

THE CONCHOLOGISTS' NEWSLETTER

No. 74

ISSN 0573-2336

Newsletter Editor: P. E. Negus,

September 1980

Chelsea Bridge Road,
London,

Produced by THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

A CONCHOLOGIST'S TOMBSTONE

Tombstones in churchyards and public cemeteries frequently give details on occupation of the deceased, but these are usually ones like surgeon, vicar, mariner, etc. and "conchologist" is not an occupation to be expected very often. A large *Tridacna* shell on a tombstone in The Royal Borough of Kensington and Chelsea Cemetery in Hanwell, west London, drew the attention of Mrs. Janet Ridout to something unusual. In this case the shell is of more than decorative significance. The inscription below reads:

"IN
LOVING MEMORY OF
EDGAR ALBERT SMITH, I.S.O.
CONCHOLOGIST, BRITISH MUSEUM
BORN NOV. 29th. 1847.
DIED JULY 22nd. 1916."



E. A. Smith was a member and past President of this Society and he published extensively on a wide range of molluscan topics. An obituary was published in the Journal of Conchology volume 15, 150-153 and in the Proceedings of the Malacological Society of London volume 12, 215-217. A photograph of E. A. Smith appears on Plate XXXIII of "Shell Collecting. An illustrated History" by S. P. Dance (1966).

In his career, Smith followed in the footsteps of his father since they both worked in the Zoology Department at the British Museum, father as an entomologist and son as a conchologist. E. A. Smith entered the service of the Museum at the age of twenty when the famous Sir Richard Owen was in charge of the Natural History Department. During the course of his career, Smith experienced the transfer of the Natural History Department from its old base in Bloomsbury to the new building and location in South Kensington, where it is today.

Smith was at the British Museum (Natural History) during a busy period in the molluscan world. The Museum had purchased the vast collection of Hugh Cuming and this brought a considerable work-load in the form of registration of specimens and re-housing of the collection. In addition to routine museum work, E. A. Smith published large numbers of scientific papers and monographs. At this time there were many expeditions bringing back new species for naming from all parts of the world. Smith produced reports on the Mollusca from Antarctica and the polar regions to the tropical climates of Africa, the Pacific Islands and the West Indies. While most conchologists restrict themselves to either marine or non-marine species, Smith tackled land and freshwater shells as well as marine bivalves, gastropods and cephalopods, for he was an all-round naturalist typical of the Victorian era. His publications were scattered over many journals including the Annals and Magazine of Natural History, the Proceedings of the Zoological Society of London, Philosophical Transactions of the Royal Society, Proceedings of the Malacological Society of London and the Journal of Conchology. He also published reports for the "Challenger" and other expeditions.

As one would expect he was a member of many scientific societies, and in the molluscan field he also served as President of the Malacological Society of London.

In addition to the tombstone personalised with the Tridacna shell in Hanwell, his many publications and new species serve as a fitting memorial to a versatile Victorian conchologist.

June Chatfield

'FICUS DESPICATA' OLIVER, 1979

Yes, 'despicata' not 'despicatus' because Ficus, like Venus, is a feminine noun although it ends in 'us'. And yes, 'despicata' because of all the families of marine gastropods which include medium or large sized shells, the ficidae seem to attract the least interest. And that despite the fact that they are graceful and attractive to look at, and most of them not difficult to come by.

I get the impression that all the authors of the books in my library deal with them in the shortest possible way and only include them because they exist! The number of recent species is given by Cernohorsky as 'about half a dozen', Wilson and Gillett as 'less than a dozen', and Dance as 'about fifteen'.

In case anyone else feels sorry for the ficidae, I have drawn up the table below from those books I have access to, in the hope it may be helpful. I should appreciate any comments, additions or suggestions. The numbers across the top refer to the publications as follows:-

1. Dance. Encyclopedia of Shells.
2. Wilson & Gillett. Australian Shells.
3. Cernohorsky. Marine Shells of the Pacific, II.
4. Hinton. Guide to Australian Shells.
5. Habe. Shells of the Western Pacific in colour. Vol. I.
6. Kira. Ditto. Vol. II.
7. Barnard. Annals of the South African Museum.
8. Abbott. American Seashells.
9. Rios. Coastal Brazilian Seashells.
10. Keen. Seashells of Tropical West America.

SPECIES	SYNONYMY	1	2	3	4	5	6	7	8	9	10
(F. ficus Linne, 1758		x	x	/	/	/	/	/	/		
(F. variegata Røding, 1798	laevigata Rve. 1847			/	/	/	/	/	/		
F. ficoides Lamarck, 1822	reticulata Rve. 1847		x	/	/	/	/	/	/		
F. filosa Sowerby, 1892		x	x	/	/	/	/	/	/		*
F. gracilis Sowerby		/	/	/	/	/	/	/	/		
F. subintermedia d'Orbigny, 1852		/	/	/	/	/	/	/	/		
F. tessellata Kobelt, 1881		x	/	/	/	/	/	/	/		*
F. ventricosa Sowerby, 1825	decussata Wood, 1828									/	
F. communis Røding, 1798	papyratia Say,										
	reticulata Lamarck, 1822	/	x						/	x	*
F. carolae Clench,									x		*
F. atlanticus Clench & Aguayo, 1945										x	*
F. dussumeri Valenciennes											*

/ = illustrated

x = mentioned but not illustrated

NOTES:

1. The Ficidae have thin, fig-shaped shells with a low spire and an inflated body whorl. They have a more or less reticulated sculpture, the spiral threads usually being stronger than the axial. They have no operculum, a wide aperture and the animal has a small head, a long siphon and a large foot. The mantle lobes are broad and cover most of the shell. The animals are active sand dwellers, and live on sea-urchins and other echinoderms.
2. F. ventricosa is a Tropical Western American species; F. communis and F. carolae are Florida species; F. atlanticus is Brazilian and the rest are from the Indo-Pacific. Their distribution seems odd as they do not appear to be represented in the Mediterranean, West Africa, the Caribbean, the Red Sea, Persian Gulf, Hawaii or New Zealand. The area between and including Australia and Japan seems to be where they are most abundant.
3. Of F. ficus Linnaeus, 1758 Cernohorsky says "this is a composite species and includes all known ficid species. We have adopted Røding's name F. variegata which was based on a good illustration of a specimen from the East Indies." Hinton gives variegata as a synonym of ficus.
4. Of F. carolae Clench, Tucker Abbott says that it is very rare and was first discovered off Key Largo, Florida.
5. Of F. atlanticus Clench & Aguayo, Rios says that it is a deep water species recorded off Salvador, BA. Brazil, and that it is known only from the type locality.
6. F. dussumeri Valenciennes I have found mentioned only in Tom Rice's Catalogue of Dealers' Prices. It is said to be from the Indo-Pacific.
7. F. tessellata Kobelt is said to be from the Australian Province by Dance.

Wilson says that it is common and found from North-West Cape to Broome, Western Australia. He goes on to say "Literature records of this species from the Philippines and other Indo-West Pacific localities need confirmation." I have a very dead specimen collected by myself in Malaysia which I am almost certain must be F. tessellata; although bleached white the brown spots are still faintly discernable.

8. Tom Rice's Catalogue of Dealers Prices quotes prices for all the species in the above table except F. atlanticus: F. dussumeri at U.S. \$5, F. carolae at \$4.50 and the others at \$2.50 or less.

Acknowledgements and thanks to those authors whose books are mentioned, and from some of which quotations given.

Any unloved and unwanted specimens of ficus (especially those marked with an asterisk in column 11), would be appreciated by the author of this article. If I can obtain examples of sufficient species, I shall try to write a further note to help distinguish each.

A. P. H. Oliver

LITTORINAS FROM GUERNSEY'S WEST COAST

Nipple Rock and Round Rock are parts of the granite reef which stretches northwards from the Handois Lighthouse and protects Rocquaine Bay on Guernsey's west coast from the full force of the Atlantic. Nipple Rock is 1,200 yards from the shore, and Round Rock 1,000 yards. Both rocks are in the direct wash of the Atlantic and are exposed at low tide but are always subject to wetting in a way that makes this an untypical littoral situation.

Several years ago I had the opportunity to visit Nipple Rock and found there a very small Littorina whose appearance was unusual in my own limited experience. Unfortunately these shells were lost before they could be identified and it was only in September 1979 that I was able once again to visit the rocks.

Nipple Rock is a grey-green granite flecked with darker hues and for some time I was quite unable to locate again the Littorina, so excellent is its camouflage. On this rock the shells are grey-green in base colour, speckled with yellow, brown and black longitudinal flecks between the ribs. The shell is dark brown inside, is more broad than high, has a diminished spire, and is very flattened. The great majority are very small and a large specimen measures 7mm high by 8mm broad. The shells appear to be restricted to a few fissures along the crest of one ridge about half way up the rock. Dr. Vera Fretter of Reading has identified the shells as Littorina saxatilis.

Round Rock has similar shells on it where, at the northern end, it is composed of the same grey-green flecked granite. Here the shells are found in much greater quantity, and are not confined to a few fissures. They are very slightly larger, are markedly less flattened and have a much more distinct spire.

Round Rock is of additional interest because it is composed of three granite colourations, running in quite distinct bands diagonally through it. The grey-green fleck is to the north, pink granite forms the middle band, and the southern end in dark grey granite which looks black when wet.

The colour of the Littorinas on this rock conforms to the colour of the bands on which the shells are to be found, and there appears to be no overlap between the separate colourings. Thus the grey-green flecked specimens are confined to the northern band of colour. The central pink band is inhabited by pink,

amber and rust-brown shells which are pink-brown inside. The southern darker end is populated with drab coloured shells, dark brown inside.

Both the pink and the drab shells are very much larger than the grey-green flecked specimens, the largest of the drab shells measuring 15mm high by 12mm in breadth. They are much more typically Littorina saxatilis although Dr. Fretter notes that some authorities would assign them to a separate L. rudis grouping. She suggests that until more conclusive evidence is produced to justify the differentiation, it is probably well to refer all three colour groups and the two varied forms found on these rocks to the Littorina saxatilis complex.

Neither rock is rich in associated fauna, being mainly inhabited by Patella sp., Calliostoma zizyphinum, Nassarius incrassatus, Mytilis edulis, and occasional Gibbula sp., including Gibbula pennanti. All of these appear to be typical but one final colour observation may be of interest.

On Round Rock between the pink and dark granites runs a vein of white quartz. Deep within a quartz fissure was a small pure white shell which was unfortunately just beyond the reach of the tweezers I had with me. Almost certainly it would have proved to have been a specimen of Nassarius incrassatus, the only white one in evidence on the rock.

I am most grateful to Mr. Hugh Lenfestey of Guernsey for his constant encouragement to make another trip out to the rocks, and to Dr. Vera Fretter of the University of Reading for examining and identifying the specimens for me, and also for suggesting that this note be written.

Graham Long

NOTES ON THE LIFE-HISTORY OF ARION SUBFUSCUS (DRAP.)

The data presented here were obtained as a bonus when Arion subfuscus (Drap.) and other slug species were reared for experimental purposes. The information, though incomplete, may be useful to others who collect or rear slugs.

No data on the duration of the pre-oviposition period were obtained because the slugs were never seen copulating but Quick says that the period may last for 3 weeks. Eggs were laid either in or on the soil from September 16th. to January 9th., which agrees with the statements of Taylor and Ellis. Three to six batches, containing from 12 to 52 eggs were laid by each slug; the total numbers of eggs per slug varying from 119 to 166, with a mean of 137. Only 62% of the white, ovoid, lightly sculptured eggs were fertile. The eggs varied in size from 6.0 to 6.8mm by 5.0 to 5.5mm, with a mean of 6.3 by 5.2mm.

At 15°C, slugs hatched from the eggs after a development period of 25 to 38 days, mean 29 days. Newly hatched slugs were kept for 10 weeks at 20°C, 15°C or in a temperature cycle, 12hrs. at 10°C and 12hrs. at 20°C. In this time they increased in length from 3.2 to 10.7mm at 20°C; from 3.2 to 9.8mm at 15°C and from 3.2 to 8.0mm in the 10° to 20°C temperature cycle.

Newly hatched slugs were on average, only 3.2mm long when fully extended; this is only half the length quoted by Quick. This species is said to feed on fungi and rotting vegetation; materials which are difficult to use in long-term cultures if high mortality is to be avoided. The slugs under observation were fed only lettuce and carrot, a diet that may have been deficient in one or more ingredients. The missing dietary factors may account for both the low fertility of the eggs and the small size of the progeny. The progeny of eggs laid by field-collected adults were all about 6.0mm long at hatching.

The eye tentacles of newly hatched slugs were pinkish-fawn in colour. The mantle and body were fawnish-brown, with lateral and median black lines. The black lines were due to the presence of tiny spots of black pigment within the small polygonal tubercles which covered the mantle surface. Larger polygonal tubercles, each with a black margin, covered the body surface. Again, some contained tiny spots of black pigment, giving rise to three black lines which fused at the tip of the body.

After one week, a few darker pigmented spots appeared on the eye tentacles, giving them a bluish colour, and at this time, the pigmented lines on the mantle and body became broader. After six weeks, the black median lines on the mantle and body faded and were replaced by broader, light grey bands. The black lateral bands remained, and the ground colour of the whole animal became yellowish-brown. The foot-fringe and the region surrounding the pneumostome assumed none of the darker pigment during this period of growth. As the animals became older, the overall colour deepened to a dusky yellowish-brown, the median grey mantle and body bands faded and the lateral bands became brown. The mucus of newly hatched slugs was clear and sticky but as they grew older, the mucus became yellow.

The longevity of the slugs in culture varied from 340 to 403 days, with a mean of 348 days. Adults lived for between 3 and 20 days after laying their last batch of eggs. A. subfuscus may occasionally feed on carion since in two of the cultures, an adult was seen feeding on its dead mate.

A three month old animal left undisturbed and without food in a specimen tube part filled with soil constructed a cell attached to the wall of the tube. The slug was tightly curled within the cell, the inside of which was more moist than the surrounding soil. This suggests that, in dry weather, A. subfuscus may construct cells in the soil in which to aestivate.

References

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 Vol. 6, No. 3
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 Isles: Vol. 2; Taylor Bros., Leeds, 1907

J. W. Stephenson

COLLECTORS IN EAST AFRICA - 2. J. T. LAST (1849-1933)

Joseph Thomas Last was born at Tuddenham in Suffolk in 1849* and ordained in 1872 at the Church Missionary College. In October 1874 he set out for East Africa and was established at the mission at Kisulutini. According to the records the "connexion was closed" in 1876 and he returned to Britain, the reasons not being stated. In November 1877 he was re-engaged and appointed to the Usagara Mission at Mpwapwa. In 1880 he founded a new station at Mamboya in the Nguru mountains and from our point of view this was the most important act of his career. The Ngurus form one of the links in a chain of upland evergreen forests which are remnants of a once more continuous forest cover that allowed the migration of southern and western elements. The Kenya coastal forests and the Usambaras are the northern units in this chain. These forests are quite rich in molluscs and Last made interesting collections at Mamboya - in fact some of his finds have never been re-collected. He obviously searched systematically for small species in the brief leisure time which would have been available to a busy missionary. At this period one of the mission letters home states "Mr. Last has put up a shed for use as a church" and indicates that he was well received by the

local chief who was pleased with Last's efforts on behalf of his tribe. "Recently he went to Zanzibar and took the Chief's son and nephew, neither of whom had seen the sea before and went into raptures of delight. He was accompanied by several released slaves for whom he obtained letters of freedom from Kirk". It is clear that he was one of those missionaries who was fortunate in having pleasanter natives to deal with and a physique to resist tropical diseases. After seven years continuous residence in East Africa he returned to Britain in December 1884. Later he was in the service of the Royal Geographical Society and Imperial British East Africa Company. He visited Portuguese East Africa in 1885 on behalf of the Royal Geographical Society and explored the Namuli Mountains and also travelled in Madagascar; he became a Fellow of the Society in 1895. He became Commissioner for Slavery for the Island of Zanzibar in 1897 under the administration of Sir Lloyd Mathews. It was Last who discovered the well known limestone caves at Makunduchi in Zanzibar. In September 1880 he had married Annie Jackson who was the first European lady to reside in the Nyanza Mission and to penetrate with her husband into the Nguru country. A note in the Church Missionary Intelligencer says "our friends will be interested to know that the lady who is to be Mrs. Last sailed last month with Mr. Taylor and Mr. Biddlecombe; she will be the first English woman to go into the interior". Like so many pioneers she did not last long and died at Mamboya in March 1883. He must have married a second time because the short obituary in the Proceedings of the Royal Geographical Society states "he leaves a widow and six children of whom one J. S. Last is now a District Sub-Commissioner in the Zanzibar Government" thus carrying on his father's association with that island. Last himself "a man of robust and virile personality" with "ability energy and an unrivalled knowledge of Swahili" died 50 years later at Shortlands in Kent in December 1933. He also collected many interesting plants, particularly in Zanzibar, and several are named after him. His namesake H. Last (no relation) tells me that H. W. Bates named a large carabid beetle Chlaenius lastii after him. There is in the Natural Science Museum at Bognor Regis a collection of marine shells labelled the Last Collection formerly in the possession of the late Dr. Joseph George Turner. Although the initials of this Last were not recorded it is known that the collection was made in the last years of the nineteenth century in Zanzibar so it is almost certain it was the work of J. T. Last. It contains a juvenile specimen of Conus cholmondelyi Melville. My thanks are due to Miss Kathleen Smythe for information about this collection.

Last's very important collection of snails from the Nguru Mountains was written up by E. A. Smith in his paper 'List of Land and Fresh-water shells collected by Dr. Emin Pasha in Central Africa with description of new species'. Ann. Mag. nat. Hist. (series 6) 6: 146-168 pl. 5, 6 (1980). Despite the title the paper deals mostly with Last's material and describes over 30 new species from his collection including Hyalinia lasti (now in Thapsia), Buliminus lasti (now in Pseudoglessula) and Subulina lasti.

Footnote

*My own notes from missionary society records give 1849 for the date of birth; H. Last told me he assumed it was 1847 since J. T. Last was in his 86th. year when he died in 1933 according to an obituary in the Geogr. Journ. I personally checked the registers at St. Catherine's House and his death is confirmed as being in the last quarter of 1933 in the district of Bromley at the age of 85; there is a record of the birth of a Joseph Last in the first quarter of 1849 in the district of Woodbridge; since Tuddenham is near Woodbridge I think this must be relevant and he would then have died in his 85th. year.

B. Verdcourt

When I was offered a position in Brussels in 1976 one of the reasons why I turned it down was because I thought that there I would be unable to continue my hobby of Conchology. So far as I was aware there was no Belgian equivalent of the Conchological Society, of our interesting Journal and Newsletter, or of our monthly meetings and incident-packed field meetings. Moreover I imagined the Belgian coast to be flat and extremely dull. However, I know now that I was entirely mistaken.

The Société Belge de la Malacologie was founded on 29th. January 1972, although it did not distribute its publications outside Belgium until 1978. Like the Conchological Society it is headed by a President assisted by officers and council members. It holds indoor and field meetings and issues two publications in French. Its "INFORMATIONS" in its substantial scientific content resembles our Journal, whilst "ARION" is the Newsletter of the Belgian Society.

"Informations" consists almost entirely of papers based on the scientific study of molluscan species which are illustrated with photographs and line drawings. Proper attention is given to taxonomy, anatomy and to sources of specimens and information; emphasis is laid on the importance of assisting other members to identify their collections. Articles range from a simple description of a new species to a complete classification of a whole family. Moreover it is not sufficient for the reader to be proficient in French; one particular author quotes all his sources in the original languages, including Latin!

One paper gave an analysis of the zonation of gastropods on the Channel coast of Brittany, including a detailed study of shore structures, seaweeds, and molluscan feeding habits, and was illustrated with artistic cross-sections of the locations studied with attractive symbols indicating just where each mollusc was found. Thus a small obtuse-angled triangle represented a limpet, and so on - an idea our Junior Members might like to copy when writing their own records or arranging exhibits for competition or show.

The "Arion" newsletter gives members information very similar to our own system. There are announcements about future activities, membership, overdue subscriptions, and it seems the Belgians too have to struggle with higher postal charges! Some of their indoor meetings are devoted entirely to exchanges of shells between members - an idea we might consider for the future - and several to identification sessions. In fact the Belgian Society runs an identification service with named experts listed in their newsletter to whom members may write. Perhaps Conchological Society Members willing to provide a similar service could be so indicated in our membership list.

Each "Arion" newsletter usually contains at least one article of scientific interest also. For instance there was an account of a shell-collecting trip to Spain undertaken by their Field Meetings Organiser and his wife which resulted in a mouth-watering list of species found at 7 sites. Another gave a history of the migration of the money-cowry from its origin in the Maldives Islands to the Red Sea by Arab dhow, then in camel-packs in caravans filing across the deserts of North Africa, and ending up in the financial centres of 18th. Century Europe - London, Amsterdam and Hamburg - whence they were re-exported back to the Orient by the ton to start life as local currency again. Eventually rising inflation made it impractical to deal in vast quantities of money-cowries, so they have disappeared from the pockets of all but the poorest Pacific islander.

It seems that in its early days the Belgian Society held its meetings in a café, though from its address their present location sounds much more staid. It would appear that the gourmet touch has not been lost, however, because some of their field meeting announcements contain recommendations to "Try the Moules

Marinières" at the lunch stop! Once a year they gather for a formal dinner - Conchological Society gourmets please note.

Finally, I should add that there seems to be as great a variety of molluscan life on the far shore (and hinterland) of the Channel as there is on our own. The Belgian Society guarantees the collecting results of its field trips! Vivent nos confrères belges!

Janet T. Sawyer, April 1980

THE MALACOFAUNA OF GREECE

The Balkan Peninsula has a long malacological history. A long list of malacological publications dispersed in many periodicals resulted from the initial field-work done in this part of Europe. Apart from the malacofauna of Bulgaria and Romania, no comprehensive work on the fauna of the other countries has yet appeared. The number of malacologists living and working in these countries is very low indeed and we do not know of any native amateurs in this area.

A large amount of material from the peninsula has been collected over the last 200 years. It rests in the museums of Europe as a little used basis for further study, used only by a very few hard-working professionals. Detailed studies on some groups have been published (Gittenberger, Nordsieck, Paget, Pinter, Riedel, Subai, Wiktor). However, all amateurs visiting these regions - and the big flow of tourists assures one that there are many - will have to do much literature research to name their shells with more or less accuracy. Much work in the field of literature research and the connected administrative work has provisionally been done before we linked up.

