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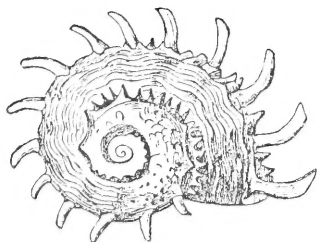
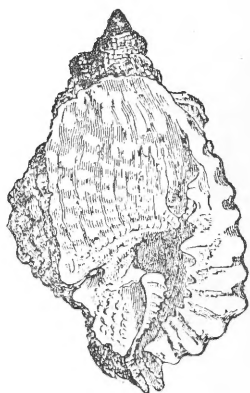
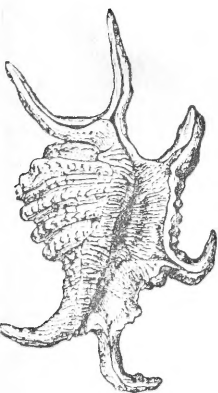
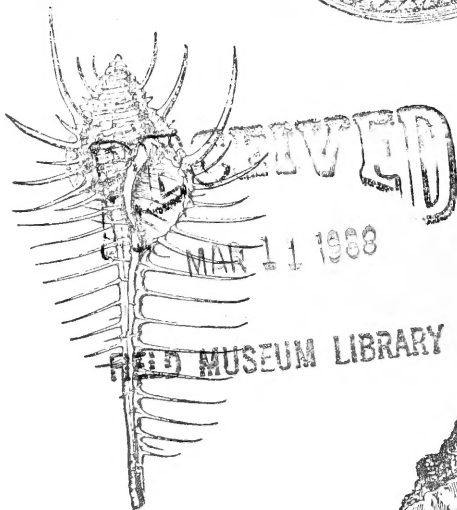
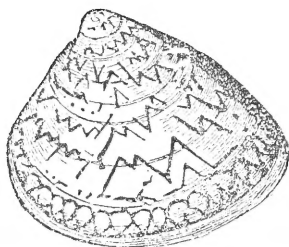
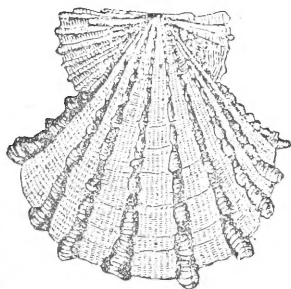
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[Vol. 20, No. 1]

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JANUARY 1988



SHELLS and SEA LIFE

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COVER ILLUSTRATIONS

Miscellaneous printing cuts (engravings).



Editor's Notes

Welcome to our 20th volume! We're still here and glad that so many of you are enjoying our publication. Thanks for all the calls and notes.

We have finally given up on the larger format. Our printing equipment simply could not handle the large size and with postal rates due to go up soon we did not want to raise the price of the publication. The October issue was a disaster for us. We were unable to complete printing the pages without cutting the sheets in half. Even then we lost many pages and had to reprint the pages ourselves after giving up on the professional help. This limits us to the page size you see here.

Shell organizations are the heart of all malacology. Every professional malacologist I know started out as a collector and most belonged to one or more clubs early in their training. Today, memberships are declining across the board and at all levels; something must be done to reverse this trend.

One of our projects for this year is to do covers with logos for all the clubs. If your club is interested, send the artwork for your logo (must be less than 2 square inches) and \$10 to cover the costs of having a cut made. We will use the illustrations on a least 3 issues during 1988 and if there is enough response, we may continue permanently.

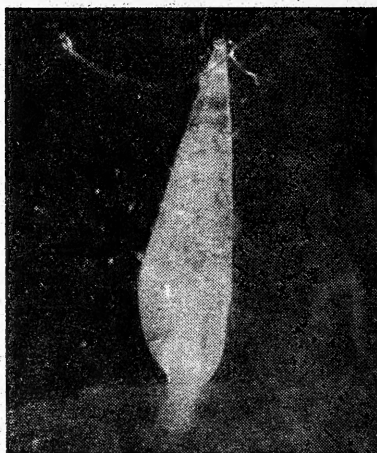
We have also cut advertising rates and offer senior citizen, student, and club member subscription discounts. These lower rates and discounts make it possible for everyone to pursue their shell interests. If anyone is unable to subscribe, please write to us. Several courtesy subscriptions are provided by patrons.

Finally, please support our advertisers! Tell them you saw their ad in S&SL when you contact them. Subscriptions do not begin to cover the costs of producing the magazine, advertising helps keep the rates low.

