



HAWAIIAN SHELL NEWS



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FEBRUARY, 1978

NEW SERIES NO. 218

SOCIETY FINANCES SHOW IMPROVEMENT

Financially, the Hawaiian Malacological Society is alive and well in 1978, according to figures submitted by HMS Treasurer Wes Thorsson at the January meeting of the Board of Directors.

"1977 was a good year for the Society," he said. "On December 31 our membership stood at 1506, and as of that date 1017 had renewed for 1978. Normally, memberships come in at a snail's pace and usually we do not have this large a percentage of renewals by January 1.

"The Society's receipts during the year came to \$39,125. Of this, 67 per cent came from dues and sales of HSN back issues. Twenty-three per cent was from HSN advertising, three per cent from sales of books to members, four per cent represented interest on savings accounts, and the remaining three per cent was from miscellaneous sources.

"Expenditures totalled \$35,488, of which 64 per cent went to produce *Hawaiian Shell News* (including reproduction of some back issues). Postage for HSN took thirteen per cent, and the same percentage went for office support for HSN. Purchase of books for members took two per cent, local meetings and library maintenance took two per cent, mounting of the 1977 HMS Shell Show cost one per cent. The remaining three per cent was for taxes, insurance, science fair awards and other miscellaneous expenses.

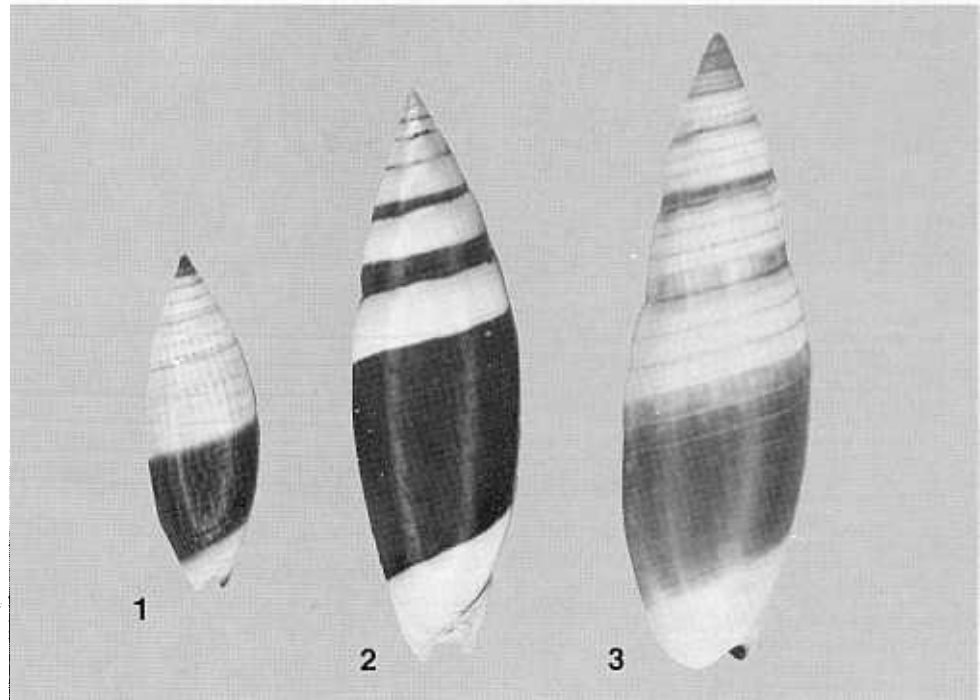
"Summing up, the Society's total assets grew by \$3637 during the past year, to a quite respectable total of \$33,588. This is enough to operate the Society for a full year — the objective of our long-term financial policies.

"It is particularly worth noting that interest from our bank accounts, plus proceeds from shell sales and auctions, brought us \$2210 last year. In accordance with the policy set by the Directors, this income is applied to the HMS Scholarship Fund. I believe that this income will remain at about that level, and that we can expect to distribute about \$2000 a year in scholarships."

Thorsson noted that applications for awards are being received until April 1, 1978. HMS members and dependents are eligible to apply.

"Time is running short," he warned. "Potential applicants should write at once to the Awards Committee, c/o HMS, P. O. Box 10391, Honolulu, HI 96816."

3 Miter Look-Alikes Compared

1 *Swainsonia bicolor*2 *S. newcombii*3 *S. casta*

by LEN HILL

HASTINGS, Neb. — Three Indo-Pacific miter species have often been confused in the past, with the result that their names have been turned around or simply lumped together. They are *Swainsonia casta* Gmelin, *Swainsonia newcombii* Pease and *Swainsonia bicolor* Swainson. This is understandable as they have almost identical markings, all are sand dwellers, and are in the same genus, *Swainsonia*.

Swainsonia casta Gmelin, 1791 is by far the most abundant, ranging throughout the tropical Indo-Pacific except for Hawaii. *S. casta* is also the largest species, often exceeding 50mm.

The white shell is usually sculptured on the upper whorls with puncto-striate grooves although the main body whorl is smooth. There is a central broad brown band around the body whorl. This band, which ranges in color from olive brown to black, is entirely epidermis which dissolves if the shell is cleaned in bleach. The figured specimens were taken in thirty feet of water off Anae Island, Guam (see page six).

Swainsonia newcombii Pease, 1869 is found only in the Hawaiian Islands and usually does not exceed 35mm. The white shell may be easily separated from *S. casta* by observing that the brown median band is a permanent part of the shell coloring and not epidermis. *S. newcombii* does bear a thin light-brown epidermis over the brown band which is easily removed with cleaning.

The puncto-striate grooves present on the upper whorls, as in some *S. casta*, also extend well onto the main body whorl. Some specimens of *S. newcombii* may have minute brown dots or dashes on the white area below the brown band. The aperture usually bears a central brown area within. Figured specimens were taken in thirty-five feet off Electric Beach, Oahu, Hawaii.

Swainsonia bicolor Swainson, 1824 (syn. *filum* Wood, 1828), is the smallest species of the three, averaging 20mm. It is an Indian Ocean species, found on the east coast of Africa and

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Hawaiian Shell News

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(Founded in 1941)

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The Society meets the first Wednesday of each month at the First United Methodist Church, 1020 S. Beretania St., Honolulu at 7:30 p.m.

VISITORS WELCOME!

Hawaiian Shell News is issued free to members of the Society. Postage rates have been computed and added to membership dues. Single copies of any issue, \$1.00, postage included. Individual copies of any issue may be obtained, free of charge, by qualified individuals for bona fide research projects.

Members outside the United States are asked to pay with a draft from their local bank on its U.S. account. (Be sure your name and address are on the draft!)

HMS DUES FOR 1978

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Advertisements are accepted at the rate of US\$15 per column-inch/issue, payable in advance. Discounts are offered for six and twelve insertions. Write to the Corresponding Secretary for information.

HMS January Meeting

Some fascinating ideas on the production of edible oysters in artificial tanks were presented to Hawaiian Malacological Society members at the January meeting by Taylor ("Tap") Pryor, one of Hawaii's outstanding entrepreneurs in the field of aquaculture. His talk and slide show revolved around a closed-cycle system designed to produce marketable *Crassostrea gigas* and, later, lobsters.

The project is situated on an abandoned airfield on the North Shore of Oahu (Honolulu).

President George Cook reported to members that the HMS lease on its office and meeting space in the First United Methodist Church expires in May, when the church expects to start reconstruction. He asked assistance in finding new quarters for the Society.

Reefcombing

For more than five years, Honolulu has been in the thoroughly unsatisfactory position of having no public display of Hawaiian shells. The reasons were multiple — lack of space, lack of personnel, lack of official interest, even a certain timidity about "stirring up the conservationists." Repeatedly, the Hawaiian Malacological Society and individual members have sought in vain to correct the situation. In the meantime, visitors to Hawaii (except those with scientific credentials acceptable to the Bishop Museum) have been dependent on the hospitality of local members prepared to show their own collections.

The situation finally has been corrected. HMS member Bill Christensen last year undertook to reassemble the fine collection brought together two decades ago by one-time HSN Editor Karl Greene at the Honolulu Childrens Museum (no longer in existence). He was given space in the City's Hawaiian Center, on Diamond Head close to Waikiki. And early in January the "shell room" was opened to the public.

In the wake of this triumph, Christensen is reviving the HMS Junior Shell Club, which has been dormant since the departure of former HMS President Charles Wolfe. A series of monthly meetings for boys and girls through intermediate school age has been scheduled. Others, including parents, are welcome.

"The department of molluscs at the Delaware Museum of Natural History is not closed," says a report to HSN from the scene. "It is receiving mail, receiving visitors both professional and amateur, curating specimens given to it in the past, and looking forward to gifts of small lots or collections.

"Tucker Abbott's office is empty and his desk is clear, but Russ Jensen is there every day keeping the wheels turning. He is assisted by Jerry Harasewych and two volunteers, H. K. Dugdale and Louise Hastings, who have been active in the department for several years.