A number of these workers-during-holidays keep contact and are of mutual help and assistance. We focus on Greece, mainland and islands including Cyprus, the malacologically most unknown country in Europe despite the long list of publications published at Backhuys's publishing house at Rotterdam in 1979. We aim at an illustrated malacofauna of Greece. In compiling the faunal lists for Greek provinces and islands from the existing literature we met with many difficulties which can only be solved by the study of types, the old first publications and handbooks, anatomic research and more data on the distribution of the Greek species.

Therefore we try to enlarge our small circle of students and will set up an inventory of persons, professional and amateurs who regularly visit Greece, who have named or unnamed shells from Greece in their collections, or are otherwise interested. The inventory would comprise persons and materials, persons who are able and willing to assist and who are in want of help, the origin of the material they have, the regions they have visited in the past or the regions they visit regularly because this is the favoured holiday location. We are only addressing those interested in land and freshwater molluscs. The marine workers in the mediterranean have plenty of books and guides at their disposal. The unclear boundaries between sea and land and the gradual transition of sea-water, brackish- and freshwater will be a good reason for those interested to take part.

Peter Subai, [REDACTED], D-5100 Aix-la-Chapelle, Federated Republic of Germany cares for the German-speaking persons and journals. Readers who are interested are invited to write to L. J. M. Butot, [REDACTED], 3723 AN Bilthoven, The Netherlands.

Members living in the Midlands are asked to note the formation of a Midlands Collections Research Unit (Natural Sciences) by curators from Midland Museums and Universities. Although formed by professionals the Unit should be of interest and value to both amateur and professional collectors alike. Its aims are to locate and list all the biological and geological collections in the Midlands (in museums, universities, schools, societies and private hands) and to record some very basic details about them (such as size, primary interest, geographical range, presence of type or figured specimens, etc.). Recording is done on simple one-page forms which can be used for computer input. The result (by 1982 we hope) will be a computer produced catalogue of all the collections in the region together with a number of indexes - for example by associated collector, location, systematic division (e.g. molluscs), geographical range, etc.. Therefore, conchologists wishing to know the whereabouts of, say, British mollusc collections in the Midlands would simply consult the appropriate part of the systematic index to find a list of known collections; descriptive details of these could then be found in the catalogue.

The system is simple and very easy to use with obvious advantages for all kinds of collectors and collections-based researchers. For the amateur it makes known the full extent of collections held in store in museums and similar institutions; for the professional it identifies the specialist collectors in the region who may be approached for information. We also hope that some important and hitherto unrecognised collections may come to light as a result of gathering data for the catalogue.

It is important that specialist societies know of the existence of schemes such as this and that their members contribute where appropriate. So any collecting conchologists living in the Midlands region are asked, please, to contact John Mathias at the Leicestershire Museums Service who will provide further details of the scheme and questionnaire forms together with the name of a local contact who can help with completing the form should this be necessary. If anyone with an old collection of unrecorded origin needs help in assessing the significance of certain items then a visit from an expert in that field can easily be arranged. It should also be stressed that confidential information of any kind (such as the location or owner of a valuable collection) can be held with complete security and will not appear in the catalogue.

The scheme can only work effectively if the catalogue is comprehensive so contributors are asked to return an entry for any collection no matter how small or insignificant they imagine it to be. Updating can take place any time after the initial entry if the collection changes substantially in the future. All contributors will receive a free copy of the full catalogue together with periodic updates as it will never be 'complete' in the absolute sense. Specialist indexes will also be available to contributors.

A similar scheme has been completed in the north-west of England with catalogues and indexes available from Charles Pettitt at Manchester Museum; the north-east, Yorkshire and Humberside, and the south-west regions are, like the Midlands, starting their own regional Units. The long-term aim is to produce a complete catalogue of collections in the British Isles which would have obvious value as a reference source for all kinds of collections-based research.

John Mathias, B.Sc., Ph.D., Keeper of Biology, Leicestershire Museums Service,
96 New Walk, Leicester, LE1 6TD Tel: (0533) 554100

LARVAL REARING OF BIVALVE MOLLUSCS IN THE PHILIPPINES

Probably no more than two species of commercially important marine bivalves in the Philippines have ever been cultured through their entire life cycle. The life cycles of the window-pane shell, Placuna placenta, the pearl shell, Pinctada maxima, the sun and moon scallop, Amusium pleuronectes, the oyster, Crassostrea iredalei and scores of other bivalves are entirely unknown. However, many investigators in the United States, Europe, Great Britain, Australia and New Zealand have made significant contributions to the field of larval rearing of bivalves and many of their techniques are adaptable to tropical species. The larval stages of the green mussel, Perna viridis (Mytilus smaragdinus) for example, have been successfully reared (Young, 1979) through the juvenile stages using such adapted techniques.

Only adults with mature gametes are collected as breeding stock. To determine general gonadal condition of a specific population it is sufficient to examine a few sample specimens. Mature eggs become well rounded in seawater, while spermatozoa swim actively upon introduction of seawater. Adults with mature gametes may be kept in ripe condition for short periods of 1-2 weeks without food in 20-22°C aerated seawater, or for longer periods (1-2 months) if well fed. By maintaining 30-40 mature adults in a cold water (20-22°C) broodstock tank, a supply of viable gametes for experimental work can be assured year-round.

Most bivalves release their gametes into the water where fertilization and larval development occur. Spawning may be induced in a male or female by introducing gametes of the opposite sex. At times, it may be necessary to rapidly increase and/or decrease the water temperature before adding the sperm or egg suspension. The oyster, Crassostrea iredalei has been found to respond to either stimuli. The green mussel P. viridis does not respond to temperature fluctuations unless "conditioned" in cold water for a few days. They are stimulated to spawn by sudden cessation of water flow and/or by its resumption. The scallop Amusium is easily induced to spawn by raising the temperature of the water by 7-10°C. If natural spawning occurs, care must be taken to discard excess sperms as these soon rot and foul the water.

Seawater to be used for rearing bivalve larvae must be free of pollution by metals, detergents or pesticides - all of which are directly toxic to larvae. Indirect toxicity can occur through chelation of essential trace elements, inactivation of cilia, or inactivation of digestive enzymes. Freshly sand-filtered seawater has been used satisfactorily for larvae of mussels and oysters. If available, finer filters which can remove all particles bigger than 10 µm will give even better results. As an alternative to the use of costly and possibly even growth-inhibiting additives for reduction of contaminants in seawater, strict attention should be paid to good housekeeping, frequent washing of larvae and avoidance of static water conditions. Because of the corrosive nature of seawater and the great sensitivity of the larvae to traces of dissolved substances, culture vessels used for rearing bivalve larvae should be made of glass, plastic or fibreglass and should be essentially cylindrical in shape, with the depth greater than the diameter.

The best food for very young larvae is naked flagellates - mobile unicellular organisms of microscopic size (nannoplakton) without any cell wall but containing chlorophyll. In this regard, Isochrysis galbana and Monochrysis sp. have been found to be excellent food for mussel and oyster larvae. Later larval stages will feed on unicellular green algae which have a cell wall, and even on diatoms.

Water should be changed at least every third day. To change water, the culture may be siphoned and the larvae collected in a sieve. With precise selective screening, the larvae can be separated from debris and only clean and healthy

larvae should be returned to the culture vessels. Gentle aeration should be provided at all times. Bivalve larvae grow well at temperature between 28-30°C and salinities between 25-31 ppt.

Fertilized eggs normally develop into the first larval stage, the trocophore, 10-12 hours after fertilization. After another 12 hours they become well-formed straight-hinge veligers with a bivalve shell and a swimming organ, the velum. As growth proceeds, the umbo starts to form and gradually becomes distinct and/or prominent in most species. Mature larvae develop an eyespot on each side of the bivalve shell and soon are equipped with a functional foot for crawling and subsequent attachment to suitable substrates. Attached larvae (spats) soon metamorphose into the adult form. When plenty of mature larvae are observed in the cultures, artificial substrates such as empty bivalve shells, tiles, or bamboo pieces are suspended in the water to provide settlement substrates for the settling larvae. Spats may be fed a wide variety of algal species, and transferred to the field at the size of 10-20 mm.

Adam L. Young

(Reprinted from 'Asian Aquaculture', submitted by Mrs. Betty M. Smith)

FIELD TRIP TO LLANDDULAS ON THE NORTH WALES COAST

On Saturday April 12th., on a pleasant spring afternoon, Mrs. N. McMillan, my wife and myself - the last remnants of a once much larger group of N.W. conchologists - visited Llanddulas near Abergele to obtain marine records. Some time previously we had a very successful visit to Kinnel Bay, a few miles further east, but at Llanddulas the list was comparatively poor. Living specimens of Mytilus edulis L., and Littorina littorea (L.) were plentiful, and less common were jointed valves of Abra alba (W. Wood), Macoma balthica (L.), Venerupis pullastra (Montagu) and Ensis arcuatus (Jeffreys). Other species were very sparse and consisted mostly of one or two worn valves. Some of the living Mytilus seemed almost completely embedded in sand, whilst others were well exposed on long byssus threads attached to small boulders. Is this an indication of much movement of the sand?

Having completed our marine list, we looked behind the beach to a narrow area between the shore and the railway which had once been a local tip. Here we found Trichia striolata (Pfeiffer), Cepaea nemoralis (L.), Candidula intersecta (Poiret) and Helix aspersa Muller which was extremely common. I was also surprised to find small specimens of Ceruella virgata (da Costa) which has been recorded fairly frequently in North Wales but which I have not seen there very often. The greatest surprise however was to find several specimens, some live, of Monacha cantiana (Montagu), which in North Wales has only previously been recorded from the south west corner of Anglesey and from Mold.

Wm. F. Edwards

REVIEW

The Natural History of Fossils by Chris Paul, The World Naturalist Series, Weidenfeld and Nicolson, 1980, xii + 292 pages, 16 pages of plates and 81 text figures; paperback £6.95, hardback £15.00.

In recent years numerous books on fossils have been published aimed at the general reader, the 'popular' market. These have varied considerably in quality, both of production and content. Some of the 'coffee table book' category have beautiful illustrations of exceptionally well-preserved specimens and the plates

are often superior to the text. Many of these books have one thing in common; they tend to treat fossils as a self-contained group of objects or a portion of frozen life largely divorced from the total natural world.

Dr. Paul places fossils firmly and clearly in their context of the world of natural history, regardless of the conventional and arbitrary boundaries of 'living' and 'dead', 'Recent' and 'Past'. He approaches his subject with enthusiasm and succeeds in his aim of presenting a very comprehensive view of fossils in a clear and readable manner. After a brief introduction to Palaeontology, he explains and stresses the amount of information that can be obtained from fossils by adequate observation, recording and interpretation and the great value this can be to our understanding of the whole continuing process of life. Although the 'fossil record' is obviously incomplete and subject to all the vagaries of preservation, the author contends that it is really more complete than many people have believed. Some of the gaps are the result of inadequate collecting and recording and indeed it is noticeable that certain groups of fossils and formations receive far more attention than others. The author delves into many aspects which might, at first glance, be considered 'fringe' subjects but which he shows to be very relevant. For example, isotopes and atomic weights, neutrons, radioactivity, dendrochronology, changes in the Earth's rotation and the length of days. Far from clouding the issue these topics enable us to see the fossils much more clearly as living organisms and communities in their natural environment just as if we were contemplating the beauty and variety of a living coral reef. The molluscs play an important part in the author's theme, as they do in the natural world and it is refreshing to find a less well-known group, the cystoids, those extinct Palaeozoic echinoderms, being used to demonstrate various points. Conch. Soc. members will find much to delight and intrigue them. It was pleasing to find the gastropod from the cover of the Journal of Conchology figured.

As a logical extension of a study of fossils, there is a review of some investigations into the origins of life, the basic materials of which primitive cells are composed and the fossil remains in Precambrian cherts.

At the end of the book an interesting comparison is drawn between the scientific method used in modern archaeological excavation and the generally rather haphazard way in which much of our palaeontological material is accumulated.

The plates are adequate and have the advantage of being original, in the sense that they are suited to the text and not merely attractive photographs of particularly good specimens. The text figures are conveniently placed close to their appropriate reference. The typeface is clear and readable. The author explains each technical term he needs to use at the first use of it rather than supplying a glossary at the end of the book. Dr. Paul has a curious and consistent blind spot regarding the spelling of two British geological formations - 'Liass' and 'Gualt' - which should, of course, be Lias and Gault! Very few typographical and other errors were noted, but on p.104, 1.3, 'inimitable' should be 'inimical' and p.139, 1.10, figure 30 (page 39) should be page 89. On p.242 and 243 'Triass' - perhaps to rhyme with 'Liass'?

It is more important now than at any time in human history that we, Homo sapiens, should understand our position in the natural world and our relationship with all the other species, past and present; only with this understanding can our own evolution proceed in a more constructive and less erratic manner. This is a stimulating and entertaining book; I wish it had been available when I was a teenager!

P. E. Negus

"The Perpetual Forest" by W. B. Collins. Published Staples Press, 1958. Not in print. About the West African Tropical Rain Forest.

"One of the most curious sights to be seen, in a country where, to the naturalist, nature piles wonder on wonder, are the lorry-loads of live snails rattling their way to market. Decay follows swiftly on the heels of death in the tropics, and what is "fresh" at dawn may be "high" by evening, even to the African whose palate relishes strong flavours. The only practical way to guarantee freshness is either to smoke the game, or deliver it on the hoof. Where scores of collectors are at work bringing in a kerosene tinful or a basket full of snails, the logical course is to transport them alive 'en masse.' A single small boy perched on the back of the lorry acts as a custodian. A snail moves slowly, but a hundred thousand of them each moving independently over an open lorry presents a problem in conservation which few of us would care to tackle. Long before they reach their destination the snails have invaded every part of the lorry; headlamps, bumpers, bonnet, tail-lamp, even the drivers all have their quota of snails intent on escaping the cooking pot. Few do."

"When the first rains have moistened the leaf litter, eggs are laid in their millions. In a few days these hatch almost simultaneously and an army of baby snails each little bigger than a pin's head, begins its brief existence. In its youth the snail is subterranean for two reasons. To survive and to grow it must not only be hidden from the eyes of the world, but must each day devour enough soil to provide itself with sufficient lime so that its protective shell may keep pace with its rapidly growing body."

"In its first few days the young snail doubles in size each day. To achieve this it lives mainly on soil. Tropical soils are notoriously deficient in calcium, so the young snails turn cannibal. As the survivors become too big to shelter within the soil, they gradually work their way to the surface where they feed on the raw humus in the leaf litter. Then the centipedes, scorpions, spiders, the carnivorous ants and a host of hungry birds descend and decimate the army of snails. As they approach maturity their shells toughen and provide a degree of protection against the smaller birds.

The forest peasant has long appreciated the danger which he is to the snail, and each tribe usually has its own laws limiting the gathering of edible snails, at most, to every other year."

(Submitted by Mrs. Betty M. Smith)

EUCHONDRUS OVULARIS IN FAECAL PELLETS OF CHALCIDES OCELLATUS

The Eyed skink Chalcides ocellatus (Forskål, 1775) (Reptilia, Scincidae) is widely distributed in N. & N.W. Africa, S.W. Asia, S.E. Europe and on several Mediterranean islands. In Israel it is one of the commonest skinks and is encountered in vast numbers over the whole country (Werner, 1966: 23).

On 25 January 1979 the author collected 5 specimens of C. ocellatus from under stones in fallow land near the entrance gate of the elementary school of Kibbutz Netzer Sereni. The skinks ranged in size from 8 to 20cm.

In order to photograph the skinks the next day, they were kept overnight in a large plastic container. The following morning several faecal pellets were found. A control of their contents revealed several remains of Arthropods and a single, still complete shell of Euchondrus ovularis (Olivier, 1801) (Gastropoda, Enidae), a common land snail in and around Netzer Sereni.

The food of Chalcides ocellatus consists mainly of Arthropods, Annelids and

other terrestrial invertebrates, however, no records of predation on snails by this skink in Israel are known to the author. Most probably C. ocellatus is preying on all small moving invertebrates in its direct vicinity. Since Euchondrus ovularis and Chalcides ocellatus are often encountered together under stones, this may explain why one of the skinks swallowed the snail. More data are, however, necessary in order to judge whether this skink is a regular predator of land snails.

Reference

Werner, Y.L., 1966. The reptiles of Israel. 49 pp. Dept. of Zoology, Hebrew University of Jerusalem (in Hebrew, mimeographed).

Henk K. Mienis

Zoological Museum, Mollusc Collection, Hebrew University of Jerusalem, Israel

MARINE MOLLUSC MAPPING SCHEME - SEA AREA PORTLAND S.16

PROGRESS REPORT NO. 6 - 1979

Detailed offshore data from a 1975 MAFF survey off Exmouth has greatly improved knowledge of several benthic species. Current field work has been largely my own, mainly in the Fleet and Portland Harbour, but also including Sidmouth, Budleigh Salterton and Dawlish Warren.

Am I really the only active field conchologist between St. Alban's Head and Start Point? Don't any members even visit the shores of Torbay?

There are no new species to add, and only 4 upgradings:-

<u>Balcis alba</u>	a to <u>A</u>	Great West Bay	MAFF	1975
<u>Devonia perrieri</u>	c to <u>A</u>	Great West Bay	MAFF	1975
<u>Mercenaria mercenaria</u>	<u>B</u> to <u>A</u>	Fleet	DRS	1979
<u>Myrtea spinifera</u>	<u>B</u> to <u>A</u>	Great West Bay	MAFF	1975

The area total is now 410 species, of which 265 are post-1950 live records.

As usual, I am indebted to several people who have helped me in various ways, particularly Mike Rolfe of MAFF at Burnham, Dr. G. H. Brown, Dr. V. Fretter, Dr. N. A. Holme, Dr. G. Oliver and Mrs. Stella Turk.

Dennis R. Seaward, Area Representative, March 1980

REPORT ON SEA AREA 14 - JANUARY 1977 TO DECEMBER 1979

Small but steady progress has been made during the past three years. Particular thanks should go to members of the Underwater Conservation Society, South East Branch and to Dave Adams whose job takes him along the south east coast. Last year saw the formation of the UCS, SEB which has opened a prospect of some exciting discoveries. I have had several trips with them and although the results haven't been spectacular I hope that eventually the liaison will produce confirmation of Winckworth's extensive records. East Channel is somewhat poor in species anyway because of geological and physical conditions, but I am sure that some improvement can be made with further collection.

New area records include Hanleyi hanleyi, C; Alvania punctura, AR; Caecum glabrum, BR; Cingula alderi, C; Clathrus clathratulus, CR; Doto fragilis, A; Odostomia plicata, AR; Phytia myosotis, A; Cardium ovale, C; Teredo megatora, AR. There were four upgraded area records, Chlamys distorta, CR to CR; Corbula gibba, BR to AR and Musculus marmoratus, BR to AR. There were 68 new 10Km square records and 25 upgraded 10Km square records.

Summary of Sea Area 14 collection data

Name	Coordinates	Number of collections	Total species	Number alive
Seaford	50/4--9--	12	64	21
Beachy Head	50/5--9--	15	94	55
Eastbourne	50/6--9--	7	102	47
Peacehaven	51/4--0--	3	22	8
Pevensy Bay	51/6--0--	15	58	15
Bexhill	51/7--0--	10	56	20
Hastings	51/8--0--	16	157	43
Fairlight	51/8--1--	4	37	18
Rye Bay	51/9--1--	25	104	34
Dungeness	61/0--1--	5	38	15
New Romney	61/0--2--	11	37	23
Hythe	61/1--3--	7	34	12
Folkestone	61/2--3--	5	30	18

Special thanks are due to the following who have collected and provided records during the past three years: Graham Ackers, Dave Adams, Conchological Society field meetings, Rupert Honnor, Tony Jones, Julia Nunn, Tom Pain, Underwater Conservation Society, South-East Branch and Derek Worth.

C. J. Pain, 22.3.80

SEA AREA SUTHERLAND (S2) ANNUAL REPORT YEAR ENDING 1979

This has been a very poor year as far as marine recording is concerned. Only one 10Km square produced any new records and these records were only new to that square. Off shore recording has completely ceased, the primary cause being the final economic collapse of the inshore seine net fleet based at Scrabster. No local boats are now fishing and the port relies on visits from East Coast boats.

R. G. Meiklejohn

OBITUARY

BRIGADIER E. A. GLENNIE, CIE, DSO, FRAS, FRES, FRGS, FRZS, FGS. It is with regret that we record the death of Brigadier Glennie on the 15th. February 1980. Born at Eastbourne on the 18th. July 1889 he was educated at Haileybury College, the Royal Military Academy, Woolwich, the Chatham School of Military Engineering

and the Portsmouth School of Defence Lighting, and was a Gold Medallist of the Royal Geographical Society. He went to India during the First World War, and was awarded the DSO for his services in Mesopotamia. In 1919 he left ordinary military duties and joined the Indian Geophysical Survey. Married in 1923 his wife died six years later and his only son, Michael, was tragically killed in action at the age of 19 while serving with the Fleet Air Arm off Norway in 1944. He continued his extensive survey work in India between 1939/1946 when, upon retirement, he took up geophysical work in an international study group and became a founder member of the Cave Research Group in 1947, holding all posts. He was the first President of the Cave Research Group from 1954 to 1972. In 1972 he founded the British Cave Research Association, and was joint President with the late J. W. Jackson* until his death. He was especially interested in examining the animals that lived deep in caves and was fascinated with molluscs living in such habitats. He joined the Conchological Society in 1950.

(*J. W. Jackson was a member of the Conchological Society from 1901 until his death last year)

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

A.N.(S.) 113

c/o. British Museum (Natural History),
Cromwell Road, London, SW7 5BD

The Commission hereby gives six months' notice of the possible use of its plenary powers in the following cases, published in Bull. zool. Nom. Volume 37, part 1, on 8th. May 1980, and part 2, on 19th. June 1980, and would welcome comments and advice on them from interested zoologists. Correspondence should be addressed to the Secretary at the above address, if possible within six months of the date of publication of this notice.

2268 Acmaea limatula Carpenter, 1864 (Mollusca, Gastropoda); proposed conservation.

A.N.(S.) 114

1054 Nettastomella Carpenter, 1865 (Mollusca, Bivalvia: PHOLADIDAE): proposed conservation.

R. V. Melville, Secretary

The following Opinions and Direction No. 108 have been published recently by the International Commission on Zoological Nomenclature in the Bulletin of Zoological Nomenclature, Volume 37, part 2, 19th. June 1980.

Opinion No.

- 1154 (p.85) Drupella Thiele, 1925 (Mollusca, Gastropoda):
designation of a type species by the use of the plenary powers.
- 1156 (p.94) Terebra variegata Gray, 1834 (Mollusca, Gastropoda):
conserved by the use of the plenary powers.
- 1159 (p.103) Littorina (Mollusca, Gastropoda):
author and date of this generic name, and type species of this nominal genus determined by use of the plenary powers.

Direction No.

