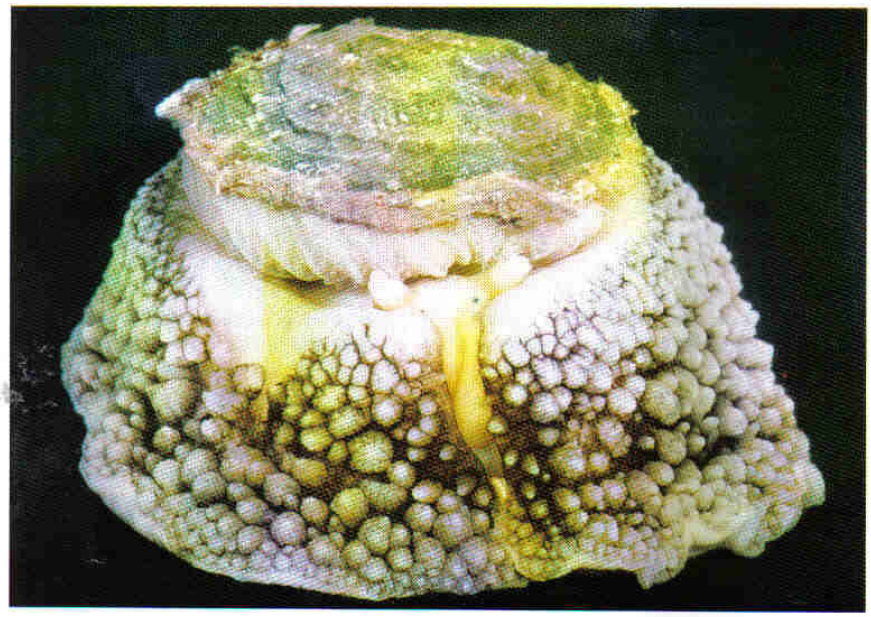
The Strandloper
BULLETIN OF THE CONCHOLOGICAL SOCIETY OF SOUTHERN AFRICA

The Umbrella Shell

by Rob Tarr



Before I had the good fortune to encounter my first living specimen of *Umbraculum* in its natural habitat, I was totally unaware of the existence of such a creature. So nondescript was the shell in my few reference books that I had never before even noted the name. I therefore hope that I may be excused for having been totally stumped when I encountered, and eagerly bagged, this fellow a few years ago. It was on the Alphard Banks, a remote reef outcrop 60 kms offshore and at 50 meters depth near Cape Agulhas.

The animal was found together with numerous fine creeping gorgonians, *Allopora* coral and yellow zoanthid colonies. The reef at that point dropped near-vertically to where the sea bed was still just visible at an estimated depth of 80-odd meters! Needless to say, with visibility like that, this dive was, and still is, one of my most memorable! On closer study in my photographic tank back on shore I couldn't help thinking that I had discovered the molluscan equivalent of the coelacanth, for this animal appears exceedingly primitive, with its exposed gills and double siphons.

As I later discovered however, and as many of you no doubt already know, it is a shelled opisthobranch of the order Notaspidea and family Umbraculidae, and has been known to science since the 1780's under various names, but most commonly as *U. sinicum*. These "umbrella shells" apparently feed on sponges or their associated microorganisms[1,2]. They are found in various parts of the world and have been reported[1,3] from the intertidal to 80 m depth, although in South Africa they are usually found in tidal pools along our north-eastern coastline[4]. My specimen was found some 700-odd km south-west of East London, which was the previously recorded limit of its southward range[4].

This specimen had a shell length of about 70 mm and stood about 70 mm high. The external features[5] are as follows: The dorsal shell, which has a soft and crumbly edge, only partially protects the gills which protrude from the front, right and rear of the shell, the gills being absent from the left side. The appealing little face has two clearly visible eyes with rhinophoral ("nose"?) tentacles on either side. These tentacles are curious in that they are not compete tubes, but enrolled structures, with the edges abutting down the (outside) length of the tube. Below the eyes, looking like an elephant's

trunk, is the penis with a visible autospermal groove. Below this, but not visible here can be found the mouth and two oral tentacles.

The general appearance of my specimen was somewhat different from other species accounts, possibly due to its deeper habitat. Other accounts of this species[1,3,4] report a foot colour of yellow or orange usually with contrasting white tubercles. My specimen had a dark brown foot colour with contrasting grey to cream coloured tubercles, the apex of each tubercle being white. The head, rhinophores and penis were pale yellow, and the only other notable colour was on the dorsal surface of the shell which, except for the extreme edges, was encrusted in a thin green layer of bryozoan polyps.

In conclusion, despite the fact that my personal collecting interests are more in the cowry/cone/marginella line, I don't think I can do better than quote Thelma Hartley[3] who claimed that..... "this was, without a doubt, the most impressive and extraordinary creature I have ever had the good fortune to collect".

