

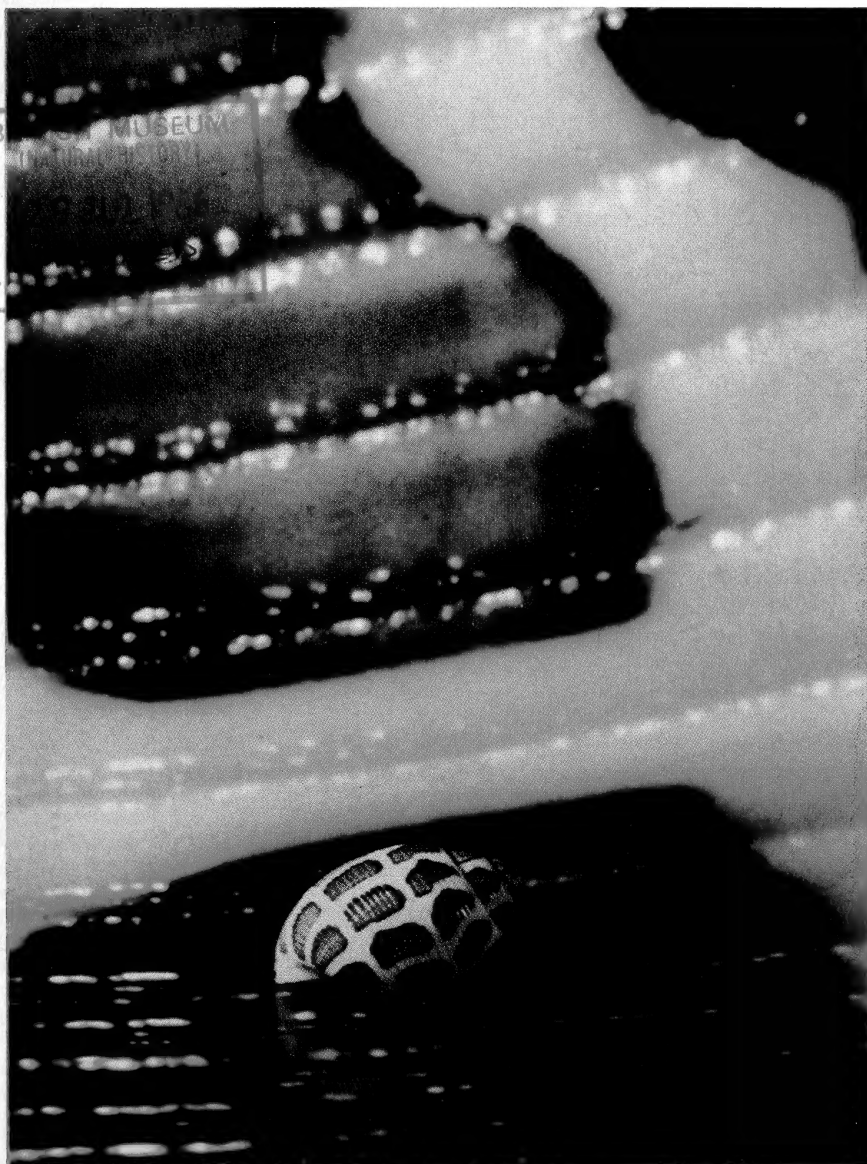
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SHELLS AND SEA LIFE

A Monthly Publication on Mollusks and Sea Life

\$3.00 April, 1985

Volume 17, Number 4



Actaeon eloiseae Abbott, 1973 — Photo by Marty Gill

EDITOR'S NOTES

It has taken a lot of hard work but we have done it "with a little help from our friends." In a very short time we will be back on full schedule with our new format and looking better than ever. This year promises to be great with many excellent articles in the line and many more promised to us by authors.

It seems that every month we need a new piece of equipment or software to provide better service to our subscribers. The March additions were a small printing press for flyers and booklists, and a folder-stapler to put things together — not to mention the building additions mentioned in the February issue. We will tell you more about how things are put together as the months go by.

We really have to give special mention to two people who have greatly helped to shape this magazine — Jack Brookshire, who receives calls at almost any time of the day or night — and Leonard J. Hansen, who has helped us shape our policies and given us invaluable aid in many of the areas necessary to make a successful magazine.

The summer conventions are on the way. We hope to meet many of you at C.O.A., A.M.U. or W.S.M. this year. It is impossible to be certain we will be able to attend because of the magazine production schedules but we certainly are working toward that goal.

Our apologies to Mary "Pecten" Flentz for misspelling her name in the January issue of S&SL. Also, the photo shown is of only a small part of her beautiful display which won the duPont Trophy.

As I am writing this, the May and June issues of SHELLS and SEA LIFE are nearing completion. Do we have some articles for you! Roland Anderson on clams; Richie Goldberg on *Orthalicus labeo*; Daniel Keren on Palau seashell stamps; Lewis Macfarlane on shelling in Dar es Salaam; Don Shasky on *Thyca*; Ron Shimek on turrids; Emily Vokes with murex species described by Roland Houart; Peggy Williams on Caribbean shells plus regular features and columns.

Actaeon eloiseae Abbott, 1973

Cover photograph

The shell pictured here came from the type locality near an island off the coast of Oman. This photo (in larger format) was part of Marty Gill's display at the Long Island Shell Club show last September. The display took a blue ribbon. Marty does his own color printing.

SHELLS and SEA LIFE

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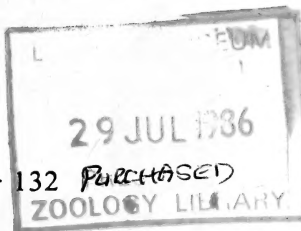
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SHELLS AND SEA LIFE

formerly the OPISTHOBRANCH

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SHELLS and SEA LIFE was formerly known as the OPISTHOBRANCH NEWSLETTER. The magazine is open to articles and notes on any aspect of malacology or related marine life. Articles submitted for publication are subject to editorial board review. Articles should be submitted typed and double-spaced. For

additional information send for free booklet "Suggestions for Contributors".

We undertake no responsibility for unsolicited material sent for possible inclusion in the publication. No material submitted will be returned unless accompanied by return postage and packing. Authors will receive 10 free reprints of their article. Additional reprints may be purchased.

