The Strandloper

BULLETIN OF THE CONCHOLOGICAL SOCIETY OF SOUTHERN AFRICA

No. 171 APRIL / MAY 1975

THE OCTOPUS AND ITS ALLIES

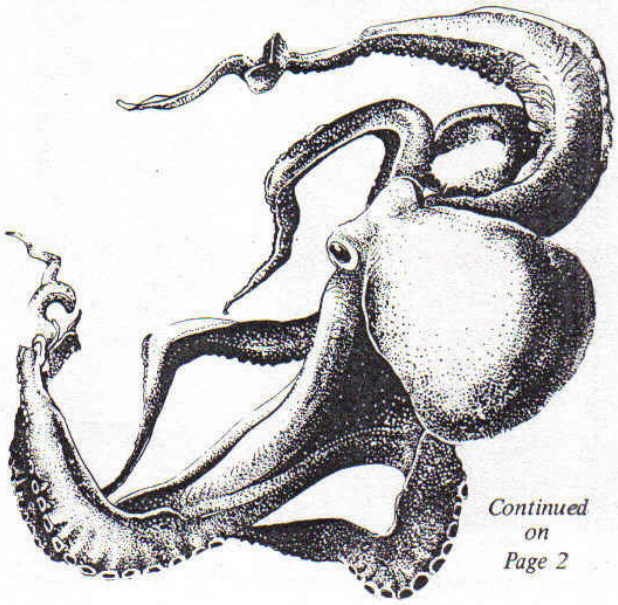
Molluscs are known to everyone, from the gourmet who enjoys a plate of oysters, to the gardener cursing snails and slugs for destroying his precious plants, but it is less well known that the octopus and its allies are closely related to these.

The class Cephalopoda, to which the octopus belongs, also includes cuttlefish, squids, the pearly nautilus and fossil ammonites. The major difference between cephalopods and other molluscs is due to their changed mode of life; cephalopods have abandoned the creeping locomotion of limpets and snails and have become adapted to a more active life of swimming though some, like the octopus, have reverted to bottom dwelling. In association with their change of habitat, the cephalopod anatomy changed, so that the foot, used by other molluscs for crawling, moved forward and became branched to form the arms around the mouth (in front of the head), as well as the funnel which plays a major role in locomotion. This change of the foot is reflected in the name Cephalopoda which translated, means "head foot".

Another change accompanying the more active mode of life was the gradual loss of the bulky and cumbersome shell. The early cephalopods, the ammonites and nautiloids, now known only from fossils, had external shells, and some of them attained enormous size. But this was obviously not the solution to life's problem, and these animals became extinct. The sole recent representative of these early forms is the pearly nautilus, still found in the Indo-Pacific region. In the remaining cephalopods the shell was gradually reduced in size and became internal. Thus the animal *Spirula spirula* has a small coiled internal shell at the posterior end. These shells are chambered and used for buoyancy, and when the animal dies, the gas-filled shells drift until they are washed up on beaches where they are commonly found in South Africa. They are sometimes known as ramshorn shells.

The best known cephalopod shell is that of the cuttlefish. These shells are even more common on the beaches than that of *Spirula* and are given to cage birds to sharpen their beaks. In the case of the cuttlefish, the now internal shell has become coiled and the ventral half of the cylinder has been lost, leaving a flattish structure with air chambers which is still used for buoyancy, as well as maintaining rigidity of the body. In the squids the shell has been further reduced, leaving a thin horny pen, the only function of which seems to be to maintain rigidity. Since squids are heavier than sea water and can no longer depend upon the shell for buoyancy, they must keep swimming to avoid sinking.

The octopus has reverted to living on the bottom, and has lost the shell altogether. The result is that this animal has no rigidity and can squeeze through remarkably small openings, the only limiting factor being the size of the eye ball, since the eye is a fluid-filled sphere and hence relatively incompressible. Certain species of octopod, the argonauts, have again become pelagic, and have developed a secondary shell, the paper nautilus. In these animals one pair of arms have very large membranes which secrete the shell and hold it around the animal. The holes in the shell correspond with the suckers on this pair of arms. The shell is used primarily as a brooding chamber for the eggs and probably also helps the animal to stay afloat, since a certain amount of gas, probably air, is trapped in the coiled apex of the shell. The extent to which the argonaut can regulate its buoyance is not known. Superficially the shell of the paper nautilus resembles that of the pearly



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THE CONCHOLOGICAL SOCIETY OF SOUTHERN AFRICA

(Founded 1958)

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All enquires should be addressed to the Secretary, The Conchological Society of South Africa, P.O. Box 98, Howard Place 7450, Cape, South Africa.