References

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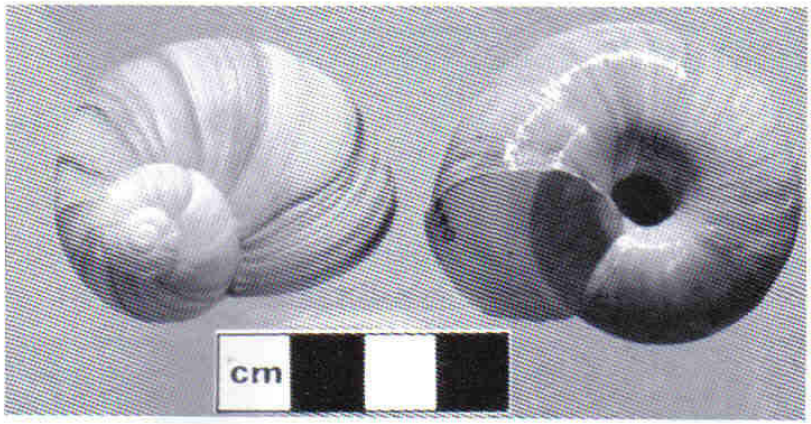
3. Hartley,T.W. (1964). Egg laying and early development of *Umbraculum sinicum* Gmelin. *J. Malac. Soc. Austral.*, vol.1(8), pp.33-35.
4. Kilburn,R. and Rippey,E. (1982). *Sea Shells of Southern Africa*, Macmillan South Africa.
5. Thompson,T.E. (1970). Eastern Australian *Pleurobranchomorpha* (*Gastropoda, Opisthobranchia*), *J. Zool., Lond.*, vol.160, pp.173-198.

Collection for sale

Mrs Nan Watt of Milnerton is selling her collection, which consists of mainly self-collected shells worldwide. All with data. Phone 021-52-5459.

Natalina cafra - gardeners' friend

compiled from information supplied by Mary Bursey, Joh Groenewald, and Dai Herbert



Although there are several carnivorous land snails in Southern Africa, the most striking may be the pulmonate, *Natalina cafra*. This indigenous species is found along the east coast of Southern Africa from the southern Cape to Maputo. Shells of this species may reach up to 80 mm in diameter, and the animal may extend for 150 mm from tip to tip when under way, making it one of the largest carnivorous land snails in the world. The colour of the shell varies from olive-green to light-brown, and it contains a deep umbilicus. The surface of the shell is covered with a rather characteristic pattern of fine ridges. The foot of the animal is yellowish-brown to orange.

It is reported that *Natalina* creeps down into loose soil or leaves during the dry season to aestivate, and that it emerges soon after the first rains of the wet season, whereupon it first cleans itself (rather like a cat?), then has a drink of water, and finally sets off in search of a land snail or earthworm with which to break its fast.

A Border Shell Club member, the late Pernell Mizen, had the good fortune to observe a *Natalina* at dinner which in this case was a large *Achatina zebra*, (on facing page). The picture was taken at Port Alfred in September 1992. The orange foot of *Natalina* can be seen clearly, as well as the numerous axial ridges on the shell by which the species is distinguished. Pernell said that the *Natalina* remained in this feeding position for three days. Dai Herbert, of the Natal Museum reports that the dinner process is quite a gruesome spectacle, with much frothing and bubbling issuing from the victim. The *Natalina* inserts its head into the other shell's aperture, and uses the rasping and ripping action of its radula to consume it. Finally, having consumed the fleshy parts, *Natalina* may envelop its foot around or into the now empty shell, whereafter it somehow succeeds in absorbing the major portion of its prey's calcium carbonate, leaving only the thin, flexible outer layer of the shell. Besides land snails (including other *Natalina cafra*) and earthworms, *Natalina* is reported to feed on carrion too. It will apparently take mince meat when in captivity.

Since *Natalina* has the potential to be used to control such pests as the exotic garden snail *Helix aspersa*, it has been considered from time to time as a possible biological control

agent. Research in this connection is currently being undertaken at the Institute for Tropical and Subtropical Agriculture at Nelspruit. Interestingly it seems that indigenous land snails are well aware of *Natalina* and will take extreme steps to escape it, turning tail and sweeping off at maximum speed with their shells twisting from side to side. However, specimens of *Helix aspersa* demonstrate no such escape response, and are an easy meal for *Natalina*.

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- anon. (1993) Vleisvreterslak 'n weldoener, *Landbounuus/ Agricultural News*, no.5, 8 Feb. 1993, pp.1 & 7.
- Herbert,D. (1993) South Africa's carnivorous snails, *African Wildlife*, vol. 45(1), pp.6-11.

Natalina cafra in process of devouring an *Achatina zebra*. Photo by the late Pernell Mizen.

Limaria fragilis - a shell with a secret weapon

Compiled by the editor with information supplied by N.Newman and R.Kilburn

Mr Noggs Newman, of the Border Group, reported recently that he had the good fortune to visit Benguerua Island, which is in the same group of islands off Mozambique as Bazaruto Island. He says that as far as the natural life of the area is concerned, "seeing is believing". The area is apparently a reserve. He found a fine specimen of *Limaria fragilis* at a location called Two-mile Reef, which was duly admired by all before being returned to its habitat. These rather delicate bivalves, which have been reported from Natal waters as well, have very long orange-red tentacles which strongly remind one of those on many sea-anemones. The mollusc is similar in some ways to a scallop, and many species are capable of some degree of free-swimming, achieved by flapping their valves. I have found examples under rocks both in South Africa, and the Seychelles. However, one example of this shell gave me the biggest surprise that any shell has given me so far while snorkeling; after I had spotted an example under a slab of coral, I poked it with my glove, only to find that it stuck to my fingers like a piece of Prestik! I shook my hand vigorously, which dislodged the shell but left quite a number of wriggling orange tentacles attached to me!!!