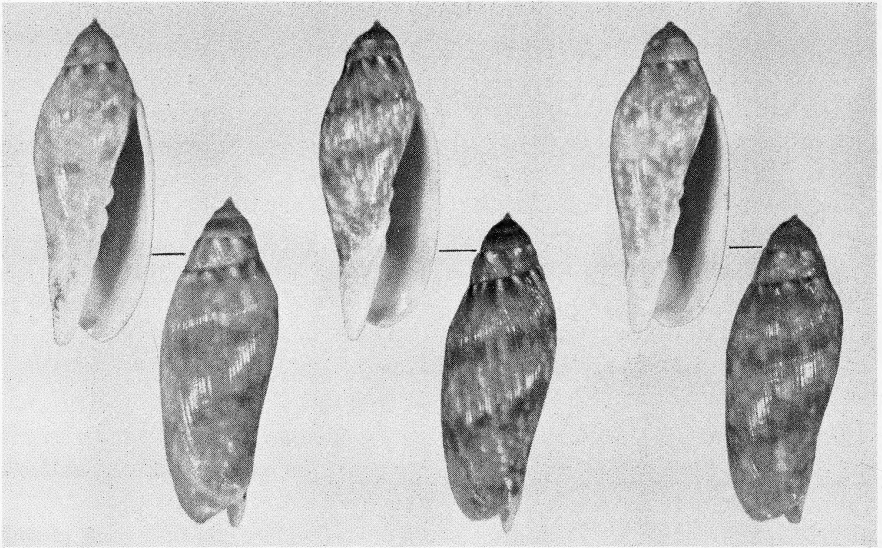
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A new dwarf form of *Volutoconus grossi*?

Richard L. Goldberg, Worldwide Specimen Shells

P.O. Box 137, Fresh Meadows, NY 11365



Volutoconus grossi mcmichaeli Habe & Kosuge, 1966 (form?). Trawled east of North Reef Light, Capricorn Channel area, Great Barrier Reef, Queensland, Australia; 75 fathoms; by commercial fishing boat. Shells 53-56 mm length.

Over the past few years, Australian fishing boats working in the Capricorn Channel area of the Great Barrier Reef have surfaced a number of new and unusual species, including *Galeodea maccamleyi* and *Notovoluta gardneri*. Among these and other finds, is a dwarf form of the rare volute, *Volutoconus grossi*. A small number of live-taken specimens trawled in early 1984 have various characteristics that mimic typical *grossi*, and the subspecies *mcmichaeli*.

In 1966 Donald McMichael described a small (60-70 mm) form of *V. grossi* as subspecies *helenae*. This has now fallen into synonymy of subspecies *mcmichaeli*. The color and pattern of *helenae* were described as orange-red with numerous, discrete small white markings, roughly triangular, and circled with four discontinuous dark brown to black bands. Except for the four bands (our *grossi* form here has two), the color and tenting are similar. The size generally is slightly smaller than McMichael's form. In Weaver & duPont's "The Living Volutes," they give adult size ranges for *V. grossi grossi* as averaging about 110 mm, and for *V. grossi mcmichaeli* as 60-97 mm. So in fact, these Capricorn Channel *V. grossi* are the smallest recorded adult specimens collected.

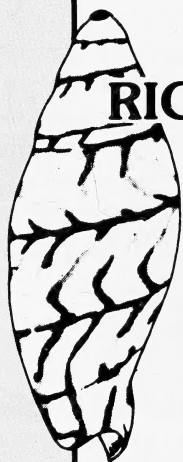
The Capricorn Channel *V. grossi* have the general shape of typical *grossi*, but the pattern of *mcmichaeli*. The protoconch of typical *grossi* is described as being smooth, and the teleoconch consisting of only minute, longitudinal growth lines. *V. grossi mcmichaeli* on the other hand has its protoconch radially ribbed, and the teleoconch with longitudinal ribs that become somewhat less pronounced on the adult body whorl. Our mystery *grossi* form has all the characteristics mentioned for subspecies *mcmichaeli*.

One of the three *grossi* forms I have observed has three bands with reduced ribs on the protoconch, so I assume that they vary considerably. I would personally say these are a range extension for *V. grossi mcmichaeli*, but I have been told by other collectors that they feel it is typical *grossi*. Whether they be typical, subspecific or possibly a new form, they are undeniably among the more beautiful and rare species being brought up in Australia.

READER FORUM

Bradybaena sp. I am sending you this portrait of *Bradybaena* sp. that was slowly crossing the asphalt road near Moscow at the end of June 1977. The snails were unusually abundant, crawling in all directions on the motor roads. The interrupted humid mucous tracks left by *Bradybaena* sp. were approximately the same by size and configuration, and arranged nearly at the same distance one from another, undoubtedly reflecting the mechanism of displacement of the snail on hard, rough substrates. This provides obvious confirmation of so-called "galloping" movement, supposed by some authors for terrestrial pulmonates. It is astonishing, but despite the abundance of snails I succeeded in finding such clear unbroken tracks only once. — Dr. I.S. Roginskaya, P.P. Shirshov Institute of Oceanology, Academy of Sciences of the USSR, 23, Krasikova St., Moscow, USSR, 117218





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PUBLICATION NOTES

McLean, James H. 1984. Systematics of *Fissurella* in the Peruvian and Magellanic provinces (Gastropoda: Prosobranchia). Contributions in Science, Los Angeles County Museum, (354), 70 p., 267 b&w figs. Order No. 848 — \$7.50.

The 58 named fissurellid taxa in these provinces have been reduced to 13 species and three subspecies. Excellent illustrations are given of the shells, animals and radulae. — Walter Sage

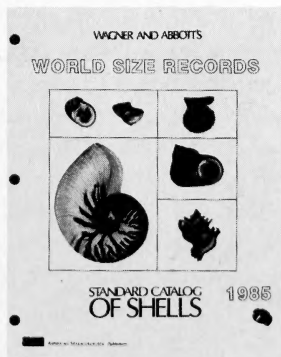
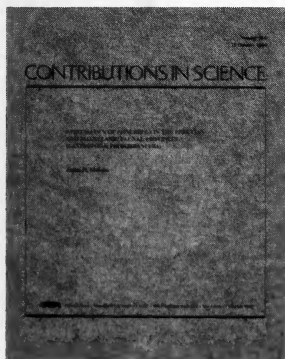
Wagner, Robert J.L. & R. Tucker Abbott. 1985. Supplement 3 to Standard Catalog of Shells. American Malacologists, Inc., Melbourne FL. 32pp. Soft cover Order No. 0781 — \$7.00

Since the first edition of this valuable catalog came into print in 1964, enthusiastic collectors have enjoyed the listings of the largest known specimens of a given mollusk species. This new supplement provides world size records for over 1000 species of mollusks, concentrating on specimens over four centimeters (1-1/2 inches), but including all cones and cowries. Records are listed alphabetically by genera, with the geographic locality, present owner, and date collected or registered. A new feature is the use of an explanation point (!) to indicated that the owner of a world record shell personally collected that specimen.

Information on measuring shells, how to establish that a specimen is of world record size, and a short bibliography complete this compilation. It is hoped that collectors will find this supplement of interest and will send changes or additions to the authors for inclusion in future editions. — Walter Sage

Rice, Tom, 1985, Ninth Edition, A Shellers Directory of Clubs, Books Periodicals and Dealers. Of Sea and Shore Publications 102 p. Soft cover Order No. 315 — \$3.75.