Melanellids & Sea Cucumbers

Peggy Williams

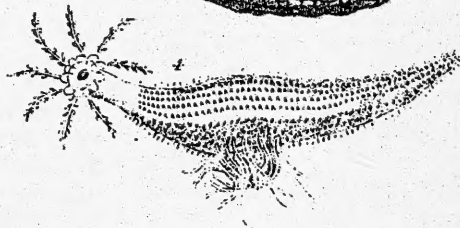
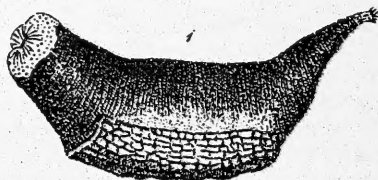
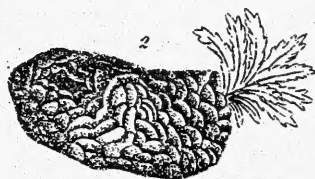
Rt. 3, Box 28, Sarasota, FL 33580



MELLANELLID

One of the most interesting habitats of mollusks is as a parasite on other organisms. The "Sea Cucumber" is an echinoderm, related to sea stars and sea urchins, sharing the characteristics of tube feet and radial symmetry. Sea Cucumbers are soft-bodied, however, and move slowly across the ocean floor ingesting sand for the nutriments found in it. When disturbed they have the ability to eviscerate, that is, disgorge their internal organs, leaving the sticky mass to trap or distract their attacker and crawling away to live on and grow new body parts.

Many Sea Cucumbers are host to parasitic mollusks of the family Melanellidae, which live in and on the host's flesh. I understand some can be found actually living inside the larger animal, but all the specimens I have collected have been on the surface, clinging tightly so they must be pried off with a fingernail. There may be as many as 6 or 8 specimens on a single Sea Cucumber, but they must be removed quickly before the host begins contracting its body in an effort to escape. They're also hard to hold on to because they're very smooth-sided and thus slippery!



Illustrations at right:

1. *Holothuria phantopus*
2. *Holothuria squamata*
4. *Holothuria fuscata*

from Griffith & Pidgeon 1834

On the Tongan Reefs

Neiafu, Vava'u Island, Kingdom of Tonga.

Bob Purtymun

1200 Brickyard Way #407, Point Richmond, CA 94801

020986 Dive #2; 18.41.3S
174.01.6W Scuba 10-25 feet. 85
minutes. In the channel between
Mala and Kapa Islands.

Sunday, Feb. 9, 1986. After lunch on the way back to Neiafu, our skipper anchored the boat in the channel between the islands of Mala and Kapa. It is a shallow channel about ten feet deep, but quite wide. I would estimate the width at 5000 feet. The bottom is hard coral with a light covering of fine silty sand. About fifty yards to the east of our anchorage was a small outcropping of coral that would produce astonishing results before the day was over. West of the boat was the dark blue of deep water.

David McLean, the local shell authority, (see HSN Sept., 1986), Andy Butler, Wes, and I elected to take the skiff out to the center of the channel to make our dive. The other scuba divers went off the big boat into the deep water, and the snorkelers headed out to the shallow water near the outcropping of coral. The water was about ten feet deep where we anchored the skiff. This was a sheller's dive. There were no spectacular corals nor colorful fish -- just a flat coral bottom with patches of fine, silty sand, a few dead coral heads and slabs and a

patch of antler coral here and there. A sparse green, weedy growth added the only color. In this type of area (a channel between two islands), the predominant current usually runs from east to west, a fact that proved to be true here. On the western side of the coral heads, slabs, and clumps of antler coral, the silty sand was always deeper. Protected by these obstructions the current had piled up triangular trails of sand up to two inches deep, and four to six feet long. Carefully fanning this sand, I have found many sand shells. On this dive this habitat added the following specimens to my collection: *Vexillum unifasciatis*, *V. exasperatum*, *V. sanguisugum*, *Imbricaria conularis*, *Domiporta filaris*, *Otopleura nodicincta* an ?*Otopleura* sp., *Nassarius pauperus*, *Terebra cingulifera*, *T. affinis*, ?*T.* sp., *Oliva miniacea*, and two unidentified species of turrids. In the sand under the slabs and coral heads were two nice *Conus textiles*, four species of bivalves, and a Triphoridae (unidentified). On the bottom of these slabs were *Monula fiscella*, a ?*Murex* sp., *Turbo petholatus*, and two pectens attached by their byssus. Out in the open in the weedy growth I found a *Conus vexillum* to complete the dive.

(Continued next page)

Bottom time on this shallow dive was 85 minutes, so two hours had elapsed from the time that we left the big boat until our return. One of the deep divers in our group, Frank Miller, had used up his air fairly quickly on a deep dive. With plenty of time and energy left he had snorkeled out to the outcropping of coral to turn a few slabs. When queried about his catch on his return to the boat he held up a beautiful live *Conus floccatus* Sowerby, 1839 about two inches long. It was under a coral slab in four feet of water. Very, very rare in Tonga, David said that he had only seen one in the twelve years that he had been on the island. He collected it. Up until now, I had never heard of one being found alive in shallow water.

020986 Dive #2 18.41.3S X
174.01.6W

Scuba, 85 minutes, 10 to 25 feet.

In the channel between Mala Island and Kapa Island. The bottom is flat hard coral with patches of fine silty sand, a few dead coral heads and slabs, and a patch of antler coral here and there. A sparse green weedy growth added the only color. In this type of an area, (a channel between two islands), the predominate current usually runs from east to west. A fact that proved to be true here. On the western side of the coral heads, slabs, and clumps of antler coral, the silty sand was always deeper. Protected by these obstructions the current had piled up triangular trails of sand up to two inches deep, and four to six feet long.

