



Night-shelling at Glen Eden, with notes on *Sepia tuberculata*

by Mary Bursey,
East London Museum

It was a calm, warm summer's evening and, by the light of the full moon, the three of us could clearly see the narrow beach littered with shells and the low embryo dunes with pioneer vegetation. The rocky shore consisted of low reefs extending out to sea perpendicular to the shore, broken by shallow gullies which sometimes formed large, shallow pools. Eastwards of the collecting site was the bay of Glen Navar. The last time the area was visited, it had been inundated with sand, but was scoured out on this occasion. Abundant seaweeds included *Caulerpa filiformis*, which thrives in sandy situations, *C. racemosa* and the sand-trapping coralline, *Arthrocardia* sp.

The site was exceptionally rich in intertidal animal life. The turrids *Clionella rosaria*, *C. subventricosa* and *Clavatula tripartita* were common. Several *Thais capensis* were seen. *Burnupena cincta* was abundant. Several *Conus tinuanus* were seen in shallow water and out of the water. *Turbo sarmaticus* was abundant. *Turbo cidaris natalensis* was very common on *Caulerpa filiformis* fronds. A few *Gibbula benzi* and a juvenile *Calliostoma ornatum* were also found on *C. filiformis* fronds. *Lienardia grayi*, *Nquma rousi*, *Pusia patula* were found on the sand under *C. filiformis*. *Patella oculus* and



Fig.1. Eggs of *Sepia tuberculata*. "Early stage" eggs on extreme right.

P. longicosta were common, the feeding territories of the latter being clearly visible as patches between the *Arthrocardia*. Five *Mitrella floccata* were found on *Arthrocardia* in water about 300 mm deep. The sea hares *Aplysia parvula* and *A. oculifera* were abundant, crawling on exposed coralline algae. The opisthobranch, *Berthellina citrina* was fairly common on *Caulerpa racemosa*. Nudibranchs collected were *Doriopsisilla miniata*, a cosmopolitan species, on *Arthrocardia*, and *Limacia clavigera* on a *C. filiformis* frond. The latter nudibranch is a common inhabitant of kelp bed communities in the Cape Province. It is known from the North Atlantic coasts of Europe and the Mediterranean, and in South Africa has been found from Saldanha Bay to Port Alfred (Gosliner, 1987). The East London Museum (ELM) houses specimens collected at Bira, Ciskei (ELM No. W2020) and the above specimen (ELM No. W2139) which extends the recorded range. A specimen was also seen at Xora,

Transkei. Several large octopuses were also present.

A particularly abundant species was the small nocturnal, *Sepia tuberculata*. This is the only cuttlefish to occur in intertidal rock pools (M. Compagno-Roeleveld, pers. comm). It occurs from 0 to 3 m (Roeleveld, 1972), but I have seen a specimen at 12 m in Algoa Bay. The recorded range extends as far east in South Africa as Knysna (Roeleveld, 1972). It is, however, commonly found around East London and the East London Museum malacological collection contains several specimens from as far east as Marshstrand (ELM Nos. W1669, W1672, W1994, W2048, W2049, W2131 and W2140). These all extend the range of live *S. tuberculata*, although a shell has been recorded from Madagascar (Roeleveld, 1972). The average length of the specimens found at East London is 30 mm, but these are probably not fully mature because the species attains a length of 82 mm

The Strandloper Index

Indices for *The Strandloper* have been compiled and are now available. A copy of a page out of Index Volume I is printed on the reverse of this form. The indices are in two volumes printed and bound in the same format as *The Strandloper*; Volume I is for *The Strandloper* issues Nos. 171 to 200 and Volume II is for issues Nos. 201 to 230. (Volume III is in the process of being compiled and will be available as soon as issue No. 240 has been published. However should there be sufficient interest the third volume will be completed up to issue No. 235 and thereafter for every five issues.)

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GENERAL INDEX

Every mention of a shell is listed hereunder. In the fourth column "D" refers to a Description and "I" refers to an Illustration, either photographic or drawn. The last column is for personal notes, references, etc.

Genus and Species	Issue	Page	D/I	Notes
Afrivoluta pringlei	171	5		
Amblychilepas scutella	189	4	D	
Amphiperas smithii	193	3		
Ampulla priamus	196	1	D/I	
Ancilla albozonata	182	5		
	183	2		
fasciata	190	4	D/I	
obtusa	183	2		
Ancylidae	199	2,3		
Ancylus	199	2		
Aporrhais pesgallinae	192	3		
Architeuthis	171	2,3		
Argobuccinum argus	188	1,2		
	190	2		
Argonauta argo	171	2		
	176	3	I	
argus	171	3		
	182	5		
Astrea tayloriana	192	3		
Atrina squamifera	189	1,2		
Austrolittorina	181	2		
Benthovoluta krigei	192	3		
Bornia africana	183	2		

The Conchological Society of Southern Africa **Die Skulpkundervereniging van Suider-Afrika**

Mini Symposium and Annual General Meeting

NOTICE. The Annual General Meeting of the Conchological Society will be held at 14:00 on the 4th May 1994 in the Frank Brand Hall of the Zoological Gardens, Boom Street, Pretoria. The AGM will be preceded by a Mini Symposium, and the programme for the day will be as follows:

- 08:30 Registration and placing of exhibits
- 09:30 Welcome
- 09:35 Dr R.N. Kilburn : Bivalve *Mollusca*
- 10:15 Prof Douw Steyn : Collecting and preservation of chitons
- 11:00 Tea
- 11:15 Mr J.H. Veldsman : Conchology and the geophysical character of SA coast
- 12:00 Laurie Smith : South African Pectens
- 12:30 Auction of shells donated by Ms Olive Peel
- 13:00 Lunch at Zoo Restaurant (NB see notes)
- 14:00 Annual General Meeting
 1. Welcome by Director
 2. Address by President
 3. Minutes of 1993 AGM
 4. Director's report
 5. Treasurer's report
 6. General

SPECIAL NOTES FOR MEMBERS

1. Registration fee : A registration fee of R10 per person is payable for the symposium
2. Lunch : The Zoo restaurant will provide lunch at R15 per person, but lunches will have to be booked in advance. Members are therefore requested to book by returning the form below.
3. Pretoria members have offered accommodation for members coming from other provinces but the secretary must be contacted to put you in touch with the hosts.
4. EXHIBITION OF SHELLS. As has now become customary members are requested to exhibit shells at the AGM. The Director will, as in the past, judge the exhibits. The theme of the exhibit is entirely your choice.

WE WOULD LIKE TO AS MANY OF THE MEMBERS AS POSSIBLE TO ATTEND THE AGM. COME AND MEET YOUR FELLOW COLLECTORS AND ENJOY THE DAY ESPECIALLY THE MEMBERS LIVING ON THE REEF AND O.F.S. KOM VRYSTATERS ONS WIL JULLE GRAAG HIER HÊ !!

