946)

Anachis subturrita Carpenter

(Pl. 23, figs. 7, 8)


Columbella (Seminella) subturrita (Carpenter), Tryon, 1883, Man. Conch., vol. V, p. 178, pl. 58, fig. 47


"Aspect of small Rissoina. 20 faint ribs: no spiral sculpture." [Carpenter, 1864b, p. 664]

Oldroyd (1927) republished Carpenter's description (1866). The following lines should be added to make the copy complete:

"... div. 30°.

"Hab. San Diego, Cooper. From shell washings.

"The only specimen seen of this tiny species is not quite mature, and has formed no labral teeth." [Carpenter, 1866a, p. 223]

In the Oldroyd copy delete "mm."

The holotype of this species is in the U. S. National Museum, no. 14952. It is labelled "San Diego Cooper." The specimen has plications on the interior of the labrum, but there are none on the labium.

Holotype.—U. S. National Museum, no. 14952 [U. S. National Museum no. 110645, holotype A. petravis Dall]

Distribution.—San Diego, California (type); San Pedro, California, to Tres Marias Islands, Mexico (Burch)

Genus Columbella Lamarck, 1799

"Columbella" santa-barbaraensis Carpenter

This species was described and named by Carpenter (1856, p. 208) as C. Santa-Barbaren-sis from that area of distribution. Later Carpenter (1864b, p. 535, 567, 625) corrected the distribution and thereby renamed the species C. recrvi. The substitute name, of course, could only be applied unless the original was a homonym. Unfortunately this is not the case, and the first name must stand.
The species does not belong in the fauna of this report. The syntypes are in the Redpath Museum, no. 74. They will be figured in the report of the Carpenter types of the Lower California area.

**Genus Aesopus** Gould, 1860


**Aesopus chrysalloides** (Carpenter)  
(Pl. 23, figs. 18-20)


*Columbella* (Mitrella) chrysalloidea (Carpenter), Tryon, 1883, Man. Conch., vol. V, p. 135, pl. 50, fig. 42

*Columbella* (Aesopus) chrysalloidea (Carpenter), Williamson, 1892, U. S. Nat. Mus., Proc., vol. 15, no. 898, p. 213; Arnold, 1903, p. 237, pl. V, fig. 6 shape not typical

*Aesopus chrysalloideus* (Carpenter), Dall, 1921, p. 105; Oldroyd, 1927, vol. II, pt. I, p. 279; Grant and Gale, 1931, p. 703; Keen, 1937, p. 28; Burch, 1945, no. 51, p. 24


“Shape of *Truncaria eurytoides*, but mouth not effuse: spirally furrowed. Shoal-water, *Ch.*” [Carpenter, 1864b, p. 662]

A copy of part of Carpenter’s (1866) notes was republished by Oldroyd (1927). The following changes should be made in her copy: Delete “poll.”

Add:

"... div. 25°."

"*Hab.* San Pedro, 1 on beach; San Diego, 30, some alive in 8 fms. on sand, in upper part of bay. *Cooper.*"

“This is one of the most beautiful, (without a knowledge of either animal, or operculum) but most puzzling of the small shells of California. It has relations with *Euryta, Truncaria, Mactula*, and *Daphnella.*” [Carpenter, 1866a, p. 223]

The type material consists of five specimens in the U. S. National Museum with a label, “San Diego Cooper” in writing. A printed label of “San Pedro” is included. Thus one cannot segregate the specimens by exact locality.

The chief characteristic of sculpture is the presence of the regular microscopic spiral striations over the whole surface. Such striations are on the young shells as well as on adults. The immature shells are less slender, and the spire is not so elevated as on the older specimens. A short and stubby young individual has plications on the interior of the labrum similar to those on the adult. The apex of the shells is minute and sharp. There is a band just below the suture; some have brown spots in their coloration.

**Dimensions.**—Length 10 mm.; greatest diameter 4 mm. (largest); length 3.5 mm.; greatest diameter 2 mm. (smallest)

**Syntypes.**—U. S. National Museum, no. 14953 (15325C)

**Distribution.**—Recent, San Diego, or San Pedro, California (type); Santa Monica to San Diego, California (Burch). Pleistocene (Woodring, Bramlette, and Kew, 1946)

**Aesopus eurytoides** (Carpenter)  
(Pl. 23, figs. 14-17)


“Common; rubbed. Also Guacomayo, in the Smithsonian Museum.” [Carpenter, 1864b, p. 619]

Oldroyd (1927) republished the Carpenter description (1864a). In her copy read .3 for .03, .2 for .02 and add “div. 23°” at the end of the line.
The type material consists of seven specimens in the U. S. National Museum, labelled "Cape St. Lucas Xantus."

One specimen has a brown tip of three whorls. The others have the whorls white. The shells are partially transparent, and some have a few light-brown spots. All have fine longitudinal ribs or lines. One specimen has a smooth body whorl and has fine teeth on the inside of the labrum. Other individuals have the labrum smooth within. Some specimens show a band below the sutures; others do not have this feature.

**Dimensions.**—Largest syntype: length 18 mm.; greatest diameter 5 mm.; syntype: length 6 mm.; greatest diameter 2 mm.

**Syntypes.**—U. S. National Museum, No. 4148

**Distribution.**—Cape San Lucas, Lower California (type); San Diego, California, to Panama (Dall)

Family **Nassariidae**

Genus **Nassarius** Dumeril, 1806


Not **Nassarius insculptus** Carpenter, Cooper, 1888, 7th Ann. Rept. California State Min. Bur., p. 253 (dive Dall, 1917, p. 576

**Alectria insculptus** (Carpenter), Dall, 1917, U. S. Nat. Mus., Proc., vol. 51, no. 2166, p. 576

**Alectria (Zeuxis) insculptus** (Carpenter), Dall, 1921, p. 103

**Alectria (Schizopyga) insculptus** (Carpenter), Oldroyd, 1927, vol. II, pt. 1, p. 267, pl. 26, fig. 12

**Nassarius insculptus** (Carpenter), Grant and Gale, 1931, p. 677; Burch, 1945, no. 51, p. 6; Keen, 1937, p. 41; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, p. 187; De Mond, 1951, Nautilus, vol. 65, no. 1, p. 17; 1952, Pacific Science, vol. VI, no. 4, p. 312, pl. II, fig. 3; eupharpia fig. 1; Abbott, 1954, p. 237, fig. 53f same fig. as Williamson, 1892

**Nassarius (Zeuxis) insculptus** (Carpenter), Baily, 1935, West Coast Shells (Keep), p. 229, fig. 221 same as Williamson, 1892

"Cat. Is., living in 40 fm., rare" [Carpenter, 1864b, p. 613]

"Zeuxis, with varix and non-reflexed callus. Spirally grooved. 40 fm. living, r. CEp." [Carpenter, 1864b, p. 662]

The description of 1865 of this species was republished by Oldroyd (1927). The following notes should be added to make that copy complete:

Delete "mm."

Add:

"... State Collection 1008.
... div. 45."

"Hab. Catalina Island, 30–40 fm.; 15 mostly alive, but few mature; animal white; Cooper."

"This singularly beautiful species probably belongs to the section Zeuxis, H. & A. Adams. The callus is slightly reflexed in the best specimen." [Carpenter, 1866a, p. 223]

Although the explanation of the figure of this species given in Williamson stipulated "Type specimen 46625," the label with the specimen in the U. S. National Museum no. 46625 does not so indicate. It reads "San Pedro Stearns Coll." The original material was collected by Cooper and belonged to the California State Collection, so that the Stearns shells could not be types.
A. insculptus cupulura Dall (1917, p. 576) is not regarded by workers as of subspecific rank (Grant and Gale, 1931, p. 677; Burch, 1945, no. 57, p. 6).

Type.—Not found

Distribution.—Recent. Catalina Island, California (type); Point Arena, California, to Cerros Island, Lower California (Dall). Pliocene (Grant and Gale). Pleistocene (Arnold)

Family Neptunidae

Genus Calicanthus Clark, 1938


Caenathus fortis (Carpenter), Grant and Gale, 1931, p. 647, pl. 28, fig. 2 see for further synonymy; Hanna and Hertlein, 1941, Div. Mines, California, Bull, no. 118, pt. 2, fig. 64–12 Pliocene


“P. testa P. insinis similis, sed solidiore; crassissima, sculptura valde impressa; anfr., norm. v., parum rotundatis, suturis distinctis; costis radiantiibus t. juroiri circ. XIII, obtusis, parum expressis, postea obsoletis; liris spiralibus validis, crebris (quarum t. juroiri v., postea x., in spira monstrantur), subaequalibus, anticus majoribus; canal recurvata; lacuna umbilicali magna; labro intus crebrilirato; labio conspicuo, spiraliter rugoso lirato.

“Hab. Sta Barbara, Pleistocene formation (Jewett).

“Col. Jewett’s single specimen is in very fine condition, and is confirmed by a fragment obtained by Mr. Gabb, the paleontologist of the California State Survey. Although resembling Purpura aperta and congeners in the irregular rugose folds of the labium, and Siphonalia in the strongly bent canal, Mr. H. Adams considers that its affinities are closely with the Caenathus group of Pisania. That genus is extremely abundant in the tropical fauna, but does not now live in California. It is the only distinctly tropical shell in the whole collection; and its presence, along with so many boreal species and types, appears somewhat anomalous, like the appearance of Voluta and Cassidaria in the Crag fauna. It is distinguished from the extreme forms of P. insinis by having the spiral lirae pretty equally distributed over the early whorls, by the close internal ribbing of the labrum, by the absence of the stunt posterior parietal tooth, and by the great development of the columellar folds.”

[Carpenter, 1866, p. 277]

The only type has been lost. The species is rare in the San Pedro sand at Deadman Island, Timms Point silt, and Palos Verdes sand but common in the Lomita marl of the Pleistocene series of the San Pedro area.

Holotype.—Not found

Distribution.—Lower Pleistocene.104 Santa Barbara formation; near Santa Barbara, California (type). Lower and upper Pleistocene. Palos Verdes Hills, California (Woodring, Bramlette, and Kew)

Genus Exilioida Grant and Gale, 1931


Exilioida rectirostris (Carpenter)


104 Also determined as upper Pliocene, or in part upper Pliocene and lower Pleistocene.
Siphon rectorostris (Carpenter), Tryon, 1881, Man., Conch., vol. III, p. 131, pl. 53, fig. 348

Copy Kobelt, t. 43, fig. 7 poor illustration of type (see Tryon for reference)

Tritonotusus (Plicifusus) rectorostris (Carpenter), Dall, 1902, U. S. Nat. Mus., Proc., vol. 24, no. 1264, p. 525, not pl. XXXIV, fig. 2

? Exilia rectorostris (Carpenter), Dall, 1918, U. S. Nat. Mus., Proc., vol. 54, p. 221

Exilia rectorostris (Carpenter), Dall, 1921, p. 92; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 90 not pl. 19, fig. 2 same as Dall, 1902, pl. XXXIV, fig. 2; Oldroyd, 1927, vol. II, pt. 1, p. 206, not pl. 6, fig. 7, pl. 28, fig. 2 same as Dall, 1902, pl. XXXIV, fig. 2


“Small, white, smooth, with straight canal.” [Carpenter, 1864b, p. 664]

A copy of Carpenter’s (1865) description has been published by Oldroyd (1927). The following typographical corrections should be made in her copy:

Line 3: insert space between “costulis” and “radiantibus”; line 4: read “lineis” for “lineis”; add “div. 33°” to the dimensions:

Add:

“Hub.—In sinu Pugetiano, specimen unicum legit Kenmerly.

“Aspectu Belam, forma Perronam, nisi labro hand sinuato, commemorat: characteribus plurimis subgeneri Siphoni convenit.” [Carpenter, 1865e, p. 64]

Carpenter’s first description (1864) of a smooth shell has confused authors such as Arnold (1903) who apparently was not aware of Carpenter’s later (1865) notes in regard to the species. Carpenter at that time described the radiating costae, which, however, are fine. Tryon also did not take cognizance of the 1865 description. He figured a copy of Kobelt’s illustration, which Tryon stated Dall had sent Kobelt. That drawing and the later one which Dall (1902) used to illustrate the species does not depict the shell properly. Dall’s figure resembles E. kelsetyi (Dall) figured by Bartsch (1945).

Dall did not state that the specimen figured (1902, no. 4815, U. S. National Museum) was the type, as was interpreted by Oldroyd and followed by Grant and Gale. The U. S. National Museum number of the type is 4515.

The confusion in regard to the holotype of this species was rectified by Bentson, who included an illustration of the holotype in her paper (1940). That specimen is badly worn. Bartsch (1945) included a fine illustration of the shell, operculum, head, and verge of the species and discussed the animal in detail.

The holotype has a label, “Puget Sound Dr. Kenmerly.”

Dimensions.—Length 45 mm.; greatest diameter 14 mm. (Bentson Fig.)

Holotype.—U. S. National Museum, no. 4515

Distribution.—Recent. Puget Sound, Washington (type); Behm Canal, Alaska, to Cape San Quintin, Lower California (Dall). Pleistocene. California (Arnold; Grant and Gale; Willett, 1937; Woodring, Bramlette, and Kew)

Genus Kelletia Fischer, 1884

Kelletia Fischer, 1884, Man. de Conchyliol., p. 625 (Boyle ms)

Type species by monotypy Siphonalia kelleti (Forbes), 1850, Zool. Soc. London, Proc., p. 274, pl. IX, fig. 10. Recent. Santa Barbara, California, to San Quintin, Lower California.105

? Kelletia kelletii (Forbes), 1850, young

Siphonalia fuscothincta Carpenter

(Pl. 24, fig. 1)


105 Japan is included in the range of this species by authors, but Keen (1941, p. 481) suggested that the Japanese form is an unnamed species.

"Like the same [S. kelletii] in extreme miniature." [Carpenter, 1864b p. 663]

"S. testa minima, turrita, albid, apicem versus fusco tincta; anfr. nucl. ii, compactis, subplanatis, apice namimillato; norm. IV., convexis, suturis impressis; costis radiantis turundatis, tenuitubis, basis versus evanidis, interstitis undulatis, subaequantibus, litulis crebris spirabilibus, costas superantibus; apertura pyriformi in canalem brevem apertum contortum producit; labro acuto; labio haud consipieni; columnella canalem versus valde contorta. Long. .17, long. spir.. 1, lat. .08, div. 32."

"Hab. Sta. Barbara (Jewett)."

The unique specimen is like a minute edition of Siphonaria Kelletii, but does not accord with the young of that or of any other species known in the region. It is probably not nature." [Carpenter, 1865h, p. 398]

The holotype of this form is in the Redpath Museum. It bears a label "unique type Sta Barbara Jewett" and consists of one specimen. The holotype is figured here. It is, as Carpenter stated, an immature shell, 5 mm. in length.

Holotype.—Redpath Museum, no. 3138

Distribution.—Santa Barbara, California (type)

Family OLIVIDAE

Genus OLIVELLA Swainson, 1831


Olivella baetica Marrat in Sowerby

(Pl. 24, figs. 2-4, 6-8)


Cf. Olivella nota Marrat in Sowerby, 1871, Thes. Conch., vol. IV, p. 36, pl. 351, fig. 428 Vancouver's Island

"Narrow, dull, thin; has been erroneously called amazora, tergina, petiolata, and ruf-fasciata." [Carpenter, 1864b, p. 661]

Carpenter in the preliminary notes (1864b) to the above listed the species from Santa Barbara (p. 537), Monterey (p. 541), and in the final list (p. 661) from Santa Barbara, Oregon, California, Monterey, Puget Sound, Vancouver, and region between San Diego and San Pedro. One may, therefore, deduce that Carpenter was referring to a ubiquitous coastal Olivella north of the Gulf of California. Carpenter compared his O. baetica (p. 590) with Conrad's O. pedroana, and his procedure was followed by Gabb (1869). Carpenter did not later amplify the above brief and unidentifiable remarks and thereby indicate, as was his custom, particular specimens from a certain locality.

This species was never adequately described by Carpenter. It lacked an illustration, a type, and a type locality. Either of the first two items would compensate for the useless
descriptive remarks, but both are lacking. A review of the literature will reveal that the problem as to the identity of *O. bactica* as of Carpenter has not been satisfactorily settled. With lack of pertinent original data the problem will not be settled from a Carpenter source.

G. L. Wilkins (Oct. 17, 1950, personal communication) kindly reported on the material of the species in the British Museum (Natural History) as follows:

"We have two sets, one of 3 from Vancouver and one of 4 from San Pedro but none of them compare with Sowerby's figure. All Mus. Cuming."

There are in the Gould Collection, New York State Museum, Gould Collection A6350, labelled type, 8 specimens of *O. bactica* Carpenter. They are all worn individuals. Three retain faint wavy colored lines. With the specimens is a printed Smithsonian Institution label of "Olivella baetica Cpr. = *O.* petiolita, Gld. (non Decl.) Hab. Vancouver—California." This label is the standard printed form which the Smithsonian Institution used at the time that Carpenter was working for the Smithsonian in making up duplicate collections for distribution. Such labels are familiar to anyone who has examined collections in various museums which received specimens from the Smithsonian in the late 1860's and 1870's. There is then nothing to indicate that these 8 shells were types. Gould's personal number (A6350) on them may mean that they were specimens which Gould identified as *petiolita*, which Carpenter stated (1864b, p. 537) was not the *O. petiolita* of Duclos (1844, p. 5). They do not bear an exact locality. Therefore, so far they do not add any scientific information to the dilemma. The specimens are apparently those identified as *O. bactica* Carpenter and figured by Dall, Oldroyd and others. Two are figured herein (pl. 24, figs. 6–8).

Marrat (1871, p. 35, pl. 350, figs. 409, 410; Tryon, 1883, pl. 17, figs. 28, 29) was the first to use Carpenter's name with a description, figures, and a type locality. Marrat's (Sowerby) figures were copied by Tryon (1883). Copies of Marrat's figures and description are included herein. The writer, therefore, credits *O. bactica* to Marrat. This does not apparently upset the usual interpretation of *O. bactica*, and by giving the name a legitimate parent, a definite type locality, description, and figures are thereby gained. Tryon's suggestion that Marrat's *O. nota* (1871, pl. 351, fig. 428) from Vancouver Island might be referred to *O. bactica* looks reasonable. It seems to be the same sort of shell that Dall figured for *O. baetica*.

"182. BAETICA (f. 409, 410), Carpenter; petiolita, Gould.—Quam *O. alectona* gracilusculor, coloribus magis nebulatis variegata; balteo castaneo, fasciato.—The colours with which most of the specimens are variegated are more clouded, and the lines more spread into patches than in Duclos' figure of *O. alectona*, but the difference seems hardly essential.—ED. [Sowerby]." [Marrat in Sowerby]

*Type*—"*O. bactica"* Carpenter, not found. Holotype, *O. nota* Marrat, is in the British Museum (Natural History), Department of Zoology (G. L. Wilkins, Oct. 17, 1950, personal communication).

*Distribution.*—Vancouver Island, British Columbia, includes Straits of Juan de Fuca (type); Kodiak Island, Alaska, to Cape San Lucas, Lower California (Dall)

**Olivella bipplicata** Sowerby

"Olivella glandinaria (Nutt.) MS." Carpenter


Carpenter (1856) described an *Olivella* from "upper California" which Nuttall had named in manuscript *Glandinaria Californica*. Carpenter (1864) identified the species as conspecific with *O. bipplicata*, where it continues to be assigned.

106 List of Gould types of Mollusca in the collection of the State Museum, 27th Ann. Rept. New York State Mus., 1874, p. 47. Through the courtesy of Dr. Carl Guthe, the specimens were loaned to the author for photographing. The original spelling of the specific name was "*bactica*" not "*bactica*.

107 The type is not in the Academy of Natural Sciences at Philadelphia, as reported by Oldroyd (1927).
Olivella intorta Carpenter

(PI. 24, fig. 5)


"O. t. parva, ovoidea, subtumente; sutura vix sulcata; albido-grisea, fascia indistincta subsuturali olivacea, flammulis et maculis purpureo-fuscis plus minusve ornata; apertura antice aperta, postice angusta; callositate parietali ad suturam penultimam prope columna maxima intorta, plica ad basin acuta, in pariete duabus saepe indistinctis; exuto, linea spirali antice unica.

"Long. .52, long. spir. .17, lat. .26, div. 60°."


"A well-marked species, resembling the West Indian O. bullata, on a much larger scale. The specimens vary in tumidity and height of spire. The parietal callosity extending over the penultimate whiril [sic] hides the colour of the spire." [Carpenter, 1856d, p. 207]

The specimen figured by Marrat (in Sowerby, 1871) is the first specimen mentioned by Carpenter. It is extant in the type collection of the British Museum (Natural History). It has a label, "San Juan, California Dr. Green" Mus. Cuming (G. L. Wilkins, Oct. 17, 1950, personal communication). The authorities of the British Museum generously furnished the included photograph of the type.

The specimen figured by Williamson (1892) is one of several, no. 47202, U. S. National Museum, from Santa Cruz, California, collected by Stearns. Under the present understanding of the species, it, therefore, would not be included under O. intorta.

Holotype.—British Museum (Natural History). Department of Zoology, 1950.11.9.2

Distribution.—San Juan,108 Lower California (type).

Carpenter definitely put the San Juan of this locale in the Gulf of California region. He enumerated the other San Juans which might be confused with the one under consideration.

Family Mitridae


Family Marginellidae

Genus Gibberulina Monterosato, 1884

(Cypraeolina Cerulli-Irelli, 1911; Merovia Dall, 1920)


Type species by subsequent designation, Wenz, 1941, Handbuch Palaozool., Bd. 6, teil 6, p. 1373, G. clavestina (Broccchi), 1814, Conch. foss. subapp., p. 642, pl. XV, fig. 11 as Voluta. Pliocene and Recent. Mediterranean

Merovia Dall (1921, p. 86) is synonymous. Volutella pyriformis Carpenter (= Gibberulina pyriformis) is the monotype

108 Carpenter (1857b, p. 228 San Juan; p. 234 San Juan; p. 339, Gulf of California; p. 352 San Juan; p. 168 Loretto and Bay of San Juan, 26.5° [Gulf of California]; p. 168, "Besides this station [Bay of San Juan] and the Straits of De Fuca, there is a San Juan on the opposite shore near Guaymas; another near San Blas; a Point on the coast near Lake Nicaragua; and a little island between Is. Catalina and San Diego.")

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Gibberulina pyriformis (Carpenter)

(Pl. 24, figs. 13-16)


Merovia pyriformis (Carpenter), Dall, 1921, p. 86


Hyalina (Cypraeolina) pyriformis (Carpenter). Grant and Gale, 1931, p. 632

Gibberulina pyriformis (Carpenter), Abbott, 1954, p. 260, fig. 561 same figure as Williamson, 1892

"Genus of Swainson (not D'Orb.) = Closia, Gray. Like V. margaritula, Maz. Cat. no. 589, but produced in front." [Carpenter, 1864b, p. 661]

Oldroyd published a copy of Carpenter's description (1865), but to make that copy complete the following changes should be made:

Correct "Long., .01" to "1."

Add:

"Hab. San Diego, Cooper.—California, 'Pacific Railway exploring Expedition.'"

"Cette espèce ressemble au V. margaritula (Maz. Cat. no. 589), mais elle est plus allongée en avant. Le genre Volutella, Swainson (non d'Orbigny), correspond au genre Closia de Gray." [Carpenter, 1865g, p. 148]

G. margaritula (Carpenter) (1857a, p. 462) measures long. .073; lat. .047 largest specimen.

There are in the U. S. National Museum two syntypes which are on an original Carpenter glass mount with a Carpenter label, "S. Diego (Cooper)." The two shells are figured herein. One is immature. A drawing of the other, an adult individual, was included in Williamson's paper (1892) on the shells of San Pedro Bay. The writer, therefore, selects that shell as the lectotype.

There are also in the Redpath Museum at McGill University 13 syntypes on an original Carpenter glass mount with a Carpenter label "type, S. Diego Monterey." Two of those specimens are figured herein. The McGill shells are less globose than the lectotype. The measurements of the lectotype length 2.5 mm. by greatest diameter 1.5 mm., are practically those of the type measurements (2.53 cm. by .1 = 2.53 mm. length; 2.53 cm. by .065 = 1.6435 mm. lat.)

Types.—Lectotype, U. S. National Museum, no. 14950 (larger of two); paratypes, Redpath Museum, no. 83 (as Gibberula)

Distribution.—Recent. San Diego, California (type); Ishut Bay, Alaska, to Mazatlan, Mexico (Dall). Pleistocene, California (Oldroyd, 1925, as C. margaritula; Grant and Gale; Willett, 1937; Woodring, Bramlette, and Kew); Mexico (Jordan, 1926)

Genus Cystiscus Stimpson, 1865


For lack of anatomical data the species C. jecvetii, C. regularis, and C. subtrigona are left as previously classified. By comparison of the illustrations of C. jecvetii and C. regularis (pls. 24, 26) one can see how posteriorly the extent of the aperture approaches that of
Gastropoda 221

Gibberulina pyriformis. C. subtrigona has the aperture shortened posteriorly, so that the species does not seem to belong with C. jewettii and C. regularis. Tentatively the species is left in the genus Cystiscus. C. subtrigona has denticulations on the outer lip, as in G. pyriformis, but it represents an extreme from G. pyriformis in the posterior character of the aperture.

Cystiscus jewettii (Carpenter)

(Pl. 24, figs. 19-21: Pl. 26, figs. 1, 2)


Hyalina (Cystiscus) jewettii (Carpenter), GRANT AND GALE, 1931, p. 630, pl. 24, fig. 17

var. nanella OLDROYD, see for additional references

Cystiscus jewettii (Carpenter), BURCH, 1945, no. 49, p. 24, 26

Hyalina jewettii (Carpenter), WOODRING, BRAMLETTE, AND KEW, 1946, U. S. Geol. Sur., Prof. Paper 207, p. 77

Persicula (Gibberula) jewettii (Carpenter), Abbott, 1954, p. 258

"...Cpr. P.Z.S. 1856, p. 207. Like the Mogador species, somewhat shorter and broader. 10-20 fm. Ch." [Carpenter, 1864b, p. 661]

A copy of the original description with translation was published by OLDROYD (1927).

The first line of that copy the word "sutura" should be inserted before the word "cclata." The following should be added to make the copy of the original notes complete:

"... div. 120°.


"Closely resembling the small white species from the Panama, W. Indian and N. African provinces, but distinguished from all in shape and plications." [Carpenter, 1856d, p. 207]

In the Redpath Museum, there are 10 specimens of this species in the Carpenter Collection mounted on glass and labelled by Carpenter as "Gibberulina Jewettii Cpr. type Sta. Barbara Jewett." These are the only specimens found so far which have been definitely labelled by Carpenter with the data corresponding with that of the original description.

At the New York State Museum in the Gould Collection, A-4268, there is a shell which William Marshall, when arranging the collection, felt might be the type of this species. The label with the specimen reads "Sta. Barbara No. 30 very rare Marginella new" with notation "appears like Cooper's handwriting." Carpenter records in his original description that a specimen was in the Gould Collection. The New York State specimen is not listed in the catalogue of Gould "types" (27th Ann. Rept. State Mus. Nat. Hist., 1874, p. 47), so that the shell was not regarded as a "type" when it was turned over to the New York State Museum. The writer includes a photograph of the specimen. It might be the one referred to. If synotypes had not been found, it would be available for neotype designation.