The latest edition of this informative book filled with useful information on shell club addresses, basic shell books, shell periodicals and shell dealers. The book is so useful and so inexpensive that it is ridiculous to be without a current copy. Our personal preference would be alphabetical arrangement; perhaps more people prefer the arrangement by locality used in this reference. — S&SL



NINTH EDITION 1985

A SHELLER'S DIRECTORY OF CLUBS,
BOOKS, PERIODICALS AND DEALERS



by Tom Rice

Branchin' the Pacific coast of Baja

Jim Gatewood, 7584 Amethyst, Rancho Cucamonga, CA 91730

Christmas, my birthday and diving expeditions for nudibranchs all have the same effect on me. I can't wait for them to arrive. So, when Dan Gotshall called and asked if I would be interested in a diving trip to the San Benito Islands, I answered with a quick "You betcha!" and started counting the days to departure.

Finally August 5th arrived, and with notebooks, specimen jars, camera and, of course, my SCUBA equipment, I was off to San Diego to begin what was to be a very exciting expedition.

There were 15 of us going on the trip, ranging from college professors and housewives to grocery clerks and doctors, all eagerly anticipating what was to come. Cameras were just as numerous as spearguns, and soon we had our gear stowed, and had laid claim to our bunks. Then, with favorite drink in hand, we began to get acquainted and talk about the trip and of course our underwater experiences. Our home for the next six days was to be the "Sand Dollar," one of San Diego's best diving boats. At midnight sharp Bill Johnson, our skipper, had us heading south along the Pacific coast of Baja.

We arrived at San Martin Island by late afternoon. It is a volcanic island about one mile wide and almost 500 feet high at its peak. My notes said it was surrounded by lush kelp beds and the bottom was described as mostly rocky. Well, I obviously had a pre-el Nino set of notes. The rocks were there, but the lush kelp had been reduced to more like sparse groupings. Anyway, a true "brancher" doesn't need much kelp to be successful, and I was more than ready to get wet.

Before donning my wet suit, I decided to search out a diving buddy. Now this can be a task of great significance for some people, but for me there are just a few simple rules that must be met. Rule 1: My dive buddy must have adequate equipment, (i.e., a B.C. with at least 35 lbs of lift and a regulator with an octopus). Rule 2: My dive buddy should have experience diving with a camera. Rule 3; Beautiful women have priority over all other available dive buddies. Luck was with me! I found a dive buddy who qualified easily on all counts.

After talking over the dive plan, my buddy and I jumped from the boat and headed towards the bottom. To my surprise there was a lot more kelp than I expected. It appeared to be very healthy looking, but it only rose to within five feet of the surface. When we reached the bottom the depth gauge read 35 ft. and the temperature read 65° F. There was some surge, but



Above left: *Flabellina* sp. found at Johnson Sea Mount; Above right: *Doriopsilla albopunctata* note chocolate brown dorsum; Bottom: Undescribed aeolid from West Benito Island.



nothing to be really concerned about. My buddy indicated she was O.K., so we began our exploration. As we cruised over the bottom, hoping to find some obvious dorid clinging to the rocks, out of the corner of my eye I caught a glimpse of something pink! I immediately swam over to the spot and there under a waving kelp frond was a *Hopkinsia rosacea* slowly making its way across a rock. "Now this is the way to start!" I said to myself. I had taken a number of pictures before I finally noticed my buddy frantically waving her hand at me. As I raced to where she was, I could tell she wasn't in any trouble, but that she had something she wanted me to see. She had found a *Mexichromis porterae* under a small rock ledge. In order to get a photograph of this specimen, I needed to reposition it out in the open. While I was trying to do this, a pretty good sized swell came through and, well, I lost the nudibranch! Oh well, I thought, "the one that got away!" During this dive we found a total of 5 different species of opisthobranch. Besides the ones already mentioned, we also found 3 specimens of *Berthellina citrina* and one each of *Hermisenda crassicornis* and *Jorunna pardus*. My diving partner was very excited and told me she had never seen so many different types of nudibranchs before.

Our second dive at San Martin Island was much the same as the first, except that on this dive I was able to add *Aplysia californica* to my list of specimens identified.

That evening I met a man who was also interested in photographing nudibranchs, and I told him that I would like to have an "extra pair of eyes" to help me collect and photo "branches." We discussed the types of Pacific coast specimens we might encounter at the San Benito Islands, and specifically a rather gaudy reddish-purple aeolid found only in that area. I told him it was important that we collect as many specimens of this particular aeolid as possible, because it had not been totally described to science yet. I also asked him if he was familiar with any of the Sea of Cortez species of opisthobranchs. I explained to him that I had gone to Guadalupe Island, off the coast of Baja, the year before and had found a *Chromodoris galaxorum*, which until then had only been found in the Sea of Cortez. My new friend smiled at me and I could almost read his thoughts... "new species" ... "range extensions" I knew I had found a good "pair of extra eyes."

The coffee smelled delicious and it was just what I needed on a Monday morning. As I stood on deck sipping it, admiring the clear blue sky dotted with a few puffy white clouds, the San Benito Islands loomed into view. They consist of 3 small islands known simply as East Benito, Benito Center and West Benito. The largest is West Benito, just a little larger than Santa Barbara Island in the California Channel Island group. Except for a lighthouse keeper and a small group of abalone divers, who double as red algae collectors in the off season, on West Benito, the islands are uninhabited by human beings. On Benito Center and East Benito there are several rookeries of California sea lions, elephant seals and a small establishment of fur seals.

We anchored off the southeast end of West Benito, and soon my new-found friend, my beautiful dive buddy from the first dive and I were over the side and heading towards the bottom. Water visibility was about 50 ft. and the temperature a comfortable 68 degrees. As we approached the bottom, I could see many sponge-covered rocks. However, a brief search of the area revealed no "branches," so we swam on to the edge of the kelp canopy. There the bottom dropped off sharply to about 60 ft. and then gradually sloped down to 80 ft. At the bottom of the drop-off there was a massive pile of rocks that looked as though they had been stacked up on each other and then pushed over. On the underside of one of these rocks, I found our first specimen of the dive, a *Tyrodina fungina*, munching on some sulphur sponge. Not a great discovery, but it was a beginning. I began turning over some of the smaller rocks — "rock-rolling" is not my favorite pastime, but I have usually found it to be most rewarding when searching for "branches." After turning over 4 or 5 rocks, I discovered what I considered to be a real find, a *Dendrodoris krebsi*. I had found only 2 specimens of this nudibranch before, both in the Sea of Cortez. After 40 minutes underwater we had also collected and photographed a *Navanax inermis* and a *Laila cockerelli*, which had orange tipped tubercles, not the red tipped ones I had hoped to find.

On returning to the boat, I noticed a crowd gathered round my new dive buddy, my "extra pair of eyes," who handed me his collection container and asked: "Is this what you've been looking for?" In the container were 4 of those gaudy, undescribed aeolids. "Fantastic!" I yelled, incredulous at the luck we had had.