"The rest of the museum is functioning as it was before the events of last year. Attendance at the first-floor exhibits is normal, and nature movies continue to be shown on schedule.

"Although it is short-handed, the department of molluscs shows no indication that it might not continue.

"There has been some switching of titles. Jensen has been transferred to museum administration, but he oversees the functions of the department of molluscs. Harasewych assists him as director of research of molluscs. The library remains under the able direction of Sophie Homsey."

As many Society members will know from having received appeals, friends of Dr. Abbott are soliciting funds for a "war chest" to help him in a

law suit against John duPont over the manner and timing of Abbott's departure from the Delaware Museum. Two long-time associates, Dr. William Clench and Robert J. L. Wagner, are spearheading the appeal.

* * *

Several Society members have requested information on the Bankers Box Records Storage System described so glowingly by Forest Horton in HSN Jan. 1978. The cases are made by Bankers Box, 2607 N. 25th Ave., Franklin Park, IL. 60131.

* * *

The absence of the name of a Corresponding Secretary from the list of Society officers in column one last month was not an oversight. Although Vivian O'Rourke was elected to the post, she subsequently found she could not serve. At the January meeting of the Board of Directors, Bunnie Cook was asked to remain in the job until a successor can be found.

Nancy Parker, the Society's only paid staff member, resigned in January. Her replacement is Carol Farias.

Who's interested in land shells?

Fred R. Cannon, Jr., 74-10 Thirty-fifth Ave., Jackson Heights, N.Y. 11372 recently took over from Henry Close the job of trying to organize land snail collectors. He wants to hear from any HMS members on the subject.

Bookstores in Hawaii, at least, do not seem to carry either of the two French-language shell books reviewed (HSN Oct. 1977) recently — *Je Decouvre les Couquillages: Cotes Europeennes et Mediterraneennes*, and *Coquillages des Antilles*. If you can't get them in your own community, write directly to J. B. Lozet, Le Peigne de Venus, 14, Avenue Joseph Etienne, 13007 Marseille, France.

* * *

That deadly occupational hazard of scuba divers, "the bends," is an international problem. A note from HMS member Roger Berthe in Thailand reported that nine men diving for shells in the vicinity of fabulous Rava Island have been stricken recently. Two are in critical condition with complete paralysis, and the others are less seriously disabled. All were diving with "hookah" gear, usually regarded as a safe technique because of the restricted depth at which it is effective.

Incidentally, a couple of errors slipped into the December HSN ad for Berthe's Gulf Sea Shells. The firm is a wholesale shell dealer and does not seek business from individuals. In the travel and tour field, however, it does offer facilities to divers as well as shore and snorkeling collectors.

Zeeland's New Museum Watches the Sea

by JAN A. BUYSE

GOES, Holland — The Netherlands consists of eleven provinces. Ten of them have museums of natural history. Zeeland alone has lacked one. Now, at last, our province is getting its own biology museum.

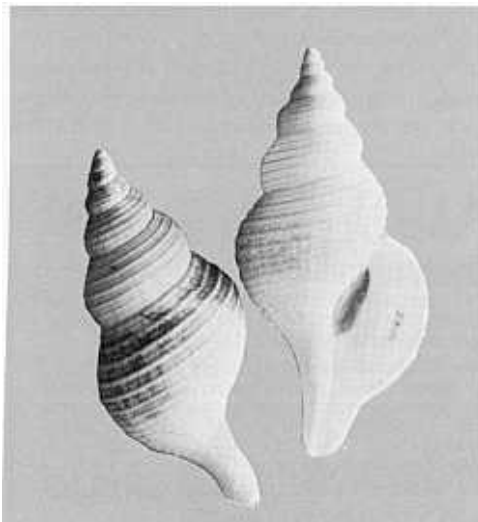
Zeeland, in the southeastern corner of the Netherlands, during its centuries of struggle with the North Sea has enclosed and expanded a series of small islands to provide livable and tillable land. Progress has not been steady, however; our history is one of repeated gains and losses against storms and floods.

Our most recent disaster is well remembered. On a cold Sunday in 1953, the sweeping waters carried away 1,850 persons, plus uncounted sheep, cows, horses, dogs, birds, polecats, beetles and other creatures. Thirty per cent of Zeeland's land was under water at the end of the day — as had been the case so many times before.

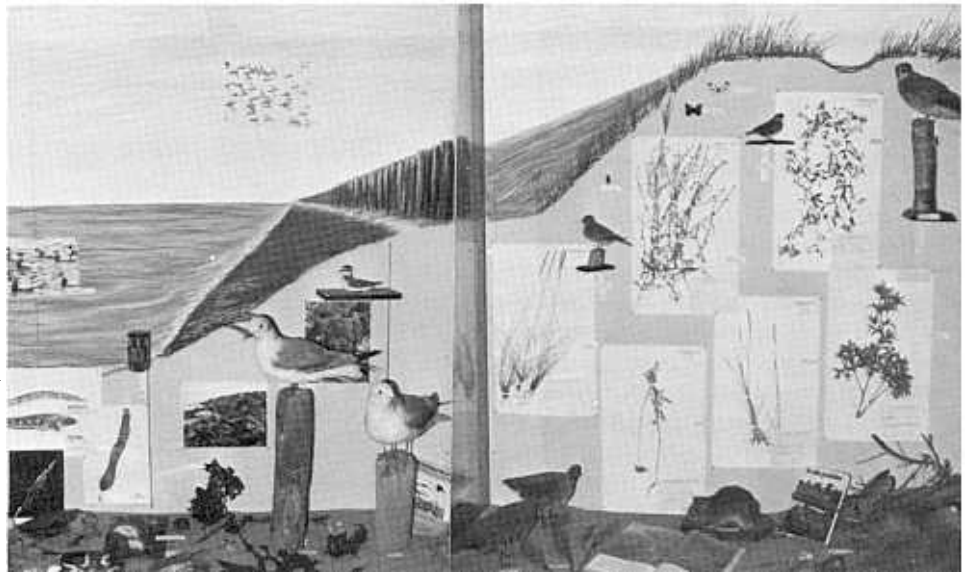
Once more, the dead were buried, the dikes were repaired, and the salt water was pumped from the below-sealevel polders. The now world-famous Deltaworks was developed by the Dutch government. Zeeland (literally "land of the sea") was cut off from the ocean by a series of long, high and broad dikes. The impounded waters changed from salt to brackish. New weeds, different shells, strange fish and exotic birds moved in. The province of Zeeland is rapidly changing biologically as well as physically and economically.

The Deltaworks is not alone in creating this change. Other factors have been air and water pollution, increased human population, division of the scarce land, and sometimes aggressive construction. The effect on our environment has been drastic.

It has become common to hear the people of Zeeland ask: "Are we losing the things we see and have now? What will we, in the future, and our children and their children, know about this land?"



Colus spitsbergenensis Reeve



How can we preserve the memory of traditional Zeeland?"

From such questions came the idea of establishing a biological museum in Zeeland. The original impetus came from three young environmentalists. Gradually, as the success of the project became more likely, governmental and private support has come forward. The Zeeuws Biologisch Museum is now an established fact.

The original plan was simple. A room was rented in an established museum, a display with the title "Animals Around Us" was created, and visitors were asked whether they liked the idea. Apparently they did. Visitors to the museum increased 35-fold!

A diorama called attention to the changes that had come over Zeeland's beaches. Where, not long ago, sailboats and seals were common sights, today one finds plastic scraps and fuel oil-soaked birds. The seals have disappeared.

Thousands promised their support at the first display, held during March 1976. A second exhibition was set up for that summer, drawing the attention of Dutch radio and television networks and winning support from such community groups as the Rotary Club, Lions, the Round Table and others. With all this, it was possible to launch a new foundation, the Biology Museum of Zeeland.

Our first display had been very popular. The second, opening in July 1976, was more scientific. It gave an overview of the biology of a sample Zeeland peninsula. One window showed butterflies, another birds and bird skulls, while further displays featured fish, crabs, lobsters and seashells. A new diorama represented a typical sea dike. More than 5,000 visitors urged us to continue our efforts.

Encouraged, we rented a small building for our 1977 exhibition, which differed slightly from the previous year. More native animals were rep-

resented, and our approach was more scientific. Again the response was good. During the first ten weeks, the museum had an average of 100 visitors a day.

As this is written, the Netherlands Ministry of Culture and Recreation, as well as some departments of the Zeeland provincial government, are beginning to grant us financial aid. At the same time, personal friends all over the world are sending seashells, land snails, fossils, posters and other material suitable for the museum. All this is very much appreciated.

The "foreign" material will permit us to show Zeeland forms in comparison with those from other areas.

Life has not been easy. The summer of 1977 was bad in Holland. For days on end the sun shone briefly and wanly through banks of clouds. Life was gray and dull. Then came a day in August that started with a deep blue sky and huge white clouds that soon brought a downpour of rain. Two to three inches fell within an hour, our building leaked badly, and the dike diorama was damaged beyond repair.

