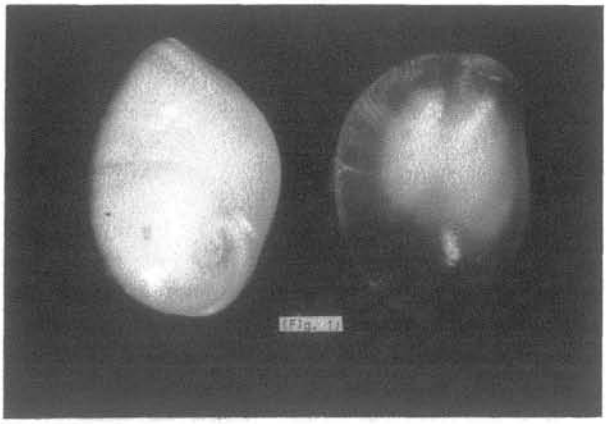
MINUTE SHELLS - Part 5

by Bert Draper

In Part 4, the first four families of the superfamily TROCHACEA which include small or minute species were discussed. There is one additional family of this same superfamily still to be covered. It is PHASIANELLIDAE, and it has only one genus on the West Coast, *Tricolia* Risso, 1826. All species of this genus found along our coasts are quite small to minute. This genus shows its rather close relationship to the Turbos by the similarity of their opercula. My photograph (Fig. 1) shows both sides of a *Tricolia* operculum and although the size is quite small, under 2 mm in length, the resemblance to the well known "cats-eyes", the opercula of an Indo-Pacific *Turbo*, is certainly noticeable.

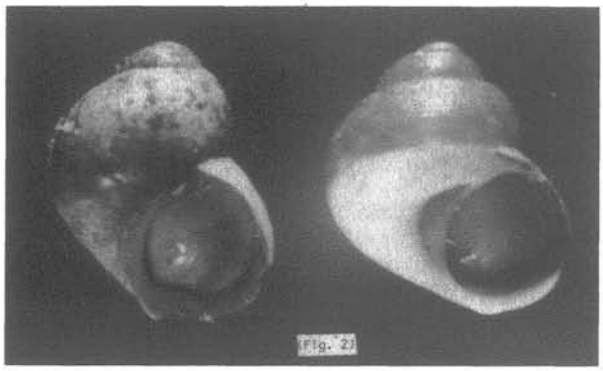


Inner surface Outer surface

Opercula of *Tricolia pulloides* (Carpenter, 1865) Magnified approx. X 27. Actual height 1.2 mm.

Four species of *Tricolia* are figured and described by Dr. McLean in "Marine Shells of Southern California." They are: *T. compta* (Gould, 1855); *T. pulloides* (Carpenter, 1865); *T. rubrilineata* (Strong, 1928); and *T. substriata* (Carpenter, 1864). *Tricolia typica* (Dall, 1908) has proven to be a synonym of *T. variegata* (Carpenter, 1864) and comes from the southern end of Baja California, but not from the California coast as mentioned by some authors. This species is included in Dr. Keen's "Sea Shells of Tropical West America."

Tricolia lurida (Dall, 1897) is a more northern species described as solid, turbinate, polished and smooth, shaped much like *T. substriata*, which my photograph shows in comparison with it. (Fig. 2) This species ranges from Mendocino County in California to British Columbia, Canada. Five other species from tropical West America are figured and described by Keen, in addition to *T. variegata* mentioned above.