OLDROYD (1927) stated incorrectly that the type is in the British Museum, and TOMLIN, followed by Grant and Gale, stated erroneously that the type is in the U. S. National Museum.

The illustration in Reeve (copied by TRYON) does not depict C. jewettii. The figure by WILLIAMSON (also BAILY, 1935, fig. 212) represents a typical form.

Syntypes.—Redpath Museum, No. 80

Distribution.—Recent. Santa Barbara, California (type); Monterey, California, to San Martin, Lower California (Burch). Pleistocene. California (Arnold; Oldroyd; Chaenes; Woodring, Bramlette, and Kew); Mexico (Jordan)
Cystiscus regularis (Carpenter)

(Pl. 24, figs. 9–12)


Hyalinia (Cystiscus) regularis (Carpenter), Grant and Gale, 1931, p. 631

Cystiscus regularis (Carpenter), Burch, 1945, no. 49, p. 24, 26

Persicula (Gibberula) regularis (Carpenter), Abbott, 1954, p. 258


Oldroyd (1927) published a copy of Carpenter's (1865) description. The following should be changed in her copy:

Add:

"Hab. Sta. Barbara (Jewett); coast of California south from Monterey, beach to 20 fathoms; Catalina Island, 10–20 fathoms, State Coll. no. 398a (Cooper)." [Carpenter, 1865b, p. 398]

Specimens marked type of this species have been found in the Redpath Museum, McGill University, and the U. S. National Museum. Those at McGill were labelled by Carpenter “type” S. Diego Monterey, and there are six specimens.

The specimens at the U. S. National Museum is labelled “type Cpr. [Cp.] 398 Sta. Barbara Jewett.” This specimen represents the first mentioned of the seven syntypes available. The locality of this shell is definite, whereas that of the McGill specimen is not. The writer therefore selects the U. S. National Museum specimen, no. 55391 (pl. 24, figs. 11, 12) as the lectotype. This makes Santa Barbara the type locality.

The reference in Oldroyd and others to the type depository as the British Museum is incorrect.

There is probably a finer sixth plication on the columella than is conspicuous in the photographs.

Types.—Lectotypes, U. S. National Museum, no. 55391; paratypes (6), Redpath Museum, no. 82

Distribution.—Recent. Santa Barbara, California (type). Pleistocene. California (Grant and Gale) Mexico (Jordan, 1926)

Cystiscus subtrigona (Carpenter)

(Pl. 26, figs. 3–4)


Hyalinia (Cystiscus) subtrigona (Carpenter), Grant and Gale, 1931, p. 631

Cystiscus subtrigona (Carpenter), Burch, 1945, no. 49, p. 24, 26

Persicula (Gibberula) subtrigona (Carpenter), Abbott, 1954, p. 258

“Shape of Erato columbella.” [Carpenter, 1864b, p. 661]

Oldroyd (1927) published a copy of Carpenter's description (1865). The following corrections should be made in her copy:

Line 1: add “latior” between “curtiore” and the semicolon; correct “parientiali” to “parietali”; add at the end, “div. 130°. Hab. Sta. Barbara (Jewett).” Delete “poll.”

The holotype and “paratype” of this species are in the Carpenter Collection in the Redpath Museum intact on the Carpenter original mount, with the original label, “Gibberula
subtrigona Cpr.* type Sta. Barbara Jewett Monterey.” Figures are included of both specimens. The holotype (specimen marked* by Carpenter) has denticulations on the interior of the labrum, as will readily be seen. Those on the labrum of the “paratype” are less pronounced but visible. The angle of spire, particularly the right side, of the “paratype” is greater than that of the holotype, the body whorl is broader, and the character of the plications on the inner lip is different. The “paratype” does not belong to the same species and should be separated. It is recorded here only as original reference (Pl. 26, fig. 5).

Oldroyd’s statement, followed by Grant and Gale, that the type is in the British Museum is incorrect.

Types.—Holotype and “paratype”, Redpath Museum, no. 81

Distribution.—Recent. Santa Barbara, California (type); Monterey to San Diego, California (Dall), to San Martin, Lower California (Burch). Pleistocene. California (Oldroyd, 1925; Grant and Gale)

Family Cancellariidae

Genus Admete Kröyer (in Möller)


Type species by monotypy Admete crispa Möller, 1842, = A. viridula (Fabricius)

Fabricius, 1780, Fauna Groenlandica, p. 402 as Tritonium; Recent. Northern Atlantic.

Troy, 1885, Man. Conch., vol. VII, pl. 7, figs. 23-28; Kobelt, 1887, Syst. Conchyl.—Cab. Martini and Chennitz, genus Admete, pl. 24, figs. 1-7

Distribution of genus.—Pliocene—Recent

Admete gracilior (Carpenter in Gabb)


Admete gracilior (Carpenter), Arnold, 1903, p. 219, pl. VII, fig. 4; Keen, 1937, p. 28 Recent; Woodring, Bramlette, and Kew, 1946, U. S. Geol. Surv., Prof. Paper 207, p. 77

Admete couthoucyi gracilior (Carpenter), Dall, 1921, p. 84; Oldroyd, 1927, vol. II, pl. I, p. 158

[Cf.] Admete modesta gracilior (Carpenter), Grant and Gale, 1931, p. 623, pl. 23, fig. 5

Massyla (Massyla) gracilior (Carpenter), Burch, 1945, no. 49, p. 9, 11

Oldroyd (1927) republished Carpenter’s original description with a translation. The following should be changed in her copy.

Delete “in,”
Add: “... div. 38,°”

“Hab. Santa Barbara, Post-Pliocene. Of this extremely elegant species, two specimens were found by Mr. Gabb, of which one is very perfect. It greatly resembles C. modesta from Neeah Bay, but is much more slender. The nucleus is chrysoerdmoid, very slanting, with sunken spire.” [Carpenter, in Gabb, 1869, p. 50]

The specimens by which Grant and Gale and Burch illustrated A. modesta are not of typical A. modesta. Both pictures seem to represent the same group as that of the individual figured by Arnold as A. gracilior. Grant and Gale described theirs as possibly A. gracilior of Carpenter but not of Arnold.

Dimensions.—Holotype: 8.8 mm. height; 4.5 mm. width. Paratype: 7.5 mm. height; 3.8 mm. width

Holotype.—Museum of Paleontology, University of California, no. 15530; paratype, same depository, no. 15531

Distribution.—Pleistocene. Santa Barbara, California (type). Lower Pleistocene, Timms Point silt, Lomita marl, San Pedro sand. Upper Pleistocene. Palos Verdes sand (Woodring, Bramlette, and Kew). Until more knowledge of this species is available the writer is omitting the Recent range, as given by Dall (1921).

Möller credited the genus to Kröyer.
Admete modesta (Carpenter)
(Pl. 24, figs. 17, 18)


Cancellaria (Sceltia) modesta (Carpenter), Dall, 1921, p. 84; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 24, p. 86; 1927, vol. 11, pt. 1, p. 154

Admete modesta (Carpenter), Grant and Gale, 1931, p. 622 in part, not pl. 27, fig. 5

Massyla (Massyla) modesta (Carpenter), Burch, 1945, no. 49, p. 8, 10 not p. 47, pl. III, fig. 13

"Like Trichotrops borcalis, with two slanting plaits and spiral ribs travelling up the paries. See also p. 615, nos. 463, 817." [Carpenter, 1864b, p. 660]

Oldroyd (1927) republished a copy of Carpenter's description (1865). The last word, "in," should be deleted from that copy and "div. 50" inserted. The following should be added to make the copy complete:

"Hab. Neah Bay; one specimen and one fragment. (Swan)." [Carpenter, 1865a, p. 32]

The holotype is a worn specimen in the U. S. National Museum with an original Carpenter label, "Type Neah Bay [sic] W. T. J. G. Swan." The apical whorls are badly decorticated. The spiral ribs are coarse, 4 on the penultimate whorl, and about 11 on the whole of the body whorl. There are finer, intervening spiral ribs on the first three primary spiral ribs of the body whorl. Apparently Carpenter counted only the 7 major spiral ribs on the body whorl. That number as given by Carpenter would coincide with such on the type. The holotype is worn, but there is no evidence that longitudinal ribs ever existed. There are two primary columellar folds.

The individual figured by Burch seems to belong to the same group as the one illustrated by Grant and Gale, which they suggested might be A. gracilior (a "variety").

Holotype.—U. S. National Museum, no. 16238

Distribution.—Neah Bay, Washington (type); Aleutian Islands, Alaska, to Neah Bay and Puget Sound, Washington (Dall)

Family Terebridae

Genus Terebra Bruguieré, 1789


Subgenus Strioterebrum Sacco, 1891

Strioterebrum Sacco, 1891, Molluschi dei Terreni Terziarii del Piemonte e della Liguria, pt. 10, p. 33


Terebra (Strioterebrum) "Philippiana" Dall
(Pl. 21, figs. 11, 12)


Terebra (Aeus) simplex (Carpenter), Williamson, 1892, U. S. Nat. Mus., Proc., vol. 15, no. 898, p. 207; Arnoldi, 1903, p. 198


Terebra (Striotrebebrum) albocincta Carpenter var. pedroana Dall, Grant and Gale, 1931, p. 469, pl. 24, figs. 18, 24, variants, see for additional references


Terebra philippiana Dall, Keen, 1937, p. 46

Terebra (Striotrebebrum) pedroana philippiana Dall, Burch, 1945, no. 48, p. 18, 19


"Very variable in sculpture, as befits the species which forms the northern limit of a group common to the tropics. Col. Jewett's shell was in poor condition, and supposed to be the young of a Gulf species." [Carpenter, 1864b, p. 614]

Carpenter's description (1865) of this species was republished by Oldroyd (1927, p. 69).

The following should be added to make that copy complete:

"Long. 1.03, long. spir. .76, lat. .27, div. 20".

"Variat tuberculis subbaploetis.

"Hab. Sta. Barbara (Jewett); S. Pedro (Cooper). [Carpenter, 1865h, p. 395]

The holotype of this species is a plump shell with the apical whorls broken and worn. The nodes are strong on the sutural collar. Below the nodose area are four or five spiral lines which are lacking just above the suture. There are more spiral lines on the upper whorls of the spire. The spiral lines are also present on the basal angle of the body whorl. The longitudinal ribs are stronger on the upper whorls.

The holotype\textsuperscript{110} bears the label "San Pedro J. G. Cooper", which identifies the specimen as the second one mentioned by Carpenter. Because the exact relationship of this species and its nomenclature are still unsettled (its specific name is preoccupied, and apparently papers are in manuscript in regard to these points) the writer merely lists the species under Dall's preoccupied name.

Holotype.—U. S. National Museum, no. 4943

Distribution.—Recent. San Pedro, California (type); San Pedro, California, to Gulf of California (Dall). Pleistocene, California; (Arnold; Grant and Gale; Willett; Woodring, Bramlette, and Kew); Mexico (Jordan, 1926)

Terebra albocincta, T. Hindsii, T. subnodosa, and T. subfocinera were all described by Carpenter in the Catalogue of the Reigen Collection of Mazatlan Mollusca (1857) and properly belong in the report on the illustration of the types of that catalogue. The types of the new species described in that catalogue are in the British Museum.

Family Turridae

Genus Ophiodermella Bartsch, 1944


Ophiodermella cancellata (Carpenter) (O. rhines Dall, 1908)


Scurca rhines Dall, 1908, U. S. Nat. Mus., Proc., vol. 34, no. 1610, p. 247, 248 new name for Drillia cancellata Carpenter, 1865

Montiolopsis cancellata (Carpenter), Dall, 1918, U. S. Nat. Mus., Proc., vol. 54, p. 318

\textsuperscript{110} There are several minor errors in the literature in connection with the record of this species which special attention may help to clear up: The date of T. philippiana Dall is 1921, not 1920; holotype of T. simflex is in the U. S. National Museum, not in the British Museum; the type locality is San Pedro, California, and not Santa Barbara, California.
Moniliopsis rhines (Dall), Dall, 1919, U. S. Nat. Mus., Proc., vol. 56, no. 2288, p. 28, pl. 8, fig. 5

Clathrodillia (Moniliopsis) rhines Dall, 1921, p. 70; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 76, pl. 5, fig. 4 figure obscure, difficult to determine; 1927, vol. 11, pt. 1, p. 74

Moniliopsis incisa (Carpenter), Grant and Gale, 1931, p. 565 D. cancellata in part

Clathrodillia rhines (Dall), Keen, 1937, p. 33

Ophiodermella rhines (Dall), Burch, 1946, no. 62, p. 10

"Drillia* cancellata, ? n.s. Like the young of incisa, but nodosely cancelled." [Carpenter, 1864b, p. 658]

"*A peculiar group of species, resembling Clionella (Marine, testa Stimpson)."

Carpenter's description (1865) of this species was reprinted by Oldroyd (1927) under Clathrodillia rhines Dall. The following line should be added to complete that copy:

"Hub. In simul Pugetiano duo specimen legit Kennerley: quorum altero labium sub-callosum, altero planatum." [Carpenter, 1865c, p. 63]

Dall renamed Drillia cancellata Carpenter because he considered there were turrids with the same specific name. However, the original names other than Carpenter were:


These would not preoccupy Drillia cancellata Carpenter. That is, Carpenter's name is not a primary homonym. Until any of the turrids of the previously named cancellata is placed in the same genus as Drillia cancellata (Ophiodermella at present) Carpenter's name is not a secondary homonym and may stand.

Dall (1908; 1919) rejected the name as a secondary homonym, which might be the basis for the validity of his new name. However, his basis for claiming homonomy was not correct.

If the specimen which Dall used for the illustration of Moniliopsis rhines (Dall) (1919, pl. 8, fig. 5) is considered not the same as O. cancellata (Carpenter), then that specimen (U. S. National Museum) would become the holotype of M. rhines Dall. Unfortunately the holotype of O. cancellata (Carpenter) has not been found.

The problem of the identity of this species remains unsettled until analyzed in the light of Bartsch's unpublished turrid paper.

Type.—Not found

Distribution.—Puget Sound, Washington (type), British Columbia, to San Diego, California (Burch)

Ophiodermella incisa (Carpenter)


Turris incisa (Carpenter), Packard, 1918, Univ. California Pub. Zool., vol. 14, no. 2, p. 342, pl. 41, figs. 2a, 2b


Clathrodillia (Moniliopsis) incisa (Carpenter), Dall, 1921, p. 70; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 75, pl. 18, fig. 4 not 3 same fig, as Dall, 1919; Oldroyd, 1927, vol. II, pt. 1, p. 72, pl. 18, fig. 3 same fig. as Dall, 1919 and Oldroyd, 1924


"Like inermis: spiral sculpture grooved, not raised." [Carpenter, 1864b, p. 657]
Carpenter’s description (1865) was republished by Oldroyd (1927). The following should be changed in her copy.

Line 2, p. 73, read .4 for 04.

Add:
“... div. 30°."

“Ant. Drillsis typicus sinu minimo et operculo hauud angulato consipicue differt: Clionella, Grayi, magis convenit.” [Carpenter, 1865c, p. 63]

Oldroyd’s copy (1927, p. 73) of Tryon (not Pilsbry) should be corrected to read “form like the preceding [D. inermis not C. ophtiderma] species.”

The name Drillsis incisa Carpenter is not preoccupied by Pleurotoma incisa Reeve, 1843, unless the latter belongs in the genus Ophidieremella in which D. incisa is at present placed.

The study of the West Coast turrids was in manuscript form by Bartisch; figures are not included herein.

Type.—U. S. National Museum, no. 6320

Distribution.—Recent. Neeah Bay, Washington (type); Puget Sound, Washington, to San Pedro, California (Dall). Pleistocene (see Grant and Gale, 1931)

Genus Cytharella Monterosato, 1875


Cytharella aculea Dall

Cytharella aculea Dall (1919, p. 74) was named by Dall from a manuscript label of the specific name of Carpenter. The label of Carpenter might, therefore, be found in old collections.

Subgenus Agathotoma Cossmann, 1899


Cytharella (Agathotoma) fusconotata (Carpenter)


Mangelia fusconotata (Carpenter), Tryon, 1884, Man. Conch., vol. VI, p. 271 section Cythara

Cytharella (Agathotoma) fusconotata (Carpenter), Dall, 1921, p. 83; Oldroyd, 1927, vol. II, pt. 1, p. 148; Keen, 1937, p. 34; Burch, 1946, no. 62, p. 31

A copy of the original description was republished by Oldroyd (1927). The following should be added to complete the original notes:

“... div. 40°.”

Type.—U. S. National Museum, no. 4081

Distribution.—Cape San Lucas, Lower California (type); Laguna Beach, California, to Gulf of California (Dall)

111 Grant and Gale (1931) incorrectly gave the type depository as Academy Natural Sciences, Philadelphia.
112 A typographical error in Dall (1921, p. 83) gave the year as 1889. The incorrect date has inadvertently been copied by later authors.
Clathrodrillia limans Dall

Clathrodrillia limans Dall (1919, p. 14) consisted of a manuscript specific name of Carpenter which was utilized by Dall. Carpenter labelled a specimen which he identified for Stearns. The name might be found on labels in Stearns material as of Carpenter.

Cymatosyrinx hecuba Dall

Cymatosyrinx hecuba Dall (1919, p. 9) is the name given by Dall for a species which bore the manuscript specific name of "rosacea" by Carpenter. Dall changed the name because of the prior use of "rosacea" for a turrid by Mighels (1845).

Genus Clathurella Carpenter, 1857

Clathurella Carpenter, 1857, Mazatlan Cat., p. 399, proposed for Defrancia Millet, 1826, not Defrancia Bronn, 1825, nor Möller, 1842, for references see Reive (1939-40).


Bronn (1831) proposed Pleurotomoides for Defrancia Millet (1826) not Bronn (1825). Bronn's name has priority over Clathurella Carpenter (1857). A nomenclatorial tangle ensues concerning whether Carpenter's replacement name should be disregarded or should be validated by one of the species which was included at the time of its use by Carpenter. If the latter is allowed it could be used with C. rava (Hinds) as type species. See Iredale (1917, p. 326) and Grant and Gale (1931, p. 604) for discussion.

Genus Mangelia (Leach ms.) Risso, 1826

(Mangilia act.)


One questions the status of Herrmannsen's type designation. For purposes of this paper and in the interest of stability the writer follows the use of Herrmannsen's type designation for Mangelia: "(Leach ms.) Gray, 1847" = Mangelia Risso.


Mangelia barbarensis Oldroyd

(Pl. 25, figs. 13, 14)


M. angulata (Carpenter), Arnold, 1903, p. 212, pl. VII, fig. 9; Dall, 1921, p. 79; not Packard, 1894, Univ. California Pub. Zoology, vol. 14, p. 341, pl. 39, figs. 10a, 10b.


"Shape of variegata, but brown, whirls broad, angular." [Carpenter, 1864b, p. 658]
A copy of Carpenter's description (1865) has been published by Oldroyd (1927). The following should be changed in her copy:

Delete "in" last line
Add:

"... div. 30".
"Hab. Sta. Barbara (Jewett)." [Carpenter, 1865h, p. 395]

The only type material found consists of three specimens in the Redpath Museum, on original Carpenter glass mounts with a Carpenter label, "? type Sta. Barbara Jewett." Apparently Carpenter was not sure of these specimens as types. But in lieu of the presence of specimens with better qualifications the writer retains these specimens as the syntypes.

There is a difference of opinion as to the synonymy of *M. variegata*, *M. angulata* (*barbarcnsis*), *M. vilens* (*pulchrior*), *M. hecetae* Dall and Bartsch, *M. beta* Dall, and others. (See Grant and Gale, 1931, p. 594; Willett, 1937, p. 394.)

Grant and Gale placed *M. angulata* as equal to *M. hecetae* Dall and Bartsch (1910, p. 10, pl. 1, fig. 6) 113 which would eliminate the replacement name of *M. barbarcnsis* by Oldroyd. Willett has shown by a series of intergradations that probably *M. angulata* and *M. variegata* are the same species. Since the name *M. angulata* is preoccupied the specific name could stand as *M. variegata*.

Smith and Gordon (1948) retained *M. barbarcnsis* (*M. angulata*), *M. hecetae*, and *M. variegata* as distinct species.

For the purpose of this report the writer compiled the data under each name. Bartsch's monograph will shed critical light on the subject.

Syntypes.—Redpath Museum,114 no. 90

Distribution.—Recent. Santa Barbara, California (type); Puget Sound, Washington, to Gulf of California (Dall). Pleistocene. California (Arnold; Oldroyd, 1925; Willett). Mexico (Jordan, 1926)

*Mangelia crebricostata* Carpenter


*Mangelia crebricostata* (Carpenter), DALL AND BARTSCH, 1913, Canada Geol. Surv., Victoria Mem. Mus., Bull. no. 1, p. 140, pl. X, fig. 3; DALL, 1921, p. 82; OLDROYD, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 85; 1927, vol. II, pt. I, p. 145; pt. II, pl. 61, fig. 3 not pl. 15 as stated in text, copy of DALL AND BARTSCH, 1913


*Mangelia* (*Bela*) *crebricostata* (Carpenter), GRANT AND GALE, 1931, p. 593

"Mangelia" *crebricostata* Carpenter, Burch, 1946, no. 62, p. 27

A copy with translation of Carpenter's description (1865) of this species was published by Oldroyd (1927). Her copy should be corrected as follows: "... nucl. ?..." Delete "pall" from the last line and substitute "div. 28". The following should be added to complete Oldroyd's copy:

"Hab. Neeah Bay; 1 specimen (Swan)." [Carpenter, 1865a, p. 29]

The type of this species is in the U. S. National Museum and will be reported on by Bartsch in his monograph in preparation. Dall and Bartsch (1913) discussed in detail and figured as a representative of the species, a shell from Skidegate Inlet, Queen Charlotte Island, B. C.

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113 Through the courtesy of F. L. Alcock, Curator, National Museum of Canada, Ottawa. Information in regard to the types of the species described by Dall and Bartsch (1910) was furnished. The type of *M. hecetae* is no. 1361 N.M.C.

114 The statement in Oldroyd, followed by Grant and Gale, that the types are in British Museum should be corrected.
Grant and Gale made a feasible suggestion in uniting *M. newcombei* Dall (1919), also from Vancouver Island, with *M. crebricosta* Carpenter. The figure of the holotype of *M. newcombei* is similar to the figure given by Dall and Bartsch of *M. crebricosta*.

Type.—U. S. National Museum, no. 15512b

Distribution.—Neah Bay, Washington (type); Forrester Island, Alaska, to Puget Sound, Washington, (Dall in part). The Monterey shells previously identified as this species have been placed under *M. hectarae* Dall and Bartsch (Bartsch in Smith and Gordon, 1948, p. 184).

*Mangelia interfossa* Carpenter

(Pl. 27, figs. 5, 6)


*Daphnaella interfossa* (Carpenter), Tryon, 1884, Man. Conch., vol. VI, p. 310, pl. 22, fig. 57?; Grant and Gale, 1931, p. 597 suggested = *M. variegata* Carpenter which appears likely

*Mangelia interfossa* (Carpenter), Dall, 1921, p. 82, section *Clathromangiia* [sic]; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 85; 1927, vol. II, pt. 1, 144 section *Clathromangiia* [sic] [Clathromangiella]

*Mangelia (Mitromorpha) interfossa* (Carpenter), Grant and Gale, 1931, p. 597 in part

*Mitromorpha interfossa* (Carpenter), Burch, 1945, no. 49, p. 33

"Mangelia" interfossa Carpenter, Burch, 1946, no. 62, p. 28

"Several dead specimens." [Carpenter, 1864b, p. 628]

"Like attenuata, delicately cancelled." [Carpenter, 1864b, p. 658]

A copy of the original description was published by Oldroyd (1927, p. 144). The following should be added to complete that copy:

"Long. 38, long. spir. 22, lat. 13, div. 25°.

"Hab. Neah Bay; very rare (Swain)." [Carpenter, 1865a, p. 29]

The type material in the Redpath Museum, labelled type in Carpenter's handwriting on Carpenter's special glass mount, consists of 9 specimens, one of which is not *M. interfossa*. Figures of two of those specimens are included herein. Carpenter's first mention of the species (1864b, p. 628) stated that there were "several dead specimens."

The shells are light yellow or brownish. The columella and labrum are smooth.

There is also a specimen in the U. S. National Museum, no. 22818, labelled type. With the two suites of syntypes, it is advisable for a lectotype to be selected. Such a selection will depend on the results of Bartsch's work in his monograph of West Coast turrid species.

The *Mitromorpha filosa barbarensis* Arnold (1907a, pl. 11, fig. 1; 1907b, pl. LVII, fig. 1), which Grant and Gale indicated were the same form as this species, does not belong to the same genus if the illustration of Arnold's shell is correct. *M. interfossa* is not a *Mitromorpha*, as thought by Grant and Gale. The difference in shape is readily seen if the figures of the types of *M. interfossa* are compared with that of *M. filosa*, the type species of *Mitromorpha*.

The resemblance to *Mitromorpha aspera*, which Grant and Gale suggested, is only superficial as may be seen by comparing the figures herein of the types of both. The heavy ribbing with pits formed by the intersection of nodose ribs presents sculpture that looks similar, but the shape of the body whorl, aperture, and spire are quite different in both species.

Syntypes.—Redpath Museum, no. 94; U. S. National Museum, no. 22818

Distribution.—Neah Bay, Washington (type); Vancouver Island, British Columbia, to Catalina Island, California (Dall)

"Mangelia" levidensis (Carpenter)


115 The statements "type in the British Museum" are incorrect.

*Mangilia levidensis* Carpenter, Tryon, 1884, Man. Conch., vol. VI, p. 251


*Mangilia* (Clathromangilia) *levidensis* (Carpenter), *Dall*, 1919, U. S. Nat. Mus., Proc., vol. 56, p. 62, pl. 21, fig. 1; 1921, p. 82; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 86, pl. 5, fig. 3; pl. 45, fig. 4 copy of *Dall*, 1919, pl. 21, fig. 1 not type as indicated in expl. of Oldroyd; *Oldroyd*, 1927, vol. 11, pt. 1, p. 144; pl. 2, fig. 21 copy of *Dall*, 1919

*Lora levidensis* (Carpenter), Grant and Gale, 1931, p. 526

"*Mangelia*" *levidensis* Carpenter, Burch, 1946, no. 62, p. 28

"Stumpy, purplish brown, with rough sculpture." [Carpenter, 1864b, p. 658]

Carpenter’s description (1865) was republished by Oldroyd (1927). The following correction should be made in her copy: delete the last word “poll.” and substitute “div. 27.”

The following should be added to make the copy complete:

"*Hab.* In sinu Pugetiano legit Kennerley: prope ‘Neeah Bay’ collig. per Indianulus Swan.

"A Mangelis typicis columnella torta differt." [Carpenter, 1865, p. 63]

The material, including the type of this species, was under observation by Bartsch at the time of the work of this report and will be reported on in his study of the turrids. The specimen figured by *Dall* (1919) is from Port Orchard, Puget Sound (Harald Rehder, personal communication).