As I write this, we are waiting for the wall to dry out thoroughly — a matter of weeks, probably. Then we will build a new dike, as the people of Zeeland have been doing for centuries and will continue to do forever.

We are looking forward to 1978 with wary confidence. We believe we will have central heating in our museum building, and schools will be invited to hold some of their biology classes here. We are going to expand, with a full-time biologist on the staff. There are plans for a mobile biology exhibit. We are already talking about the need for bigger quarters.

Zeeland is the last Dutch province to get a museum of this sort. We are trying to give it the best biological display in the country.

A New Species, But Is It Valid?

by JOHN K. TUCKER

EFFINGHAM, Ill. — In shell discussions, you often hear the expression "a valid species" or, conversely, an "invalid" one. What do the words mean? What (or who) determines a species' validity?

The questions go to the heart of our hobby.

My article last month ("Where Do Species Names Come From?" HSN Jan. 1977) dealt with the process of validly proposing a name for a shell that you believe to represent a new species. Let us now look at how you go about determining whether you have, in fact, found a new species. Remember, the two steps are not the same, despite the use of the word "valid" in both cases.

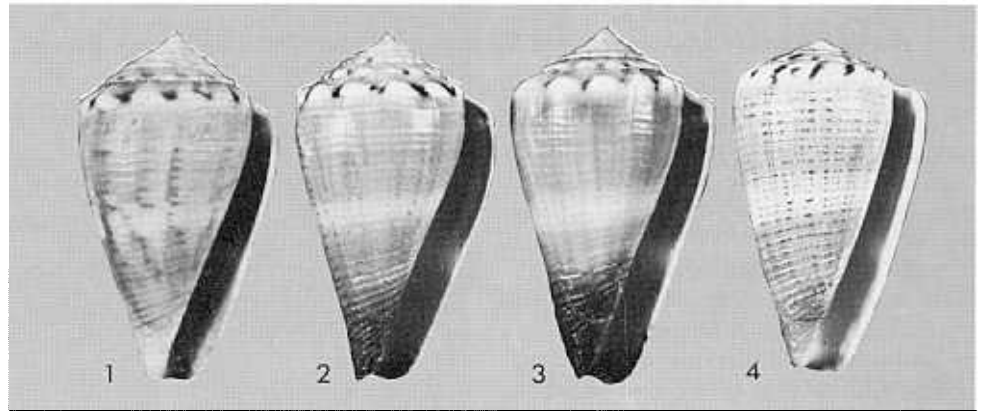
The correct name for a valid new species must always have been validly proposed. Equally important, the name must have priority (a matter of dates) over any other names validly put forward for the same shell. The losers in the priority race become "synonyms."

In the final analysis, whether the shell to which you wish to apply a proposed new name actually can be recognized as a new species is a matter of informed opinion based on scientific evidence. As HSN Associate Editor Elmer Leehman stressed, a worker who agrees — or disagrees — with a proposed new species needs to have access to a large study collection and a complete technical library. Otherwise his opinion may be supported only by his memory or his intuition. Neither has true-scientific standing, even when they turn out to be correct.

Species concepts vary among taxonomists, and may be influenced by the nature of the material available. (I will not try to define or discuss "species" here; it is a large, complicated and disputed subject.) Consequently, bases for descriptions of new species vary widely — one might even say wildly — among workers in this field. One malacologist may depend on shell characters alone, while another studies the animal's anatomy. One is willing to draw conclusions from a single specimen. Some examine large numbers of individuals from many populations throughout the range of the proposed species before writing a description.

While the last of these methods for arriving at a species concept (or as a basis for describing a new species) probably is the soundest, there is no single "right" way to do it. In the long run, good scientific research will be recognized. But expectations of uniformity of methods or demands for instant decisions on validity are unrealistic.

Unless your shell has some strikingly new characteristics, proposal of a new name is bound to meet with some skepticism. One suggestion is likely to be that the shell is merely a freak specimen of a known species. Another is that it is a member of an existing species known to be variable. If either of these points wins much support,



The caption with HSN Science Consultant W. O. Cernohorsky's article, "More About 'Conus imperator,' *C. roseus* and *C. mus*" (HSN Jan. 1978), was incorrect, as several sharp-eyed HMS members were quick to point out. The caption should have read: "1. *Conus mus* from Florida Keys, Southeastern United States; 2. "*C. imperator*" (= *parvulus*) from island off Ketapang, S. W. Borneo, 33.8mm; 3. "*C. imperator*" (= *parvulus*) from El Arish, Queensland, 29.2mm; and 4. *C. biliosus* from N.E. Ceylon, 43.0mm." Members are urged to correct the caption in their copies of the January issue. The error occurred in editing. HSN apologizes for the incident. S.L.

the name probably will not be widely recognized as representing a valid new species. It simply would be given the status of a synonym — and ignored.

In this world of individuals, the response by the experts is often divided. One reputable authority may accept your proposed name as representing a genuine new species, while another will not. Often — but certainly not invariably — the difference of opinion is between the "splitters" and the "lumpers." Despite what the partisans say, neither viewpoint is devoid of scientific integrity. The difference simply proves that scientific truth is not a matter of black or white.*

Perhaps a couple of examples of these principles in operation would be in order here.

First, there is the matter of priority of proposal of a new species. A recent article by Cliff Weaver ("A Beautiful New Species of *Volute*," HSN Nov. 1977) was based on this point. On the basis of prior publication — by one month! — T. C. Lan's proposed *Voluta taiwanica* was held to be

*HSN Science Advisor Dr. E. Alison Kay, who reviewed this article, commented: "There are no final answers in science. No species is ever 'for sure'." Ed, HSN.

valid, and Dr. Tadashige Habe's *V. kawamurai* a synonym. This, without regard to the prestige of the two periodicals that carried the original descriptions or the standings of the two authors.

Dr. C. M. Burgess' "New Cowries" (HSN Dec. 1977) included several clear demonstrations of the close scrutiny to which a proposed new species is subjected. Burgess dismissed one as a freak specimen of a long-recognized species, a couple of others as being undistinguishable from existing species, and a pair of subspecies as unjustified attempts to split a species. All the names he discussed had been validly proposed, but could not survive the test of examination. (Another expert, of course, might feel differently and could publish an article supporting some or all the species Burgess rejected.)

What I have tried to make clear in this article and the previous one is that proposal of a new species name is the privilege of any knowledgeable worker in malacology, but that recognition of the species itself is a matter of scientific consensus and may not come easily.

Next month I will look at some of the problems that arise from careless or improper handling of new names.

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PLEASE SEND ME YOUR LIST OF AVAILABLE SHELLS
AND YOUR WANT LIST

ONE SHELL

"Which shell would you save in case of fire?" HSN asked members recently. More replies are published on this page and will continue next month. The writers will receive specimens shells from Hawaii for their efforts.

How It All Began

I was on a business trip to Bangkok in 1972 and decided to try a small resort on the west shore of the Gulf of Siam for the week-end. Browsing through the little gift shops, I spotted a beautiful light brown shell with a spire and graceful wing that reminded me of the dancing girls I had seen in Bangkok. I bought it for 20 baht (\$1) for its sheer beauty, having no idea of its name or value but knowing that I could give it to someone back home as a gift.

Returning to Wilmington, I phoned the Delaware Museum of Natural History, and told them I had a shell from Thailand that I would like to have identified. Could I bring it over?

"By all means. I'd like to see it," was the reply, "My name is Tucker Abbott. Come up to the Department of Mollusks and I'll show you around."

Dr. Abbott not only took the time to talk with me but led me into the library and opened his *Kingdom of the Seashell* to page 136 where he tells the story of this "rare shell of yesterday" — *Strombus listeri* Gray, 1852.

From this start, I began doing volunteer work at the museum, leading to my serious interest in malacology. What more perfect hobby could there be for a retired businessman who loves to travel and lives just a mile from the Delaware Museum?

My *Cypraea guttata*, bought from fishermen in the village of Punta Enganō in the central Philippines after an hour of haggling, is the shell I treasure most for its beauty. But, after all, if I had only one shell to keep, it would certainly be my *Strombus listeri* from Hua Hin, for then I would have the original basis to start collecting all over again.

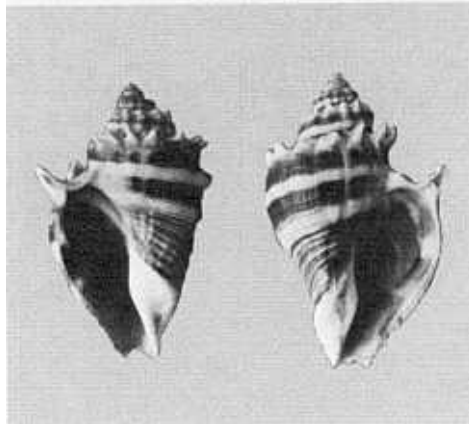
H. K. Dugdale
Wilmington, Del.