- 108 (p.107) Correction of Name No. 2087 in the Official List of Specific Names in Zoology: for Murex striata Gmelin, 1791, read Voluta striata Gmelin, 1791.

The Commission regrets that it cannot supply separates of Opinions or Directions.

GENERAL NOTES

INDOOR MEETINGS OF THE CONCHOLOGICAL SOCIETY. For the convenience of members, Council has decided to make some changes to the sequence of the programme for indoor meetings, commencing with the meeting on Saturday 18th. October next.

- | | |
|--------------------------------|-------------------------------------|
| 1. Minutes of the last meeting | TEA INTERVAL |
| 2. Matters arising | 6. Announcements and correspondence |
| 3. Nominations and elections | Field meeting announcements |
| 4. Exhibits | 7. 'Papers' to be read |
| 5. Lecture, as advertised | 8. Any other business |

WHEN THE SNAIL'S ON THE THORN. On January 3rd. 1976 the following Editorial appeared in the Sunderland Daily Echo under the above title:-

"The Swiss canton of Valais, according to a news item from Geneva, has banned snail-hunting for three years as a conservation measure. Police have now powers to search the rucksacks or cars of suspected offenders and make arrests. Presumably the unlucky snails are intended for some table in France, where escargots have always been regarded as a delicacy. No such problem is likely to arise in this country. The appearance of snails, by definition, slimy, slow-creeping gasteropod molluscs, do not evoke the sensitive feelings as they do in Switzerland. Gardeners are never happy to find their tell-tale silvery trails, although they provide a tasty morsel for the birds.

Yet there is a beauty about the snail, with its spiral shell and retractable eye-stalks, which is not always appreciated by those who are not naturalists. The snail has never inspired a sonnet but it does figure in Robert Browning's Pippa Passes:-

The lark's on the wing,
The snail's on the thorn,
God's in his Heaven ...
All's right with the world"

Three days later the Echo printed this reply from a correspondent:-

SNAILS A CURE FOR A HANGOVER. "Reading your editorial comment this evening, an incident which I experienced about 1936 would refute your statement that snails are not regarded as somestible objects here.

I worked in a small garage under the Roker Baths Road railway bridge and met a man with a full-sized biscuit tin bulging with these creatures which he had collected on the railway embankment. In answer to my question he told me he sold them in public houses on Sunday mornings and said that, swallowed whole and alive, they were a sure cure for a hangover. These were the type of snail similar to large whelks".

The correspondent was of course referring to Helix aspersa, which is a garden nuisance in this area.

R. H. Lowe

THE COLOUR OF THE SOFT PARTS OF PISIDIUM SPP.

In the days of J. Gwyn Jeffreys all the British species of Pisidium were forcibly compressed into five species, and at that time P. milium Held was known as P. roseum Scholtz because the soft parts were often pinkish. Jeffreys says "Body opaline white, orange-yellow, red or rose-colour". I have not observed this pink colouring in Bromborough (Cheshire) specimens of P. milium but on 23

April 1967 I took fine big specimens of both P. subtruncatum Malm and P. casertanum (Poli) (both det. A. W. Stelfox) all with bright rose-pink bodies; when cleaned, the inside of the valves was also rose-pink. The habitat was a very ordinary shallow pond, with much vegetation and in places almost a marsh. Stelfox told me that the body of milium was commonly pinkish and that of hibernicum is sometimes pink, but certainly not always.

R. A. Phillips, writing to Stelfox on 16 August 1917, remarked that he had taken P. hibernicum in Lough Rea (Co. Galway) "and all the animals were a bright pink or rose-colour, as were also some of those of the associated P. milium. In another lake near Gortymadden the animals were an amber-yellow colour".

Nora F. McMillan

SEASHELLS - BIVALVES OF THE BRITISH AND NORTHERN EUROPEAN SEAS by J. Møller Christensen. Revised and adapted by S. Peter Dance. 124 pp. - coloured figures. Penguin Books, Harmondsworth, 1980. £1.95.

This book will be reviewed in detail in the Journal of Conchology by Dr. B. Verdcourt. In the meantime, we wish to bring it to the attention of members since it is considered particularly good value for the modest price and would probably be very useful to many people.

JOURNAL OF CONCHOLOGY, BACK ISSUES

From time to time the Society's stock of back issues runs rather low. Currently we have less than 10 copies of the following parts: Volume 26, parts 1 and 2; Volume 27, parts 1, 3 and 4; Volume 29, part 3.

If any member has no further use for his or her copy of these parts, the Society will buy them back for £1 each if they are in good condition. Please send any copies to Dr. C. R. C. Paul, Dept. of Geology, Liverpool University, L69 3BX. Thank you.

THE SOCIETY'S PUBLICATIONS

Back numbers of the Conchologists' Newsletter may be obtained from J. D. R. Fryer, Dept. of Geology, King's College, Strand, London, W.C.2; at 50p each plus post. The Hon. Secretary, Mrs. E. B. Rands, can supply copies of the Marine Concordance, 30p to members and 50p to non-members, the Atlas of Non-Marine Mollusca, £2.50 to members plus 85p post/packing and £3 to non-members plus 85p post/packing. Enquiries for back numbers of the Journal of Conchology should be addressed to the Editor, Dr. C. R. C. Paul.

Papers for Students can be obtained from Mr. A. Norris, Natural History Dept., City Museum, Municipal Buildings, Leeds, LS1 3AA.

ANNUAL GENERAL MEETING MARCH 1981

Members are reminded that they can nominate candidates for election to the Council.

Rule No. 12. Candidates for nomination to the Council shall be paid-up members of The Society and shall be nominated by two members. Nominations, other than those made by the Council itself, shall be sent in writing to the Hon. Secretary at least six weeks before the A.G.M., and shall be accompanied by a signed declaration of the candidate's willingness to serve.

NOTE Nominations must be received by the Hon. Secretary NOT LATER THAN 31 December 1980.

HELP WANTED. Dr. Harry G. Lee, [REDACTED], Jacksonville, Florida 32204, U.S.A. is anxious to obtain specimens of sinistral Vertigo spp. from the U.K. He would be very generous in exchange or would purchase. Please write.

MR. E. DEARING, [REDACTED], Read, Burnley, Lancs., [REDACTED], urgently requires two parts of the Journal of Conchology, nos. 1 and 2 of vol. 24 - Dec. 1954 and June 1955 to complete the volume before going to the bookbinder. If a complete vol. 24 should be offered rather than the missing parts, this would be purchased willingly. Please write.

CHARGES FOR THE NEWSLETTER

Please note that small advertisements offering material for sale, will cost £1 per insertion in future.

Back numbers of the Newsletter will be 50p each plus post in future. The low price of 25p has been maintained for a long time, but is now quite uneconomical.

September 1980, P. E. Negus

EXCHANGE WANTED. Roberto Ubaldi would like to exchange shells. He is interested in obtaining Patellidae, in particular Patina pellucida var laevis. He has for exchange rare specimen shells from the following families: Haliotidae; Olividae; Strombidae; Xenophoridae; Struthiolariidae; Aporrhaidae; Conidae; Cypraeidae; Volutidae and many others. Please contact Roberto Ubaldi, [REDACTED], 00125 Acilia, Roma, Italy, if you are interested.

Celia Pain

FOR SALE. Cowrie collection 375 shells comprising 148 of the 185 species listed by Burgess in THE LIVING COWRIES. Please contact G. S. B. Patterson, [REDACTED], Carlisle Place, London, [REDACTED].

SUBSCRIPTION ARREARS

Dear Members,

A substantial number of you failed to update your Bankers' Orders to cover the increased subscription for 1980.

You have all been notified, and sent new Bankers' Order forms. Please remember that completion of one of these and delivery to your bank does not mean that the deficit for 1980 has been paid, since the bank will not implement the change until 1981.

As literature is now increasingly expensive to print and to post, it will not be possible to supply you with the forthcoming Journal part (Vol. 30, No. 4) until the arrears have been paid. Please send remittances to me; cheques and postal orders should be payable to the Society.

Marjorie Fogan, Hon. Treasurer,
[REDACTED], Atherton, Manchester, [REDACTED]

FOR SALE. We are suppliers of tropical sea shells, land snails, coral and sea curios to collectors, schools and colleges. S.A.E. for lists.
Nature of the World, 19 Bell Lane, Fetcham, Leatherhead, Surrey.

Duplicated by: SPEEDWELL PRESS, Trap Road, Guilden Morden, Royston, Herts.

THE CONCHOLOGISTS' NEWSLETTER

No. 75

ISSN 0573-2336

Newsletter Editor: P. E. Negus,

Chelsea Bridge Road,
London,

December 1980

Produced by THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

'LOOKING BACK' OR 'IF ONLY.....'

They say that life begins at forty. How right 'they' are! It was at about that age that I discovered how a whelk differed from a winkle. Now, twenty years on I have, though I say it myself, a very fair collection of marine gastropods. I have had, and still have, the most enormous pleasure from my collecting, and could I have my life over again with the knowledge I now have, I can only say I would start collecting much, much earlier. But I would not do so in the same way, and it is with that thought in mind that I write this note.

Working for one of the multi-nationals (Shell appropriately) I spent from 1946 to 1966 overseas. During that time I lived on the coast of China, of Taiwan, of East Africa and of West Africa, and at no time then did I know the first thing about shells. Or care! But I did discover in Tanganyika, as it then was, that under water in the tropics is the most beautiful and fascinating place on earth: colour, light, peace, quiet, some danger to give spice, no telephones, no newspapers, the fish, corals and the glorious warm clear sparkling water.

When in 1961 I was posted to Singapore, the opportunities for getting into the sea around the reefs of the hundreds of islands and islets which litter the coast were easy to come by, and also I fell in with another very keen swimmer who had just started collecting shells, a delightful, crazy beachcombing character Johnny Johnson. That started me off. One needed something to do under water. Some folk took up under-water photography, but that was still in its early days for amateurs, was expensive and anyway I was no photographer. Others went in for spear-fishing, but a dying fish wriggling on the end of one's spear brings the sharks around all too quickly, and I'm not over fond of sharks, interesting creatures though they be. Shell collecting produced some of Nature's most beautiful creations, and as I soon found out, made one explore all the different types of under-water terrain (merrain?) one could get at, the reefs, live and dead coral, rocks, sand and sand-bars, estuaries, mud, mangrove swamps, wrecks, kalongs (large permanent fish traps) and so on. Each had its own fauna, its own beauty and its own excitements.

Of course I very soon wanted to know what my finds were called, and in those days I had to rely on Walter Webb's "Collector's Guide to Sea Shells". One may scorn that book today, but my word, I was glad of it then; and it does cover a very large number of species.

After five years in Singapore and Malaya, which included visits to the Philippines, Indonesia, Sarawak, Brunei, Sabah, Thailand and Hong Kong, I was posted back to the U.K. and immediately joined the Conch. Soc.. A long business trip to Africa enabled me to get in a few hours shelling in Ethiopia (at Assab), Mombassa, Dar-es-Salaam, Mauritius and at Port Sudan, but apart from that my shelling days in the tropics were over. Since then I have added to my collection and I have learned a great deal about shells, but most of all I have come

to realize how much, how very much more there is to know and to find out, which I should like to know and which would add to man's understanding of this small part of the world about us.

Here is the root of the difference in the way I should collect if I had my time over again. To start with, I should take infinitely more trouble in noticing and noting more about the shells when I found them (alive). What sort of places, in detail, they were in; not just under coral at 3 feet, but what sort of coral, alive or dead, what was the tide, time of day, what were the sea conditions, what other creatures were about, in what sort of quantities were they present and so on and so on. I should learn at least enough biology to enable me to dissect some of my finds. I would try to make a record of the molluscan fauna of my particular areas over as long a period as possible, or perhaps limit myself to two or three families only, especially those not already deeply studied.

If you are as fortunate as I was, and your work is likely to take you for three or four years to one country and then on to another, bear in mind that you may never be able to go back to answer the questions which crop up after you have left.

Today, however, very many keen young collectors may never have the chance of living on the coast of some tropical country. What advice would I give them? There are some people who collect shells solely for their beauty. They are not interested in their names, their relationships with each other or where they come from. Fair enough, if that gives them pleasure and satisfaction; but I believe that for most collectors, the more they learn about their shells, the more they want to learn. There must be considerable satisfaction in being only a little 'expert' in a small field, and heaven knows there are in the Conch. Soc. (at least among the regular amateur attenders of meetings) not even 'little experts' in so very many families and genera of molluscs - even the gastropods. There are many who are knowledgeable on cowries, cones, volutes, murex and olives, but what about the patellas, trochids, turbos, cymatids, bursas, thais, terebras just to mention a few. Specimens of these 'unloved' families may be difficult to come by but not impossible, and very, very few of them will cost the sort of money that a Golden Cowrie or Conus gloriamaris fetch, let alone a Cypraea brodrigi or Conus cervus. Perhaps the biggest problem is getting hold of what little literature there is on the subject. However it is surprising what a little diligence and the right library will turn up.

In short what I am advocating is "specialize"; be a master of one family, not a jack of them all. I believe you will get more interest by so doing, and you will be able to give more help to your fellow collectors. You can always increase your interests, but it is very difficult to decrease them. And as a final thought, think how much less room you will need!

A. P. H. Oliver

MEANS BY WHICH ALIEN SHELLS REACH THE SHORES OF BRITAIN AND IRELAND

One of the favourite themes of Darwin (1859) was the accidental, or, as he called it, "occasional" transport of plants and animals by such agents as ocean currents, wind, icebergs, and birds. Similarities between the marine faunas of Old World and New are particularly striking. Carson (1951) points out that about 60% of the marine animals of the New England coast of North America are also found in the waters around the British Isles. She goes on to say that the Gulf Stream carries many migrants away from American shores, and, in spite of the long distance and short larval life of most species, a few succeed in making the crossing. Some in the adult stage are carried by floating timber and

drifting seaweed.

Today, ocean currents are somewhat over-shadowed in significance by the direct or indirect influence of man. Many alien molluscs, either alive or as empty shells, reach the shores of Britain and Ireland through shipping (clinging to ship bottoms and the like) or as introductions. It will be seen that the majority of the species, whether brought by ocean currents or through some agency of man, are warm-water ones, most being from the West Indies and a few from Africa.

To be looked for on many of the beaches where alien molluscs have been found are tropical drift seeds from the West Indies and neighbouring parts of the American tropics. These buoyant seeds, which mainly reach the ocean by way of rivers, are picked up by ocean currents, and numbers eventually reach the shores of Europe. The first written records go back to 1570. Likely landfalls include westward-facing beaches in the Shetlands, Orkneys, Outer Hebrides, and western Ireland; also beaches on both coasts of Cornwall and Devon, and more northerly North Sea beaches in Norway. Authors, who have treated this topic, include Guppy (1917), Colgan (1919), and Gunn and Dennis (1976). Currently Dr. E. C. Nelson, National Botanic Gardens, Dublin, is preparing still another work and would appreciate receiving further specimens or records from European beaches.

Once warm-water molluscs reach our shores alive, by whatever methods, there is a greater chance of at least short-term survival if they happen to reach an artificially-warmed area, like the Queen's Dock at Swansea where water from the nearby power station is discharged. Here a Mediterranean species of crab, Brachynotus sexdentatus, and a species of barnacle and tube-worm, both sub-tropical, have established breeding colonies (Naylor, 1957).

Abbott (1954) lists several conspicuous introductions by man. In 1873 a sailing vessel carrying a cargo of shells of the Money Cowrie (Cypraea moneta L.) was wrecked off the coast of Cumberland, England. For years the shells were picked up on nearby beaches and this Pacific Ocean species has also been picked up on Cape Cod in New England, according to Abbott. He goes on to call attention to "a dozen or more" species of British marine shells found in the vicinity of Long Island, N.Y., and attributed to discharges of ballast brought by shipping during World War II.

The shell collector may also be an important agent in distributing alien shells. It has been suggested by Mr. and Mrs. L. C. Prebble (Turk, 1968) that exotic shells, that they have found on the Isle of Wight, may have been discarded by people re-packing their luggage as they enter Southampton waters, and then throwing away specimens collected alive on tropical beaches; it is reasonable to assume that imperfectly cleaned shells would become offensive in the moist British climate. Obviously this could happen at any port. The many 'shell curio' shops now to be found in seaside resorts are a further source of exotic specimens, as may be witnessed by the recent discovery of non-marine tropical shells on the beaches at Penzance, close to just such a shop that imports molluscs, etc. from many parts of the world.

With so many intentional or accidental introductions of the kinds we have mentioned, it has become increasingly difficult to assign means of transport to the many alien species being found on beaches or in off-shore waters. Some knowledge of the life habits of the animal is helpful, and especially the means by which various species disseminate themselves. We have listed three major modes of transport available to molluscs reaching the shores of Britain and Ireland, including accidental and deliberate dissemination by man. In addition, several other potential methods of transport deserve consideration.

1. ACCIDENTAL INTRODUCTIONS BY HUMAN AGENCY

1a BY INDIVIDUAL PERSONS

Mention has already been made of the role of the shell collector. To give one more illustration, the junior author, while hiking along a woodland trail in the mountains of South Carolina in the U.S., spotted a small shell lying on the ground. It turned out to be a Crown Conch (Melongena corona Gmelin), whose natural marine habitat was several hundred miles to the south on the Atlantic coast. No doubt the shell was accidentally dropped by a collector.

1b ATTACHED TO SHIPS

With the exception of mussels, few molluscs attach themselves to ships, and even mussels "are not normally troublesome in the fouling of ships' outer-bottoms, though after a period of being laid up they have been removed by the truck load from large ships. But they may be a major problem in the various pipe systems carrying seawater in-board, such as the firemain. Because of the fairly constant flow of water the major pipe systems offer an ideal situation for mussel colonies to develop" (Stubbings, 1959).

1c BALLAST

Stone ballast, which often would have included shells, has been largely superseded, but undoubtedly many 19th. century records are attributable to this. For instance, Joshua Alder, referring to the large quantity of foreign ballast thrown into Falmouth Harbour and the many doubtfully indigenous species recorded from there, observes "that no dependence can be placed on the indigeneness of any shell, which has solely been found in that harbour" (Forbes and Hanley, 1848:330). At the present time, ballast in the form of seawater held in empty holds of oil tankers and discharged (often at sea) before a new cargo is taken on, is, in a sense, a huge reservoir where many marine forms, including molluscs, obtain 'free' transport to all parts of the world.

1d IMPORTED WITH OYSTERS

When the American Oyster or 'Blue Points' Crassostrea virginica (Gmelin) was being imported from North America, two species of prosobranch gastropods were accidentally introduced, and both in different ways, are pests of oyster beds. One is the American Slipper-limpet Crepidula fornicata (L.) introduced about 1890 and now widely distributed, and the other is the Oyster-drill Urosalpinx cinerea (Say) first found in 1920 and still restricted to Essex and Kent: Slipper Limpets, with as many as thirteen mounted one on another to form a chain, settle on oyster shells and intercept the plankton flow instigated by the highly efficient ciliary currents of the oysters; whilst the Oyster-drill uses its radula (aided by acid secretions) to file holes in the shells themselves, sucking out the soft parts. It is also possible that the American Piddock (Petricola pholadiformis Lamarck) was introduced in the same way, not later than 1890 (Naylor, 1957).

2. DIRECTLY BY CURRENTS

The Gulf Stream, continued as the North Atlantic Drift, brings what Guppy (1923) describes as "the wash of the two great continents of the Western World" to our western seaboard. He further describes how on one occasion when leaving the Bahamas "our course followed the Gulf Stream through the Florida Strait, leading us through patches of vegetable drift, large and small turtles, dead masses of Sargasso weed* and much else, all en route for Cape Hatteras, and thence to the shores of Western Europe..." Guppy adds that "There is even more than a suspicion that West African drift may reach our shores by the Gulf Stream by way of the equatorial Atlantic, the Caribbean and the Gulf of Mexico."

*In fact the Sargasso weed is invariably still alive. J.V.D.

2a ATTACHED TO FLOTSAM

The Gulfweed or Sargasso Weed, Sargassum natans (L.) is known commonly to harbour various creatures, including two species of crabs and an isopod (Naylor, 1957). Within the space of just over a year, Mr. J. H. Price (pers. communication) noted half-a-dozen fragments of this weed in the vicinity of Land's End in 1977-78. It is conceivable that larger benthic molluscs might become entangled in its fronds. One of the crabs listed by Naylor, (Planes minutus), has reached Britain in very large numbers. This small pelagic species attaches itself to floating timber as well as Gulfweed; specimens have even been found under the tail of a Hawksbill Turtle. Plastic bottles, buoys and fishing floats provide a substrate for attachment by barnacles and several molluscs, including the recently recorded Coon Oyster (Lopha frons (L.)) from Ireland (West & O'Riordan, 1979) and the Scorched Mussel (Brachyodontes exustus (L.)) from Scotland and Ireland (O'Riordan, 1977). The former was on a fishing float of a type commonly used in eastern N. America. Doubtless several species of shipworms (Teredinidae), now established along the western coasts of Europe or appearing as waifs, owe their presence to floating timbers. However, Scheltema (1971) suggests, on the basis of plankton hauls, that the larvae of one or more species are capable of making the journey from North American waters unaided. There are still other western Atlantic species to look for on floating timber and other flotsam. For example, the Wood Piddock (Martesia cuneiformis Say), a West Indian species, may be looked for both in drift timber and coconuts that may have reached the Gulf Stream from the West Indies and then been drifted across the Atlantic. Corinne E. Edwards (pers. communication) has found this piddock in stranded drift seeds on the island of Bimini in the Bahamas.

2b. FREE-FLOATING

Of the various pelagic molluscs (cephalopods as well as opisthobranch and prosobranch gastropods), the prosobranch Janthina janthina (L.) always attracts the attention of beachcombers because of the conspicuous purple of its shell, the bubble-raft which it secretes and the vast numbers in which it often occurs. Wrecks of this species, usually associated with the colonial hydroid, Velella velella (L.), picturesquely known as 'By-The-Wind-Sailor', on which it feeds, may occur every decade or two, evidently after frequent high winds from the west: Wilson & Wilson (1956) describe a large wreck of this species on the coasts of Cornwall and N. Devon, and give some details of previous strandings. The same conditions are apt to drift the much larger and more dangerous Portuguese-Man-o'-War (Physalia physalis L.) on to beaches of south-west England and western Ireland. Wilson (1947) recorded an unusually heavy stranding of the Man-o'-War in the summer and autumn of 1945 and suggests that the source of origin of the vast fleets was the Azores region. Odd specimens of the small cephalopod Spirula spirula (L.) are also found from time to time on west coasts of Britain and Ireland. Experiments by one of us (J.V.D.) have shown that empty closed shells of Morton's Egg Cockle (Laevicardium mortoni) can float for considerable lengths of time, at least in artificial conditions. Of ten shells of this species, floated in a plastic container, six were still afloat after five months, and one after two years. So it is conceivable that shells of this and other bivalves could occasionally float across the Atlantic. According to Guppy (1923) "Gulf Stream drift is most likely to be diverted to Cornish coasts when persistent southerly gales follow a long succession of north-westerly winds."