Types.—U. S. National Museum, no. 4487 (labelled Puget Sound), *M. levidensis* Carpenter; U. S. National Museum, no. 220913 (Sitka, Alaska) (Harald Rehder, personal communication) *M. junobrata* Dall, 1871

Distribution.—Puget Sound, Washington (type); Bering Strait to Puget Sound, Washington (Dall in part)

*Mangelia nitens* Carpenter

(Pl. 28, figs. 1-1A)


*Daphnella variegata nitens* (Carpenter), Tryon, 1884 Man. Conch., vol. VI, p. 300


*Mangelia pulchrior* *Dall*, 1921 [not 1919], p. 81, 201 new name for *M. nitens* Carpenter; Oldroyd, 1927, vol. 11, pt. 1, p. 139; Burch, 1946, no. 62, p. 29

*Mangelia (Bela) variegata* (Carpenter), Grant and Gale, 1931, p. 590 in part


"Glossy: spiral lines almost obsolete." [Carpenter, 1865, p. 658]

Oldroyd (1927) republished the original notes on this species. The word “poll” in the last line of Oldroyd’s copy should be deleted and “div. 20:” inserted. The line “*Hab.* Sta. Barbara (Jewett), rare.” should also be added to complete the copy of original notes.

As Grant and Gale (1931) pointed out, the name *Mangelia nitens* Carpenter was not preoccupied by *Clavatula nitens* Hinds (1843, p. 41), because that species is not a *Mangelia*. The name *M. pulchrior* *Dall* is therefore not necessary.

Synotypes.—Redpath Museum, no. 93 (3 specimens)

Distribution.—Santa Barbara, California (type); Monterey, California, to Magdalena Bay, Lower California (Dall)

*Mangelia variegata* Carpenter

(Pl. 25, fig. 12)

Daphnella variegata (Carpenter), Tryon, 1884, Man. Conch., vol. VI, p. 300, pl. 22, fig. 54 if authentic, poor figure

Mangelia (Cythara) variegata (Carpenter), Dall in Williamson, 1892, U. S. Nat. Mus., Proc., vol. 15, no. 898, p. 208

Mangelia (Bela) variegata (Carpenter), Grant and Gale, 1931, p. 590; Willett, 1937, San Diego Soc. Nat. Hist., Trans., vol. VIII, no. 30, p. 394, pl. 26, fig. 1

"Mangelia" variegata Carpenter, Burch, 1946, no. 62, p. 29, 39

"Small, slender, thin, zoned with brown: 9 narrow ribs, strong spiral striae." [Carpenter, 1864b, 658]

"M. testa valde attenuata, tenui, parvi, pallide carneae, rufo-fusco normaliter bizonata, interdum unizonata, seu zonis interruptis; vertice nucleoso conspicuo, anfr. uno et dimido, apice mammillato, anfr. norm. VI, subrotundatis suturis valde impressis; costis radiantibus IX, angustis; costulis spiralibus crebis, validioribus, in spira circ. X, costas superantibus; apertura valde elongata; canali brevi, aperto; labro tenui, juxta suturam conspicue arcuato, labio tenui. Long. .31, long. spir. .17, lat. .1 poll., div. .22°. Variat costis crebrioribus, sculptura minus expressa.

"Hab. Sta. Barbara (Jewett)." [Carpenter, 1865h, p. 394]

A syntype (or syntypes) of this species is in the U. S. National Museum. The types were under study by Bartsch, so that the writer did not examine the specimen. Since there are two suites of types, the U. S. National Museum specimen, because of Bartsch's study, could be designated the lectotype.

A syntype of this species is in the Redpath Museum, McGill University. It is preserved on Carpenter's original glass mount with the label "type Sta. Barbara Jewett," in Carpenter's handwriting.

The character of the specimen and the label check with the original description. Tryon stated that the specimen figured by him was from an original lot. It may have been from a lot segregated and described by Carpenter. Tryon's figure suggests the species and may be a poor illustration, M. oenoa Dall (1919, pl. 8, fig. 6) does not appear to be the same as this species, as suggested by Grant and Gale (1931, p. 590).

Grant and Gale are correct in stating that the name Mangelia variegata is not preoccupied by the various Pleurotoma variegata until one named before 1864 is correctly referred to Mangelia.

Willett (1937) regarded several named forms, including M. angulata Carpenter, as synonymous with this species. He figured a series of 14 specimens to show intergradation between extremes of form and sculpture. For purposes of type record the writer itemized the data of each Carpenter name separately. Bartsch's studies will reveal their biologic combinations.

Syntypes.—U. S. National Museum, no. 11798; Redpath Museum, no. 92

Distribution.—Recent Santa Barbara, California (type); Alaska, south to Monterey, California, to Gulf of California (Burch). Pleistocene. California (Grant and Gale; Willett, 1937)

Genus Pseudomelatoma Dall, 1918

Pseudomelatoma Dall, 1918, U. S. Nat. Mus., Proc., vol. 54, no. 2238, p. 317

Type species by original designation, Pleurotoma feniculata (Carpenter), Carpenter, 1865, Jour. de Conchyl. vol. XIII, ser. 3, p. 146. Recent. Lower California

Pseudomelatoma moesta (Carpenter)


Pseudomelatoma feniculata moesta (Carpenter), Grant and Gale, 1931, p. 561
"Drillia moesta, n.s. Like large *luctosa*: middle whirls with long transverse ribs and posterior knobs; adult obsolete." [Carpenter, 1864b, p. 657]

Oldroyd (1927) republished Carpenter's description (1865) of this species. To that copy should be added the following:

"... div. 27°
"Hab. Sta. Barbara (Jewett); S. Pedro (Cooper)." [Carpenter, 1865h, p. 182]

**Type.**—U. S. National Museum, no. 14942

**Distribution.**—Santa Barbara, California (type); San Pedro, California, to Cerros Island, Lower California (Burch). Pleistocene. Mexico (Jordan)

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**Pseudomelatoma torosa** (Carpenter)


**Pleurotomula (Drillia) torosa** (Carpenter), Weinkauff in Küster, 1887, Syst. Conch.-Cal., Bd. 4, Abt. 3, p. 228, pl. 42, fig. 13

**Pseudomelatoma torosa** (Carpenter), Dall, 1921, p. 70; Oldroyd, 1927, vol. II, pt. I, p. 76;

**Grant and Gale, 1931, p. 562, pl. 26, fig. 20; Baily, 1935, West Coast Shells (Keep), p. 262, not fig. 277 (same as Keep, 1887, fig. 39)** *Pleurotomula* (Cooper).

**Distribution.**—Monterey, California (type); Monterey, California, to Scammon Lagoon, Lower California (Dall)

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**Pseudomelatoma torosa aurantia** (Carpenter)


"Drillia ? var. aurantia. Orange, with sutural riblet and faint spiral sculpture." [Carpenter, 1864b, p. 657]

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116 Oldroyd, followed by others, stated incorrectly that the type is in the British Museum (Natural History)

117 The depository of the type is not the British Museum as stated in Oldroyd and followed by others.
Oldroyd (1927) republished the description (1865). The following should be added to complete her copy:

"... div. 38." “Hab. San Diego, Cassidy.—San Pedro, Cooper. Les individus des localités méridionales étaient tous en mauvais état, et je ne suis pas encore convaincu qu'ils appartiennent à la même espèce." [Carpenter, 1865g, p. 145]

**Type.—** U. S. National Museum, no. 15310

**Distribution.—** San Diego, California (type)

**Genus Granotoma** Bartsch, 1941


**Granotoma excurvata** (Carpenter)


**Lora excurvata** (Carpenter), Dall, 1919, U. S. Nat. Mus., vol. 56, no. 2288, p. 46, pl. 14, fig. 5: 1921, p. 78; Oldroyd, 1927, vol. 11, pt. 1, p. 123; **Keen**, 1937, p. 38

**Granotoma excurvata** (Carpenter), Burch, 1946, no. 62, p. 19

“Like Treceilliana: stumpy, Chrysalloid.” [Carpenter, 1864b, p. 658]

The original description of this species was republished by Oldroyd (1927). The measurements should be corrected in her copy to: "Long. .28, long. spir. .13, lat. .15, div. 55°." The following original notes should be added:

"Hab.—In sinu Pugetiano ante decessum prematurum specimen unicum piscavit Kennerley, cheu deploratus!" [Carpenter, 1865e, p. 63]

The type of this species, according to Carpenter, was a premature specimen. It is in the U. S. National Museum. Dall did not state from what locality the shell figured by him (1919) came from. The species has been critically studied by Bartsch and will be reported on in his paper.

**Holotype.—** U. S. National Museum, no. 4493C

**Distribution.—** Puget Sound, Washington (type); Bristol Bay, Bering Sea, to Puget Sound, Washington (Dall)

**Genus Propebela** Iredale, 1918


Type species by original designation, *Murcix turriella Montagu*, 1803, Test. Brit., vol. 1, p. 252, pl. 9, fig. 1. Recent Europe, Greenland. Tryon, 1884, Man. Conch., vol. VI, pl. 30, fig. 93; pl. 27, fig. 22

**Propebela tabulata** (Carpenter)

(Pl. 25, figs. 7-11)


**Daphinella tabulata** (Carpenter), Tryon, 1884, Man. Conch., vol. VI, p. 312, section *Raphitoma*

**Mangilia tabulata** Carpenter, Arnold, 1907, Smith. Misc. Coll., vol. 50, pt. 4, pl. LVII, fig. 4 reprinted Arnold, 1907, U. S. Geol. Surv., Bull. 321, pl. 11, fig. 4 not typical

? *Turris (Bela) tabulata* (Carpenter), Packard, 1918, Univ. California Pub. Zool., vol. 14, p. 343, pl. 39, fig. 1, not typical

**Lora tabulata** (Carpenter), Dall, 1919, U. S. Nat. Mus., Proc., vol. 56, p. 45, pl. 14, fig. 1; 1921, p. 74; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 78, pl. 18, fig. 5 same as Dall, 1919, pl. 14, fig. 1; Oldroyd, 1927, vol. 11, pt. 1, p. 101, pl. 7, fig. 13; pl. 18, fig. 5 same as Dall, 1919, pl. 14, fig. 1; Grant and Gale, 1931, p. 520 in part; Keen, 1937, p. 38; Burch, 1946, no. 62, p. 22 "Lora."

"Stout, strongly shouldered, coarsely cancelled. Pillar abnormally twisted." [Carpenter, 1864b, p. 658]

Oldroyd (1927) published a copy of Carpenter's description (1865) with a translation. The following lines should be added:

"... div. 35°
"Hab. Neah Bay; several worn specimens (Swan).
"The distinct fold near the base of the pillar may require the formation of a new genus." [Carpenter, 1865a, p. 29]

Ten specimens at the Redpath Museum in the Carpenter collection are labelled "type Neah Bay Swan." These are on the original Carpenter glass mounts, and the label is the original made by Carpenter. Of the 10 specimens, 5 are figured herein to show how constant or inconsistent the characters may be. The specimens are worn, but they reveal the predominant factors of the species. Dall's (1919) figure of the species (same in Oldroyd) is of a shell typical in shape and basic rib character, although the spacing of the spiral ribs of the posterior body whorl belong to an irregular kind. Dall does not explain where the specimen came from.

Besides the syntypes in the Redpath Museum there is also a specimen labelled "type" in the U. S. National Museum. That specimen has been examined by Bartsch and will probably be reported on by him.

The shells figured by Arnold (1907) and Packard are not typical.

Syntypes.—Redpath Museum, no. 89, U. S. National Museum, no. 19403

Distribution.—Neah Bay, Washington (type); Sitka, Alaska, to Puget Sound, Washington (Dall in part; Burch in part)

Genus Mitromorpha Adams in Carpenter, 1865


Type species by monotypy, M. filosa (Carpenter)118 Carpenter, 1865, Ann. Mag. Nat. Hist., ser. 3, vol. XV, p. 182. Recent Monterey, California to Gulf of California. (pl. 25, figs. 5, 6)

Mitromorpha aspera (Carpenter) (Pl. 25, figs. 3, 4)


Mangelia (Mitromorpha) aspera (Carpenter), Grant and Gale, 1931, p. 598

"Elongated with coarse fenestration." [Carpenter, 1864b, p. 658]

"† General position of all these doubtful; perhaps they belong to genera not yet eliminated: filosa resembling the Eocene forms between Conus and Pleurotoma." [Carpenter, 1864b, p. 658]

Oldroyd furnished a copy of Carpenter's description (1865) in her monograph (1927). Her copy should be corrected as follows:

118 The date of Mitromorpha in Oldroyd (1927, p. 173) has evidently been transposed in printing. The statement of type species as "Mitromorpha gracilis Carpenter" is a confusion following Arnold (1903) who said it was a "characteristic species". The name is a nomen nudum in both Arnold (1903, p. 223) and Oldroyd (1927, p. 173). M. gracilior Tryon (1884) (Hemphill ms.) was not described until 1884.
Change first word to “? D.A.”; line 7, insert “augusta” between “elongata” and “antice”; correct .69 to .09; insert “div. 35” after “poll.”

The following lines should be added to complete her copy:

“Je n’ai vu de cette charmante petite coquille qu’un seul échantillon très-frais, mais incomplètement adulte. Peut-être se trouvera-t-elle mieux placée dans genre Mitromorpha, A. Adams?” [Carpenter, 1865, p. 146]

The holotype of this species is preserved in the U. S. National Museum and not, as stated by Oldroyd and followed by Grant and Gale, in the British Museum.

The holotype bears the label “Type Monterey Taylor,” which coincides with the original description. A growth over the apical whorls obscures the characters, but the body whorl is well preserved. The sculpture is not worn, and the microscopic longitudinal striations are clearly seen. At the crossing of the longitudinal and spiral ribs sharp nodes are formed.

*Mitromorpha gracilior* Hemphill in Tryon, 1884, p. 317, pl. 25, fig. 62 was described by Tryon as a “variety” of *M. aspera* (Carpenter). Tryon used a manuscript name of Hemphill and did not indicate a locality for the specimen which he figured. Grant and Gale (1931, p. 597) followed by Smith and Gordon (1948, p. 185) indicated Monterey as the type locality. There is nothing in Tryon to confirm that statement of type locality.

Three specimens in the Redpath Museum (no. 2360) are labelled “*Mitromorpha gracilior* Hemphill type S. Diego.” These specimens were the types of the Hemphill manuscript name, but since Tryon is the author of the specific name, the specimen which Tryon figured would be the holotype. Unfortunately it had no published locality. The Redpath Museum specimens have lost their status as syntypes. *M. gracilior* is now regarded as distinct from *M. aspera*; hence the tracing of a type locality in connection with the holotype has not been pursued in this report.

*Holotype.*—U. S. National Museum, no. 22816

*Distribution.*—Recent, Monterey, California (type); Monterey to San Pedro, California (Dall). Pleistocene. Mexico (Jordan, 1926; Grant and Gale)

? *Daphnella effusa* Carpenter


“...† nom. prov. Thin extremely drawn-out, sculpture faint.” [Carpenter, 1864b, 658]

“† Generic position of all these [*D. aspera, D. filosa, D. effusa*] doubtful: perhaps they belong to genera not yet eliminated ...”

“? *D. testa gracillima, maxima effusa, rufo-fusca; anfr, augustis elongatus, sutorius impressis; striis spiralisibus crebris a lineis incrementi decussatis ornata; labro tenuiore, postice vix sinuato. Long. .65, long. spir. .45, lat. .22, div. .30."

“Hab. Neeah [sic] Bay; one broken specimen (Swam).” [Carpenter, 1865a, p. 29]

Tryon gave an English translation of Carpenter’s description above. Carpenter’s measurements in mm. would be slightly larger than those given by Tryon.

The type has not been found. Dall (1913) apparently had not seen the shell but took his cue from the above description (1865a) that the single broken specimen was unidentifiable.

Keen (in Burch, 1946, no. 62, p. 10) suggested that if *Ophiocermella incisa* Carpenter was preoccupied (secondary homonym), [?] *Daphnella effusa* Carpenter was available. This would indicate that the two forms were regarded as conspecific.

*Type.*—Not found

*Distribution.*—Neeah Bay, Washington (type)
Mitromorpha filosa (Carpenter)  
(Pl. 25, figs. 5, 6)  

? *Daphnella filosa* Carpenter, 1864b, p. 658; Reprint, 1872, p. 144; Tryon, 1884, Man. Conch., vol. VI, p. 317, pl. 25, fig. 63 poor  
*Mangelia* (Mitromorpha) *filosa* (Carpenter), Grant and Gale, 1931, p. 596.  

"† Small, diamond-shaped, but rounded periphery; spirally threaded. [Carpenter, 1864b, p. 658]  

"‡ Generic position of all these doubtful: perhaps they belong to genera not yet eliminated: filosa resembling the Eocene forms between Conus and Pleurotoma."  

Oldroyd republished the Carpenter's description (1865) in her monograph (1927). The following changes should be made in her copy:  

Delete "poll."  

Add:  

"... div. 45"  

"Hab. Sta. Barbara (Jewett); Lower California (texte Trick [Frick?] in Mus. Cuming.)."  


"Mr. A. Adams obtained two similar species from Japan; and as the shells do not rank satisfactorily under any established group, he proposes the above genus for their reception. M. Crosse suggests that *Columella dormitor*, Shy., may be congeneric." [Carpenter, 1865h, p. 182]  

The holotype of this species is in the Redpath Museum at McGill University, on an original Carpenter mount with a Carpenter label, "type Sta. Barbara Jewett." It is dark red, the protoconch has about two smooth whorls, about four of the coarse spiral ribs are on the whorls of the spire, and the columella is smooth.  

The statement in Oldroyd and others that the type is in the British Museum is incorrect. Grant and Gale have described well the shell of this species.  

*Holotype.—Redpath Museum, no. 96*  

*Distribution.—Recent, Santa Barbara, California (type); Monterey, California, to Gulf of California (Dall). Pleistocene. California (Arnold; Oldroyd, 1925; Grant and Gale); Mexico (Jordan, 1926)  

"Mitromorpha gracilis" Carpenter"  

"Mitromorpha gracilis" Carpenter" in Arnold (1903, p. 223), copied by Oldroyd (1927, vol. II, pt. 1, p. 173) is apparently an error either in spelling or confusion of names. Arnold may have meant *M. gracilis* of Hemphill in Tryon (1884). However, that species was not described until 1884 which was 19 years after the introduction of *Mitromorpha* Adams in Carpenter (1865), with which Arnold associated the specific name as the type species.  

Family Acteonidae  

Genus Acteon Montfort, 1810  

(Tornatella Lamarck, 1822)  

*Tornatella* Montfort, 1810, Conchylol. Syst., t. 2, p. 315  


110 Their description is not a complete English translation of Carpenter's description (1865), as stated by Burch (1945, no. 49, p. 33). Their description appears to have been based on specimens. The shells which they measured were larger than the figures by Carpenter.

For discussion of *A. tornatilis* (Linnaeus) see Dodge (1955, p. 58).

Subgenus *Rictaxis* Dall, 1871


*Acteon*120 (*Rictaxis*) *punctocaelatus* (Carpenter)


*Actaeon* (*Rictaxis*) *puncto-coelata* (Carpenter) Dall, 1871, Amer. Jour. Conch., vol. VII, p. 136, 160, pl. 15, fig. 12 lectotype; Arnold, 1903, p. 189, pl. 1X, fig. 6 no hyphen in specific name

*Rheutaxis* *puncto-coelata* (Carpenter), Keep, 1887, West Coast Shells, p. 125


*Acteon puncto-coelatus* (Carpenter), Pilshry, 1893, Man. Conch., vol. XV, p. 166, pl. 49, fig. 24 section Rictaxis

*Acteon* (*Rictaxis*) *puncto-coelata* (Carpenter), Dall, 1921, p. 60; Oldroyd, 1927, vol. II, pl. 1, p. 24, pl. 1, figs. 17, 17a; Baily, 1935, West Coast Shells (Keep), p. 267, fig. 287

*Acteon* (*Rictaxis*) *puncto-coelatus* (Carpenter), Grant and Gale, 1931, p. 443

*Acteon puncto-coelata* (Carpenter), Keen, 1937, p. 28; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, p. 179

*Acteon* (*Rictaxis*) *puncto-coelata*, Burch, 1946, no. 47, p. 9

*Actaeonidea* (*Rictaxis*) *punctato-coelatus* (Carpenter), Cossmann, 1895, Essais Paleo. comparé, I, p. 52, pl. 1, fig. 10

*Actaeonidea* (*Rictaxis*) *puncto-coelatus* (Carpenter), Cossmann, 1903, Essais Paleo. comparé, VI, p. 118, pl. IX, figs. 8, 9


*Acteon* (*Rictaxis*) *puncto-coelata* *vancouverensis* Oldroyd, 1927, vol. II, pl. 1, p. 25, pl. 1, figs. 19, 20. See Grant and Gale, 1931, p. 444 and Burch, 1945, no. 47, p. 10

"Tornatella puncto-coelata, n.s. Small; grooved with rows of dots; pillar twisted as in *Bullina*, Add, non Gray." [Carpenter, 1864b, p. 646]

Oldroyd (1927) published a copy of Carpenter's (1865)121 description, to which should be added the following:

"Hab. Santa Cruz, Rewell.—San Diego, Cooper.

"Cette espèce est un peu aberrante, à cause de son ouverture large, de son pli reporté près du bord pariétal et de sa columelle tordue comme celle des *Bullina*. La ciselure des tours ressemble aux impressions que laisserait une série de petit colliers." [Carpenter, 1865g, p. 139]

Two syntypes in the U. S. National Museum are labelled, "Fig'd type San Diego Cooper." Dall (1871) did not indicate whether the specimen he figured was a "type" or what the locality or measurements were. Dall's figure is the most likely of all the illustrations of the species to be that of a syntype. The measurements of the syntypes do not fit those given by Carpenter.

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120 *Acteon* is masculine in gender as well as *Rictaxis*. The original spelling is *punctocae-lata*.

121 It would appear from Oldroyd's text that the description she copied was from Carpenter (1864b), the only reference she mentioned (page error). Her republished description is from Carpenter (1865g, p. 139).
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There is a large columellar fold on the syntypes. The smaller shell is worn, but the larger specimens show the dark and white bands plainly. The writer chooses the larger of the two individuals to be the lectotype which is probably the one figured by Dall (1871). The writer makes this selection in spite of the discrepancy in measurements, because the two U. S. National Museum shells are the only one which have been found with any indication as to type label. The small shell that Carpenter measured (1865) apparently has been lost, and the two specimens now found are syntypic. If Carpenter handled these syntypes, which correspond in size to the dimensions of the shells which are usually identified as this species, it is strange that he chose such a small shell for representative size (.2 x 25.3 = 5.06 mm. long.; .09 x 25.3 = 2.27 mm. lat.). Carpenter’s measurements are puzzling. Grant and Gale (1931, p. 443), as well as Burch (no. 47, p. 9), commented on the relatively large size of the species as identified in contrast to the original dimensions. The choosing of the lectotype presents a more logical measurement basis of identification.

The type locality is San Diego, California. The only possible localities which would qualify as type locality would be, “San Diego,” “The Islands” (Farallones), and Santa Cruz (see original description). Smith and Gordon (1948) indicated that Monterey was the type locality. Monterey was not included by Carpenter. Dall had secondary material from Monterey which he listed (1870).

Dimensions.—Lectotype: length 10 mm.; greatest diameter 5 mm.; paratype: length 8 mm.; greatest diameter 4 mm.

Types.—Lectotype and paratype (former syntypes), U. S. National Museum, no. 14914

Distribution.—Recent. San Diego, California (type); southeastern Alaska, to Magdalena Bay, Mexico (Burch). Pleistocene. California (Arnold; Oldroyd, 1925; Grant and Gale; Willett, 1937); Mexico (Jordan, 1926)

Family Atyidae

Genus Atys Montfort, 1810

Atys Montfort, 1810, Conchyl. syst., vol. 2, p. 342-344


Subgenus Aliculastrum Pilsbry, 1896


Because A. casta deviates so far from typical Atys the writer believes that a better idea of its characters is intimated by its grouping under the subgenus Aliculastrum. B. casta is more typical of the shell characters of that subgroup than are fossil species in the lower and middle Miocene of Jamaica and Florida, which have been so classified and seem to bear a relationship to Aliculastrum (Woodring, 1928, p. 127; Gardner, 1937, p. 269)

Atys (Aliculastrum) casta (Carpenter)

(Pl. 27, figs. 1-4)


Bulla casta (Carpenter), BURCH, 1945, no. 47, p. 29

"? Atys casta. Rare: allied to Cylichna." [Carpenter, 1864b, p. 618]

A copy of Carpenter's description (1864) and Pilsbry's translation was published by Oldroyd. To complete Oldroyd's copy the following should be added: "On the confines of the genus, related to Cylichna." [Carpenter, 1864a, p. 314]

The type material consists of two specimens in the U. S. National Museum. They are on Carpenter's original glass mount, with label "type. C.S.L." The two specimens, 9 mm. in height, and 2 mm. in height, respectively, possibly represent the young and adult of the same species. The larger specimen is of the approximate dimension given by Carpenter, and the writer therefore selects it as the lectotype. If the smaller specimen is not a juvenile, it is of a different species but of the same genus and subgenus.

The present illustration is the first published of the series. The fine concentric striations which cover the surface, greater anteriorly and posteriorly, do not show in the photograph.

The species was described from Cape San Lucas and is included in this report because a statement of its distribution has been extended by Dall to Catalina Island.

**Types.**—Lectotype: U. S. National Museum, no. 4014 (larger specimen); paratype: same number, smaller specimen

**Distribution.**—Recent. Cape San Lucas, Lower California (type) Catalina Island, California, to Gulf of California (Dall). Pleistocene. California (Willett, 1937)

**Family Retusidae**

**Genus Volvulella** Newton, 1901

*Volvulella* Adams, 1850 not Gistl, 1848


The use of *Rhizorus* Montfort (1810, p. 539, monotype *R. Adelaidis* Montfort) for *Volvula* Adams, 1850 (Abbott, 1954, p. 280) is based on the supposition (see Jeffreys, 1867, p. 412; Pilsbry, p. 235) that *R. adelaidis* Montfort (= *Bulla fucicola* Chiregihini (nomem nudum) fide Nardo, fide Brusina) indirectly equals *V. acuminata* Brugière, which is a *Volvula*.

**Volvulella cylindrica** (Carpenter)

(Pl. 25, figs. 1, 2)


"*Volvula cylindrica*, n.s. Like a grain of rice, pointed at one end." [Carpenter, 1864b, p. 647]
Carpenter's description (1865) of this species was republished by Oldroyd (1927, p. 34). Her copy should be corrected to read, "lat. .07" for of "17". The line "Hab. Sta. Barbara (Jewett)" should also be added to complete the copy.

The type of this species is in the Redpath Museum. One specimen has an original label, "Volvula cylindrica Sta. Barbara Jewett [in pencil] unique type [in ink], Monterey Dall [in pencil]." The holotype is worn and has part of a yellowish epidermis remaining. The uneroded surface reveals microscopic spiral lines with wide interspaces. The statement of Oldroyd (copied by others) that the type is in "Mrs. Boyce's collection" means only that the specimen was originally described from "Mrs. Boyce's" (Col. Jewett) material, a collection which is not intact at present.

Type.—Redpath Museum, no. 2364

Distribution.—Recent. Santa Barbara, California (type); Vancouver Island, British Columbia, to Gulf of California (Dall). Pleistocene. California (Arnold; Grant and Gale; Willett)

Genus Coleophysis Fischer, 1883

Coleophysis Fischer, 1883, Man. de Conchyl., p. 555

Type species by monotypy, Ulitriculus truncatulus (Bruguërie), 1832, Enc. Méth., Vers., t. 1, p. 377, no. 10 as Bulla. Living. Europe. Forbes and Hanley, 1851, Hist. British Moll., vol. III, p. 510, pl. CXIV, B, fig. 7, 8, pl. V. V, fig. 4 animal, as Cylchina truncata (Adams?) (Montagu), 1803

Coleophysis carinata (Carpenter)


Pleistocene

Coleophysis carinata (Carpenter, Burch, 1945, no. 47, p. 11, 15

This species was described from Mazatlan, and the illustration of the type belongs in the report on the types of that catalogue (Carpenter, 1857). The type should be in the British Museum.