✂

Return to The Secretary, Conch. Society, 7 Jan Booysen Str, Annlin, Pretoria 0182 BEFORE 15th April 1994. (tel.012-57-5543). I will attend the Mini Symposium and AGM and wish to book for the lunch.

NAME.....

NO. of persons.....

I am enclosing R..... @ R25 per person.

(M.Compagno-Roeleveld, pers. comm.). One cuttlefish was found with the posterior half of a clinid in its mouth. On capture, it regurgitated the fish, the anterior of which had been eaten, and emitted a purple smoke-screen.

Eggs of *S. tuberculata* have been observed on many occasions (Fig.1). They occur under rocks in clusters of 3 to 135 eggs, but usually there are about 30. They are translucent with no coating, and the developing embryos are visible inside. This is different from most other sepiid eggs which are coated with a rubbery black film or with sand grains (Compagno-Roeleveld, pers. comm; Okutani, 1978). The only sepiid known to have similar eggs is *Sepia latimanus* (Okutani, 1978). The eggs and hatchlings of *S. tuberculata* are, however, relatively much larger than those of *S. latimanus*, the hatchlings being about 12% of adult size as opposed to only about 2-3% in the case of *S. latimanus*, although this in turn is large compared to other Japanese sepiids (Okutani, 1978). *S. latimanus* also lays 30 to 40 eggs, but in groups of 3 to 4 in hollow spaces in coral branches as opposed to the large clusters laid by *S. tuberculata*. How often a female *S. latimanus* lays eggs is not mentioned. All of the 15 egg clusters found in the East London area have been found in September and October, but this could be the result of greater collecting effort during spring. One cluster was found in False Bay in December and one in Algoa Bay (at 12 m) in January. On one occasion an adult darted away when a rock with a group of 40 eggs was turned over. It may have been laying or guarding. A very small individual was also present under this rock. It remained on the substratum and did not attempt to escape. Eggs in a

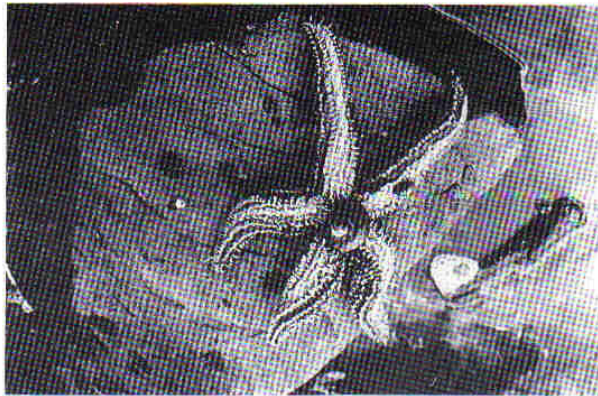


Fig.2 Starfish, *Marthasterias glacialis*, turned over to show it grasping prey of *Turbo sarmaticus*.



Fig.3 Starfish, *Marthasterias glacialis*, underside showing prey of *Patella oculus*.

cluster are sometimes in different stages of development and range from about 3 mm to 8 mm in diameter. (The eggs were not measured *in situ* and have shrunk as a result of preservation in alcohol, so cannot be measured precisely). Other groups contain only "early" stage eggs which are opaque and the embryos are not visible through the white walls (Fig.1). If disturbed, the late stage eggs hatch and the embryos are able to swim away immediately, to exhibit camouflage, and to emit ink.

The large starfish *Marthasterias glacialis* was abundant. If the central disc was hunched up, it indicated that the animal was feeding. Two were feeding on *Turbo cidaris natalensis* and one on a black *Oxystele* sp. Other molluscs which *M. glacialis* has been found feeding on around East London

include *Turbo sarmaticus*, *Patella oculus* and *P. longicosta* (ELM No.2193) (Figs. 2 and 3). If the prey is removed, the averted stomach, which secretes digestive enzymes, can be seen. After a few seconds the stomach is reabsorbed. Other abundant echinoderms were brown and yellow featherstars, in very shallow water, and black sea-cucumbers which were buried vertically in sand with only the tentacles sticking out to catch plankton and other suspended particles. red rock crabs, *Plagusia chabris*, were abundant, often feeding on *Caulerpa racemosa*. For anyone who wants to discover a new lease on night-life, a trip to the rocky shore is highly recommended.

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- Gosliner, T. (1987). *Nudibranchs of Southern Africa*, Sea Challengers & Jeff Hamman in assoc. with California Academy of Sciences.
- Okutani, T. (1978). Studies on early life history of decapodan *Mollusca*- VII. Eggs and newly hatched larvae of *Sepia latimanus* Quoy & Gaimard. *Jap. J. Malac. (Venus)*, vol.37(4), pp.245-248.
- Roeleveld, M. (1972). A review of *Sepiidae (Cephalopoda)* of southern Africa, *Ann. S.A. Mus.* vol.59(10), pp.193-313.

Editor's notes on night shelling

1. Check out the territory in daytime first
2. Make up a party of three or more.
3. Have backup (waterproof) torches
4. Wear superior footwear
5. Stay together
6. Watch those waves !
7. Watch that tide !

Bartolomeu Dias Museumkompleks op Mosselbaai

deur Joh Groenewald

Synopsis

This article describes a museum in the town of Mossel Bay in the Cape province. The museum has a collection of local and foreign shells, and shell handcraft. There are also several marine aquaria with fish and invertebrates, as well a variety of whale bones and a fibre-glass replica of a very large great white shark. A particular theme at the museum is the use of shells by humans for cultural purposes.

Skulpversamelaars sal 'n besoek aan die enigste werklike skulpmuseum in die land geniet. Hierdie museum vorm deel van die Bartolomeu Dias-museum-kompleks op Mosselbaai. Gedurende vakansietye besoek tot 1000 mense per dag die Skulpmuseum, wat gehuisves is in 'n ruim gebou wat in 1902 as pakhuis vir 'n meule opgerig is, net langs die beroemde Poskantoorboom. Dit is 'n "lewende" museum, want behalwe vir die uitstalstukke is hier ook akwariumentens met molluske, visse en ander mariene lewe. Boonop word navorsing oor 'n hele aantal aspekte van die skulpkunde deurlopend hier gedoen.

Dit is ook 'n "vriendelike" museum, veral vir kinders. In een deel is daar 'n walviskopbeen, walviswerwel, dolfynskedel en ander voorwerpe wat hulle kan aanraak. Daar is ook 'n reusegapermossel, *Tridacna gigas*, wat 1,074 m lank is en 131,6 kg weeg (geskenk deur mnr. G.Bell).

Kinders se aandag is gou by die akwariumentens waarin daar hoofsaaklik lewende molluske soos seekatte, swartmossels (ook as kos vir kreef en seekat), Kaapse pèrel-oesters, wulke (*Burnupena* sp.), periwinkles (ook as kos vir see-sterre), alikreukels en naakslakke, asook visse, krappe en kluisenaarskrappe, krewes en gamale, 'n duiwelvis, pampoentjies (see-

egels), kreweltjies en selfs van die bedreigde Knysna-seeperrdies is.