IT REALLY HAPPENED!

There I stood, the ashes of my home around me — and it was no nightmare! Everything I owned, including my treasured shell collection, had just been destroyed.

Since that time I have often reflected on the question posed by HSN. The conclusion I already had reached was this: The shell I would have saved had I been able to was my *Cypraea stolidia* Linne, 1758. To me, it epitomized shell collecting and everything concerned with the hobby.

I began collecting in 1972, shortly after arriving



Melongena corona Gmelin

One in a Million

If my home were burning and I had to limit myself to taking just one shell with me, it would be a self-collected sinistral specimen of *Melongena corona* Gmelin.

I decided that just about all the shells in my large collection, including many rare ones, could be replaced. But the odds against finding another sinistral specimen of a *Melongena corona* would be about one in a million.

Mrs. Jo' Kotora
St. Petersburg, Fla.

snorkeling. Once I had seen the beauty beneath the sea, I was hooked. Shelling followed naturally with my first find on my first outing. It was the most beautiful thing in the world. Imagine me, a newcomer, with a tiger cowry!

Soon I was buying books, meeting other collectors, joining the Torii Shell Club, participating in discussions, outings and experiences. The fellowship of the other collectors was fantastic, as was the sharing of ideas.

During my early days I became fascinated with the ethereal beauty of *Cypraea stolidia*. I just had to have one. Although I searched islandwide, however, I never found one.

Finally, at my last meeting with the shell club before returning to the United States, one of the members mentioned that he had found several specimens. More than that, he freely told me the location.

The next day I was at Bolo Reef for my last snorkeling on Okinawa. I didn't have to search very long. My friend's description of the place was exact. There, sitting on top a flat coral head, its translucent mantle only slightly concealing its beautiful colors, was my *Cypraea stolidia*, the perfect culmination of the best three years of my life.

I only wish I'd been able to save that one from the fire!

Robert G. Carruthers
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MAGIC IN THE DATA

You ask which shell from my collection would I save? I found on reflection that the question was fairly easy to answer.

The shells I covet most are not the species with the high value. Acquiring a rare shell, of course, gives one a great kick, and the work of pricing and sorting out a fair exchange is of great interest. One is very chuffed when the exchange works out well for both parties. But those are not the shells I would save.

It could have been any in my collection, but it happens to be *Chama lazarus* Linne. Why *Chama lazarus*? The answer is in the data that came with the shell.

Living in the U.K. as I do, with not many opportunities to go shelling even in British waters, I am (and not from choice) an armchair collector. I have to use my imagination to conjure up a picture of shelling on a coral reef under a warm sun, or diving down into crystal water to see the shells in their environment. The wonder of that undersea world must be absolutely breathtaking.

Our British waters are cold and murky, only occasionally clear. Although I swim, I have not had the chance to learn scuba diving.

So, I would take the *Chama lazarus* because it has extra magic for me in its data sheet:

"Brought up by divers from 30 fathoms. Found attached to a girder in a sunken ship on Luzon, Philippines."

Gilly Slator
Clevedon, England

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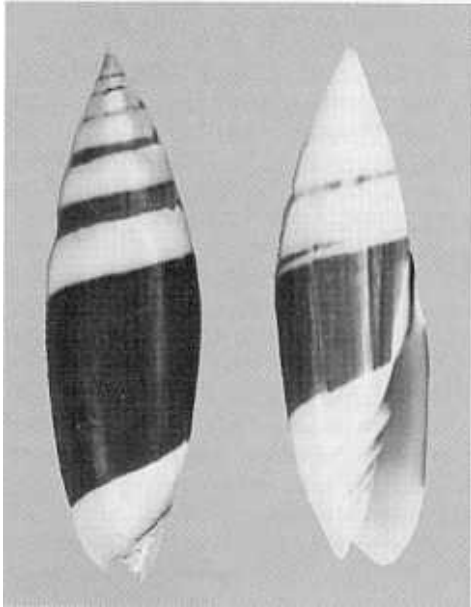


FINE SHELLS AND FINE ART

Shells graded according to HMS-15GS

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Miter Look-Alikes
Cont'd from Page 1

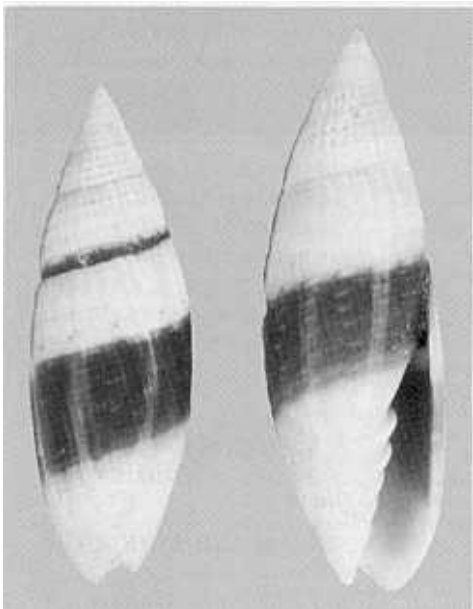


Swainsonia casta

throughout many island groups such as the Seychelles and Mauritius. Due to its small size, *S. bicolor* was often considered a juvenile of *S. casta*. It is the only *Swainsonia* with a black apex and tip which immediately separates it from the other two species.

The smooth white shell also bears a permanent brown band and has a lighter film of brown epidermis. The brown band usually bears very fine white longitudinal lines. The puncto-striate grooves are only microscopically evident on the uppermost whorls. The specimens figured are from Port Louis, Mauritius.

The three species are shown together for comparison on page one. It may be noted that the width of the brown band varies in the three species.



Swainsonia newcombii

HMS SHELL AUCTION

Plans for the HMS 1978 Shell Auction are "in the works," following a decision by the Board of Directors at the January meeting. The date is not firm, but is tentatively set for late November.

Directors Mike Owens and John Mapes are to be in charge, advised and assisted by Elmer Leehman.

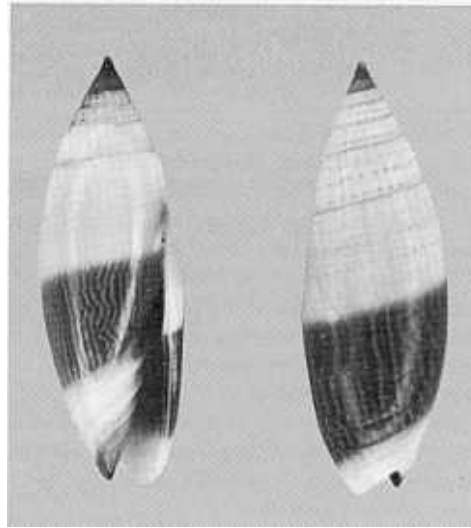
Proceeds from auctions and other shell sales go to the HMS Scholarship Fund (see Treasurer Wes Thorsson's report on page one).

"We need good shells," declared Mapes, "specimens that will bring good prices. I ask every member of the Society to start putting aside shells for auction. They should reach us by about September 1, if we are going to circulate a sales list in advance.

"We will acknowledge all gifts, which are fully tax deductible under U.S. law."

The same Board meeting voted to defer the HMS Shell Show until 1979. It was the feeling of the Directors that the Auction and the Shell Show should be alternated in the future.

S.L.



Swainsonia bicolor

Additional copies of the December 1977 issue of *Hawaiian Shell News* containing Dr. C. M. Burgess' article, "The 'New' Cowries," are available from the Hawaiian Malacological Society for \$1 each. Write to the Secretary. The 1977 Index is included in the issue.

**More About Those Shells
On Our Identification Page**

Vexillum (Costellaria) interruptum (Anton, 1839). This tiny miter (about a quarter-inch long) is quite rare in Hawaii, most specimens in collections having come from beach drift. Live specimens are found under rocks at scuba depth. The species ranges through Polynesia.

Julia exquisita (Gould, 1862). Gould described this species as a bivalve and erected a new genus and family for its placement. It is now known to be a bivalved gastropod! Beach specimens are uncommon in Hawaii. To my knowledge, live specimens have not been taken.

Oliva species. This New Guinea species reaches around 1" in length. It has been described and called Parkinson's olive, but the adequacy of the description is at present under controversy, so it is best left with a popular name. HSN will publish a clarification when the matter is settled.

Strombus gibberulus albus Morch, 1850. This is the Red Sea subspecies of *S. gibberulus*. The exterior varies from white to the banded pattern shown in our figure. The aperture is a beautiful carmine-rose, which unfortunately does not show too well on our plate.

Scabricola (Scabricola) caerulea (Reeve, 1844), an uncommon Western Pacific miter, can be identified by the greenish band around the periphery and the greenish brown aperture.