I made 3 more dives that day, another at West Benito on which we added *Flabellina iodinea* to the list, one at East Benito which produced nothing, and finally a night dive

back at West Benito. On the night dive I again buddied up with my "extra pair of eyes," and the results were great. He found a *Chromodoris dalli*, normally found only in the Sea of Cortez, and I found specimens of an undescribed *Dendrodoris* and a *Phyllidia*.

On Tuesday I made 3 dives, all at West Benito Island. Two dives were made at a spot called South Pinnacle. Although this was the most beautiful of all the dive spots I visited while at the Islands, it yielded nothing new to add to my identification list. While I was disappointed with the day's find, the nudibranchs had already begun to work their magic. That evening I must have answered over a hundred questions about "branches," and I was amazed at how the interest in nudibranchs had grown in the few days we had been on our trip.

The next day we anchored at Sacramento Reef which is located three miles WSW of Punta San Antonio. I made 2 dives this day and added another *Jorunna pardus* and a *Doriopsilla albopunctata* to my list. An interesting note about the latter was the chocolate color of the dorsum. I was also able to identify a *Mexichromis porterae*, a *Flabellina iodinea*, and another specimen of the undescribed *Dendrodoris*, all of which were brought aboard by different divers, in cupped hands, dive gloves, and the most impressive of all, a previously disposed of Corona beer bottle! It seemed that all the talk about these colorful little sea slugs had started a real "Easter Egg Hunt."

Early Thursday morning we arrived at Johnson Sea Mount, a pinnacle located less than a mile off the coast of Cabo San Quintin, noted on most charts simply as "Breakers." The sea mount rises from over 100 ft. to within 30 ft. of the surface. The sheer walls and an abundance of hydroids and sponges make Johnson Sea Mount an ideal area for photography. We made 2 dives here and collected 15 different species of nudibranchs, eight of which had not been found on any of the previous dives. Some of the more significant of the finds were *Cadlina limbaughorum*, *Hypselodoris californiensis*, *Polycera atra*, *Triopha catalina*, and *Chromodoris macfarlandi*, all of which are possible range extensions. I also collected an unidentifiable species of *Flabellina*. This specimen is approximately 20-25 mm in length, the ground color is white and the cerata are a dark brick red with a slightly lighter red at the tips. The white rhinophores are tipped in orange, as are the oral tentacles. It is very similar to *Flabellina trilineata*, but does not have the characteristic three white lines. Again this day most of the other divers made contributions to my identification list. One of the divers had brought up an old anchor from 110 ft. deep, and while cleaning his treasure, noted some egg masses and 2 *Rostanga pulchra*. Altogether about half of all the specimens I identified at Johnson Sea Mount were collected by the other divers.

After lunch we headed for Roca Ben, which is a small pinnacle about 2.5 miles south of San Martin Island. This area is very similar to Johnson Sea Mount in that there is very little kelp. We made one dive here, and then moved to San Martin Island for our final dive of the day. Seven different species were collected at Roca Ben, 3 of which were new additions to my identification list, i.e., *Cadlina luteomarginata*, *Janolus barbarensis*, and *Phidiana pugnax*.

At San Martin Island we made a shallow dive of less than 30 ft. On this dive, by popular demand, I took 8 of the most colorful nudibranchs we had collected to the bottom with me, so that the other divers could photograph them. It turned out to be one of the funniest things I had ever seen underwater - all those photographers jockeying for the best position in which to photograph the little creatures! Eventually they all got sorted out and everyone was able to photograph at least 3 different species. While all this was going on, I was able to search the area for new specimens, and I found an *Elysia hedgpethi* on the green algae, *Codium fragile*.

That evening we started on our return trip to San Diego, and I had time to organize my collection and reflect on the outstanding trip we had had. Thirty-one different species of opisthobranch had been collected, 3 of which were undescribed or altogether new.

I should like to thank everyone again for their help in the collection of specimens and information, especially our dive master, Jim Stewart, who always made sure we were safe. A special thank you goes to my "extra pair of eyes," Marc Chamberlain, whose enthusiasm and knowledge helped to stimulate the interest of the other divers, and to Patty Mariano, my beautiful dive buddy, for her patience and understanding throughout that week.

[Editor — Results from the scientific data will appear in a future issue.]

The trivalved mollusk

Richard E. Petit

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Much has been written about Constantine Smaltz Rafinesque and his publications. To this day the mention of his name among malacologists, especially those of fluviate persuasion, arouses as many different responses as there are persons present. It can be, and has been, argued that Rafinesque was either a genius, insane, or both.

While many of Rafinesque's taxa are well-known, and others are still being debated, his trivalved mollusk has been forgotten. This story should probably begin with Rafinesque's acquaintance with John Audubon and the oft-told story of Rafinesque's demolition of Audubon's violin while using it to kill "new species" of bats. Rafinesque, regardless of his talents and intellect, was a species-monger, and Audubon was quick to recognize his cupidity regarding undescribed animals. Subsequently, possibly in retaliation for the destruction of his violin, Audubon described to Rafinesque imaginary animals which were duly named and entered into the scientific literature. Of course, Rafinesque did not need much assistance in this regard, as he named and published descriptions of sea-serpents from contemporary newspaper accounts.

Our trivalved mollusk made its first appearance in 1818 under the name *Notrema fissurella*, a "new genus of fluviate bivalve shell of the family of Brachiopodes." Rafinesque was not certain if the creature was a brachiopod or a mollusk, and he really should not have been expected to know as he had never seen one. He states that "I have not seen the living animal myself, but Mr. Audubon of Hendersonville, a zealous observer, has drawn it, and it appears to have a head with two eyes and no tentacula jutting out of the perforation." Nonetheless, Rafinesque was quite capable of writing a detailed description of the shell, the living animal, and its lifestyle. He further stated that "It is found on the rocks of the bottom of the river Ohio, from the falls to the mouth; it is rare; diameter about one inch; it holds on wrecks as the *Patellas* do, and might be mistaken for one at first; the operculum has a hinge, when the animal wants to protrude the head, it opens it as a valve. The shell might, perhaps, be deemed trivalve on that account."

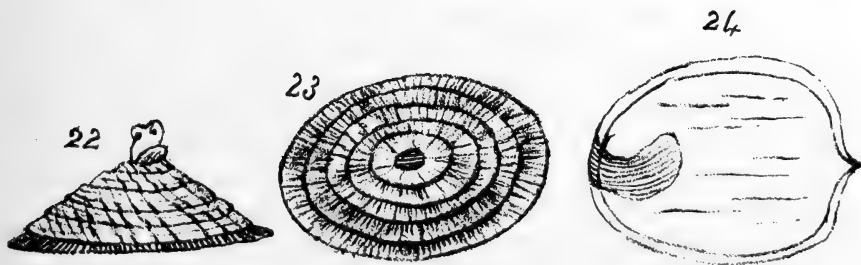
No illustration accompanied this original description, but Audubon's drawing was published in 1820 when Rafinesque redescribed his *Notrema*, giving it a new generic name and a new specific name. This description, as *Tremesia patelloides*, stated that the species represents a new family intermediate between "les Brachiopes, les Teredaires et les Patellaires." Incidentally, the species-level name *patelloides* was not entirely new, Rafinesque having used it in 1819 when referring to the shell as *Notrema patelloides*.