Vars seewater word in die akwarium gebruik, en afgesien van die alge en wiere wat in die miniatur-ekosisteme van die tenks groei, word vjsvlokkies en vars rooiaas as voeding bygevoeg. Die binnekant van die museumgebou is so ontwerp om die spiraalvorm van 'n gastropodskulp voor te stel, en besoekers stap kloksgewys in die spiraal. Die uitstallings is hoofsaaklik deur Gabriël Fagan-argitektheit ontwerp, met groot skildery-illustrasies van Maggie Newman om voortplanting, voeding en verdediging van skulpe te toon, asook plankton en soorte kuslyne.

Rondom die tema van "die mens en skulpe" is daar kunswerke wat getuig van die skulp as simbool van rykdom en status. Dit sluit Afrika-maskers en voorwerpe van die Pigmieë in wat met skulpe versier is, asook fetisjoppe. Daar is vier groot hanglampe wat ryklik getooi is met stringe sierskulpe, en 'n goue kauri van Fiji word vertoon.

'n Plaaslike uitstalling is die 43 beste skulp-omsoemde doilies wat 'n doilie-kompetisie van 'n paar jaar gelede opgelewer het. Slegs dames van bo 65 jaar kon deelneem (die oudste deelnemer was 95), en al die doilies, met hul fyn en delikate handkunsoptrone, word oopgesprei uitgestal.

Nog 'n hoogtepunt is die cowry uitstalling geskenk deur mnr. Gordon Verhoef. Daar is ook 'n versameling seëls wat skulpe afbeeld, geskenk deur mej. Madge Joss.

Terwyl die onderste verdieping die ekologie van molluske voorstel, het die boonste verdieping van die museum 'n sistematiese uitstalling van 'n groot verskeidenheid skulpe van oor die wêreld. Seker die gewildste uitstalkas op hierdie vlak is die een met skulpe van Mosselbaai en omgewing, waar talle vakansiegangers hul eie skulpe kan identifiseer. Die museum is propvol interessantheide, soos 'n afgietsel van 'n witdoodshaai van 476 kg wat in 1981 gevang is, 'n rots met gate daarin wat geboor is deur *Pholas*

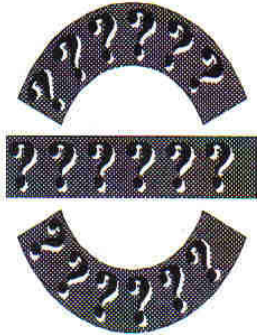
dactylus, en 'n groot muurkaart van Suid-Afrika met die skulpe van landslakke daarop. By die muuruitstalling van groot en skouspelagtige skulpe in die vooruitportaal is daar ook goed soos doilies met skulpsome te koop. Plaaslike skulpe van die Suid-Kaap word gebruik, en die doilies word deur mense van 'n ouetehuis op George gehekel. Pryse wissel van R15-R25. Dit is veral buitelandse besoekers wat sulke doilies koop.

Die malakoloog in bevel van die skulpmuseum is Amanda Human, 'n toegewyde en geesdriftige skulpkundige. Die navorsing waarmee mej. Human besig is behels onder meer die stelselmatige optekening van inligting oor "skulpkultuur": skulpmotiewe, mosseldrade, kamee, kleursel en kleurstowwe, juwele, voedsel, kalk, seëls, pèrels, skulppuinhope (shell middens), en musiekinstrumente soos snaarinstrumente met inlegsels van kauri's.

"Most spectacular malacological discovery of the last ten years"

The magazine *La Conchiglia* has illustrated a very unusual cowrie-like shell with a magnificent dark-brown colour and stunning white teeth on the outer lip. The interior is creamy-orange. The shell was first brought to public attention at a malacological convention in Italy in 1993 and is said to have caused quite a stir amongst the delegates. The two specimens seen so far are 80 and 92 mm long and hail from Somalia where its apparently found "at depths of 30 to 150 m". It has features of both the *Ovulidae* and the *Cypraeidae* and has been assigned to its own genus with the name *Chimeria incomparabilis* Briano. The animal itself has not yet been examined by scientists, but when it is, greater clarity on the nature of this creature will be available.

- G.R. Massilia, *La Conchiglia*, no.268, July/Sept. 1993, pp.16-17, see also *Rossiniana*, no.58, 1993, pg19.



Conchological Confusion!

by Bob Lipe

[reprinted from *St Petersburg Shell News*, June 1987]

The edge of the shell is called a lip, and yet it isn't on a mouth, or is it? The opening of the shell is called the mouth at times, but the mouth on the animal is called the proboscis, which I used to think was a nose. But the nose on the snail is called the siphon [*not altogether correct!* -Ed.], which is the way I get gas out of my car for my lawnmower. The part the shell crawls on is called the foot, or so they tell me. That's why the snail is called a gastropod, which means "stomach-foot". When a snail eats a large meal, he might say, "I can't eat any dessert because my foot's full."

The siphon or nose extends through and out of the siphonal canal, which I have heard called the tail end of the shell - wrong end my friend! The other end is called the tip, spire, rear, top, etc. It's the end the shell started its growth. The little tip is called the nucleus or protoconch. Each time the snail builds a complete circle of shell, it's called a whorl. The place where the whorls are joined is called the suture. To help you remember, let's say the whorls were separated and the doctor had to sew them up. What would he call his sewing? You guessed it, a suture. The shell is constructed by something called a mantle (no fireplaces included). The mantle is a thin piece of fleshy material which extends to the edge of the shell, or

can cover the entire shell in some families.

The operculum is an item that the snail uses to close up the entrance of the shell. It's called a door, but has no hinges. The bivalves or clams have the hinges, but have no doors; what a mess! The snails have teeth in the end of their proboscis (that's their mouth not their nose). The teeth are called radula (no, not Dracula) and they are lined up in what is called a ribbon, by the hundreds, and when some wear down or are lost, others take their place. The proboscis can extend to cover twice the length of the shell. The snail can stay home and send his mouth out to eat. Some snails have the ability of knocking other shells off their backs with their proboscis. Wow! Extendo mouth!

The humble brachiopod

by J. Dunlevey

Dinosaur mania has swamped South Africa. As a result of Steven Spielberg's film 'Jurassic Park' dinosaur toys, dinosaur T-shirts, dinosaur burgers, dinosaur bones and even dinosaur books are all the latest fashion. A positive side effect of this craze is that a genuine interest in fossils (particularly dinosaurs) has been stimulated and concern for the coelacanth (*Latimeria*) and cycad revived. However, few people are even aware of South Africa's own living fossil animal, the humble brachiopod.

The coelacanth (popularised as 'old four legs') is, as virtually everyone knows, a type of early fish which evolved in the Middle Devonian, about 360ma (million years ago), that was thought to have become extinct about 170ma. However, in 1938 a specimen was caught near East London and subsequently identified by Professor J.L.B. Smith. The ensuing search for, and discovery of, the coelacanth's home territory off the Comores has been the subject of several books and films. While articles on modern coelacanth research and habitat

conservation are regularly published. Similarly the cycads receive their share of glory as 'the plants dinosaurs eat', a living relic of the Mesozoic Era. These plants feature regularly in environmental books and programmes, are protected by law and treated with reverence by botanists and horticulturists.