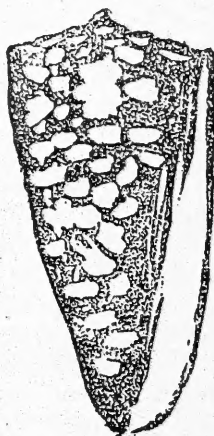
GASTROPOD

- 2 *Conus textile* nn
- 1 *C. vexillum* nn
- 1 *C. marmoreus* #4461
- 4 ?*Clavus* sp. #12805
- 1 ?*turid* sp. #12806
- 1 *Vexillum unifascialis* #12245
- 6 *V. exasperatum* #4126
- 3 *V. sanguisugum* #4429
- 1 *Imbricaria conularis* #12246
- 1 *Domiporta filaris* #12254
- 1 ?*triphorid* sp. #4456
- 2 *Nassarius pauperus* #7712
- 4 *Oliva miniacea* nn
- 1 *Turbo petholatus* nn
- 1 ?*Murex* sp. #7270
- 1 *Morula fiscella* #4457
- 1 *Otopleura nodicincta* #4460
- 1 ?*Otopleura* sp. #4459
- 2 *Terebra cingulifera* #4722
- 1 *T. affinis* #4723
- 1 *Terebra* sp. #4721

BIVALVE

- 1 *Brachidontes crebristratus*
with oyster sp. on dorsum
- 1 *Chlamys squamosa* #4471
- 1 *Anadara antiquata* nn
- 1 *Codakia divergens* #4472
- 1 *Fragum fragum* nn
- 1 *Fuivia tenuicostata* nn
- 1 ?*Pecten* sp. #4417
- 1 bivalve sp. #4458

Next month we will return to the channel at the Mala Island to look for *Fusinus* and *Mitra nubila*.



Shell Terminology

from *The Mollusca and Radiata. Arranged by Baron Cuvier...*
London, 1834.

As we have inserted four plates in explanation of the terms made use of in conchology, it becomes necessary to advert here to such of the references as could not be engraved on the coppers.

The figures of *univalve spiral shells* include,

1. An involute shell, with the spiral horns separate, and the siphon ventral. *Spirula Australis* (*Peronii*, Lam.,) *Nautilus spirula*, Gm.

2. A multilocular shell, the spire invisible, siphon medial.

3. A monolocular shell, subinvolute, columella plaited. *Voluta musica*.

4. An involute shell, emarginated or notched, narrow mouthed. *Oliva littorata*, Lam.

4. a. Shell without columella. *Id.*

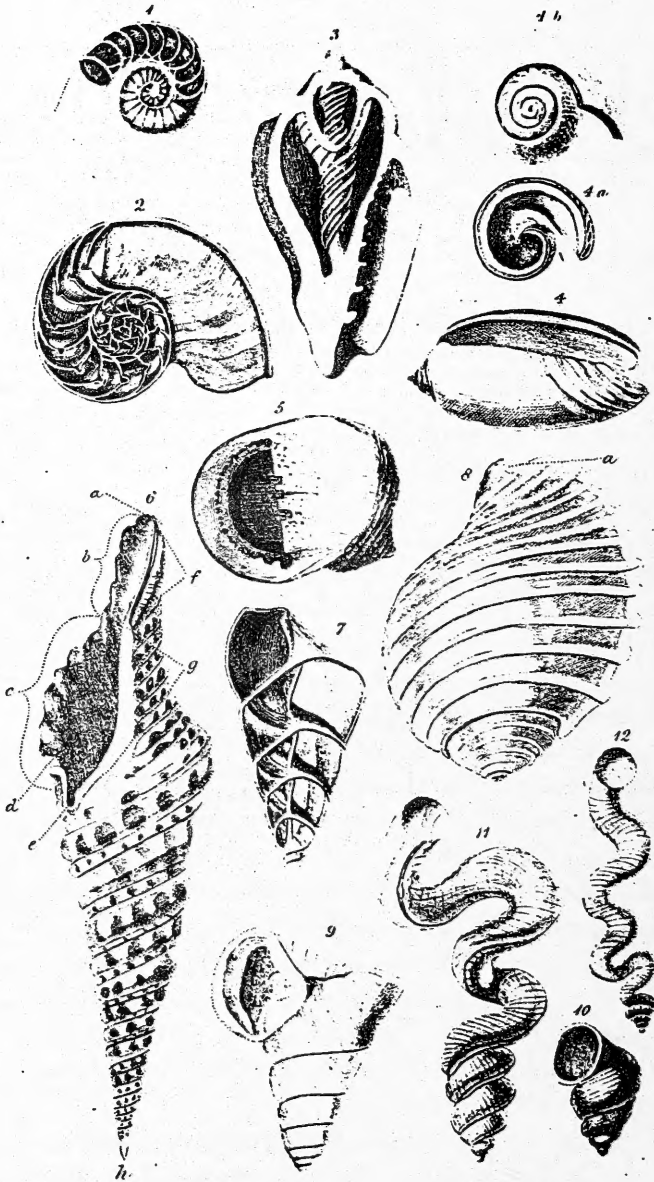
4. b. Shell with sulcated suture. *Id.*

5. A globular shell, aperture semicircular, left edge septiform. *Nerita peloronta*.

6. A turriculated siphonostomatous shell; a. anterior extremity (inf. Lin.)—b. the canal—c. right or external edge—d. emargination, or notch—e. posterior sinus—f. umbilical cleft—g. left or inner edge. *Pleurotoma* (*Murex*, Lin.) *Babylonia*.