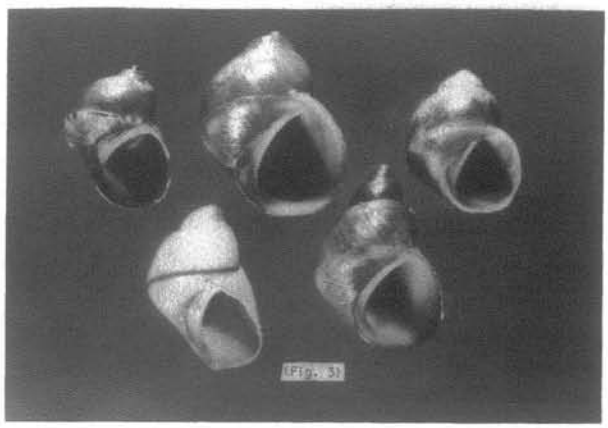


Comparison of *Tricolia lurida* (Dall, 1897) at left, collected by Emery Chace at Crescent City, Calif., 1933 and *Tricolia substriata* (Carpenter, 1864), dredged off Redondo Beach, Calif., by Tom and John Q. Burch, 1935. Note spiral grooves and larger umbilical notch in *T. substriata*. Magnified approx. X 10. Both 3.6 mm H.

We now move into another order, MESOGASTROPODA, and the first family we come to is SEGUENZIIDAE which has one genus on our coast, with six species of deepwater mollusks, all very small, seldom exceeding 5 mm in height. These have attractive little shells, broadly cone shaped, with several sharp spiral ridges, between which are slanted, curved axial threads. Four species have been taken off Southern California: *Seguenzia caliana* Dall, 1919; *S. cervola* Dall, 1919; *S. giova* Dall, 1919; and *S. certoma* Dall, 1919. All four species came from deep water. Keen has figured and described two other species taken off the West Mexican Coast. Her photographs of *S. occidentalis* Dall, 1908 and *S. stephanica* Dall,

1908, will give you a good idea of what the shells of this genus look like.

The next family is LITTORINIDAE, which has several rather small species but generally the shells will exceed 10 mm when fully grown, so I have not considered them as belonging in the Minute Shell category. The next family, LACUNIDAE, which is quite closely related to the Littorines, has only small species, seldom reaching over 7 or 8 mm in height. At least eleven species or subspecies of this family, all in the genus *Lacuna* Turton, 1827, have been named and described; however, indications are that only three of these are valid, and the most common is *Lacuna unifasciata* Carpenter, 1857, pictured and described by McLean. As his figure shows only one form of this highly variable shell, I have shown some of the other forms in my photograph. (Fig. 3)



Five variations of *Lacuna unifasciata* Carpenter, 1857. All from Southern California except upper right shell is from Olga, Washington. Height of largest shell - 6.5 mm.

Lacuna carinata Gould, 1849, is a more northern species, although it is reported to have been taken as far south as San Diego. It would appear that this may be just another form of *L. unifasciata* and a study of the radulae and body parts will be necessary before this can be decided. The only apparent difference as seen in the figures of this species is a wider and more extended umbilical groove than most forms of *L. unifasciata*.

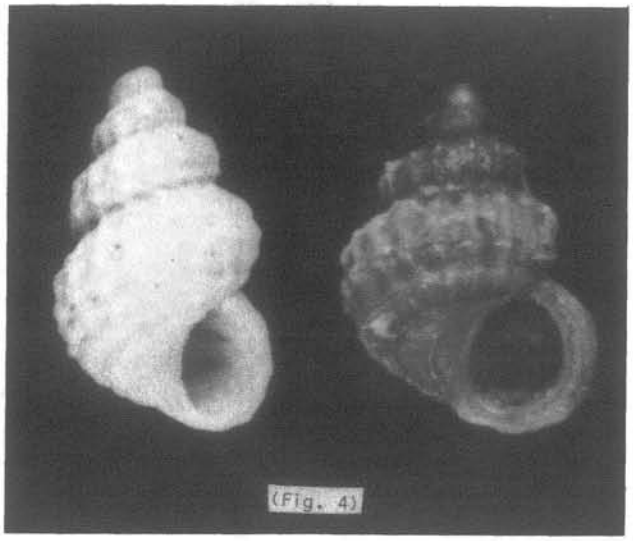
Keen shows one species of *Lacuna* from the tropical waters along Central America. It is *L. succinea* Morch, 1860 and her figure and description leave this as a rather doubtful species which may well later be found to be a *Littorina*. Many of the *Littorina* look much like *Lacuna* when they are quite juvenile, and new collectors of minute shells will need to study these closely to learn to separate them. The umbilical chink has a little ridge between it and the aperture in *Lacuna*, but is rounded off in *Littorina*.