3. DELIBERATE INTRODUCTIONS

Of the three species of oysters that have been introduced into this country, the importation of one, the American Oyster Crassostrea virginica (Gmelin) has now been banned (see note under 1d); the Portuguese Oyster C. angulata (Lamarck) is still being brought in for fattening; and recently the Japanese Oyster (Gryphaea gigas), inter-fertile with C. angulata, and described

as "a large and succulent Indo-Pacific form" has been added to our fauna (Naylor, 1957). Repeated attempts to establish the American Quahog Mercenaria mercenaria (L.) in the Humber, Mersey and Dee from 1864 onwards, all failed, whilst a few accidentally introduced with American Oysters into the Menai Straits, died without breeding. However a flourishing breeding colony was found in the Solent and Southampton Water in 1956, and it has been suggested that "under favourable conditions of current pelagic larvae may have reached the south coast from breeding grounds in Brittany" where they have escaped from storage enclosures (Heppell, 1961). Pelagic larvae of the hermit-crab (Clibanarius misanthropus Risso) are believed to have reached British shores from the Ushant in this way in the 1960's, when a few small colonies of adults were found on the shores of the far S.W. (Southward & Southward, 1977).

4. OTHER MEANS (HYPOTHETICAL)

Four other means of dispersal, that may possibly apply to marine molluscs, remain. One is transport by birds, and this could be of some significance in view of the several migratory species that reach Britain and Ireland from Iceland, Greenland and still more distant points. Darwin (1859) was impressed by the number of viable seeds sometimes present in small pieces of mud or earth adhering to the feet, legs or feathers of birds; for example, he reported that no less than 82 plants sprang from a small ball of earth adhering to the leg of a red-legged partridge. Rees (1965), discussing the dispersal of non-marine molluscs, states that birds, especially aquatic and ground-roosting species, are generally recognized as the chief agents in aerial dispersal, and he lists several including the Upland Plover, Redshanks and Herons that have had gastropods and bivalves in their plumage and on their feet. Kew (1893:58) specifically mentions that "Marine bivalves, such as cockles, mussels, etc. have several times been found clinging to the toes or bills of birds of various kinds..." A second possible method of transport is available in the migratory fish and sharks that reach waters around Britain, and also the sea turtles that arrive in the summer and autumn from warmer sections of the North Atlantic. Thirdly, the importing of fish for warm-water marine aquaria, could well result in the occasional arrival of molluscs in water or weed. Finally, melting icebergs from higher latitudes are known to carry debris of various sorts, and they undoubtedly transport living marine organisms.

Without dwelling further on means of transport, we should point out that not all published records of alien molluscs from Britain and Ireland are reliable. There is, first of all, the problem of wrong locality data. Obviously there is always a possibility of labels being mixed, whether in museum or private collections if the specimens are handled much, and this may account for some of the species which would seem unlikely to have reached us by any known means. Secondly, there is the ever-present possibility of faulty identification. However we have selected a number of seemingly trustworthy records in order to show the source of origin of the species, the probable means of transport, and date and locality where found (see Table).

In the light of further searching of the literature, and, we hope, the arrival of more reports that may come to us as the result of this article, we will hope to publish additional notes - and queries! - on this subject, calculated to appeal to the more discerning beachcomber.

Finally, although Darwin's occasional methods have become obscured by the activities of man, there are still clear instances of organisms arriving on their own. Whether these organisms arrive in a living or moribund state, or as empty shells, they do illustrate a process that has been going on for millions of years. Many wait only for the proper climatic conditions that will permit them to become established. Certainly Darwin was on firm ground in attaching importance to occasional means of transport.

We wish to express our gratitude to Mrs. N. F. McMillan for drawing our attention to certain species, and for help with identification of others.

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SELECTED EXAMPLES OF ALIEN SPECIES ON BRITISH AND IRISH SHORES

GROUP SPECIES COMMON NAME	DATA	WHERE NATIVE	SOURCE/S	SUGGESTED MODE OF TRANSPORT
LORICATA <i>Callochiton fulvus</i> (Wood) Chiton	Alive, on oyster in 3-4 fm: the Fal, Cornwall 1950: one	Portugal, Spain S. America	Baird (1955)	Possibly imported with Portuguese Oysters or carried on hull of boat
GASTROPODA: PROSOBRANCHIA <i>Crepidula forficata</i> (L.) American Slipper Limpet	Alive, assoc- iated with American Oysters and first found in U.K. c.1890: common	N. America	Various	Imported with American Oyster <i>Crassostrea virginica</i> (Gmelin)
<i>Crucibulum acutellatum</i> (Wood) Slipper Limpet	Gwithian, N.W. Cornwall: April 1978: shell	Lower California to Equador	Ian Harris det. N.F.McMillan	?
<i>Cypraea moneta</i> L. Money Cowrie	Seascale, Cumberland	Indo-Pacific	M.Brockbank (Recorder, 1891)	Cargo: sailing ship wrecked off Cumberland in 1875
<i>Cypraeassis testiculus</i> L. Reticulated Cowrie Helmet	Spit Head, Par, Cornwall: one shell: 1961	West Indies	P. Collins det. SMT	Possibly Gulfweed carried by N. Atlantic Drift

<u>Janthina</u> spp.	Shells and living animals cast up on S. & W. coasts many years	Cosmopolitan, in warm seas	Various, including Wilson & Wilson (1956)	Drifting with secreted bubble-raft, and carried by N. Atlantic Drift
<u>Oliva porphyria</u> L. Porphyry Olive	Leebotten, E. side of Shetland June 1974	W. Central America	R. & J. Lennon	?
<u>Urosalpinx cinerea</u> (Say) American Oyster-drill	Essex and Kent, since 1920	America	Various	Imported with American Oyster <u>Crassostrea virginica</u> (Gmelin)
GASTROPODA: OPISTHOBRANCHIA <u>Bulla ampulla</u> L. Pacific Bubble	Shells, sparingly, in sand Falmouth Harbour, Cornwall	Indo-Pacific	Montagu (1803)	Probably ballast
LAMELLIBRANCHIA <u>Bankia bipennata</u> (Turton) West Indian Shipworm	Hayle, N.W. Cornwall	West Indies	Hockin (1866)	Boat timbers or driftwood
<u>Bankia fimbriatula</u> Moll & Roch	Southport, Lancs.	West Indies	Heathcote (Marshall, 1897)	Boat timbers or driftwood
	Falmouth, Cornwall, in keel of Dutch barque		H. Fox (Tregelles 1885)	Boat timbers (Also from Dutch coast)
<u>Brachyodontes exustus</u> (L.)	N. Bay, Ardivacher, Outer Hebrides 26 on plastic-foam buoy: Sept. 1975	W. Indies and E. coast of America. Mainly brackish water	M. Brockbank (Brockbank, 1976, 1977; Nelson, 1978)	Attached to buoy and carried with N. Atlantic Drift
	E. of Dingle Harbour: 9 on metal buoy: March 1977		M. Long (O'Riordan, 1977)	As above
<u>Congerina cochleata</u> (Nyst)	Fairhaven, Lancs: Sept. 1966: 18 shells with remains of animals	S. Africa, but has spread to Belgium, N. France and Holland where it lives in brackish water	P. Cambridge (Cambridge, 1969)	Hull of ship from Africa or mainland Europe-or may already be living in Ribble Estuary
<u>Crassostrea angulata</u> (Lam.) Portuguese Oyster	Cornwall (Helford) and Essex (W. Mersea and Brightlingsea)	Spain, Portugal and E. coast of Morocco	Various	Deliberately imported as two-year-old animals for fattening

<u>Crassostrea virginica</u> (Gmel.) American Oyster	Essex, etc.	N.America (St. Lawrence to Gulf of Mexico and Panama)	Various	Formerly imported but banned since 1939. Shells still sometimes found
<u>Divaricella</u> cf. <u>cumingi</u> Adams & Angus	East Sands, Isle of Wight: 1964	Indo-Pacific	L.C.Prebble (Turk, 1968)	Probably discarded by passenger on liner
<u>Donax denticulata</u> L.	Cornwall	West Indies	E.M. da Costa (Couch, 1841)	Possibly entangled in Gulfweed carried by N. Atlantic Drift
	Studland Bay, Dorset: with remains of animal		P.K.Earle (Heppell, 1964)	As above
<u>Donax rugosa</u> L.	St. Ives, N.W.Cornwall	West Africa	M.G.Hocken (Heppell, 1964)	?
<u>Gryphaea gigas</u> (Thunberg) Japanese or Pacific Oyster	Cornwall, etc.	Indo-Pacific, including Japan	Various, including Naylor (1957)	Recently introduced for fattening
<u>Lopha frons</u> (L.) Coon Oyster	Cross Beach, Mullet Peninsula, Co. Mayo: 1974: 3 left valves on fishing float	Florida, Louisiana and W. Indies to Brazil; also Bermuda	J.Sides (West & O'Riordan, 1979)	Fishing float - of type used in eastern N. America - carried by N. Atlantic Drift
<u>Mercenaria mercenaria</u> (L.) Quahog	Solent and Southampton Water: established colonies	Atlantic coast of N.America	Heppell (1961)	Larvae may have come by currents from Brittany where the Quahog had been established for many years
<u>Tellina magna</u> (Spengler) Big Tellin	"Among a 'brook' of tangleweed at sea edge" Stromness, Orkney: spring 1947: one shell valves joined and ligament intact	Carolina to Florida	Rendall, (1956)	Probably N. Atlantic Drift
CEPHALOPODA <u>Spirula spirula</u> (L.)	West coasts of Britain & Ireland: shells only	Most tropical and subtropical seas	Various	N. Atlantic Drift

Stella M. Turk and John V. Dennis

(NOTE: This account of the snail dyeing industry in Mexico appeared in 1963 in Bulletin 13 of the Instituto Nacional de Antropologia e Historia, in Mexico City (pages 13-14). Hence it may very well be much out of date. It would be interesting to find out if the trade still exists. Translation by M. K. Jacobson)

In ancient times in the Mediterranean region the purple dye from snails (Murex, Purpura, Thais) was tied up in the minds of the inhabitants with (a) power, royalty, and divinity, and (b) with female fertility. The first of these beliefs also existed in Japan in the 10th. century A.D. and possibly also in pre-Columbian America. The belief that color derived from snails can make women fertile seems to exist even now in America.

During colonial times and even up to the present, the indigenous populations from Mexico to Peru have used the purple color from snails to dye certain articles of clothing, especially the wedding gowns of brides. The first mention of this custom in history is found in Ovieda (Nicoya, 1592), but this undoubtedly refers to a tradition that is much older. In the 17th. and 18th. centuries these colored cloths served as an important article of commerce. Since the 19th. century, however, the Indians have been able to buy cloth dyed with aniline colors. Nevertheless they prefer to pay ten times more for cloth dyed by genuine snail colors. Thus this color must have a special significance for them for which there is no substitute.

In the present century several Indian tribes on the Pacific coast - in Michoacan, Oaxaca, and in Central America and Ecuador - have persisted in using the dyes derived from snails to color their cloth. The snail most commonly used for this purpose is Purpura patula pansa. Such cloth is still an article of commerce in these regions - but on a much reduced scale - among the Huave, Mixe, Zapoteco, Chontal, and Mixteco tribes in Oaxaca. Since 1958 the relatively small trade has been dominated by a small town in Mixteca Baja called Pinotepa de Don Luis. In this town the women harvest, card, and weave the cotton into long white threads. These threads are then formed into skeins, each one containing about 100 meters (about 300 feet) of thread and each selling for 2 pesos per pound.

During the dry season about a dozen boys and men go to the shore, each carrying about 15 pounds of thread to be dyed. The first group appears on the shore at the beginning of November. Formerly they worked near the city of Acapulco, but today they prefer the area between Puerto Angel and Barra de Copalita, Oaxac Province, where they find a number of quiet coves, ideal for both snails and men. They prefer to work during the morning low tides. They say that the color collected during the full moon is better, but many work during the new moon as well. Each man carries from 10 to 20 skeins under his arm, and a sharp stick to loosen the hold of the more persistent snails. They walk along the shore, examining the shady sides of the rocks until they come across a colony of Purpura. The tinter pulls the snail off its rock and blows on it, thus forcing the infuriated animal to retract strongly. As it does so, it exudes a milky liquid which almost fills the mouth of the shell. This liquid is then poured over the cotton skein and the snail carefully replaced on the spot where it was taken. At first there is no colour on the threads, but when the skein is exposed to the sunlight, it first turns yellow, then brilliant green, and finally vivid and permanent purple. Normally the juice from six to eight large snails is enough to dye a skein of cotton. Before and after tinting, the skeins are dipped in the sea. The tinters then stretch the threads out and leave them all afternoon in the sun, often until dusk, so that the color can be more even and stable.

For an entire month the tinters go from one cove to another. The following

month they return to the first coves and "milk" the snails again. This continues until each skein has been tinted at least once; rarely is the same skein tinted twice. When their work is completed, the men throw their ill-smelling loads over their shoulders and return to Pinotepa. Skeins become much heavier after having been dyed. When the first group returns, others go to the shore to continue the work for two more months. Sometimes all work stops at the beginning of March, but ordinarily a third group of men comes and continues working until the end of April.

Back in their village, the tinters sell the purple skeins (called tishindá cayi yukvá in the Mixteco language) at 40 to 60 pesos a pound, depending on the quality of the color. Taking into account the increased weight of the tinted cotton, a good tinter can earn up to 1,200 pesos for two months of work. Some skeins are sold in Huazolotitlan, but most are sold in Pinotepa de Don Luis.

Sometimes a thin colored thread is used to trim a huipil of white cotton, but the most common use is as a thick thread in the posahuanco, the only article of clothing normally worn by the native women of Mixteca Baja. The garment is 1.2 by 3 meters in size (about 4 by 9 feet), with which the women wrap themselves from the waist down. It is held in place by two sashes. The garments are decorated with horizontal bands of blue, red, and purple. The posahuancos in daily use, in which the cheaper aniline dyes are used, do not cost more than 50 or 60 pesos. The garments with wide bands of snail purple are used only on weddings and other ceremonial occasions and cost between 300 and 600 pesos, depending on the amount of "snail" each one contains. The blue color comes from the indigo plant, and cochineal is sometimes used for red, but not as much as in former years. The posahuancos of Pinotepa de Don Luis are sold in all the neighboring towns and those colored by snail dye are very highly valued.

Reprinted from New York Shell Club Notes, No. 229, Feb. 1977 - with grateful acknowledgements.

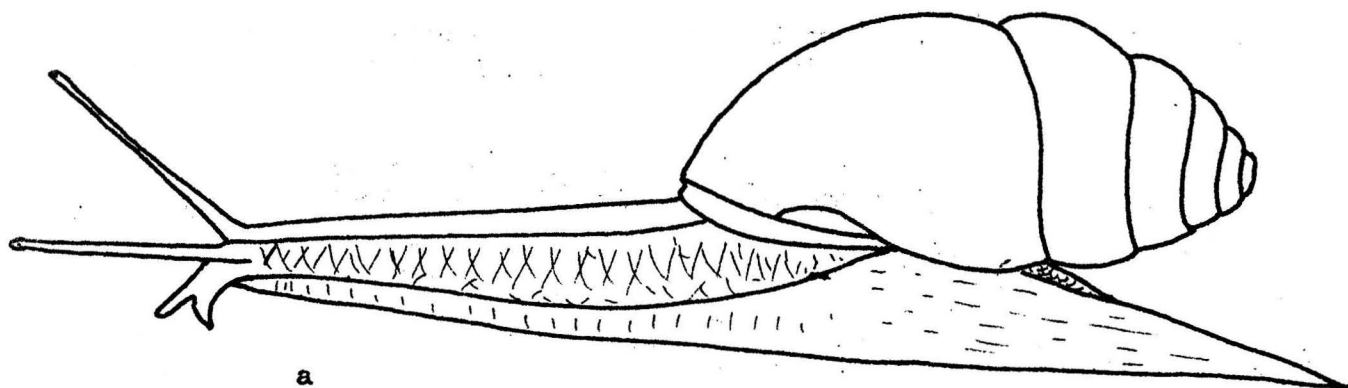
Peter Gerhard

SOME NOTES ON THE LARGER STREPTAXIDAE OF THE USAMBARA MOUNTAINS, TANZANIA

During 1949-1950 I spent nearly a year in the Usambara Mountains in the north-east of Tanzania and collected many molluscs, the working out of which is still not entirely complete even after some 30 years. The evergreen rain-forest in this area is renowned for the high degree of Endemism and it is sad that most of it has been destroyed and replanted with tea plantations. Attempts are being made at the last minute to conserve at least some of the forest and a complete report (including a list of all molluscs known from the area) will appear elsewhere. Whilst preparing the list I came across some old manuscripts giving details of some larger Streptaxidae. The increased interest in the area prompts me to publish these in the Newsletter.

Three species of Edentulina occur and the genus has been present in the African evergreen forests from at least some time in the Miocene. Edentulina ovoidea (Brug.) (including E. affinis Bttgr.)

I do not consider that the mainland populations can be kept separate from the species described by Bruguiere from the Comoro Is. but comparative anatomical studies have not I think been made. This species of which I give a sketch (Fig. 1) is (? was) common and feeds on large Urocyclid slugs. It chiefly frequents the open parts of the forest and is often found by roadsides on the forest edges. I found it at Amboni Caves, Tongwe Mt., Mt. Mlinga, Kisugu, Kihui track, Amani, Mt. Bomole, Ndarema, Ngua, Sigi Sengeli (narrow and fat examples together on Cedrela seedlings and undersides of Polypodium fronds) and also in

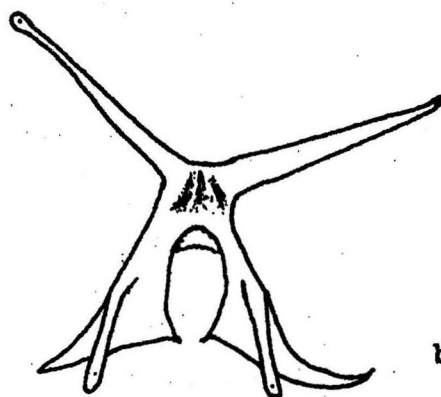


a

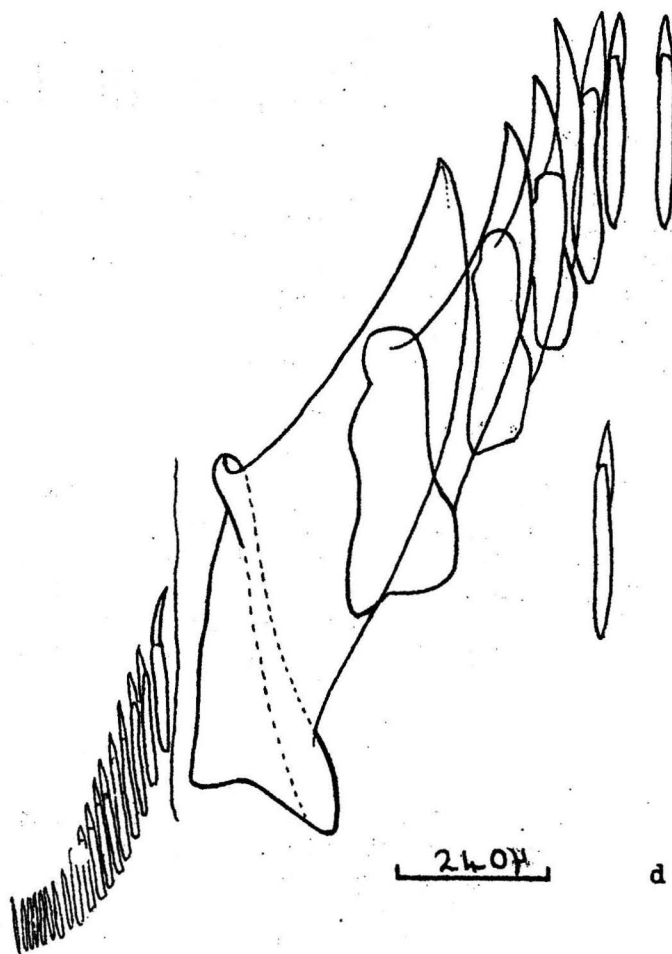


c

Figure 1



b



d

Figure 2

- a) Edentulina ovoidea (Brug.) E. Usambaras, Amani, fully outstretched, x 2.
 b) ditto, view from front.
 c) Third radular tooth from middle of a row 8 mm from nascent end.
 d) Gonaxis craveni (Smith) E. Usambaras, Amani; half row of radula showing remarkable division into two areas.

the W. Usambaras at Mkusi. There is material in the Berlin Museum from Ndarema (Conradt) (Volkens), Kithau (Lieder, 41 x 25 mm.), Amani (Vosseler) and Tanga (Karasek).

In common with many Streptaxidae the shell is very variable in size and shape as may be seen from the measurements given in the following table (in mm.)

Locality	Height	Breadth	Breadth of body whorl	Height of aperture
Amani	43	20	20	17 x 13.5
Mlinga	40	20	19	17 x 14
Kisugu	39	20	18	15
Amani	37	17	18	14
Ndarema	37	20	19	15
Amani, Nth bank of R. Kwamkuyu	36	17		
Ndarema	36	18	19	14
Sigi Sengeli	35.5	19	18.5	14.5 x 13.5
Ditto	35	17	16.5	14 x 12
Ndarema	35	17	16	14
Mt. Bomole	34	16.5	16	14

The shell has rough transverse growth lines and under a lens appears granulate or shagreened due to close shallow depressions; apical $3\frac{1}{2}$ whorls quite smooth and polished, without granulation; columella entering obliquely and roof of aperture with shallow emargination.

The extended animal is dark grey but the entire shell when occupied by the animal often has a pale rose-pink tinge particularly near the apex. In drowned specimens the snout is white and thin-tissued; everted genitalia thin-tissued, white, reddish tinged at the base, the genital opening being 2 cm. from the right upper tentacle; back leaden blue with the sole and sides pale greyish; there is a pale impressed line down the neck and back; foot long and tapering towards the hinder end and flattened dorsally; sole rounded in front and acute behind crossed by numerous transverse grooves; fringe grooved. The liver occupies the apical three whorls and is buff brown, reticulate and sparsely speckled. The radula is massive as would be expected of an animal which catches slugs with its protrusible snout (2.6 cm. long, 2-3 mm. wide with about 100 rows of sub-equal small aculeate teeth, about 28 in each strongly curved half-row which meet at the middle in a narrow acumen). Some details of the anatomy have already been given (Verdcourt, Coryndon Memorial Museum Occasional Papers No. 8 (1961)). A sketch of the animal made in 1950 is reproduced here showing something of its graceful form.