7. A turriculated shell, columella smooth and truncated. *Helix* (*Bulimus*) *zebra*.

8. A monolocular ampullaceous entomostomatous shell; a. emargination, or notch. *Buccinum dolium*, Lin. (*Dolium maculatum*, Lam.)



Univalve spiral shells.

Extra!



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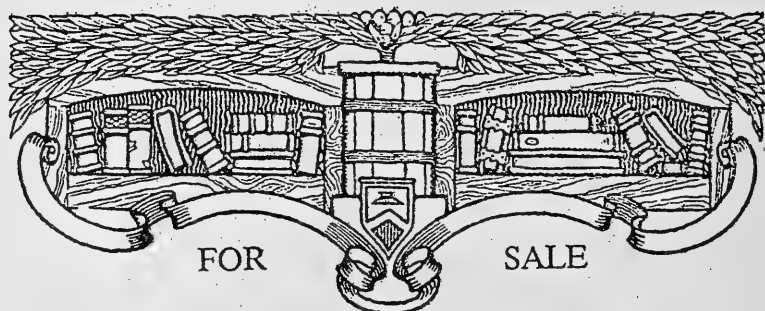
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6.

Fig. 4. *Io verrucosa*, Recco.

" 5. " *lurida*, Anth.

" 6. " *rhombica*, Anth.

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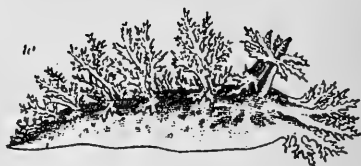
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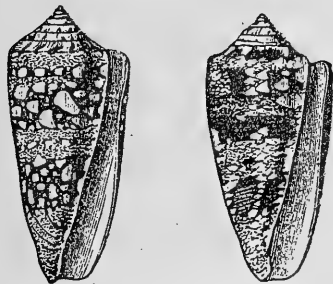
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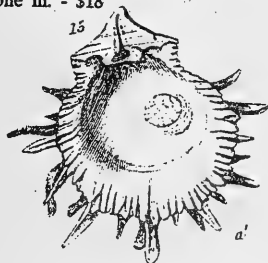
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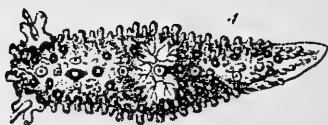
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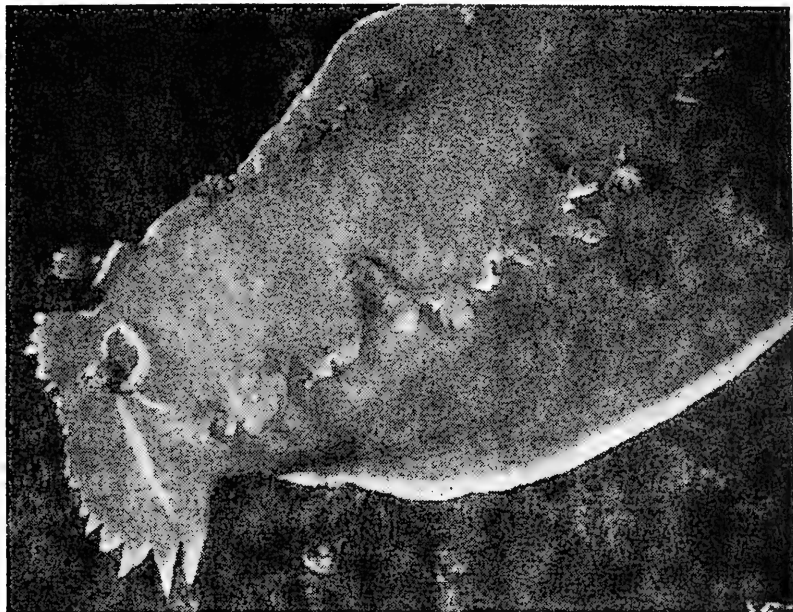
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Swimming Nudibranchs

by Roland Anderson

The Seattle Aquarium, Pier 59, Seattle, Washington 98101



Tritonia diomedea

Land slugs tend to crawl around in moist habitats leaving slime trails, coming out at night to munch our flowers and vegetables. Most are rather drab shades of green and brown which blend in with the vegetation they are eating or the decayed leaves they hide under during the day. Those of us acquainted with sea slugs know them to be slugs of a different color, figuratively and literally.