One other genus in LACUNIDAE is *Haloconcha* Dall, 1886. Two species of this genus, *H. minor* Dall, 1919; and *H. reflexa* Dall, 1884 are found in Alaskan waters from Bering Strait to the Aleutian Islands. They resemble the lacunas in general shape, but are somewhat broader, lack the umbilical chink, and have a glossy translucent periostracum which is only occasionally found on lacunas. In size they are a little larger than the lacunas.

We next come to the large superfamily RISSOACEA which has nearly 250 species of small or minute mollusks from Eastern Pacific waters. The first family to be studied is RISSOIDAE which includes six genera of minute species along our coasts. Some of these have shells that are very beautiful when viewed through a good microscope, and are quite easily found in fine gravel from eelgrass roots, kelp beds and under rocks intertidally and deeper.

Genus *Alvinia* Monterosata, 1884 includes many beautiful species, all minute, some microscopic in size. McLean has pictured five of the species found along the Southern California coast. *A. aequisculpta* (Keep, 1887) and *A. cosmia* (Bartsch, 1911) are rather similar, both being crystal-white with tiny beaded sculpture at the intersections of their spiral and axial ridges, but the first has three spiral ridges on the early whorls and four on the final whorl, while the latter, *A. cosmia*, has one less spiral ridge on each of its whorls, and does not grow as large, reaching about 2.5 mm against 3.5 mm for *A. aequisculpta*. *Alvinia oldroydae* (Bartsch, 1911) is

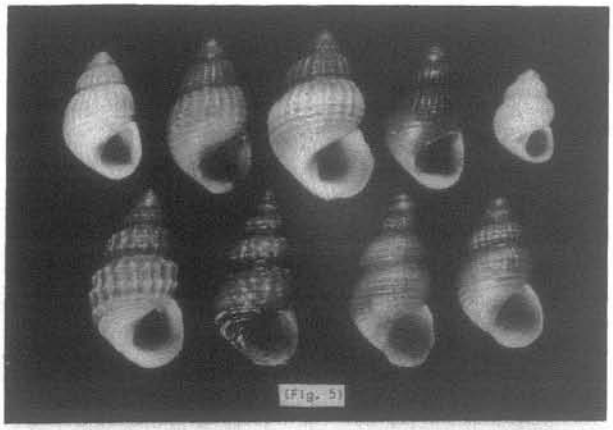
even smaller than either of the above species, seldom exceeding 1.5 mm. It has finer sculpture and lacks the beads of the other two species. Another species, not mentioned by McLean is *A. almo* (Bartsch, 1911. It is similar to *A. oldroydae* in size and shape, but has somewhat coarser sculpture and a yellowish color with a light brown color zone around the lower part of each whorl. My photograph shows *A. almo* much better than the lighter colored *A. oldroydae*, but the difference should be apparent. (Fig. 4)



Comparison of *Alvinia oldroydae* (left) and *Alvinia almo* (right). magnified approx. X 32. Height of *A. almo* 1.4 mm. Both from Eelgrass roots, Catalina Island, Calif., 1970.

A. compacta (Carpenter, 1864) illustrated by McLean, shows resemblance to several other species from our coast. *A. acutilirata* (Carpenter, 1864) is quite similar but has more widely spaced ribs and is lighter in color. *A. rosana* Bartsch, 1911 is broader, has coarser sculpture, and is also lighter in color, especially on its later whorls. *A. sanjuanensis* Bartsch, 1921 is taller, has more subdued sculpture, and is somewhat translucent.

