

# Collecting with Hand Rake and Hard Hat

By EDWARD A. DUNLAP, M.D.\*

SARASOTA, FLA. — Imagine — if you can — a mound higher than a two-story house and as large as a city block made up *wholly* of washed shells. Imagine — if you can — scrambling over huge 30-foot-high mounds of freshly excavated dirt containing thousands of shells which until a few hours previously had lain buried for millions of years. Imagine — if you can — being able to explore each or both of these at your leisure in one concentrated area.

Such a dream is reality at the Macasphalt Co.'s Newburn Pit mine on the northeast edge of Sarasota. It is an incredibly rich concentrated fossil shell deposit covering a time span estimated at three million years. Exploring this site is an adventure that must be experienced to be believed.

The "mine" is an approximately 600-acre site that is being excavated by terrace-tier technique to provide sand, dirt fill and other construction material. Huge shovels work five days a week to scoop the dirt into mounds which are either trucked away at once or left for future removal. The total depth of the tiered excavation is approximately 150 feet. Ground water infiltration precludes deeper excavation. The excitement lies in the fact that this dirt contains vast numbers and varieties of shells, largely from the Pliocene period but with, at times, a slim skim of late Miocene.

The shell content boggles the mind as to both variety and profusion. A scientific survey of the pit with special emphasis on a new genus was published by Dr. Ed Petuch in 1982 ("Notes on the Molluscan Paleocology of the Pinecrest Beds at Sarasota, Florida with the Description of *Pyruella*, a Stratigraphically Important New Genus"). The reference to Pinecrest formation was corrected last year (1984) to the Buckingham formation.

While the pit is worked commercially five days a week, it is open to shellers on Mondays and Thursdays from approximately 8:30 a.m. to 3:00 p.m. There is a charge of \$2/day/person. A hard hat must be worn. If you don't have one, you can buy one for \$5 at the trailer-office.

Adam Nosal, a friendly man, is in charge of shellers, signing them in and either directing them or conducting them personally to whatever site can be explored that particular day. The alternative is to



Photo: Dunlap

Dr. Dunlap and newly excavated shells

go directly to the "wash pile", a relatively small amount of the excavated material being fed by conveyor belt into a huge revolving drum that washes and grades the "dirt" into three sizes. This translates into three ever-growing piles of: 1. Shells or pieces; 2. Some small shells in fine gravel; and 3. Sand. If the pile of washed shells is not carted off at once, it is bulldozed over onto the huge storage mound. While many shells are imperfect (wouldn't you be after a million or so years?), the supply is so great that searching yields plenty of good quality shells of wide variety.

You can go out of your mind working on either wash-pile or mounds. Both are exciting. The former consists of picking over or digging into the pile; the latter involves crawling on and digging into the mounds and unearthing shells. A small short-handled rake, geologist's pick or some such tool is almost imperative, along with buckets or sacks for the booty. Old clothes and sun protection are in order. Depending on the level of selectivity one can finish a day with 200+ pounds of shells or just a bucketful or two.

You will find a wide variety of both univalves and bivalves, many of the latter intact. Some of the *Cypraea*, *Strombus* and olives still have color and luster. Some cones and volutes also show markings, which are enhanced by wetting the shell or, better,

viewing under ultraviolet light. Many *Murex* have delicate spines and spires intact. One large handsome but nameless *Strombus* measures six inches or so. It usually has a broken lip or end but a few are intact and verge on the spectacular. Large conchs are common. Clusters of *Vermicella* up to a foot or so in width are also common; in fact, two of the 12 levels are composed exclusively of them. I found two tiny *Marginella* (?*M. eulima* Dall?) that are gem in appearance and look as if they were live-taken yesterday.

Most specimens are filled with sediment, in itself exciting to examine. While purists say this sediment should be left intact in the shell, it is an adventure to flush it out as it invariably contains tiny shells often of wide variety. Sinistral cones — 18 varieties, according to Petuch — are in great abundance as are "conventional" cones, also of wide variety. Cowries and cones range in size from one-half to four inches. A common and beautiful shell is the now extinct *Histrivisum locklini* Olss. & Harb. The "shell of the show" — if you can find one — is an *Ecphora* — any of several varieties. It is a late Miocene shell and rare in this pit. I lucked out with one and saw two women find one each in the wash pile.

In addition to shells, fish, whale and other mammal bones are found occasionally. The prize was huge elephant teeth, a rare find.

You should make more than one visit, if possible, as the freshly excavated shells, either mound or wash-pile, can vary significantly from visit to visit. It was my good fortune to manage 11 visits in early 1984, enabling considerable selectivity. Even so, I brought a careful of shells back north.

A list of families found in the pit includes: Busyconidae, Cancellariidae, Cardiidae, Carditidae, Cassis, Conidae, Cypraeidae, Fasciolaridae, Marginellidae, Melongenidae, Mitridae, Muricidae, Olividae, Spondylidae, Ostreidae, Pectenidae, Strombidae, Terebridae, Turbellinellidae, Turridae, Vasidae, Vermicularidae, and Volutidae.

This site with its findings differs from two other Florida sites recently described by Aurora Richards in "My Love Affair with Fossils" (HSN Aug. 1983) and Donald Moody's "Cape Canaveral Scallop Dumps" (HSN March 1985).

To the collector accustomed to working hard for his or her shells — and who isn't? — exploring this site is a singular experience, a most novel treat.

\*R. D. I, Box 416, Rhinebeck, NY 12572.

# REEFCOMBING

Hawaiian Shell News is fortunate to have a non-resident editorial conscience in Walter Sage of the American Museum of Natural History in New York. In addition to providing a dependable flow of "News of New Species" and "Speaking of Books" copy, Sage is an implacable catcher of editorial slips (after they have been printed, unfortunately). He was all over the park on the August issue.

1. That great color picture of nine colorful peccens from Hawaii on page one was run upside down. Our apologies to author John Earle.

2. The "Publication Notice" of Sally Diane Kaicher's Card Catalogue of World-Wide Shells Pack #41 omitted an important point — the family covered. It dealt with the Nassariidae. Sorry about that, Sally!

Watch this space for news of future fluffs.

\* \* \*

Sage's letter leads naturally to discussion of a note that appeared not long ago in another shell club publication:

"If you are unhappy with your editor, just copy this letter and send it to six other clubs. Then bundle up your present editor and send him to the club that heads the list, adding your own club's name to the bottom. Within one month you will receive 16,436 editors — one of whom ought to be a dandy.

"Warning: Do not break this chain! One club did it and got its old editor back!"

### Semi-settled in Florida

After a silence of several months, HSN staffer Richard Salisbury has sent in a report on his activities since the U.S. Navy transferred him from Hawaii.

"I'm semi-settled here [near Jacksonville] in Florida," he writes. "I say 'semi-settled' because I am at sea more than I am at home.

"I went to Norfolk, VA for two months of school. Although it was cold at first, I lucked out in getting some very nice early Spring weather of which I took full advantage to do some fishing and a little beachcombing. I was hoping to get to the Smithsonian Institution [in Washington, D.C.] but didn't make it. Maybe I will be able to get away from the ship later.

"The Jacksonville Shell Show was very nice. Will try to get to a few of the Jacksonville Club meetings later in the year.

"I sure do miss Hawaii. Say hello to everyone.

"My permanent address is 2213 Cypress Landing Drive, Atlantic Beach, FL 32233. There may be a slight delay in my replies as I will be traveling extensively until the end of the year. Our ship is scheduled to visit a few places in the Caribbean, where I hope to do some serious collecting."

### All Quiet in Philippines

"Things remain much the same here in Baguio," said a midsummer note from James Barnett, the

Society's reporter on Philippine land snails, "with an intensity-8 earthquake and a typhoon which completely isolated us from the outside world.

"The earthquake and the some-50 aftershocks did little damage to our place, but I was very busy for a few minutes, running from cabinet to cabinet fielding statues and other knickknacks as they came toppling from the top shelves.

"The typhoon also caused us little trouble here, but it is a strange feeling to know you are cut off, with no way into or out of the city.

"So much for the disaster news from Baguio. We're awaiting a tsunami (tidal wave)."

### The Traveling van Pels

HSN Contributing Editor Peter van Pel of Holland is scheduled to spend September and October in Australia. He reports that his wife's health is improving and her doctor has cleared her for travel. They are looking forward to "lots of new experiences and shells."