Many are brightly hued. They avoid eating vegetation, preferring to prey upon various other marine creatures, and some have developed a swimming mode used mostly to escape predators, but also for species dispersal or finding better feeding grounds. Several have given up crawling entirely and spend their entire lives floating at the surface or swimming in the depths.

Nudibranchs use a number of methods of swimming. Some nudibranchs use up and down flexions of the body, while some flatten their bodies laterally and use quick side-to-side flexions. Others actually flap their cerata or the sides of their mantles up and down like the wings of a bird, or make large undulating motions along the sides of the mantle which propel the animal forward. Few of these nudibranchs can actually make a directed motion toward a target; the swimming motions are used mainly to get the animals up into the water column where currents may sweep them away from a perceived threat.

Perhaps suprisingly, many nudibranch swimmers are the giants of the group; *Tritonia diomedea* is a prime example, growing to 200mm in length. This dendronotacean normally spends

its life crawling around on the sand preying on sea pens, but sometimes it encounters its enemy, the giant sunflower star, *Pycnopodia helianthoides*. When this happens *Tritonia* flattens its oral veil and its tail region and then flaps them convulsively up and down, rising up from the bottom, hopefully into a current that will carry it away from its enemy. *Tritonia* has been used extensively in neurophysiological studies because it has extremely large nerve cells in its ganglia.

The scarlet-colored Spanish Dancer, *Hexabranchus sanguineus*, another giant at 250mm, also swims by up and down flexions of its body but can also swim by flattening the margins of its mantle and pushing anteroposterior waves along it. This latter method of swimming has earned its common name, as it is highly reminiscent of the flowing skirts of a flamenco dancer.

Dendronotaceans such as *Dendronotus* and *Melibe* swim by flattening their bodies laterally and flexing from side to side. It's hard not to use superlatives when talking about nudibranchs — a swimming 250mm rainbow nudibranch has to be one of the most beautiful marine sights, as its tree-like cerata flow with its body movements.

Melibe, on the other hand, has to be one of the most bizarre nudibranchs. Its entire body is a gray or brownish jelly-like material. Its cerata are large flat leaf-like flaps through which you can see a vascular network. Perhaps its most unique aspect is its hood; the oral veil is greatly expanded into a hood with a fringe of tentacles. It feeds on small crustaceans by expanding its hood into a giant bowl, which then comes down onto a blade of eelgrass or kelp like a throw net, capturing its prey within. The hood is then deflated and the water is strained through the fringing tentacles, leaving the prey inside. Another distinctive feature of *Melibe* is its smell, like that of pungent watermelon and usually does not wash off very well. The odor is probably an enemy repellent.

The striking beautiful aeolid, the Spanish shawl, *Flabellinopsis iodinea*, swims by flexing its body from side to side, and another aeolid that swims is *Cumanotus beaumonti*, which flaps its cerata up and down on each side like the wings of a bird. The bullomorph bubble shell, *Gastropteron pacificum*, has extensions of its mantle on each side of its body which it also flaps up and down like wings; at certain times of the year these bubble shells are highly prevalent in plankton samples.

There is a rather flamboyant dendronotacean found in the Caribbean that exhibits still another method of swimming. *Bornella calcarata* flattens its body laterally then makes sinuous contractions of its muscles resulting in a snake-like motion through the water.

Although not a true swimmer the icy blue aeolidacean *Glaucus* merits attention because of its uniqueness. *Glaucus* swallows an air bubble which buoys it up against the surface where it floats or crawls on the underside of the surface film. Its claim to fame is that it eats the Portuguese man-of-war, the stinging jellyfish. Like other aeolidaceans *Glaucus* stores the undischarged nematocysts (stinging cells) of the jellyfish in its cerata, using them for its own defense; therefore, *Glaucus* can sting the unwary as badly as the Portuguese man-of-war. *Glaucus* itself is preyed on by another interesting gastropod, the floating snail *Janthina*. *Glaucus* is camouflaged like many other open-water creatures: dark blue above and lighter colored below; from above it blends in with the deep blue of the open ocean and from below it blends in with bright sky.

Many other small nudibranchs spend part or all of their lives either floating in the water column or crawling on the underside of the surface film. There are also many other swimming nudibranchs not mentioned in this article; for additional information on swimming slugs see Wesley Farmer's "Swimming Gastropods" in *The Veliger* 13(1).

on the DRIFT LINE ~ ~ ~

from Seattle, WA

Gastropod Power. Slugging it out. Maybe it was for all that poisonous bait scattered around flower and vegetable gardens this summer.

Maybe it was for all the gratuitous "YUK!" insults uttered by hundreds of humans who sight squishy slugs and their trails of slime.

We shouldn't be so anthropomorphic -- but it's hard to resist thinking that the much-maligned slugs got a little revenge the other day.

A slug crawled into an underground vault and shorted out an electric transformer with its slime trail, Tacoma City Light reported, leaving thousands of Lakewood residents without power for more than three hours.

Predictably, the wandering gastropod did not survive the incident. "The slug could not stand the shock," said a City Light spokeswoman. "He is no longer with us." (How she knew it was a "he" wasn't disclosed.)