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The Society's Bulletin, The Strandloper is issued free to members.

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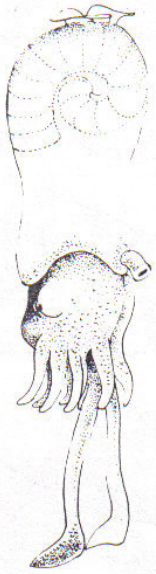
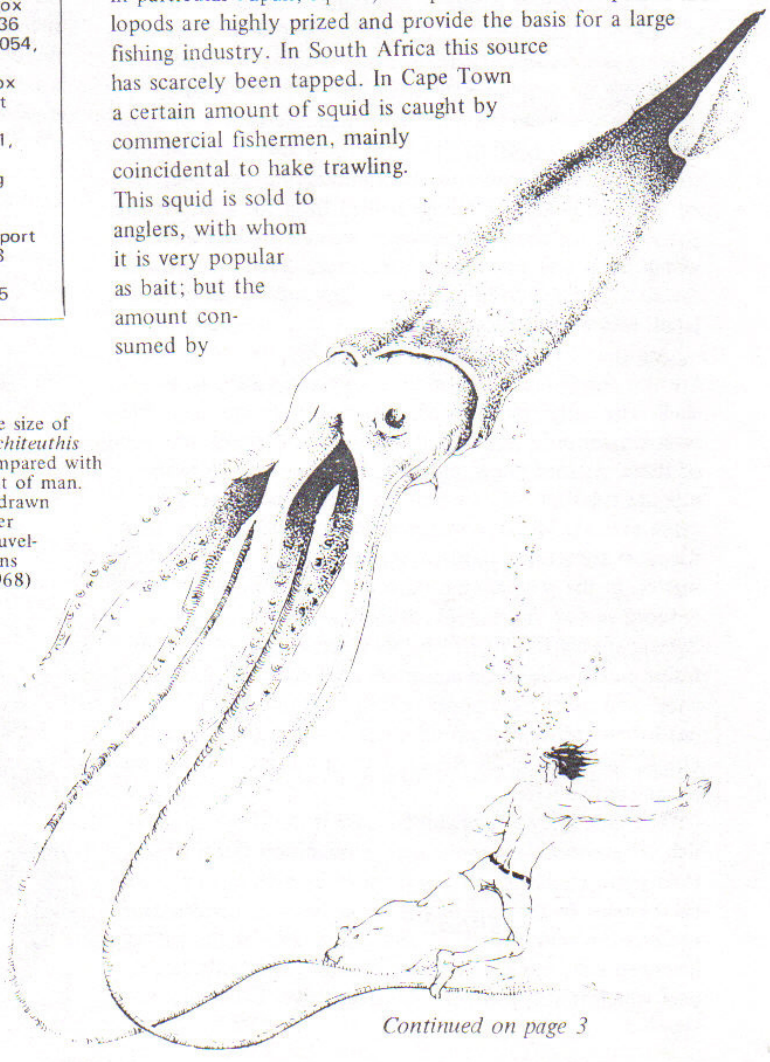


Above: *Spirula spirula* with the position of the internal shell indicated by dotted lines.

nautilus, hence the similarity in their names. But in fact there is a vast difference between these two animals and their shells, which represent opposite extremes in the cephalopods.

The shell of the pearly nautilus is secreted by the mantle (the muscular sheath covering the body), is chambered and used for buoyancy, whereas that of the argonaut or paper nautilus is secreted by the membranes of the arms, is not chambered and is used primarily for brooding the eggs, and perhaps also for buoyancy regulation. By far the most common paper nautilus in South Africa is *Argonauta argo*, familar to all who have collected these prizes along the beaches near Cape Agulhas, where the shells seem to wash up most frequently.