The fifth species shown by McLean, *Alvinia purpurea* (Dall, 1871) has much the same form as *A. aequisculpta*, but lacks the beads and is of a brownish color, often with a darker purplish-brown zone around the shell at the sutures. I have shown shells both with and without this color zone in my photograph (Fig. 5). Two other species, also in my photograph, are less well-known. One is *A. pedroana* Bartsch, 1911 originally described from a San Pedro fossil. Its axial sculpture ends sharply at the lowest spiral rib on the final whorl. I have three specimens; all are light tan in color, with a gloss as if they had been waxed. They are quite small, about 2 mm in height, were dredged off Redondo Beach, California and appear to be recent shells. The other species is *A. tumida* (Carpenter, 1857), a very minute yellowish white shell, about 1.6 mm in height. This species is supposed to range from the Gulf of California to Panama, but I have several specimens from Todos Santos Island, Baja California. All other species of *Alvinia* mentioned above are generally California species, except *A. sanjuanensis* which ranges from northern California to Canada.



West Coast *Alvinia:* L. to R. Upper row - *pedroana, acutilirata, rosana, compacta, tumida:* Lower row - two variations of *purpurea,* and two of *sanjuanensis.* Magnified approx. X 9.

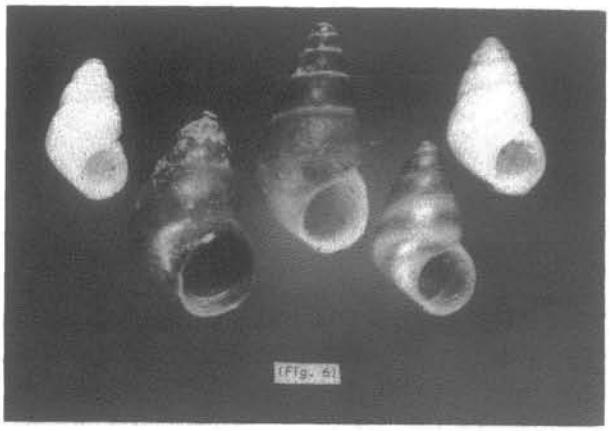
At least 14 other species of *Alvinia* have been described from the Eastern Pacific between Alaska and southern Baja California, and at least 18 other species from Tropical West America and the offshore islands. Much work is still needed to make adequate photographs and descriptions of these species available to those interested in collecting and studying our minute shells. Myra Keen pictures four of the more commonly found Panamic species,

and it will be noted that they differ from the species along the California coast in having more predominant spiral sculpture, and the sutural areas are not recessed as in the more northern species. However, I have seen a few Panamic species that closely resemble certain of the northern species, but have not yet been able to identify them.

The next genus of RISSOIDAE is one with a large name but very tiny shells. It is *Amphithalamus* Carpenter, 1865, and we probably have only two valid species along our California and Baja coasts. Both are figured and described by McLean. *A. inclusis* Carpenter, 1864 is the most common and can be easily recognized by its peripheral spiral ridge and a darker color around its offset aperture. *A. tenuis* Bartsch 1911 is often found with the previous species, and differs in being more slender, having no spiral peripheral ridge, and quite consistently having color at the base and aperture.

Two other species are mentioned in Keen: one from outer Baja, *Amphithalamus stephensae* Bartsch, 1927 is described as being of ashy pale brown color, with flesh colored columella, and resembling *A. inclusis*, but having a weaker peripheral ridge, coarser spiral threads and more rounded whorls. The other species is *A. trosti* Strong & Hertlein, 1939 described from Panama which is even more like *A. inclusis*, but has the peripheral ridge exposed on the earlier whorls of the spire. All of these species are very small, none exceeding 1.5 mm at full growth.

The next genus, *Barleeia* Clarke, 1853, (Fig. 6) has not had as many species named as has *Alvinia*, but is well represented by at least nine described species from the California coast, two of which range as far north as Canada, and six tropical species listed in Keen's book. McLean has figured and described four Southern California species: *B. californica* Bartsch, 1920; *B. haliotiphila* Carpenter, 1865; *B. subtenuis* Carpenter, 1864; and *B. acuta* (Carpenter, 1864). He also mentions four other species which he regards as synonyms: *B. oldroydi* Bartsch, 1920 as a synonym of *B. haliotiphila*; *B. sanjuanensis*, a synonym of *B. subtenuis*; *B. marmorea* (Carpenter, 1864) and *B. dalli* Bartsch, 1920 both synonyms of *B. acuta*; *B. exilis* (Tryon, 1866) also appears to be a synonym of *B. acuta*.