Or maybe the little land mollusk was just confused and looking for companionship. What do we call those little metal pieces that we knock out of electrical boxes? That's right: slugs. -- from *Seattle Times*, August 25, 1984. provided by Roland Anderson.

from Laguna Hills, CA

David Berschauer is preparing a paper on a behavioral study of Fasciolariidae of St. Joseph's Bay, Florida.

from Emily Vokes, Harry Lee *et al*

I know you will hear this from others -- the photo on p. 9 (October S&SL) as *Ceratostoma foliata* is not but is probably *Searlesia dira* (Reeve).

from Wilton, CT

I want Recent Brachiopods with detailed collecting data. I don't have trading material as yet but I'm willing to purchase or reimburse postage. Kerry Yellin, 152 Spoonwood Rd, Wilton, CT 06897 (203) 762-5021

from Laguna Niguel, CA

I currently have some 8,000 shells from many different places in the world -- good to gem condition. I would like to send out some to any museums that would be interested in them. Contact: Stephanie Prince, 24242 Via Aquara, Laguna Niguel, CA 92677.

from Los Angeles, CA

Curatorial Assistant in Invertebrate Zoology at the L.A. County Museum of Natural History to assist with NSF funded program in support of museum crustacean program -- part or full time. Contact: Mr. Hans G. Kuck (213) 744-3450.

from Russia

...with best feelings and hearty wishes for a happy and prosperous New Year 1988!! Dr. I. Roginskaya, Academy of Sciences, Moscow.

from San Francisco, CA

The City & County of San Francisco has been accepting applications for Marine Biologist and Senior Marine Biologist. Interested persons may obtain an application from Jose Lebron, Civil Service Commission, 646 Van Ness Ave., San Francisco, CA 94102, (415) 558-2913

from Australia

Joe & Nell Rinkens wish to advise that they have moved to 10 Richardson Street. Their new address is: P.O. Box 418, Port Hedland 6721, Australia.

from Santa Barbara, CA

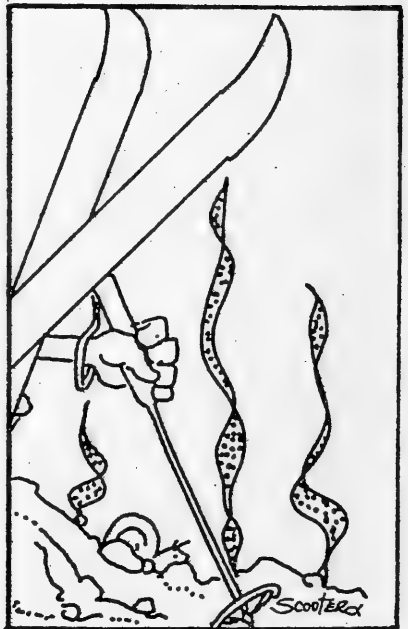
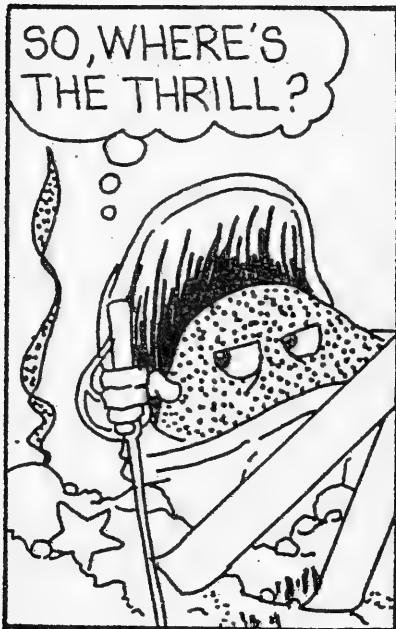
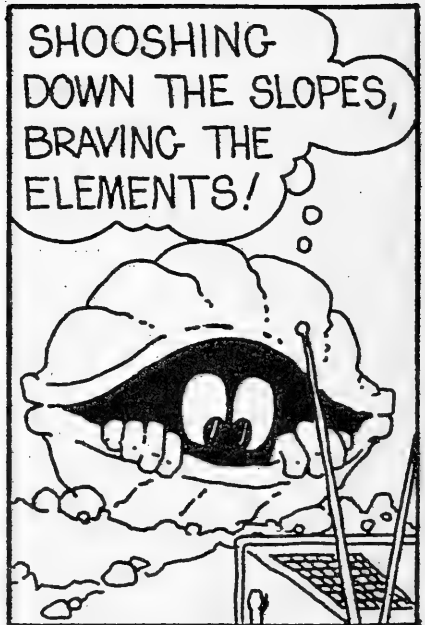
...the Santa Barbara Shell Club is pleased to announce the availability of funds to support student research in malacology through the Sara T. DeLaney Scholarship. Completed applications must be received no later than 1 June, 1988. Contact Paul Scott, Santa Barbara Shell Club, P.O. Box 30191, Santa Barbara, CA 93130 (805) 682-4711.