Edentulina oleacea (Fulton)

This is smaller than, and by no means as common as, the previous species. It was described from Ukami, Morogoro District, Tanzania. I collected material in the Usambaras at Ndarema; Kihui track; Mavumbi track; and banks of R. Kwamkuyu at Amani, all at about 600-900 m. It seems to favour young Achatina as food. Material in the Berlin Museum is as follows: Ukami (Staudinger), Ndarema (Conradt), Amani (Vosseler). The shell is finely transversely striate save for the apical $2\frac{1}{2}$ whorls which are smooth; the body whorl is shagreened, especially above the aperture, often giving the appearance of transverse impressions between the striae.

Locality	Height	Breadth	Aperture
Amani	24	13	10 x 8.5
Amani	23	13.5	9.5 x 8.5
Ukani	22	12	
Amani	21.5	12	8.5 x 7.5
Ukani	21	12.2	

The animal is remarkable for its very vivid green colour which shows through the shell but the protruded animal in which the pigment spots are separated is sometimes only yellowish in colour; the tentacles are brownish. The snout is protrusible as in the preceding species and it doubtless catches its prey from behind in a similar manner by almost throwing out the radula but it undoubtedly tackles smaller sized prey. A few anatomical details are given in the reference previously mentioned. There are also two specimens 29 x 16 mm. at Berlin, one from Ukani (Staudinger) and the other without locality (Methner) which are larger than E. oleacea and had been called ovoidea var. minor. Their identity is not certain.

Edentulina obesa (Taylor) (including var. bulimiformis Grandid)

This is a species of the coastal belt and not of the evergreen rain-forest proper. It was described from Zanzibar and Grandidier's bulimiformis, which is no more than a variety, from "between Usagara and Useghu". It just reaches the lowest parts of the foothills and I found it at the bottom of Mt. Tongwe amongst the rocky part of the lower grassland zone and three were found on the lower part of Mt. Mlinga, the mountain between the E. Usambaras and the coast. There is a good deal of material in the Berlin Museum as follows: Amani (Vosseler), Tanga (Karasek), Lussmersberg (Karasek), Usambaras without locality (Schmidt), Magila (Neumann), Pongwe on sisal (Vosseler), Kisemeo (Emin & Stuhlmann), Uluguru Mts, Mbogata and Tetegoro (Stuhlmann), Masai Nyika (Neumann). The shell has no regular striation; the body whorl is slightly flattened above the aperture; the columella enters obliquely into the aperture and where it meets the lower surface of the whorl which forms the roof of the aperture there is a conspicuous rounded emargination but this is very variable and not always distinguishable in the typical form of the species. The material I found can be referred to the variety.

Locality	Height	Breadth	Aperture
Mlinga	23	12	9 x 8
Ditto	22	10.5	9 x 7.5
Ditto	21.5	10.5	8.5 x 7

I did not find any living specimens but one of the shells still contained the remains of a deep green animal. The colouring is therefore presumably as in E. oleacea.

Gonaxis craveni (E.A. Smith)

This species was described from a specimen collected on the Kenya coast (between mouth of Dana (? Tana) R, and Mombasa) by Sir John Kirk and named by Smith for Alfred Craven about whom I have recently published a few details (Newsletter 69, p.147 & 70, p.165, 1979). No further material has turned up in this locality but Kirk was a careful collector and I have examined the type. It is a fairly common and characteristic species in the East Usambara rain-forest at 840-990 m. and I saw it at Amani, Monga, Mt. Bomole, Ndola, Ngua, Ngambi, and on the Kihui track. It was found to be abundant on the upper part of this track

correlated with an abundance of Achatina. There is material in the Berlin Museum as follows: Ndarema (Conradt), Amani (Vosseler), and Tanga (Karasek). It is active in the early evening but was not observed to feed but presumably feeds on Achatina. A single young shell was also found on the summit of Mt. Tongwe and I have since found it on Vuria Peak, Bura Hills, Kenya, and have seen specimens from Mbololo Hill in Kenya and Mlinga and Tongwe Mts. in Tanzania. Shells of young specimens are regular and helicoid and bear a striking resemblance to Tayloria species and only great care in examination of details of sculpture allow them to be distinguished. The shell is very glossy with irregular usually fine growth lines and sometimes very faint lines at right angles; there are short strong striae just below the suture which is puckered. The species is very variable in size and the three smallest I have seen are detailed below.

Locality	Length	Breadth	Aperture (height)
Usual dimensions	23-29	26-29	15-16
Between Ndarema and Ngambo	24	24	13
R. Sigi headwaters	23	21.5	13
Kihui track	21	20	12

The body is a pale livid flesh pink when seen through the shell or the upper whorls may appear grey and only the body whorl pinkish. When outstretched the body is seen to be whitish with the corrugations down the back a pale pink with a 'granulated' look. There is a brighter dorsal line of red on the tentacles. Details of the highly characteristic radula were given long ago (Verdcourt, Proc. Malac. Soc. 29: 7-8 (1951)) and the anatomy is briefly described in the other reference already mentioned. The radula is refigured here (Fig. 2).

Gonaxis vosseleri Thiele

This was originally confused by von Martens and others with G. mamboiensis (E.A. Smith) but Thiele realised that two distinct species were involved. It has also been confused with G. enneoides (von Marts.) and G. elongatus (E.A.Sm.) In fact I had all four names back from various authorities for my material before I managed to make certain of its identity myself. I found only very few specimens. Several shells were found on burnt clearings at Amani and Ndarema and one in dry scrub lower down by the roadside at Kisiwani. After much searching, a single living specimen was found at Amani above the R. Dodwe. There is material in the Berlin Museum as follows: Ndarema (Conradt), 'Tanga' (Karasek), and Mkulumusi (Schröder). The shell (about 17 x 12 mm.) is very strongly ribbed save for a smooth area just above the aperture; the roof of the aperture has a single parietal denticle. The animal is the most striking of all the Streptaxidae seen alive in the Usambaras being grey-black with a broad band down the neck and back bright vermillion; the upper tentacles are also bright vermillion. Once again the anatomy has been partly described in the reference already mentioned.

B. Verdcourt

OXFORDSHIRE MOLLUSC RECORDS

In reference to the notes on tetrad mapping in the Newsletters Nos. 68 and 69, Oxfordshire like most counties in England now operates a Biological Recording Scheme run by the County Museum Service. Although the schemes vary in detail, most, like Oxfordshire, record the distribution of species on a tetrad,

2km. square basis, and in detail all sites of natural history interest, for their region. The mapping part of the scheme includes checking for new 10km. square records which have not been published in atlases, such as that for Terrestrial and Freshwater Molluscs. Such new national records are then forwarded to the appropriate recorders.

The Oxfordshire scheme is now in its fifth year and many discoveries have been made. One of us (T.E.C.) has undertaken the work of identifying and recording molluscan specimens collected in the field either by conchologists or interested members of the public. Already a number of notable discoveries have been made which are described below.

Valvata macrostoma was known only from a backwater of the R. Thames in Oxfordshire. In 1979 it was found in a flight of ponds, which eventually join the Thames some 16 miles downstream of the known backwater. A month or so later further specimens were found in a large ditch near the Buckinghamshire border. An increase of 200% for Oxfordshire.

Pseudanodonta complanata was already known from the R. Thames and the Oxford Canal in Oxfordshire. Now it has been found above the so called "gorge" stretch of the R. Evenlode on the edge of the Cotswolds. Specimens have also been found in the R. Thame in east Oxfordshire and from further stretches of the Oxford Canal. So far four new 10km. square records have been recorded.

One function of the Biological Recording Scheme run in Oxfordshire is to bring together the observations in old journals and other publications about the natural history of the County. For molluscs we have amongst others, the list compiled by J. F. Whiteaves, and published by the Ashmolean Society in 1857, L. W. Grensted in the Natural History of the Oxford District (Ed. J.J. Walker 1926), A. E. Ellis, J. Conch. 18, p.137, 1926, and C. Oldham, J. Conch, various dates. These and other publications do indicate sites worth checking for less common species. Following up such old records has proved that Ena montana still exists in two West Oxfordshire sites, and two new sites have been discovered. With local species such as Helix pomatia only two new 10km. square records, but several new locations have been discovered within known 10km. squares. One such site, probably the strongest in the county, is in a railway cutting. Sampling in the Oxfordshire rivers has so far given rise to two new 10km. square records for Theodoxus fluviatilis, but many stretches of river have yet to be examined in detail.

Although our recording of the molluscs in Oxfordshire has not been particularly systematic, good progress has been made. However, help is required. If any member of the Society has records for Oxfordshire, or visits Oxfordshire in future, we would be most grateful for copies of your records.

June 1980, J. M. Campbell and T. E. Crowley
Oxfordshire County Museum, Woodstock, Oxford, OX7 1SN

THE GROUND BEETLE CARABUS IMPRESSUS FEEDING ON SNAILS IN ISRAEL

Most beetles belonging to the family Carabidae, the so-called ground beetles, are well-known for their carnivorous behaviour. Although many species attack almost every edible living creature up to their own size, including their own kind, others are rather specialised and feed only on a single item: snails, slugs or worms. According to Verdcourt (1978) Cychrus caraboides var. rostratus is a good British example of ground beetles specialised in feeding on snails.

Among the Carabid beetles living in Israel, are also quite a number which feed occasionally on snails. Records are, however, rather scarce since they

have to be established by actual observations. (Remains of snails are never encountered in the faeces of species of the genus Carabus since the digestion in this group is exclusively extraintestinal (Thiele, 1977: 106)). Unfortunately carabidologists only record at best the predators, while malacologists only identify the victims. Co-operation between entomologist and malacologist is unfortunately a rare item. Therefore the actual number of Carabid beetles feeding on snails may be much higher.

A good example of a snail-eating Carabid in Israel is Carabus impressus, a coal-black beetle about 27mm., commonly encountered in most parts of the country. When this beetle encounters a snail, it attacks the victim with his strong mandibles. At the same time it injects a fluid, which not only calms down the movements of the snail, but helps also in decomposing the flesh. The resulting watery mass is taken up by the beetle. If the snail retreats in its shell or the beetle is unable to reach part of the victim's remains, then it bites away part of the shell with its mandibles (Mienis, 1978a, 143, fig. 3).

In previous notes I have reported on three cases of predation on snails by Carabus impressus (Mienis, 1978a-c), however, in the meantime I was able to register 22 additional cases of predation. All are enumerated in Table 1.

TABLE 1. Records of Predation on Snails by Carabus impressus*

No.	Prey species	Locality	Date
1	<u>Cernuella arrouxi</u>	Netzer Sereni	17 December 1977
2	<u>Monacha haifaensis</u>	Netzer Sereni	19 April 1978
3	<u>Xeropicta vestalis joppensis</u>	En Nesher, Carmel	11 May 1978
4	<u>Euchondrus ovularis</u>	Rehovot	22 February 1979
5	<u>Xeropicta vestalis joppensis</u>	Rehovot	22 February 1979
6	<u>Monacha haifaensis</u>	Rehovot	22 February 1979
7	<u>Monacha haifaensis</u>	Netzer Sereni	1 March 1979
8	<u>Theba pisana</u>	Rehovot	2 March 1979
9	<u>Eopolita protensa jebusitica</u>	Rehovot	2 March 1979
10**	<u>Helix engaddensis</u>	Rehovot	2 March 1979
11**	<u>Helix engaddensis</u>	Rehovot	2 March 1979
12	<u>Theba pisana</u> juv.	Netzer Sereni	7 March 1979
13	<u>Monacha haifaensis</u>	Netzer Sereni	7 March 1979
14	<u>Theba pisana</u> juv.	Hoter	14 March 1979
15	<u>Monacha haifaensis</u>	Hoter	14 March 1979
16	<u>Xeropicta vestalis joppensis</u>	Hoter	14 March 1979
17	<u>Monacha haifaensis</u>	Netzer Sereni	15 March 1979
18	<u>Helix engaddensis</u> juv.	Netzer Sereni	18 December 1979
19	<u>Xeropicta vestalis joppensis</u>	Netzer Sereni	28 December 1979
20	<u>Helix engaddensis</u> juv.	Netzer Sereni	28 December 1979
21	<u>Xeropicta vestalis joppensis</u>	Netzer Sereni	9 January 1980
22	<u>Monacha haifaensis</u>	Netzer Sereni	9 January 1980
23	<u>Monacha haifaensis</u>	Netzer Sereni	10 January 1980
24	<u>Eopolita protensa jebusitica</u>	Nes Ziona	12 January 1980
25	<u>Monacha haifaensis</u>	Nes Ziona	12 January 1980

* All observations by the author.

** Larvae of Carabus impressus.

According to these data both juveniles and adults of Carabus impressus are feeding on snails. As prey species I could register: Euchondrus ovularis (Olivier, 1801), Eopolita protensa jebusitica (Roth, 1855), Cernuella (Microxeromagna) arrouxi (Bourguignat, 1863), Xeropicta vestalis joppensis (Schmidt, 1855), Monacha haifaensis (Pallary, 1939), Theba pisana (Müller, 1774) and Helix engaddensis Bourguignat, 1852. In captivity it accepted juvenile specimens of Levantina spiriplana weneri (Kobelt, 1889) and Cochlicella barbara (Linnaeus, 1758). It is not known whether predation on these snails by Carabus

impressus plays a role in the natural selection of these gastropods. However, sometimes large numbers of predated snail shells are found in the hideouts of these beetles.

The predation in captivity on Cochlicella barbara, an introduced pest species, is interesting. However, both are living in completely different habitats, therefore a role of Carabus impressus in a biological control programme against Cochlicella barbara may be ruled out.

Since most observations on the predation of snails by Carabus impressus have been carried out within a radius of 5 kilometers of Kibbutz Netzer Sereni, the residence of the author, it is more than possible that this beetle is pre-ating on quite a number of other terrestrial snails.

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- Thiele, H.U., 1977. Carabid beetles in their environments. Zoophysiology & Ecology, 10:VII-XVII, 1-369. Springer-Verlag, Berlin, Heidelberg, New York.
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Henk K. Mienis

Zoological Museum, Mollusc Collection, Hebrew University of Jerusalem, Israel.

CARABID BEETLES AND SNAILS

A number of species of ground beetles are known to feed on snails. A recent publication* relates the different shapes of the body of ground beetles to the feeding habit of the beetle. Carabids of the tribe Cychrini feed on snails and in these beetles the head and thorax are narrow and elongate, enabling the beetle to crawl inside the snail shell, following the snail as it retracts into its shell. In addition the deep constrictions on the jointing between the head and thorax and the thorax and abdomen increase the flexibility of the body and probably facilitate the entering of the spiral inside of the snail shell.

*Thiele, H.U., 1977. Carabid beetles in their environments. Springer-Verlag. Berlin, Heidelberg and New York (Chapter 1).

(from Dr. J. E. Chatfield)

ANNUAL SUBSCRIPTIONS, 1981

Dear Members,

Will you all please make a note to remember to pay your Annual Subscriptions for 1981 promptly. The Subscription is due on 1st. January; Members paying before 31st. March may deduct the sum of 50p (U.S. \$1.25). (This concession does not apply to Junior Members). Cheques and Postal Orders should be made payable to the Society, and sent to me. Receipts will not be sent unless spec-

ially requested, and each such request must be accompanied by a stamped addressed envelope.

Will you also please ensure that the amount of your Subscription is correct. A number of Members are still in arrears for the increase in the Subscription which came into force in 1980, and they have not received copies of the Journal of Conchology Vol. 30, Part 4. Copies will be despatched on receipt of the arrears; the Society regrets the need for this action, but Members will realise that the increase in the Subscription was made most unwillingly and as a matter of necessity. Present rates are as follows:

Ordinary Member	£ 7.00	(U.S. \$ 17.50)
Family Membership	£ 8.00	(U.S. \$ 20.00)
Junior Member	£ 1.50	(U.S. \$ 3.75)
Institutional Member	£ 10.00	(U.S. \$ 25.00)
Life Member	£140.00	(U.S. \$375.00)

You are reminded that only the votes of Members whose current Subscriptions are paid will be valid in the election of Officers and Council Members for 1981.

The Society will be grateful to all Members who pay the correct Subscriptions promptly, as individual reminders are now very expensive.

A number of Members pay their Annual Subscriptions by means of Seven Year Covenants, and the tax reclaimable is most useful to the Society. I shall be happy to send a form of covenant, with explanatory letter, to any Member who may be willing to consider this method of payment.

Yours sincerely,
Marjorie Fogan, Hon. Treasurer
[REDACTED], Atherton, Manchester, [REDACTED]

GENERAL NOTES

IDENTIFYING SLUGS AND SNAILS. A residential weekend course for beginners at Juniper Hall Field Centre (near Box Hill) 7.00 p.m. Friday 29th. May - 4.30 p.m. Sunday 31st. May 1981. Fee: £32 per person including board and lodging. Tutor: Dr. R. A. D. Cameron. Full details and booking form from: The Warden, Juniper Hall Field Centre, Dorking, Surrey, RH5 6DA

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE. A.N.(S.) 115
c/o British Museum (Natural History), Cromwell Road, London, SW7 5BD 7.10.1980.

The Commission hereby gives six months' notice of the possible use of its plenary powers in the following case, published in Bull. zool. Nom. Vol. 37, part 3, on 25th. September 1980, and would welcome comments and advice on it from interested zoologists. Correspondence should be addressed to the Secretary at the above address, if possible within six months of the date of publication of this notice.

1777 Voluta papilio Link, 1807 (Gastropoda), proposed conservation.

R. V. Melville, Secretary

MISS BRONWEN SCOTT, a third year zoology student, Dept. of Zoology, Bristol University, University Road, Bristol, BS8 1BH, is very anxious to obtain live specimens of Testacella for a study of form and function of the radula. Please can anyone help - postage on specimens will be refunded.

JOURNAL OF SHERKIN ISLAND. An important new addition to the few biology and

natural history journals of Ireland. Published by Matt Murphy, Sherkin Island Field Study Centre, Sherkin Island, Co. Cork, Ireland ('phone Baltimore 87). Much research is done on the Island, a number of European Universities run annual field courses here and visitors from other centres and museums can stay at the Sherkin Island Field Study Centre. Journal Subscription - £15 (Ir.) Individuals, £25 (Ir.) Libraries, Institutions.

OCEAN FLOOR BIVALVES. The National Geographic Society Expedition has found molluscs of the East Pacific ocean floor between the Galapagos Islands and the coast of Equador that live without sunlight in an ecosystem supported by volcanic action. The sea seeps "into vents on the ocean floor, where it becomes superheated, and its sulphates are turned under immense pressure and heat into hydrogen sulphide. Bacteria feed on this, and on minerals which are spewed up as exotic food." (Radio Times)

Chemosynthesis produces food for giant clams "the size of dinner plates filled with strange red meat" (Radio Times) and for limpets previously known only as Palaeozoic fossils.

A remarkable film was shown on BBC2 in "The World About Us" series on 14th. September 1980. If you missed it, watch for a repeat!

Betty M. Smith

F.A. & S.M. TURK, THE OCCURRENCE IN CORNWALL OF ANIMALS ALIEN TO THE BRITISH FAUNA. Cornish Biological Records, No. 3, 1980. Institute of Cornish Studies, Trevenson House, Pool, Redruth. Price 60p plus postage 22p.

All animals except birds are included, marine, land and freshwater. "The year 1800 has been considered as a terminus ante quem for our present purposes. Earlier ones exist in our data-bank and the interested research worker may consult these as well as the relevant references in our Bibliography of Cornish Natural History currently amounting to some 7,800 citations of the literature by some 4,000 authors." Mollusca recorded include: Pseudachatina gravenreuthi from a warehouse in Truro; Boettgerilla pallens, from the Turks' garden at Reskadinnick; Testacella maugei; Theba pisana; Potamopyrgus jenkinsi; alien Physa; Dreissena (a fresh specimen found by the Hayle River); Helisoma; Janthina; Ommastrephes caroli; Spirula (shells only); Bankia tintinnabulum (West Indian shipworm); Callochiton fulvus; Crepidula fornicata; Gryphaea gigas.

(from A. E. Ellis)

CONCLUSION OF CLINICAL TRIALS OF PERNA CANALICULUS, the New Zealand green-lipped mussel for the alleviation of arthritis by an anti-inflammatory agent.

Work began with a Perna canaliculus preparation five years ago. The mussel extract, enclosed in capsules, was prepared by Mcfarlane Laboratories, Auckland, New Zealand. The patients were chosen from the joint surgery waiting list of Victoria Infirmary, Glasgow. The results to date suggest Perna canaliculus "reduces the amount of pain and stiffness, and improves the patient's ability to cope with life" with "low incidence of side effects."

A detailed account of the trials is published in the September 1980 issue of "The Practitioner" (£1), journal of postgraduate medicine, 30 Calderwood St., London, SE18 6QH. A complimentary copy of the account is in the hands of the Society.

Betty M. Smith

EXCHANGE WANTED. I am a shell collector of Portugal and all the World. I've got Portuguese species to exchange and I would like to know if any members are interested. Fernanda Pinto, [REDACTED], 4100 Porto, Portugal.

THE SOCIETY'S PUBLICATIONS

Back numbers of the Conchologists' Newsletter may be obtained from J.D.R. Fryer, Dept. of Geology, King's College, Strand, London, W.C.2, at 50p each plus postage. The Hon. Secretary, Mrs. E.B. Rands, can supply copies of the Marine Concordance, 30p to members and 50p to non-members, the Atlas of Non-Marine Mollusca, £2.50 to members plus 85p post/packing and £3 to non-members plus 85p post/packing. Enquiries for back numbers of the Journal of Conchology should be addressed to the Editor, Dr. C.R.C. Paul.

Papers for Students can be obtained from Mr. A. Norris, Natural History Dept., City Museum, Municipal Buildings, Leeds, LS1 3AA.

FOR SALE. We are suppliers of tropical sea shells, land snails, coral and sea curios to collectors, schools and colleges. S.A.E. for lists.
Nature of the World, 19 Bell Lane, Fetcham, Leatherhead, Surrey.

MRS. ALICE WILKINS, widow of Guy Wilkins, died suddenly on 19th. July of a heart attack whilst travelling to a concert. She was aged 70, in good spirits having recovered from an earlier, severe heart attack. She died as she would have wished, in full flight.

(from Ronald Brown - nephew and executor)

DAVID R. FELD, [REDACTED], Hove, East Sussex, [REDACTED] now has copies of his 'Shells on Stamps' available, cost £1.10 including post/packing. This includes all shell stamps up to mid-1980 and can be used as a catalogue.

CHRISTMAS 1980

The Newsletter Editor sends Seasonal Greetings and Good Wishes for the New Year to every reader.