Not so for the poor brachiopod. Admittedly this little shellfish, being only a couple of centimetres long, does not have the dinosaurian connotations of a 1½ metre long fish, or similar size plant, but then brachiopods were shellfish long before there were even fish, let alone land plants or dinosaurs. Brachiopods, sometimes called 'lamp shells' for the resemblance of some fossil varieties to ancient oil lamps, are amongst the oldest living animals.

The onset of the Cambrian Period, which started 600ma, was marked by the sudden evolution of animals with shells. Amongst the first creatures were brachiopods remarkably similar to those alive to day. For the next 300ma, throughout the Paleozoic Era, brachiopods thrived and were the dominant shellfish, with thousands of species inhabiting virtually every aquatic environment. During this period there were at least two major extinction events, and life progressed from invertebrate to vertebrate forms with the evolution of fish (including the coelacanth), amphibians and even the early dinosaurs.

However, in the ensuing Mesozoic Era the dominance of the brachiopods began to decline. Molluscs in the form of bivalves became at least as common as brachiopods in the seas. The best known, and possibly greatest, mass extinction occurred at the end of the Mesozoic Era (60ma) when the dinosaur and many other species vanished from the face of the earth. Although the cause of this event is still open to speculation, the spectacular results are very evident, with an entirely new fauna dominated by mammals evolving. For the brachiopods this was a traumatic time. Although avoiding extinction, the number of brachiopod species was drastically

reduced, their dominance of the oceans was past, and the few remaining species were forced to retreat from the rich shallow seas and now survive only in the hostile environments of the deep ocean and some rocky coastlines. Although there are many similarities between the bivalves and brachiopods, it appears that the stronger musculature, different filter feeding mechanism and holdfast structure in the bivalves won in the survival battle. Thus the brachiopods, which at their height were represented by over 30 000 species with individuals some 50cm in length, are now reduced to some 200 species, the largest of which is a mere 2½ cm long.

Although brachiopods have never had the mass media attention of other creatures such as dinosaurs, their morphology is distinctively fascinating. A brachiopod superficially resembles a bivalve in having two cup-shaped shells, but unlike the more common bivalves the shells of a brachiopod are not equal and mirror images. Furthermore the plane of symmetry of a brachiopod passes through the hinge and bisects each shell, while in a bivalve the symmetry plane lies between the shells (Fig. 1).

The phylum Brachiopoda is divided into two classes, termed the inar-

articulate and articulate brachiopods. Inarticulate brachiopods, the most primitive and oldest forms, have shells composed of chitin and calcium phosphate. The conservative inarticulate brachiopods never reached the abundance of the articulate forms, and although the early Cambrian burrowing species seem virtually identical to the living forms, the former inhabited shallow seas and estuaries, while the modern variety often dwells in the depths of the deep oceans. [However, *Lingula anatina*, the type species of *Lingula*, used to live in Durban Bay] The articulate brachiopods evolved to dominate the Paleozoic seas. Although some groups evolved complex shapes with spines and horns, the basic shell pattern was always retained by some species. In all eras there existed the simple conservative brachiopod forms similar to those alive today.

To the professional conchologist the modern brachiopod is a rarity, and to most amateur shell collectors virtually unknown. The inaccessibility of the deep ocean specimens, and the fact that (as the shallow water varieties inhabit rocky coast areas) very few shells survive the surf, ensures that brachiopod shells are rarely seen.

However, should you be relaxing on the beach you could find specimens like those I discovered. Because the brachiopod shells are small and thin, any that survive the surf usually come to rest at the high tide mark, with the other small shells and light sea debris. The secret in identifying brachiopod shells and distinguishing them from bivalves lies in recognising their special symmetry. However, a useful guide lies in the external structure of the two groups of shellfish. In the bivalvia the muscles inside the shell hold the shell closed against the spring action of the hinge, thus when a bivalve dies the two shells open and the beach shell debris is invariably composed of disarticulated shells. The spring action in the hinge of a brachiopod acts to close the shells and the muscles force the shell open, so that after death the shell remains closed with the two valves together. When found brachiopod specimens are almost always complete.

Although my specimens of *Megalima pisum* were found on the Natal south coast, this is certainly not the only place where you can find a brachiopod. But be warned, a casual beach stroller does not find the elusive brachiopod. It requires dedication, a large helping of patience and a good slice of plain old-fashioned luck.

So, seat yourself comfortably where the small shells accumulate at the high tide after a storm. Take up a handful of the debris and inspect it carefully. Are there any double shells with one valve larger than the other? Where is the plane of symmetry? Is it a brachiopod or a bivalve? Is this the shell of a creature that dates back a few tens of million years, or do you have one of real, 'all time' (in palaeontological terms) living fossils?

Happy searching, and did you ever have a better excuse for lying on a sandy beach than 'brachiopod hunting'?

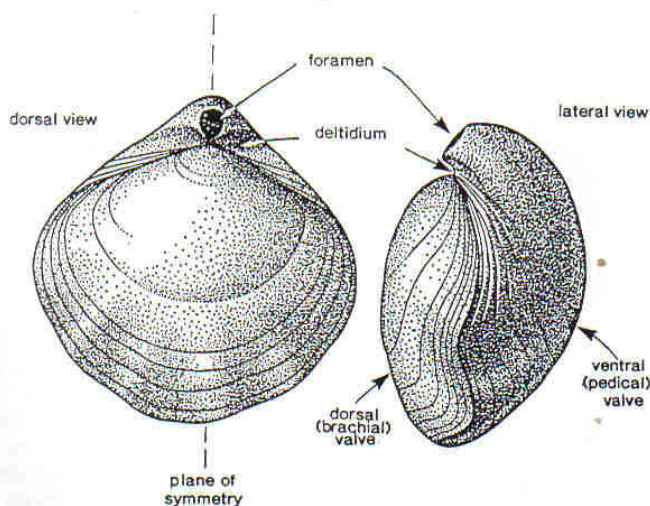


Figure 1. The external shell morphology of a conservative articulate brachiopod such as *Megalima pisum*.