Other common South African cephalopods are *Sepia officinalis*, *Loligo vulgaris* and *Octopus vulgaris*. The cuttlefish *Sepia officinalis* is very common in Langebaan Lagoon, Knysna Estuary and Durban Bay, as well as offshore. At Langebaan it was at one time fished commercially, but there seems at present to be no demand for this species which is considered a delicacy by the people of the Mediterranean countries. Unfortunately South Africans are very conservative eaters, and are wary of unusual food, but with the steadily increasing price of meat they may in future come to realise that the cephalopods are good eating and very nutritious. In other parts of the world, and in particular Japan, squids, octopuses and other cephalopods are highly prized and provide the basis for a large fishing industry. In South Africa this source has scarcely been tapped. In Cape Town a certain amount of squid is caught by commercial fishermen, mainly coincidental to hake trawling. This squid is sold to anglers, with whom it is very popular as bait; but the amount consumed by



The size of *Architeuthis* compared with that of man. Redrawn after Heuvelmans (1968)

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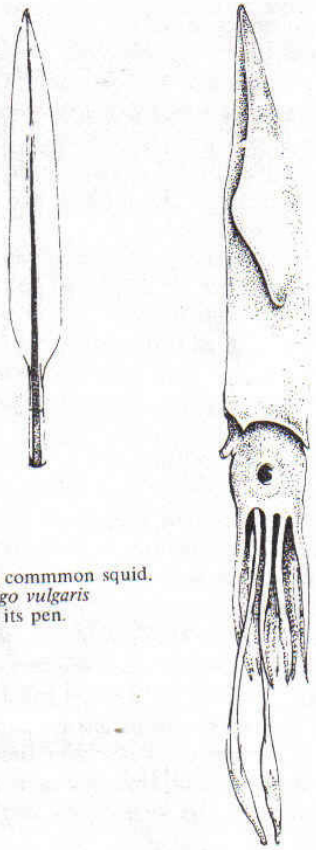
humans at present is very small. The most common squid caught in this way is *Loligo vulgaris*, known locally as chokka, an ubiquitous name also used sometimes to describe the cuttlefish, or even the octopus.



The commmon squid, *Loligo vulgaris* and its pen.

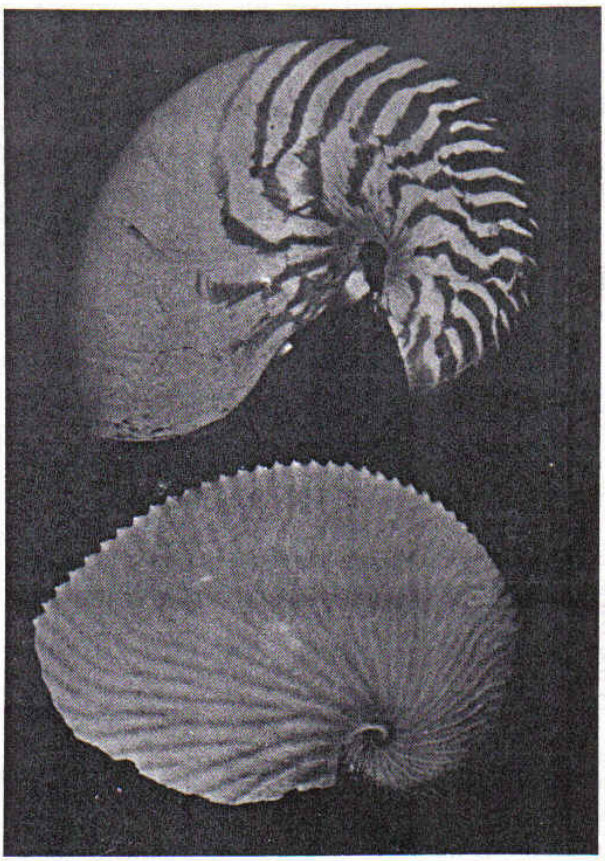
A certain number of octopuses, mainly *Octopus vulgaris*, are caught by anglers or in commercial trawls, and sometimes even in rock pools. Octopus is more frequently eaten than squid, by a relatively small number of people who have overcome their squeamishness sufficiently to appreciate the delicate flavour. The octopus is usually killed by "turning the cap", which is erroneously thought to be turning the head inside out, but it is in fact the mantle, or body, which is inverted; the head is the region between the body and the arms.