from Alaska

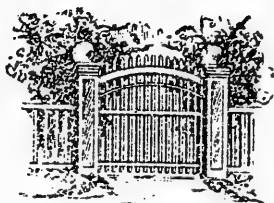
I am still well bogged down in fish and have done nothing with mollusks yet this winter. -- Rae Baxter, Box 96, Bethel, AK 99559 [ed. - the second printing of Rae's "Mollusks of Alaska" is nearing completion and prepaid orders will be shipped in the next two weeks].

from Houston, TX

The Houston Conchology Society... is preparing for its annual shell auction to be held in April, 1987. The proceeds from this auction help to cover the ever increasing costs of publishing our quarterly scientific bulletin, *The Texas Conchologist*. Our society would welcome any shells, coral, shell books, shell crafts or other related items you might wish to donate. Please send any packages or correspondence to: Sandra W. Clark, Auction Chairman, 7902 Captain, Houston, TX 77036.



Current Addresses



We will list changes of address, new subscribers, and other addresses here as we receive them. Many of these changes come from the post office, which has been known to make a mistake & we also make mistakes. If you see an incorrect address here please notify us at once and we will publish a correction in the next issue. If you do NOT want your address listed here, please tell us when you write to us.

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Baguio, Philippines

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Cardiff, CA 92007
619-752-2919

Rita Benak
3819 Strong St.
San Diego, CA 92111

Jo Bennett
1559 Tredegar Dr.
Fort Meyers, FL 33907

Hans Bertsch
2511 W. Sunflower T-9
Santa Ana, CA 92704

Ed & Justyn Blackwell
311 2nd Ave N.E.
Carmel, IN 46032

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Museum d'Histoire Naturelle
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75005 Paris, France

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Tallahassee, FL 32312

Bruce Kemp
9420-D Carlton Oaks Dr.
Santee, CA 92071
619-225-7494

Calendar

JANUARY						
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FEBRUARY						
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29						

1988

JANUARY

Southwest Florida Shell Show, normally mid-January.

Astronaut Trail Shell Show, January 22-24. Contact: Astronaut Trail Shell Club, P.O. Box 515, Melbourne, FL 32935

American Association for Zoological Nomenclature, Third week in January. Annual Meeting. Contact: Dr. Raymond Manning, c/o NHB Stop 163, Smithsonian Institution, Washington, DC 20560

Greater Miami Shell Show, January 29-31. Annual shell show. Contact: Greater Miami Shell Club, Inc., c/o Larson, 8850 Byron Ave., Surfside, FL 33154.

FEBRUARY

Broward Shell Show, February 5-7. Contact: Broward Shell Club, P.O. Box 10146, Pompano Beach, FL 33061

Ft. Myers Shell Show, February 12-14. Contact: Fort Myers Shell Club, c/o LaVerne Weddle, 1936 Coronado Road, Fort Myers, FL 33901.

Sarasota Shell Show, February 19-21. Contact: Sarasota Shell Club, c/o Mary L. Mansfield, 2232 Bahia Vista Bldg A#7, Sarasota, FL 33579-2413.

Naples Shell Show, normally 3rd week February. **St. Petersburg Shell Show**, February 26-28, 41st Annual Shell Show. Community Center, 1 Park Place & 106th Ave., Treasure Island, Florida. Donation of \$1.50 per person (Children under 15 free with adult). Shell dealer sales during event. Show put on by members of the St. Petersburg Shell Club, Inc. Contact: Betty Lipe (813) 360-0586.

MARCH

Sanibel Shell Fair, March 3-6. Contact: Sanibel-Captiva Shell Club, P.O. Box 355, Sanibel, FL 33957.

Marco Island Shell Show, normally 2nd week in March.

Treasure Coast Shell Show, March 19-20. Contact: Treasure Coast Shell Club, c/o Bertrez Bond, 99 Yacht Club Place, Tequesta, FL 33458.

JUNE

Salon International du Coquillage, normally 3rd week in June.

JULY

Conchologists of America, July 11-15. Hosted by the Southwest Florida Conchological Society at the Sheraton Harbor Place, Fort Myers, Florida. Gene Herbert & Al Bridell, General Convention Co-Chairmen. Contact: Phyllis & Bernard Pipher, 1116 N Street, Tekamah, NE 68061.

NOVEMBER

Hawaiian Malacological Society, Tentatively early November for combined Shell Show and Auction. Contact: Hawaiian Malacological Society, Inc., P.O. Box 10391, Honolulu, HI 96816.

DECEMBER

Western Society of Naturalists, Annual Meeting, normally last week in December. Details later.

1989

AUGUST

International Society for Invertebrate Reproduction, Meeting, August, Nagoya, Japan. Contact: Prof. David H. Montgomery, Dept. Biological Sciences, California Polytechnic State University, San Luis Obispo, CA 93407.

If we have missed an event that you are aware of please excuse us, and send the information. We welcome club individual meeting notices. Send information as early as you can and update us as the event nears. Listings are on a space available basis with the earliest events given priority. We especially like to hear of overseas shows and meetings. Commercial events are requested to use our **CLASSIFIED ADS**.