Peter is taking his underwater camera and promises to produce a few articles for HSN.

### Bed & Breakfast, Anyone?

HMS member Ruth Reetz of Bloomington, Minnesota is trying to determine whether there is sufficient interest among shell collectors of the world to organize our own Bed & Breakfast Directory. If you would like to participate as a host/hostess to other collectors (or even if you aren't sure) write to Ruth Reetz, The Spell of the Shell, 40 Norman Ridge Drive, Bloomington, MN 55437. Tel.: (612) 831-7897.

### Speaking of Shell Money

The Broward Shell Club of Pompano Beach, FL netted \$790 at its auction early this year to assist in the liquidation of the Neil Hepler estate. Among the unusual items that changed hands were two preserved specimens of *Nautilus pompilus*, complete with the animals; a world record sunray venus shell, *Macrocallista nimbosa*, and a *Vasum caestus* from Panama.

Hepler, one of Florida's best known shellers, was five times winner of the original du Pont Trophy, and took several COA trophies and the Smithsonian Award, with a series of carefully thought-out displays at regional shell shows. Several of his exhibits were taken by the Delaware Museum for permanent display.

Hawaiian Shell News accepts worldwide shell dealers' advertising in good faith, assuming that they will deal fairly with their customers. Inclusion of advertising in HSN, however, does not imply an endorsement of the advertiser. If you are in doubt, investigate first.

## Hawaiian Shell News

ISSN 0017-8624

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The Society meets the first Wednesday of each month at the First United Methodist Church, Beretania & Victoria Streets, in Honolulu.

#### VISITORS WELCOME!

Hawaiian Shell News is issued free to members of the Society. Postage rates have been computed and added to membership dues. 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 bank cheque (not a draft) payable to HMS on a U.S. bank. (Be sure your name and address appear on the cheque.)

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Advertisements are accepted at the rate of US \$20.00 per column-inch/issue, payable in advance. Discounts are offered for six and twelve insertions.

Typesetting, composition and printing of Hawaiian Shell News is done by Fisher Printing Co., Honolulu.

## WELCOME TO HAWAII!!

HMS members visiting Hawaii are invited to contact the Society while in Honolulu. Please keep in mind, however, that the Society office is open irregularly, and that it does not have a telephone. Society officers are listed individually in the telephone book. If in doubt, ask the Waikiki Aquarium or the Bishop Museum for names. Better still, write to the Society in advance. The Museum's Karl Greene Shell Room has a good display of both Hawaiian and Indo-Pacific species.

# Is It japonicus or polygrammus — or filicinctus or nipponicus?

By ROGER MARTIN\*

CEBU — While dredging one day recently in the Central Philippines, I had the unhappy experience of bringing my dredge up from 230 meters of water to find that, while heavily loaded, it contained only stones and dead shells. Reluctantly I emptied the load into the bottom of the boat.

One never knows, however, so I started picking through the uninviting heap. Mingled with the stones were many broken cones. Judging from their eroded appearances, the amount of breakage, and the number of parasites attached to the fragments, most had been dead for years — perhaps centuries.

Then, to my surprise and delight, I came upon a small, apparently fragile cone in an unbelievably good condition. It, too, was dead.

Although I racked my memory, I could not put a name on the shell. I did remember, however, a cone of about the same size, with a similar pattern of fine spiral lines, in my collection. It bore the name *Conus japonicus* Hwass, 1792.

Needless to say, as soon as I returned home I compared my find with *C. japonicus*.

Their color patterns were indeed remarkably similar. And the shells' sculptures were practically identical.

Continuing my hunt for a name, I was happy to recognize my shell in Abbott & Dance's *Compendium of Sea Shells* (1982), page 263. It bore the label *C. filicinctus* Schepman, 1913. The text said the figured holotype was from Java (virtually "next door" to the Central Philippines), that it came from deep water and that the shell was rare.

I turned then to Walls' *Cone Shells* for a description of *C. filicinctus*. I found the species listed as

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Da Motta's figure of *C. nipponicus*



*C. filicinctus* 37.6 x 20mm

Photo: Martin

invalid and perhaps a synonym of *C. polygrammus* Tomlin, 1937. Based on the very bad condition of the holotype of *C. filicinctus*, Walls suggests that the proper name of *C. polygrammus* should actually be *C. filicinctus* and "there would probably be no harm in using the name *filicinctus* if one prefers."

The condition of my newly found shell allows a fair comparison with *C. polygrammus*, as described in *Cone Shells*:

- *C. polygrammus* is more elongated, with a higher spire than *filicinctus*, which has a rather low spire.
- The distinctly stepped shoulder and spire whorls of *filicinctus* are decorated with very regularly spaced brown spots all around.

None of the eight *C. polygrammus* specimens figured on Page 548 of *Cone Shells* show the characteristic pattern of fine, continuous, regularly spaced dark brown spiral lines (to which the species owes its name) seen on both the holotype and the new specimen.

*Conus filicinctus* seems to me to be clearly distinct from *C. polygrammus*. I see no justification for applying its name to *polygrammus*.

Having answered the first question posed in the title of my paper, I intended to end the matter there. Before I could feel completely satisfied, however, I succumbed to an urge (fisherman's instinct, perhaps) to return to the bit of ocean where I found the shell in question.

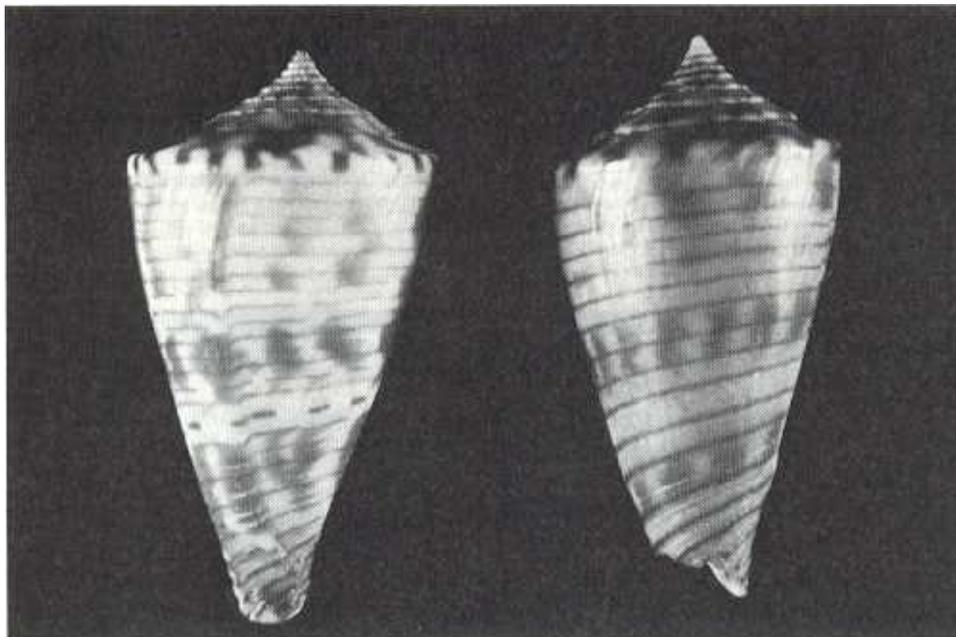
Dredging at a depth of 120 fathoms (720 feet or about 250 meters), I was soon rewarded with another load of stones. I began to dig into it and almost immediately picked up what looked like another *C. filicinctus*. Its condition was similar to that of the first, but it was bigger — 33 x 18mm for a  $\frac{L}{W}$  ratio of 1.83.

This new catch and the old maxim, "Never two without three," spurred me to dredge further. Sure enough, a couple of hauls later I brought up the third specimen. Again, it was bigger — 37.6 x 20mm  $\frac{L}{W} = 1.835$ .

In the meantime, while all this was going on, I had received a copy of *Publicacoes Opcionais da Sociedade Portuguesa de Malacologia*, 4 (1985) with a description by A. J. da Motta of *Conus nipponicus*, put forward as a substitute name for *C. japonicus* Hwass, 1792 (*nomen dubium*).

Serious study leads me to feel that the specimens of *C. filicinctus* in my collection conform to da Motta's description of *C. nipponicus*. Certainly, on looking closely at my photo (left) it is difficult to deny the close similarity of *C. filicinctus* and my former *C. japonicus* (now *nipponicus*).