Apart from being a potential food source for man, the cephalopods are also important as food for many other animals. They are preyed upon by most of the large marine carnivores, including sea birds, fish, whales, dolphins and seals. Indeed the toothed whales feed predominantly on squid of various types, one of the most interesting being the giant squid *Architeuthis*, which grows to enormous size and is the largest known invertebrate. Giant squids are not caught in nets and are only known from whale stomachs and occasional strandings. For some reason these enormous squids seem to wash up fairly often at certain places, such as Newfoundland, Northern Europe and New Zealand. It is thought that this may be due to the animals entering water of a different temperature and/or salinity, but at this stage the reasons for strandings are still conjectural. In South Africa, giant squids have been recorded only from whale stomachs. One of the largest verified giant squid recorded was stranded in Newfoundland and had a total length of 18 metres. This figure is misleading however, since a large part of the total length is taken up by the two long tentacles. A more realistic way of indicating the size of a squid is by the mantle length, in this case some 5 metres. Most giant squids are somewhat smaller, however, having a mantle length under 2,4 metres. This is still a very impressive size, as can be more easily visualised from the drawing.

At the other extreme, the smallest known cephalopod is a little animal somewhat like a cuttlefish, known as *Idiosepius*, which has a mantle length of only a few milimetres when mature.

Stories of giant octopuses are largely due to the imagination of novelists. The largest species is one occurring in the Pacific, off the West Coast of America, which attains the size of some 9 metres from armtip to armtip, but here again a large part of the size is due to the very thin elongated tips of the arms, and the mantle is only about half a metre long.

Other interesting features of the cephalopods include the beaks, eyes and mode of locomotion. The mouth of the cephalopods is equipped with a pair of beaks similar to that of a parrot, except that the lower beak overlaps the upper. In addition there is a molluscan radular, a "tongue" with many minute teeth arranged in rows, used for rasping. Thus in feeding the squid grasps its prey with its arms, takes a bit with the beaks and finally rasps the food to very small pieces. The result is frustration for the scientist



Comparison of the shells of the pearly nautilus, *Nautilus* (top) and the paper nautilus, *Argonauta* (below).

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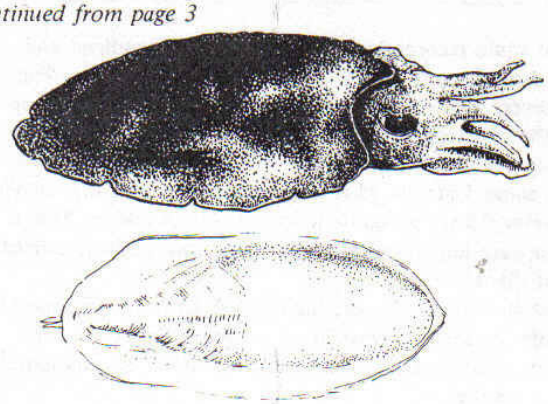

Above: The common cuttlefish and its shell.

trying to find out what the squid eats, as the food has become an unrecognisable mush by the time it reaches the stomach!

The eyes of cephalopods are remarkably well developed and are comparable with, though not the same as, those of mammals. Since all cephalopods (except the pearly nautilus, which is a scavenger) are carnivorous, the well developed eyes are important in finding and catching prey, Their rapid means of moving is also important for this, and cephalopods developed jet locomotion long before aeroplantes were thought of. Jet locomotion is accomplished by drawing water into the mantle cavity and then forcing it out through the funnel at high speed, so that the animal moves in the opposite direction. Since the funnel can be moved through a complete circle, the animal can move forwards, backwards or sideways, though the most efficient, i.e. the fastest, movement is backwards, as the animal is most streamlined when travelling in this direction.

In all, cephalopods are a remarkably interesting group of animals, having achieved a successful mode of life comparable with that of fish. Relatively little is known about these molluscs, perhaps because their good eyesight and rapid movement frequently enables them to escape nets, but with increasing efficiency and effort in collecting methods the gap in our knowledge is slowly closing, although many questions are still to be answered.

FURTHER READING:

F. Lane, 1960. Kingdom of the Octopus. Sheridan House, New York.

B. Heuvelmans, 1968. In the wake of the sea-serpents. Rupert Hart-Davis, London.

National Geographic has published articles on cephalopods in the following issues:

August, 1935 – Marauders of the Sea, by R.W. Miner.

March, 1967 – Squids: Jet-powered Torpedoes of the Deep, by G.L. Voss

December, 1971 – Shy Monster, the Octopus, by G.L. Voss.

COLLECTING SHELLS

By D. GOULD

How did you start collecting shells?

For my family and I it started innocently enough with a holiday spent at Jeffrey's Bay. We had read of the shells to be found at this resort in a magazine article dealing mainly with the late Miss Kritzinger's collection. Decided it looked an attractive place, hired a house, loaded the Kombi with humans, their gear plus the dogs and off we went. Little did we know . . .