Dr Kilburn records in his book, *Sea Shells of Southern Africa* that the tentacles can be shed at will, and that they exude an acrid-tasting mucus. These appendages apparently serve the same function as a lizard's tail in so far as they keep a would-be predator occupied.

Photo courtesy of the Natal Museum.

Presidential report 1994

by R.N.Kilburn

This year I will give a general survey of some of the more interesting developments that have taken place in world malacology during 1993 and 1994. I will concentrate, of course, on aspects relevant to the South African scene.

Collections

Many of the name-changes that annoy collectors can be traced back to sins of omission. Often the original description and figures given by the early writers were so lacking in detail that their species are difficult or impossible to recognise with certainty. For example, less than a third of the names proposed by Röding for species and "varieties" of *Oliva* can now be identified. Often the only way of positively resolving the identity of these early names is to locate types (the actual shells on which the name was originally based). Unfortunately, many of the early collections have disappeared - usually being dispersed by sale or destroyed by fire or warfare - but there is reason to suspect that others survive unrecognised in some of the smaller European institutes. The rediscovery of one such collection was announced this year - that of Hermann Eduard Anton.

Anton was an important German malacologist, who in 1838 published a descriptive catalogue (*Verzeichniss der Conchylien*) of his shell collection, in which many new names were proposed. Unfortunately, no illustrations (and few localities) were provided, and what is worse, his collection was supposedly lost, so that authority for the few Anton names now in use rests mostly on the opinions of contemporary German writers. His collection has now been discovered in the collection of the Staatliches Museum für Tierkunde, Dresden, and their curator intends publishing an account of it. It will be interesting to see whether names such as *Clanculus miniatus*, *Natica tecta*, *Oxystele tigrina* and *O. variegata* have been correctly used!

Another early source of molluscan names was the catalogue of the Demidoff collection, published in 1807 by Fischer von Waldheim. Few of these have been used by malacologists, partly because it was believed that most, if not all, of the collection had been destroyed during Napoleon's occupation of Moscow. Last year an illustrated account of the surviving types, still preserved in the Zoological Museum of Moscow University, was published by a group of Russian workers, led by Dimitri Ivanov. Some of these bear the earliest names for various well known species, although fortunately the names of only two South African species are threatened by prior synonyms. One of these -*Patella [Siphonaria] serrata* - we will probably have to accept as the earliest name for *Siphonaria aspera*. The other, *Patella digitata* Fischer von Waldheim, 1807, threatens the well-known name *Patella longicosta*, and will be challenged in the interest of stability.

Both Dai Herbert and I separately visited various European museums last year. I spent a month at the Natural History Museum, London (previously called the British Museum Natural History), examining and photographing types, with brief visits to the Oxford University Museum (where the Turton collection is housed) and Manchester Museum (to examine some of the Melvill & Standen turrid types). Dai spent time at the Paris Museum plus a few days at the Bordeaux Museum. The latter houses the collection made in the South Pacific by the missionary Xavier Montrouzier, including his types.

Finally, in August 1994 I will be visiting the Indian Museum in Calcutta, to examine its type collection. The most important part of this collection are some of the many small specimens from the tropical Indian Ocean that were described, usually very inadequately, by G & H Nevill. Numerous types collected by the *Investigator* expedition to the deep water of the northern Indian Ocean are also kept here.

Some discoveries

The family Turridae has long been considered the largest family of living molluscs, and one that shows the greatest range of radula types. It has, for ease of study, long been divided into a number of sub-families (Clavatulinae, Mangeliinae *etc.*). Last year John Taylor and Yuri Kantor demonstrated - mainly by study of the anatomy of the front part of the digestive system - that the name Turridae must be restricted to a relatively small number of genera. The Drilliidae are given full family status, but the vast majority of genera have now been transferred to the family Conidae! The Conidae now not only holds the record for the largest known genus of molluscs (genus *Conus*), but is probably the largest family too!

The family Neritidae has invaded more habitats than most other gastropod groups, yet until recently these were believed to be restricted to intertidal and shallow water. The first deep sea genus, *Bathynerita*, has now been described from depths of 540 to 722 m, where it occurs near seepage from hydrothermal vents.

Some publications

Dai Herbert and myself have begun work on an identification manual to South African seashells, a massive task which we will be lucky to complete in 5 years. Each family is being revised before inclusion, which involves much original research, based mainly on the Natal Museum collection, but drawing on the latest published data and information from other museum collections as well. New species will be described as we progress. Unfortunately one must be realistic - it will not be humanly possible to give complete coverage to all

families. A full revision of groups such as the "Turridae", Triphoridae, Eulimidae, Pyramidellidae, *etc.*, would alone consume several life times! Nevertheless we hope to provide a means by which most of our shallow-water species, and many of the deep-water ones can be identified by anyone.