I started this report with a question. I end it with another: *nipponicus* or *filicinctus*?



Left: *C. filicinctus*.

Right: *C. nipponicus* (Syn: (*japonicus*))

Photo: Martin

## Spikes or No Spikes, It's *Strombus gigas*



Lonely member Hoeblich on deserted Isla Tortuga

By PIERRE HOEBLICH\*

CIUDAD GUAYANA, Venezuela — First, let me say that *Strombus gigas* is *S. gigas*, regardless of size or shell form. The animal is the same, whether the "spikes" are strong or weak.

I make this statement in response to the interesting report by Peter van Pel in *HSN* June 1985 ("Ecological Variation — or Pure Chance?") that he had noted striking differences in the size of the knobs that normally decorate the queen conch. He cited *S. gigas verrilli* McGinty from relatively calm Lake Worth, FL as a possible parallel development to "spikeless" specimens from a rough-water habitat on Curacao.

I do not regard *S. gigas verrilli* as a valid subspecies or even a form.

In 30 years of shelling in the Caribbean, I probably have handled hundreds of *S. gigas*, adults and juveniles, most of them alive. Specimens from the northern areas are generally spined. The same is generally true from southern habitats except for the shores of Venezuela, Colombia and Guiana, where the spineless variety is more abundant.

There is no apparent reason for this difference. Spineless shells can be found in shallow water where heavy surf occurs only in severe storms. At other points along the Venezuelan coast (Falcon state, for example and at Isla Margarita), both types are found in the same colony. The same is true on Bonaire and Curacao where, however, the spiny shells predominate. On some islands — La Orchila, Los Roques, Los 7 Testigos and Tortuga (all in Venezuelan waters) — the reverse is the case. Queen conchs are shorter, very heavy and with well-formed spines. Spineless individuals are rare.

Ecological variability is a possibility, but the idea does not fit in all cases.

I might add that I consider *S. goliath* from Brazil to be *S. gigas* and not deserving of species status. Its radula does not differ from that of *S. gigas* except for a minor detail of tooth size and operculum. The operc of *S. goliath* usually is terribly worn. (It's no wonder, since the animal must use it to propel its heavy shell forward!)

*Strombus goliath* also is spineless. Thus it may be midway between the real *S. gigas* and the spineless form.

## Further Notes on Cocos Island Species

By DONALD R. SHASKY, M.D.\*

Cocos Island, Costa Rica is small and remote, five degrees north of the equator and about 278 miles from the nearest mainland point. Approximately half way to the Galapagos, on a south-by-southwest heading from Puntarenas, Costa Rica, it is reported to be the largest uninhabited island in the world.

Part of the Costa Rican National Park system (and administered by HMS member Fernando Cortes), the island is of volcanic origin with precipitous sides that fall away to the sea floor at a depth of about 150 feet. Numerous islets surround the main island. Because of an annual rainfall of 22 feet per year and precipitous slopes, the island has an estimated 200 waterfalls.

For the past three years the *Victoria af Karlstad*, an 84-foot motor schooner from Sweden, has been taking diving parties to the island out of Puntarenas. The crew is Swedish except for the dive master, who is from Bermuda.

In 1983, when I made my first trip to Cocos Island, and again last year, the water temperature was 85 degrees Fahrenheit (29° C) at all depths. This year I had a shock. The surface water was 78 degrees and there was a thermocline at about 70 to 90 feet to 65-degree water. The warm water from the past two years was undoubtedly due to El Niño, about which more later.

This year the shell collectors in our party included Dr. Michel Montoya of Managua, Nicaragua, and Kristi Kaiser of La Canada, California. It was the third visit to Cocos Island for Dr. Montoya and the first for Kristi Kaiser. Our days consisted of two scuba dives per day, plus shore collecting between dives and later afternoon or night dredging.

From our previous trips, Dr. Montoya and I have been working on a revised check list for the molluscan species of Cocos Island. In addition, we have been trying to determine the number of Indo-Pacific species that occur there.

Although I had previously taken *Cypraea caput-serpentis* and *C. alisonae*, I had begun to doubt a previous report that *C. moneta* had been found there. So I was greatly elated when I found two beautiful specimens of *C. moneta* intertidally at Chatham Bay. A few minutes later Kristi also found one.

Two years ago Captain Richard Calaway of Balboa, Panama and I each found a live *Cypraea alisonae*. Last year none were found. This year, however, I found another beautiful specimen at a depth of 80 feet under a coral slab.

Two years ago numerous *Cypraea talpa* were found, last year only one and this year none. Also two years ago there were many specimens of *C. isabellamexicana*. Last year and this year only two were found, although many dead ones were found. It is my belief that El Niño and its very warm water had a deleterious effect on these last two species.

Incidentally, *Coralliophila neritoidea*, which was very common two years ago, was almost non-existent last year and this year. The coral on which *C. neritoidea* is found has not looked healthy for the past two years.

As on many offshore Panamic islands, *Conus diadema* is common. I have never read anything on the feeding preferences of this species. While diving at 55 feet over a sand patch between large coral heads, I chanced upon *C. diadema* with a fine live *Cymatium nicobaricum* in its clutches. Since this was only the second specimen of *C. nicobaricum* found at Cocos Island, I happily separated the cone from its meal.

On the same dive, Kristi, while attempting to stroke a large stingray, had the sand fanned for her as it attempted to escape. She was surprised to find a *Mitra mitra* that the ray obligingly fanned out as it fled.

*Conus tessulatus* is commonly found by fanning the sand under coral slabs. It also crawls on the sand at night. We did not do any night diving this year due to extremely high density of hammerhead sharks. (Hammerheads were not seen two years ago and only a few last year.)

*Spondylus nicobaricus* is very common. Many specimens have *Malleus regulus* also attached between or under the spines.

Other Indo-Pacific species found so far include: *Isognomon incisum*, *Cardita aviculina*, *Phillipia radiata*, *Scalenostoma subulata*, *Metaxia brunni-cephala*, *Viriola abbotti*, *Pseudocypraea adamsonii*, *Charonia tritonis*, *Bursa granularis*, *Favartia garrettii*, *Morula uva*, *Persicula pulchella*, *Conus eb-raeus*, *Mitra papalis*, and *Mitra ferruginea*.

Cocos Island, because of its remoteness, its wild above and underwater beauty, the lore of buried treasure, the camaraderie of the *Victoria* crew and the divers, will bring us back next April, continuing our study of its real treasure — its natural history.

\*229 Cajon St., Redlands, CA 92373

## Cowries Errata

An Errata list for C. M. Burgess' *Cowries of the World* is being prepared for publication in an early issue of *Hawaiian Shell News*.

It will include both corrections to be made by hand, and several substitute paragraphs and sections to be pasted over original material.

Burgess was assisted in compiling the list by Walter Sage of New York.

S.L.



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## EDWIN H. BRYAN, JR. 1898-1985

Edwin H. Bryan, Jr., an international authority on the geography and natural history of the Pacific islands, died in Honolulu in late July. The Hawaiian Malacological Society lost a member of whom it long had been proud.

Ed Bryan was on the Publications Committee of **Hawaiian Shell News** from 1954 to 1956. From 1955 to 1958, he authored a series of 150 articles, titled "Hawaiian Shell Collecting," for a major Honolulu newspaper. For this series he used a pseudonym, "Nautilus Argonaut", which is well remembered by senior members of the HMS. From 1958 to 1960 he provided supplements to **Hawaiian Shell News** under the heading, "Provisional Checklist of Gastropods Recorded From The Hawaiian Chain."

Of Bryan, the editor of **Hawaiian Shell News** in November, 1958 wrote: "E. H. Bryan, Jr. is one of the busiest men we know. Officially he is Curator of Collections at the Bishop Museum and probably it would take the combined knowledge of most of the staff there to equal his knowledge of that institution".

The writer continued by sketching the wide diversity of scientific interests which was a hallmark of the Bryan career. In the legacy of knowledge which he left to the world were the books he wrote and over 2,000 published articles and shorter works.

Born in Philadelphia in 1898, Bryan came to Hawaii in 1916. In 1919 he began to work for the Bishop Museum in Honolulu, an association which lasted more than 60 years. He held degrees from the University of Hawaii and Yale University. Although he specialized in botany and entomology, he was interested in many disciplines and excelled in the gathering and dissemination of information on the Pacific islands.