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Send your organizations non-copyright address list and we will send each member a complimentary copy of **SHELLS** and **SEA LIFE** and subscription information.

Suggestions for Authors

SHELLS and SEA LIFE (S&SL) welcomes notes and articles on any aspect of natural history. Articles on conchology will, however, receive priority. Our major interest is reference and review material of importance to professional and amateur alike. We include meeting notices, bibliography, field observations, book reviews, historical sketches and species group reviews among our primary interests. If you see something of probable interest to our readers, please forward a copy and we will attempt to obtain permission for republication.

The **on the Driftline** and **Reader Forum** sections of S&SL are wide open for short contributions from anyone. Field Notes are intended to provide a place 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.

Black & white photographic prints may be submitted with articles. If it looks great in the print, with good contrast and few shadows, it should look good on the printed page. Please provide separate prints for light and dark specimens as they must be handled separately for best results. Please note that prints are frequently trimmed spray-mounted before scanning. It is not usually possible to return the print after use.

We attempt to absorb all production costs (typesetting, halftones etc.) but they should be borne in mind by authors. Donations to help defray printing 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.

1) Manuscripts should be in final form, complete, carefully proof-read and with the name of the author(s) appearing at the top of each page. Number all pages 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 are expressed in numerals (e.g., 1, 21, 198).

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) The first appearance of any scientific name of any species discussed or cited should be given in full, including author and year of the original description. The generic name should be written out whenever it is mentioned for the first time in any paragraph and any time 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.

7) Abbreviations and "common names" should appear adjacent to the full-length version or Latin name. Subsequent usages may be with only the abbreviation or the capitalized Common 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.

10) Square brackets "[]" are normally used to set off editorial comments or addition within articles.

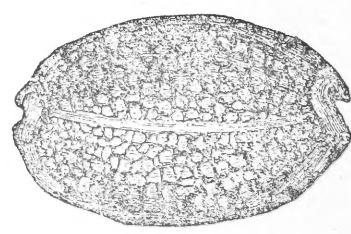
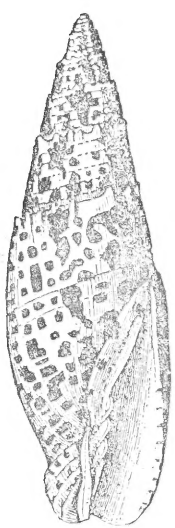
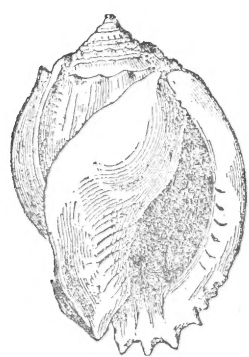
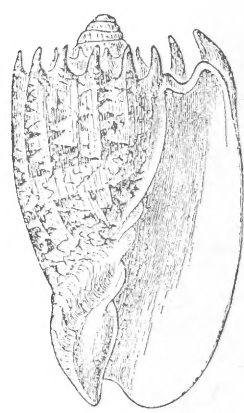
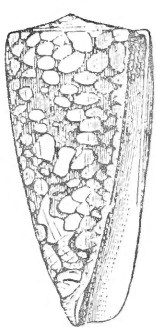
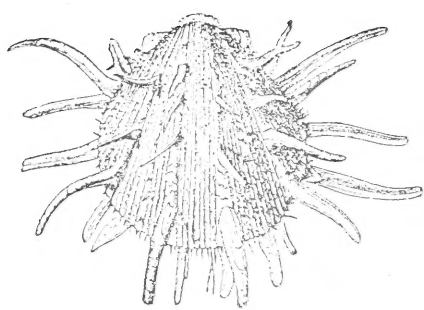
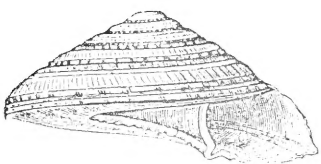
11) Authors should follow the style guidelines recommended in the "Style Manual for Biological Journals", which may be purchased from the American Institute of Biological Sciences, 2000 "P" Street, N.W., Washington, DC 20036. Original manuscripts should be typewritten on white paper, 8-1/2" x 11", and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

12) References in the text should be given by the name of the author(s) followed by the date of publication: (SMITH, 1951), (SMITH & JONES, 1952), or (SMITH et al, 1953).

13) The "literature cited" section must include only references cited in the text. We prefer complete citations including full author names, exact publication dates, series identification, volume and issue numbers, full pagination, plates, figures, tables & appendices. We will format them to meet our requirements.

14) Tables, numbered in arabic, should be on separate sheets, with the title at the top. Legends should be attached to each photograph. Text figures should be submitted ready for publication, in black ink and completely lettered. It is the author's responsibility that lettering is legible after final reduction and that lettering size is appropriate to the figure and the magazine format.

15) Articles and pictures accepted for publication, become the property of SHELLS and SEA LIFE. No material will be returned unless accompanied by return postage and mailing envelope with instructions for its disposition.



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