I have submitted a proposal to the International Commission on Zoological Nomenclature requesting that the name *Donax serra* Dillwyn, 1817, be conserved for the common South African white mussel. I have discovered that on paper this name is an invalid homonym, being threatened by the earlier *Donax serra* Röding, 1798, which was based on a venerid.

Rüdiger Bieler's exhaustive monograph of the Architectonicidae has now been published: he first began this study as an MSc thesis at the Natal Museum in about 1980, when he came out from the University of Hamburg to do field-work.

Prof. Chris Appleton of the University of Natal, Pietermaritzburg, is producing an identification book on the freshwater molluscs of South Africa.

South African research workers continue to suffer from lack of access to many of the most important early publications. Over the past year the Natal Museum has been successful in adding some valuable 19th century malacological literature to its library, notably a near complete set of *American Journal of Conchology* (a short-lived journal edited by G.W. Tryon), and a set of the Deshayes & Milne-Edwards edition of Lamarck's *Histoire naturelle des Animaux sans Vertèbres*, generously donated to us by Rhodes University.

Fieldwork

The Natal Museum dredging programme officially terminated in 1993, after 12 years. During this time we collected 1 011 bottom samples, mainly off Transkei and Zululand, which have provided good series of our deep-water molluscs, many of which are new to science. Unfortunately the vast area of the Agulhas Bank and its slopes has to remain unsampled, as the cost of ship's time is now too great for our resources, largely because of the great distances involved. However, we have been invited to join the Sea Fisheries Research Institute on some of its demersal surveys, and in this way hope to get at least some samples of the central Agulhas Bank fauna.

In 1993 Dai and I spent a week in Inhaca Island off Maputo, investigating the potential for fieldwork there. We were very disappointed, as it is obvious that the island, once rich in marine life, has sanded up, largely smothering the marine grass flats and most of the coral reefs, and filling in much of the Saco (the large bay at the southern end of the island). Although there is now great potential for fieldwork elsewhere in Mozambique, we will be giving Inhaca a miss.

This August, if I survive Calcutta, I will be spending a week on the east coast of Malaysia, where I will join Dr Richard Newell, eminent British marine biologist, in an ecological survey. We hope to gain a good sample of the local molluscs, which are very rich in number of species (including, for example, no less than 10 species of the mangrove periwinkle, *Littoraria*.

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. Please address correspondence and submissions to

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CORRECTION!!

The Editor wishes to apologize to Mrs Dawn Brink for the errors that appeared in her article on Personidae in the last *Strandloper*. All *Distortio* should of course read *Distorsio*, and *reticulatus* should have been *reticularis*. Also, figures (a) and (b) were in each case transposed. Sorry Dawn!

Back issues of the *Strandloper* for sale

Old newsletters (#1 to 170, 1958 to 1975), where available, cost R2 each. Photocopies are R3 each. "New" *Strandlopers* (#171 onwards) cost R4 each for a B&W issue, and R8 each for a colour issue, where available. Colour issue number 225, which had a beautiful *Conus milne-edwardsi* on the cover is now very rare, and the few copies still left will cost R40 each. There are no supplies of the following numbers, 172, 174, 192 and 202, but photocopies can be supplied at R4 each.

Overseas members please total up price in R, and divide by 2 to get US$ price.

Flotsam

The inconstant sea

That the level of the sea has varied over the millenia is well-known but precise details are not readily available. A.Jerardino, of the University of Cape Town's Dept. of Archaeology has presented an analysis of marine molluscs found in a midden on the west coast of the Cape and used the data to deduce some details of the sea level. The evidence is said to point to a cyclic variation in sea level over the last 6000 years of from 0 to 3 m higher than present. The falls in level are apparently correlated with neoglacial periods (so we must be in one of those, whatever they are).

It seems that the original strandlopers were fond of eating the rock-dwelling mussel *Choromytilus meridionalis* and the limpet *Patella granatina*, as well as the sand dwelling bivalves *Solen capensis* and *Venerupis corrugata*, more or less in that order. Other shells found in the midden were those of the bivalve *Dosinia*, as well as those of the small gastropods *Assiminea globulus*, *Clionella* and *Nassa kraussianus*. Jerardino considered that these small shells were most likely brought onto the site by accident, perhaps caught up in the sea weed *Zostera capensis*, which may have been used for bedding. The various shells vary in frequency in the midden, and these figures, combined with an assessment of the shoreline, were used to deduce the sea level changes.

Jerardino,A, *S. African Journal of Science*, vol.89, 1993, pp.481-488.

More on tributyl tin (TBT)

The April 1993 issue of the West Australian Shell Collector reports that Prof. A. Kohn, the well-known authority on cone shells, has found that TBT-induced abnormalities have been found in number of cones collected near Perth in 1992. As mentioned in *Strandloper* 237, p.10, TBT appears to cause certain species of mollusc to develop abnormal reproductive arrangements. Since TBT is quite widely used as an anti-fouling agent on ship's hulls, the problem might also exist in Southern Africa, especially in and near to our harbour cities. If it became sufficiently acute, it could cause a reduction in the numbers of individuals of susceptible species, which now seem to include the Conidae and Muricidae. Perhaps somebody in Kwazulu-Natal could look into this and report back to the *Strandloper*?