Royal Tyrean Purple

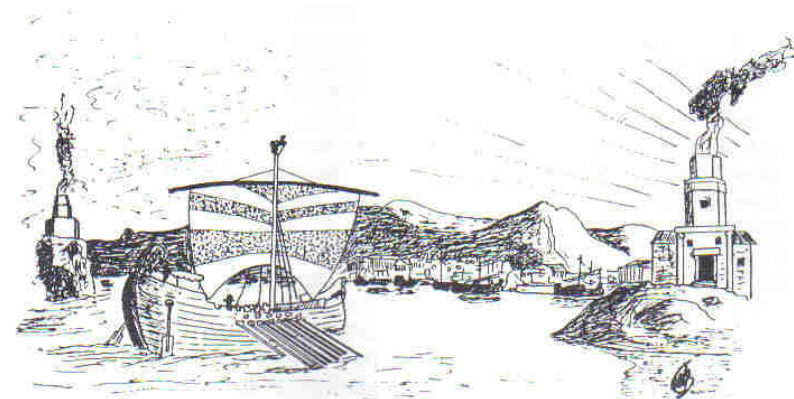
by Barbara Fouche

The most famous and influential of dyes produced by the ancients was a purple pigment obtained from members of the *Murex* family. Although the dye was probably known to and used by Neolithic man, the earliest evidence of its use points to the Mediterranean island of Crete at least as early as 1600 B.C. The legendary story of the dye being discovered by a Greek shepherd, whose dog had stained its mouth when breaking a shell on the seashore, is probably apocryphal.

The earliest authentic accounts of the preparation of the dye were given by Aristotle and later by Pliny. There were two species of *Murex* and one *Thais* used in the Mediterranean by the Minoans and later the Phoenicians, who perfected the manufacture of the dye and maintained a monopoly for several centuries, from about 300 B.C. to A.D. 150. Pliny's description is quite accurate in view of what is known today about the physiology of the snail and the properties of the organic dye.

The process adopted by the Phoenicians, who were supposed to be the greatest exponents of the art, was to collect the shells just prior to the egg-laying period, because that is the time when there is most secretion in the gland. (The eggs are also a rich source of dye.)

The liquid was obtained from a transparent branching organ (the hypobranchial gland on the roof of the mantle) behind the neck of the animal. At first the liquid was the colour and consistency of thick cream (it is a yellowish mucous fluid that, in the presence of direct sunlight, gradually - in a matter of ten minutes - turns to greenish, then bluish, and finally purple-red). Small shells were crushed in rock mortars, while larger shells were broken with a cleaver, in order to extract the entire soft parts. The slimy bodies were steeped in salt water for three days and then set to boil in vessels of tin or lead. To aid



in fixing this dyestuff permanently, a mordant was used, which was an alkali derived from seaweed found principally on the Cretan coast. Skeins of wool or cotton threads were continuously dipped into the fluid over a period of five hours and later dried and carded. Redipping produced darker shades.

Evidently the Phoenicians of Tyre and Sidon (now in Lebanon) used two different dye baths, one made from the juices of *Murex brandaris*, the other from *Thais haemostoma*. Their dyed wool was very highly esteemed, and during the reign of the Roman Augustus (63 B.C. to 14 A.D.) a kilogram of dyed wool sold for about 2000 denarii, a sum now roughly calculated to equal 300 dollars. The dye itself was very costly, since it took many thousands of hours to collect the shells, each of which yields just a few drops. For one kilogram of wool, the ancients used no less than six kilograms of liquid dye. The dye was very fast and did not fade for many years. When Alexander the Great took possession of Susa, he discovered amongst the treasures of Darius over two tons of purple cloth still bright and fresh after 180 years of storage. Some museums today possess mummy wrappings dyed with molluscan purple that still show strong colouration after thousands of years.

Tyrian purple cloth was always considered an article of luxury and was usually reserved for the hangings of temples, the robes of priests or the garb of princes and kings. It

is of interest to note that the purple bearing mollusc even figures in the Word of God, for in the Book of Exodus, the Lord tells Moses that the Tabernacle should be furnished with fine linen woven with blue, purple and red wool, and that the priests were to wear garments of blue, purple, and red wool.

Earlier, the Babylonians used it to dress their idols. The Romans used it extensively, and during the reign of Nero, it was reserved, on pain of death, for only the emperor himself. Later, with the advent of the Christian era, purple colouring, usually from other sources, was used in the church for bishops' robes and altar drapes. The most extravagant use of it was made by Anthony and Cleopatra in the battle of Actium, in which their ship was distinguished by having all sails coloured in royal Tyrian purple.

The Phoenicians spread out well beyond the Mediterranean in search of new beds of *Murex* shells. They are reported to have circumnavigated Africa, and got as far as the British Isles. Archaeological digs have uncovered huge mounds of purple cloth still bright and fresh after 180 years of storage. Some museums today possess mummy wrappings dyed with molluscan purple that still show strong colouration after thousands of years. Large mounds containing incalculable numbers of broken shells may be seen today between Mount Carmel and Sidon along the coast of Lebanon. Wicker baskets baited with offal were set in the sea to attract and ensnare the molluscs. The common Mediterranean murex, *Murex brandaris*, is eaten by poor

people along the coast, though it is no delicacy.

Other purple dyes

Mounds found in Ireland, dating back to 1000 B.C. contain enormous numbers of *Nucella lapillus*, a snail used as a source of purple dye as late as the nineteenth century in England and Scotland. [See elsewhere in this issue for an update on this species Ed.] The Phoenicians are recorded to have obtained a "black purple" from the British Isles, which historians believe must have come from *Nucella*. The dye from this source was used to paint illuminated manuscripts, long before the advent of printing. In north-east Europe, and later to a limited extent in New England, *Nucella* was used as a convenient, cheap and effective way to mark laundry.

Conservation was something practised by even primitive societies, one classic example having been carried out by the Central American Indians on the West Coast, from Nicaragua and Costa Rica to Panama. During the sixteenth and seventeenth centuries, before the influence of the white man, the coastal Indians of that region produced a superior cloth woven from agave fibre and dyed a deep rich purple colour that they obtained from the seashell *Purpura patula*. The Indians had produced the dyed cloth long before the advent of the Spaniards, perhaps, as some ethnologists claim, under the direction of wandering Phoenicians who were well versed in this then important industry. By 1648, according to the early traveller Thomas Gage, the Indians were producing purple-dyed cloth in Salina and Nicoya, both in Costa Rica, for export to the wealthy classes of Spain.

With the increased demand for this molluscan purple dye, the Indians began to practice conservation. Instead of dumping the snails into a cauldron and crushing them in order to extract the dye - the method used by the Phoenicians - the Indians learned that if they plucked the snail off the rocks and gently blew on the animal, it would exude its dye in the form of a viscous liquid,

which was collected in a calabash gourd bowl. The snail was the returned to the same place on the rocks, and the Indians would paddle off in the canoes, continuing their milking operations as they went. On the return trip, the Indians would again milk the snails, obtaining more of the dye from each rested individual. During this canoe voyage, the women passengers would draw the agave threads through the precious mucous liquid, one by one. When the threads were laid in the sun to dry, the colour would begin to change from yellow to blue and then to a rich magenta. Purple-dyed yarns have been found in pre-Columbian textiles in Mexico and Peru. Ancient codex paintings of Mexico are illustrated in this purple dye, showing women of rank in purple skirts and numerous chieftains with fringed waistcloths and capes of purple.