From 1927 until 1941, when he entered on active duty with the U.S. Army, Bryan was Curator of Collections at the Bishop Museum. His extensive knowledge of the Pacific islands, gained through field trips and research, was of great value to the U.S. forces. He resumed the Museum curatorship in 1950, holding it until 1968. During this period he was named the institution's first Brigham Fellow, an honor named after the Museum's first director.

In 1960, Bryan founded the Pacific Scientific Information Center where he worked until recently when declining health limited his activity. When the Museum was unable to carry the entire cost of the Center, he often used his own funds in its support. Although on a perpetually busy schedule, he was always willing to help persons in search of information.

The members of the Hawaiian Malacological Society join countless other individuals and organizations in gratitude for past assistance so generously rendered by Ed Bryan and extend their condolences to Mrs. Bryan and family.

George Campbell

## A 9000-Year-Old Shell Collection

By HENK K. MIENIS\*

JERUSALEM — The Dead Sea area at the border of Israel and Jordan has been in the focus of mankind throughout history. Every place along its banks has its own story:

- Sedom: in its neighborhood were the biblical Sodom and Gomorrah;
- Mezada: famous for the final Jewish stand against Titus's Romans (AD 73) and the mass suicide by the city's last 960 defenders;
- Nahal Hever: scrolls found here in 1960 and 1961 describe the last Jewish rebellion under Bar Kochba against the Romans (AD 135);
- En Gedi: known for its sulphur springs and beautiful nature reserve with many African elements in its fauna and flora; the only place where the palaeotropical land snail *Pupoides coenopictus* is found alive in Israel;
- Ein Feshkha: magnificent freshwater springs rich in aquatic animals, a few metres from the saltiest lake on earth;
- Qumran: the famous Dead Sea scrolls were found here in 1947 in a cave;
- Jericho: lowest town on earth, etc., etc.

To this impressive list we can add now another: the Cave of Nahal Hemar (= Asphalt River). This cave, discovered by David Alon and Id et-Turi of the Israel Department of Antiquities and the Archeological Survey in 1983, turned out to contain the richest neolithic finds ever encountered in Israel. Carbon dating (C-14 analyses) placed the site in the pre-pottery Neolithic B period, i.e., some 9,000 years ago.

Among other things, the cave contained wooden objects including arrowheads, digging sticks and a fishhook; bone objects in the form of needles and spatulas; flint tools including blades, knives and arrowheads; ornaments and jewelry made of shells, clay and green stone beads; a figure of a rodent carved out of limestone; a human skull decorated with a net pattern made of asphalt; painted stone masks; small human figurines of bone; knotted bags and baskets, and pieces of very fine fabric.

All these finds shed new light on Stone Age people. The shell material found in the cave had its origin in two different areas: the Mediterranean Sea, some 100 km to the west, and the Red Sea, 200 km to the south.

Among the Mediterranean shells we could recognize were 23 valves of *Glycymeris violacescens*, four of *Acanthocardia tuberculata*, four of *Cerastoderma glaucum*, one shell each of *Bolinus brandarus* and *Phyllonotus trunculus*, and 42 shells of *Nassarius gibbosulus*.

In all the specimens of the latter species the dorsum had been removed. Some were still supplied with pieces of thread as if they had adorned a piece of cloth.

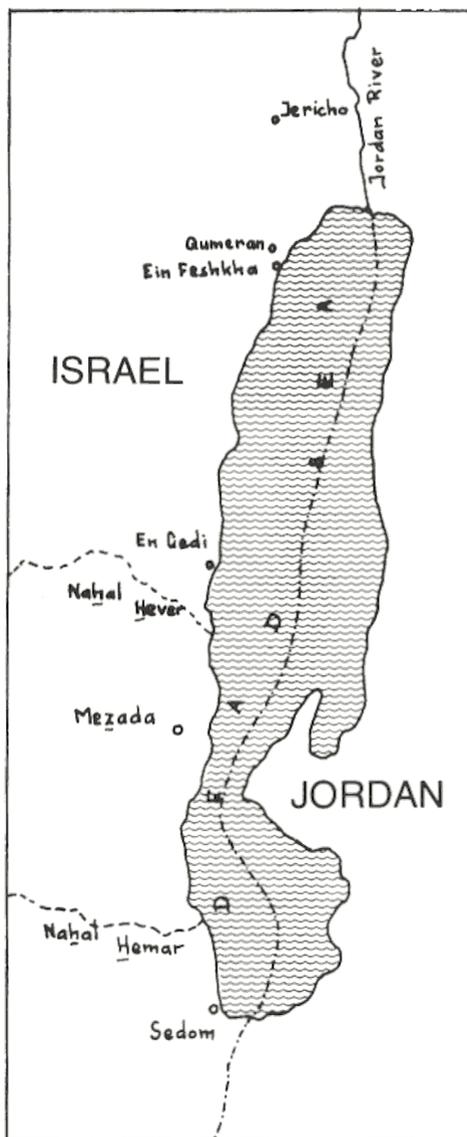
Among the Erythraean shells we could recognize were four *Nerita sanguinolenta* (two were found sewn on cloth), one *Nerita polita*, 12 shells of *Cypraea turdus* (all with dorsum removed and some with pieces of thread still adhering to them), eight large pieces of *Lambis truncata sebae*, two *Tonna* species, and a single *Engina mendicaria*. The latter, like the Nerites, was holed and had probably been used for ornamentation or as a shell bead.

Remarkably, all the cowries were specimens of *Cypraea turdus*, one of the 30 or so species available in the Mediterranean and Red Sea.

The importance of these shell finds lies in the fact that they are the only objects from outside the close vicinity of the cave in Nahal Hemar. They show that as long as 9,000 years ago there existed an exchange of culture and items between tribes living hundreds of kilometers apart.

I thank Dr. Tamar Noy for allowing me to study the material currently on exhibition in the Israel Museum.

\*Zoological Museum, Hebrew University of Jerusalem, Israel.



**OBSERVATIONS**

By JANET HOWE\*

SUNNYVALE, CA — In May, I traveled with my mother to Florida. At Satellite Beach we stopped at Patsy's Shell Shop and asked where in the Keys we could find *Cypraea cervus*.

The instructions we got were precise and accurate. In fact, I found so many specimens that I had difficulty deciding which I wanted to keep. Most of the shells spent only a minute or two in my bag while I hunted for one just a little bigger or better.

Several pairs got their partners swapped. Some poor cowries probably still are wondering whatever happened to that handsome mate and where did this homely one come from?

Eventually I selected what I decided was a male and a female *C. cervus*, and flew them to California for my home aquarium. "Her" measurements are 4 by 2 1/4 inches; "his" are 2 by 1 1/4 inches.

Once I had them in the aquarium, I started to notice differences. She has a black foot; his is cream color. Her mantle is mottled black and white, while his is mottled brown and white. I checked his lateral spots for ocellations. No — well, maybe; a couple, anyhow. He does appear more elongated. Perhaps my "his" and "hers" labels are all wet.

To add to my confusion, "she" has started to eat. ("He" hasn't, at least while I have been watching.) And what does she eat? Almost everything in the tank.

I put in a 1 1/2-inch California starfish, on which she pounced and started gobbling while I stood there. She didn't leave a trace. Next, she attacked a 2-by-4-inch piece of kelp. Again, no trace when she finished.

Small anemones didn't last a day. My Guam pillow starfish (four inches) died suddenly after months of thriving, but I can't prove anything. I just hope my fish keep on the move.

The more I study "him" and compare him with photos in the books, the more strongly I suspect that I have a *C. zebra*. But, then what was he doing under that rock, snuggling up to a *C. cervus*?

Beemer Ave., Sunnyvale A 94086

**Dear Sir or Ms:**

**Excerpts from Letters to HSN**

Charlotte, N.C.

It was with sadness that I read in HSN of the deaths of Delmer Stone and Dr. Tom Richert. Being privileged to dive and collect with both men, I feel fortunate to be able to share some of my experiences with these top-notch collectors and true gentlemen.

My experience with diving or shelling began in Guam in 1966 when I joined the scuba club on Andersen AFB as a diversion from flying missions to Viet Nam. Delmer Stone was a civilian in charge of the fire department at the Navy base. His future wife, Joyce, was librarian at the Air Force base. Joyce took me on my first scuba dive.