That year was a very good one for beach collecting and we made the most of it. When we arrived we settled in and then almost immediately made for the beach. Well! When our eyes made contact with all that treasure just lying around for us to pick up (we were very green in those days and picked up everything in sight), little did we know the shell collecting bug had bitten hard and deep.

By observation we soon realised that the best time for collecting was the early morning. It then became a common sight to see five humans plus dogs plus containers (anything from paper and plastic bags, buckets, woolly caps and mother's pots when she wasn't looking), legging it up and down the beach. Quite soon we all developed that fomous shellers' stance, bottoms in the air, heads well down and dressed in the oldest and warmest clothes – it was winter time. The dogs did their bit too and on seeing their humans staring intently at one little spot, dug deep holes for our inspection and at the same time generously spraying us with fine sand. One only retired when it rained heavily or one's fingers were so blue with cold they could no longer pick anything up.

I don't think I need say at this stage that each member who had picked up a shell considered his or her find the prettiest, the best and definitely in a class of its own. We just didn't know about good and bad specimens.

Then came a visit to Miss Kritzinger's home to see her collection! Hours later we staggered out into the cold air in a state of shock and excitement. We were still delighted with our own shells but confused and bewildered at the staggering array to be had, and at the depth and scope of our new found hobby.

When the time came for our return to Cape Town, we barely found room for ourselves and the dogs in the Volkswagen Kombi. You see, every inch of space was taken up by boxes and more boxes of shells. By then every shopkeeper in Jeffrey's Bay, and lots of other people besides, knew us by our continuous quest for bags and boxes.

Back home, after sorting, my Mother and I decided we would be owners of the shells but would keep separate collections. Eventually we realised too that we had to find some other way of housing these shells other than boxes of all descriptions. We chatted to many people about this fabulous new hobby of ours and then a shopowner from whom we bought the needs for many of our other hobbies, suggested tentatively that a couple of old, disused and slightly broken cotton reel cabinets might be of some use.

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Might be of some use, did she say? We snapped them up with such rapidity, she didn't have time to breathe after having made the statement! Soon these were filled and over the years we have added other housing ideas.

But we still didn't know anything about the actual shells themselves. Then one day we read an article in a local newspaper on the shell club. Quickly I phoned the then secretary, charming Mrs. Giles, attended a meeting and became a member.

Our hobby now became more disciplined. We wanted to know more and set about doing just that. To say we jumped in at the deep end and started swimming frantically is an understatement. We bought books, chatted to members especially the unbelievably knowledgeable and helpful Mrs. Connolly, attended field days as time allowed and tried very hard to gain some small knowledge. Everyone it seemed knew far more than we did and we soon learnt to keep a straight face and not show our lack of knowledge.

Then I became a corresponding member of other shell clubs and in this way learnt about exchanges and further about the world wide need for conservation.

To date our knowledge, like our collections, is still small but we hope both will continue growing in the future.

EXCHANGES WANTED

Mr B.O. Lafferty, 229 Adeline Avenue, Hamilton, Ontario, Canada L8H 5T9. Would like to obtain some of the more common cowries and trivia. Mr Lafferty is formely from Natal and is now living inland and finds that he is running out of specimens for exchange.

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Mr J. Trondle, B.P. 1753, Papeete, Tahiti. Would like to contact South African collectors with the view to exchanging.

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Mr J.F. Singleton, C/o GPO Shay Gap, W.A. 6761, Australia. Is a 'cone-nut' in Australia and would like to exchange specimens of Conus gilvus from the north west Australian coast, for some South African specimens of the same species.

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Mr G. Poppe, Paleizenstraat 130, 1030 Brussels, Belgium. Wants to establish exchange contacts. Can offer shells from Belgium, France, Netherlands, Spain and the Mediterrean.

****

Mr J. Hermans, Waterstraat 132, B.9110 Sint-Amandsberg, Belgium. Can offer shells from Europe and North Africa (common and rare) and would like to make exchanges with members.

****

Mr A.S.D. St. John, Box 242, Post Office, Karratha, Western Australia 6714. Has specialised in conus, cypraea and bivalves, but would also like to obtain some West African cymbium by means of exchanging with South African collectors.