The illustrations, reproduced here, show a limpet-like shell with a nondescript head poking through the operculated apical opening. Having spent considerable time with head and shoulders sticking up out of tank turrets, this writer can empathize with our *Tremesia* (alias *Notrema*).

Tremesia (or *Notrema*) has received little notice in the scientific literature, probably for the simple reason that it is not worthy of scientific comment. Baron de Ferussac, in 1835, had more to say about it than anyone. His rather lengthy comments can be boiled down to one phrase employed in his discussion, "Chose incroyable !"

Selected references

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- Ferussac, Baron de, 1835. Observations ... sur la synonymie des coquilles bivalves de l'Amerique Septentrionale.... Magazine de Zoologie, 5(59-60):1-36.
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PERSONAL NOTES



WHAT IS IT from **Pete Haaker**: Enclosed is a slide of an unidentified marine "thing," for your new "what is it?" column. It appears to be some kind of egg case. I have seen these several times, always solitary on hard substratum, lightly covered with sandy silt. This one was photographed at Santa Rosa Island in July of 1981. The wine glass shaped object is quite flat (ca. 2 mm) by 20 mm high, and ridged. — State Fisheries Laboratory 1301 W. 12th St. Long Beach, CA 90813

From Miss Mathilde Teitgen: Shell collecting has been my passion for over 20 years. After discovering that snorkeling worked well to collect shells, I decided to take scuba lessons. I'm a newly certified basic scuba diver from Long Island, New York and I'm planning a scuba trip to St. Thomas in May 1985. In the future I plan to go on other scuba and/or shell collecting expeditions. Unfortunately, I don't know many scuba divers and I don't know any divers who collect shells. Please write to me if you scuba dive to collect shells. I'd be happy to hear from you. — Miss Mathilde Teitgen, 45-25 248th St., Little Neck, NY 11362

Suggestions for Preparing Manuscripts for SHELLS and SEA LIFE

505 E. Pasadena
Phoenix, Arizona 85012-1518 U.S.A.

SHELLS and SEA LIFE (S&SL) welcomes notes and articles on any aspect of malacology — or related marine life. Even topics only indirectly concerned with mollusks will be considered. Articles on shells will, however, receive priority. We attempt to absorb all production costs (typesetting, color separations, halftones and author revisions) but they should be borne in mind by authors. Donations to help defray expenses are always welcome.

It is the policy of **S&SL** not to change the writing style of authors, nevertheless there are a few policies that have been found necessary to decrease the possibility of misinterpretations and errors.

The **PERSONAL NOTES** and **READER FORUM** sections of **S&SL** are wide open for short contributions from anyone. They are intended to provide places where amateur and professional naturalists can record field observations. You can provide a real service by recording and reporting field observations, no matter how unimportant they may seem. (An example would be observation of egg laying including locality, date & species.) All it takes is an observant eye, a piece of paper, an envelope, and a stamp.

Notes should be less than 500 words and may include photographs or drawings. "What is it?" photos are especially encouraged. They should give all available information on where and when the observation was made. Book reviews are also encouraged — see recent issues of the magazine for format and style.

"Notes" for the magazine are *not* subject to Editorial Review Board review and are very flexible in format and content. "Literature cited" should not be included in "notes". "Scientific articles" should follow the style guidelines suggested below.

There are a few rules that apply to all scientific writing. While it may be unnecessary for the majority of our potential contributors, we will repeat them here for the benefit of those whose paper may be their very first venture:

1) The name of the author submitting a manuscript should appear at the top of every page. The manuscript should be in final form, complete, carefully proof-read. All pages should be numbered consecutively. The sequence of manuscript parts should be as follows in most cases: title, introduction, materials

and methods, results, discussion, acknowledgments, literature cited, figure legends, figures and tables.

2) Under no condition start a sentence with an abbreviation or with a number written in numerals. Within a sentence, numbers one to ten are written out and larger numbers are expressed in numerals (e.g., 11, 121, 1985).

3) Avoid the use of idioms, as scientific papers must be read by persons of many different tongues; idioms too frequently give rise to serious misunderstandings.

4) Scientific names are underlined to indicate that they should be set in *Italics*. A double straight underlining indicates that SMALL CAPITALS are required and a triple underlining indicates ALL CAPITALS. A wavy line by itself calls for bold face.

5) We request that for the first appearance in a paper, the scientific name of any species discussed or cited be given in full, including author and year of the original description. For example: *Favartia (Pygmaepterys) peasei* (Tryon, 1880). The generic name should be written out whenever it is mentioned for the first time in any paragraph. Also, it is better to spell out all generic names if in the same paragraph two or more genera are mentioned that begin with the same letter.

6) The use of FAMILY NAMES is encouraged. The name should be in CAPITALS and be clearly associated with the species in that family. In general it should immediately precede the use of the full scientific name, author and date.

7) "Common names" may be used anywhere within notes or articles subject to the following: Common names will be capitalized only when the first appearance of each common name is *adjacent* to the Latin name, author and date. Subsequent usages may be with only the capitalized **Common Name**. Names introduced without the scientific name adjacent will all be treated as common nouns and set in lower case type (except, of course, proper noun place names, etc.). The same policy is used with abbreviations which must be introduced by the fully spelled-out term or name.

8) If you are using terms which are not readily available in standard dictionaries please include a short definition with each term — separate from the article. This is preferable to defining the term in the text. We will include a **GLOSSARY** from time to time as necessary.

9) Footnotes are discouraged. If the article is so complex as to require footnotes, it may belong in a pure scientific journal. Extended quotes and other "footnote" material should be referred to by sequential numbers in the text and placed in an appendix at the end of the article.

10) Square brackets "[]" are normally used to set off editorial comments or addition within articles. Authors should avoid the use of square brackets.

Articles may include color or black and white illustrations. Either 35mm color transparencies and/or prints may be sent in although prints are preferred. Please note that prints are frequently trimmed before scanning and must be spray-mounted for scanning. It is not always possible to return the print after use — which is why we recommend that you keep your original slide or negative and send us a print.

We cannot guarantee that we will print any particular photo in color. The quality of the photograph and the amount of color printing space we have available determine what is printed in color.

Authors should follow the style guidelines recommended in the "Style Manual for Biological Journals", which may be purchased from the American Institute of Biological Sciences, 2000 "P" Street, N.W., Washington, DC 20036. Original manuscripts should be typewritten on white paper, 8-1/2" x 11", and double-spaced throughout. You may include a copy to facilitate review; the original is required.