My second dive was off Orote Point with "Stoney." One day he took a group of us to a sand bed with trails of large marlin spike, *Terebra maculata*, in great abundance. This was a big and exciting shell for us new collectors and we tried to fill our bags with them. But I noticed Delmer kept picking up shells, examining them and putting them back. Later I asked what he was doing, and got my first lesson in conservation. He was only interested in that one large, gem specimen and returned the other 99%.

After night collecting he always had a thermos of hot tea waiting in the car. I had dinner at the Navy base as his guest. He was a fine man in all respects.

In April 1983, I spent eight days on the Great Barrier Reef aboard the 65 ft. *Divemaster* with Dr. Tom Richert, his wife Tetta and other collectors. Collecting, Tom appeared more interested in ferreting out the habitat of a rare species than in finding the shell itself. He seldom brought up a shell unless it was new to his collection or something outstanding. Tom kept far fewer shells than any of the rest of us, yet the best shell of the trip — a live, colorful, gem *Conus floccatus* — was his.

A collector can learn more about conservation from observing people like Delmer Stone and Tom Richert than from having it preached to them at every turn. A caring person in everyday life is a caring person underwater, and these two gentlemen were two of the best.  
Gene Everson

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Two thousand people live here on scanty means. There are no problems of law and order, though. I managed to meet the only shell collector on the island and have learned a lot about endemics. This is not the right time for shelling, however. The seas are wild and dangerous, especially on the south coast.

I am on my way soon to Santiago, Chile, then northward along the Andes to the Galapagos and Costa Rica, and finally across to Spain. I expect to be home in Papua New Guinea by the end of the year.  
Aurora Richard

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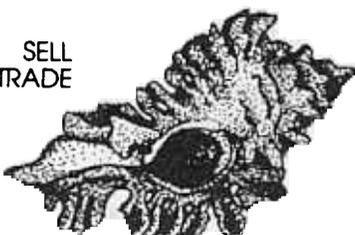
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**A Traveler's Introduction to Black Reef**

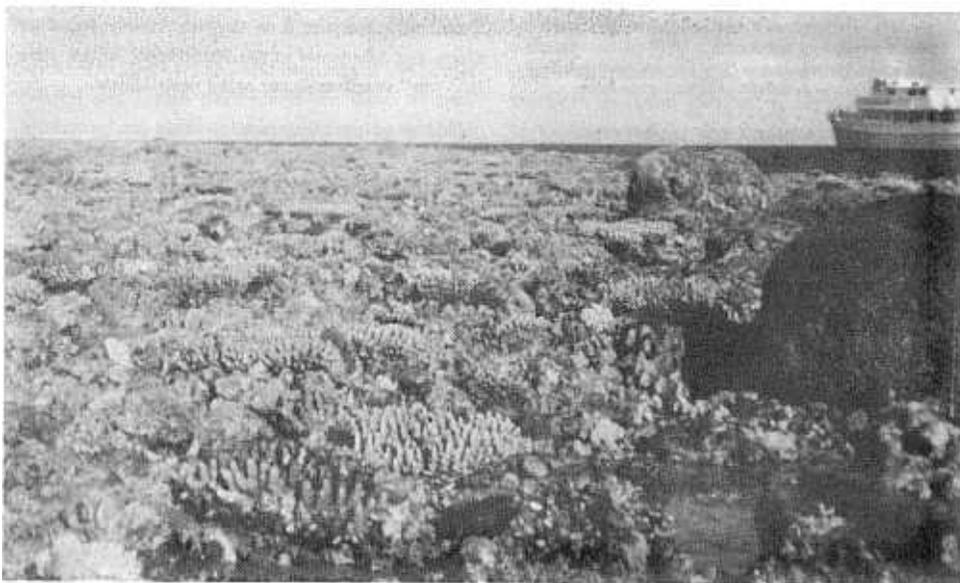


Photo: Ilene Tuttle

*Lonely Black Reef, with Elizabeth E II in the background, awaiting the return of the shellers.*

By RUTH HERMANN\*

The Great Barrier Reef stretches some 1,250  
miles along Australia's eastern continental shelf, 20  
to 100 miles offshore from the Queensland coast,  
washed by the Coral Sea and the South Pacific. It is  
a phenomenal, almost unbroken coral barrier, made  
up of reefs that appear only at the lowest tides and a  
few islands.

On a four-day cruise among the mainland islands  
along Queensland's Whitsunday Passage, our group  
of American shellers, led by Dr. Joel Greene of San  
Francisco, in 1983 was able to explore little-known  
Black Reef north of Mackay. Apparently we were  
the first American conchologists to step ashore on  
Black Reef.

Capt. John Evetts ("Captain John," to us) should  
know. He is the skipper of the new 115-foot charter  
vessel *Elizabeth E II*. His father operated the ear-  
lier *Elizabeth E I*. Both are fully informed on every  
phase of marine traffic along the Queensland coast.

Captain John told us other American shelling par-  
ties had tried to reach reefs in the same vicinity but  
had been turned back by adverse tides or bad weat-  
her.

Realizing our eagerness to shell on the Great  
Barrier Reef (our principal reason for visiting the  
region), the captain agreed to head for the nearest  
point above water where there was no restriction on  
shelling.

Our shelling party included Mrs. June Huie of  
Texas; Peggy and Robert Kellam of New York and  
St. Lucia, W.I.; Mrs. Florence Kuczynski and Mrs.  
Eleanor Rothoff of Florida; Clark Silvey and Mrs.  
Miriam Silvey of Louisiana, and Ruth and Victor  
Hermann, Paul Newby, Mrs. Katharine Stewart and  
Mrs. Ilene Tuttle of California.

The voyage out was an adventure. The Whit-

sunday Passage had been rough occasionally, but the  
open ocean was even rougher. At times we thought  
the captain would have to turn back, but our vessel  
finally reached Black Reef, the captain's target.

Black Reef is about 65 km northeast of Hayman  
Island resort and is almost in line with Hook Reef to  
the west.

Our dinghy had to make several trips to ferry our  
group ashore. The wind was blowing and the sea  
was churning and splashing against us as our small  
craft bobbed up and down with the currents. Deep  
water extended to the very edge of the reef, requir-  
ing a big step on to the jagged coral.

A maze of coral lay ahead of us, spreading out  
broadly on each side in an awesome expanse of  
living coral of almost every species, rising from  
their dead skeletons, often called the "building  
blocks" of the Great Barrier Reef. *Acropora* spe-  
cies, including the high-pointed staghorn coral,  
stood out prominently among sometimes  
treacherous-looking pools which had trapped  
strangely shaped and vividly colored fish during the  
low tide.

Yet the scene was beautiful in its strangeness and  
soft hues. There was no evidence that anyone had  
been there before us, but the surging sea is quick in  
erasing and renewing.

As we went our separate ways across the reef top,  
few of us avoided falling through the flat, bush-  
shaped coral; the flat ones, our occasional stepping-  
stones, often did not support our weight. If we were  
off balance slightly, sudden gusts of wind occa-  
sionally pushed us over. A few suffered gashes on  
shoulders or legs.

Nevertheless, that marvelous realm gave us an  
allowance of shells. I came along at the right mo-  
ment for a three-and-a-half-inch brown-spotted-on-  
cream *Cypraea tigris*, resting on sand in four inches

\*P.O. Box 202, San Mateo, CA USA 94401

# Rabaul Harbor's Semi-Fossils

This is a postscript to Corresponding Editor Aurora Richard's report in last month's HSN on the volcano situation at Rabaul, Papua New Guinea, and its effect on the molluscan population of the harbor there.

By **AURORA RICHARD**

**RABAU** — Blankets of ashes laid down by past volcanic eruptions are responsible for East New Britain's fertile soil and the great variety of vegetables offered at the stalls of Rabaul's famous market. They are also responsible for burying countless colonies of molluscs whose well-preserved shells have turned up in Greet Bay in recent years, particularly around Matupit volcano.

Dredging for these shells is impractical, due to the nature of the substrate and the presence of wrecks and boulders. We have a fair idea, nevertheless, of the tremendous wealth of rare species in the harbour-caldera before the last big eruption in 1937.