Oldroyd (1927) republished part of Carpenter's original description with Pilsbry's translation of the Latin.

Distribution.—Recent. Mazatlan, West Mexico (type); Redondo Beach, California, to Panama (Burch). Pleistocene. (See Grant and Gale; Willett, 1937.)

Family Scaphandridae

Genus Acteocina Gray, 1847


Type species by original designation, Acteocina vertherelli Lea, 1833, Cont. Geol., p. 213; Miocene. New Jersey. Lea, 1833, pl. 6, fig. 224

123 There is doubt as to the interpretation of Bulla truncatulus Bruguërie, 1792. Application for proposal to stabilize the interpretation of the species by reference to Bulsa truncata Adams (1800) has been made by Lemche, 1957, Bull. Zool. Nomen., vol. 13, p. 4, p. 132.

124 The following corrections should be made in the Latin copy in Oldroyd: line 3: delete first "a" in "aspira"; line 5: change "m" to "n" in "basin".
Acteocina inculta (Gould) in Gould and Carpenter, 1856

Acteocina planata (Carpenter)

(Pl. 25, fig. 19)


Acteocina planata (Carpenter), Dall, 1921, p. 61; Strong, 1921, Nautilus, vol. 35, no. 2, p. 45, 123; Oldroyd, 1927, vol. 11, pt. I, p. 30; Keen, 1937, p. 28; Burch, 1945, no. 47, p. 11, 15, 30 pl. II fig. 14

"Cylichna planata, n.s. Like mollmollata, with apex flattened-off, and fold distinct." [Carpenter, 1864b, p. 647]

Carpenter's description (1865) with Pilsbry's translation, is reprinted in Oldroyd's monograph.

The following should be added to make the copy complete:

"... div. 180° "

"Hab. San Diego, Cassidy." [Carpenter, 1865g, p. 139]

The type of this species is in the Museum of Paleontology, University of California. Burch suggested (1945, p. 15) that the form is the same as A. inculta (Gould) (in Gould and Carpenter, 1856). The two species were described from the same locality. Strong (in Burch, 1945, no. 47, p. 11) thought A. planata is a senile individual of A. inculta (Gould).

Type.—Museum of Paleontology, University of California, no. 33501

Distribution.—San Diego, California (type)

Genus Cylichna Lovén, 1846

(Bullinella Newton, 1891)


Cylichna attonsa Carpenter

(Pl. 25, figs. 17, 18)


Cylichnella (Bullinella) attonsa (Carpenter)., Dall, 1921, p. 63; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 73; 1927, vol. II, pt. 1, p. 40, pl. 2, fig. 8


Cylichnella attonsa (Carpenter), Keen, 1937, p. 34, range corrected in Burch, 1945, no. 47, p. 24

"Cylichna (? var.) attonsa. One living sp. Probably a variety of cylindracea." [Carpenter, 1864b, p. 603]

"Cylichna ? cylindracea, Linn. auct. Intermediate specimens passing into Cylichna var. attonsa, rounded off at apex." [Carpenter, 1864b, p. 647]

Part of Carpenter's notes (1865) was republished by Oldroyd (1927). The following should be added to complete her copy:

"Hab.—In sinu Pugetiano specimen unicum legit Kenmerley.

“Specimina Californica, à Jewett Cooperque collecta, C. cylindraceae typicae magis convenient.” [Carpenter, 1865e, p. 58]
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The figure included by Oldroyd does not seem to have the anterior portion of the outer lip elevated so much as C. attoma does. The discrepancy may be due to the position of the shell in the photograph.

The holotype of this species is in the U. S. National Museum.¹²⁵

The holotype bears the label "Puget Sound Kennerley." This label is verified by the original description. As Keen pointed out Dall's distribution of San Diego, California, should be modified. The type locality is Puget Sound.

There are microscopic wavy spiral lines over the entire surface of the shell. These are not revealed in the photograph of the holotype. The brownish epidermis is lighter in the central area. An elongate light spot is seen in the photograph. This is a glue spot on the shell and not part of the specimen.

_Holotype._—U. S. National Museum, no. 4495

_Distribution._—Recent. Puget Sound, Washington (type); Kodiak Island, Alaska, to San Diego, California (Burch). Pleistocene. California (Willett); Oregon (Grant and Gale)

Family Pyramidellidae

Genus Pyramidella Lamarck, 1799


_Living_. Southern Florida and West Indies. _Tryon_, 1886, Man. Conch., vol. VIII, p. 300, pl. 72, figs. 71-74

Genus Longchaeus Mörch, 1875

_Longchaeus Mörch_, 1875, Malak, Blatt, vol. 22, p. 158

Type species by subsequent designation, _Pyramidella punctata Schubert and Wagner in Martini and Chemnitz_, 1829, Bd. XII, Abt. 1, p. 152 _fide_ _Sherborn_, 1929 = _Obeliscus punctatus_ (Chemnitz) in Mörch. Living. Polynesia. _Bartsch_, (1955, p. 9) considered _Longchaeus_ to be of generic rank distinct from _Pyramidella_.

_Longchaeus adamsii_ (Carpenter)

_Obeliscus Adamsii_ Carpenter, 1864b, p. 546, 547, 551; Reprint, 1872, p. 33, 37 = _Pyramidella_, sp. ind. C. B. Adams, no. 293 (not 294) = Mazatlan Cat. 486, p. 409

_Obeliscus conicus_ jun. Carpenter, 1857, Cat. Mazatlan. Shells, p. 409-10 _fide_ _Dall and Bartsch_, 1909


_Pyramidella conica_ Ads. var. _variegata_ (Carpenter), _Williamson_, 1892, U. S. Nat. Mus., Proc., vol. XV, no. 898, p. 208 by _Dall_; _Arnold_, 1903, p. 280?


_Pyramidella conica_ C. B. Adams, _Tryon_, 1886, p. 302 in part

The holotype of this species is from Mazatlan, and the discussion of the species belongs in the report of that area. Since the species is reported from San Pedro to Mazatlan, and one specimen from Monterey, a reference is included herein. The holotype is in the British Museum with the Reigen Mazatlan Collection (tablet 1951). _Dall and Bartsch_ published a drawing of a specimen in the U. S. National Museum. On page 21 they stated that the type was in the British Museum. On page 22 they stated that the illustration was of a

¹²⁵ The statement in Oldroyd and Grant and Gale indicating the type depository as the Academy of Natural Sciences at Philadelphia is incorrect.
specimen in the U. S. National Museum. In the explanation of the plate (pl. 1, fig. 6) the specimen is indicated as "type" with the dimensions of the U. S. National Museum specimen. Therefore, the word "type" in the explanation should be deleted. Accordingly, the type data in Oldroyd (1927) should be corrected.

The type of L. variegata (Carpenter) came from Cape San Lucas. From the explanation of the use of the name in Arnold, the discussion probably belongs to L. mexicana Dall and Bartsch (1909). This interpretation has been followed by Grant and Gale (1931, p. 865). Burch (1946, p. 20) believed that all the forms mentioned represent one species. In that case the species would also have to be accounted for in the diagnosis of the Pleistocene of San Pedro (Arnold).

Genus Odostomia Fleming, 1813


Subgenus Besla Dall and Bartsch, 1904

Type species by original designation Chrysallida convexit Carpenter, 1857, Mazatlans Cat., p. 424. Living, Mazatlans. Dall and Bartsch, 1909, U. S. Nat. Mus., Bull. 68, pl. 13, fig. 4

Odogostomia (Besla) callimorpha Dall and Bartsch


"Like ovulum, Maz. Cat. no. 512, but slender; spiral lines delicate." [Carpenter, 1864b, p. 659]

"Chr. t. minuta, angusta, alba; vert. nucl. subito immerso, dimumidium truncationis tegente; marginibus spirae parum excurvatis; anfr. norm. IV, planatis, suturis vix distinctis; clathris radiatibus rectis, validis, planatis, circ. XX, marginibus spirae utroque lateri parallelis, saepius attingentibus, circa basim elongatam, rotundatam continuo; interstitii lirulis acutis distantibus, baud extantibus, circ. X, decussatis, quarum IV, V, in spira monstrantr; apertura ovali, perimetrica vix continuo; plica parietem tenuis acuta, haeclata, declivi.

"Long. 0.06, long. spir. 0.03, lat. 0.25, div. 12°.

"Hab. S. Pedro, Cooper.

"One specimen and a few fragments were found in the shell-washings of Dr. Palmer's consignment. Differs from Chr. ovulum, in its slender shape and delicate spiral sculpture." [Carpenter, 1866a, p. 220]

Dall and Bartsch figured the holotype (Carpenter type, O. pumila).

Dimensions. — Holotype: Length 1.5 mm.; diameter .6 mm. (Dall and Bartsch)
Holotype. — U. S. National Museum, no. 15565
Distribution. — San Pedro, California (type); San Pedro, California, to Todos Santos Bay (Orcutt; Burch)

Subgenus Chrysallida Carpenter, 1856


The monotypic designation of *Chrysallida* can be inferred from Carpenter's statement in his original description, although one other species is linked with the name, because of his definite type designation (1863). His reference is to *C. communis* C. B. Adams. Therefore, the question of the right or wrong identification of *C. communis* in Carpenter (1857a, p. 419) has no bearing on the type species of *Chrysallida* as Dall and Bartsch believed (1909, p. 137; 1955, p. 60). Their statement of the type species of *Chrysallida* as *C. torrata* Dall and Bartsch (= *C. communis* Carpenter, 1857, not C. B. Adams, 1852) has no validity. *Chrysallida* was proposed in the year before the Mazatlan Catalogue was published (1857). Carpenter stated earlier (1856) that more details would be given in the Mazatlan Catalogue.

**Odostomia (Chrysallida) cincta** Carpenter


Pyramidella cincta (Carpenter), Tryon, 1886, Man. Couch., vol. VIII, p. 315, pl. 74, fig. 51, section Mumiola.

*Mumiola cincta* (Carpenter), Keep, 1887, West Coast Shells, p. 54


“Passing towards *Mumiola*. Radiating sculpture very faint. [Carpenter, 1864, p. 659]”

“Ch. t. satis regulari, alba, marginibus spiraeae vix excurrevatis; vert. nucl. parvo, celato, dimidium truncationis vix superante: anfr. norm. IV parum excurrevatis, suturis distinctis; costis spiralibus obtusis circ. X, cincta, quorum IV, in spira monstrantur; costis iii posticis radiatim subgranulosis, seriebus circ. XV., marginibus spiraeae utrinque parallellis, supra quartam subhosoletis; interstilis latis, delicatim decussatis; basi satis prolongata; columella antice valde effusa; plicae parvae, mediana.

“*Long. 0.11, long. spir. 0.07, lat. 0.03, div. 35°.*

“*Hub.* Santa Barbara group of islands, Cooper.

“The solitary specimen is probably immature. Intermediate between *Chrysallida* proper and *Mumiola.*” [Carpenter, 1866a, p. 220]

Apparently Dall and Bartsch and Oldroyd overlooked Carpenter’s detailed description (1866). The type is in the U. S. National Museum. It is labeled “Sta. Barbara Cooper fig’d type”.

Dall and Bartsch included an enlarged description. This was recopied by Oldroyd.

**Dimensions.**—Length 3 mm.; diameter 1.5 mm. (holotype) (Dall and Bartsch)

**Holotype.**—U. S. National Museum, no. 15730

**Distribution.**—Santa Barbara Island, California (type); Santa Barbara to San Diego, California (Burch)

**Odostomia (Chrysallida) virginalis** Dall and Bartsch

*Evalea gracilente “Cpr”*, Keep, 1887, West Coast Shells, p. 52


Keep apparently used a manuscript name of Carpenter and therefore should receive credit for the specific name. Dall and Bartsch in transferring the specific name to *Odostomia* discovered that there was a previous *O. gracilente*. As a secondary homonym Keep's designation required renaming. Dall and Bartsch's appellation was given to replace a formerly described species; hence the type of their name should be that of Keep. In this case Dall and Bartsch chose a new type from a distant locality (Todos Santos Bay, Lower California). Presumably Keep's specimens came from California. He probably did not segregate certain specimens, and they have not been found. However, for scientific purposes and technicalities of nomenclature it would be better if a neotype had been chosen for the new name, *O. virginalis*, from the California area instead of from Lower California.
Subgenus Evalea A. Adams, 1860


Odostomia (Evalea) inflata Carpenter


Odostomia (Evalea) inflata Carpenter, in part, Dall and Bartsch, 1907, U. S. Nat. Mus., Proc., vol. 33, no. 1574, p. 524, pl. XLVII, fig. 8 lectotype; Dall and Bartsch, 1909, U. S. Nat. Mus., Bull. 68, p. 201, pl. 23, fig. 7 lectotype same as 1907 fig.; Bartsch, 1912, U. S. Nat. Mus., Proc., vol. 42, no. 1906, p. 306, 337; Dall, 1921, p. 133 correct “Dall and Bartsch” as author; Oldroyd, 1927, vol. II, pl. 11, p. 195, pl. 63, fig. 7 lectotype; pl. 66, fig. lectotype same as Dall and Bartsch, 1907, 1909; Baily, 1935, West Coast Shells (Keep), p. 184; Keen, 1937, p. 42; Burch, 1946, no. 61, p. 13, 42; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, p. 194

“Like large dolioliformis; with most minute spiral striulation, Farallone Is. on Hal. rufescens, teste Darbishire.” [Carpenter, 1864, p. 658]

In the recording of this description the species was listed from Vancouver region.

“O. testa majore, tenui, pallide cinera epider-mide cineta induta; vert. nucl. subito immerso; anfr. norm. IV, rapidissime augmentus, subplanatus, saturas impressus; tota superficie minutissime et confortissime spiralis striolata; umbilico nullo; basi et apertura valde elongatis; labro acuto; labio tenuissimo; plicata acuta, transversa, parietem attingente; columnella valde arcuata, antice effusa. Long. .26, long. spir. .09, lat. .14, div. 60°.

“Variat spira elatiore. Long. .24, long. spir. .11, lat. .13, div. 45°.

“Variat quoque striolis subobsoletis.

"Hal. Sta. Barbara (Jewett); Farrallone Islands, in cavities, on Halitotis (teste R. D. Darbishire); near San Francisco (Rowell); Neeah Bay (Swan)." [Carpenter, 1865h, p. 395. Includes O. inflata Carpenter and O. jewetti Dall and Bartsch, 1909]

The original description of O. inflata Carpenter (1864b, p. 658) is meager but sufficient to claim validity. In that description only the Vancouver region and the Farallones material are included.

When Carpenter wrote his final description of what he called O. inflata (1865, p. 395) he included specimens from Santa Barbara, collected by Jewett, as well as other California localities, and the original material from Neeah Bay, Washington, sent in by Swan.

Dall and Bartsch regarded the description as covering two distinct species, and in 1907 they described the Jewett forms as new species, O. jewetti. They figured the original specimens, which they called types, of each suite. Each specimen is a lectotype. The illustrations reveal that the specimens do represent distinct forms. Confusion has entered into the differentiation of O. inflata Carpenter and O. jewetti Dall and Bartsch, because those authors were not complete in their references. In 1921 (p. 133) there is an error in printing in Dall’s list, crediting O. inflata to Dall and Bartsch, Part authorship of Dall and Bartsch is carried over into Oldroyd (1927, p. 195). Carpenter is the author of O. inflata, and Dall and Bartsch of O. jewetti.

Dimensions.—Length 6.2 mm.; diameter 3.8 mm (lectotype, Dall and Bartsch)

Lectotype.—U. S. National Museum, no. 15521b (Also includes one paratype, second of the original syntypes)

Distribution.—Neeah Bay, Washington (type); Raspberry Island, Alaska, to Monterey, California (Burch)

Odostomia (Evalea) jewetti Dall and Bartsch


Odostomia (Evalea) jewetti Dall and Bartsch, 1907, U. S. Nat. Mus., Proc., vol. 33, no. 1574, p. 523, pl. XLVII, fig. 3 lectotype; 1909, U. S. Nat. Mus., Bull. 68, p. 201, pl. 23, fig. 3 lectotype same fig. as 1907; Bartsch, 1912, U. S. Nat. Mus., Proc. vol. 42,
Odostomia (Evalea) tenuis Carpenter

Odostomia (Evalea) tenuis Carpenter was described by Carpenter (1857a, p. 412). Dall and Bartsch (1909, pl. 22, fig. 3) figured a Carpenter drawing of the type in the British Museum (Natural History).

The O. tenuis "Carpenter" of Dall and Bartsch in Arnold (1903, p. 281, pl. 1, fig. 14) is not the O. tenuis Carpenter (1857). Dall and Bartsch described that shell as O. (Evalea) (1909, p. 199, pl. 22, fig. 4). The holotype is from Santa Rosa Island, California.

O. tenuis Carpenter (1857a) is also not the O. tenuis Dall (1897, p. 14) as Mumiola tenuis). That species was renamed O. pharcida by Dall and Bartsch (1907).

Odostomia (Evalea) tenuisculpta Carpenter


Odostomia straminea Carpenter, 1865, Jour. de Conchyliol., vol. XIII, p. 146; Reprint, 1872, p. 314; Cooper, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 33; fide Dall and Bartsch, 1907, p. 527; 1909, p. 206; Burch, 1946, no. 61, p. 44


"Like sublirulata, Maz. Cat. no. 487, with obsolete sculpture throughout." [Carpenter 1864b, p. 659]

Oldroyd (1927) republished Carpenter's description (1865). The following changes should be made in her copy:

Delete "poll."

Add: "... div. 60°.

"Hab. Neeah Bay; one specimen (Swan)." [Carpenter, 1865a, p. 30]

Dall and Bartsch presented a detailed description of the species (1907) and repeated it later (1909). In regard to the measurement and category of the specimen figured there is a discrepancy. In the text (1907, p. 527) the specimen figured was said to be one of two specimens from the type locality by the original collector but not the holotype. Its length was given as 5.5 mm. which coincides with that in the explanation of the plate (pl. XLVII, fig. 6). However, the same drawing is included later (1909, pl. 23, fig. 2), but in the explanation of the plate it is listed as type with the length 2.3 mm., which is the length of the holotype (p. 206). Examining the holotype one finds that the drawing of Dall and Bartsch is of the holotype which is no. 15520. It is smaller than another specimen (no. 46483 of Dall and Bartsch, p. 206) which is segregated. Dall and Bartsch, therefore, figured the holotype (1907; 1909, explanation pl. 23, fig. 2, 1909 is correct). A photograph of the holotype is included herein (pl. 21, figs. 9, 10).

Dall and Bartsch determined O. straminea Carpenter (described from Cape San Lucas) as a southern smooth form of this species.
Holotype.—U. S. National Museum no. 15520. (Same number is catalogued also for O. satura Carpenter)

Distribution.—Nehah Bay, Washington (Swan) (type); Barkley Sound, Vancouver Island, British Columbia, to Lower California (Dall)

Subgenus Menestho Möller, 1842


Type species by monotypy, Turbo albulus Fabricius, 1780, Fauna Groenlandica, p. 394. Living. Greenland

Odostomia (Menestho) aequisculpta (Carpenter)


Odostomia (Oscilla) aequisculpta (Carpenter), Dall and Bartsch in Arnold, 1903, p. 284, pl. 1, figs. 3, 3a type


This species was described from Cape San Lucas. The type was figured by Dall and Bartsch (in Arnold) and in their later monograph (1909). Although Arnold indicated that the species was living from Cape San Lucas north to San Pedro, such distribution apparently was not verified. Arnold also included the species in the Pleistocene of San Diego. Jordan (1924) stated that the northern range extended to San Diego. On Jordan's authority, Keen and Burch include the species in the southern California fauna. The discussion and synonymy are not intended to be complete in this report.

Subgenus Amaura127 Möller, 1842


Type species by monotypy, Amaura candida Möller, 1842. Living. Greenland

Odostomia (Amaura) avellana Carpenter


Odostomia (Amaura) nuciformis avellana (Carpenter), Arnold, 1903, p. 283, pl. I, fig. II Dall and Bartsch; Dall and Bartsch, 1907, U. S. Nat. Mus., Proc., vol. 33, p. 530, pl. XLVIII, fig. 1, 1a type

Odostomia (Amaura) avellana (Carpenter), Dall and Bartsch, 1909, U. S. Nat. Mus., Bull. 68, p. 4, 5, 218, 225, 228, pl. 28, fig. 3; Bartsch, 1912, U. S. Nat. Mus., Proc., vol. 42, no. 1906 p. 307 342; Dall, 1921, p. 136; Oldroyd, 1924, Pub. Puget Sound Biol. Station, vol. 4, p. 132; 1927, vol. II, pt. 11, p. 212, pl. 4, fig. 3 same as Dall and Bartsch, 1907 and 1909; Grant and Gale, 1931, p. 876, cf. pl. 32, fig. 20; Keen, 1937, p. 42; Burch, 1946, no. 61, p. 11, 45

"Shape of conoidalis." [Carpenter, 1864b, p. 658]
"O. testa O. nuciformi indole simili, sed spira valde prolongata.
"Long. .32, long. spir. .16, lat. .16, div. 50°.
"Hab. Nehah Bay; one specimen (Swan).
"Like a gigantic form of O. conoidalis." [Carpenter, 1865a, p. 29]

Dall and Bartsch discussed the species in detail and figured the holotype of the species. Dimensions—Length 8.3 mm.; diameter 4.3 mm. (holotype) (Dall and Bartsch)

Holotype.—U. S. National Museum, no. 15517b

127 Preoccupied by Amaura Geyer (in Huebner, 1837, p. 39, for reference see Neave, 1939-40). There is a disagreement as to whether Amaura candida belongs in the Naticidae (Fischer, 1887 [1885]; Tryon, 1883) or Euspiridae (Cossmann, 1925) or Pyramidellidae (Dall and Bartsch, 1909; Theile, 1931)
Distribution.—Recent. Neah Bay, Washington (type); Neah Bay, Washington, to San Martin Island, Lower California (Burch). Pleistocene. California (Arnold; Grant and Gale)

**Odostomia (Amaura) gouldii** Carpenter


*Odostomia Gouldii* Carpenter, Keep, 1887, West Coast Shells, p. 53 probably var. **O. inflata** Carpenter

Not *Odostomia (Evalea) gouldii* (Carpenter), Arnold, 1903, p. 282, pl. I, fig. 15 fide Dall and Bartsch, 1907, p. 528

*Odostomia (Amaura) gouldii* (Carpenter), Dall and Bartsch, 1907, U. S. Nat. Mus., Proc. vol. 33, p. 531, pl. XLVIII, fig. 4 type; Dall and Bartsch, 1909, U. S. Nat. Mus., Bull. 68, p. 4, 5, 204, 218, 224, pl. 27, fig. 2 type; Bartsch, 1912, U. S. Nat. Mus., Proc., vol. 42, no. 1906, p. 307, 342; Dall, 1921, p. 136; Oldroyd, 1924, Pub. Puget Sound Biol. Sta., vol. 4, p. 132; Grant and Gale, 1931, p. 876, Baily, 1935, West Coast Shells (Keep), p. 185; Keen, 1937, p. 42; Burch, 1946, no. 61, p. 11, 45

“Taller, base gently rounded.” [Carpenter, 1864b, p. 658]

“O. testa solida, alba, ovoidea, marginibus spirae valde excurrevatis; vert. nucl. decliviter immerso; aufr. norm. v., subplanatis, suturex valde impressis; peripheria hau angulata; basi excurrevata, hau tumida; apertura ovata, postice parum constricta; labro solido; labio conspicio, rimam umbilicalem formante; plica submediana, solida, extante, hau declivi.

Long. 23, long. spir. .13, lat. .1, div. 30°.

“Hab. Neah Bay; very rare (S'wan).

“Agrees in some respects better with the diagnosis of **O. gracida**, Gould, than do Col. Jewett's shells, from which it is presumed the species was described. These large forms appear very variable.” [Carpenter, 1865a, p. 29]

Dall and Bartsch (1907; repeated 1909) discussed the species in detail and figured the holotype.

**Dimensions.**—Holotype: Length 6.1 mm., diameter 3.1 mm. (Dall and Bartsch)

**Holotype.**—U. S. National Museum, no. 22821

**Distribution.**—Neah Bay, Washington (type); Neah Bay, Washington south to San Diego, California (Burch)

**Odostomia (Amaura) nuciformis** Carpenter


*Odostomia nuciformis* [sic] Carpenter, Tryon, 1886, Man. Conch., vol. VII, p. 358, pl. 78, fig. 46


“Very large, solid Tornatelloid.” [Carpenter, 1864b, p. 658]

A copy of Carpenter's description (1865) was published by Oldroyd (1927). The following changes should be included in her copy:

Line 2: read “vertice” for “vertic.;’ last line: delete “poll.”

Add:

“... div. 70°

“Hab. Neah Bay; extremely rare (S'wan).” [Carpenter, 1865a, p. 30]

Dall and Bartsch (1907; 1909) furnished a detailed description of the species and illustrated the holotype.

**Dimensions.**—Holotype: length 7.7 mm.; diameter 4.4 mm. (Dall and Bartsch)

**Holotype.**—U. S. National Museum, no. 15517a
Distribution.—Neha Bay, Washington (type); Neha Bay, Washington, to San Diego, California (Burch)

Odostomia (Amaura) satata Carpenter


"Large, with swollen whirls [sic] like Bithinia similis." [Carpenter, 1864b, p. 658]

A copy of Carpenter's description (1865) was republished by Oldroyd (1927). The following should be changed in her copy:

Delete "poll."

Add:

"... div. 40°"

"Hab. Neha Bay; rare (Swan)"

"Var. pupiformis: anfr. primis valide depressis, planatis; vertice mammillato; anfr. ult. normali. Specimen unicum, quasi monstruosum. Long. '19, long. spir. '1, lat. '12, div. 45°."

[Carpenter, 1865a, p. 39]

Dall and Bartsch (1907; repeated 1909) presented a detailed description of the species. They included, with good reason, the "var," pupiformis Carpenter as an injured individual of the species. They figured the type of O. pupiformis in Arnold (1903) and the type of O. satata (1907; 1909).

The same U. S. Nat. Museum catalogue number applies to both O. satata and O. tenuiscutata. O. satata is labelled, "Neha Bay type Swan."

Dimensions.—Length 6.4 mm.; diameter 3.5 mm. (holotype) (Dall and Bartsch)

Holotype.—U. S. National Museum, no. 15520 (holotype, O. pupiformis, no. 15520a)

Distribution.—Recent, Neha Bay, Washington (type). Pleistocene. California (Dall and Bartsch in Arnold; Grant and Gale)

Odostomia (Ivara) terricula Dall and Bartsch

Odostomia (Ivara) terricula [turricula] Dall and Bartsch (1909, p. 179) was described by Dall and Bartsch in Arnold (1903, p. 285). The name was a manuscript one of Carpenter, and it was misspelled as terricula. Dall and Bartsch (1909) pointed out the typographical error, so the writer assumes that the corrected form might be authenticated. However, Dall (1921, p. 130) apparently decided that the original misspelling should stand for the specific name he so wrote it. Dall was followed by Oldroyd (1927, p. 173), Burch (1946, no. 61, p. 39), and Abbott (1954, p. 290). Keen (1937, p. 43) and Smith and Gordon (1948, p. 194) used "turricula." Such a dual usage is not a healthy condition in the taxonomy of the species, for error of interpretation and listing of two different species could easily creep into records. The most practical and least involved method of solving the problem is to return to the original spelling of the specific name. This has published sanction of one of the original authors. An original author, of course, has no more right to change his published name than any other author. However, in this case it does give an authoritative opinion.