THE NEWSLETTER IN 1981

I look forward to receiving some interesting and varied items for the issues next year. In particular, field meeting reports, notes on collections and museums and any news items or comments from Junior Members. All will be welcome! Because of the high cost of postage and the need for strict economy, we do not send acknowledgments to contributors unless a specific query has to be answered or a S.A.E. is enclosed.

P. E. Negus, Newsletter Editor

"DEVELOPMENTS IN DEEP-SEA BIOLOGY", by N. B. Marshall. Blandford Press, 1979. £15.00. Recommended.

Those interested in abyssal molluscs will find plenty of food for thought and useful references in the text with dates, in this very readable fat volume. It is well illustrated with clear black and white drawings, and fits molluscs into the chain of other deep-sea life.

Perhaps it should be said that knowledge of the abyssal area has increased greatly in recent years and is increasing.

Betty M. Smith

Duplicated by: SPEEDWELL PRESS, Trap Road, Guilden Morden, Royston, Herts.

THE CONCHOLOGISTS' NEWSLETTER

No. 76

ISSN 0573-2336

Newsletter Editor: P. E. Negus,

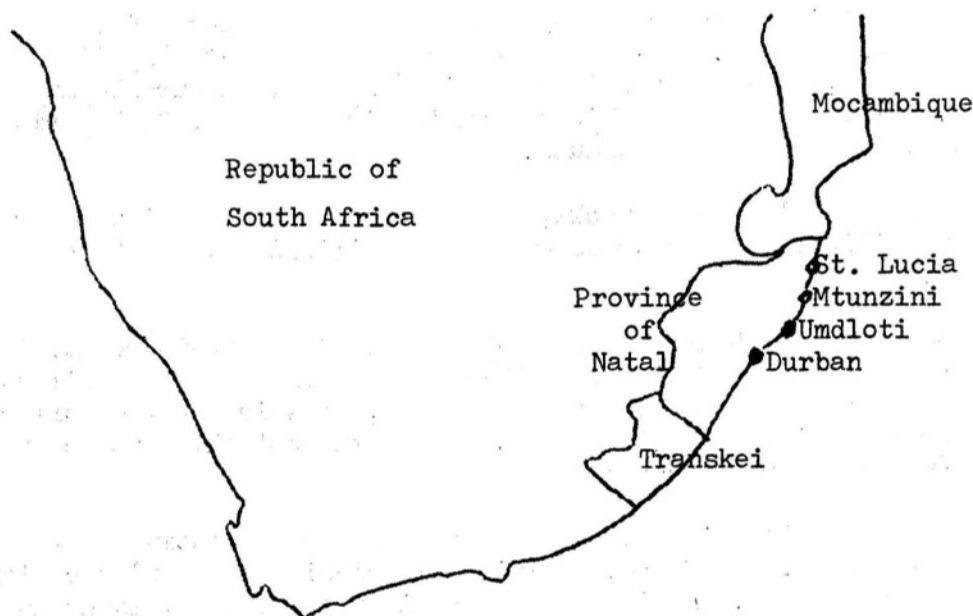
March 1981

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Chelsea Bridge Road,
London,

Produced by THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

A BRIEF VISIT TO NATAL'S WILD COAST



The coast of Natal, South Africa, stretches for some 550 km. from south of Mocambique to the Northern border of the Transkei. It is not protected by a barrier reef or any off-shore islands, so that the Indian Ocean has an unbroken sweep right up to the shore line.

During my all too brief visit to the coast in August 1980, a strong wind blew constantly from the north-east. A heavy swell pounded the shore making swimming difficult and snorkling impossible. Collecting was, therefore restricted to the tidal zone.

The coast is composed of long stretches of sandy beach interspersed with occasional rocky outcrops jutting into the sea. The estuaries of small rivers reach the sea, but often terminate in brackish water lagoons. They are cut off from the sea by a high sand bar which is only breached at the height of the rainy season.

The long sandy beaches, happily devoid of the plastic bottles and oily tar so common to our coasts, unhappily threw up very little in the way of shells!

At St. Lucia, near the estuary bar, a careful search of the receding surf revealed several species of Nassariidae; Bullia natalensis (Krauss), B. rhodostoma Reeve, and B. diluta (Krauss). Donax sordidus Hanley was also found just beneath the surface of the sand, its presence being indicated by a small depression on the

surface of the sand leading to the siphonal tube.

Further south at Mtunzini, an area of mangrove swamp, surrounding a small lagoon, provided a pleasantly different scene. Large crabs, with bright red pincers, scuttled to and fro between the roots of the mangrove trees. A Potamid, Cerithidea decollata (Linn.), was present in enormous numbers, climbing the mangrove stems to a height of a metre or more above the mud, and well beyond high water mark.

North of Durban, at Umdloti, the first opportunity arose for a look at one of the rocky outcrops. The low tide revealed many rock pools containing several different sea-weeds. The first impression on seeing the bare rock was one of amazement! The whole surface appeared to be covered either with barnacles, or with edible oyster, Crassostrea margaritacea Lamarck. The South African edible mussel, Perna perna Linn. was also present in large clusters.

In amongst this abundance, many limpets of all shapes and sizes were to be found in the splash zone. The following have been tentatively identified: Patella variabilis Krauss, Cellana radiata capensis (Gmelin), Fissurella mutabilis Sowerby, F. natalensis Krauss, Diodora australis (Krauss), Siphonaria aspersa Krauss and S. cynaneomaculata Krauss.

On the less well covered rocks, the Littorinids, Littorina scabra Linn., L. punctata Philippi and Tectarius granosus (Philippi) had a chance to proliferate.

The rock pools harboured Thais bufo (Lamarck) and Thais gemmulata Lamarck. In small crevices and on flat ledges Nerita albicilla Linn. and Ritena plicata (Linn.) were to be found. Under the sea-weeds, browsing on the surface algae, the Trochids, Trochus nigropunctatus Reeve, Monodonta australis Lamarck and Oxystele tabularis (Krauss) were discovered.

Under a small stone in a rock pool, a sole representative of the Cypraeidae, Cypraea annulus Linn. was found. Trivia pellucidula (Gaskoin) occasionally appeared on coarse sand. A single dead specimen of Conus tinianus Hwass was picked up in an adjacent pool, in surprisingly good condition. The large chiton Chiton gigas Gmelin, and the much smaller Chiton castaneus Gmelin were to be seen in deep crevices.

Although some species were exceedingly common, many were only found as single specimens or in small numbers. Obviously more time and care spent in collecting would have realised more species. However, it is not an easy coast to obtain shells from, particularly during periods of strong winds. Even when searching amongst the rocks and pools a watchful eye must be kept on the advancing tide, for the huge rollers racing in to break on the rocks could spell severe injury if not death to the unwary.

References:

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Keith Erskine

SOME LAND MOLLUSCA OF LUGANO, SWITZERLAND

Stimulated by Kerney and Cameron's classic, "A Field Guide to the LAND SNAILS of Britain and North-west Europe" (Collins, 1979), my wife and I decided to take a

short holiday at Lugano. Our reason for choosing this southern Ticinese resort was the mention in the guide of no fewer than nine species of mostly S. Alpine range but occurring exclusively in the Ticino canton within the area covered by the book. Eight further southern European species, which are found in only a few north-western locations also live in Ticino. The possibility of collecting some of these snails and the chance of seeing the many alpine flowers in their natural habitat was a good enough excuse for going there and enjoying the beautiful scenery and excellent cuisine.

We limited our search to a comparatively small area within a 4 mile radius from the centre of Lugano and including Monte San Salvatore (2995'), which dominates the town at the western end and Monte Bre (3055') at the eastern end. This predominantly limestone area supports a fairly rich molluscan fauna of which Helicodonta obvoluta (Müller) is by far the most common followed by the two large clausiliids Itala itala (Martens) and Laciniaria plicata (Draparnaud). We only found the striking Chilostoma cingulatum (Studer) on one occasion. A fairly large colony was living on broken limestone rocks half-way up the path from lake Lugano to the main road, at Cape San Martino, on the outskirts of the town. A colony of Granaria illyrica (Rossmässler) was found only at the top of Monte San Salvatore.

The tops of both local peaks are easily accessible by means of well marked leafy paths. These are sometimes steep but, with constant stops for snail-hunting and examination of the varied flora, the ascent did not present any problems. The return journey can, of course, be made by the frequent funicular service, if so desired.

Our list of molluscs recorded leaves a lot of scope for additions.

Cochlostoma septemspirale (Razoumowsky), Succinea putris (Linne), Columella edentula (Draparnaud), Granaria illyrica (Rossmässler), Chondrina megacheilos (Cristofori & Jan), Ena obscura (Müller), Discus rotundatus (Müller), Arion ater (Linne) Orange colour-variety only, Arion subfuscus (Draparnaud), Arion silvaticus Lohmander, Retinella hiulca (Albers), Oxychilus draparnaudi (Beck), Oxychilus cellarius (Müller), Zonitoides nitidus (Müller), Milax rusticus (Millet), Deroceras reticulatum (Müller), Itala itala (Martens), Macrogastra plicatula (Draparnaud), Clausilia parvula Ferussac, Neostyriaca strobili (Porro), Laciniaria plicata (Draparnaud), Perforatella incarnata (Müller), Ciliella ciliata (Studer), Drepanostoma nautiliforme Porro, Helicodonta obvoluta (Müller), Chilostoma cingulatum (Studer), Cepaea nemoralis (Linne), Helix pomatia Linne.

We have, regrettably, only two records of fresh-water snails. Lake Lugano is enclosed by quay walls, in the area surveyed, with short flights of stone steps to the water at regular intervals. Not only does this not create a natural habitat but each set of steps appeared to be inhabited by one or more brace of wild ducks who would probably dispose of any molluscs in the vicinity. Under the circumstances we were lucky to find one live and one dead Lymnaea peregra (Müller).

The small lake Muzzano, about 3 miles from the town, looked like a good collecting area with reeds and other vegetation growing along the marshy banks and fallen trees half submerged in the water. It proved, however, to be most disappointing. Here, apart from Succinea putris and Zonitoides nitidus listed above, we only found a single live Physa fontinalis (Linne). Had we had suitable collecting equipment with us we might have been more successful but one would have expected more life on the reeds and submerged logs.

In conclusion I would like to express my warm thanks to Dr. Michael Kerney for his ready willingness to examine some of our material and his subsequent most helpful comments.

Roger Fresco-Corbu

MOLLUSCS IN HAMPSHIRE

Report of the weekend meeting held at the Oates Memorial Museum and the Gilbert White Museum, Selborne, 26-27 April 1980.

Over 30 people attended this most successful joint meeting with the Malacological Society of London. The first day was devoted to lectures while the second was given to field work, all within walking distance of the museum. Abstracts of the lectures are given below together with an account of the field meeting.

GILBERT WHITE AND MOLLUSCS

June Chatfield, Gilbert White Museum, Selborne

Selborne is associated with two early naturalists, the Reverend Gilbert White (1720-1793) and Professor Thomas Bell (1792-1880), both of whom lived at "The Wakes". Gilbert White's earliest observations on natural history were by-products of his interest in gardening for they were included in the Garden Kalendar, kept from 1751-1771. Slugs and snails received attention in this although not in a very favourable light as the following quotes show:

February 27, 1764 "The snails continue to annoy the Cucr: (cucumber) bed; & have destroyed all the plants in one hill, & damaged several others."

And again - February 29, 1764 "...the snails damage them every night".

White was not a mollusc conservationist and he was doing his best to control them.

April 10, 1756 "No snail ever comes near a place well sprinkled with quick-lime, especially in a frame where the wet is kept off."

Slugs also came in for some remedial treatment, particularly when they attacked the French beans.

In 1768 White was presented with a specially prepared Naturalist's Journal which was presented to him by Daines Barrington, one of the numerous naturalists who frequented his brother Benjamin's book business in London. Shortly after this, the Garden Kalendar was discontinued and garden notes incorporated in his new journal alongside natural history observations.

White recognised the close relationship between slugs and snails and he made some observations on behaviour and hibernation.

March 31, 1775 "The shell-less snails, called slugs, are in motion all the winter in mild weather, & commit great depradations on garden plants...while the shelled snail, ... does not come forth at all 'til about April the tenth; and not only lays itself up pretty early in the autumn, in places secure from frost; but also throws out round the mouth of its shell a thick operculum formed from its own saliva; so that it is perfectly secured, & corked-up as it were, from inclemencies. Why the naked slug should be so much more able to endure cold than its housed congener, I cannot pretend to say."

He also noted predation of birds on the local snail population:

June 5, 1775 "...thrushes seem to live on snails. Thrushes do great service in hunting-out the snail-shells in the hedges, & destroying them: the walks are covered with their shells."

Breeding habits did not escape White's observing eye:

June 15, 1775 "Snails copulate about Midsumr; & soon after deposit their eggs in the mould by running their heads & bodies under ground".

The natural history observations did not indicate a change in attitude towards the Mollusca for White continues:

"Hence the way to be rid of them is to kill as many as possible before they begin to breed."

Gilbert White had a fascination for the phenomenon of hibernation and in one

of the letters in his Natural History of Selborne he compares the spring emergence of both snails and his pet tortoise, Timothy:

"While I was writing this letter, a moist and warm afternoon, with the thermometer at 50, brought forth troupes of shell-snails; and, at the same juncture, the tortoise heaved up the mould and put out its head;"

MAPPING NON-MARINE MOLLUSCA IN THE ISLE OF WIGHT

R. C. Preece, Imperial College, London

With the disappearance of many woodland and wetland habitats, there is an urgent need to have accurate up-to-date information on the occurrence and status of all species of plants and animals and not merely the more popular groups. Only when armed with such knowledge can conservation organisations carry out effective measures to protect endangered species. The Biological Records Centre (BRC) was formed at Monks Wood in 1964 to co-ordinate national recording schemes and a series of atlases recording the geographical distributions of various organisms using the 10 km grid squares has been published, including one covering the non-marine Mollusca.

However for many of the smaller counties, the 10 km grid is a rather large and coarse mapping unit and it has become usual to divide each 10 km grid square into 25 smaller squares, each 2 km x 2 km, known as tetrads. The collection and storage of this information is the role of local Biological Record Centres. Since 1975 I have been recording the distribution of non-marine Mollusca in the Isle of Wight (v.c. 10) on a tetrad basis. When the survey was completed earlier this year over 4,000 records had been filed from the 121 tetrads that cover the Island. This makes the average number of species per tetrad 33, while the richest tetrads had totals exceeding 70. 115 species, rather over half those known from the British Isles, are now recorded from the Isle of Wight. Similar mapping schemes are currently under way in several counties and it is hoped that even more counties will undertake such surveys. The production of a regional tetrad atlas for the south-eastern counties is a long-term possibility.

The results of the present survey will shortly be published by the Isle of Wight Country Museum Service and will be obtainable from Dr. A. N. Insole, Museum of Isle of Wight Geology, High Street, Sandown, Isle of Wight, PO36 8AF (price £2.75 including P & P).

THE RELATION BETWEEN SHELL SIZE AND POPULATION DENSITY IN CEPAEA MEMORALIS L.

M. Carter, Portsmouth Polytechnic

Most ecological genetical studies of the land snail *Cepaea nemoralis* L. have been concerned with variation of the shell colour and band pattern phenotypes. However, Wolda (1969, 1972) showed systematic variations of shell size in both time and space which he suggested might be due to natural selection.

We have monitored a group of populations of *C. nemoralis* in a dry valley system on the South Downs near South Harting, West Sussex over the past twelve years. The mean shell sizes of individuals in these populations vary systematically with geographical position and there are cyclical variations of shell size with time (Carter and Morgan-Huws in prep.).

Faecal analysis combined with estimates of plant cover have shown that snails select their food (Williamson and Cameron 1976, Carter Jeffery and Williamson 1979). Snail growth rates are greatest on a diet of herbs which are their preferred food (Williamson and Cameron 1976). It seemed possible that differences in food quality might affect snail sizes in natural populations. This does not, however, seem a likely explanation of the observed differences between populations as there is no correlation of snail size or density with the distribution of

particular herbs or herbs in general (Cameron, Williamson and Morgan-Huws 1977). Furthermore, one of the most dense populations (5 snails m⁻²) has been shown to consume less than 1% of the above ground primary production (Williamson, 1975). Food, is therefore, unlikely to be limiting.

There is a strong negative correlation between shell size and population density (Williamson, Cameron and Carter, 1976). As food was unlikely to be limiting snail interactions were proposed as causing this relationship.

Laboratory experiments have demonstrated that snails recognise each other's slime trails which inhibit their activity.

In an experiment with excess food, juvenile snails were less active and showed lower growth rates under crowded conditions (8 snails/container) than under uncrowded ones (1 snail/container) (Cameron and Carter, 1979). Similar results have been obtained by Oosterhoff (1977).

Further experiments (Carter in preparation) have shown that small snails lay fewer eggs which have a lower hatching success than larger snails. It is also true that crowded snails produce fewer eggs than uncrowded ones.

The relatively rapid cyclical changes of shell size within our natural populations over twelve years suggest that there is a large environmental component for this character. Interaction between snails through their slime trails, affecting activity growth and fecundity could go a long way to account for the changes we have observed.

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MOLLUSCS OF THE SOLENT

J. Coughlan, Central Electricity Generating Board, Fawley, Hampshire

The Solent lies at the biogeographical division of the Channel into east and west basins. Docks, an oil terminal, naval base and large numbers of yachts provide routes for immigrant species. In general the benthic communities show low diversity, low species richness and high numerical dominance by a few species. This is particularly true of the larger molluscs. In recent surveys 27 species were recorded sublittorally¹ and an additional 14 intertidally²: of these less than a dozen could be regarded as at all common or widespread. Two species, the mussel Mytilus edulis and shipworm Teredo navalis³, that caused problems in the

1950's are now rare and absent respectively.

Neptunea antiqua was considered by Fretter and Graham and by McMillan to be absent from the south coast. However, since the discovery of a single specimen during the 'Solent survey' many specimens have turned up. Ocenebra erinacea is now achieving pest proportions on the expanding oyster grounds in a classic predator/prey cycle. Crepidula fornicata is abundant throughout the Solent and rare only at the mouth of Southampton Water, where there is an Abra/Nephtys association and in the west Solent where fast currents and large cobbles support only a very sparse fauna. Having established itself this slipper limpet will convert any ground into a "shell/mud" habitat.

Three species of cockle have been found and dead shells of Acanthocardia are not uncommon. Parvicardium is found sublittorally. Cerastoderma glaucum has an anomalous distribution, which is thought to represent relict or displaced communities. Our records were based on shell/ligament morphology alone and may not have been conclusive in view of current work by M. Nossier at Southampton University. He considers that glaucum is no longer present and indeed argues that there are no grounds for erecting the species. There are enormous populations of C. edule on the west shore of Southampton Water above Hythe - up to 5,000/m² - but in other areas the populations appear to be ageing. The most abundant bivalve intertidally and sublittorally in Southampton Water is the American clam Mercenaria mercenaria. Up to 150 tonnes are fished annually, almost all being exported to Europe although the possibility of a US market now exists! Growth is best at the seaward end but recruitment is best at the top end. Warm water from Marchwood power station was thought to have aided its establishment but this station is little used now.

The oyster Ostrea edulis has spread in large numbers throughout the Solent since 1970. Stocks on private ground in the R. Beaulieu had been building up almost unnoticed and in 1969 released large numbers of larvae, some of which were flushed into Stanswood Bay where they settled. These were discovered during the 'Solent survey'². There has been successful breeding in almost every year since and the Solent has become the largest naturally recruiting oyster ground in Europe. Between Poole and Chichester 700 boats are registered for oystering (there were fewer than a dozen in 1972) and 1500 tonnes were taken in 1979/80 of which £1 million worth were exported.

MOLLUSCS OF SOUTHAMPTON WATER AND THE SOLENT

Subtidal records From Barnes, Coughlan and Holmes, 1973.

Lepidopleurus asellus
Gibbula cineraria
Lacuna crassior
Littorina littorea
Crepidula fornicata
Trivia monacha
Nassarius reticulatus
Thais lapillus
Ocenebra erinacea
Buccinum undatum
Neptunea antiqua
Akera bullata
Onchidoris fusca
Archidoris pseudoargus

Acanthodoris pilosa
Doto coronata
Nucula turgida
Modiolus modiolus
Mytilus edulis
Ostrea edulis
Chlamys varia
C. opercularis
Parvicardium exiguum
Cerastoderma edule
Abra nitida
Barnea candida
Sepia officinalis

Additional intertidal records

Mainly from Barnes, 1973.

Hydrobia ulvae
Patella vulgata

Lepidochitona cinerea
Gibbula umbilicalis

Loripes lucinalis
Mercenaria mercenaria
Venerupis aurea
V. decussata
V. pullastra

Petricola pholadiformis
Macoma balthica
Scrobicularia plana
Mya arenaria
Ensis siliqua

From screens of Fawley Power Station

Sepia officinalis
Sepiola atlantica

Loligo forbesi
Alloteuthis subulata

Recorded but believed now absent

Teredo navalis Coughlan, 1977

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This list is not claimed to be complete!

FIELD MEETING IN SELBORNE, 27 APRIL 1980

The morning was spent investigating the fauna of a damp meadow in the valley of the Oakhanger Stream, east of the village street. This was followed by collecting along the hedge-banks of Scrubb's Lane, leading off from the public car park. The afternoon was devoted to The Hanger, a beech wood on a steep chalk slope to the west of the village; a site made famous by Gilbert White.

Selborne is well known as a rich locality for almost all branches of natural history and this reputation is well substantiated by the molluscs for 58 species were recorded, and these only included terrestrial slugs and snails, since the more limited freshwater fauna of the streams was not investigated. Amongst these, were several new finds, for both the 10 km square, for Selborne, and for Hampshire.