I

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SHELLING ON MIDWAY ATOLL EXCHANGES

by ROGER L. SCHMELTZ

Situated in the mid-Pacific more than a thousand miles northwest of Hawaii, Midway Atoll is controlled by the U.S. Navy (HSN Nov. 1975). I arrived there early in 1977 for a two-year tour of duty and, soon afterward, was introduced to the wonderful world of shelling by John Ross, an experienced scuba diver and a six-year member of the Hawaiian Malacological Society.

My first ten months of collecting produced a few specimens that would be welcome in any collection, I believe. My prize undoubtedly is a Cypraea ostergaardi Dall, 1921.

I am fortunate to be able to shell in the waters around Midway. The island has no recompression chamber, so scuba diving is restricted to the comparatively shallow water of the lagoon with a few exceptions. Fortunately, John Ross, my diving partner, and I qualify for exceptions. This has permitted us to shell outside the reef, in virtually virgin territory — a sheller's dream come true!

Of the approximately eighty divers on Midway, less than a dozen have the advanced certification required for diving "over the reef." On top that, I am the only serious sheller on the island with my own boat. There is never a lack of volunteers to join me, however. With my wife Elaine as anchor watch-radio operator, three or four of us go looking for shells when the weather permits, which isn't necessarily whenever we plan it!

The photo shows some of the unusual shells we have picked up. Except as noted, I found them. From left to right in the top row they are:

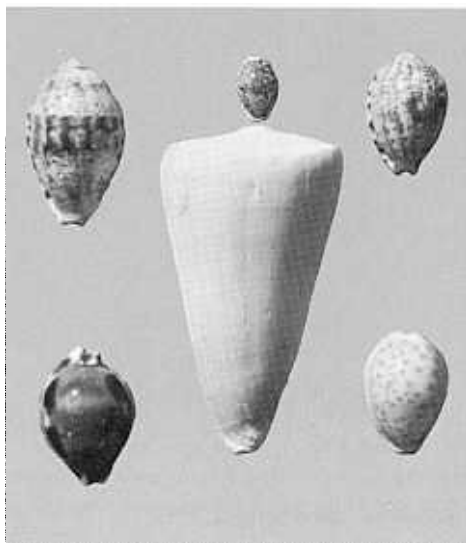
Cypraea latior Melvill, 1888 (40.5mm x 24 x 19) (According to C. M. Burgess (HSN Dec. 1977) C. latior is a synonym of C. teres Gmelin, 1791.)

Found in April 1977 under coral rubble two meters deep in the center of the lagoon by Ross. This specimen lived in my aquarium four days, permitting photos of the live animal, which closely resembles C. rashleighana. The animal is in formalin for possible study. Another C. latior, found crabbed a few weeks ago and considerably smaller, is a very good specimen. In addition I have three beached specimens.

Cypraea ostergaardi Dall, 1921 (16mm x 10.5 x 8.5) was found in July 1977 under a coral rock, twenty meters deep, outside the reef and south of the island. When I found this shell I didn't know what I had for several hours so I made no attempt to keep it alive. Although it is small, as C. ostergaardi go, I am more than pleased to have it.

Cypraea rashleighana Melvill, 1888 (29.5mm x 20 x 15) was found in August 1977 under coral rubble eighteen meters deep, outside the reef south of the island, by Ross during a four-day eight-dive "marathon" in which I found two other specimens. Both mine were considerably smaller and one was crabbed. We now have found a total of five, two being crabbed.

Cypraea tessellata Swainson, 1822 (33mm x 23 x 18) was one of three found in February 1977 under



a large coral head seven meters deep in the center of the lagoon. It lived in my aquarium more than three weeks. I have found seven more C. tessellata at depths varying from two to twenty-two meters, inside and outside the reef. My wife and I have picked up more than fifty beach specimens.

The very pale Cypraea helvola Linne, 1758 was found in April 1977 under coral rubble twelve meters deep off "Koral King Beach" in the lagoon. It appears to be a common honey cowry except for its faint color. If it isn't a C. helvola, I don't know what it is.

In the center is a Conus spiceri Bartsch & Rehder, 1943, found in April 1977 among coral rubble twenty-three meters deep outside the reef and south of the island, by Ross. We have found several of these rare cones, all but one of which have been crabbed.

Other notable shells found on Midway and now in my collection include Conus pertusus Hwass, 1792; Cypraea gaskoini Reeve, 1846; C. granulata Pease, 1862; C. isabella Linne, 1758; C. sulcidentata Gray, 1824; Murex insularum Pilsbry, 1921; M. pele Pilsbry, 1918; Strombus vomer hawaiiensis Pilsbry, 1917 (beach and crabbed, only); and Terebra achates Weaver, 1960 (plentiful, but few are gem quality).



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A collector on Okinawa, Frank S. Walker, wants cowries, murex, cones and olives from all parts of the world. He says he has many common and uncommon species from many families to trade, including a number of Cypraea luchuana Kuroda, 1960. "Some are 7/8-inch giants," Walker adds. His address is HQ USAGO Box 3642, APO San Francisco 96248.

* * *

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Dov Peled of Haifa passed through Honolulu late in February, following visits to Sri Lanka, the Maldives, Andaman Islands, the Philippines, New Guinea, the Solomons and the Marshall Islands. He was scheduled to return to Israel by the end of February.

News From Zanzibar

DAR ESSALAAM — Here is some news from Zanzibar.

Early in December we went for a four-day shelling safari to Zanzibar, not knowing any of the places we wanted to visit. During the first day I bought from a Mrs. da Costa (the only shell dealer left on the island) a Blasicrura (Derstolida) owenii vasta Schilder & Schilder, 1938, the East African variation of C. owenii Sowerby, 1837. The size — 22mm in length — exceeds the record listed in Burgess' Living Cowries.

The next day we went to Fumba Bay, famous for C. onyx adusta, and the third day to a reef well known for its C. mappa and C. contrastriata Perry, 1811, the East African variation of C. argus. At both places we experienced the normal frustration of not being able to find what we came for. At Fumba, however, local children brought us three nice specimens within a few minutes. (By the time we discovered their secret the incoming tide had ruined the visibility.) And the following day, after a fruitless search, we learned that several fishermen had C. mappa and C. contrastriata at home.

On the final day we abandoned our plan to visit another famous shelling reef and, on the advice of friends in Zanzibar town, we settled for a convenient offshore island. Within a few minutes of stepping ashore there we had a nice assortment of cowries, including C. microdon (rather rare in East Africa) and a C. becki, which had not been found there for several years.

Through the C. becki, I met the Fornari family of Dar-es-Salaam and learned of the Hawaiian Malacological Society, so that I am applying to become a member, also.

Ingo Guhr

Speaking of Books: Make These Corrections

by A. P. H. OLIVER

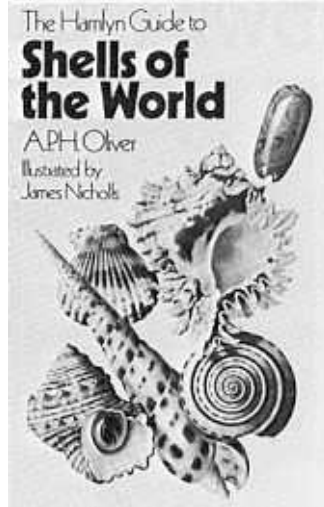
CROWHURST, Sussex — No one's perfect, the saying goes, and I must admit that a number of errors crept into my *Hamlyn Guide to Shells of the World*, published in 1975. Unfortunately, I cannot put them all on the printer's doorstep.

The list that follows includes, besides some slips in nomenclature, a number of minor items that should be corrected while the opportunity offers.

Readers who note any further errors will be doing me a favor by calling them to my attention, either through HMS or directly at Blackland, Crowhurst, Sussex, U.K.

This list does not purport to be exhaustive.