Odostomia (Iolea) eucosmia Dall and Bartsch

Oscilla insculpta "Cpr.," Keep, 1887, West Coast Shells, p. 52

Odostomia (Iolea) eucosmia Dall and Bartsch, 1909, U. S. Nat. Mus., Bull. 68 p. 183,

Keep used a manuscript name of Carpenter, so that Carpenter cannot be credited with the name.

The above is a new name for that of Keep which was preoccupied when the species was transferred to Odostomia. Dall and Bartsch used specimens other than those of Keep for the type of their new name. They chose a specimen from Lower California. Again, as in the case of O. virginalis, a neotypic choice from the type area of Keep (California) would be more appropriate than from Lower California.

The type of Oscilla insculpta Carpenter ms. is in the Redpath Museum, no. 2371. The Carpenter type was discovered by the author in 1951. There are two specimens with the label, “Oscilla insculpta San Diego H H type.” Because Carpenter’s name is a nomen nudum and Keep’s is preoccupied the species is now known by Dall and Bartsch’s appellation. The Carpenter type has no value. Therefore, no figure of it is included in this report.

Genus Turbonilla Leach in Risso, 1826

Turbonilla Risso, 1826, Hist. Nat. Europe Merid., vol. 4, p. 224
The type designation of Gray (1847, p. 160) of Turbo elegantissima Montagu (1803, pt. II, p. 298) is valid only if that species is proven to be equivalent to T. costulata Risso. T. elegantissima Montagu is restricted to a northern distribution by modern workers (Winckworth, 1932, p. 227; Palmer, 1947, p. 228).

Subgenus Chemnitzia d’Orbigny, 1840

Chemnitzia d’Orbigny, 1840,129 in Webb and Berthelot’s Hist. Nat. Iles Canaries, p. 77
as subgenus of Melania
Type species by monotypy Chemnitzia campanellae (Philippi), 1836, Enum. Moll. Sicil., vol. I, p. 156, t. 9, fig. 5 as Melania; Recent. Sicily. Tryon, 1886, Man. Conch., vol. VIII, pl. 75, fig. 77

Turbonilla (Chemnitzia) muricata (Carpenter)

Chemnitzia muricata Carpenter, 1857, Cat. Mazatlan Shells, p. 428
Turbonilla (Strioburbonilla) muricata Carpenter, Dall and Bartsch in Arnold, 1903, p. 270
Turbonilla (Chemnitzia) muricata Carpenter, Dall and Bartsch, 1909, U. S. Nat. Mus., Bull. 68, p. 36, pl. 2, fig. 9; Grant and Gale, 1931, p. 866

The species was described from Mazatlan by Carpenter and has not been reported in the Recent fauna from the area of the scope of this report. Dall and Bartsch figured the type (1909). The notes herein are not intended to be complete. Arnold stated that the species occurred in the Pleistocene, “rare” in the lower Pleistocene (lower San Pedro) of San Pedro and Deadman Island, and common in the upper Pleistocene (upper San Pedro = Palos Verdes sand) of San Pedro and Los Cerritos, California. This distribution has been repeated by Grant and Gale.

Subgenus Bartschella Iredale, 1916

(Dunkeria Dall and Bartsch, 1909; not Carpenter, 1857)

Type species by original designation, Dunkeria subangulata Carpenter, 1857, Mazatlan Cat., p. 434. Recent. Mazatlan. Dall and Bartsch, 1909, U. S. Nat. Mus., Bull. 68, pl. 12, fig. 11 type


129 See Stearns (1937, p. 54) for dates of publication of Webb and Berthelot.
Turbonilla (Bartschella) laminata (Carpenter)


*Turbonilla laminata* (Carpenter), Tryon, 1866, Man. Conch., vol. VII, p. 338, pl. 76, fig. 51

*Turbonilla (Pyrgiscus) laminata* (Carpenter), Arnold, 1903, p. 277, pl. II, figs. 8, 8a Dall and Bartsch

*Turbonilla (Dunkeria) laminata* (Carpenter) Dall and Bartsch, 1909, U. S. Nat. Mus., Bull. 68, p. 120, 121, 122, pl. 12, figs. 16, 16a; Bartsch, 1912, U. S. Nat. Mus., Proc., vol. 42, no. 1906, p. 303, 326

*Turbonilla (Bartschella) laminata* (Carpenter), Dall, 1921, p. 127; Oldroyd, 1927, vol. 11, pt. II, p. 150; Grant and Gale, 1931, p. 872; Baily, 1935, West Coast Shells (Keep), p. 183, fig. 158 same as Dall and Bartsch; Keen, 1937, p. 48; Burch, 1946, no. 61, p. 34; Abbott, 1954, fig. 631 same fig. as Dall and Bartsch, 1909

"Subgenus of *Chemnitizia*, with rounded whorls: typical species. Aspect of *Fenella*, finely cancelled." [Carpenter, 1864, p. 659]

Oldroyd (1927) republished a copy of Carpenter's description (1865). The following should be changed in her copy:

Delete "poll", last line.
Add:

"... div. 20".

"Hab. Sta. Barbara (Jetcett); San Diego (Cooper).

"This beautiful Fenelloid species may be regarded as the type of the group *Dunkeria.*"

[Carpenter, 1865b, p. 396]

Dall and Bartsch presented a detailed description of the species and figured a specimen collected by Cooper at San Pedro, California, not the type locality.

*Dimensions.*—Length 6.6 mm.; diameter 2.1 mm. (Dall and Bartsch, specimen figured)

*Type.*—Not found

*Distribution.*—Recent, Santa Barbara or San Diego, California (type); Redondo Beach, California, to South Coronado Islands (Burch). Pleistocene. California (Arnold; Oldroyd, 1924; Willett, 1937); Mexico (Jordan, 1926)

*Subgenus Pyrgiscus* Philippi, 1841

*Pyrgiscus* Philippi, Archiv. Naturgesch., 7, Bd. 1, p. 50


Turbonilla (Pyrgiscus) castanea (Keep)

*Pyrgiscus* Philippi, Archiv. Naturgesch., 7, Bd. 1, p. 50


*Chemnitizia castanella* "Cpr." Keep, 1887, West Coast Shells, p. 52, fig. 33

Not *Turbonilla (Pyrgiscus) castanea* Dall and Bartsch, 1907, U. S. Nat. Mus., Proc., 33, no. 1574, p. 509, pl. XLVII, fig. 7 = *T. castanella* Dall, 1908, Nautilus, vol. 21, no. 10, p. 131

*Turbonilla (Pyrgiscus) castanea* (Keep), Dall and Bartsch, 1909, U. S. Nat. Mus., Bull. 68, p. 101, pl. 9, figs. 1, 1a not type; Bartsch, 1912, U. S. Nat. Mus., vol. 42, no. 1906, p. 303, 322

Keep apparently used a manuscript name of Carpenter for this species. But as Dall and Bartsch have shown, Keep only is responsible for the name. Dall and Bartsch described and illustrated a specimen from San Pedro collected by Oldroyd. This is not the type, as they indicated in the explanation of the plate (pl. 9, figs. 1, 1a). They explained that Keep's type which they had examined came from San Diego. Bartsch (1912, p. 322) recorded the Keep type in the U. S. National Museum.

Curiously Dall and Bartsch (1907) described a *Turbonilla (Pyrgiscus) castanea*. Therefore, when Keep's species was transferred to the category of *Turbonilla*, Dall and Bartsch's name became preoccupied. Dall consequently renamed their specific name, *T. castanella*. 
Turonilla (Pyrgiscus) tenuicula (Gould)

Chemnitzia crebrifilata Carpenter

(Pl. 21, fig. 20)

Chemnitzia tenuicula Gould, 1853, Boston Soc. Nat. Hist., Jour., vol. 6, p. 383-384, pl. 14, fig. 15; Dall and Bartsch, 1909, U. S. Nat. Mus., Bull. 68, p. 92, pl. 8, figs. 7, 7a, 12, 12a, 14, 14a (type of T. cuspidata Carpenter) including representative figures of Carpenter name; Grant and Gale, 1931, p. 870, see for additional synonymy

Chemnitzia cerebralis Carpenter, 1857, Mazatlan Shells, p. 432 fide Dall and Bartsch, 1909, p. 92

Chemnitzia unifasciata Carpenter, 1857, Mazatlan Shells, p. 433 fide Dall and Bartsch, 1909, p. 92

Chemnitzia (? tenuicula, var.) subcuspidata Carpenter, 1864b, p. 613, 659; Reprint, 1872, p. 99, 143 fide Dall and Bartsch, 1909; Cooper, 1867, Geol. Cat. Moll., Geol. Sur, California, p. 33

Chemnitzia subcuspidata Carpenter, 1866, California Acad. Sci., Proc. vol. III, p. 220


Turonilla (Pyrgiscus) crebrifilata (Carpenter), Dall and Bartsch in Arnold, 1903, p. 276, pl. 11, figs. 6, 6a fide Dall and Bartsch, 1909

Turonilla (Pyrgiscus) subcuspidata (Carpenter), Dall and Bartsch in Arnold, 1903, p. 277, pl. 11, figs. 2, 2a type fide Dall and Bartsch, 1909; Burch, 1946, no. 61, p. 32 under T. (P.) tenuicula Gould

Dall and Bartsch indicated in the synonymy of T. tenuicula Gould several Carpenter names. T. cerebralis and T. unifasciata are Mazatlan catalogue names, and the figuring of the types of those forms properly belong with the illustration of that catalogue. The holotype of T. crebrifilata (Santa Barbara) is in the Redpath Museum, no. 2363. That of T. tenuicula subcuspidata Carpenter is in the U. S. National Museum (no. 14829) and was figured by Dall and Bartsch (1903, Pl. II, figs. 2, 2a; 1909, pl. 8, figs. 14, 14a). It is a specimen collected by Cooper at San Diego. (See Carpenter, 1864b, p. 613, no. 106.)

"Ribs more distant, muricated at sutures." [Carpenter, 1864, p. 659 C. tenuicula var. subcuspidata]

"Slender, whitish; with 8 spiral threads passing over 24 ribs, evanescent round base." [Carpenter, 1864b, p. 659, C. crebrifilata]

"C. testa satis tereti, subalbida, haud regulari; anfr. nucl. ii., helicoides, decliviter sitis, margines spirae parum excurratos paulum superantibus; norm. VIII, quorum primi subrotundati, ultimi vix planati, suturei valde distinctis; cost. rad. circ. XXIV., subrectis, acutioribus, angustis, interdum attingentibus, anfr. ultimo crebrioribus minus expressis, circa basim prolongatam haud subito evanescentibus; lirulis spiralibus, in spira circ. VIII., rotundatis expressis, anfr. ult. supra costas subnodulosis, circa basim crebrioribus; peritrematim continuo; columnella vix torta, haud plicata; labio distinto. Long. .22, long. spir. .17, lat. .07, div. 18°.

"Hab. Sta. Barbara, 1 specimen (Jewett)." [Carpenter, 1865h, p. 395, C. crebrifilata]

". . . State Collection, no. 670; a.

"Ch. t. parva, minus tereti, cerina seu purpureo-fusca; anfr. nucl. ii. et. dimidio, valde decliviter sitis, marginiibus spirae parum excurratis superantibus; norm. viii. planatis, sutureis excavatis; costis radianibus circ. xviii, acutis, circa basim prolongatam vix continuis, ad suturas valde elevatis, subcuspidatis; interstiiis latioioribus undulatis; sulcis spiralibus creberrimis, altis, in spira circ. x, costas vix secantibus, circa basim impressis; peritrematim vix continuo, labio distinto; columnella vix torta.

"Long. 0.23, long. spir. 0.16, lat. 0.06, div. 25°.

"Hab. S. Diego; 25 dredged in shoal water. Cooper.

"Differs from the figure of Ch. tenuicula (which represents a shell with more numerous ribs than the diagnosis) in its more distant ribs with broader interstices; closer and deeper spiral sculpture; impressed sutures; and especially by the elegant murication of the tops of the ribs, with projecting, curved lines between. This is best seen in the young shells, when the ribs are distinct over the base." [Carpenter, 1866, p. 220, C. subcuspidata]

130 Substitute Carpenter for Gould in author's name (1909, explanation pl. 8, fig. 14). The same figure is in Arnold (1903, Pl. II, figs. 2, 2a labelled type); also indicated type in Dall and Bartsch (1909, p. 93) and Bartsch (1912, p. 321).
Arnold reported the Carpenter forms *T. crebrifilata* (San Diego) and *T. subcuspidata* from the Pleistocene of San Pedro and San Diego regions.

**Turbonilla** *(Pyrgiscus)* **virgo** (Carpenter)


**Turbonilla virgo** Carpenter, Tryon, 1886, Man. Conch., vol. VIII, p. 333 list only


“Very slender, with short, smooth base; 18 ribs, evanescent at periphery, and 8 spiral grooves.” [Carpenter, 1864b, p. 659]

Oldroyd (1927) republished Carpenter’s description (1865). The following should be changed in her copy:

Line 2: For “VII” read “VIII”; last line: delete “poll.”

Add:

“... div. 12º.

“Hab. Sta. Barbara, 1 specimen (Jewett).” [Carpenter, 1865b, p. 396]

The specimen in the U. S. National Museum, no. 73993, is labelled, “Sta. Barbara Stearns Coll. fig’d type unique”. The label in the bottle containing the specimen is “unique type”, in Carpenter’s handwriting. Hence the specimen is the “holotype”. However, Carpenter has a discrepancy in his choosing of the type. His description referred to Jewett as the collector. The writer, therefore, prefers to use the term lectotype in designating the true type representative of the species.

There is a slight and unimportant disagreement between the measurement of length in the text in Dall and Bartsch (1909, p. 94) and that stated in the explanation of the plate.

The species has been described in detail by Dall and Bartsch and the lectotype figured. *Lectotype.—U. S. National Museum, no. 73993

Distribution.—Santa Barbara, California (type)

**Subgenus Pyrgolampros** Sacco, 1892

*(Pyrgolamprus* Cossmann, 1921)


Type species by original designation, *P. mixperpitatus* Sacco, 1892, p. 669, pl. II, fig. 91.ortonian, Middle Miocene. Italy

**Turbonilla** *(Pyrgolamprus) aurantia* (Carpenter)

*Chemmitzia aurantia* Carpenter, 1864b, p. 537, 603, 659 (? var.); Reprint, 1872, p. 23, 89, 145; Cooper, 1870, Amer. Jour. Conch., vol. VI, p. 66; Smith and Gordon, 1948, p. 102 query Monterey record

*Chemmitzia chocolata var. aurantia* Carpenter, Cooper, 1867, Geog. Cat. Moll., Geol. Sur, California, p. 33 in part


*Turbonilla (Lancea) aurantia* (Carpenter), *Dall and Bartsch* in *Arnold*, 1903, p. 272


*Turbonilla (Pyrgolamprus) aurantia* (Carpenter), *Dall and Bartsch*, 1907, U. S. Nat. Mus., vol. 33, p. 502, pl. XLV, fig. 5 [lectotype]; *Dall and Bartsch*, 1909, U. S. Nat. Mus., Bull. 68, p. 60, 66 (duplicate of 1907), pl. 6, fig. 4 same as 1907; Bartsch, 1912, U. S. Nat. Mus., Proc., vol. 42, no. 1906, p. 302, 317; Dall, 1921, p. 123; Oldroyd, 1927, vol. 11, pt. 11, p. 123, pl. 1, fig. 4 [lectotype]; pl. 54, fig. 5 type, both same as *Dall and Bartsch*, 1907; 1909; Grant and Gale, 1931, p. 869; Keen, 1937, p. 48; Burch, 1946, no. 61, p. 5, 27; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, p. 192 queried Monterey record.
"Intermediate between the above: orange, base round; 26 ribs, striulate between." [Carpenter, 1864b, p. 659]

Oldroyd (1927) republished a copy of Carpenter's description (1865) of this species. To that copy the following lines should be added:

"... div. 20."

"Hab. Santa Barbara, Jewett.—Puget Sound, Kenmerley."

"Il est possible qu'on reconnaît plus tard que cette espèce est le jeune âge du Ch. tridentata: elle est intermédiaire entre elle et le Ch. chocolata." [Carpenter, 1865g, p. 148]

Dall and Bartsch (1907) gave and repeated (1909) a complete discussion of the shell of this species and figured the lectotype. The specimen (no. 4493b) is labelled "Puget Sound" and "Santa Barbara." Dall and Bartsch suggested that the specimen came from Puget Sound, as the species has not been reported south of there since Carpenter's and Cooper's time. Because of the discrepancy in the label, the writer uses the term lectotype and follows Dall and Bartsch in choosing Puget Sound as the proper locality. Dall and Bartsch referred (1907; 1909) to the specimen mentioned as "type," but it is listed by Bartsch (1912) as specimen.

There is still uncertainty, however, regarding this species, because Carpenter (1864b, p. 531, 603, 659; 1865g, p. 148) made particular mention that the species was found by Col. Jewett at Santa Barbara.

Dimensions.—Lectotype: length 5.8 mm.; diameter 2.4 mm. (Dall and Bartsch). [Expl. pl. XLV, 1907, length 6.2 mm, corrected elsewhere]

Lectotype.—U. S. National Museum, no. 4493b

Distribution.—Recent. Puget Sound, Washington (type); Departure Bay, Victoria, British Columbia and Puget Sound (Dall). Pleistocene. California (Arnold; Grant and Gale)

Turbonilla (Pyrgolampros) chocolata (Carpenter)


Turbonilla (Pyrgolampros) chocolata (Carpenter), Dall and Bartsch, 1909, U. S. Nat. Mus., Bull. 68, p. 60, 70, pl. 5, figs. 9, 9a; Bartsch, 1912, U. S. Nat. Mus., Proc., vol. 42, no. 1906, p. 302, 317; Dall, 1921, p. 124; Oldroyd, 1927, II, pt. II, p. 115, pl. 50, figs. 9, 9a same as Dall and Bartsch; Keen, 1937, p. 48; Burch, 1946, no. 61, p. 4, 27; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, p. 193; Abbott, 1954, fig. 63e same fig. as Dall and Bartsch, 1909

Turbonilla (Pyrgolampros) beryrri Dall and Bartsch, 1907, U. S. Nat. Mus., Proc., vol. 33, no. 1574, p. 500, pl. 44, figs. 10, 10a; Dall and Bartsch, 1909, U. S. Nat. Mus., Bull. 68, p. 69, pl. 6, figs. 5, 5a fide Smith in Burch, p. 27; Smith and Gordon, 1948, p. 193

Turbonilla (Pyrgolampros) painei Dall and Bartsch, 1909, p. 71, pl. 5, figs. 4, 4a fide Smith and Gordon, 1948, p. 193

"Same size and colour: not toothed: base prolonged: crowded ribs minutely striulate between." [Carpenter, 1864b, p. 659]

Carpenter's description (1866) was republished by Oldroyd (1927). The following should be changed in her copy:

Delete "poll."

Add:

"... State Collection, no. 428"

"... div 17°."

"Hab. S. Pedro, S. Diego, Monterey; rare. Cooper.

"One specimen, in Dr. Palmer's consignment, is known from Ch. tridentata by the very effuse spire, prolonged base, and crowded ribs without waved sculpture between." [Carpenter, 1866a, p. 220]
Dall and Bartsch described the species in detail and illustrated a specimen collected by Cooper from San Pedro that could well be chosen as a lectotype (no. 15315, U. S. National Museum).

Dimensions.—Length 14 mm.; diameter 3.6 mm (specimen figured by Dall and Bartsch)

Holotype.—Not found

Distribution.—Recent. San Pedro, San Diego, or Monterey, California (type): Monterey to Catalina Island, California (Burch). Pleistocene. San Diego (Cooper, 1888)

Turbonilla (Pyrgolampros) valdezi Dall and Bartsch

Turbonilla (Pyrgolampros) gibbosa “Carpenter” DALL AND BARTSCH, 1903, in ARNOLD, p. 279, pl. 1, figs. 2, 2a = *T. valdezi* DALL AND BARTSCH, 1907, U. S. Nat. Mus., Proc., vol. 33, no. 1574, p. 502, figs. 3, 3a same figure as in ARNOLD, 1903 = *T. valdezi* DALL AND BARTSCH, 1909, U. S. Nat. Mus., Bull. 68, p. 62, pl. 6 fig. 8 same figure as in ARNOLD (1903) and DALL AND BARTSCH (1907). Not Turbonilla gibbosa CARPENTER, 1857, Mazatlan Cat., p. 430 as Chemnitzia

Subgenus Mormula A. Adams, 1864


Turbonilla (Mormula) tridentata (Carpenter)


*Turbonilla tridentata* (Carpenter). TRYON, 1886, Man. Conch., vol. VIII, p. 333 list only

*Turbonilla (Lancea) tridentata* (Carpenter). ARNOLD, 1903, p. 273, pl. 11, figs. 1, 1a identification made by Dall and Bartsch


"Large, chestnut: 19–24 ribs, evanescent at periphery: waved interspaces with 8–10 spiral grooves: labrum with 3 teeth, hidden as in Obeliscus: base round." [Carpenter, 1864b, p. 659]

A copy of Carpenter’s description (1865) was republished by Oldroyd (1927). The following should be changed in her copy:

Line 2, read “pallidioribus” for “pall dioribus;” line 3, read “II” for “ii”; line 5, read “undatis” for “undates;” line 7, read “labro” for “labio;” line 8, read “.45” for “.43.”

Add:

“... div. 16”.

"Hab. Santa Barbara, Jevett.—Puget Sound, Kennerley.—Monterey, San Pedro, Cooper.

"Les trois dents de cette belle espèce, cachées tout à fait à l’intérieur de l’ouverture, comme dans plusieurs espèces du genre Obeliscus, ont été, pour la première fois, observées sur un individu cassé et roulé de Santa Barbara. Celui-ci a 22 côtes; celui de Monterey, 20; celui du nord, 19; et ceux de San Diego, 24." [Carpenter, 1865g, p. 147]

The type of this species is labelled "Type Monterey, Cal." It is, therefore, the third specimen mentioned by Carpenter and collected by Cooper.

Dall and Bartsch gave a complete description of the species and illustrated a shell from San Pedro. The holotype is figured herein.

Lectotype.—U. S. National Museum, no. 15315b

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131 Neave (1940, p. 219) gave the date as 1863. The volume examined is dated 1864.
**GASTROPODA**

**Distribution.**—Recent. Monterey, California (type); Monterey to San Diego, California (Dall). Pleistocene. California (Arnold; Grant and Gale; Willett, 1937)

Subgenus Strioturbonilla Sacco, 1892


Dall and Bartsch (1904; 1909) stated that the type of Strioturbonilla Sacco is T. alpina Sacco. They have been followed by such students as Cossmann (1921, p. 281) and Thiele (1929). Sacco designated as type S. sigmoidea (Jeffreys) in both his descriptions (1892).

**Turbonilla (Strioturbonilla) stylina** (Carpenter)

(Pl. 22, fig. 16)


Turbonilla (Strioturbonilla) torquata stylina Dall and Bartsch in Arnold, 1903, p. 272 in part fide Dall and Bartsch, 1909, pl. 1, figs. 10, 10a

Turbonilla (Turbonilla) stylina (Carpenter), Smith and Gordon, 1948, California Acad. Sci., Proc. ser. 4, vol. XXVI, no. 8, p. 192

“Like torquata, tapering less swollen in front, with more ribs, band less marked.” [Carpenter, 1864b, p. 659]

Oldroyd (1927) republished Carpenter’s (1865) description. The following should be changed in her copy:

Line 4: for “fascis” read “fascia;” last line; for “8” read “.8;” delete “poll.”

Add:

"... div. 10" "Hab. Sta. Barbara (Jewett); Monterey (Cooper)." [Carpenter, 1865h, p. 396]

There is a discrepancy as to the category of the illustration of this species in Dall and Bartsch.

The explanation in the text and of the illustration in regard to the specimen figured by Dall and Bartsch (1907) stipulated that the specimen was collected by Dall at Monterey and did not indicate that the shell was the holotype. Under the circumstances it could not be the holotype. The type was either collected by Jewett or Cooper. Dall and Bartsch later (1909) duplicated the text and figures of the discussion of this species, except that, in the explanation of Figure 11 of the plate, “type” is inserted. The specimen in the U. S. National Museum, no. 14829 is indicated as type. This is the specimen catalogued by Carpenter in the U. S. National Museum catalogue. It is labelled “Chemnitzia (? torquata var. stylina) type Monterey Cooper.” Another specimen in the Redpath Museum is labelled by Carpenter, “Chemn. (? var. stylina type St. Barbara.” The two syntypes, therefore, of the original description are accounted for. Because each was collected at a different locality, the writer designates no. 14829 U. S. National Museum as the lectotype.

Dall and Bartsch discussed the species thoroughly.

**Lectotype.**—U. S. National Museum, no. 14829; paratype, Redpath Museum, no. 5729

**Distribution.**—Recent. Monterey, California (type). Monterey, California, to Coronado Islands, California (Dall). Pleistocene. California (Cooper, 1888; Arnold; Grant and Gale; Oldroyd, 1937); Mexico (Jordan, 1926)
Family Siphonariidae

Genus Siphonaria Sowerby, 1823


Subgenus Liriola Dall, 1870

*Liriola* Dall, 1870, Amer. Jour. Conch., vol. VI, p. 32 as section; Dall, 1878, Jour. de Conchyl., vol. XXVI, p. 69


*Siphonaria (Liriola) thersites* Carpenter


“*Siphonaria Thersites*, n.s. Rare, dead. Like *tristensis* and other Cape Horn and N. Zealand types. The genus was not known north of Margarita Bay.” [Carpenter, 1864b, p. 627] “*Siphonaria Thersites*, n.s. Like *lateralis*: with strong lung-rib and obsolete sculpture.” [Carpenter, 1864, p. 647]

Oldroyd (1927) republished Carpenter’s description (1864). To make that copy complete the following should be added:

“*Hab. Neah Bay (Swan)*.

“This genus, which culminates in western tropical American and at Cape Horn, is not known in California. The Vancouver species resembles *S. lateralis* and its congeners, but differs in having an enormous lung-rib and no colour-rays.” [Carpenter, 1864b, p. 426]

The holotype of this species has not been found. The statement of Oldroyd that the type is in the U. S. National Museum is incorrect. Dall (1870) did not figure Carpenter’s type, but a specimen (U. S. National Museum, no. 60412) collected by him from Sitka, Alaska. This specimen does not qualify as lectotype because the type locality is Neah Bay. The specimen figured by Dall (1925) from Alaska (U. S. National Museum no. 55802) does not qualify for lectotype.

So far, as Hubendick points out, this species is the only northern cold-water species in the Siphonariidae. It can be readily distinguished from other members of the family provided the general locality of the specimen is known. Hubendick (1946) described the shell and anatomy.

Type.—Not found

Distribution.—Neah Bay, Washington (type); Aleutian Islands, to Strait of Juan de Fuca, Washington (and British Columbia) (Dall)

Genus *Williamia* Monterosato, 1884


Williamia peltoides (Carpenter)

(PI. 25, fig. 15, 16)


Nacella subsidialis Carpenter, 1864. See synonymy and discussion following.