Red Sea Cowries

Many of our members will be familiar with the Cypraeidae to be found along the Kwazulu-Natal coast. They generally represent species drawn from the vast Indo-Pacific pool, but their number and type reflect the fact that most of the Natal coast lies at the extreme edge of the Indo-Pacific "province". The situation at the other end of the east African coast line, at the extreme north end of the Red Sea has been recently described in the journal *Gloria Maris*, published by the Belgian Society for Conchology. My first impression was that the situation there should mirror that along the Natal coast to some extent, however, it is really quite different. The common species are said to be *C. arabica*, *C. caurica*, *C.erosa*, *C. isabella*, *C. propinqua* and *C.turdus*. (The first four are also found in Natal of course). However, species that are common in Natal, such as *C. annulus*, *C.teres* or *C. carneola* are apparently uncommon at the top end of the Red Sea. About 26 species of Indo-Pacific cowrie seem collectable there. So Natal, with its two dozen or so Indo-Pacific representatives compares quite favourably.

Verbinnen,G., Wils,E. and Wellens, W. (1993). *Cypraeidae* in the Red Sea, *Gloria Maris*, vol.32, pp.27-62.

Midae fast food

The perlemoen or abalone has acquired something of a reputation as a food item, and quantities of the flesh of *Haliotis midae* are exported from South Africa. Since supplies of the animal in its natural habitat are limited, the benefit to be gained by rearing the molluscs in 'farms' is self-evident. However, one of the major problems faced is what to feed them. Apparantly they are 'farmed' in limited numbers in Japan, Taiwan and the USA, but in these cases are fed on naturally-occuring sea weed. Researchers at Rhodes University in the Eastern Cape have now developed an artificial feed for *Haliotis* that contains the necessary ingredients to ensure growth during aquaculture. One requirement was that the food should be in the form of a ribbon, so that the animal could clamp it under its shell, as it does with seaweed. Another requirement was that the food should stay intact for several hours underwater. In any case, a successful recipe was found, and juvenile Haliotidae apparently prefer the new artificial 'fast food' over the real thing, possibly proving that molluscs are more closely related to humans than we might think.

Unfortunately, it seems that *Haliotis midae* is rather a slow grower, even with the new food, and a shell typically takes 300 days or so to reach a size of about 30 mm at a water temperature of 21°C. Growth in colder water is even slower.

Britz,P.J., Hecht,T., Knauer,J. and Dixon,M.G. (1994). The development of an artificial feed for abalone farming. *South African Journal of Science*, vol.90, January, p.7-8.

AGM news

The 1994 Symposium and Annual General Meeting of the Society was held in Pretoria on the 14th May. The symposium proved to be very interesting and we hope to run versions of the talks as articles in future issues of the *Strandloper*. A shell exhibition was held, and, while all the exhibits were stunning, it was a tray of shells collected along the Wild Coast (brought by Val van der Walt of Kwazulu-Natal) that won the Director's Award floating trophy. There was also cake and other good things to eat in profusion but everybody seemed to be so busy talking shelly business that much of it went back home again! Back issues of the *Strandloper* were on sale and raised R112 for the Society.

The AGM proper was held after a fine lunch at the restuarant of the Pretoria Zoo. The Treasurer, Bill Kruger, reported that the Society's income last financial year was R6654, and its expenditure R5739. While this might seem in balance, members should bear in mind that only three issues of the *Strandloper* were produced in the previous financial year. The total membership of the Society remained approximately constant last year with as about as many members joining as leaving. We currently have 338 members of various kinds. This figure includes Life Members, and institutions to which we send the *Strandloper*.

A strong theme at the meeting was that members wanted more issues of the *Strandloper*, in colour too if possible. After it was pointed out that financial considerations made this difficult, a general cry to raise the annual membership fee was raised. While all present accepted that the fees would have to be raised, there was discussion whether this should be done in two increments or one, and if so by how much. The majority view was carried by vote, namely that the annual fee for ordinary members should be raised to R50 per annum, that for pensioners over 65 and students should be R25, and that for overseas members should be US$25. Families who receive a single *Strandloper* may register the other family members with the Society at a cost of R5, but these additional members will not receive their own correspondence. These figures are expected to remain unchanged for next year as well.

I regret very much that I have had to be the bringer of this slightly unpleasant news, but in amelioration of it, I promise that we will do our utmost to bring out four issues of the *Strandloper* this year. I am currently experimenting with ways to produce a colour version at lower cost, of which the present version represents a first attempt. While the overall print quality is not as good as the best of Olive Peel's issues, I trust you will bear with us because the cost is much lower.

M Cortie

Readers who have South African shells for sale or trade are invited to write with details to Nick & Joy Welbanks, Sea Shell Cove, 2302 State Route 109, HOQUIAM, Washington 98503, U.S.A.