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References in the text should be given by the name of the author(s) followed by the date of publication: for one author (SMITH, 1951), for two authors (SMITH & JONES, 1952), and for more than two (SMITH *et al.*, 1953).

The "literature cited" section must include only references cited in the text. "Literature cited" should be listed in alphabetical order by author and typed on sheets separate from the text. Each citation must be complete and in the following form:

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b) Books

Keen, A. M. 1971. Sea shells of tropical west America; marine mollusks from Baja California to Peru, 2nd ed. Stanford Univ. Press, Stanford, Calif. xiv + 1064 p.; illust. (1 Sep. 1971).

c) Composite works

Feder, H.M. 1980. Asteroidea: the sea stars. In: R.H. Morris, D.P. Abbott & E.C. Haderlie (eds.), *Intertidal invertebrates of California*. Stanford Univ. Press, Stanford, Calif. p. 117-135.

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Ten free reprints will be provided to authors. If you desire further reprints of articles, they should be ordered at the time the article is submitted for publication. Reprints of black and white articles are possible after publication but will be in photocopy. Color articles may be purchased after publication as complete issues at the cover price. Orders for more than 10 copies of an individual issue are available at a discount. Write for details.

Articles already under consideration for publication with other periodicals are not acceptable for publication in **SHELLS and SEA LIFE**. If you wish to submit an article to more than one publication, please let us know when you write us. We will either accept or reject the article within 30 days so that you may send it elsewhere. After acceptance, the article will proceed through the review process to be published after all requirements are met.

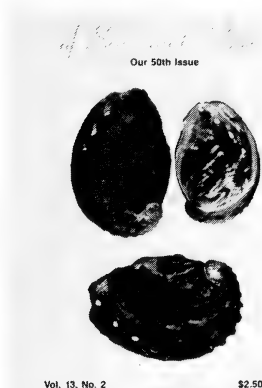
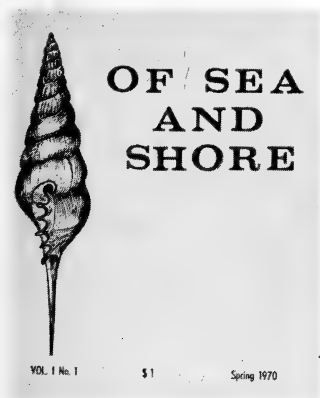
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Of Sea and Shore

Tom Rice



During the years 1960 to 1964 a periodical aimed at the amateur sheller appeared, entitled **Shells and Their Neighbours**. It was printed on slick paper, and each issue had 16 pages of interesting articles with black and white photographs on all sorts of subjects, from shells to echinoderms, craft articles and travel tales. Unfortunately, it ceased publication in 1964, leaving the shell collector without a magazine which covered his interests.

In 1968, while on a collecting trip to Mexico — something I did during the winter months whenever possible — with friends Mabel and Everett Stiles, I began thinking seriously of starting a successor to that short-lived publication. Everyone I talked to thought the idea great, but felt it would not be successful. I persisted.

Upon my return home, I started compiling a file of shell collector names and addresses as potential subscribers to my proposed periodical. Since I had already begun publishing "A Sheller's Directory of Clubs, Books, Periodicals and Dealers" (now in its 9th edition) and "A Catalog of Dealers' Prices for Marine Shells" (8th edition out soon), I had a basic list of people with like interests. To add to these I contacted every shell club and requested a copy of their membership roster. I was amazed to find several clubs which either did not issue one, restricted release of the list to members only, or refused to send a list. A great majority of the clubs, however, promptly sent lists of members and I had soon compiled a file of nearly 5,000 names and addresses from around the world.

Of course a successful publication cannot exist on subscriptions alone, so it was necessary to secure a number of advertisers — the more the better, and the more quality I could put into my

publication. I also scouted around in the Seattle area to find a printer who could run 5,000 copies of a 48 page magazine at a reasonable price. Unfortunately, the response from potential advertisers did not come anywhere near meeting the costs of an initial press run, so the idea of the magazine suffered the possibility of being stillborn.

At this time friends Jerry and Agnes Ward purchased a Gestetner mimeograph machine which produced copies of a quality I had not expected from such a printing process. I found that by slip-sheeting (placing a black sheet of paper on each one run through the machine) I could eliminate the problem of offsetting (ink from one sheet rubbing off onto the sheet on top of it), and reach a fair quality printing job at an extremely reasonable cost. So advertisers were contacted, ad copy received and articles secured from friends and shell-exchanging correspondents, for our first issue.

Little did I surmise when I started that the amount of work in getting that first issue out would be as overwhelming as it was. I soon discovered that even at the slowest speed I could run the mimeo electrically, it was too fast to enable me to slip-sheet. So I decided to do the run by hand. I had electronically-cut stencils made — they last much longer and give a much higher quality of printing than those simply cut with a typewriter — and purchased mass quantities of mimeo paper. Since I planned to send a free copy of my first issue to everyone in my file of shell collectors, it meant that I must produce nearly 5,000 copies, or 120,000 sheets of paper, printed on both sides and each one slip-sheeted for each of its two runs through the mimeo. This was a total of nearly 250,000 turns on the machine, 250,000 inserts of slip sheets, and then another 250,000 removals of those slip sheets when the ink had dried. Then each copy was hand collated and stapled inside a cover which I had printed on an old hand-fed printing press I had in the basement at home.

Then came the addressing, stamping and mailing. Our small Port Gamble Post Office was overwhelmed when I mailed that first issue. You can imagine the look on the face of the man who picked up the mail from that small office, which normally ran a sack or two partially filled, when one day in the spring of 1970 he arrived to find nearly 20 sacks of mail awaiting him!

One thing I had to eliminate from that first issue were photographs. I was able to substitute some drawings and I promised that the second issue (praying that there would be one) would contain the photographs missing from the initial number. This issue contained the first article of many from the pen of the delightful Corinne Edwards, as well as an initial number of a

series of excerpts from the journals of noted naturalist and shell enthusiast Walter J. Eyerdam. I like to think that another article in this issue, on preserving chiton species by George Hanselman, started a resurgence in interest in this neglected group of mollusks.

Then it was time to wait and see what the response would be to my "baby." Fortunately, I didn't have to wait long. Subscriptions and letters of congratulations started to come in from near and far. **Of Sea and Shore Magazine** was on its way!

I would like to mention here a few of our advertisers who started with that first issue and continued to support our efforts throughout the life of the magazine — Seashell Treasures (through two sets of owners), Richard M. Kurz, M. C. Chandoo, Ceylon Express, Sea Perch, Elsie Malone, Phillip W. Clover and Althor Products. Summer of 1970 saw our first professionally printed issue — with those photographs which should have been in the first issue — going to subscribers in more than 50 countries around the globe.

Of Sea & Shore
Museum

and

Port Gamble
General Store



By the time we had issued our first volume of magazines — four issues per volume, a quarterly — I had been contacted by Ellis Robinson to do a book on Pacific Northwest shells. Ellis had a patented process for making inexpensive color separations, and volunteered to do separations for color covers for the magazine. I was ecstatic!