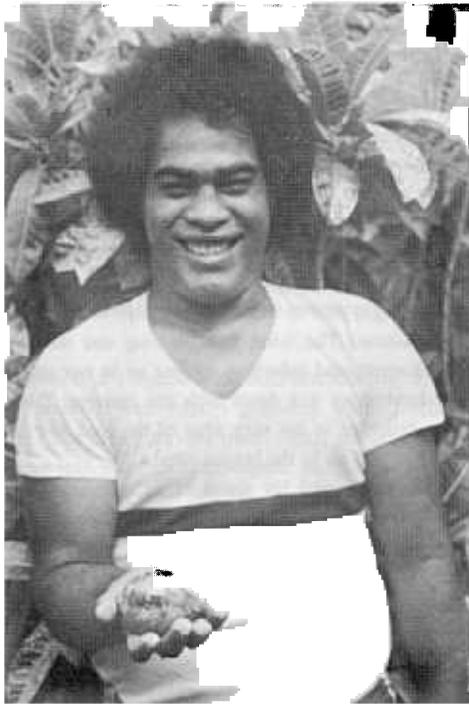


Photo: Richard

Rabaul diver Noel Vahare shows the pink-gold semi-fossil *Cypraea valentia* he found off Matupit.

I can only compare it to the rich variety found off Cebu and Mindanao in the Philippines, where some of "our" semifossils are being netted alive.

Many of our finds are in fresh-dead condition. Spines and original gloss and patterns have been well protected by the soft pumice dumped on them half a century ago and now releasing them sparingly.

Most such finds end up in the hands of the Matupit "shell Marys," the local women merchants who are jealous of their quasi-monopoly of collecting in Greet Harbour (now yellow with sulphur).

Interestingly, few of our semifossils seem to have living counterparts in Rabaul harbour. An exception is *Chicomurex turschi* Houart (See HSN May 1983), a small colony of which was discovered in 1979. None of the following, all well-known in semifossil form here, have been found alive in the Rabaul caldera in recent memory:

*Cerithium (Pseudovertagus) nobilis*, *Angaria sphaerula*, *Strombus kleckhamae* (see HSN March 1984), *Gyrineum aculeatum*, *Scalptio* sp., a mystery *Colubraria* sp., *Trigonostoma antiquata*, *Murex heros*, *Murex* s.s. sp. (E. Vokes, in print), *Chicoreus artemis*, *C. banksii*.

*Phyllonotus* (?) sp., possibly a local variant of the Philippine *Chicomurex* "venustus," *Pteryonotus aparii*, *Favartia judithae*, *F. pelepili*, *Latiaxis (Babelomurex) diadema*, *L. tosanus*, *L. cristatus*, *Mitra deynzeri*, *Neocancilla clathrus* forma *crenifera*, *Subcancilla abyssicola*, *Tiara rehderi*.

*Vexillum takakuwai*, *V. tokubei*, *V. unifasciatum* (but forma *decora* is found alive here), *V. interstriatum*, *Conus subaequalis*, *C. saecularis*, *C. anabathrum* (nomen dubium).

A special note regarding *Cypraea novae-britanniae* Schilder: Semifossil specimens measuring 35+ mm are occasionally found, whereas our rare live ones never exceed 27mm. Similarly, our semifossil *C. bregeriana* are as large as those found in New Caledonia, but the post-1937 generations seem to be dwarfed and more solid, averaging 18mm.

Another perplexing circumstance is the amazing number of some *Xenophora* species found in the pumice beds. Prime examples are *X. torrida*, which frequently still has volcanic debris attached, and *X. pallidula* with such attachments as *Conus insculptus*, *C. inaequalis*, *Turrids* and *Terebra* cf *T. swobodai* Bratcher.

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**HMS August Meeting**

The suddenly critical problems of Hawaii's Bernice P. Bishop Museum were the focus of attention at the August meeting of the Hawaiian Malacological Society. The institution in June had to face up to the hard fact that it was approaching bankruptcy. As a consequence, research work has been drastically reduced. The Malacology Division is virtually closed.

Dr. Allen Allison, head of the museum's Department of Zoology, attended the meeting to explain recent developments and to urge HMS members to join the Bishop Museum Association as an easy avenue of support.

Dr. Allison's talk was followed by video tape shot by HMS Vice President Dr. Tom Burch last year and starring Past President Carl Christensen. It showed the inner working of the Malacology Division and explained the significance of the large collections.

S.L.

A simple way to assist Bishop Museum in this time of crisis is to join the Bishop Museum Association. Resident memberships cost \$35 for a family, \$25 for singles, and \$15 for non-residents, students and senior citizens. Checks or requests for more information can be sent directly to the Bishop Museum, P.O. Box 19000-A, Honolulu, HI 96819.

**Speaking of Books:**

**GUIDE TO FLORIDA SEASHELLS.** By Robert Anderson. 56 pages. Winner Enterprises, Florida, 1985. \$3.95.

This booklet should get first prize for being the worst guide to Florida shells published in the present century.

Superficially respectable, this pocket-sized guide contains 68 common Florida shells. Twelve species are grossly misidentified. Ten old scientific names, not used by experts in 50 years, are employed and sometimes misspelled. Three have wrong illustrations and 23 species that are inadequately described in the text have no accompanying illustrations. All told, there are over 56 misspellings and erroneous facts — an average of one per page.

In essence, the buyer receives a book that has only 16 species properly named, described and illustrated.

Unfortunately, this attractive little guide is being widely distributed to the Florida public despite its many major errors. The moral for small press publishers is to produce books written in good English by knowledgeable people or face the consequences of free enterprise and honest reviews.

R. Tucker Abbott

**Publication Notices:**

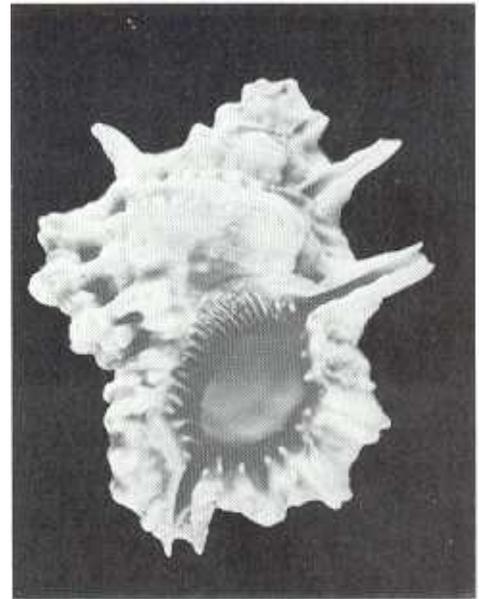
An interesting new publication, **Hobby Fauna**, devoted to news of malacology, entomology and herpetology and their devotees, is being issued monthly by Calegari Edizioni, via G. da Procida 35/2, Milan, Italy. The publishers have asked HMS for a list of members so that sample copies could be sent.

HMS has a long-standing policy of not giving out its membership list. Individual members, however, may wish to write Calegari Edizioni and ask for an issue to inspect.

Text is in both Italian and English.

S.L.

**HAWAIIAN RARITIES**



Photos: Onishi

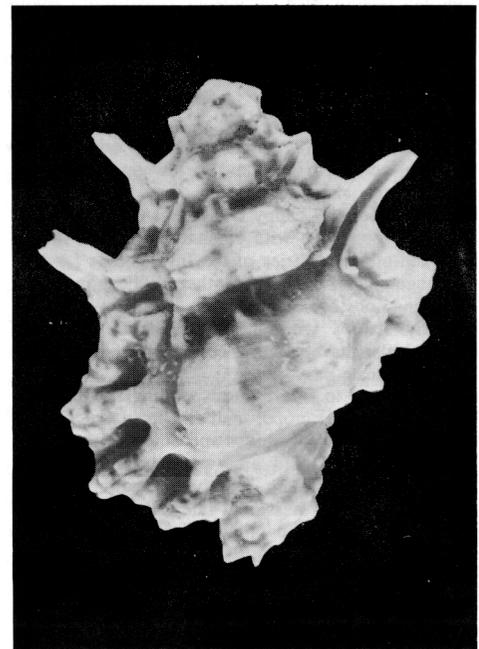
By JIM McDOWALL\*

**KOLOA** — Hawaiian Malacological Society member Bill Job, an active shell diver in Honolulu, sent me the unusual *Bursa* specimen figured here. He had found it crabbed under a dead coral slab at a depth of six to 10 feet off Fort Kamehameha, at the entrance to Pearl Harbor, Honolulu. It measures 44.3mm.