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INTERTIDAL TALK

With this issue of The Strandloper we take another step towards the improvements which were promised some time ago. Number 121 saw the adoption of our motif, *Afrivoluta pringlei*, and the change to the metric size paper. Number 141 saw the adoption of the name "The Strandloper" and now we go into print. The Society has grown somewhat since it was founded in May, 1958 with a membership of 31. Today we dispatch 306 copies of The Strandloper each issue, a number which we hope will soon increase considerably.

In the October, 1974 issue of The Strandloper (No. 167) we published an account of a shelling trip to Mocambique by Mr J. Polack, together with a list of some of the shells found. As a result of this Mr N. Webb of Lusikisiki wrote to say – "I read with interest the article in the October issue of The Strandloper, particulary in regard to the cowries he found. I am particulary interested in the cowries of South African waters and it might be of interest to collectors to know that I have found all the types mentioned by him on the coast of Eastern Pondoland in the Transkei, except for *C. histrio*, *C. kieneri*, *C. argus*, *C. caurica*, *C. onyx* and *C. stolida*. But in addition to those listed as from Mocambique I have found *C. arabica immanis*, *C. capensis*, *C. caputserpentis*, *C. citrina*, *C. contaminata*, *C. edentula*, *C. felina*, *C. hirundo*, *C. limacina*, *C. marginalis*, *C. poraria* and *C. teres*. This amounts to a total of thirty-one types of cowry I have found on this part of the coast. Some species are, however, rare and apart from *C. talpa*, *C. annulus* and *C. arabica immanis* all are beach specimens, but in excellent condition. The finding of *C. capensis*, *C. edentula* and *C. contaminata* is rather interesting as this area is normally beyond their range, the first two too far north and the last too far south. In addition to the cowries I have also found many other shells of interest. The spots where the shells are to be found are few in number and very isolated, some involve a hike of two or three miles. I have directed genuine collectors to the spots and will continue to do so."

The formation of a sea reserve in the Port Elizabeth area is seen as a step towards the preservation of our over exploited sea life and is welcomed by the Society. The area is a 6,7 kilometre stretch of coast line between Schoenmakerskop and Bushy Beach to the west. The reserve, which stretches from the spring tide high water mark to one kilometre out to sea, was proclaimed in the Government Gazette towards the end of last year. Fishing, bait collecting and any activities that disturb sea life have been banned in the reserve which has examples of all typical marine habitats of the Eastern Cape. The members of the Eastern Province Group of the Society have made a project of compiling a check list of the molluscs to be found in the reserve.

We would welcome any article of interest to Shell Collectors for future publication.

DIVING FOR TREASURE

By G. VERHOEF

The north-wester had been blowing all week and when we arrived at Gansbaai the sea was rough. So, as you can imagine, we were feeling more than a little disgruntled with our prospects of diving, and expecially of our chances of finding the famous wreck of the "Birkenhead". I spoke to one of the locals at the hotel who told me that the wind never gets up before 9.30 in the morning and if we wanted to dive we should dive as early as possible. We set our alarms for 5.00 a.m. and, sure enough, we awoke just before it became light. How we were able to get down to the harbour and out to sea before sunrise I cannot remember, but it was a lovely morning and the sea was calming down.

We had planned this dive for months and, come hell or high water, I was going to make an attempt.

I can remember the sun coming up as we arrived at the large blinder which had been the cause of so many men losing their lives, and looking back towards land and seeing the rays of the sun reflecting on the red and white light house which seemed so far away. The sea was still rough and it was impossible to drop anchor. However, Ernst Brinkman and I decided to try anyway, much to the trepidation of all on board. Within minutes we were in the water. Due to poor visibility of five feet we kept close to each other, and dropped down.

I have dived for some time now but have never experienced anything so eerie. We could see nothing at all as we went down and down and down. All of a sudden the ocean bed came up towards us and my natural reaction was to put my hands in front of me to protect myself against the oncoming collision. As I put my hands out I saw a small sponge-like object move away. I immediately recognized it to be either *Cypraea fuscorubra* or *Cypraea gondwandalendensis*. Ernst, who was just behind me, could not understand why my face was so close to the rocks and that I could not be moved. I looked at my depth gauge and saw we were at eighty-five feet. I beckoned him to follow me and I moved slowly up the side of the blinder. Within minutes I found another *Cypraea*. This had a different mantle and was eating off rough coral grass.

From then on time seemed to fly and my air had to be turned on to reserve which meant we had to surface.

As we got back to the boat everyone shouted, "Have you found the wreck?" Without thinking I said, "What wreck?"