The collecting sites:

1. Damp meadow by the Oakhanger Stream. 41/744340
This included patches of Amphibious Bistort and Iris in the damper areas, and nettles around the edge of the field.
- 1a. A corner of the Long Lythe adjacent to the field - beech wood.
2. Scrubb's Lane. 41/743337 A hedgebank habitat.
3. The Scrubbs. 41/741330 Overgrown chalk grassland.
4. The ground immediately surrounding the Gilbert White Field Study Centre. 41/742336
5. The Hanger (Love Lane to Wood Lane and back along the Bostal). 41/737335 - 41/734337

Land Mollusca found in Selborne (* denotes live record)

*Pomatias elegans Sites 2, 3, 5; *Acicula fusca Site 5; *Carychium minimum Site 1; *C. tridentatum Sites 1a, 3, 5; *Succinea putris Site 1; *Azeca goodalli Sites 1, 5; *Cochlicopa lubrica Sites 1, 2, 5; Vallonia excentrica Site 3; V. costata Site 3; *Acanthinula aculeata; *Ena montana Site 5; *E. obscura Site 5; *Punctum pygmaeum Site 1a; *Discus rotundatus Sites 2, 3; *Arion ater agg Sites 1, 2, 5; *A. subfuscus Site 1; *A. circumscriptus Sites

1, 5; *A. silvaticus Site 5; *A. hortensis Sites 1, 5; *A. distinctus Site 5 (a new species split off from A. hortensis, see Davies, S. 1979 in Journal of Conchology, 30, 123-128); *A. intermedius Site 1; *Vitrina pellucida Sites 1, 2, 3, 5; *Phenacolimax major Site 5; *Vitrea crystallina Site 1; V. contracta Sites 2, 5; *Nesovitrea hammonis Site 1; *Aegopinella pura Sites 1a, 2, 3, 5; *A. nitidula Sites 1, 5; *Oxychilus cellarius Sites 1, 2, 5; *O. alliarius Site 5; *Milax sowerbyi Site 5; *M. budapestensis Site 5; *Boettgerilla pallens Site 4; *Limax maximus Sites 1, 5; *L. cinereoniger Site 5; *L. marginata Sites 1, 1a; *Deroceras laeve Site 1; *D. caruanae Site 4; *D. reticulatum Sites 1, 3, 4; *Euconulus fulvus Sites 1, 5; *E. alderi Site 1; Ceciloides acicula Site 3; *Cochlodina laminata Site 5; *Macrogastra rolphii Sites 1, 3, 5; *Clausilia didentata Sites 1, 3; *Testacella haliotidea Site 4; Candidula intersepta Site 3; Cernuella virgata Site 3; *Monacha cantiana Sites 2, 3; *Ashfordia granulata Site 1; *Zenobiella subrufescens Site 5; *Trichia hispida Sites 1, 2, 3, 5; *T. striolata Sites 1, 2, 3, 5; *Arianta arbustorum Sites 1, 5; *Helicigona lapicida Site 5; *Cepaea nemoralis Sites 1, 5; *C. hortensis Sites 1, 2, 3; *Helix aspersa Sites 2, 3, 5.

This list shows a very rich fauna with some rarities. Phenacolimax major was formerly known from The Hanger from a single dead shell, but it is good to be able to confirm this with one living specimen and further shells. Ena montana had been previously recorded for The Hanger by Mrs. E. B. Rands but over 20 live specimens were found on the field meeting. Acicula fusca, the smallest of the two British land operculates, was collected by sieving leaf litter alongside the Bostal Path, and this proved a new record for the Atlas of Non-Marine Mollusca.

Two other exciting finds were made in the small garden surrounding the Museum's field study centre, and both were located under sheets of polythene and stored bedding plants. The three specimens of Boettgerilla pallens constitute a new record for Hampshire and south-east England: this slug was first discovered in Britain in 1972 and the Atlas (published 1976) shows only 5 records (Northern Ireland, Lake District, South Wales, Cornwall and Jersey). The same site also yielded one specimen of the shelled slug Testacella haliotidea which has only been recorded once before for Hampshire and that was prior to 1950.

In addition to these records, Succinea putris, Milax sowerbyi and Limax maximus were new, since they were not represented in the Atlas for this 10 km. square.

Segregates of recently divided species were also recognised including Arion hortensis, A. distinctus, A. circumscriptus, A. silvaticus and Euconulus alderi.

Selborne proved a rich collecting site for some snails which, although not great rarities, are not commonly found everywhere. Azeca goodalli was abundant along the Bostal and also in the damp meadow by the Oakhanger Stream; both white and brown-shelled forms occurred. Macrogastra rolphii, a snail of south-eastern England, was abundant in Selborne, while a large population of Arianta arbustorum was present in the damp meadow and it was also common in Scrubb's Lane and on The Hanger. This snail is not usually common or widely distributed in the south-east.

June Chatfield

SEVENTH INTERNATIONAL MALACOLOGICAL CONGRESS, PERPIGNAN, FRANCE

31 AUGUST - 6 SEPTEMBER 1980

The seventh international malacological congress organised by Dr. J.M. Gaillard of the Laboratoire de Malacologie, Paris, was based at Perpignan in the south of France near the Spanish border. The five days of lecture sessions were held in

the Palais des Congres in Perpignan whilst field excursions enabled participants to explore the scenery and molluscan faunas of the French Pyrenees and of the nearby coast and lagoons. About thirty British delegates attended the congress and many of them read papers.

The lecture programme was divided into parallel sessions which followed a number of themes concerned with molluscan research. These included the role of molluscs as intermediate hosts in the life cycles of parasites, reproduction in molluscs, calcium and shell development, patterns of growth, feeding, digestion, taxonomy, ecology, geographical distribution and adaptive radiation. One session was given to discussing the problems of mapping schemes in which Dr. Kerney gave the introductory lecture showing examples of maps from the British 10 km. snail atlas and also from Dr. Preece's recently published tetrad maps of snails in the Isle of Wight. Dr. Pinter from Hungary then followed with an account of grid mapping of land Mollusca in his country and he circulated a copy of the Hungarian atlas which has now been published. Further details of this may be obtained from Dr. L. Pinter, Naturwiss Museum, Baross utca 13, 1088 Budapest, Hungary.

Members of the congress were supplied with abstracts of the papers published in Haliotis the journal of the Societe Francaise de Malacologie. Further copies of these are obtainable from the society at 55 Rue de Buffon, 75000 Paris, France.

Many posters were on display at the congress centre and these included a wide range of themes from detailed photographs of the microscopic structure of molluscan tissue, histograms of life cycles, results of molluscan survey work and conservation as applied to molluscs. In France a size limit is set to control the collecting of immature Roman Snails (Helix pomatia of escargot fame) which is threatened by over-collecting for culinary purposes. From Norway came results of a most interesting survey of the small freshwater molluscs Pisidium and Sphaerium in which field work was undertaken to examine the effects on the aquatic animal life of acidification of Norwegian lakes due to air pollution from European industrial countries.

This, like all previous congresses had its social element too, with a reception at the town hall, the banquet in the Palais des Rois de Majorque, as well as the informal lunchtime and evening gatherings in restaurants in the town. One evening was devoted to the showing of films of molluscs which included many attractive seaslugs and also the Bubble Shell Haminea navicula in the live state.

A particularly popular feature of Malacological congresses is the field meetings and those from Perpignan were no exception. On the first day a coach party set off for the Pyrenees. After a short stop at Cuxa to see the abbey (Monacha cartusiana and Helix aspersa were seen here too) the party was driven to the Lakes of Bouillouse up in the mountains where lunch was taken. After lunch there was a long and attractive walk up to the lakes and along the way gentians, saxifrages and other mountain flowers provided an interesting diversion, but the real object was to collect Pisidium from the mountain lakes at an altitude of 2921m. The common species Pisidium milium, P. subtruncatum, P. obtusale, P. casertanum and P. nitidum are known from these lakes in addition to P. lilljeborgii and P. hibernicum typical of upland lakes. The pond snail Lymnaea (Radix) limosa var. glacialis is also known from this area.

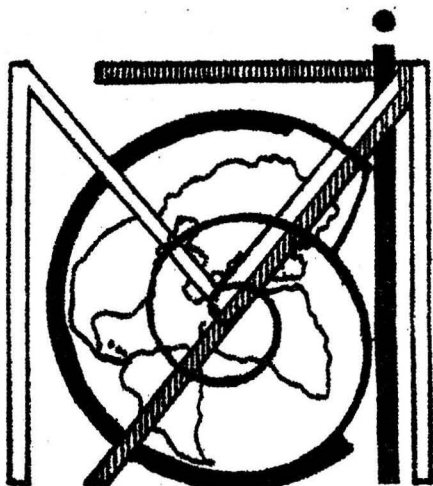
The second excursion was to the coast of the Mediterranean. After a stop at Collioure where Patella coerulea and various species of small trochids were found on the harbour wall, the collecting party then moved on to a small bay towards Port Vendres. Here the rocky shore yielded an abundance of typical Mediterranean molluscs including Mytilus galloprovincialis, Patella coerulea, Monodonta turbinata and Cerithium rupestre. The widespread species of Dwarf Winkle Littorina neritoides was very abundant clustered in crevices on the rocks just above the water. Accumulations of sand and cliff habitats at this site provided some typical coastal land snails, Theba pisana, Cernuella virgata, Helix aspersa,

Eobania vermiculata and Ruminea decollata. The latter species is always truncate as the apex of the shell is shed and the broken end plugged with calcareous secretion. Lunch was taken at Banyuls and this was followed by a range of activities from boat trips (some with dredges), visits to the marine laboratory and aquarium and a visit to the laboratory's terrestrial ecology unit nearby.

On the last day of the congress there were two possible excursions, one to the mountains of the Pyrenees at La Preste and the other to lagoons along the coast north of Perpignan towards Narbonne. On the mountain excursion the first stop was at Gorges de la Fou, a ravine 100m. deep in calcareous rock. Land snails found here and just out of the ravine were Pomatias elegans, Vallonia costata, Pyramidula rupestris, Abida cylindrica, Clausilia bidentata pyrenaica, Discus rotundatus, Hygromia limbata, Helicigona lapicida and zonitids. Lunch was provided at La Preste and followed by field work in a wood along the side of a river valley at an altitude of 1160m. This is the type locality for a number of species including Elona pyrenaica Draparnaud which proved to be common here with both living snails and empty shells to be found. In addition there were specimens of Euomphalia strigilla, Abida cylindrica, Chondrina farinesii, Cochlostoma crassilabrum and Cepaea nemoralis, some of which had a white instead of brown lip. There were accumulations of leaf litter around the boulders of the wooded valley sides and this was rich in small species of land snails. Water-worn boulders of the mountain river were dotted with small brown River Limpets Ancylus fluviatilis.

In conclusion, this was a most enjoyable congress and thanks are due to the organisers in France for all the hard work involved in the preparation. At the UNITAS meeting the venue of the next congress was decided and this will be in Budapest in Hungary in 1983.

June Chatfield



LIMAX MAXIMUS IN COMPETITION WITH FELIS DOMESTICA FOR FOOD!

Much to the concern of our two cats and my wife, we recently found a large Limax maximus lapping milk from the cats' bowl. I was politely told to keep my slugs outside, and duly removed the offending animal. Two evenings later, a large L. maximus was again observed helping itself to the milk. The animal appeared to be similar to the slug evicted on the previous occasion. By chance, Brian Eversham, a fellow Conch. Soc. member was present, and after photographs had been taken of the slug in action (and again it had been put outside), conversation turned to whether the animal might have learned to exploit the cats' milk as a food source.

The obvious thing to do was to mark the slug in some distinctive way so that it could be identified if it returned. As it was a Limax, it was decided that small nicks could be cut into the edge of the mantle without damaging the animal to any great extent. Since then we have been visited twice by our lactophile Limax, and the clipped mantle has conclusively shown that it is the same animal that has returned.

This observation seems to imply some degree of learning, as it is hard to see what could be attracting the animal into the house other than the milk. We certainly do not find slugs in any other part of the house.

I would be interested to hear from other members who have noted a predilection for milk amongst slugs, and more to the point, to hear of other examples of possible learning.

My experiments will of necessity be practical. There will be little peace until I have proved to my wife that I have made the house slug-proof!'

Noel Jackson, [REDACTED], [REDACTED], Stanley, Co. Durham

REPORT FOR SEA AREAS 18 (PLYMOUTH), 19 (SCILLY ISLES) & 20 (NORTH CORNWALL)

FEBRUARY 1979 TO JUNE 1980

The publication of lists so far compiled for the various Sea Areas (Seaward, 1979) has already brought to light a number of new or upgraded records for Areas 18, 19 and 20. The majority of new records for Area 18 are nudibranchs, sent in a general distribution list by Dr. G. H. Brown. He draws attention to many changes in nomenclature, and these are mentioned here in so far as they have an immediate bearing on the interpretation of a record. The work of Hartley (1979) has added many more species to Area 19. Of special interest is the second record for Area 18 of the large triton, Charonia lampas. It was found off Fowey in 1979, and brought to Mr. A. T. Mattacola who is keeping it alive in the Plymouth Marine Aquarium. He will publish the full details when he has obtained these from the skipper who brought it ashore. It is only in recent years that this rare gastropod has been found north of the Channel Isles.

SEA AREA 18 PLYMOUTH

PROSOBRANCHIA

<u>Alvania punctura</u>	A to A	VF & RM
<u>Natica alderi</u>	A to A	VF & RM
<u>Triphora adversa</u>	new A	B & G
<u>T. pallescens</u>	new A	B & G
<u>OPISTHOBRANCHIA</u>		
<u>Calma glaucoides</u>	A to A	TET
<u>Coryphella gracilis</u>	A to A	GHB
<u>C. pellucida</u>	Queried by	GHB
<u>C. verrucosa</u>	Queried by	GHB
<u>Cuthona amoena</u>	a to A	BEP
<u>Doto cuspidata</u>	new A	(GHB)
<u>Embletonia pulchra</u>	a to A	BEP
<u>Eubranchius vittatus</u>	new A	GHB
<u>Facelina auriculata</u>	see below	
<u>Okenia elegans</u>	new A	JR
<u>Polycera notha</u>	a to A	SMT/TET
<u>Proctonotus mucroniferus</u>	new a	CNE/GHB
(as <u>Janolus flagellatus</u>)		

OPISTHOBRANCHIA cont.

<u>Cuthona pustulata</u>	new A	GHB
<u>C. rubescens</u>	new A	GHB
<u>Doto maculata</u>	new A	(GHB)
<u>D. millbayana</u>	new A	HL
<u>D. tuberculata</u>	new A	GHB
<u>Facelina bostoniensis</u>	A	GHB
(= <u>F. auriculata</u> in part,		
<u>F. drummondii</u> and <u>F. curta</u>)		
<u>F. coronata</u>	A	GHB
(= <u>F. auriculata</u> in part)		
<u>Hedylopsis spiculifera</u>	A	TET & GHB
<u>Lomanotus marmoratus</u>	A to A	BEP
(L. <u>genei</u> & <u>L. marmoratus</u>		
considered distinct fide GHB)		
<u>Runcina ferruginea</u>	new A	AK
<u>Trinchesia glotensis</u>		
(syn. of <u>T. coerulea</u> fide GHB)		
<u>Thecacera virescens</u>		
(syn. of <u>Polycera nothus</u> fide GHB)		

<u>Trinchesia coerulea</u>	a to A	GHB	LAMELLIBRANCHIA	
<u>T. viridis</u>	new A	GHB/BEP	<u>Abra tenuis</u>	new A NAH

The following are entered under "Other species" on Field Card.

<u>Aplysia parvula</u>	withdrawn fide	GHB	<u>Aeolidiella alderi</u>	new a WPC
<u>Colpodaspis pusilla</u>	b to a		<u>Coryphella browni</u>	new A
<u>Crimora papillata</u>	new A	(GHB)		

SEA AREA 19 SCILLY ISLES

SOLENOGASTRES

<u>Chaetoderma nitidula</u>	new A	JPH
PROSOBRANCHIA		
<u>Alvania crassa</u>	b to B	CJP & TP
<u>Aporrhais pespelicani</u>	a to A	JPH
<u>Balcis devians</u>	a to A	DN
<u>Buccinum humphreysianum</u>	new A	JPH
<u>Caecum glabrum</u>	b to B	DAJT
<u>C. imperforatum</u>	B to A	JLJ
<u>Calliostoma occidentale</u>	new A	JPH
<u>Cantharidus montagui</u>	b to B	DAJT
<u>Capulus ungaricus</u>	B to A	JPH
<u>Cingula proxima</u>	b to A	JPH
<u>C. vitrea</u>	new B	ULSAC/GWP
<u>Clathrus clathratulus</u>	B to A	JLJ
<u>C. clathrus</u>	A to A	JLJ
<u>C. turtonis</u>	c to A	JPH
<u>Colus jeffreysianus</u>	b to A	JPH
<u>Emarginula crassa</u>	new A	JPH
<u>E. reticulata</u>	B to A	JPH
<u>Hydrobia ulvae</u>	a to A	DN
<u>Lepeta fulva</u>	new A	JPH
<u>Mangelia attenuata</u>	b to B	DAJT
<u>M. brachystoma</u>	b to B	CJH
<u>M. coarctata</u>	b to B	DAJT
<u>M. nebula</u>	b to B	JLJ
<u>M. powisiana</u>	B to A	TGWF
<u>Natica montagui</u>	a to A	JPH
<u>Philbertia gracilis</u>	b to B	TGWF
<u>P. teres</u>	B to B	DAJT
<u>Rissoa guerini</u>	new A	CJP & DN
<u>R. lilacina agg.</u>	new b	AES Coll.
<u>Tornus subcarinatus</u>	b to B	ULSAC
<u>Trophon muricatus</u>	b to A	JPH
<u>Turritella communis</u>	a to A	JPH

OPISTHOBRANCHIA

<u>Coryphella lineata</u>	new A	(GHB)
<u>Cuthona nana</u>	new A	JPH
(Possibly this sp. which = Precuthona peachii)		

<u>Cylichna cylindracea</u>	b to A	JPH
<u>Doto coronata</u>	new A	ULSAC

LAMELLIBRANCHIA

<u>Laevicardium crassum</u>	A to A	TGWF
<u>Lima sulcata</u>	C to B	DAJT
<u>Lutraria angustior</u>	B to A	CJP & TP
<u>Lyonsia norwegica</u>	b to A	JPH
<u>Macoma balthica</u>	b to A	LAH & PCC
<u>Modiolus modiolus</u>	b to A	CJP & TP
<u>Monia patelliformis</u>	b to B	DAJT
<u>M. squama</u>	B to A	JPH

OPISTHOBRANCHIA cont.

<u>Eulimella laevis</u>	b to B	ULSAC
<u>E. nitidissima</u>	b to B	DAJT
<u>Menestho divisa</u>	b to B	ULSAC
<u>Odostomia albella</u>	b to a	B & M
<u>O. conoidea</u>	b to B	ULSAC
<u>O. eulimoides</u>	b to B	CJH & HP
<u>O. plicata</u>	b to B	CJH & HP
<u>O. scalaris</u>	b to A	LAH
<u>Onchidoris luteocincta</u>	new A	NB (GHB)
<u>Philene catena</u>	b to B	DAJT
<u>Pleurobranchus membranaceus</u>	a to A	LAH & PCC
<u>Polycera quadrilineata</u>	delete	
<u>Retusa mammillata</u>	b to B	DAJT
<u>R. obtusa</u>	b to A	JPH
<u>R. truncatula</u>	b to A	LAH
<u>Rostanga rufescens</u>	new A	LAH
<u>Scaphander lignarius</u>	a to A	JPH
<u>Spiratella retroversa</u>	A	
(S. inflata marked in error)		
<u>Turbonilla fenestrata</u>	new b	AES Coll.

LAMELLIBRANCHIA

<u>Abra nitida</u>	b to A	JPH
<u>A. prismatica</u>	new A	JPH
<u>Acanthocardia echinata</u>	b to A	JPH
<u>Arca lactea</u>	b to B	DAJT
<u>Arctica islandica</u>	b to A	JPH
<u>Astarte sulcata</u>	a to A	JPH
<u>Cardium minimum</u>	b to A	JPH
<u>C. scabrum</u>	A to A	JPH
<u>Chlamys distorta</u>	b to A	LAH
<u>C. similis</u>	a to A	JPH
<u>C. striata</u>	b to A	JPH
<u>Corbula gibba</u>	a to A	JPH
<u>Cultellus pellucidus</u>	a to A	JPH
<u>Cuspidaria cuspidata</u>	new A	JPH
<u>Erycina nitida</u>	new b	JTM
<u>Tellina fabula</u>	new b	S & C
<u>Thyasira flexuosa</u>	a to A	JPH
<u>Venerupis saxatilis</u>	new b	RIC
<u>Venus casina</u>	A to A	JPH

CEPHALOPODA

<u>Octopus vulgaris</u>	new A	MHT
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<u>Montacuta substriata</u>	A to A	JPH
<u>Myrtea spinifera</u>	b to A	JPH
<u>Mysella bidentata</u>	A to A	JPH
<u>Nucula sulcata</u>	new A	JPH
<u>Pandora pinna</u>	b to A	JPH
<u>Spisula elliptica</u>	b to A	JPH
<u>S. solida</u>	a to A	SMT

SEA AREA 20 NORTH CORNWALL

PROSOBRANCHIA		
<u>Barleeia unifasciata</u>	B to A	SMT
<u>Cingulopsis fulgida</u>	B to A	SMT
<u>Ocenebra erinacea</u>	A to A	SMT
OPISTHOBRANCHIA		
<u>Calma glaucoides</u>	new A	GHB
<u>Facelina bostoniensis</u>	new A	GHB
(See note under Area 18)		
<u>F. coronata</u>	new A	GHB
(See note under Area 18)		
<u>Onchidoris luteocincta</u>	new A	NB (GHB)
<u>Polycera dubia</u>	queried by	GHB
<u>P. nothus</u>	new A	GHB

the following are entered under
"Other species" on Field Card.

PROSOBRANCHIA		
<u>Balcis monterosatoi</u>	b to A	ULSAC/VF
<u>Cerithiopsis clarkii</u>	b to B	CJP & TP/SMS
OPISTHOBRANCHIA		
<u>Polycera faroensis</u>	new A	ULSAC/GHB

LAMELLIBRANCHIA		
<u>Arctica islandica</u>	b to B	JMcAH
<u>Cochlodesma praetenu</u>	b to B	JMcAH
<u>Mysia undata</u>	C to B	JMcAH
<u>Scrobicularia plana</u>	A to A	GWB & LGH
<u>Tellina squalida</u>	b to B	JMcAH
<u>Thracia phaseolina</u>	C to B	JMcAH
<u>Venerupis pullastra</u>	A to A	SMT

SOURCES. Sincere thanks are due to the many individuals who have recently contributed records, drawn attention to earlier ones or helped in other ways. I am particularly grateful to our Marine Recorder Dennis Seaward.

AES Coll.	A. E. Salisbury	JPJ	see HARTLEY
AK	see KRESS	JR	J. Rubin
B & G	see BOUCHET & GUILLEMOT	JTM	J. T. Marshall
B & M	see BURKHILL & MARSHALL	LAH	Prof. L. A. Harvey
BEP	B. E. Picton	LAH & PCC	see HARVEY & CHAPMAN
CJH	C. J. Hayton	MHT	M. H. Thurstan
CJH & HP	C. J. Hayton & H. Price	NAH	Dr. N. A. Holme
CJP & TP	Celia J. & T. Pain	NB	N. Bowden
CNE	see ELIOT	RIC	Royal Instn. Cornwall Coll.
DAJT	Sqn. Ldr. D. A. J. Taylor	S & C	see SMART & COOKE
DN	Prof. David Nichols	SMS	Dr. Shelagh M. Smith
GHB	Dr. G.H. Brown also see BROWN	SMT	Stella M. Turk
(Brackets indicate not checked by GHB)		TET	Dr. T. E. Thompson
GWB & LGH	see BRYAN & HUMMERSTONE	TGWF	T. G. W. Fowler
GWP	Dr. G. W. Potts	ULSAC	Univ. London Sub Aqua Club
HL	Dr. H. Lemche	VF & RM	see FRETTER & MANLEY
JLJ	J. Llewellyn Jones	WPC	W. P. Cocks
JMcAH	J. McA. Hart		

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RAF SubAqua Club Expedition to Scilly.
Newsheet No. 3.