Page:	Line:	
5.	5.	For 'page 163' read 'page 175'.
16.	32.	After 'Other members . . . <i>P. teramachii</i> ' insert Kuroda, 1955.
16.	44.	For ' <i>beyerichi</i> ' read ' <i>beyrichi</i> '.
24.	36.	For ' <i>F. producta</i> ' read ' <i>Macrochisma producta</i> '.
25.		For ' <i>Fissurella producta</i> ' read ' <i>Macrochisma producta</i> '.
30.	13.	For ' <i>T. niloticus</i> ' read ' <i>Tectus niloticus</i> '.
31.		For ' <i>Trochus niloticus</i> ' read ' <i>Tectus niloticus</i> '.
44.	42.	After ' <i>T. rugosus</i> Wood' insert '1828'.
50.	40/41.	Insert heading 'Family: Siliquariidae'.
	41.	Delete whole line ' <i>V. cereus</i> Carpenter . . . apart'. (N.B. NOT line 35 which is the same), and substitute ' <i>Vermicularia fargoi</i> ' Olsson, SE USA & Caribbean. The early whorls tightly knit for 15mm.'
51.		For ' <i>Vermetus fargoi</i> ' read ' <i>Vermicularia fargoi</i> '.
54.	48.	For ' <i>Potamides fuscatus</i> L. 1758' read ' <i>Tympanotomus aurita</i> Müller'.
55.		Ditto.
60.	29.	For ' <i>Onustus helvacea</i> Philippi 1851' read ' <i>Tugurium indicus</i> Gmelin 1791'.
61.		Ditto.
62.	45.	For ' <i>T. (Rimella) cancellata</i> ' read ' <i>Varicospira cancellata</i> ' Ditto.
64.	1.	For ' <i>T. (R)</i> ' read ' <i>Varicospira</i> '.
82.	38.	<i>S. granulatus</i> — For 'Sowerby 1822, read 'Swainson'.
88.	26.	For 'Aporrhaididae' read 'Aporrhaidae'.
88.	29.	For ' <i>pespelicani</i> ' read ' <i>pespelecani</i> '. Also on p. 89.
88.	39.	After 'New Zealand' insert 'Australia & Indian Ocean', and for 'Four sub-species' read 'Six species'.
88.	41.	Add ' <i>S. scutulata</i> Martyn 1784'.
124.	32.	For 'Jennaria' read 'Jenneria'. Also on p. 125.
124.	<i>penultimate</i>	For ' <i>artica</i> ' read ' <i>arctica</i> '.
126.	2.	For 'Cassidae' read 'Cassididae'.
136.	9.	<i>M. grande</i> — after 'A. Adams' insert '1855'.
136.	17.	For 'Hanley 1888' read 'Sowerby 1889'.
136.	25.	<i>M. ponderosum</i> — after 'Hanley' insert '1888'.
136.	39.	<i>M. cancellatum</i> — after 'Sowerby' insert '1824'.
142.	7.	For ' <i>T. cerivesina</i> ' read ' <i>T. cerevisina</i> '.
144.	10.	For ' <i>Ranella gigantea</i> ' read ' <i>Ranella olearium</i> L.'
144.	35.	For ' <i>C. nodifera</i> Lamarck, 1822' read ' <i>C. lampas</i> L. 1758'.
145.		Ditto.
146.	30.	For 'south-east, south Australia, read 'warm waters worldwide'.
148.	6.	For ' <i>C. (Turritella)</i> . . . read ' <i>C. (Turritron)</i> . . .
148.	21.	Delete ' <i>Limatelle</i> '.
150.	21.	For ' <i>giganteum</i> Lamarck 1816, read 'olearium L. 1758'.
151.		Ditto.
152.	20.	For ' <i>Distortio</i> ' read ' <i>Distorsio</i> '.
153.		Ditto — three times.
157.		For ' <i>mindanoensis</i> ' read ' <i>mindanoensis</i> '.
158.	28.	For ' <i>cabriti</i> Bernard 1859' read ' <i>bellegladensis</i> Vokes 1963'.
159.		For ' <i>cabriti</i> ' read ' <i>bellegladensis</i> '.
158.	33.	For 'Kuroda 1955' read 'Kira 1962'.
160.	29.	For ' <i>kawamurai</i> Shikama 1964 Taiwan' read ' <i>axicornis</i> Lamarck 1822. Indo-Pacific.
161.		For ' <i>kawamuri</i> ' read ' <i>axicornis</i> '.
161.	43.	For ' <i>Murex senegalensis</i> Gmelin 1791, read ' <i>C. clausii</i> Dunker 1879'.
161.		For ' <i>Murex senegalensis</i> ' read ' <i>Chicoreus clausii</i> '.
162.	26.	For ' <i>C. damicornis</i> Hedley 1903 South-east Asia', read ' <i>C. axicornis</i> Lamarck 1822 Indo-Pacific (see p. 160)'.
163.		For ' <i>damicornis</i> ' read ' <i>axicornis</i> '.
164.	22/26.	Delete note on <i>H. saxicola</i> . This is a synonym of <i>H. cichoreum</i> . Also note spelling of 'cichoreum'.



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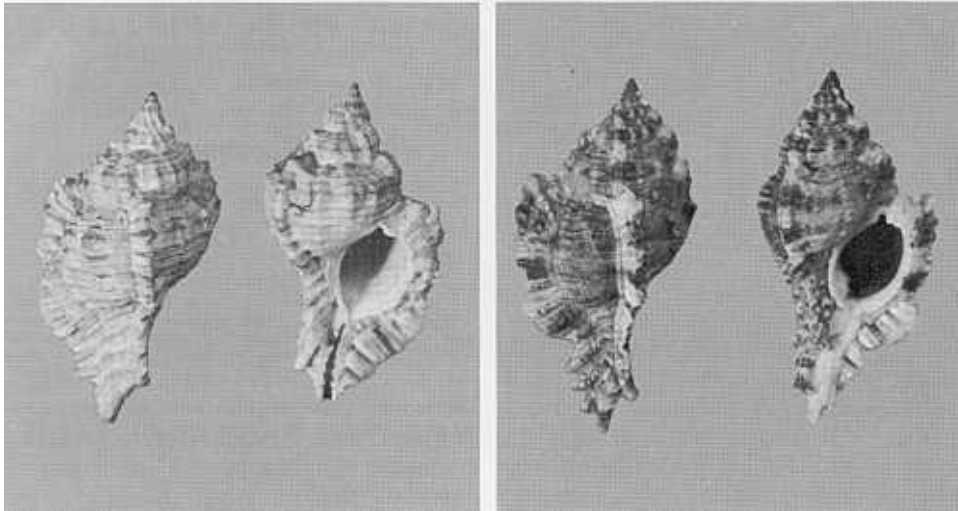
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Cont'd on Page 9

A RANGE EXTENSION OF ULTRA-RARE *Murex barclayi*

by ELMER LEEHMAN



Murex barclayi Reeve (Arabian Pen.)

M. barclayi Reeve (Japan)

Veteran members of HMS will remember the series of articles in HSN regarding *Murex barclayi* Reeve, 1857, appearing in 1971 and 1972. The discussion revolved about the identification of several putative specimens. Were they *M. barclayi*, or did they represent one or more similar species?

The consensus was that the shells then being offered as *M. barclayi* by dealers in the Far East actually were *M. annandalei* Preston, 1910 or *M. trigonulus* Lamarck, 1816.

From the controversy came realization that there were, in fact, only three known specimens of the true *M. barclayi* of which two — the holotype and a paratype — were in the British Museum (Natural History) in London. The third, trawled from deep water off South Africa, was in the possession of HMS member Lawrence Thomas, of Morro Bay, California, for some time. (I do not know the present whereabouts of that shell.)

At about the same time, another red-and-white muricid was dredged in Australian waters. Its identify was uncertain, but it was regarded by many experts as a new species, not *M. barclayi*.

Recently, my good friend Taizo Ninomiya of Tokyo obtained two specimens which he believed to represent *M. barclayi*. One had been live taken. The second had previously been in another Japanese collection. He sought confirmation of their identity, and sent excellent photos. I sent the photos on to Jerry Harasewych at the Delaware Museum, a leading *murex* expert.

Harasewych quickly replied that the shells were indeed the ultra-rare *M. barclayi*.

According to Ninomiya, the dead specimen, measuring 80mm x 31, was trawled off the Arabian Peninsula in 1972. The second, however, was caught in a shrimp net off Minabe, Central Japan in 1977. The latter measures 86 x 31.1mm and has its operculum.

I believe this is the first of the species to be found in Japanese waters. Previously it had been known only from the Indian Ocean.

The problem of identifying *M. barclayi* has been complicated by a suggestion that the figure in Radwin & D'Attilio's *Murex Shells of the World* is in error, that it actually represents *M. annandalei*, and that the "*M. annandalei*" figure really is *M. trigonulus*. In any event there is widespread confusion over the three species.

Taizo Ninomiya is certainly to be congratulated on having secured two new confirmed specimens of what must be the rarest of the muricids. His discovery suggests the possibility that other HMS members may have specimens unrecognized in their collections.