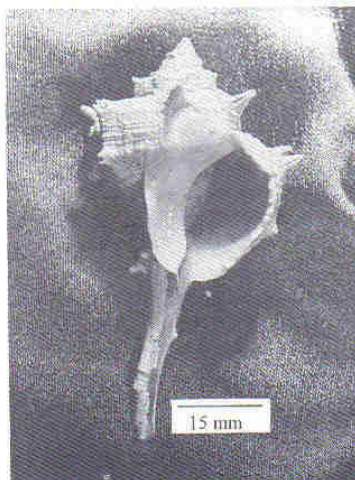
*Who hath not heard how Tyrian shells
Enclose the blue, that dye of dyes,
Whereof one drop worked miracles,
And coloured like Astarte's eyes,
Raw silk the merchant sells.*

Robert Browning

(Browning was wrong about silk, for it was very fine wool that was used. Poetic licence, I suppose!)

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Murex brandaris

A letter from your new Director/Editor

A phone call out of the blue from Laurie Smith established me as the Director of the Conchological Society in about thirty seconds. Not that you have much choice with Laurie. I took on the task having been assured that the position does not involve any actual work, well not *real* work anyway. Maybe a few letters perhaps, the odd decision here and there, and so on! Its the so on part that's worrying me and now my wife is barely speaking to me. She says that I was already over-extended *before* I took on the job. (*Took on the job?? I was given the job!*) Newer members might be wondering why the Vaalies are now running Conch. Soc. Well, its quite simple really. First the Capetonians did it (for rather a long time), then the Natal Group did it, and now the Vaalies will do it. Watch out Port Elizabeth, East London and the OFS. Your turns will come in time!

I have also taken on the task of editor of the *Strandloper*. Why, I don't know. I am not your typical collector. I have only about 1500 species, mostly self-collected, with no particular speciality, except perhaps a fondness for fresh water molluscs. I have practically to fall over a shell before I add it to my collection. Snorkeling and the mathematics of shells are other passions. Anyway, here I am for better or for worse. Olive Peel's editorship of the *Strandloper* will be a difficult act to follow. Olive's interesting and often spectacular issues have attracted favourable comment from around the world. I will endeavour to continue on in the tradition as best I can. However, like Olive, *I can not read your minds!* Please write and tell me how I am doing. Send news, articles and letters. As far as the Society in the broader sense is concerned, your Executive has resolved to embark on an aggressive policy to retain and extend membership. Please help by reminding your acquaintances about us. Membership brings with it the benefits of new friends and contacts, and access to the most up-to-date shelly news. It is also very cheap, only R25 for residents of southern Africa, and US\$20 for the rest of the world. So why not? The AGM will be held in Pretoria in May. See elsewhere in this issue for details.

Regards,

Mortie

Family *Personidae* Gray, 1854

by Dawn Brink

There are about 20 species of *Personidae* worldwide, grouped into three genera, namely *Distorsio*, *Distortionella* and *Personella*. Seventeen species belong to the genus *Distorsio*.

In South African waters we know of five species of *Distorsio* only, none of which are endemic to South Africa. Locally, few are likely to be found outside of Natal waters. The South African examples are:

- *Distorsio anus* (Linné, 1758),
- *Distorsio reticularis* (Linné, 1758) (not *reticulata* Röding, 1798, as it is often erroneously called),
- *Distorsio perdistorta* Fulton, 1938,
- *Distorsio kurzi* Petuch & Harasewych, 1980,
- *Distorsio euconstricta* Beu, 1987.

Most species are fairly deep water shells, obtained from trawling or dredging operations, except for *Distorsio anus* which has been dived off the Natal coast in 10 to 60 meters.

Distorsio reticularis is represented by two colour forms, the shallower water mauve/pink apertured form and the white apertured form with tan rays on the outer lip and a colourful tan parietal shield. The latter is probably a deep water bathymetric form. The two forms of *Distorsio reticularis* were long thought to be two separate species - *Distorsio reticularis* (Linné, 1758) and *Distorsio decipiens* (Reeve, 1844) - but after thorough research on a great number of specimens, Manfred Parth of Munich has concluded that *Distorsio decipiens* is only a colour form and therefore a synonym of *Distorsio reticularis*.

It has also been observed that *Distorsio perdistorta* Fulton, 1938 appears to have two colour forms, one with a plain white aperture and parietal shield and the other

displaying much the same tan rays on the outer lip and colourful tan parietal shield as the deep water form of *Distorsio reticularis*. It was therefore most interesting to note that Dr. Emerson makes a similar observation in a 1990 paper (see bibliography) about specimens of *Distorsio perdistorta* which he examined from Somalia. As far as is known, *Distorsio kurzi* Petuch & Harasewych, 1980, has only been found in South Africa from Natal dredgings, while *Distorsio euconstricta* Beu, 1987, has been both been dredged and trawled off Natal.

The *Personidae* are easily distinguished by their distorted aperture, which has a number of irregularly sized denticles, pustules and ridges. This is accompanied by a parietal shield which is often heavily glazed and easily chipped. A smallish, horny and ovate operculum is present. The sculpture is usually strongly cancellate with axial ribs and spiral cords. A thick, hairy periostracum is often an attractive feature of these shells, some with long bristles on the dorsal surface.

Most members of the family live on muddy sand among coral reefs and rocks, and are known to feed on polychaete worms. They have a long proboscis which helps in hunting polychaetes in crevices narrower than the shell can enter. The veliger larvae of some species may be free swimming for up to three months, which partly explains their wide distribution.

Acknowledgements

Ryszard Strzelecki for photography, and Manfred Parth and Markus Lussi for their invaluable assistance.

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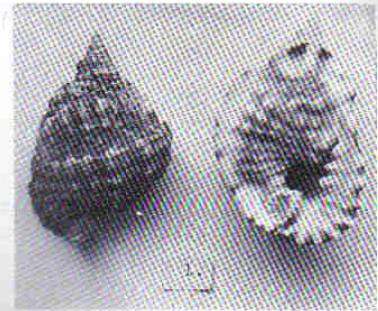


Figure 1. *Distorsio anus* (Linné, 1758) 52.8mm (ventral), 49.9mm (dorsal)



Figure 2(a) *Distorsio reticulatus* (Linné, 1758). Shallow water form. 48.3mm dorsal, 67.9mm ventral.



Figure 2(b) *Distorsio reticulatus* (Linné, 1758). Deep water form. 51.6mm dorsal, 56.2mm ventral.

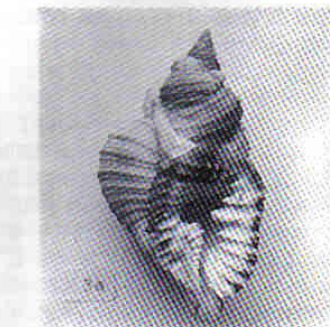


Figure 3 (a). *Distorsio perdistorta* Fulton, 1938. 48.9mm (dorsal), 56.2mm (ventral).



Figure 3(b) *Distorsio perdistorta* Fulton, 1938. 67.1 mm (ventral).