Pretoria Group is 20 years old

The Pretoria Group of the Society is now 20 years old. It held its first meeting on the 17th April 1974 at the National Zoological Gardens, and has been meeting regularly ever since. The Group was founded by Mr Laurie Smith, now the Society's Secretary, Mrs Anne Wilson, who is probably the Society's oldest member, and Mrs Laureen du Preez. Also included in the Group's membership at present is Mr Dirk Bosman, who was one of the Society's thirty-odd founding members way back in 1958!

Joan Weakley's scrapbook

Among the various papers *etc* amassed by the Society's Historian over the years is a charming scrapbook compiled by the late Joan Weakley of Cape Town. Each page of this interesting book is decorated with poems and illustrations about shells. Some examples:

SCALLOP SHELLS
There is fun in the chase,
As I find in the race
Along the Cape's breezy beaches,
Where'er the eye reaches,
On my gladsome gallops
In search of scallops

W.V.E. Fish Hoek 5/12/1957

and,

Ek is 'n skulpie van die see,
En spoel al om en om;
My moedersee het my gewas,
Ek kan nie skoner kom

Totius

Change of address
Olive Peel's new address is P.O.Box 205, BELFAST 1100, South Africa

Some unusual endemic South African molluscs

Brian Hayes*

Introduction

The coast-line of South Africa is unusually rich in the number and variety of molluscs which occur along it. We are fortunate in this country to have part of our coast-line subject to very temperate conditions predominantly affected by the cold Atlantic Ocean and part of it subject to sub-tropical conditions affected by the warm Indian Ocean. These extremes have given rise to a great diversity in our molluscan life which is supported by an extensive and varied reef structure containing a considerable amount of other marine life.

The varying climates, reef-types, water temperatures *etc.* make diving around the S. African coast a wonderful experience as there are an almost endless number of unexplored reefs, which regularly reveal new species of shells. Most diving along our coast takes place between 10 and 40 meters, with only the most daring and dedicated divers going as deep as 50 meters. Shells can be found in a variety of habitats on the reef and it usually takes a very long time to get to know where to look for them. Some species live on open sandy reef, others live in caves or rock crevices, many hide away among the other faunal life on the reef and some just sit out in the open using their shape or colour as camouflage.

The shells shown in the figures on page 10 were found between Algoa Bay and False Bay, which is a stretch of coast-line approximately 800 km in length and which falls between the two climatic extremes mentioned above.

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The photos were all taken by the author in a small tank using a Chinon CP-7M with magnification lenses and separate hand-held flash (cable-attached). For more information on photographing shells, see Markus Lussi's article in *Strandloper* #237.

Description of the figures

Figure 1. Family: *Conidae*.
Conus infrenatus Reeve, 1848. This specimen from Jeffreys Bay. Range: Jeffreys Bay to Transkei. Habitat: sandy reef.

Comments:
Quite a rare species, with a variety of colours : yellow, pink, orange, white and deep mauve. All colour forms have the characteristic spiral brown spotting. The animal is dirty yellow with brown spotting or speckling. The shell is covered with a thin tan periostracum. This species can be found on top of the reef just using its colouring for camouflage, under rock crevices or sand pockets on the reef. It feeds on worms and has been found at depths of 25 to 35 m.

Figure 2. Family: *Triviidae*.
Trivia phalacra (Schilder, 1930). This specimen from Jeffreys Bay. Range: Cape Agulhas to Transkei. Habitat: reef.

Comments:
This is probably the first published photo of a living *T. phalacra*. It was found underneath a boulder at 25 m. It is likely that, like other *Trivia* species, it feeds on compound tunicates. This is a rare species to find alive, although not uncommonly found washed up on the beach. The shell is pink with basal ribs which extend a short way across the dorsum. The animal totally covers the shell and resembles a compound tunicate which makes finding it and other *Trivia* species extremely difficult.

Figure 3. Family *Cassidae*
Phalium labiatum iredalei Bayer, 1935. This specimen from Algoa

Bay. Range: False Bay to Natal. Habitat: open sand or sandy reef.

Comments:
This shell has a very striking animal being a lovely pale orange colour. The tentacles are also orange and black like the margin of the lip. The front portion of the foot is broad and thickened to enable it to dig into the sand. It lives at depths of 10 to 100 m. As with most molluscs, this species buries itself or hides itself during the day, but at night may be seen moving about on open sand or on the reef. It is known to feed on pansy shells and sea-urchins.

Figure 4. Family: *Olividae*
Amalda obtusa (Swainson, 1825).
This shell from Jeffreys Bay. Range: False Bay to Natal. Habitat: open sand.

Comments:
The animal is white with numerous brown blotches or flecks and totally covers the shell giving it the glossy finish characteristic of the *Olividae*. The spade-like anterior portion of the foot can clearly be seen. This is used for burrowing in the sand. This species spends most of the time buried and was captured by dredging in open sand. It is fairly uncommon and when in fresh condition it is indeed a beautiful shell.

Figure 5. Family: *Nassariidae*
Bullia tenuis Reeve, 1846.
This specimen from False Bay. Range: False Bay to Natal. Habitat: surf zone (rarely) and to depths of 120 m on open sand.