Five West Coast *Barleeia* - L. to R. *B. coronadoensis*, *B. subtenuis*, *B. haliotiphila*, *B. californica*, and *B. bentleyi*. Magnified approx. X 6.5.

This leaves only two other species from Southern California and Outer Baja which may be valid. *Barleeia coronadoensis* Bartsch, 1920 has a shiny white shell, very small, seldom reaching over 1.5 mm in height. Its whorls are well rounded and it has a small almost round aperture. *B. bentleyi* Bartsch, 1920 is a little larger, flesh colored, except for brown in the nuclear whorls. It is similar to *B. californica* in shape, and may be a solid color form of that species. It was described from shells from Venice, California; however, I have seen specimens from several Southern California and Outer Baja locations.

From the Panamic Province, Keen has listed five species besides *B. bentleyi* mentioned above. Four of these species have been figured but the figures are not too clear. More work is needed on the Panamic *Barleeia* which do not appear to be as commonly found in grunge as are the California species. Grunge from the California

coast, from Outer Baja and the islands off that coast almost always produces some of these little mollusks, especially when it comes from kelp beds or areas of other vegetation.

There are three more genera of RISSOIDAE yet to be discussed. I will consider these and some additional families in Part 6 of "Minute Shells" in the next TABULATA.

More.... A SPONGE IS A SPONGE

found in the cavities of *Aphrocallistes*, from tiny juveniles to full adults. The one exception is a bank of metal tubes brought up by one of the dragboats, in which the *Delectopecten* was found. [Additional data indicates that in southern waters this species was found on a submerged crashed Naval fighter plane off San Diego.] Off northern California, *D. tillamookensis* is not found in mud as is *Delectopecten randolfi* Dall, 1897, but with the one noted exception, always in massive siliceous sponge.

This data is not presented for its scientific value, but with the general idea of stimulating some student to delve into this subject in more detail, or perhaps to initiate a similar study from other areas.

TEXAS SHELL NEWS

We learn with regret that the San Antonio (Texas) Shell Club has reluctantly had to discontinue publication of the Texas Shell News. The rising cost of supplies and printing--which is becoming an increasingly serious problem for all publications--was a major factor in the Club's decision.

CLUB NEWS

CLUB CALENDAR

October 19. Regular meeting. Shelling highlights of a South Seas expedition by six SBMS members to the Solomons, New Hebrides and Gilbert Islands.

Election of officers for 1974.

November 16. Regular meeting. Helen DuShane will present "Vignettes of Baja California," including Escondido Bay, Scammons Lagoon, and offshore islands.

December. Christmas Meeting. Date, time and place to be announced.

SBMS RUMMAGE SALE DECEMBER 3

On Monday, December 3, 1973, SBMS will hold a Rummage Sale at 835 Olive Street, Santa Barbara.

This is an important fund-raising event for the Society, as it will be our major source of funds for the programs and projects of the Club, and for the TABULATA, in a year when there is to be no Shell Show. If dues are to be maintained at the present modest $4, supplementary funds are essential. We beg for the fullest cooperation of all members in making this event a success.

Lucile Lockard, Chairman, and her Committee are already hard at work receiving, sorting, preparing and pricing articles. In addition to the usual rummage sale offerings, there will be a special Christmas Boutique section, featuring hand-made items and crafts, costume jewelry, Christmas decorations and toys.

Articles for the Rummage Sale may be brought to SBMS meetings; or mailed to the Society at P.O. Box 30191; or taken to Lucile Lockard at 209 E. Valerio St., Santa Barbara. Arrangements for pick-up by the Committee may be made by calling Lucile at 962-7048.