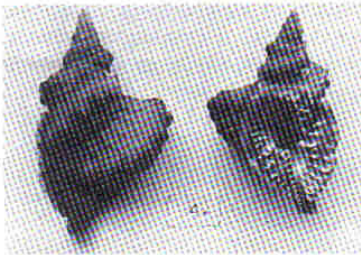


Figure 4 *Distortio kurzi* Petuch & Harasewych, 1980. These are not South African specimens.



Figure 5. *Distortio euconstricta* Beu, 1987. 22.2mm (dorsal), 21.2. mm (ventral).

World Size Records

Some of our readers will have seen *World Size Records*. The new editor is Mrs Barbara Haviland. Her address is
 Mrs B. Haviland #51
 6950 46th Avenue North
 St Petersburg
 FL 33709
 United States of America

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 P.O.Box 1088
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Please contact them for details regarding price etc.

Flotsam

A new Trivia

An article by Brian Hayes, a Conch. Soc. member from Port Elizabeth in *La Conchiglia*, describes a new species of *Trivia*, *Trivia sharonae*. The description is based on a single live shell, and two hermit shells, which were found at Betty's Bay, east of Cape Town at a depth of about 30 meters on a rocky reef. The shell is said to be similar in size and shape to *Trivia virginiae* Lilltved and *Trivia suavis* Schilder, but the shell of the new species has a thicker lip than either, and fewer riblets than the latter. Further details are available in the original reference.

- B.Hayes, *La Conchiglia*, no.268, July/Sept. 1993, pp.6-7.

A different kind of zebra

The zebra mussel, *Dreissena*, has spread far from its original habitat in the freshwater lakes and rivers of the Baltic region. It reached the canal system of England in 1824 and spread rapidly in the next twenty years into the rivers, docks, reservoirs and water pipes. It reached the Great Lakes region of North America this century, perhaps as a direct result of the opening up of the St Lawrence Seaway which paved the way in 1959 for ships from all around the world to sail right up into the Great Lakes themselves.

The bivalve itself is more like a marine mollusc than a freshwater one, since, unlike most freshwater bivalves, it attaches itself to hard substrates with byssus threads. The shell is rather small (about 20 mm

long) and solid, and has an alternating pattern of light and dark zigzag bands on its exterior. The October 23rd 1993 issue of *New Scientist* reports that these mussels are showing a preference for attaching themselves in the intake pipes of the water utilities in the Great Lakes region. This is presumably because the constant flow of water assists them in their task of gathering food by filter-feeding. In any case, the shells eventually hinder the flow and they have caused an estimated US\$ 5 billion worth of damage. (Yes, billion. Think carefully before you tip some exotic aquarium life into our rivers!)

Interestingly enough, there is now some argument regarding whether it would be appropriate to control the pest by introducing the Asian black carp, which seems to eat it. However, astute observers have questioned whether the carp would be satisfied by the intended diet, and have pointed out that it might prefer the native molluscs. This would not be the first time a molluscan biological control experiment went wrong. Some readers may recall the story of the carnivorous landsnail *Euglandina rosea* (told in *Strandloper* no.224, 1988) which was introduced to certain Pacific islands to control *Achatina fulica* (the giant African land snail) but which ended up eating, and eliminating, much of the native landsnail fauna in preference.



Specimen of *Dreissena* from France.

Man adapts to Nature

Commercial fishers of shell fish at Yerseke in the Netherlands have learnt to make good use of sea-gulls. They spread their catch of mussels out on submerged banks of peat in the Oosterschelde estuary, and leave them there for several days so that the mussels' insides can be purged of sand. Flocks of sea-gulls have leant about this and descend on the mussels to forage for any that were damaged in transit. This performs the useful function of ensuring that only healthy, living mussels are still around after several days, at which time the mussels are dispatched to market. *New Scientist* 11 Sept 1993, p.8.

Nature adapts to Man

Female dogwhelks, *Nucella lapillus*, found in the North Sea, are very susceptible to the effects of the chemical tributyl tin (TBT) [See *Strandloper* no.230, July 1991, p.12]. This substance is used in the anti-fouling paints applied to large boats, and only a few parts per trillion of it in sea water cause the appearance of oversized male organs in female animals. These organs physically prevent the animals reproducing normally, and *Nucella lapillus* is said to have practically died out along the north Kent coast of England. Imagine the excitement of scientists of the Plymouth Marine Laboratory when they recently found thriving populations of the animal near a busy ferry terminal. Closer examination is said to have shown that the individuals had developed a genetic mutation that decreased the size of the male organ, both in males, and in females affected by pollution. While the syndrome is a great calamity for affected males (assuming they have egos I suppose) it does not prevent carrier females breeding with normal males, thus ensuring the survival of the species. *New Scientist*, 11 Sept 1993, p.16.

New species of *Marginella* from the Cape

An article by Bozzetti in *La Conchiglia* describes some new species of *Marginella* including a new example from the Cape. *Marginella hayesi* Bozzetti is similar to *Marginella lineolata* Sowerby, but its shell has a rather distinctive and attractive pattern on its mid-whorl. A live specimen and some hermit examples were collected at 30 m depth off Betty's Bay. -L.Bozzetti, *La Conchiglia*, no.268, July/Sept. 1993, pp.44-47.

In memoriam

We wish to record our deep sense of loss at the passing of Pernell Mizen - our respected member of ten years standing. She did most things in her busy life somewhat differently from other folks but it is fair to say that she got more out of her short career on this Planet than even those who exist beyond their allotted span. She was also a front runner among those who include the management of molluscan aquaria among their interests.

Noggs Newman, East London,
2nd November 1993

Collection for sale

Mr C.D. Hanneman has indicated that he wants to sell his shell collection which he has been adding to for the last 25 years. The shells are housed in 4 cabinets and include technical data. Mr Hanneman wants R5000 o.n.o. If you are interested then write to him at 6 Clarke Road, Warner Breach, Natal 4126.

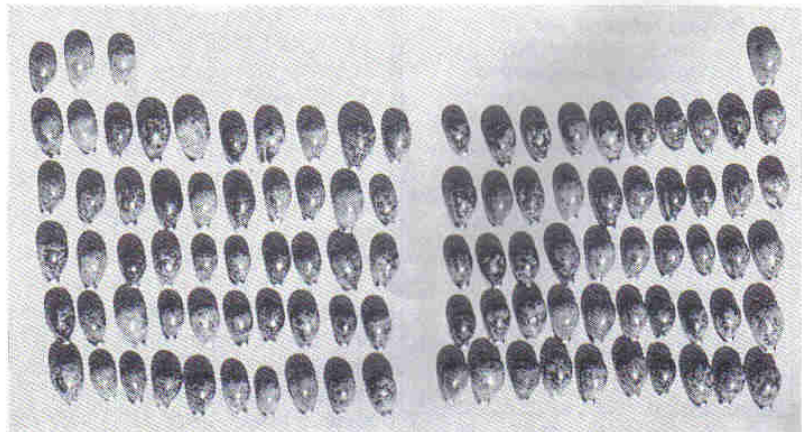
Identifying shells

Mr Markus Lussi of 15 Longwood Drive, Durban North 4051, is willing to help with the identification of tricky shells. Please send him a clear photograph, or perhaps the shell itself, together with return postage.