Comments:
This species is not commonly found by diving or dredging. The specimen in Figure 5 was found using scuba and by digging in open sand at about 15 m. It has a lovely white foot, almost like a bridal train. Characteristic of the *Bullia* genus are the two digging lobes of the foot which it uses for "ploughing" into the sand - hence the name plough-shell. The shells in this family are mostly scavengers and will probably feed on any dead or dying animals.

Figure 6. Family: *Nassariidae*
Demoulia abbreviata (Gmelin, 1791).
This specimen from False Bay. Range: Saldanha Bay to Transkei. Habitat: Open sand or sand gullies amongst reef.

Comments:
Shells of this species are commonly called "golf balls" in Jeffreys Bay because of their globose appearance. Shells are tan with brown flecks and covered with a thick hairy periostracum. The foot is white with numerous dark brown blotches. These shells also bury themselves during the day but are not uncommon and can be found at night using scuba. They can be seen moving about on the sand scavenging for food at depths of 10 to 30 m.

Figure 7. Family: *Turridae*
Makiyamaia sp.
This specimen was found in Algoa Bay. Range: False Bay to Transkei. Habitat: Reef or open sand.

Comments:
This is an undescribed species of the genus *Makiyamaia* (Kilburn, pers. comm). This specimen was found by dredging on open sand off Algoa Bay at 15 m. It is very rare in living condition. Some live and hermitted specimens have also been obtained from cray-fish traps off Algoa Bay to a depth of 150 m. The shell is very pretty, having spiral beads of white on a brown background. The animal is a grey-white with white blotches and grey speckling.

Figure 8. Family: *Turridae*
Clionella semicostata (Kiener, 1840).
This specimen was found in False bay. Range: False Bay to Cape Agulhas. Habitat: in sand pockets on reef.

Comments:
An uncommon species, occasionally found on a scuba-dive at night, sometimes moving around in search of food. The shell has a rich orange-brown colour with angular axial riblets. The animal is white with numerous black spots. This species is similar to *C. kraussi* (E.A. Smith, 1877) which has spiral striae, but not as orange as *C. semicostata*. This species, like other members of the *Turridae*, is a carnivore or a scavenger. It lives at depths of 5 to 20 m.

Figure 9. Family: *Marginellidae*
Marginella hayesi Bozzetti, 1993.
This specimen was found at Betty's Bay (S.W. Cape Province). Range: not yet fully established. Habitat: sandy pockets on reef.

Comments:
This newly described species (see *Strandloper* 237, p.10, *Ed.*) is very rare and is known from only a few live-taken specimens. It was found moving on the reef at a depth of 30 meters. It resembles *M. lineolata* Sowerby 1886, but the lace patterning is limited to the mid-section of the body whorl, whereas it covers the whole shell in *M. lineolata*. The animal of *M. lineolata* is also different being white with numerous red spots whereas that of *M. hayesi* is a uniform cream colour.

Figure 10. Family: *Marginellidae*
Marginella lutea Sowerby, 1889.
This specimen was found at Cape St. Francis. Range: Cape St. Francis to Natal. Habitat: sand pockets on reef.

Comments:
Figure 10 features two specimens found at a depth of 40 m. This remarkable pair of *M. lutea* shows an albino specimen on the right and a normal one on the left. This occurrence of an albino shell is very rare indeed. It can be seen, however, that the animal is the same as the normal *M. lutea*. It was originally thought that *M. lutea* was a form of *M. piperata* Hinds, 1844 but it is clear from the constant differences in live-taken specimens that it is a valid species on its own.

Some unusual endemic South African molluscs by Brian Hayes

My Hermit Friends

by Karen Couch,

Ms Couch, who lives in Kansas, USA, is a pen friend of Olive Peel . The illustrations for her article follow on page 12.

Anyone who collects shells eventually becomes acquainted with another "collector", the hermit crab. My introduction to hermit crabs came during a vacation trip to the coast of Texas. There on a mud flat were walking shells, but when I picked one up, it appeared to be empty. One shell was taken home in a plastic bag and I later discovered I had brought with me a hermit crab! The poor crab was in a panic to get out of the bag, so I put him in a dishpan of water and he sat there with his mouth parts whirring. What an interesting creature he was! Unfortunately, I did not have the correct equipment to provide life-support and the hermit died a few days later. But I remember having seen in the "pet section" of a nearby discount store some hermit crabs. The Texas hermit crab had spurred my interest, so I bought a little book that explained how to care for hermit crabs. It answered my mental questions regarding why the crabs in the store were living on gravel with little water while my accidental visitor had to be in salt-water aquarium. The crabs in the store were LAND hermit crabs and it didn't appear that a lot was required to sustain them. I bought the basic supplies and set things up; returning to the store a few days later and purchasing the crabs. Never had I seen an animal so unusual and interesting. My desire was to learn everything possible about hermit crabs.