Speaking of Books Cont'd from Page 8

- 165. For '*saxicola*' read '*cichoreum*' & alter spelling of latter.
- 164. 27. For '*hoplites* Fischer 1876' read '*rosarium* Röding 1798'.
- 165. For '*hoplites*' read '*rosarium*'.
- 170. 10. For '*Cailleti* Petit de la Saussaye 1856' read '*S. perelegans* Vokes 1965'.
- 14. For '*alata*' read '*alatus*'.
- 20. For 'Solander' read 'Lightfoot'.
- 171. For '*alata*' read '*alatus*' and for '*cailleti*' read '*perelegans*'.
- 172. 36. For '*Murex rectirostris* Sowerby 1841' read '*Siratus pliciferoides* Kuroda 1942 and see p. 158.' Delete last sentence — 'The illustrated specimen . . .'
- 174. Last. I am satisfied that the *Murex* spec. referred to on page 5, and illustrated on p. 175 is *Chicoreus corrugatus* Sowerby, 1841 from the Red Sea. The problem outlined on p. 5 arose due to incorrect data, but is still a good example of the sort of difficulties an amateur conchologist so often meets.
- 182. 1. For '*Concholepas peruvianus* Lamarck, read '*Concholepas concholepas* Bruguiere'.
- Ditto
- 183. 8. For '*Northia*' read '*Niotha*', do. p. 191.
- 190. 12. For '*N. northiae*' read '*Northia northiae*'. N.B. '*Northia*' is a genus of the family Buccinidae not Nassariidae, and should appear on p. 192.
- 196. 28. For '*aerolata*' read '*areolata*', also on p. 197.
- 200. 26. For 'Melongeridae' read 'Melongenidae'.
- 226. 25. For '*Vexillum lubens* Reeve 1845' read '*M. incompta* Lightfoot 1786'.
- 227. Ditto.
- 240. 4/5. There should be a space between lines 4 & 5.
- 242. 3. For 'Griffiths' read 'Griffith'.
- 286. 21. *C. mediterraneus* Hwass 1792, has recently be shown to be *C. ventricosus* Gmelin 1791'; however, more recently still, some doubt has been raised on this question.
- 267. The cone illustrated as *C. mediterraneus* is unfortunately a specimen of *C. coronatus* Gmelin 1791.
- 296. 42. For 'Turricola' read 'Turricula'.
- 297. Ditto.
- 312. 29. After 'Sowerby' insert '1860'.

INDEX to be altered as appropriate.

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Diving for *C. floccatus* On a Reef in Samoa

by BOB PURTYMUN

PAGO PAGO — I call it Floccatus Country. The topographic map of Tutuila Island, American Samoa calls it the Taema Bank. It is the southern rim of the caldera of the volcano that formed this island, and is situated about two miles south of the entrance to Pago Pago harbor, hence the local name, Two-Mile Reef. No matter what you call it, it is a shell collector's treasure chest.

During trade-wind weather, huge ocean swells surge across the forty-feet-deep bank, making it impossible for diving. But, as the Austral summer nears, the trades die and the water flattens. A slight east-to-west current, more of an ocean drift, flowing unimpeded for thousands of miles, continually bathes this reef with brilliantly clear water. Visibility is always in excess of 100 feet.

The rare *Conus floccatus* Sowerby, 1839 lives on this reef. It is found in sand, under coral slabs, in sheltered areas below the crest of the reef. The color pattern in extremely variable.

The shell in Figure 1 is beige, with brown spots and blotches. It has the typical needlelike tip on the protoconch. Another, not figured is pink, with brown blotches and encircling white interrupted streaks. The leading edge of the body whorl is white.

Figure 2 shows three color patterns in the same shell. Each change is marked by a scar, where the mollusk had mended an old shell-break.

The American Samoan *C. floccatus* appears to be very similar to the British Solomon Island specimens (HSN May 1973 color page).

On Kwajalein

KWAJALEIN ATOLL — One of the prettiest of the Micronesian cone shells is *Conus floccatus* Sowerby. At Kwajalein, this rather rare species primarily inhabits the oceanside slopes in ten to twenty meters of water. It is a piscivorous (fish eating) species which roams the steep coral slopes at night in search of a sleeping fish to devour. Night diving on this reef, I once observed a specimen consuming a green-lined triggerfish (*Balistapus undatus*) as large as the predator's shell.

Specimens kept in aquariums will eat offered fish quite rapidly, sometimes one each night until the supply is gone.

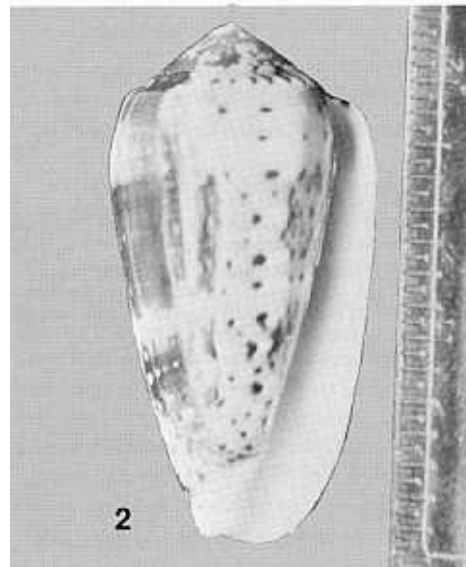
Though the living animals are rare here, old dead shells are frequently seen. Beach specimens are common.

The Marshall Islands are thought to be the center of distribution for *Conus floccatus*. At Kwajalein Atoll two color forms exist. The more common, by a ratio of about four to one, has a lavender background, upon which the dark markings occur. The other form has the same dark markings, but the background is brilliant yellow. This is the more striking variety.

Scott Johnson



1
Conus floccatus Sowerby (both)



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What Shall I Feed To My *Terebra*?

by OLIVE SCHOENBERG

Not much is actually known about feeding habits of the Terebridae. Some terebrids have been found to feed on worms, and there are reports that others feed on *Donax* clams.

Possibly terebrids differ as to method of feeding as they possess different feeding apparatus. Some have a poison gland like the cones; others have radular teeth like cowries; others' stomachs evert so they can swallow their prey like fish-eating cones.

Are terebra as versatile as cones in their feeding habits?

Several people have found *Terebra dislocata*, which comes from the East Coast of North America, in close association with a hemichordate, *Balanoglossus*, and think it preys on them (Mollick 1973).

Terebra cinerea (Born, 1778) are found intertidally in close association with single-celled algae upon which the clam, *Donax*, feeds. It is reported that *cinerea* shoots poison darts into small polychaete worms, and swallows them whole. However, quite a few people report that *cinerea* feeds on young clams. Humfrey, in *Sea Shells of the West Indies*, says *cinerea* feeds on *Donax denticulatus* in Jamaica waters.

Here in Hawaii, I have never found terebrids in close association with small clams but have almost always found them in the same areas as soft-sided yellowish sand worms, *Ptychodera flava* (*Balanoglossus*) commonly called acorn worms. I have seen *Terebra maculata* in the process of swallowing a six to seven-inch worm of this type, with half the worm inside its gut. I have kept *T. gutatta*, *spauldingi*, *gouldi*, *achates*, *penicillata*, *lanceata*, *crenulata*, *affinis*, and *funiculata* alive for months in my home aquarium where there are many small marine worms, much detritus and algae, but no clams.

The most comprehensive work on any terebrid has been done by Bruce Miller on *Terebra gouldi* Deshayes, 1859. He notes that *T. gouldi* is carnivorous and feeds only on the marine worm, *Ptychodera flava* (acorn worm). *T. gouldi* does not possess a poison gland but captures its prey with its proboscis. It detects the worm by "smell" or chemoreception. Once the worm has thus been located the terebra zeros in on it and makes contact with its foot. Then it everts its muscular proboscis to grasp the worm and slowly ingests it. Many worms are twice as long as the terebra, and consumption can take up to fifteen hours.

According to Miller, other terebrids found in Hawaiian waters that are the same feeding type as *T. gouldi* are *T. thaanumi* Pilsbry, 1920, *T. areolata* (Link, 1807), *T. crenulata* (Linne, 1758), and *T. dimidiata* (Linne, 1758). These terebrids all lack a radula and would have difficulty capturing fast moving prey such as *Donax* clams.



"Come see us at the Jacksonville (Florida) Shell Club's annual shell show, July 29 and 30," say these specimens, lined up in front of the spectacular Flag Pavilion in Jacksonville Beach, scene of the display. Out-of-town exhibitors are welcome at what is expected to be the largest show ever held in the resort community, adds Show Chairman Allan Walker.

Termed 'Indeterminate' *Conus ventricosus*

Interesting observations on *Conus mediterraneus* Hwass in Bruguiere, 1792, *C. guinaicus* Hwass in Bruguiere, 1792 and *C. ventricosus* Gmelin, 1791 have been presented by K. Bandel of Bonn, West Germany, and E. Wils of Amsterdam. The three species have been the source of confusion among *conus* experts for years.

Briefly, they conclude that *C. mediterraneus* and *C. guinaicus* represent two distinct species, "although very similar in conchological characters." On the other hand, *C. ventricosus* is considered to be "an indeterminate species based on a hardly recognizable figure without a locality."

In layman's language, that means: "Nobody really knows. Better not use the name *Conus ventricosus*. In fact, forget it!"

A group of terebrids possessing poison apparatus or those with radula might be capable of securing faster moving prey, but actual ingestion of this type of prey has not been seen as far as I know.

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The study involved extensive field trips to the Mediterranean and West Africa, as well as use of the new scanning electron microscope. The results have been published in *Basteria* 41: 33-45, 1977.

"*C. mediterraneus* and *C. guinaicus* can hardly be distinguished conchologically," the authors write. "On the whole, identification by means of color and size differences is hampered by the fact that both species show a considerable amount of variation. . . . In their ecological requirements, both species are very similar and prefer soft substrates close to the shore."