Border News

Cowries galore!

A shelling outing by Border Shell Club members Pernell Mizen and D-J Hodgkinson to the Fish River Mouth yielded a bumper crop of interesting beached shells including over one hundred *Cypraea edentula*, as well as specimens of *Modiolus ligneus*, *Trivia aperta*, *Trivia suavis*, *Amalda obtusa*, *Cosmetalepas africana*, *Corallophila fritschi*, *Terebra suspensa* and *Demoulia abbreviata*.



Photographing shells in colour

by Mark Lussi

This brief guide will hopefully help you achieve good results when photographing shells between 20 and 80 mm in size.

You will need

- a 35mm SLR (viewfinder works through the lens not past it!) camera, preferably with through the lens metering.
- colour prints or slide film, ASA200
- black velvet (for background)
- set of close-up lenses (eg. +1, +2 & +4 magnification)
- sturdy stand/tripod for mounting camera
- cable release for shutter mechanism

Setting up

- mount loaded camera on stand. An improvised stand is acceptable, however care must be taken to avoid vibration.

- attach close-up lenses to main lens in descending magnification (i.e. +4, +2, +1)
- image quality will be improved with single close-up lens usage (multi-lens usage can be avoided by adjusting "camera to subject" distance)
- adjust height of camera until subject occupies at least 30% of the lens frame
- set lens diaphragm to f/16 (depth of field improves from f/1.2 to f/16)
- smaller objects should be raised from background (use Prestik) to minimise background detail

Shooting picture

- shoot in full shade (preferably noon) in still cloudless conditions
- ensure camera stand is level and parallel to subject background (check with spirit level)
- select shutter speed using camera (or independent) exposure meter. Avoid settings slower than 1 sec - rather adjust aperture
- select stopdown feature (if your camera has it) in order to see how shell will look with given aperture
- switch back to normal view

- use cable release or self timer to activate shutter. (It may be desirable to shield the eyepiece from strong light on some cameras - shade it with your hand - Ed.)

Good luck !

Separating the lambs from the wolves

A scientific paper by G.C. Kronenberg in the journal *Vita Marina* considers the validity of *Lambis wheelwrighti* Greene, 1978, and *L. arachnoides* Shikama, 1971. These striking shells are found in Indonesia. Kronenberg examines the available evidence and has concluded that *L. wheelwrighti* is a junior synonym of *L. arachnoides*, and that furthermore, the shells are probably the result of hybridization between *L. truncata sebae* and *L. millepeda*.

- Kronenberg, G.C. (1993). On the identity of *Lambis wheelwrighti* Greene, 1978 and *L. arachnoides* Shikama, 1971. *Vita Marina*, vol.42(2), pp.41-56.

The magic of the cowrie - either fertility or currency

collected by L. van den Berg

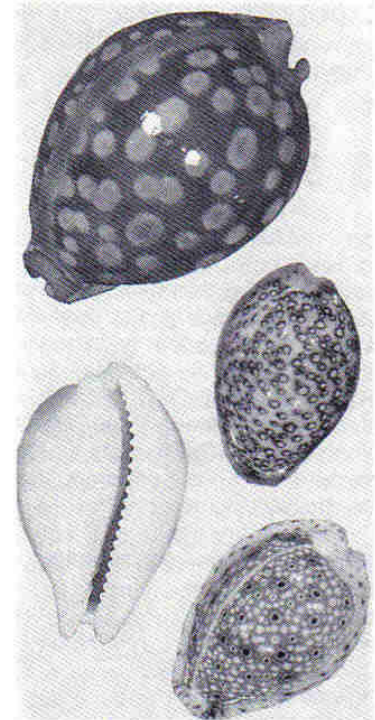
In the ancient classical world the cowrie was called *concha venerea*, the shell of Venus. Aphrodite, the goddess of desire, rose naked from the foam within an open shell. She settled in Paphos on the western tip of Cyprus. Aphrodite means "foam born". The scientific name of the genus *Cypraea* arose from Cyprus or Cyprian after the island where the worship of Aphrodite or Venus began. *Cypraea* means giver of life.

From early times cowries were known to western traders as "porcelains". The term cowrie is derived from a Greek word for "little pig". The Romans called them *porci* or *porculi*, from which the word porcelain is derived, because of the

external appearance of the shell. The cowries are still known as *les porcelaines* in French-speaking countries.

In India round about 900 AD. are Hindu scripts that tell of shells used for currency. (Of course they were later very widely used as money in Africa too.) The Hindu word for shell is *kauri*, that became cowrie. The Afrikaans word is also *kauri*.

The aperture of the cowrie resembles the vagina of a woman; it became the symbol of womanhood, the source of life. Large cowries were used at the birth of a child, favorites were *C. mauritiana* and *C. tigris*. Tiger cowries were clenched in both hands by women during childbirth, partially to counteract the pain and to ensure easy delivery, but mainly in the hope that the child was both normal and healthy. In Japan certain cowries are known as *koyasu-gai*, or "easy delivery shell".



Announcement of AGM

The annual general meeting of the Society will be held on 14th May in the Frank Brand Hall of the Pretoria Zoo. There will be a programme of interesting talks, an auction of shells donated by Olive Peel, and a light lunch. The formal AGM will be held after lunch. More details will be mailed nearer the date.

Book review

An Annotated Price Catalogue of Marine Shells, G.T.Poppe and J.R.Senders, 1994. Available from G.T.Poppe, Stanislas Leclefstraat 8, 2600 Berchem, BELGIUM, price US\$33.

This publication covers 10 000 or so species, and includes a lot of interesting background information on the shells. Some points of interest to our readers include the prices for several well-known shells from South Africa. *Cypraea fultoni*, for example, is worth between \$1000 and \$5000 depending on details. *C. cruickshanki* may fetch between \$800 and \$3000. *Marginella rosea* is worth about \$10, *Haliotis queketti* may fetch a price of about \$30. The more common South African shells, such as the various *Patellidae* are listed at around \$3 to \$5.

Strandloper

The editor welcomes original articles, news, shelling reports, feedback, advertisements (rates on application) and any other material likely to be of interest to members of the Society. If possible, send articles on a MS-DOS diskette in Word for Windows, WordPerfect, Wordstar, or ASCII formats. Photographs and line drawings are especially welcome.

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Change of address

Olive Peel has re-located to Belfast in the Eastern Transvaal. Her postal address for the time being is
Ms O.Peel, Box 757, 1100 BELFAST,
South Africa

Did you know?

The *American Conchologist* of December 1993 reminds us that system by which we name molluscs (and other living organisms) is called the **binominal system** and not the binomial system as it is sometimes erroneously called. This is the choice of spelling of the International Commission for Zoological Nomenclature.

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