HSN Science Consultant Walter O. Cernohorsky figured this shell in his **Marine Shells of the Pacific**, (1971) and listed it simply as "*Bursa* species." He commented that the shell is occasionally referred to in the literature as *B. bufonia* (Gmelin, 1791), but that is actually appears to be a nameless species.

Whatever the taxon, the shell is distributed throughout the tropical Pacific. This appears to be its first recorded appearance in Hawaii, however.

\*P.O. Box 637, Koloa, HI 96756



## Does Anyone Have a Name for These?

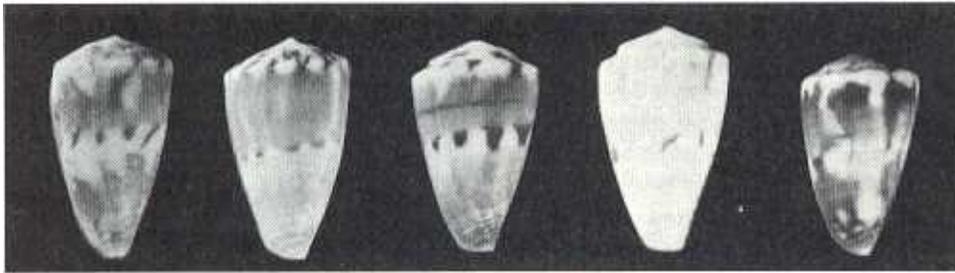


Photo: Vink

Danker Vink\* of Holland was interested in the four cone shells figured in HSN March 1985 (p.4), which HMS member Carl Sahling reported finding in 30 feet of water at Bimini, in the Bahamas.

Sahling's shells "look somewhat similar to some small cones I collected on the island of Cozumel in

\*Prinsenweg 73, 2242 EC Wassenaar, Holland

June of 1974," writes Vink. "Up to now, I have not been able to identify them properly."

"In the photo, the shell on the extreme left is pinkish, that in the center is gray and the shell next to it is bright yellow."

Any suggestions on their identity?

S.L.

### BLACK REEF (Cont'd from Page 7)

of water and under the coral. With the shell's mantle withdrawn, its lacquerlike dorsum glistened through the water. However, it showed its grey-



Mrs. Dolores Stelljes, 3104 I'on Avenue, Sullivans Island, SC 29482, is looking for "anyone who would like to exchange common shells." She also collects sand worldwide. "It just seemed to go along" with shells, she notes. "I don't think most people realize how different beach sands can be."

\* \* \*

Miter Collectors: I wish to exchange slides or prints of living miters. I have more than 60 species available to trade.

ETC Richard Salisbury, U.S.S. Estocin (FFG-15), FPO Miami, FL 34091

\* \* \*

### JASLO

I am a beginner collector of shells living in Poland. Most interesting to me are Indo-Pacific shells, but I am collecting land and freshwater shells from all the world, also.

I would be very happy if HMS can help me enter into correspondence with beginner collectors in Hawaii and other countries of the Indo-Pacific [and] to exchange shells, books and other publications about collecting, postage stamps from all the world (particularly stamps with shells), postcards and shell crafts. I also have a small collection of butterflies, which fascinate me.

If I manage to find a corresponding friend, I can send shells from Europe, land and fresh water shells from Poland, fossils, stamps and other items.

I am 34 years old and work in the regional museum in Jaslo, in Southern Poland, as an ethnologist. My professional interests are in art and folk culture of groups living near the Carpathian mountains.

Alfred Sepiol  
Muzeum Regionalne  
ul.Swierszewskiego 1  
38-200 Jaslo, POLAND

green, tan and speckled camouflage covering several times after I took it. This particular color form of *C. tigris* is peculiar to the great reef. It was the only one collected that day.

Another spectacular find was a six-inch Echinoderm, *Nardoa novaecaledoniae*, with its usual five rays. The starfish, or sea star, was upright against a coral head from where it showed off to advantage its golden brown color and lighter brown bumps. This particular sea star is also characteristic of the reef.

Soon I spotted a huge *Trochus niloticus* with its prominent pattern of rose-red streaks, bearing on its foot a blood-red operculum larger than a 50-cent piece.

In time I collected live *Cerithium nodulosum*, *Tectus pyramis*, *Trochus maculatus*, *T. virgatus*, *Turbo argyrostomus*, *Astraea pileola* and *Chlamys vexillum*. I marveled at the unadorned beauty of several *Tridacna maxima*, smaller than the giant clam, *T. gigas*. Each *maxima* displayed its varied green or brown, striped and mottled mantle, much like a Victorian lady might have moved her fluffy boa of delicate fabric. I left the endangered species untouched.

In all the excitement over our finds, time slipped by quickly. Shadows were lengthening and the tide was returning; we had to backtrack to the dinghy and ferry out to Elizabeth E II in the distance.

Smiling despite our tiredness, sore muscles and aching backs, we proudly stowed our bags of live shells from Black Reef. Kit Stewart, a *Haliotis* enthusiast, was exuberant over her newly found *Haliotis varia*, *H. ovina* and *H. asinina*.

As we clustered about our prizes that evening, Dr. Greene expressed a prevalent thought: Each in his own close affinity with that significant coral depth, alone, had experienced a feeling tantamount to walking on the bottom of the sea. It did not matter how few or how many shells, rare or common, we had collected. The important fact was that we had touched one of the world's wonders, the Great Barrier Reef, a universe in itself.

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## News of New Species

# A Trophon From South African Waters

By WALTER SAGE

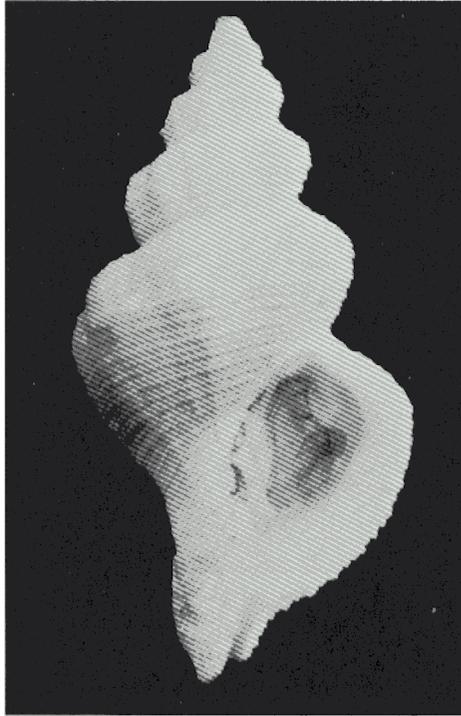
Roland Houart of Belgium described and named a new species of *Trophon* from South Africa waters in *Annals of the Natal Museum* 25(2), 1983.

*Trophon purdyae*, with a length up to 28mm, was trawled off the eastern Cape coast. The shell is white, ovate, and moderately long. The aperture is porcellaneous white with 5-6 denticles on the inner surface of the outer lip. Whorls are weakly shouldered. Sculpture consists of 7 to 9 low to obsolete axial ribs, more prominently on early whorls, and numerous primary and secondary spiral cords. Radula and operculum are typically trophonine.

This new species is compared to the South African *Nucella wahlbergi* (Krauss, 1848) and *Ocenebra sperata* (Cossman, 1921), which differ in details of sculpture and protoconch, radula, operculum, and in having more shouldered whorls.

In the same publication Richard Kilburn reviews recent Arcidae of southern Africa and Mozambique, recording 31 species, six new records, and three new species from the region. The new taxa are:

*Barbatia (Calloarca) tetraquetra*, to 14.5mm, from 45-140 meters off Natal south coast to western Transkei. The species has a trapeziform pinkish white shell with brownish orange markings post-

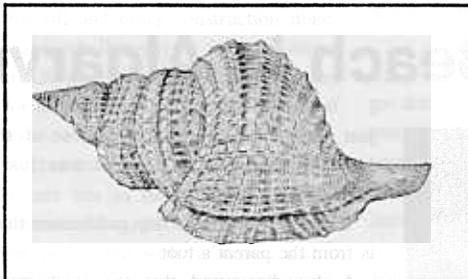


*Trophon purdyae* holotype.

eriorly, and a lanceolate ligamental area. Sculpture consists of numerous fine radial riblets crossed by weaker concentric threads. This new species is compared to *B. (C.) sculpturata* (Turton, 1931), which has a larger shell with coarser ribbing, and a shallower habitat.