But the species "can be separated by studying their distribution, egg cases, embryonic shells and radulae. *C. mediterraneus* seems to be restricted to the Mediterranean and is the only member of the genus there. To our knowledge, *C. guinaicus* penetrates the Mediterranean only near the Strait of Gibraltar, but otherwise is a Lusitanic species."

E.G.L.

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Volute Problems:

The Status of *Cymbiola marispuma* Angioy & Biraghi, 1977

by CLIFTON S. WEAVER

A new species of volute, *Cymbiola (Aulica) marispuma*, was proposed last year by M. Angioy and G. Baraghi, both from Italy. *La Conchiglia*, which published their description, also carried a striking color photo of the shell, which had been found at "Cikanjang" (subsequently amended to read Cikonjang), West Java, Indonesia.

On the basis of the photos and the authors' description of *C. marispuma*, I am of the opinion that it does not represent a valid species.

HMS Associate Editor Elmer Leehman was equally dubious of the proposed species. Dr. R. Tucker Abbott, one of America's outstanding malacologists and author of many books in the field, told Leehman he had no hesitation in identifying the shell as *Voluta ceraunia* Crosse, 1880, a population variant of *Cymbiola (Aulicina) rutila norrisi* (Gray, 1838).

C. rutila norrisi is illustrated and described in Weaver & du Pont's *The Living Volutes* (1970), and was figured in HSN Jan. 1977.

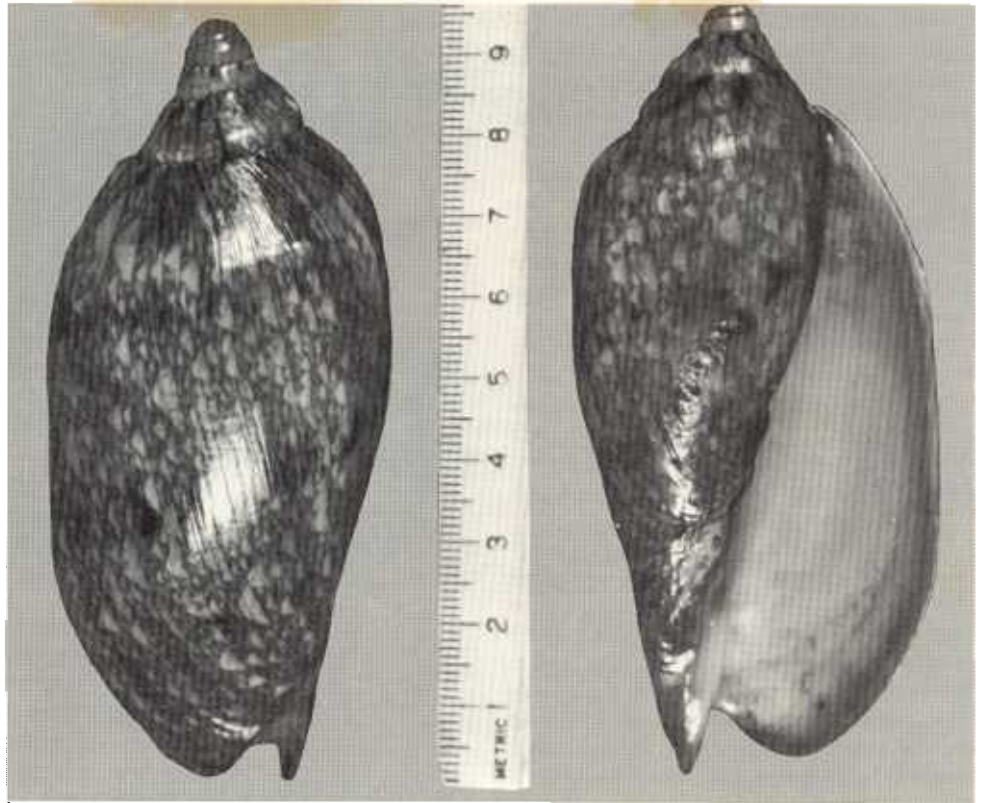
In their description, Angioy & Biraghi gave as the first and most important species differentiating characteristic that the anterior portion of the outer lip of *C. marispuma* is attached to the penultimate whorl. But this is not a unique feature. The same thing happens in many (but not all) specimens of *Cymbiola (Aulica) aulica* Sowerby, 1825 from the Philippines. So that feature alone does not separate the shell from other volutes.

In their original description, Angioy and Biraghi offer as a difference the fact that their species is more elongated than *C. ceraunia*. This is trivial. It could be the result of sexual dimorphism. I feel quite certain that early authors did not examine animals to determine sex. For that matter, the early authors may not even have been aware that sexual dimorphism existed!

In the case of *Voluta musica musica* Linne, 1758, the males are more slender and have less developed shoulder nodules than do the females. We found at least twelve synonyms as a consequence of earlier authors' failure to recognize this.

The proposed new species is also said to have a less corrugated (or wrinkled) protoconch. Here is another variable characteristic among some volute species. *Cymbiolacca complexa* Iredale, 1924 is an example. *The Living Volutes* has record of the ribbed protoconch of a deep-water population such as *Pseudocymbiola provocatonis* being glazed over and smooth.

The authors cite tentlike markings on their shell. Variation in marking is one of the least important of all differentiating characteristics. An example is the tremendous difference in color and markings among the various populations of *Amoria damoni* Gray, 1864 along the 3,500-mile Western Australian coast. At least eight names have been given to population variants.



Dorsal and ventral view of *Cymbiola (Aulica) marispuma* Angioy & Biraghi, 1977 (= *C. (Aulicina) rutila norrisi* Gray, 1838), a population variant formerly known as var. *ceraunia* Crosse, 1880. It may also be conspecific with *C. (Aulica) kaupii* Dunker, 1863. Photo: Chapman

Compare *V. reticulata* Reeve, 1844, from the northwest coast of Australia, with the almost completely white, longitudinally lined Port Keats, population formerly known as *Amoria keatsiana* Ludbrook, 1953. Figures 64B and 64C of plate G4 in *The Living Volutes* illustrate this variation in a single species.

The slightly straighter columella of *C. marispuma*, mentioned in the description, also is an insignificant difference, as is the matter of columellar plaits. Among a dozen specimens of *Miomelon philippiana* Dall, 1889, on one occasion I counted anything from one to four plaits. All specimens had been dredged from the same deep water area.

Because of all these considerations it is my firm opinion (shared by Dr. Abbott and others) that *Cymbiola (Aulica) marispuma* Angioy & Biraghi, 1977 is a synonym for *C. (Aulica) rutila norrisi* Gray, 1838.

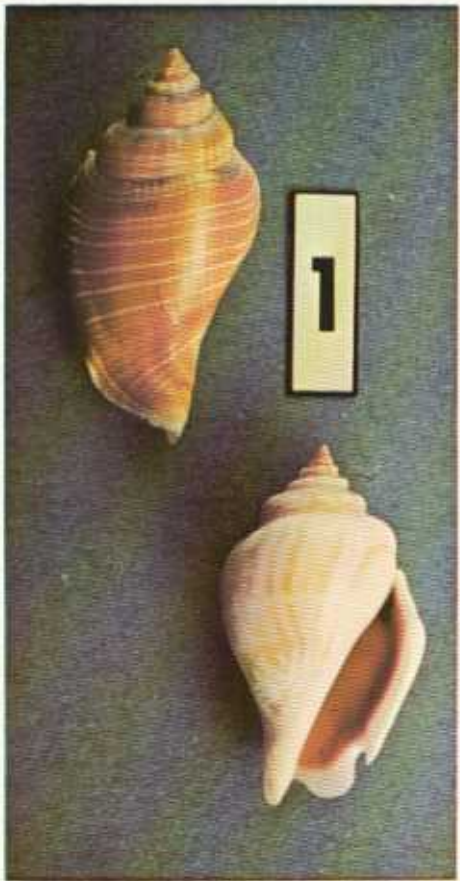
I suspect that the "lost" species, *V. kaupii* Dunker, 1862 is a victim of the same confusion. Dunker's very worn, dead holotype may also be *V. ceraunia* Crosse, 1880.

As a consolation to Messrs. Angioy and Biraghi, I should point out that they are not alone in having their proposed species downgraded. I had the same experience with a subspecies that I

named for my wife. Intergrades among shells were subsequently discovered. Similarly, a species named in my honor by Dr. Donald McMichael was later reduced to subspecies status — by me!

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Strombus gibberulus albus Morch, 1850

Red Sea

Photo: Kemp

Vexillum (Costellaria) interruptum (Anton, 1839)

Hawaii



Photo: Salisbury

Julia exquisita Gould, 1862

Hawaii



Photo: Salisbury



Scabricola (Scabricola) caerulea (Reeve, 1844)

New Guinea

Photo: Hill

Oliva species

New Guinea



Photo: Hill