Siphonaria peltoides (Carpenter), Dall, 1870, Amer. Jour. Couch., vol. VI, p. 37 not pl. 4, 11a, b = \textit{W. vernalis} (Dall), 1870 p. 37 in part

Liriola peltoides (Carpenter), Dall, 1878, Jour. de Conchyl., vol. XXVI, p. 70 in part


\textit{Williamia} peltoides (Carpenter), Dall, 1907, Nautilus, vol. 21, no. 8, p. 86; 1921, p. 67, pl. 15, figs. 10, 12 not type as stated by Dall; Oldroyd, 1927, vol. II, pt. II, p. 58, pl. 2, fig. 17 copy of Dall, 1921, pl. 12; Grant and Gale, 1931, p. 463; Baily, 1935, West Coast Shells (\textit{Keep}), p. 277; Keen, 1937, p. 50; Smith, Maxwell, 1944, Panama Marine Shells, p. 44; Burch, 1945, no. 48, p. 16; Smith and Gordon, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, p. 182; Hubendick, 1946, Kungl. Sv. Vet. Akademins, Handlingar, ser. 3, Bd. 23, no. 5, p. 72


Oldroyd (1927) republished Carpenter’s description (1864a). The following line should be added to make that copy complete:


Oldroyd, followed by Grant and Gale, stated that the type was in the Liverpool Museum which would mean that the shell (no. 262) of the Mazatlan Catalogue was considered the type.

Carpenter was explicit in his first notes (1864b, p. 545) that the species was “described from Cape St. Lucas specimens.”

The syntypes consist of two specimens in the U. S. National Museum, mounted on an original Carpenter glass mount and labelled in Carpenter’s handwriting, “Cape St. Lucas Xantus M. Cat. 262,” and two specimens in the Redpath Museum marked “type Cape San Lucas.”

The two specimens in the U. S. National Museum measure: length 4 mm.; 1.5 mm.; greatest diameter 3 mm.; 1 + mm., respectively. The Redpath Museum specimens measure: 4 mm. by 3.5 mm. by 2 mm.; 3 + mm. by 2.5 mm. by ? respectively.

Regardless of a note with the Carpenter types, “fig’d by Dall,” one cannot believe that those were the shells which Dall illustrated. Certainly the shell that he figured (1921, pl. 15, figs. 10, 12), which in the explanation of the plate (p. 216) is labelled as “type”, cannot be such a specimen. Dall’s measurements of “long. 10 mm., alt. 6.5 mm.” are nearly three times the typical measurements. The illustration of \textit{Williamia} labelled \textit{peltoides} which Dall included (1870, p. 1, 4, fig. 11a, b) could not be of the Carpenter type. Dall (1921) indicated that the specimen was \textit{W. vernalis}, which he regarded at the later date as distinct from \textit{W. peltoides}.

The syntypes were young individuals. The measurements which the writer made of the larger of the two approximate those of Carpenter (.14 by 25.3 mm. = 3.54 mm. long.; .11 by 25.3 mm. = 2.78 mm. lat.). The writer, therefore, selects the larger of the two syntypes as the lectotype of this species. The illustration is reserved for a later report. The Redpath paratypes also approach the typical measurements. A figure of the larger of the two specimens is included herein.

Dall stated (1870) “after a careful study of the types,” that \textit{Nacella subsidialis} Carpenter belonged to the same species as \textit{W. peltoides} as well as \textit{Nacella ? vernalis}. The name of the latter was given in manuscript by Dall (1866), but he later (1878) classified it as a variety of \textit{Liriola peltoides}. He later separated the two as distinct species (1921).

The paratypes in the Redpath Museum are thin-shelled. They have a few faint widely separated radiating ridges. The tip of the shell is white and the remainder brownish.
Types.—Lectotype and paratype, U. S. National Museum, No. 4023; paratype, Redpath Museum, No. 1156

Distribution.—Recent. Cape San Lucas, Lower California (type), Monterey, California to Gulf of California (Burch). Pleistocene. California (Grant and Gale; Woodring, Bramlette, and Kew, 1946)

Williamia petoides (Carpenter)

_Nacella subspiralis_ Carpenter = _Williamia petoides_ (Carpenter)


_Siphonaria petoides_ (Carpenter), Dall, 1870, Amer. Jour. Conch., vol. VI, p. 37, 38, 39

_Liriola subspiralis_ (Carpenter), Dall, 1878, Jour. de Conchyl., vol. XXVI, p. 70 under _L. petoides_


"? _Nacella subspiralis_. Cat. 1s, 10-20 fm. [May be the young of the long-lost Patella calyptra, Mart.; unless that be a broken Crepidula adunca]

"? _Nacella subspiralis_. n.s. shaped like Emarginula rosea, and may be a Scutellina. 10-20 fm. _Cp._ [Carpenter, 1864b, p. 630]

"? N. t. parva, carneae, lateri, tenuissima; vertice "Emarginulae" simulante, subspirali, sed apice patelloido, adunco; t. adulta valde elevata; margine laterali antico subrecto, apice projicente, valde remoto; postico maxima tornicato; aperturae margine antice et postice prolongato.

"Long. 0.26, lat. 0.19, alt. 0.20, div. 80°.

"Hab. Catalina Island, 10-20 fm., 4 dead. Cooper.

"This may be the young of the long-lost Patella calyptra, Mart. It may be a Scutellina. Even the genus cannot be predicted from the shell alone." [Carpenter, 1866a, b.]

Dall stated (1870, p. 38) that the type of this species was in the Smithsonian Institution, No. 11847. He made a careful study of the type and decided that it was an "abnormally elevated, dead and faded" shell of _W. petoides_.

The type of this form was once in the U. S. National Museum and catalogued as "Cat. Cp. 416a [in description] Catalina Id. Cooper. Type 1 spec."

Harald Rehder (Personal communication) stated that the specimen has since been lost.

Family _Ellinobidae_

Genus _Melampus_ Montfort, 1810


_Melampus olivaceus_ Carpenter


Carpenter described this species from Mazatlan, and therefore the figuring of the type belongs with the illustration of the catalogue of the Mazatlan Mollusca (Carpenter, 1857).

The type should be in the British Museum. In papers by Carpenter in the same year as the
description (1857) Carpenter reported the species from San Diego. Later he listed it from the same area, Santa Barbara group of islands, and Lower California.

**Distribution.**—Recent. Mazatlan, Mexico (type); Monterey, California to Mazatlan, Mexico (Dall). Pleistocene. California (Arnold; Grant and Gale; Willett, 1937; Woodring, Branlette, and Kew) Mexico (Jordan, 1926)

**Class AMPHINEURA**

Because Carpenter died before his large chiton monograph was completed, various manuscript names of that group crept into literature. Many were first introduced by Dall without proper diagnoses and in some cases with a manuscript name of the type species. Some of those names are now credited to Carpenter and some to Dall. Technically Carpenter should not receive credit, and there is grave doubt that Dall’s introduction of the names was adequate to establish him as author. See discussion under individual species.

Pilsbry carefully and explicitly explained in the “Preface” to the monograph of the Polyplacophora (1892, p. iv) that the types were Carpenterian in cases where the new species were credited to Carpenter, and the descriptions were quoted from his manuscript. Where the original description was that of Pilsbry, the types would be those of Pilsbry and would be in the Academy of Natural Sciences at Philadelphia. In the explanation of plates (1892, p. 334), acknowledgment of the work of Foord, Smith, and Emerton, prepared under Carpenter’s supervision, is a clue to what figures were of specimens in the Carpenter Collection. Specimens which were utilized by Pilsbry other than Carpenter individuals are indicated as drawn by Pilsbry or Ross.

Following the above rule the writer tried to analyze accordingly the matter of author and type credit of the Pilsbry-Carpenter chiton names. In some cases it is difficult to render a strict ruling. But in most cases Dr. Pilsbry’s distinction is apparent and defined. However, in no case where Carpenter ins. names are described for the first time in Pilsbry can Carpenter be the sole author as referred in Dall (1921, e.g. p. 190, “Stenoplax fallax Carpenter, 1892”). His references are misleading to workers not familiar with the literature and can cause unnecessary labor in hunting for such a reference. If Carpenter is to be credited, the less confusing is “Carpenter in Pilsbry.” or a similar modified form. The confusion of Carpenter manuscript names has been continued in recent literature, e.g., “Callistochiton Carpenter, 1882” (LaRocque, 1953, p. 12), “Nuttalina Carpenter, 1873” (LaRocque, 1953, p. 11), “Stenoradzia Carpenter, 1878,” “Placiphorella Carpenter, 1878,” and “Nuttalia Carpenter, 1879” (Abbott, 1954, p. 314). For the status of those manuscript names and others of Carpenter, see the list of Carpenter’s generic names in this monograph.

Many of the chiton types had been preserved for so long in a curved position that the measurement of length implies the dimension of the line which subtends the curvature of the specimen.

**Family LEPIDOPLEURIDAE**

**Genus Leptochiton** Gray, 1847


133 Smith and Gordon do not report it from Monterey.

134 This type designation, specific name without author, cannot be taken without reference to the original description or mention of the generic name. A type species designation must be one that was listed in the original description. Therefore, the authorship of *C. cinereus* rests upon Gray’s mention (p. 127) which is as follows: “Leptochiton cinereus. Chiton cinereus, Montague [sic] = Ch. asellus, Lowe, Zool. Jour. var. white, Chiton albus.” The difficulty which has arisen in the pronouncement of the type species of this genus is in the interpretation of the above paragraph. If Gray regarded the first mention of *L. cinereus* as of Linnaeus (1767, p. 1107) then Linnaeus would be assumed as author (p. 168), and *C. cinereus* L. would be the type species of *Leptochiton*. The genus would be different than that assumed by present West Coast workers. The other interpretation would be as Gray stated in the
C. cinereus Linnaeus]. Recent. Circumboreal. Northern Europe; Greenland to Massachusetts Bay; Arctic Ocean to San Diego, California

For the differences between "Lepidopleurus asellus (Spengler)" and "Trachydermon cinereus (Linnaeus)," see Christiansen (1954).

"Lepidochiton crassus Carpenter" nom. nudum

There is a specimen in the Redpath Museum (no. 11) labelled by Carpenter "Lepidochiton crassus Cpr. 'unique type' S. Diego under rocks in sand extreme low tide Hemphill."

The writer has found no reference to such a species in literature. It apparently applied to a species which Carpenter intended to describe.

**Lepidochiton internexus** Carpenter *in* Pilsbr

(Pl. 28, figs. 3-6)


*Lepidochiton internexus* (Carpenter), Dall, 1878, U. S. Nat. Mus., vol. I, p. 316, 319;

Smith *in* Burch, 1947, no. 66, p. 5; Burch, 1947, no. 66, p. 17.

*Lepidopleurus* (*Lepidochiton*) *internexus* ("Carpenter"), Baily, 1935, West Coast Shells (Keep), p. 28.

Pilsbr used Carpenter's *ms.* name for this species and quoted Carpenter's description. Therefore, the holotype is that of Carpenter. It is in the U. S. National Museum and figured herein for the first time. The type has the label, "Cp. 1080 P. P. Carpenter Type." The species, however, should not be credited to Carpenter alone as it has been. 135

Oldroyd (1927) republished the original description from Pilsbr.

**Dimensions.**—Length (tangent to arc) 4.5 mm.; width 3+ mm. (type)

**Holotype.**—U. S. National Museum, no. 30750

**Distribution.**—Santa Barbara, California (type); Belkofski, Alaska, to San Diego, California (Dall)

**Lepidochiton nexus** Carpenter

(Pl. 28, fig. 2)


*Lepidopleurus* (*Xiphozona*) *nexus* Carpenter, Baily, 1935, West Coast Moll. (Keep), p. 28

"Like asellus; scarcely sculptured: mantel-margin with striated chaffy scales, like *Magdalenis*, interspersed with transparent needles. 20–80 mm. *Cp.*" [Carpenter, 1864b, p. 650]

First writing of the name. *C. cinereus* Montagu [not Linnaeus] = *C. albus* [Linnaeus, 1767]. This is the interpretation followed herein and by modern West Coast students (not Dall, 1921).

135 It is confusing to use the expressions as in Dall (1921, p. 186, 190, 191, 192, 194, 196) "Carpenter, 1892" and "Carpenter, 1878" meaning "Carpenter *in* Pilsbr, 1892" and Carpenter *in* Dall, 1878." Since Carpenter died in 1877 there are no publications by him of those dates. To persons not familiar with the history of the literature of West Coast chitons such references may entail needless work.
Pilsbry (reprinted by Oldroyd, 1927) published a translation of Carpenter’s detailed Latin description (1866). The lines not included by Pilsbry are:

"Long. 0.30, lat. 0.18; div. 90°.
"Hab. Catalina Island, 10-20 fms. Cooper."

"The appearance of this northern genus among the Mopaliae and Ischnochitonidae is very remarkable; as is the character of the mantlemargin." [Carpenter, 1866, p. 213]

The holotype has a printed label, “Type Cataline Id. Cooper.” The posterior and anterior plates (one broken) are separate from the remainder of the specimen which is intact. The surface has fine striae. The sides are mottled, but there is lack of color down the middle. The beaks are slightly pointed.

**Holotype.—** U. S. National Museum, no. 16270

**Distribution.**—Recent. Catalina Island, California (type), Catalina Island, to Gulf of California (Dall). See Table 2 for stratigraphic distribution.

**Leptochiton rugatus** (Pilsbry)

(Pl. 28, fig. 7; Pl. 35, fig. 3)


According to the indication of the original description this species should be credited to Pilsbry, and the types are those (three) in the Academy of Natural Sciences at Philadelphia.

The label with the three syntypes reads, “near San Tomas River L. Cal. H. Hemphill” (Pilsbry, May 15, 1951, personal communication). Material consisting of five specimens and an extra plate in the U. S. National Museum is labelled “Type San Diego H. Hemphill (Todos Santos).” The specimen is figured herein. However, the specimens defined as types by Pilsbry in the Academy of Natural Sciences are the true types. The species was figured by Pilsbry.

**Syntypes.**—Academy of Natural Sciences, Philadelphia, no. 35586

**Distribution.**—Near San Tomas River, Lower California (type); Monterey, California, to Todos Santos Bay, Lower California (Pilsbry)

**Family Lepidochitonidae**

**Genus Lepidochiton** Gray, 1821

*(Crasspedochilus Sars, 1878)*


Type species by monotypy, *Chiton marginatus* [Pennant], 1777, British Zool., vol. IV, p. 60, pl. 36, fig. 2. Recent. Northern Europe

Pilsbry (1892, p. 69) referred *C. marginatus* Pennant (and of other British authors) to *Ischnochiton* (Trachydermon) cinereus Linnaeus (Committee Conch. Soc., 1901, Jour. Conch., vol. X, p. 10).

**Genus Cyanoplax** Pilsbry, 1892

*Cyanoplax* Pilsbry, 1892, Man. Conch., vol. XIV, p. 40

Type species by original designation, *Cyanoplax hartwegii* (Carpenter), 1855, Zool. Soc. London, Proc., p. 231. Living. Forrester Island, Alaska, to Gulf of California. (pl. 27, figs. 8-10; pl. 28, figs. 8-15)

See discussion of *Trachydermon* Carpenter, 1864, under *Basiliochiton* Berry.
Cyanoplax hartwegii (Carpenter)
(Pl. 27, figs. 8-10; Pl. 28, figs. 8-15)


Chiton (Chactopleura) hartwegii Carpenter, DALL in ORCUTT, 1886, U. S. Nat. Mus., Proc., vol. 8, p. 544

Tonicella (Cyanoplax) hartwegii (Carpenter). PILSBRY, 1892, Man. Conch., vol. XIV, p. 45, pl. 14, figs. 81-85; BAILY, 1935, West Coast Shells (Keep), p. 29


Lepidochiton (Cyanoplax) hartwegii (Carpenter), THIELE, 1929, Handbuch, Teil I, p. 8

Oldroyd (1927) furnished a copy of the original description as well as the supplementary notes by PILSBRY. The following lines should be added to the copy of Oldroyd to make that copy complete:

"Long. 1.26, lat. .76, alt. .18 poll.


"A much smaller shell than the last, almost destitute of sculpture; with a blackish spot on each side of the jugum, but no radiating lines." [Carpenter, 1855, p. 231]

There are three units (1 small complete specimen; 1 of 8 separate plates; 1 of 3 plates off + 5 intact) of specimens in the Redpath Museum labelled in Carpenter's handwriting on his glass mount. The label is as follows: "? C. Hartwegii Cpr. type Monterey H. Cuming."

The black or brownish patches on each side of the jugum mentioned by Carpenter are conspicuous on the syntypes. In the small young specimen the blackish patches meet irregularly in the center.

Syntypes.—Redpath Museum, no. 68

Distribution.—Recent. Monterey, California (type); Forrester Island, Alaska, to the Gulf of California (Dall). Pleistocene. California (Berry: Chace and Chace)

Cyanoplax hartwegii nuttalli (Carpenter)
See C. hartwegii (Carpenter)
(Pl. 27, fig. 11)


Tonicella (Cyanoplax) hartwegii nuttalli (Carpenter), PILSBRY, 1892, Man. Conch., vol. XIV, p. 46


Cyanoplax hartwegii nuttalli (Carpenter), SMITH AND GORDON, 1948, California Acad. Sci., Proc., ser. 4, vol. XXVI, no. 8, p. 203 young of C. hartwegii

Part of the original description was republished by Oldroyd (1927). The following lines should be added to make that copy complete:

"A small specimen in Mr. Cuming’s collection was passed over as the young of C. Hartwegii; but a fine one in Mr. Nuttall’s collection distinctly displays the points of difference above indicated, which at present appear of specific value. This specimen has much the appearance of a young Ch. articulatus, but differs essentially in the character of the ligament." [Carpenter, 1855, p. 232]

G. L. Wilkins (personal communication, October 17, 1950) obligingly furnished the following information in regard to possible type specimens in the British Museum:

“We have a specimen of Chiton nuttalli Carpenter. Were it not for the fact that it is marked ‘Mus. Cuming’ it might well have been the small specimen as ‘passed over’ on p. 232 P.Z.S. 1855. It is too small for the type. The locality is given as ‘Santa Barbara’—perhaps a paratype?”

Since the small specimen “passed over” should be from “Mus. Cuming,” the specimen referred to by Wilkins could possibly be the one mentioned by Carpenter. The locality does not correspond to what might be intended by Carpenter in the description. The only reference to “Santa Barbara” by Carpenter is to the “Santa Barbara group of islands (1864b, p. 649; 1872, p. 135)

Smith and Gordon (1948, p. 205) expressed the opinion that this form is the young of C. hartwegii.

The included photograph of the holotype has been co-operatively furnished by the officials of the British Museum (Natural History), G. L. Wilkins of the Mollusca Section, ferreted out the specimen and described its status and measurements (Personal communication, March 2, 1951 and July 10, 1951).

**Holotype.—**British Museum (Natural History), 61.5.20.102

**Distribution.—**Monterey, California (type)

**Cyanoplax dentiens** (Gould)


*Ischnochiton pseudodentiens* Carpenter, 1864b, p. 530, 606 = *C. dentiens* Gould type; Reprint, 1872, p. 16, 92


*Trachydermon pseudodentiens* Carpenter, 1864b, p. 649 = type of *C. dentiens*; Reprint, 1872, p. 135; Cooper, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 22

*Ischnochiton (Trachydermon) dentiens* (Gould), Pilsbry, 1892, Man. Conch., vol. XIV, p. 73, pl. 8, figs. 61–65

*Lepidochitona dentiens* (Gould), Dall, 1921, p. 188; Burch, 1947, no. 66, p. 18

*Cyanoplax dentiens* (Gould), Berry, 1948, Leaflets in Malacology, vol. 1, no. 4, p. 13, 14

Carpenter was explicit in explaining that his name *I. pseudodentiens* was created for the type of Gould’s *Chiton dentiens*. Therefore, there is no question as to the synonymy of Carpenter’s name with the earlier of Gould. As Pilsbry (1892) explained Gould had mistaken spots for denticles. Carpenter noted the fact and supposed a new name was required.

The type of “Chiton dentiens” Gould is in the U. S. National Museum, no. 5824. Two other suites of supplementary material of the species, which were labelled by Carpenter in connection with his name *pseudodentiens*, are labelled types in the U. S. National Museum.

A complete synonymy or discussion of *C. dentiens* (Gould) is not intended in this report.

**Genus Nuttallina** Dall, 1871


Type species by monotypy, *N. scabra* (Reeve) Carpenter = *Chiton Californicus* [Nuttall, ms.] Reeve, 1847, Conch. Icon., vol. IV, *Chiton*, pl. XVI, fig. 89. Living, Strait of Juan de Fuca to San Diego, California. Pilsbry, 1892, Man. Conch., vol. XIV, pl. 54, figs. 23, 25, pl. 56, figs. 12–18

**Nuttallina fluxa** (Carpenter)

(Pl. 28, figs. 16–19)

*Chiton scaber* Reeve, 1847, Conch. Icon., vol. IV, *Chiton*, pl. XVII, fig. 106. Not *Chiton scaber* Blainville, 1825

Nuttalina scabra (Reeve), Pilsbry, 1892. Man. Conch., vol. XIV, p. 281 in part, pl. 54, figs. 21, 22, pl. 56, figs. 19, 20

Nuttalina fluxa (Carpenter), Dall, 1921, p. 190; Oldroyd, 1927, vol. II, pt. III, p. 264; Smith, in Burch, 1947, no. 66, p. 18

“Green, mottled with orange-red; not beaked; with only marginal and diagonal ribs.” [Carpenter, 1864, p. 649]

“At. “A scabrae” simili, sed lattiore, pallidiore; viridi, rubroaurantio conspersæ; valvis rectangulatis; suturis marginalibus haud conspicuis; areis diagonalibus satis distinctis; radiis obtusi fluxis ii., altera diagonali, altera suturali; tota superficie conspicue granulosa; granulis acutioribus praesertim albidus; jugo obtuso, vix vallato: laminis insertionis ut in A. scabra instructis.

“Long. 0.60, lat. 0.40, div. 110°.

“Hab. Santa Barbara Island, Cooper”

“Foot, in the only dried specimen seen, extremely thin, flat, and narrow.” [Carpenter, 1866a, p. 211]

The holotype in the U. S. National Museum consists of one specimen with three plates removed. It is labelled “Nuttalina fluxa Cpr. = N. scabra Rve (Type) Sta. Barbara Cooper.” Another label which is crossed off reads, “Acanthopleura fluxa Cpr. Type Sta. Barbara Cooper.”

Oldroyd republished the parts of the notes by Pilsbry in regard to N. californica [Nuttall] (Reeve) and N. scabra Reeve and this species.

Holotype.—U. S. National Museum, no. 15690b

Distribution.—Santa Barbara Islands, California (type); Point Conception, California, to Gulf of California (Dall)

Family Chaetopleuridae

Genus Chaetoleura Shuttleworth, 1853

Chaetoleura Shuttleworth, 1853, Mitt. naturf. Ges. Bern, p. 190


Chaetoleura beanii (Carpenter)


This species was described by Carpenter from Mazatlan. The types (1 specimen and 2 valves) should be in the British Museum (Natural History). The figuring of the species belongs with the illustration of the types of the Mazatlan Catalogue and is not included herein. The brief discussion is inserted because the range of the species has been extended to Unalaska, Alaska (Dall).

Chaetoleura gemma “Dall”, Pilsbry

(Pl. 29, figs. 1-4; Pl. 30, fig. 6)


This species is another of which the radula only was described first by Dall. He used the manuscript name of Carpenter as did Pilsbry later (1892). Pilsbry, however, gave a
complete description and drawing of his own using one of Emerton’s illustrations which had been supervised by Carpenter.

Whether the specific name dates from Dall (C. gemma) or Pilsbry (C. gemmea), the original Carpenter types can be used as syntypes. The Emerton drawing was probably of the type. Five specimens in the Carpenter Collection in the Redpath Museum are on the original glass mounts with a Carpenter label, “type Monterey Canfield.”

There are also in the Redpath Museum (no. 71) two specimens labelled “Chaetopleura gemma var. limata type Monterey Canfield (comp. lanuginosus).” There is no record of publication of this varietal name.

Syntypes.—Redpath Museum, no. 49

Distribution.—Recent. Monterey, California (type); Monterey, to Magdalena Bay, Lower California (Dall). Pleistocene. California (Berry)

Chaetopleura parallela (Carpenter)


Chaetopleura lurida parallela (Carpenter), Pilsbry, 1892, Man. Conch., vol. XIV, p. 34, pl. 12, fig. 50


The original description of this species was republished by Oldroyd (1927).

Corrections to be made in her copy are: last line: read “disjunctis” for “disjectus”; read .7 for 7; .48 for 48; .16 for 16. Add: “Belongs to the group with minute setose scales.”

This species was described from Cape San Lucas, Lower California. A specimen (one complete and separate plates) in the U. S. National Museum is labelled “cotype.” There is also a specimen in the Carpenter Collection, Redpath Museum, on an original glass mount with a Carpenter label, “type C. S. Lucas Xantus ? = Columbiensis.”

Since the types belong to the Lower California fauna the illustrations will be included in the report of these types.

Syntypes.—U. S. National Museum, no. 4017; Redpath Museum, no. 46

Distribution.—Cape San Lucas, Lower California (type); San Diego, California, to Cape San Lucas, Lower California (Dall); West Colombia (Burch)

Chaetopleura prasinata (Carpenter)


Chaetopleura lurida Sowerby var. prasinata (Carpenter), Pilsbry, 1892, Man. Conch., vol. XIV, p. 34


Oldroyd (1927) furnished a copy of the original. Corrections to be made in her copy are: read .8 for 8; .4 for 4; add “div. 125°.”

The holotype has a label “Cape San Lucas type (= lurida Sby var.).” It is composed of separate plates.

The illustration of the holotype will be included in the report on the types of Carpenter species which occur below San Diego, California.

Holotype.—U. S. National Museum, no. 15892

Distribution.—Cape San Lucas, Lower California (type); San Diego, California, to Cape San Lucas (Dall)

Subgenus Pallochiton Dall, 1879

(Hemphillia Carpenter, ms.)


Type species by monotypy, P. lanuginosus [Carpenter, ms.] Dall, 1879, U. S. Nat. Mus.,
Proc., vol. 1, p. 297. Recent. San Diego, California, to San Ignacio Lagoon, Lower California. (pl. 27, fig. 7)

The authorship and date of the establishment of the above generic name is involved in the same technicality as that of the type species. In the first reference cited Dall used several of Carpenter's manuscript names, both generic and specific. In the case of the specific names he described only the dentition of the radula. If this case can be construed as belonging under Article 27, Int. Rules of Zoological Nomenclature, the names so introduced by Dall (1879) are available. *Pallochiton* would date from Dall, 1879, because the name of its monotype is validated at the same time. Dall, 1882, is usually given for *Pallochiton*. If the validity of *Pallochiton* and *P. lanuginosus* is not accepted as of Dall, 1879, then the same names would date from Dall, 1882, the generic and specific description being synonymous.

*Pallochiton lanuginosus* "Dall"

*Pallochiton lanuginosus* Pilsbry

(Pl. 27, fig. 7)

*Hemphillia lanuginosa* Carpenter, ms.  