WANTED TO BUY OR SWOP

Anybody who wants to sell or to swop a *Cypraea cruickshanki* and/or *Cypraea fultoni* and/or *Conus milneedwardsi*

PLEASE WRITE TO:

Francine Stäger-Le Clair,
Poste Restante, Main Post Office, Market Square,
Port Elizabeth

AROUND THE GROUPS

Natal Midlands, Pietermaritzburg. At our meeting held on 1st March Dr Kilburn gave us a talk on the Xenophoridae. After a general account of their characteristics and biology, their various adaptations were discussed, as well as the probable evolutionary course of their most striking adaptation, that of attaching foreign bodies to their shells. Specimens of all four species occuring in South Africa were exhibited.

Pretoria. The family Strombidae, with special reference to the Genus Lambis, was discussed at our March meeting. After the tea break Miss du Preez showed slides taken during her visit to the Yellowstone Park in the United States. Not only did she prove to be be an excellent photographer but commentator as well, with all manner of interesting data at her finger tips. It was interesting to note that the article in the February issue of the S.A. Panorama had to date resulted in one new member.

Border, East London. Our March meeting opened with general discussion during which Mrs Latigan reported that two live *Volva sowerbyana* had been taken off Nahoon. One of these was still alive in the aquarium on the beach front. It was noted that the Eastern Cape Group had agreed to help with the making of a check list from Jeffries Bay to the Natal Border. Mesdames Brickhill, Hulley and Latigan then gave a most interesting talk on the family Trochidae.

Eastern Cape, Port Elizabeth. At our March meeting we discussed the family Fasciolariidae. Mrs Mears showed a small pearl found in the oyster *Pinctada capensis* and Mr Graeve displayed a fairly fresh *Cypraea moneta* he had found in the P.E. Sea Reserve. A field day had been held on 16th February at which only six people were present. This was a pity as it had been a good day for shelling and many species had been collected. It was reported that the sub-committee responsible for the filling in of the check-lists had met twice during February – progress was slow but it was very interesting work.

Natal, Durban. March was quite an active time for the Group. Firstly there was the meeting in Pietermaritzburg at which Mr Kilburn gave a most enlightening talk on the family Xenophora. This was very well attended by members of our Group who we are sure enjoyed it, and secondly there was our shell hunt at Kelso and Park Rynie, but as usual the weather was against us. If ever the farmers want a drought broken, they should get us to arrange a shelling outing – it never fails! The Saturday was a complete washout, but the Sunday had its rewards. Unfortunately the area we had chosen at Park Rynie was over crowded, so it was decided to go to Kelso. The late-comers didn't know this, so tried their luck, but without success. Kelso proved much more profitable and a good variety of shells was collected.

Headquarters, Cape Town. Our March meeting was very well attended. Messrs Carlsson, Verhoef and Watt showed the slides they had taken on the field outing at Cape Hangklip. In most cases the members where unaware they were being photographed with the result that the poses were typical of all shell collectors. Mr Simon then gave a most informative talk on sea-weeds with special reference to the food value for mulluses and the effects of pollution on seaweed.

NEW MEMBERS

Mrs P.I. Noble, 5 Jeffcoat Avenue, Bergvliet.
Mrs F. Stäger-Le Clair, Poste Restante, Main Post Office, Port Elizabeth.
Mr K.L. Brown, 1 Arend Avenue, Windsor Glen, Randburg.
Mrs P.G. Sydie, 16 Vaal Road, Farrarmere, Benoni.
Mr F. Maurice Maurel, Riviere-Des Anguilles, Mauritius.
Mrs V. Heath, P.O. Box UA 5, Union Ave., Salisbury, Rhodesia
Mrs. Y.A. Snelling, 10 Alexander Road, Umtata, Transkei.
Dr A. Saks, 279 Silver St., Muckleneuk Hill, Pretoria
Master B. Ridgway, 2 Neethling Street, Strand.
Mrs M. van Rensburg, 9 Vulcan St., Kensington, Johannesburg
Mr L. Shapshak, P.O. Box 10439, Johannesburg.
Mr A.D. Da Silva Ramalno, Rua Do General Rosado 1075, Lourenço Marques.
Mr C. Rondos, 284 Davenport Road, (Flat B), Glenwood, Durban.
Mrs D.P. Currie, 3 Meyer Drive, Wright Park, Springs.
Mrs R. Tosefsky, 35 Aster Rd., Cyrildene, Johannesburg.

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