In order for Ellis to closely supervise the printing of our color covers, we switched printers from the large Seattle company which had printed the final three issues of the first volume, to a smaller printer near Ellis's home. He was a very particular fellow. If you have a copy of the first number of volume two of the magazine, look closely at the back cover. You should see a

bit of shellcraft with a poem — notice that you can read the poem clearly. The printer rejected his first run because the poem was blurred!

Ellis continued to do our color separations through the years, with the exceptions of Volume 6, Number 4 and Volume 13, Number 1, which were black and white issues throughout. With Volume 8, Number 1 we were able to include eight pages of color in each issue.

Over the years more than 300 people contributed articles to the magazine. These authors hailed from more than 30 different countries.

Personal collecting trips to Central America and Mexico, as well as escorting, as tour leader, several shell collecting groups to various parts of the world, helped me gather information for articles I added to the magazine. It was sometimes amazing how quickly the pages of each issue filled — and other times (fortunately not as often) how slowly material was accumulated. Fortunately, I was able, for most of the issues, to meet the deadlines of getting out a quarterly publication.

During the period from 1970 to 1979, I had a job which allowed me to devote a great deal of time to both the magazine and to the museum which we had opened in 1973. I was "on call" two weeks out of every four, to work the drawspan of the Hood Canal Floating Bridge to allow passage of ships into Hood Canal. In February, 1979, a storm with winds over 120 m.p.h. sank the western half of the bridge, and along with losing the bridge, I lost my job. Now all my time could be devoted to other interests — including a great trip to Florida in the winter of 1980 to attend many of the shell shows. In 1982 the bridge was reopened and I returned to my job. Unfortunately, the amount of hours worked and the pay scale were greatly reduced from what they had been, so I looked for other employment. In 1984 I gained full-time employment on the bridge, and soon discovered that I had little time to work on my magazine. This, along with other factors, led to my decision to cease publication.

I shall always be grateful to our faithful and understanding subscribers and advertisers, as well as those who generously contributed articles and other material for publication. They made those 15 years the best. I hope to continue my endeavours here in *Shells and Sea Life*, and with our other *Of Sea and Shore* publications.

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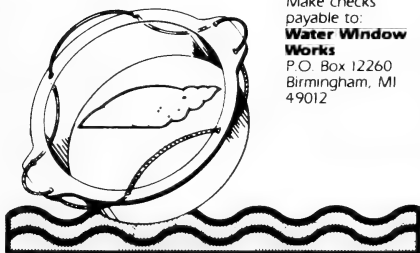
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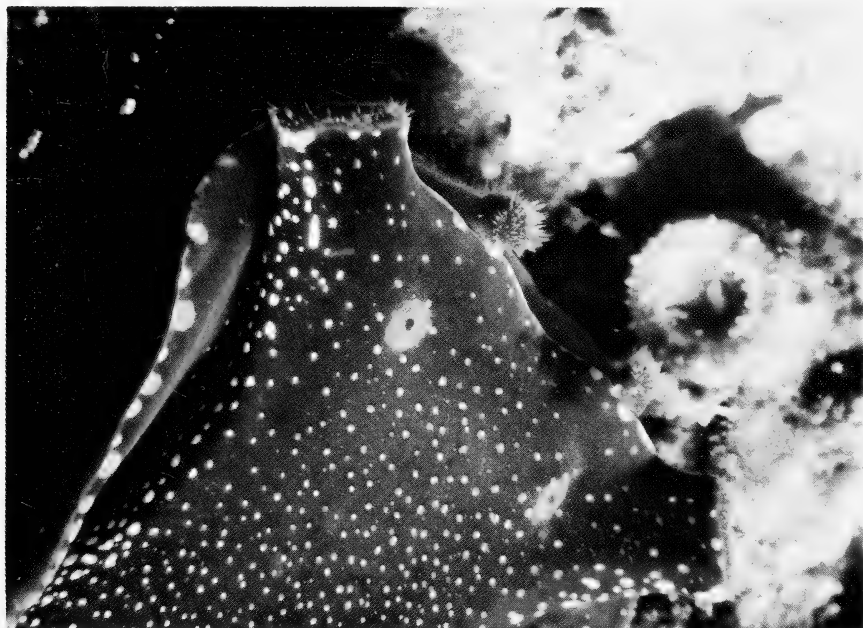
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Meet Navanax -- Head On

Text by David W. Behrens, Route 1, Box 70-A, Templeton, CA 93465

Photograph by Marc Chamberlain



Navanax inermis Cooper, 1862 has been called the most voracious opisthobranch carnivore on the west coast. This denizen of shallow protected bays and open coastal environs is known to swallow suitable prey whole, by violently sucking it into its mouth. Paine 1963 (*Veliger* 6(1):1-9) presents a list of some 64 prey species, primarily other opisthobranchs, but including prosobranchs, worms, arthropods and two fishes. The only other mollusk known to feed on this latter prey are members of the genus *Conus*.

This agile predator possesses a variety of sensory mechanisms, which by chemoreception, are capable of recognizing and locating prey at a distance. The accompanying photograph taken at 45 ft depth off Santa Cruz Island in the Santa Barbara Channel by Dr. Marc Chamberlain clearly shows two of *Navanax's* sensors: eyes and sensory mounds. Although *Navanax* has large and obvious eyes, which are light sensitive, and well developed for a cephalaspidean, there is no indication that this more obvious organ is of any use in prey detection.

Most important in prey and mate detection is thought to be a unique feature, a pair of bristle covered "sensory mounds" on each side of the mouth. Although not yet documented, these

sensory mounds, seen in the photograph in front of the eyes, are thought to be the sensory site at which *Navanax* detects (smells) sugars called mucopolysaccharides found in the slime trails produced by numerous opisthobranchs. Gosliner 1980 (Zool. Journ. Linn. Soc. 68(4):325-360) reports that as *Navanax* follows mucus trails, the sensory mounds move side to side, as if scanning for the highest concentration of this target chemical.

An interesting addition to this chemoreception ability is that as *Navanax* follows the trail of an unwary prey, it secretes a chemical substance of its own, into its slime trail. This material or pheromone referred to as Navenones A, B & C (Sleeper & Fenical, 1973; Am. Chem. Soc. 99:2367-2368) when encountered by another *Navanax* elicits an immediate alarm and avoidance response which terminates the latter animals trail-following behavior. By this mechanism the following *Navanax* is deterred from cannibalizing as well as avoids potential danger, a step towards species preservation.