*Chaetopleura* (*Pallochiton*) *lanuginosus* [sic] Pilsbry, Burch, 1947, no. 66, p. 18; 1947, no. 68, p. 5

If the description and figure of the radula by Dall in 1879 validate the specific name in the case of *Ischnochiton cooperi*, *Chaetopleura gemma*, and *I. regularis*, as intimated by authors (Burch, 1947; Smith and Gordon, 1948) then the specific name of this species should date from Dall, 1879, also. In this case Dall used Carpenter's manuscript name and probably studied Carpenter's notes. Dall did not specify a type. Dall (1882), in an indirect description of *Pallochiton*, presented details of the species, *P. lanuginosus*.

There are in the Carpenter Collection in the Redpath Museum five specimens on original glass mounts with a Carpenter label "Hemphillia lanuginosus Cpr. type Todos Santos Bay Lower California H. Hemphill." An illustration of one of those complete types which reveals the beautiful sculpture is included herein.

The note in Oldroyd that the type is in the U. S. National Museum is incorrect.

Pilsbry (1892) presented a complete description of the species and used drawings made by himself as well as drawings which had been supervised by Carpenter. Pilsbry (Personal communication, May 15, 1951) considered that his description was the first and selected the specimen of Figure 4 of Plate 56 of his original illustrations as the lectotype. His types are from Pt. Abreojos, Lower California, and are in the Academy of Natural Sciences.

The several species, the names of which were published by Dall (1879) in connection with the dentition only, cannot be identified by Dall's remarks. For value to workers the authority should date with Pilsbry, 1892.

*Types.*—Synotypes: Redpath Museum, no. 66 (of Dall); lectotypes and paratypes: Academy of Natural Sciences, Philadelphia, no. 35684 (of Pilsbry).

*Distribution.*—Todos Santos Bay, Lower California (type, Dall); Pt. Abreojos, Lower California (type, Pilsbry); San Diego, California, to San Ignacio Lagoon, Lower California (Dall)

It is not correct, as in A. Smith (1955, p. 12) to use the species as of Pilsbry with the type locality of Dall. If the authorship is of Pilsbry the type locality is Pt. Abreojos, Lower California. The type locality of Todos Santos Bay applies only if Dall is used as the author.

Family *Ischnochitonidae*

*Genus* *Ischnochiton* Gray, 1847

Type species by subsequent designation, Gray, 1847, Zool. Soc. London, Proc., p. 168,

**Ischnochiton newcombi** Carpenter in Pilsbry

*(Pl. 30, figs. 1-5)*


Carpenter's manuscript name and description were published by Pilsbry. The holotype is figured herein for the first time. The type material consists of two specimens in the Carpenter Collection in the Redpath Museum. They are on an original Carpenter glass mount with his label, "type Catalina Is. Newcomb." There is, however, a mixture of specimens, and the two individuals do not represent the same species. Both have different sculpture. Figures 1-5 represent *I. newcombi*. There are microscopic granulations present on the central area of the valves which do not appear in the figures. The second specimen (pl. 30, fig. 6) is a worn *Chaetopleura gemma* Carpenter in Pilsbry.

**Holotype.**—Redpath Museum, no. 19

**Distribution.**—Catalina Island, California (type)

**Ischnochiton scabricostatus** (Carpenter)

*(Pl. 30, figs. 10-12)*


The holotype (1 specimen, posterior and anterior plates, free) in the U. S. National Museum is figured herein. Since up to Pilsbry's time only one specimen had been found, his drawings (1893) are presumably of the type plates. Pilsbry published (1892) a translation of Carpenter's (1866) Latin description and presented further details of description and corrections (1893). Oldroyd republished a copy of Carpenter's original description and a copy of Pilsbry's translation.

The following should be added to the copies of the description of 1866 to make those notes complete:

"Hab. Catalina Island: 10-20 fm., Cooper." [Carpenter, 1866, p. 212]

The specimen (U. S. Nat. Mus.) is labelled "Type Catalina Is. Cooper."

**Holotype.**—U. S. National Museum, no. 16268

**Distribution.**—Catalina Island, California (type): San Pedro and Catalina Island, California, to Cerros Island, Lower California (Dall)

**Ischnochiton veredentiens** Carpenter

*(Pl. 29, figs. 9-14)*


The original description of this species and the Latin description (1866) as well as Pilsbry's translation of Carpenter's description were republished by Oldroyd. The holotype is figured for the first time herein. It was no. 518a (bis) of the old California State Collection. This number was a duplicate number, as Carpenter discovered. Carpenter's label of "Ischnochiton subexpressus Cpr. type = scabricostatus Cooper no. 518a" was apparently the original 518a of Cooper's numbering.
The following line should be added to Oldroyd’s copy of Carpenter to make the copy complete:

“Hab. Catalina Island, 20-30 ft., Cooper.” [Carpenter, 1866a, p. 211]

The holotype consists of separate plates. They are labelled “Catalina Isl. type Cooper.”

Holotype.—U. S. National Museum, no. 16259

Distribution.—Catalina Island, California (type)

Subgenus Stenoplax Dall, 1879


Pilsbry, 1892, Man. Conch., vol. XIV, pl. 16, figs. 9–16

Ischnochiton (Stenoplax) acrior Pilsbry

Ischnochiton (Stenoplax) acrior Pilsbry, 1892, Man. Conch., vol. XIV, p. 61, pl. 14, figs. 86–89 section Stenoradzia; Dall, 1921, p. 190 credited to Carpenter; Oldroyd, 1927, vol. II, pt. III, p. 268 credited to Carpenter and Pilsbry

The specific name in this case was a manuscript name of Carpenter used by Pilsbry, but the description and holotype were of Pilsbry. Credit should be to Pilsbry. It is included herein only for completeness in references to Carpenter’s names.

Holotype.—Academy of Natural Sciences, Philadelphia, no. 35702

Distribution.—Recent. Point Abreojos, Lower California (type, from label with type, Academy of Natural Sciences, Philadelphia); San Miguel Island, California, to Gulf of California (Dall). Pleistocene. California (Berry, 1922)

Ischnochiton (Stenoplax) conspicus “(Dall)” Pilsbry

(Pl. 35, figs. 1, 2)


Chiton (Maugerella) conspicua “Cpr.,” Dall in Orcutt, 1886, U. S. Nat. Mus., Proc., vol. 8, p. 544 name only


Ischnochiton (Maugerella) conspicus (Carpenter), Stearns, 1901, Nautilus, vol. 15, no. 5, p. 53


Ischnochiton (Stenoradzia) conspicus Carpenter, DAILY, 1935, West Coast Shells (Keep), p. 29

“Minor lateral bila-tate, top of inner wing and shaft bent into a twisted cusp with a small process extending outward from the apex of the shaft; major lateral tridentate, shaft with a keel and cuspitate process.” [Dall, 1879, p. 296 dentition]

Whether this species must be credited to Dall or to Pilsbry is a technical question. Certainly Carpenter is not the author, for both Dall and Pilsbry used Carpenter’s name. Dall (1879) first used the name as that of the type species of Maugerella, also a ms. name of Carpenter’s. Dall described and figured only the dentition of the radula of the species. Pilsbry gave a detailed description of the shell and illustrated the same with several drawings, two of which were made for Carpenter.

If Pilsbry is regarded as the author the holotype of the species is no. 35709. Academy of Natural Sciences, Philadelphia, collected by Henry Hemphill from San Diego. It is probably the specimen figured by Pilsbry (pl. 15, figs. 91–93, 96).

136 Not 35704 as in Oldroyd (1927, p. 270).
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However, if Dall's prior remarks have precedent, a lectotype should be selected. Though Dall used Carpenter's manuscript notes for the major details of his paper (1879), he probably did not have Carpenter's type of the species in his study of the dentition. Carpenter's type remained at the Redpath Museum where it is now. There is one specimen of eight separate plates labelled by Carpenter, "original type" of *Mangerella conspicua* from La Paz collected by Pease. There are also 11 fine complete specimens labelled "type normal San Diego Hemp-hill Sta. Barbara Cooper (= *magdalensis*, var. *subobsoleta* B.A. Rep.)." Unfortunately the last label is of little value in determining a specific locality. There apparently is no type designated by Dall in existence, so that the Carpenter specimen is the logical shell to become the lectotype for the species of Dall's authorship. This selection would automatically change the type locality from San Diego to La Paz.

Illustration of a Carpenter specimen is included herein for completeness. The plates of the specimen are pinkish and purplish beneath the jugum.

Pilsbry included the Carpenter ms. description and drawing of a "variety solidus" (1892, p. 64, pl. 15, fig. 97) of a worn specimen which he regarded only as an individual variation.

**Types.—**Redpath Museum, no. 65 (Dall); Academy of Natural Sciences, Philadelphia, no. 35709 (Pilsbry)

**Distribution.—**Recent. La Paz, Lower California, or Upper California (type, Dall); San Diego, California (type, Pilsbry). Monterey, California, to Gulf of California (Dall). Pleistocene. California (Berry; Chace and Chace; Chace)

**Ischnochiton (Stenoplax) corrugatus** Carpenter in Pilsbry  
(Pl. 29, figs. 5–8)


Carpenter's manuscript name and description were utilized by Pilsbry (1892), who had not at that time seen a specimen of the species. The holotype is figured herein for the first time. It is in the Carpenter Collection in the Redpath Museum and has the following original Carpenter label, "type Catalina Is. 40 ins. 1070 Cooper no. 1068."

**Holotype.—**Redpath Museum, no. 37

**Distribution.—**Catalina Island, California (type); Catalina Island, to Todos Santos Bay, Lower California (Dall)

**Ischnochiton (Stenoplax) fallax** Carpenter in Pilsbry  
(Pl. 29, fig. 15)


Pilsbry, as he stated, used Carpenter's manuscript description and the drawing of the holotype (1892). The holotype is in the Carpenter Collection, Redpath Museum. It bears the label, "Stenoplax fallax type Bodegas¹³⁸ Newcomb." The type material consists of one specimen.

Stearns (1868, p. 382) described the area of Bodega Bay where he and Newcomb made a collecting trip in 1867. No. 34 of the list of species is "Trachydermon fallax, Cpr. (mss.)."

**Holotype.—**Redpath Museum, no. 64

**Distribution.—**Recent. Bodega [Bay], California (type); Vancouver Island, British Columbia to Todos Santos Bay, Lower California (Dall). Pleistocene. California (Berry)

¹³⁷ The statement concerning the location of the holotype in Oldroyd (p. 279) is incorrect. ¹³⁸ Spelling should be corrected in Palmer (1945, p. 101) to read "Bodegas" instead of "Brodegas."
Subgenus Lepidozona Pilsbr, 1892

Lepidozona Pilsbr, 1892, Man. Conch., vol. XIV, p. 55, 125


Ischnochiton (Lepidozona) aureotinctus Carpenter in Pilsbr

(Pl. 31, figs. 1-4)


Carpenter’s manuscript name and description were used by Pilsbr (1892). The holotype is in the Carpenter Collection in the Redpath Museum. It is on the original Carpenter glass mount and bears the label “type Catalina Is. 80 fms. Cooper 1071a.” The 1071a refers to the catalogue number of the old California State Collection. There is a discrepancy in Carpenter’s label and writings. In the description of “Lepidozona nertensis” Carpenter (1866, p. 212) wrote “State Collection, 1071a,” which is the same number he copied on the label of the holotype of Ischnochiton aureotinctus. The holotypes of both species, respectively, are figured herein for the first time.

The holotype is a poor specimen and inadequate for identification. It consists of four plates and a bit of the girdle. They are light orange with no sculpture except possibly microscopic pustules. It does not have the coarser striations of I. nertensis.

Holotype.—Redpath Museum, no. 26

Distribution.—Catalina Island, California (type); Catalina Island, 80 fathoms, to Cerros Island, Lower California (Dall)

Cf. Ischnochiton (Lepidozona) californiensis Berry

I. pectinatus Carpenter

(Pl. 31, figs. 5, 6)

? Ischnochiton (Lepidopleurus) pectinatus Carpenter, 1864b, p. 612; Reprint, 1872, p. 98. “Cat. Is., beach.”

Not Chiton pectinatus Sowerby, 1840 = Ischnochiton


“Chiton (Lepidopleurus ?) pectinulatus Cpr.,” Dall in Orcutt, 1886, U. S. Nat. Mus., Proc., vol. 8, p. 544 nomen nudum

Ischnochiton clathratus (Reeve), Pilsbr, 1892, Man. Conch., vol. XIV, p. 129 in part, section Lepidozona

Lepidopleurus pectinulatus Carpenter, ms. in Pilsbr, 1892, Man. Conch., vol. XIV, p. 129

Ischnochiton (Lepidozona) pectinulatus “Carpenter,” Berry, 1922, California Acad. Sci., Proc., ser. 4, vol. XI, no. 18, p. 471, pl. X, figs. 4-6


“Olive: strong sculpture over shagreened surface; side areas ribbed; outer margin and inner sutures pectinated, Beh. C.” [Carpenter, 1864b, p. 649]

“... State Collection, no. 1073.

“1t. ‘L. Mertensi’ simili, sed omino olivaceo; areis diagonalibus radiis plerumque IV. dense tuberculiferis, radioque altero suturali tuberculis inflexis, marginae valvulam pectinatibus; costis transversis crebris validis; costulis longitudinalibus acutis distantibus superantis, quorum marginae suturas anticas pectinat; valv. term. ut in areis diag. sculptis, seriebus tuberculorum creberrimis; tota superficie minutissime tuberculata: intus, valvis centralibus unifissatis, terminalibus XI-XX—fissatis: scalis pallii irregularibus, confertis, minutissime longitudinaliter striatis.

“Long. 0.85, lat. 0.50, div. 110°.

“Variet: interdum aurantio nebulosa.

“Hab. Catalina Island, Santa Barbara Island, beach, Cooper.” [Carpenter, 1866a, p. 212]
There are in the Redpath Museum two complete specimens and three separate plates which were labelled by Carpenter, "Type La Paz Pease." One of those specimens is figured herein.

In the first mention of *I. pectinatus* Carpenter (1864b, p. 612) the specimen was reported from Catalina Island. The name in this reference is a *nomen nudum*. The second brief reference (1864b, p. 649), quoted above, listed specimens only from Santa Barbara Islands. The 1866 description cited Catalina and Santa Barbara Island. Lower California is not included in any of Carpenter's remarks. Therefore, the locality with the type specimens must be in error or a misplacement of labels.

As Pilsbry and Berry have pointed out the name *I. pectinatus* Carpenter is preoccupied. A possible substitute name was *I. pectinolatus* Carpenter ms. However, its introduction by Pilsbry must date the name from 1892 by Pilsbry, and it cannot be credited to Carpenter. The introduction by Pilsbry is somewhat ambiguous in its manner of connection with *I. clathratus* Reeve, and the writer agrees with Berry that it is not a strict substitute for *I. pectinatus* Carpenter.

Berry, (1931) proposed the name *I. californiensis* to cover the "commonest southern Californian *Lepidozona, *" but he doubted that it was a substitute for *I. pectinatus* Carpenter (1864; 1866).

Even though Carpenter's remarks (1864) are brief, his later description (1866) qualifies to validate a specific name. Berry selected a type locality when presenting a new name which is not the same as that of *I. pectinatus* Carpenter.

Unfortunately there is the nonconformity in type locality between the description and the label of the type. Hence there is uncertainty that the specimen labelled type is an authentic type. It could be compared with specimens from the northern and southern range of species and determined to what it bears the closer resemblance.

The problem of whether *I. californiensis* is a substitute name and whether it is equivalent to *I. pectinatus* Carpenter is still unsettled. Berry (1931) did not give the range of *I. californiensis*. He (1922) specified Monterey to Todos Santos Bay, Lower California, and stated that it was found in the Pleistocene of California.

*Types.*—Syntypes: *I. pectinatus* Carpenter, Redpath Museum, no. 70; holotype: *I. californiensis* Berry, S. S. Berry Collection, no. 1699; paratypes: see Berry (1931, p. 256).

*Distribution.*—Catalina Island or Santa Barbara Island, California (type) *I. pectinatus* Carpenter; La Jolla, California (type), *I. californiensis* Berry.

*Ischnochiton (Lepidozona) cooperi* “Dall” Pilsbry


The authority for this species is in the same category as *I. conspicus*. The radula only was described and figured by Dall (1879). Pilsbry also utilized Carpenter's manuscript name (1892), but he composed his own description and used specimens from the collections of the Academy of Natural Sciences. The specific name, if Dall's description is not validated, should be credited to Pilsbry as has usually been done. Smith and Gordon date the specific name from Dall. Apparently Dall used Carpenter's manuscript notes in identifying the species. No specimen has been found which could be identified as a type for Dall's description.

*Types.*—Dall, not found; syntypes of Pilsbry, Academy of Natural Sciences, Philadelphia, no. 118659

*Distribution.*—Dall, type locality unknown; Recent. Bolinas, north of San Francisco, California (type, Pilsbry); Mendocino County, to Catalina Island, California (Dall). Pleistocene. California (Chace and Chace, 1919; Berry).
“Ischnochiton cooperi acutior” Dall
(Pl. 34, figs. 1-6)

See I. cooperi


This species was never adequately described by Dall. He used a manuscript name of Carpenter’s. At first he did not regard the name as representing more than a color variation of I. cooperi Carpenter. However, he later (1921) listed the form as a bona fide subspecies, from “San Diego to Los Animas Bay, Lower California.”

The holotype in the U. S. National Museum is labelled, “Todos Santos Bay Hemphill” and marked in red pencil “type.”

There are 11 specimens in the Carpenter Collection at the Redpath Museum which are labelled “type” by Carpenter. Five of them are from Todos Santos Bay collected by Hemphill (Redpath Museum, no. 18). Six others are labelled, “Sta. Cruz Cooper False Bay near S. Diego collected by Hemphill!” (Redpath Museum, no. 8).

Since the form has not been illustrated previously the illustrations of the McGill specimens are included herein. They are not types because the subspecific name would date from Dall or later, depending on the validity of Dall’s name. The problem has passed beyond the scope of Carpenter type material. The illustrations may help to determine whether Dall was correct in assigning subspecific rank. The writer includes them under I. cooperi.

Holotype.—U. S. National Museum, no. 30734
Distribution.—Todos Santos Bay, Lower California (type)

Ischnochiton (Lepidozona) decipiens Carpenter in Pilsbry

Ischnochiton decipiens Carpenter ms. in Pilsbry, 1892, Man. Conch., vol. XIV, p. 123;

This species bears a manuscript name of Carpenter which was validated by Pilsbry. Unfortunately the species was not figured, and the whereabouts of the type does not seem to be known. Pilsbry published Carpenter’s manuscript description. That description is also available in Oldroyd who republished a copy of the same. Willett thought he knew what I. decipiens was and because of gradation believed that the form named l. gallina by Berry was merely a color form of I. decipiens.

In a list of chitons in Dall’s handwriting in the collection in the U. S. National Museum are the following notations:

“Not in collection decipiens Cpr. 1892 Monterey.” “Not in collections decipiens Cpr. 1892 Catalina Id. to Monterey.”

Holotype.—Not found

Distribution.—Monterey, California (type); Catalina Island, to Monterey (Dall)

Ischnochiton radians Carpenter in Pilsbry
(Pl. 30, fig. 13; Pl. 31, figs. 8-17)


In this case Pilsbry used Carpenter’s manuscript name and description, meaning thereby to give partial credit to Carpenter. Pilsbry also mentioned that the specimen figured by him was not Carpenter’s type but a secondary specimen from the Smithsonian Institution. Carpenter’s original types (mentioned by Pilsbry) are in the Redpath Museum. There are four specimens mounted and labelled by Carpenter, “type Monterey Canfield.” Since the McGill specimens are more complete than that in the U. S. National Museum (No. 19471), the
writer chooses the one figured herein as the lectotype, with the remaining three Redpath Museum specimens and the U. S. National Museum specimen as paratypes. The U. S. National Museum specimen is labelled "type San Pedro Cooper."

The photographs included of the Redpath Museum specimen have been taken with the specimens blown with ammonium chloride to bring out the details of sculpture; therefore the flecked coloration does not show.

**Types.**—Lectotype: Redpath Museum, no. 25 (figured herein); paratypes: Redpath Museum, no. 25 (three specimens); U. S. National Museum, no. 19471 (2 plates figured herein)

**Distribution.**—Monterey, California (type); Prince of Wales Island, Alaska to San Pedro, California (Dall)

**Ischnochiton (Lepidozona) retiporosus** (Carpenter)

(Pl. 30, fig. 7; Pl. 35, figs. 4, 5)


*Trachydermon retiporosus* (Carpenter), Cooper, 1867, Geog. Cat. Moll., Geol. Sur. California, p. 22


"...: mantle-scales very small, close, smooth. Sp. like *scrobiculatus*, central pattern in network, 3–6 side ribs. [Carpenter, 1864b, p. 649]

"I.t. parva, subelongata, cinerea, valde elevata, jugo arcuato; valvis subquadratidis, apicibus celatis, marginibus sutturalibus inbus reglicatis; areis lateralibus parum definitis, costulis iii-vi. obsoletis, rotundatis, huc et illuc granis acutis, expressis, instructis; areis centralibus omnino scrobiculatis, interstititis parvis, alte punctatis; valvis terminalibus costulis crebris, angustis, acutioribus; mucrone parum conspicio, antorsum sito: intus, sinus sutturali lato; laminis, utroque latere semel, valvis terminalibus circ. XII incisis; limbo pallii granuloso, granulis conflertis, minimis, vix elongatis, vix regularibus, haucl sculptulis. Long. 44, lat. 28, div. 90°.

"Hab.—In sinu Pugetiano specimen unicum legit Kennerley.

"Forma I. interstincto, Gld. et I. scrobiculato, Midd. convenit; indole sculpturae differt."

[Carpenter, 1865, p. 59]

Pilsby (1892) presented a translation of Carpenter’s (1865) Latin description. He later (1893) included a sketch (Fig. 47) of part of one plate of the type and added a detailed description of the species.

In the Carpenter Collection in the Redpath Museum there is a mounted specimen labelled by Carpenter “Ischnochiton subexpressus Cpr. type = scabricostatus Cooper 518a 20 fms. Catalina Is." This is a manuscript name of Carpenter, although it is not so indicated on the label. A photograph of the shell is included herein, so that the record may be clear. The specimen is *I. retiporosus* Carpenter as may be seen by comparison of Pilsby (1893, pl. 16, fig. 47) and this report (pl. 30, fig. 7). The Redpath Museum specimen has been coated with ammonium chloride to bring out details of sculpture, but this method obliterates coloration.

The note on the label, "= scabricostatus Cooper 518a," has not been explained. The published number of *I. scabricostatus* is "1071c" (Cooper's number, California Geological Survey); 518a was the number of "Trachydermon gothicus" (Carpenter, 1866a, p. 212).

**Holotype.**—U. S. National Museum, no. 4499 (No. in Pilsby, 14917)

**Distribution.**—Puget Sound, Washington (type); Victoria, British Columbia, to San Pedro, California (Dall)

**Ischnochiton (Lepidozona) serratus** Carpenter

(Pl. 32, fig. 5)

Pilsbry (1892) included a translation of Carpenter's original description and later (1893) presented additional notes on the species. Oldroyd (1927) published a copy of both Carpenter's description and Pilsbry's translation. The following should be changed in the copy by Oldroyd to make that copy complete.

Read .34 for 34; .2 for 2
Add:

"... div. 115°.
"Differs from Elenensis in the sculpture of the terminal valves." [Carpenter, 1864, p. 315]

The type of this species was in the U. S. National Museum, no. 16204, but, although the original glass mount is still present, the specimen is gone and has been for at least 5 years, according to a note with the type. The tablet has a label "type C.S. L. Xantus."

A specimen in the Redpath Museum is labelled, "Leptopleurus serratus Cpr. var. C type C. San Lucas Xantus Pearl Id."

Holotype.—Formerly U. S. National Museum, no. 16204 (lost); paratype: Redpath Museum, no. 98

Distribution.—Cape San Lucas, Lower California (type); San Diego, California, to Gulf of California (Dall)

**Ischnochiton (Lepidozona) sinudentatus** Carpenter in Pilsbry

(Pl. 30, figs. 8, 9; Pl. 33, figs. 1-5)


The name of this species was a manuscript name. The name and manuscript description were utilized by Pilsbry (1892) when the name became valid. The type material consists of four specimens in the Carpenter Collection in the Redpath Museum on the original Carpenter glass mount and label. The label states, "type California." The types are figured for the first time herein.

Syntypes.—Redpath Museum, no. 27

Distribution.—Recent, Monterey, California (type); Pleistocene. California (Berry, "cf.")

**Subgenus Rhombochiton** Berry, 1919


**Ischnochiton (Rhombochiton) regularis** (Carpenter)

(Pl. 31, fig. 7)


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The original description of this species as well as Pilsbry's extended notes were republished by Oldroyd (1927). The following should be changed in her copy: Last line, read 25 for 25.

Add:

"Var. T. caerulea, striig prope marginem subgranulosis.
"A very similar species, but with larger scales on the margin, is from New Zealand, and at present undescribed in the Cumingian Collection." [Carpenter, 1855]

G. L. Wilkins (British Museum) supplied the following information regarding the holotype:

"There is little doubt that a shell we have labelled 'Monterey' and a reference to the P.Z.D. is the type of this species. Size o.k."

The figures of this species by Pilsbry are likely those of the type material, probably from the Carpenter ms. illustrations. The figures were drawn by Emerton under Carpenter's supervision. The included illustration was furnished by the authorities of the British Museum (Natural History).

Carpenter's references (1864b) are not cross-referenced. Under Chiton regularis in the index (1872, p. 35), reference is to page 40 only with the additional reference, 1857, pages 287, 318, and 1855, page 232. In the same publication (1872) index (p. 62) under Lepidopleurus regularis, page 135 only is indicated. On page 135 Carpenter referred L. regularis to "P.Z.S., p. 232", so that he referred to the same species. The following remarks were inserted:


Fortunately this is not Carpenter's original description, for at the later date he indicated the occurrence as "California; or district north of the peninsula, generally." Originally the type locality was stipulated as Monterey.

Holotype.—British Museum (Natural History), Department of Zoology, B.M. 1950, 11.9.1

Distribution.—Recent. Monterey, California (type); Mendocino County, California, to Monterey, California (Dall). Pleistocene. (Arnold; Berry)

Subgenus Tripoplax Berry, 1919


Type species by original designation Ischnochiton trifidus (Carpenter), 1864b, p. 649. Recent, Shumagin Islands, Alaska to Puget Sound, Washington. PILSBRY, 1892, Man. Conch., vol. XIV, pl. 18, fig. 40; 1893, vol. XV, pl. 17, figs. 64-67 type

Ischnochiton (Tripoplax) trifidus (Carpenter)


Ischnoradisia trifida (Carpenter), DALL, 1879, U. S. Nat. Mus., Proc., vol. 1, p. 331


"Centre-punctures few, deep: 2-4 blunt ribs: side plates with 2 slits." [Carpenter, 1864b, p. 649]

"I.t. elevata, ovali, rubida; valvis latis, subquadratis, apicibus vix intortis; areis lateribus subelevatis, costis obsoletis rotundatis ii-iv; areis centralibus punctis distantibus, valde im-
pressis; valvis terminalibus ut in areis lateralis costatis; valva postica mucrone submediana, haud elevata: itus albida, subrosacea; valvis utraque laterae maculo aurantio elongato ornatis, stimuli centralibus parvis, expansis; marginibus externis subgranda typice obiectis; laminis lateralisibus bis, terminalibus cirriteri xii. incisis; limbo pallii, granuloso, granis ovalibus, viribus imbricatis haud striatis. Long. .75, lat. .45, div. 110°.