Because hermit crabs are sold and kept as pets in many parts of the United States, it wasn't too difficult to find more literature about them. The most significant aspect regarding the hermit crab is that there are two types. The aquatic hermit crab requires sea-water to live. Much of the time they are completely submerged and breath with gills similar to those of fish. When they do come out of the water to scavenge for food on the beach, they usually will not stray too far from the water, and they carry some water in their shell. On the other hand, the land hermit crab, or tree crab as they are sometimes called, have gills that are modified which allow them to extract oxygen from the atmosphere. The soft tail has very fine blood vessels on the underside that also absorb oxygen directly from the air. They do require warmth and high humidity, so are found only in geographical areas that can provide this. They will often live some distance from the sea. The first stage of the life of the land hermit crab is spent in the ocean and they gradually adapt to living on land. Some species of land hermits are considered by some authorities as semi-aquatic; they will spend part of their time underwater. There is evidence that at least one species of land hermit will actually drown if submerged too long; these crabs seem to have an aversion to water of any depth. It appears that aquatic hermit crabs do not have the need to associate in groups, but the land hermits are quite sociable and could hardly be considered "hermits".

There are some anatomical characteristics which distinguish land hermit crabs from their sea cousins. In addition to where they are found, physical appearance regarding the eye stalks, length of antennae, and length of the legs bearing the claws are notably different between the two types. Here is where the big differences end, and in my quest to learn more about hermits, I purchased a salt water aquarium setup and began keeping marine hermit crabs. Immediately I discovered that there are many more species of sea hermit crabs than land ones. Incredibly, there are enormous variations in "disposition" or "personality" according to the species. Some are very shy, and some have a real temper. Many sea hermits, I learnt, have very specific environmental requirements and therefore did not live long in the aquarium. I believe that these are best left in the ocean where they can reproduce. This is also somewhat true of the land hermit crabs. They are not all alike. I have kept three species of land hermits, and had real success with only one.

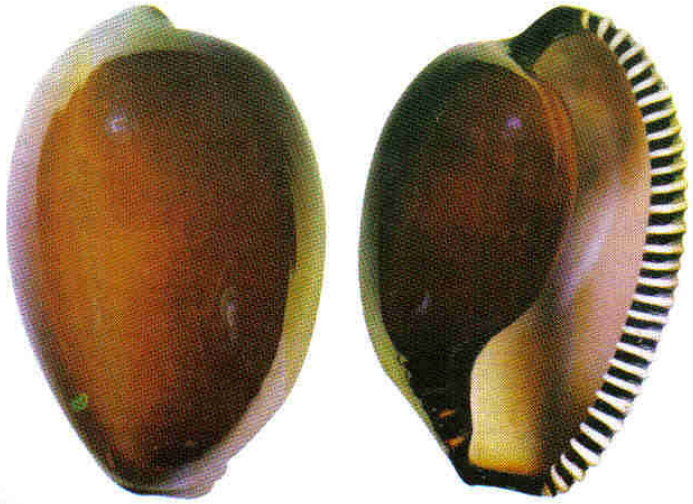
The most interesting aspect of the hermit crab is, of course, its shell home. This shell is not really a part of the crab, but he uses it as a protective covering for the soft tail that is otherwise easily damaged. If the shell of a snail is not available, the crab will bury his tail in the sand or find a substitute, a small bottle perhaps. The behavior of a hermit crab looking at a prospective new home is quite amusing. The hermit will feel the shell with his legs; rolling it over and over. He will check the interior with his claws, and if everything is acceptable he will "try it on for size". If the hermit is not being observed by another crab waiting to grab the old shell, he will even walk around with the new shell to decide if he really likes it. Sometimes after a "trial run" he may return to the old shell he left and move back into it. There are stories of shell collectors who unwittingly leave recently cleaned shells outside to dry, only to find that hermit crabs came in the night and traded their old shells for better ones! The shell selection is a very important event repeated many times in the life of the crab- it is just as necessary for his wellbeing as food and water. A hermit crab will not otherwise voluntarily leave his home; he will allow himself to be pulled apart first. Some shell collectors, out of consideration for the crab, will place desired shells with their crab occupants in a plastic bag of water in the sun. When the water becomes too warm, the crabs will leave the shells and can then be released where they can find new shell homes and go on living. In some areas, certain species of hermit crabs grow quite large and are actually used for food. They can also be sold in shops in Florida- preserved with their shell and sold as souvenirs. ⇨⇨⇨⇨ *continued* ⇨⇨

Coenobita clypeatus (Herbst, 1791), from Caribbean, occupying *Cittarium pica*. Note how neatly the aperture is closed with the large claw.

Hermit crabs, continued from pg 11
I hope the reader has been enlightened, educated and entertained regarding the sometimes overlooked hermit crab. My personal experience in keeping these wonderful creatures in captivity has certainly deepened my appreciation of them.

More on *Chimaeria incomparabilis*

Strandloper 237, p.3 contained some details of this striking new shell. Further details have now been published in Dr Raybaudi Massilia's magnificant magazine, *World Shells*, no. 5, 1993, pp. 14-17. Specimens of the shell were apparently trawled by Somalian fishing boats. It is not yet clear whether the mollusc belongs in the Ovulidae or the Cypraeidae, although Briano has placed it in the latter.



Chimaeria incomparabilis. Photo courtesy Mr Bruno Briano, dealer in shells, rocks and fossils, address: C.P. A Savona Ferrovia - 17100 Savona ITALY

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