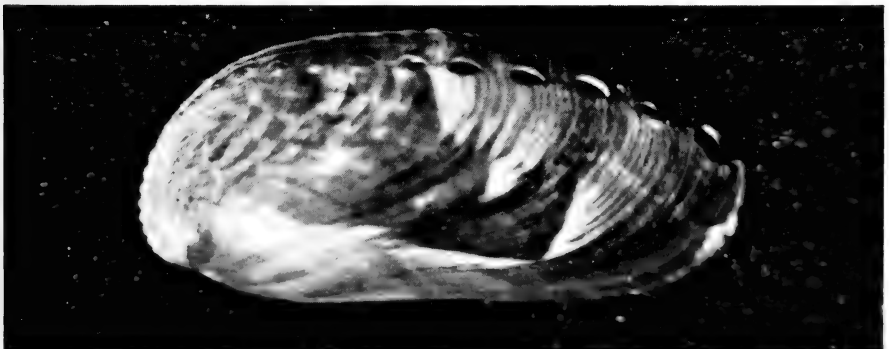
ON THE REEF WITH BOB PURTYMUN: Haliotis asinina

Bob Purtymun, P.O. Box 643, West Point, CA 95255

Haliotis asinina Linnaeus, 1758 is classed as a common mollusk in most books, and is very economical on price lists. I collected mine on Wheeler Reef, Great Barrier Reef, off Townsville, Australia, on the hull of a sunken dive boat in 10 feet of water.

Several years ago the boat had anchored close in the lee for the night and early in the morning the South Easterlies had backed-off. With the wind coming from the other direction and all aboard asleep the boat swung on it's anchor and was driven on the reef where it broke up.

Apparently *H. asinina* is not common in the Townsville area for it was the only one that I saw while diving or in collections that I viewed during my visit. This shell is 81 by 37 mm.



DEALING WITH DEALERS: The synonym syndrome

David DeLucia, 7 Sunset Hill Drive, Branford, CT 06405

Have you ever ordered a shell from a dealer, only to find you already have the species under a different name? Dealing with synonymy may be inevitable for the advanced collector, but there are measures you can take to reduce the chance of getting a familiar friend with a new label, surely one of the most exasperating side effects of doing business via mail order.

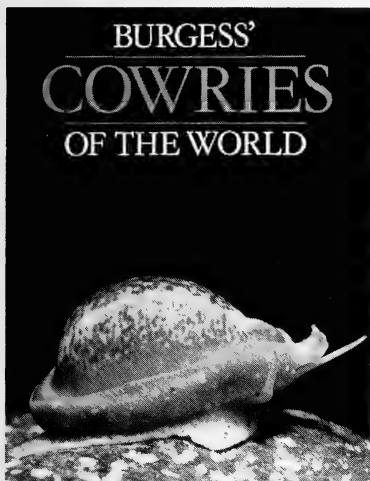
The first thing to do before ordering any shell with an unfamiliar name is to try to find the species in at least 3 references, preferably those written in the last 10 years. Most well known treatises such as Keen's Sea Shells of Tropical West America list all the known synonyms of a given species, so it should be relatively simple to check and see if the name in question is represented. Fortunately, most dealers will list both names in the rare cases where two names are given to the same shell concurrently, *i.e.*, *Latiaxis chiangi* Lan and *Coralliophila armeniaca* D'Atilio & Myers.

Since most of the large families have an abundance of genera, it will pay off in the long run to learn as many of these tongue twisters as possible. Not all dealers use *Murex*, *Voluta*, *Mitra*, and *Trochus*. Just as likely are *Ceratostoma*, *Cymbiolacca*, *Subcancilla*, and *Austrocochlea*. If you are not aware that *Typhis angasi* is the same as *Murex angasi*, for example, you may order the former thinking it will be new to your collection. The moral is: learn as much about taxonomy as you can. A little knowledge goes a long way with mollusks, and as you gradually assimilate the different genera, you will see how shells within a family are related, always a fascinating diversion.

Finally, be wary of dealers' lists that have a preponderance of specific names with no author given. Chances are good that such names were passed on by the supplier, who had no idea whether they were valid or not. The best dealers always check out any unfamiliar names, so if you see too many species in parenthesis with a question mark, you can be sure someone hasn't done his homework.

Remember, when in doubt, cross it out! Thousands of synonyms have been named over the years and the list, if anything, will get longer in the future. If worse comes to worst and you get a shell you already have, send it back immediately with an explanation of why the name is incorrect. Most mistakes on dealers' lists are caught by vigilant customers specializing in a particular family.

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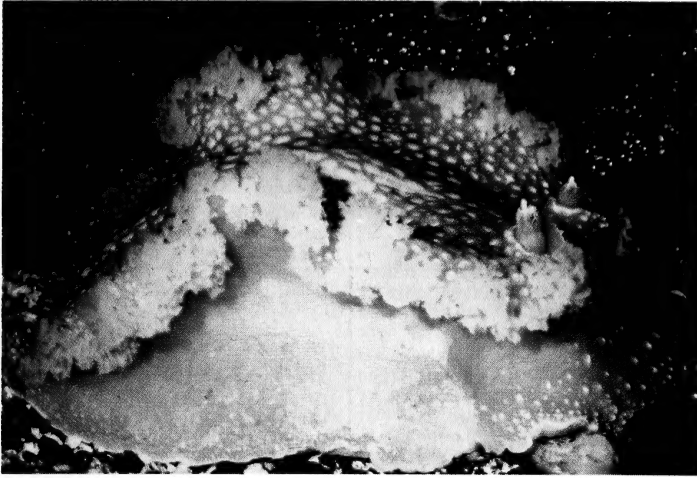
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Roland Anderson, The Seattle Aquarium, Pier 59, Seattle, WA 98101



Tochuina tetraquetra (Pallas, 1788)

I have always been skeptical of the given size limits of some nudibranchs. David Behrens's definitive book on Pacific Coast nudibranchs lists some sizes that would be truly memorable to see. Even the common sea lemon may grow to 200 mm. At that size perhaps they would be called sea grapefruits?

Recently I've had the opportunity to confirm one of Behrens' sizes when Dave Nisitano of the National Marine Fisheries Service (NMFS) lab at Mukilteo, WA called and asked if I wanted a couple of 5 pound nudibranchs. After quickly assuring him that I wanted them I mentally ran through the list of what they could be at that size: *Dendronotus*, *Tritonia*, *Archidoris*, or *Tochuina*. They turned out to be *Tochuina tetraquetra* (Pallas, 1788), locally known as the Orange Peel Nudibranch, but larger than any I've ever seen before; the Seattle Aquarium has frequently collected *Tochuina* but typically about 15 cm long. The larger of these two new monsters was 32.5 cm long, 16 cm wide and weighed 2.8 kg. It had been dredged by a NMFS survey crew in Discovery Bay, WA at 80 feet, along with many 6 foot sea whips (probably *Stylatula*), which it eats. It also eats the sea pen *Ptilosarcus* and the soft coral *Gersemia*.

In the past I have been relatively successful in maintaining *Tochuina* in my display tanks. Sea pens are an available food source which they take readily. I hope to maintain one of these giants on display at least until summer, when warm water has sometimes caused a survival problem. Thank goodness garden slugs don't grow as big!



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