"Hab."—In sinu Pugetiano specimen unicum pisavit Kennerley." [Carpenter, 1865 p. 60]

The type of this species is composed of four loose valves in the U. S. National Museum. The illustrations by Pilsbry (1893, Pl. 17, figs. 64, 65) are of the type.

Holotype.—U. S. National Museum, no. 30946

Distribution.—Puget Sound, Washington (type); Shumagin Islands, Alaska, to Puget Sound, Washington (Dall)

Genus Callistochiton Dall, 1882

Callistochiton Dall, 1882, U. S. Nat. Mus., Proc., vol. 4, p. 283, 289, 290 no species mentioned


Callistochiton decoratus PILSBRY

(Pl. 33, figs. 15-21)


Although PILSBRY utilized Carpenter's manuscript name for this species, he did not use Carpenter's description or his type. PILSBRY's type was a specimen in the Academy of Natural Sciences, Philadelphia. In this case, therefore, the species should be attributed to PILSBRY and not Carpenter. The synonymy, therefore, is not intended to be complete.

In the Carpenter Collection in the Redpath Museum, there are 12 fine specimens on Carpenter's glass mounts with a Carpenter label, "type S. Diego Hemphill (Comp. veredentius)." These specimens were evidently Carpenter's ms. types. PILSBRY (1893) described differences between the typical form from Lower California and an individual from San Diego collected by Henry Hemphill. The specimens which Carpenter had labelled type should fall in the category to which PILSBRY called attention. Five of those specimens are figured herein to define the variation, if any. The number of ribs on the head valve varies from 11 to 12.

PILSBRY's original description, but not the supplementary notes, was republished by OLDROYD (1927).

Holotype.—Academy of Natural Sciences, Philadelphia, Pa., no. 118687

Distribution.—Todos Santos Bay and near San Tomas River, Lower California (type); Santa Barbara, California, to San Tomas River, Lower California (Dall)

"Callistochiton fimbriatus" CARPENTER ms., nonum nudum

Three specimens in the Redpath Museum (no. 4) are labelled by Carpenter, "Callistochiton fimbriatus Cpr. type Monterey Canfield."

Callistochiton fimbriatus Carpenter is a nonum nudum. The name has been frequently mentioned in literature, but Carpenter never described the species. PILSBRY was aware of the problem in connection with the name and, therefore, did not use the Carpenter name but

135The first species mentioned in connection with the generic name was Callistochiton decoratus "Carpenter," DALL in Orcutt (1886, p. 544). However, at that time that specific name was a nonum nudum, and it did not become valid until by PILSBRY, 1892. Therefore, PILSBRY'S type designation has priority.
gave a new designation (C. crassicoestatus) to the chiton which would have been described by Carpenter. Pilsbry did not believe that the use of the name by Cooper applied to the same form. The specific name was used for a chiton by Sowerby (1840).

The name is thus best dropped from literature of chitons.

References to name:


Chiton fimbriatus of authors, Berry, 1922, California Acad. Sci., Proc., ser. 4, vol. XI, no. 18, p. 484 = Callistochiton crassicoestatus Pilsbry, 1892

Callistochiton palmutatus Carpenter in Pilsbry

(Pl. 32, fig. 1)


Pilsbry utilized Carpenter's manuscript name, description, and drawings. Part of the figures under the species (pl. 58, figs. 7-11) Pilsbry segregated under a subspecific name, mirabilis Pilsbry. The holotype of the subspecies is in the Academy of Natural Sciences, Philadelphia.

One specimen in the Carpenter Collection in the Redpath Museum is on an original Carpenter glass mount with original label, "type Sta. Barbara Cooper no. 1077." The number and locality corresponds with that given for the type by Pilsbry (1892, p. 263), which verifies the specimen as type. An illustration of the holotype is figured herein. The specimen was mounted with four plates separate.

Holotype.—Redpath Museum, no. 48

Distribution.—Recent. Santa Barbara, California (type); Monterey, California, to San Ignacio Lagoon, Lower California (Dall). Pleistocene. California (Berry, 1922, p. 407)

Family Chitonidae

Genus Placiphorella Dall, 1879


Placiphorella velata Dall


The specific name should not be credited to Carpenter, as only Carpenter's manuscript name was utilized by Dall and by Pilsbry. Dall described the soft anatomy of the animal, and Pilsbry later (1892) described the shell. Dall, therefore, has priority of naming. Reference to the species is included here for the record in regard to names in connection with Carpenter's work.
Genus *Mopalia* Gray, 1847


Type species by original designation, *Chiton Hindisi* Reeve, 1847, Conch. Icon., vol. 4, *Chiton*, pl. XII, figs. 67a-b. Recent Alaska, to Gulf of California. PILSBY, 1892, Man. Conch., vol. XIV, pl. 62, figs. 99, 100; pl. 63, fig. 57

*Mopalia acuta* (Carpenter)

(Pl. 31, fig. 18; Pl. 32, fig. 6)


"Chiton (Mopalia) rugosa Gld. var. acuta Cpr.," Dall, *in Ocurtt*, 1886, U. S. Nat. Mus., Proc., vol. 8, p. 544

*Mopalia muscosa* acuta (Carpenter), PILSBY, 1892, Man. Conch., vol. XIV, p. 297, pl. 64, figs. 75-79; Dall, 1921, p. 195; OLDROYD, 1927, vol. II, pt. 111, p. 306

*Mopalia muscosa plumosa* CARPENTER ms. in PILSBY, 1892, Man. Conch., vol. XIV, p. 298, pl. 64, figs. 80, 81

*Mopalia muscosa* fissa CARPENTER ms. in PILSBY, 1892, Man. Conch., vol. XIV, p. 299


A copy of the original description was published by Oldroyd (1927). The following should be changed in her copy:

Line 2: read "tenebrosisioribus" for "tenebrosioibus."

Add:


"A very sharply angled, thin, delicately marked species, with extremely thin margin, and the edges of the valves deeply cut within." [Carpenter, 1855, p. 232]

"Subgeneric, aberrant form; with small blunt plate, instead of post. sinus, between the two principal lobes." [Carpenter 1864b, p. 648]

Three specimens illustrated by PILSBY (1892) were considered by him as the types. He considered one specimen (pl. 64, figs. 76, 77) the "holotype" (PILSBY, May 15, 1951, personal communication). They were collected by H. Hemphill at San Diego, California. However, the real holotype is in the British Museum. It is in the Nuttall Collection and bears a Nuttall label, "Chiton incisus. Sta. Barbara". There is also in Carpenter's handwriting the following note, "Comp. acutus. Cpr. Probably I found incisus preoccupied." (Fide G. L. Wilkins, Jan. 1, 1952, personal communication.) A photograph of the type was furnished by the British Museum.

The type of *M. plumosa*, Carpenter in PILSBY is in the Newcomb Collection (25530), Geology Department, Cornell University. The drawings made of that type for Carpenter were published by PILSBY.

PILSBY also included a description of *M. fissa* CARPENTER ms. but did not illustrate the holotype, which he stated was from Monterey. PILSBY regarded both *M. plumosa* and *M. fissa* as synonymous with *M. acuta* (Carpenter).

A specimen in the Redpath Museum is labelled by Carpenter, "Mopalia filosa Cpr. MS. type St. Barbara Cooper plumosa & acuta." This certainly is the "M. fissa" CARPENTER ms. in PILSBY. *M. filosa* Carpenter ms. is a *nomem nudum* and is either an error for *fissa*, or the *fissa* is an error for *filosa*. They equal the same and are regarded as equivalent to *M. acuta* Carpenter. The photo of "M. filosa" type is included to illustrate the character of *fissa*. Photographs of the type *A. filosa* Carpenter ms. were sent to Allyn Smith in 1945. Mr. Smith (Personal communication) wrote, "The species is undoubtedly what we are now calling *Mopalia acuta* (Carpenter), which Dall places as a subspecies of *M. muscosa* Gould, which I believe is not justified."

"Mopalia filosa Cpr. MS." is not the *Arthuria filosa* CARPENTER ms. in Dall (1882, p. 287) and/or in PILSBY (1892, p. 258).
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Dimensions.—Long. 22.77 mm.; lat. 12.65 mm.; alt. 5.06 mm. (holotype); original dimensions of Carpenter converted into mm.

Types.—Holotype, British Museum (Natural History), 61.5.20.103, "Chiton incius" Nuttall ms. = C. acutus Cpr.; holotype of M. plumosa Carpenter in Pilsbry, Geology Department, Cornell University, no. 25530; holotype of M. "filosa" Carpenter ms. = M. fissa Carpenter in Pilsbry, Redpath Museum, no. 9

Distribution.—Recent. San Diego, California (type); Santa Barbara to San Diego, California (Dall). Pleistocene. California (Berry)

Mopalia imporocata Carpenter
(Pl. 32, fig. 2)


Placiphorella imporocata (Carpenter), Dall, 1879, U. S. Nat. Mus., Proc., vol. 1, p. 306

Osteochiton imporocatus (Carpenter), Dall, 1887, U. S. Nat. Mus., Proc., 1886, vol. 9, p. 211

"Pale: central area ribbed; post. valve slightly notched. Indications of sutral pores in these two species, if confirmed, will require a new genus." [Carpenter, 1864b, p. 648]

"? M. t. parva, valde elevata, satís elongata; jugo acuto, rectangulato; pallida, rutinicta.; arcis lateralibus costa elevata, dense granulosa, definitis; suturis dense granosis, marginibus intus implicatis; valva antica circiter octies granoso-costata; arearum lateralium et valvae anticae interstitis intricatim rugulosos-indentatis; arcis centralibus costis longitudinalibus crebris, validissimis, acutis, subparallelis, interstitii creatum-decussatis; valva postica mucrone haud conspicuo, submarginali, sinu parvo, angusto: intus, sinu laminarum suturalium angusto: valvis centralibus fissura una; valva antica fissuris ?—; valva postica fissura utraque una, postice sinu parvo, angulato: limbo coriaceo, poris suturalibus aliisque luc et illic sparsis, minutis, setulis albidis instructis.

"Hab.—In sinu Pugetiano specimen duo legit Kennerley.

"Ut in ? M. simnata, à Mopalias typicus different." [Carpenter, 1865c, p. 59]

Pilsbry stated that his description and figures were drawn from Carpenter's type in the U. S. National Museum. There is also a specimen (plates separated) in the Carpenter Collection in the Redpath Museum on an original Carpenter glass mount with Carpenter's label. "Placiphorella imporocata Cpr type Puget Sd. Kennerley."

Syntypes.—U. S. National Museum, no. 4499; Redpath Museum, no. 57

Distribution.—Puget Sound, Washington (type); Forrester Island, Alaska, to San Pedro, California (Dall)

Mopalia lignosa (Gould)
(Pl. 27, fig. 12)


Carpenter described Chiton montereyrensis from a specimen in the Cuming Collection. Later (1864b), after examining perfect specimens of the same, he determined the form as equal to Mopalia lignosa (Gould). Authors have continued to agree with Carpenter in that assignment.

The type of C. montereyrensis is in the British Museum. It is one of five specimens on a tablet which has a label. The original label reads: "Montereyensis Carp. =
simpsonii Grey Monterey." The front of the table has "Vancouver Is." as the locality (G. L. Wilkins, Sept. 7, 1951, personal communication).

"Ct. ovata, subelevata (ad angulum 120°), sublaevi; olivacea, valva utraque ad jugum rubro-fusco maculato, lineis tenebrosioribus valvis intermediae subradiantibus, valvis ultimis radiantibus; valvis intermedii lineis diagonalibus subdistantibus, ad marginem subquadratis, suturis conspicuis; areis lateralis lineis paucis radiantibus obsoletis; tota superficie punctulis creberrimis conferta, subobsoleditis, maxime ad areas laterales; mucrone vix prominente; limbo coriaceo, ad marginem et in suturis pilosa, setis planatis curtis, incurvatis; intius valvarum marginibus hand valde arcuatatis, sinu parvo, ad jugum subimpresso.

"Long. 2.4, lat. 1.42, alt. 45 poll.


"Margin with numerous but not crowded, short, incurved, horny, flattened hairs; shell very finely sculptured, dark olive, with very dark rays slightly diverging from the summit of each valve, and very conspicuous on the terminal one. The jugum is stained in each valve with sienna." [Carpenter, 1855, p. 231]

Through the courtesy of the authorities of the British Museum (Natural History) a photograph of the type of C. montereyensis Carpenter is included.

The synonymy of M. lignosa is not intended to be complete.

**Holotype.—British Museum (Natural History), no. 1951, 9.7.1-5**

**Distribution.—Recent. Monterey, California (type of M. montereyensis). For complete distribution see that of M. lignosa. Pleistocene. (Berry; Chace and Chace)**

**Mopalia muscosa Gould**

"Chiton ornament Nutt. M.S." Carpenter


Carpenter used Nuttall's manuscript name of C. ornata and described the San Diego shell, although he suspected that it might have been described by Gould. Carpenter (1864b) identified the Nuttall specimen as conspecific with *M. muscosa* Gould.

**Mopalia muscosa kennerleyi Carpenter**

**Mopalia grayii Carpenter, 1864b, p. 603, 648; Reprint, 1872, p. 89, 134 name preoccupied fide Carpenter**


Oldroyd (1927) republished the original description, Carpenter's Latin description 1865, and a translation of the latter.

There are specimens with labels in the U. S. National Museum from Neah Bay and Vancouver Island, which bear Carpenter's initial, but none has a notation that it is type material.

**Holotype.—Not found**

**Distribution.—Puget Sound, Washington (type); Shumagin Island, Alaska, to Monterey, California (Dall)**

**Mopalia sinuata Carpenter**

(Pl. 33, figs. 6-13)


*Ostechiton* *sinuata* (Carpenter), DALL, 1886, U. S. Nat. Mus., Proc. 1885, vol. 9, p. 211


"Small, raised sharp back, red and blue, engine—turned; post. valve deeply notched." [Carpenter, 1864b, p. 648]

"2. M. t. parva, subelongata, elevata, jugo angulato; rubido et caeruleo elegantur maculata, valvis elongatis, subquadratis; areis lateralis costa augusta, sublevata, granulosa, utraque definitis; suturis quoque granulosis; tota superficie clarissime reticulata, punctis areis centralibus valde, areis lateralis et valvis terminalibus modice impressis; valvis terminalibus ut in areis lateralis sculptis, costis acutis radiantis, interstitiis reticulatis; valva postica maxime incisa, sinu alto, acuto muereon tenuis haud conspicuam effuso: intus rosacea; marginibus apicinis granulosis tota longitudine intortis; sinu laminarum saturalium parvo, angusto; laminis externis, valvis centralibus semel incisis; valva antica, fissuris circiter VIII., costis convenientibus; valva postica, fissura laterali utraque costae conveniente, postice maxime sinuata: limbo pallii coriaceo, pilulis paucis; poro rotundato parvo suturis utroque latere conveniente.

"Hab.—In sinu Pugetiano specimina duo legit Kennerley.

"Mopalis typicus structura valvae posticae convenit: poris saturalibus vix definitis, differt." [Carpenter, 1865e, p. 59]

Pilsbry stated that his description and figures were drawn from the type in the U. S. National Museum. There is also a specimen in the Carpenter Collection in the Redpath Museum on Carpenter’s original glass mount with Carpenter’s label, "Placiphorella sinuata Cpr. type Puget Sd. Kennerly." That specimen, consisting of eight loose plates, is illustrated herein.

*Syntypes.*—U. S. National Museum, no. 4473; Redpath Museum, no. 58

*Distribution.*—Puget Sound, Washington (type); Forrester Island, to San Francisco, California (Dall)

*Mopalia* *swanii* Carpenter


*Mopalia ciliata* Sowerby, PILSBRY, 1892, Man. Conch., vol. XIV, p. 304 in part


*Mopalia* *swanii* Carpenter, BERRY, 1951, Mal. Soc. London, Proc., vol. 28, pt. 6, p. 214-217, 219, pl. 26, fig. 15

"; red, ridge arched; less sculptured.149 [Carpenter, 1864b, p. 648, *swanii*]

"M. testa M. Kennerleyi typicae similis, sed jugo fornicato, haud carinato; omnino rubida, sculptura multo minus expressa; areis lateralis vix definitis; latera versus subgranulata; dorsum versus lineis jugum versus procedentibus, interstitiis punctatis; sinu postico latiore; limbo pallii lato; coriaceo, vix piluloso. Long. 24, lat. 1., div. 120°.

"Hab.—Tatooche Island (Swan)." [Carpenter, 1864d, p. 426, *swanii*]

BERRY (1951) believed this to be a good species on the basis of a series of British Columbia specimens. He included a good illustration in his paper.

*Holotype.*—Not found

*Distribution.*—Tatooche Island, Washington (type); Shumagin Islands, Alaska, to Monterey, California (Dall)

149 If this brief description is considered the original, the spelling of the specific name is spelled with one "n." This is closer to the collector’s name, J. G. Swan. Since Dall (1921, reviser) the name has been spelled with one "n."
Genus *Dendrochiton* Berry, 1911


*Dendrochiton gothicus* (Carpenter)

(Pl. 32, fig. 3)

*Ischnochiton* (*Trachydermon*) *gothicus* Carpenter, 1864b, p. 612; Reprint, 1872, p. 98, *nomen nudum*


*Ischnochiton gothicus* Carpenter, Pilsbry, 1892, Man. Conch., vol. XIV, p. 74

*Trachydermon gothicus* Carpenter, Pilsbry, 1893, Man. Conch., vol. XV, p. 65, pl. 15, figs. 28, 29 type plates

*Chaetopleura gothica* Carpenter, Dall, 1921, p. 193 *Dendrochiton*; Oldroyd, 1927, vol. II, pt. III, p. 290 section *Dendrochiton*


*Mopalia* (*Dendrochiton*) *gothica* (Carpenter), Burch, 1947, no. 66, p. 19

"Blunt parallel ribs long at very arched back. Sutural lobes united in sinus: eaves not spongy. 8–20 fm. Cf." [Carpenter, 1864b, p. 649]

"... State Collection, 518a.

"Tr. t. parva valde elevata, viridi et olivaceo et elegantera tincta; valvis gothice arcuatis, jugo acuto; areis lateralisibus parvis, arcuatim distincte definitis, granulosis; unbonibus prominentibus; marginibus unbonalis colore tessellatis, intortis; areis centralibus longitudinaliter costatis, costis rotundatis, crebris, haud valde expressis, interstitialibus parvis, vix interdum decussatis; valv. term. ut in ar. lat. sculptis, postica mucrone mediano, subelevato: intus, lobis suturalibus haud separatis, medio latissimum simulatis; laminis insertionis, lat. unifissatis, term. VIII–X.—fissatis, obtusis, subgrundis haud elevatis: limbo pallii minutissimae squamuloso, granulis confertissimae, subrotundatis, laevibus; circa marginem pilulis suberectis.

"Long. 0.20, lat. 0.10; div. 80°.

"Hab. Catalina Island, 8–20 fm., Cooper." [Carpenter, 1866a, p. 212]

A set of types is in the U. S. National Museum, and one is in the Redpath Museum. Both suites are on the original glass mounts of Carpenter with Carpenter's original label. There are five specimens at McGill labelled, "type Catalina Is. St. Barbara Is. Cooper." The specimen in the U. S. National Museum consists of four small plates with a label, "Catalina Id. Cooper type." The photograph of one of the types at McGill is included. It may be verified readily with the original drawings of plates by Carpenter in Pilsbry pl. 15, figs. 28, 29).

Berry (1919) pointed out distinguishing features of this species which was then little known.

Oldroyd republished Pilsbry's translation of Carpenter's Latin description.

*Syntypes.*—U. S. National Museum, no. 16271, 4 separate plates; Redpath Museum, no. 13

*Distribution.*—Recent. Catalina Island, California (type); Monterey to Catalina Island (Dall)

Genus *Basiliochiton* Berry, 1918

*Basiliochiton* Berry, 1918, Nautilus, vol. 32, No. 1, p. 12


*Trachydermon* Carpenter was first mentioned (1864b, p. 612) with two species *Ischnochiton* (*Trachydermon*) *pseudodentens* Carpenter [= *Cyanophax dentens* (Gould)] and I. (T.) *gothicus* Carpenter, "n.s."
T. gothicus Carpenter was at the time a manuscript name and, therefore, not eligible to be type species of the genus. I. pseudodentens Carpenter was a name given by Carpenter for Chiton dentiens Gould (1846). Hence Chiton dentiens Gould is the monotype of Trachydermon. Chiton dentiens Gould is a Cynoplax Pilsbrv, 1892 (fide Berry, 1948b, p. 14), which makes Trachydermon Carpenter have precedence over the later generic name.

In Carpenter's second mention of Trachydermon (1864b, p. 649) he included nine species in the genus. It is this second reference which Pilsbrv (1892, p. 67; 1893, p. 62, 63) considered the original reference. Pilsbrv designated the last species mentioned, T. flectens Carpenter, as the type species of the genus.

Dall (1879, p. 295) used Trachydermon Carpenter with "T. cinerus Lowe" as type species. That designation is not valid, because that species was not included by Carpenter in the original mention of the genus.

Berry (1918) proposed the name Basiliochiton for T. flectens Carpenter, because he had been told that Trachydermon was preoccupied. However, although there are several uses of Trachyderma (Latreille, 1829; Gravenhorst, 1829; Wiegman, 1834) the appellation of Trachyderma has not been used other than that of Carpenter. Basiliochiton is not necessary or valid unless the first reference of Carpenter is accepted, whereby Trachydermon, 1864, has precedence over Cynoplax Pilsbrv, 1892. If this condition is not accepted, Trachydermon is a bona fide generic name, and T. flectens Carpenter is the type species.

Prof. Henry Poirier was consulted in regard to the equivalence of Trachyderma and Trachydermon because of similar classical origin. Professor Poirier kindly sent his opinion (Oct. 6, 1955, personal communication) as follows:

"They (Trachyderma and Trachydermon) differ only in termination, but Trachydermon introduced in 1863 should not now be rejected because it has the same origin and meaning as Trachyderma."

"Basiliochiton" flectens (Carpenter)

Ischnochiton flectens Carpenter, 1864b, p. 603, 606; Reprint, 1872, p. 89, 92; PILSBRY, 1892, Man. Conch., vol. XIV, p. 75


"Mantle-margin scarcely granular. Rosy, very small, scarcely sculptured; valves beaked and waved as in M. Simpsonii: eaves and incisors normal." [Carpenter, 1864b, p. 649]

Oldroyd (1927) republished Carpenter's Latin description (1866) and Pilsbrv's translation.

To Oldroyd's copy of Carpenter's description (1865e) the following lines should be added:

"Hab. In sinu Pugetiano legit Kenmerley: in insula Vancouver legit Lord: prope Monterey, Taylor: apud San Diegoeum, Cooper." [Carpenter, 1865e, p. 60]

The type of this species has not been found. The statement in Oldroyd (1927) that it is in the U. S. National Museum and her statement regarding type locality are incorrect. The type locality could be one of three locales (see description above), depending on where a syntype may be found. Berry's (1925, p. 24) statement that Puget Sound is the type locality will only prove to be true if a type is eventually found or selected from that area.

There are two lots of specimens (not types) in the U. S. National Museum which bear the name "L. flectens montereyensis Cpr." This is a nomen nudum. Berry (1917, p. 247)
referred to the nude name, "Trachydermon flectens monterecyensis" Bartsch," which had appeared in print but never been described. Berry referred the latter to Mopalia heathii Pilsbry in Berry (1911, p. 490, figs. 4-7, pl. XI, figs. 1-3, 7)

**Family Acanthochitonidae**

**Genus Acanthochitona** Gray, 1821

*Acanthochitona* Gray, 1821, London Medical Repository, p. 234


*Acanthochitona avicula* (Carpenter)

(Pl. 32, fig. 4)


"Like arragonites, but valves sculptured in large snake-skin pattern. 8-20 fm. r. Cp."

[Carpenter, 1864b, p. 650]

Oldroyd (1927) republished the Latin description (1866a) and Pilsbry (1893) presented a translation of the description which was also copied by Oldroyd. The following lines should be added to make that copy complete:

"... State Collection, no. 1072"

"Hab. Catalina Island, 10-20 fm., rare; Cooper." [Carpenter, 1866a, p. 211]

The holotype of this species is in the Redpath Museum, labelled by Carpenter, "type Catalina Is. Cp. 1072." This label corresponds with Carpenter’s (1866a) description.

**Holotype.—Redpath Museum, no. 72**

**Distribution.—**Recent. Catalina Island, California (type); Catalina Island, to Gulf of California (Dall). Pleistocene. California (Berry)
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OPALIA, BARLEELIA, BITTIM, EPITONIUM, ALVANIA, DIALA, AND TURBONILLA
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<td>2, 3.</td>
<td><em>Olivella baetica</em> Marrat in Sowerby</td>
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<td>Fig. 2, copy original Thes. Conch., IV, Fig. 409; Fig. 3, Fig. 410.</td>
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<td>Copy original <em>O. nota</em> Marrat in Sowerby, Thes. Conch., IV, Fig. 428. Length, 14 mm.</td>
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<td>Gould Coll., No. 146350, Catalogue No. 24, New York State Mus. Length, 17 mm.; greatest diameter, 8± mm.</td>
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<td>8.</td>
<td><em>Olivella baetica</em> Marrat in Sowerby</td>
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<td>Gould Coll., No. 146350, Catalogue No. 24, New York State Mus. Length, 18 mm.; greatest diameter, 8 mm.</td>
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<td><em>Cystiscus regularis</em> (Carpenter)</td>
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<td>Lectotype, U.S.N.M., No. 55391. Length, 3.5 mm.; greatest diameter, 2+ mm.</td>
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<td><em>Gibberulina pyriformis</em> (Carpenter)</td>
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Holotype, British Mus. (Nat. Hist.) 61.5.18.22 “U. California”; × 2. Photo Crown copyright reserved.

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<td>5, 6. <em>Mangelia interfossa</em> Carpenter</td>
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<td>Syntypes, Redpath Mus., No. 94. Fig. 15, length, 8 mm.; greatest diameter, 3.5 mm.; Fig. 16, length, 7 mm.; greatest diameter, 2.5 mm.</td>
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<td>“Syntype,” Redpath Mus., No. 66. Length, 30 mm.; width, 17 mm.</td>
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<td>Syntype, Redpath Mus., No. 68. Length, 15.4+ (attached plates); width, 10.3 mm.</td>
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<td>Holotype, British Mus. (Nat. Hist.), No. 61.5.20.102. Photo Crown copyright reserve, neg. 6747; × 3.</td>
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<td>Holotype, Redpath Mus., No. 64. Length, 44.7 mm.; width, 27 mm.</td>
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<td>Holotype, <em>I. subexpressus</em> Cpr. ms., Redpath Mus., No. 28. Length, 8.5 mm.; width, 5.7 mm.</td>
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<td>Syntypes, Redpath Mus., No. 27. Fig. 8, length, 10.7 mm.; width, 6.8 mm. Fig. 9, photographed in different position to show longitudinal sculpture.</td>
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<td>Holotype, U.S.N.M., No. 16268. Length, 6 mm.; width, 4.5 mm.</td>
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<td>13. <em>Ischnochiton radians</em> Carpenter in Pilsbry</td>
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<td>18. <em>Mopalia acuta</em> (Carpenter)</td>
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<td>Mopalia imparata Carpenter</td>
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<td>Holotype, M. “filosa” Cpr. MS. = M. fissa Cpr. in Pilsbry, Redpath Mus., No. 9. Length, 10.8 mm.; width, 9.6 mm.</td>
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