*Barbatia (Destacar) colpodes*, to 7mm, outer continental shelf of northern Zululand, has an ovate-trapeziform white shell with a finely setose periostracum and lanceolate ligamental area. It is sculptured with many fine radial riblets and concentric threads. This new species is compared to the Australian *B. (D.) metella* (Hedley, 1917), which has a larger shell, a more trapeziform outline, and coarser radial riblets.

*Barbatia (Acar) petasion*, to 13mm, intertidal to 130 meters, Natal to Cape Agulhas, has a quadrate white shell with obsolete periostracum. Sculpture with somewhat lamellate concentric ridges crossed by subequal radials and conspicuous scales at the intersections, the shell has a tuberclelike apex on the prodossoconch. This new species is compared to *B. (A.) plicata* (Dillwyn, 1817) and *B. (A.) agulhasensis* (Thiele, 1931), which differ in details of sculpture, hinge structure, lack of scales, and different prodossoconchs.



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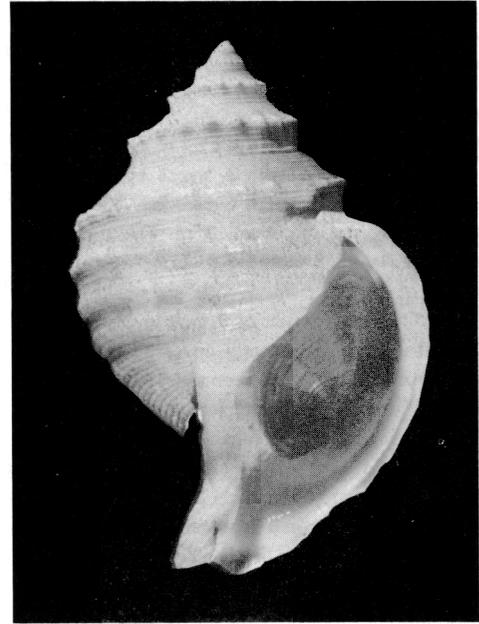
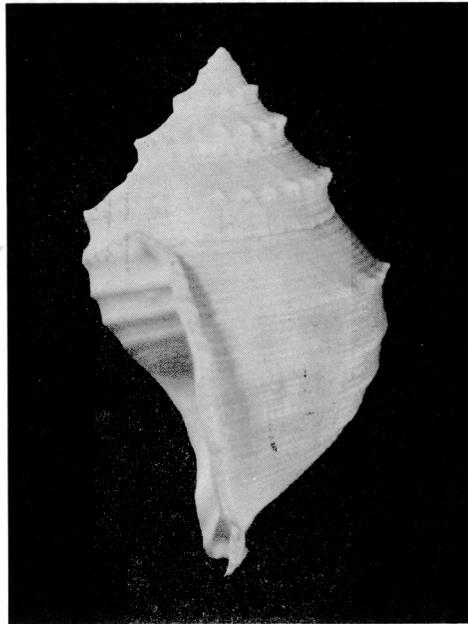
Species we have handled recently: *Conus excelsus*, *hirasei* world record, *lohri*, *pergrandis*, *Cypraea bernardi*, *fultoni*, *haddnighatae*, *iutsui*, *leucodon*, *lisetae*, *midwayensis*, *Latiaxis teramachii*, *Morum macdonaldi*, *teramachii*, *Murex anomaliae*, *peledi*, *oliverae*, *conconvopterus*, *Phalium adcocki*, *sinuosum*, *Voluta beauli*, *knoxi*, *lutea*, *pescalia*, and many many more.

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## Some Intriguing Specimens from North Western Australia



*Galeocorys* sp.

Photos: Turner

By DR. HANS TURNER\*

There has been considerable trawling activity this year off the North West Australian coast, between Broome and Port Hedland, in 1,500 feet of water, seeking scampi. As a byproduct, a lot of interesting shells have been coming up.

My friend, Ray Walker of Rossmoyne, W.A., was able to send me an outstanding selection from that deep-water material, such as *Pleurotomaria af-*

*ricana* Tomlin, and a splendid, obviously super-rare 58mm bivalve specimen which is identified until now only at the generic and subgeneric level: *Euricoa* (*Acreuciroa*) Thiele & Jaekel, 1931.

If there is an expert in this family out there, I would be pleased to send the specimen to him.

Furthermore, besides interesting *Teramachia* and *Polystira* species of extraordinary size, the families Cassididae and Ocorytidae are represented by a

giant (102mm) *Phalium* (*Echinophoria*) *coronadoi* ssp. *wyvillei* Watson and by the figured false tun, *Galeocorys* sp. With a length of 86mm, it is 28mm longer than my *G. leucodon* (Dall) from Southern Japan. It has quite different sculpture, too.

Has anyone a name for this North Western Australia false tun — or is it new to science?

\*CH-8912 Obfelden, Switzerland

## Strange Happenings on a Beach in Algarve

By PETER van PEL

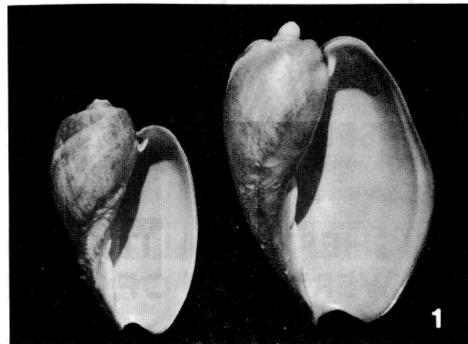
EGMOND-AAN-ZEE, HOLLAND — My wife and I escaped last winter's cold in Holland by flying to the Portuguese province of Algarve for two weeks, combining the sun with some collecting. The Algarve is the southernmost province of Portugal.

This time, the shelling was easy. Our goodies were all on the beach, alive, just thrown away by the fishermen in the daily routine of clearing their nets after a day (or night) of fishing at depths of approximately 30 meters, five miles off shore.

We were surprised to find so many, often-rare species in gem condition. Several were new to our collection. The most abundant, however, was the volute, *Cymbium olla* (Linne), alive in the dry sand. The shells seemed to be all over the place. To the fishermen, the species is a nuisance. Quite a lot of time must be spent in getting them out of the nets.

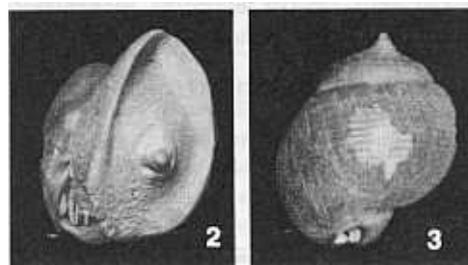
From the literature, I knew the species to be viviparous. Nevertheless, I still was surprised to discover one female carrying 12 unborn juveniles.

I had decided to preserve one of the specimens intact in alcohol for further study. When I reached our lodging and prepared to put the shell in a suitable bottle, I made a remarkable (to me, at least) discovery. The protoconch of a tiny *Cymbium* was



Photos: van Pel

1. *Cymbium olla*. The female on the left. Is she more angulate as well as smaller? 2. The moment of birth. 3. Rare *Demoulia obtusata* (Link), 27mm. All from Algarve.



just visible beneath the large foot of the female, right in the central part. It was just about to "hatch."

I have never seen in any publication that this birth is from the parent's foot.

I also discovered that the shell of the female differs significantly from that of the male. It is more angular. This is apparent, I believe, in the photo.

Other species found in the nets included:

*Demoulia obtusata* (Link), *Cymatium corrugatum* (Lamarck), *C. cutaceum* (Linne), *C. parthenopeum* (Von Salis), *Charonia opis* (Röding), *Argobuccinum olearium* (Linne), *Phalium saburon* (Brugiere) (real beauties!), *P. granulatum undulatum* (Gmelin), *Bolinus brandaris* forma *longispina* (Coen), *Phyllonotus trunculus* (Linne), *Ocenebra erinaceus* forma *hanleyi* (Dautzenberg) and *Turritella turbona* Monterosato.

Among the many bivalves were *Acanthocardia aculeatum* (Linne), *A. tuberculatum* (Linne), *Laevicardium oblongum* (Gmelin), *Vepricardium spinosa* (Lightfoot), *Chlamys pefelis* (Linne) and *C. flexuosus* (Poli).

You can imagine how excited we were at collecting so many lovely shells. We intend to go there again one day, not only for the sun and the shells, but also for the friendly, laughing people.