Stella M. Turk

THE GENUS GYRINEUM (CYMATIIDAE) AND ITS SUBGENUS BIPLEX

I have recently been working on my specimens of Gyrineum, and have come up with a number of problems. Firstly Peter Dance in his 'Encyclopedia of Shells', and Habe & Kira in the two volumes of 'Shells of the Western Pacific in Colour', all use the generic name Apollon. However Hal Lewis in his article on p.10 of the 'Nautilus' of January 29th. 1974 is convincing that Link's name of Gyrineum has precedence over Montfort's of Apollon; their dates being 1807 and 1810 respectively.

The genus Gyrineum Table

	Cernohorsky	Dance	Hinton	Kira & Habe	Wilson & Gillett
<u>G. bituberculare</u> (Lamarck, 1816)	3	1	1 ^o , 2 ^o		
<u>G. cuspidatum</u> (Reeve, 1844)	3		2 ^o		
<u>G. gyrinum</u> (Link, 1758)	1	1	2	2	
<u>G. louisae</u> Lewis, 1974	3				
<u>G. natator</u> (Röding, 1798)	2		2		
<u>G. pusillum</u> (Broderip, 1832)	1, 2	1	2	2	
<u>G. roseum</u> (Reeve, 1844)	2	1		2	
<u>G. atlanticum</u> Fechter, 1975	3 ⁺				
<u>G. concinnum</u> (Dunker, -)					
<u>G.(B). aculeatum</u> Schepman, 1909			2 ^o	2	1
<u>G.(B). jucundum</u> (A. Adams, 1854)	2		2		1
<u>G.(B). perca</u> (Perry, 1811)	2 ⁺	1		1	1 ⁺

+ = not illustrated

o = ? wrongly identified

The table shows which species are illustrated and/or mentioned in the reference books I have available. 'Cernohorsky' refers to his 3 vols. of 'Marine Shells of the Pacific'; 1 = vol. 1, 2 = vol. 2, 8c. He also gives the following synonyms: for G. gyrinum - G. verrucosum Link, 1807 (non Link, 1808, non Sowerby, 1825), G. variegata (Perry, 1811), G. ranina (Lamarck, 1822); for G. natator - G. elegans (Perry, 1811), G. tuberculata (Broderip, 1833) (non Risso 1826); for G. pusillum - G. lacunatum Mighels, 1845, G. facetum Iredale, 1936. He also points out that G. (Biplex) jucundum (A. Adams, 1854) is better known under its earlier name Ranella pulchella Forbes, 1852, the name preoccupied by R. pulchella Sowerby, 1825, which is G. (Biplex) perca (Perry, 1811).

Dance in The Encyclopedia of Shells uses the generic name Apollon Montfort, I believe incorrectly. He says that there are "about twelve species in the Indo-Pacific Province. Dance also gives the following synonyms: for A. bituberculare - A. chemnitzii Kobelt, for A. gyrinum - A. raninus Lamarck, for A. perca - A. pulchra Sowerby, A. pulchella Forbes*, A. microstoma Fulton* and A. jucunda A. Adams*, and for A. pusillus - A. lacunatum Mighels and A. laciniatum Pease. (* = ? incorrect)

Hinton:- 1 = 'Shells of New Guinea and Central Indo-Pacific', 2 = 'Guide to Shells of Papua New Guinea' and 3 = 'Guide to Australian Shells'. He illustrates but does not describe.

Kira & Habe:- 'Shells of the Western Pacific in Colour', Vol. 1 Kira, Vol. 2 Habe. They also use the generic name Apollon. In addition to those species shown in the table, Habe illustrates and briefly describes Biplex hirasei Kuroda & Habe, which looks to me more like a member of the nominate genus rather than its sub-genus Biplex. The only other reference to it which I can find in my literature is a quotation in Tom Rice's Catalog of Dealers Prices for Apollon hirasei Kuroda.

Wilson & Gillett:- 'Australian Shells'. They call G. (Biplex) jucundum by its synonym G. (B.) pulchellum.

From East and South Africa Spry and Kensley respectively name and illustrate G. pusillum (Broderip).

From the Atlantic, Cernohorsky (Vol. 3) mentions the recently described G. atlanticum Fechter, 1975, from the Great Meteor Bank. He says it is almost indistinguishable from G. louisae Lewis, 1974, from Hawaii. The only other reference I can find to an Atlantic species is an entry in Tom Rice's Catalog to G. cruentatum Reeve from Florida. But I cannot find this referred to in any of my reference books on America.

The paper by Hal Lewis, referred to in my first paragraph, as well as giving a full discussion of the historical use of the generic names Gyrineum and Apollon, describes and names G. louisae, and also mentions G. concinnum (Dunker -) from Obhur, Saudi Arabia.

Now for a few notes on the species. Firstly G. bituberculare (Lamarck, 1816) and G. cuspidatum (Reeve, 1844); I suspect that there is a tendency among collectors not to distinguish between the two. However Cernohorsky in his Vol. 3 describes and illustrates both species and leaves no doubt in my mind. The very name bituberculare is obvious when specimens of both species are seen together. The shell which Hinton illustrates as G. bituberculare is, I believe, G. cuspidatum, and the one he gives under the latter name I think is probably G. roseum (Reeve, 1844). G. bituberculare is well illustrated by Dance and also in the Hamlyn's Guide (but incorrectly in the latter under the generic name Biplex instead of Gyrineum), and in neither is G. cuspidatum mentioned.

G. natator (Röding, 1798) is said to be uncommon in the Pacific by Cernohorsky, and also in Papua by Hinton. Round Malaya, however, where I collected for some years it was reasonably common.

My biggest queries are among the Biplex. But first I should perhaps again make Cernohorsky's point that while G. (B.) jucundum (A. Adams, 1854) is better known under the earlier name Ranella pulchella Forbes, 1852 - the name used by Wilson & Gillett - the name is preoccupied by R. pulchella Sowerby, 1825, which is G. (B.) perca (Perry, 1811).

It is strange that Cernohorsky, who otherwise gives a complete coverage of the genus and sub-genus (unlike anyone else) only mentions and does not describe or illustrate G. (B.) perca, and does not even mention G. (B.) aculeatum Schepman, 1909. I believe too, that Hinton's illustration of G. (B.) aculeatum in his Guide to Shells of Papua is in fact G. (B.) perca.

Is there, however, an unnamed and undescribed species of Biplex, which at times is miscalled perca. I have always understood G. (B.) perca (Perry) to be that shell described and well illustrated by Dance under that name, and beautifully by James Nicholls in the Hamlyn's Guide to Shells of the World. I have in my collection three specimens of a Biplex, one from Taiwan, the other two with

sadly no locality data. They are superficially similar to my B. perca but smaller 48, 45 $\frac{1}{2}$, 45mm. long (compared with 75 $\frac{1}{2}$ mm.), in two of them the penultimate and final whorls, and in the other the last whorl only, have only two ribs between varices; these being wide apart and each carrying two or three strong nodules and a number of very weak ones where the otherwise almost obsolete spiral threads across the whorl. (The effect is not dissimilar to G. bituberculare). They are lighter in colour than B. perca, being a milky white with pale brown 'spiral' shading.

I have wondered if they might be juvenile B. perca, though this seemed unlikely, but I recently had the opportunity of examining Bob Scase's specimens of Gyrineum, and found firstly that he had a similar specimen, and also a specimen of B. perca, presumably somewhat juvenile, which though the same size as these was otherwise identical to my idea of B. perca. In Tucker Abbott's excellent little pocket book 'Sea Shells of the World' this shell I have described is illustrated on p. 67 under the name Biplex perca Perry. I do not possess a specimen of G. (B.) aculeatum Schepman to compare with these shells but from Wilson & Gillett's illustration and the specimen Bob Scase has in his collection, I feel sure it is not this species.

Any help with this problem from any reader would be much appreciated.

A. P. H. Oliver

GENERAL NOTES

A JOINT SYMPOSIUM with the Northamptonshire Natural History Society will be held in the Humfrey Rooms, Northampton, on September 26 and 27, 1981. The provisional programme is:- coffee on arrival, the symposium to start at 11 a.m., then lunch, an afternoon session followed by the symposium dinner in the evening. Accommodation will be found for members who wish to stay the night. If there is enough demand a short field excursion will be held on the Sunday morning.

Members who wish to attend, or to give a paper are asked to send their names to Gordon Osborn, [REDACTED], Olney, Bucks., [REDACTED] as soon as possible, they will then receive the symposium circulars as they are published.

FIELD COURSE AT ORIELTON, PEMROKE. A residential field course on molluscs of the Pembroke area will be held at Orielson Field Centre from 17 - 24 June 1981. Tutor: Dr. June Chatfield. The course will include both marine and non-marine species and visits will be made to rocky, sandy and muddy shores and to sand-dunes, woods, lakes and streams. There is a rich marine fauna on the Pembroke coasts and a chance to see the European Cowrie and other species alive. The Field Centre is an elegant eighteenth Century house and there are library and laboratory facilities. Students have the use of binocular microscopes. Further details from: The Warden, Orielson Field Centre, Pembroke, Dyfed.

ANNUAL SUBSCRIPTIONS, 1981

All Members are reminded that the Annual Subscription was due on 1st. January, and are asked to pay forthwith if this has not already been done. It is now very expensive to send individual reminders by post, so please help to avoid this. Members whose Subscriptions for 1981 are unpaid will receive no further publications until payment is made.

Some Members omitted to observe the increase in the Subscription for 1980, and are still in arrears for the additional amount; prompt payment of these arrears is requested. Please check the amount of your Subscription, which is:

Ordinary Member £ 7.00 (U.S. \$17.50)

Family Members	£ 8.00 (U.S. \$20.00)
Institutional Member	£10.00 (U.S. \$25.00)
Junior Member	£ 1.50 (U.S. \$ 3.75)

Ordinary, Family and Institutional Members may deduct the sum of 50p (U.S. \$1.25) from Subscriptions paid before 31st. March. Cheques and P.O.'s should be made payable to the Society, and sent to the Hon. Treasurer, Mrs. M. Fogan, [REDACTED], Atherton, Manchester, [REDACTED]. Receipts will not be sent unless specially requested, and each such request must be accompanied by a stamped addressed envelope.

THE MALACOLOGICAL SOCIETY OF LONDON. Saturday 14th. March 1981.

A.G.M. and Presidential Address: Prof. E. R. Trueman (Manchester). The effects of Pollutants on the Behaviour and Physiology of some Estuarine Bivalves. Department of Zoology, Chelsea College, Hortensia Road, London, SW10 0QX, at 2.30 p.m.

Saturday 25th. April 1981 and Sunday 26th. April 1981.

Saturday: Symposium on The Mollusc Shell (organised by Prof. J. Currey). Department of Biology, University of York, York, YO1 5DD.

Sunday: Joint Field Meeting with the Yorkshire Conchological Society to visit the area of Duncombe Park, near Hemsley which includes the Abbey of Rievaulx and one of the Yorkshire Naturalists Trust's nature reserves - Ashberry Pastures. The area is mixed old woodland on the banks of a fast-flowing river, and is quite rich in British land snails. All who are interested are very welcome to attend.

Further information concerning the meetings can be obtained from the Hon. Secretary, Dr. A. Bebbington, Department of Science, Bristol Polytechnic, Redland Hill, Bristol, BS6 6UZ.

A NOTE ON SOME HELICIDAE FROM MALAWI. Some years ago Mr. T. Pain asked me to examine some small hairy helicids which had been collected on Ndirande Mt. to the NE. of Blantyre at 1500 m on 19 Dec. 1976. They had been found by W. Noel Gray (No 844) on leaves of bushes in rain forest. Since they were preserved in formalin it seemed worthwhile establishing to which of Pilsbry's genera they belonged; the shells match those described by E. A. Smith from Zomba Mt. (also to the NE. of Blantyre and about 45 miles further N. than Ndirande) as Phasis (Trachycystis) fusco-cornea (Proc. zool. Soc. Lond. 1899: 585, pl. 33, figs. 35, 36) fairly satisfactorily. The genital anatomy was not easy to make out from the not fully adult rather badly preserved animals but the glands are separated as in Vicarii helix with only one or perhaps in one case two glands per dart sac. The radula has the marginal teeth with the main cusps narrow but apically bifid and several ectocones. The shell is similar to that of V. mukulensis (Pilsbry) but that has but one ectocone and definitely two mucous glands per sac. V. fusco-cornea (Smith) is the correct name for this Malawi species.

B. Verdcourt

KITCHEN MIDDENS. From The Examiner, 13 August 1979, Tasmania.

"The original residents of the Asbestos Range area were Aborigines of the North tribe. This group of about 300 people lived in the region between what is now Asbestos Range and Burnie. The only remaining signs of the group's presence are the so-called kitchen middens of discarded shells. These shell deposits are exposed by wind erosion, and are visible in many sand dunes along the North Coast."

From "The Malay Archipelago" by Alfred Russel Wallace, 1869. (In Print by Dover Publications.)

Waigiou, Bessir.

"The village of Bessir was built in the water at the point of a small island. The chief food of the people was evidently shell-fish, since great heaps of the shells had accumulated in the shallow water between the houses and the land, forming a regular "kitchen-midden" for the exploration of some future archaeologist."

"Almost the only food we can obtain with any regularity are fish and cockles of very good quality. It is curious to see the baskets and buckets used here. The cockles are brought in large volute shells, probably *Cymbium ducale*, while gigantic helmet shells, a species of *Cassis*, suspended by a rattan handle, form the vessels in which fresh water is daily carried past my door. It is painful to a naturalist to see these splendid shells with their inner whorls ruthlessly broken away to fit them for their ignoble use."

"A curious feature of the jungle here was the multitude of sea-shells everywhere met with on the ground and high up on the branches and foliage, all inhabited by hermit crabs. I have actually seen a spider carrying away a good sized shell, and devouring its tenant. On the beach, which I had to walk along every morning to reach the forest, hermit crabs swarmed by thousands. Every dead shell, from the largest to the most minute, was appropriated by them."

Amboyna.

"I went to see a collection of shells. The *Mactras* and *Ostreas* in particular struck me by the variety and beauty of their colours. Shells have long been an object of traffic in Amboyna. Many of the natives get their living by collecting and cleaning them, and almost every visitor takes away a small collection. The result is that many of the commoner sorts have lost all value in the eyes of the amateur, numbers of the handsome but very common cones, cowries, and olives sold in the streets of London for a penny each, being natives of Amboyna, where they cannot be bought so cheaply. The shells were arranged in large shallow pith boxes, lined with paper, and every specimen being fastened down with thread. I roughly estimated that there were nearly a thousand different kinds of shells, and perhaps ten thousand specimens."

(Submitted by Mrs. Betty M. Smith)

MORE RE EDGAR A. SMITH

As a sequel to Dr. Chatfield's interesting note on Edgar A. Smith's grave (Conchologists' Newsletter No. 74, pp. 243-4, 1980) readers may like to hear more of the man himself. My old friend the late J. R. le B. Tomlin who of course knew Smith once told me that his (i.e. Smith's) chief interest was in the marine Mollusca but that in his later years someone remarked to him "there is no sea in Heaven" and Smith promptly turned his attention to the non-marine spp.!

Someone really ought to collect the folk-lore of museums and those who work in them.

Nora F. McMillan

A CHRISTMAS CARD

No mortgages or overdrafts
Beset my tranquil mind.
Whenever I decide to move,
My house is close behind.
It's a comforting reflection
That, however far I roam,
Whatever troubles may befall,
I'm never far from home.

Margaret Jaques

On the reverse of the card is a photograph of a young *Helix aspersa*. Miss Jaques has recently moved from Velator to [REDACTED], Braunton, and writes: "It was a truly heartfelt effort and suddenly came into my head when I was turning out some photos while anxiously awaiting the money for Kiln Cottage, which was very

slow in forthcoming. Thank goodness it is all in at last, so my mind is no longer beset by financial worries."

(from A. E. Ellis)

IDENTIFYING SLUGS AND SNAILS

A residential weekend course for beginners at Juniper Hall Field Centre (near Box Hill) 7.00 p.m. Friday 29th. May - 4.30 p.m. Sunday 31st. May, 1981.

Fee: £32 per person including board & lodging.

Tutor: Dr. R. A. D. Cameron. Full details and booking form from: The Warden, Juniper Hall Field Centre, Dorking, Surrey, RH5 6DA.

WANTED: Can members please offer me specimens of any of the following freshwater bivalves. Material required from both the British Isles and European localities; full data is essential.

Margaritifera auricularia recent and fossil: Margaritifera margaritifera var. durrovensis: Unio crassus recent and fossil: Potomida littoralis recent and fossil: Anodonta complanata: Corbicula fluminalis fossil or recent African/Asian: Sphaerium solidum: Sphaerium dickinii recent or fossil: Sphaerium transversum: Pisidium clessini: Pisidium conventus: Pisidium pseudosphaerium: Pisidium supinum: Pisidium henslowanum: Pisidium lilleborgii: Pisidium moitessierianum: Pisidium tenuilineatum: and Pisidium vincentianum.

Full cost of postage and packing will be refunded. John Humphreys, [REDACTED], St. Ives, Cornwall, [REDACTED].

BOOKMARKS

Members attending the Society's meetings have recently been able to buy leather bookmarks with a shell design in gold. The bookmarks are available in black, cream, red, blue and green at a price of 50p each.

Members can order these at 70p (including p. & p.) from A. P. H. Oliver, [REDACTED], Battle, E. Sussex, TN33 9AB.

THE SOCIETY'S PUBLICATIONS

Back numbers of the Conchologists' Newsletter may be obtained from J. D. R. Fryer, Dept. of Geology, King's College, Strand, London, W.C.2., at 50p each plus postage. The Hon. Secretary, Mrs. E. B. Rands, can supply copies of the Marine Concordance, 30p to members and 50p to non-members, the Atlas of Non-Marine Mollusca, £2.50 to members plus 85p post/packing and £3 to non-members plus 85p post/packing. Back numbers of the Journal of Conchology and Papers for Students can be obtained from Mr. A. Norris, Natural History Dept., City Museum, Municipal Buildings, Leeds, LS1 3AA.

FOR SALE

We are suppliers of tropical sea shells, land snails, coral and sea curios to collectors, schools and colleges. S.A.E. for lists.
Nature of the World, 19 Bell Lane, Fetcham, Leatherhead, Surrey.

Duplicated by: SPEEDWELL PRESS, Trap Road, Guilden Morden, Royston, Herts.

THE CONCHOLOGISTS' NEWSLETTER

No. 77

ISSN 0573-2336

Newsletter Editor: P. E. Negus,

Chelsea Bridge Road,
London,

June 1981

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ENIGMATIC ANODONTAS FROM TISBURY, WILTSHIRE

This note is intended to record the occurrence of a highly aberrant form of Anodonta anatina which lives in the lake on the Fonthill Abbey estate near Tisbury, Wiltshire. A. anatina, like many of its relations, has the frequent habit of adopting more or less well-marked variations of growth and shape, probably for the most part under ecological influences, but as these variations are rarely clear-cut and usually grade into each other, the reasons for them are for the most part unknown: in the present state of our knowledge one can only say that the genus has an innate and sensitive capacity for variation according to circumstances, without any accompanying tendency to form subspecies. No doubt the extreme vigour of the Unionidae as a family is as much due to their facility for adaption as it is to their hardiness under unfavourable circumstances. The experienced camper never 'roughs it'.

It was in 1951 that during an inspection of the local freshwater Mollusca, the late C. A. Raffray noticed examples of an enormously tumid mussel in the lake near Tisbury variously known as Lake Bitham, Lake Bittern, or Fonthill Abbey Lake. Specimens were obtained by him and other members of the Society and they were all seen to have the same highly unusual features sufficient to make the form instantly recognisable.

Fonthill Abbey Lake is artificial in origin and is retained by a large gravity dam on the downstream side. It is 60 to 80 feet deep and two acres in area, surrounded by mature mixed woodland which includes some remarkably fine trees. It was evidently formed by damming up a steep valley and as no streams enter it, it must be replenished from underwater sources. There are reputed to be three springs and at certain seasons of the year one of these is visible from the bank. The water is remarkably soft and pure and supports flourishing growths of sponge.

The Wiltshire County Archivist, Mr. M. G. Rathbone, reported that the lake was known to be in existence in 1755. The estate at this time belonged to Alderman William Beckford 1709-1770 and the Manor house was burned down in 1755. There is in existence a picture of the house which shows the lake. Beckford spent an estimated £240,000 in re-building on a lavish scale but his son William Beckford, the famous Regency eccentric dubbed by Byron 'Britain's Wealthiest Son', abandoned the house in 1807 because of its dampness and built on higher ground the notorious structure known as Fonthill Abbey. This gargantuan work took him from 1796 to 1812 and was prosecuted on the most lavish and reckless scale.

It would seem that A. anatina has inhabited the lake for a long time. A shell in my possession through the courtesy of Mr. T. Pain, bears the label "Anodonta anatina v. ponderosa pfr. East Hatch, nr. Tisbury, Wilts. (Bennett). Specimen from the collection of the late Major M. K. Connolly, obtained many years ago, from J. W. Taylor of Leeds, and stated to be one of the original specimens collected and distributed by Miss Bennett. TP". It may be inferred that the shell came from Fonthill Abbey Lake, since it is not thought that there were any lakes (except in

times of flood) at East Hatch itself, which is, sensu stricto an area about two miles away, at any time within the last two hundred years. (Rathbone in lit.)

Miss Ethelred Benet 1776-1845, who obtained this shell, was a noted geologist of the time, living at Norton House, Warminster and frequently ranging the countryside for specimens which she distributed to the museums and scientists of her acquaintance. Gray (1840) referring to var. avonensis of Anodon cygneus says "Mr. Miller justly remarks 'I perfectly agree with Dr. Maton in considering M. Avonensis only a variety of M. anatinus. Miss Benet of Norton House favoured me lately with specimens from Tisbury, Wiltshire ...'". The late C. P. Castell provided me with many details of this remarkable lady in lit. 1959.

If it be allowed that the shell marked East Hatch is actually from Fonthill Abbey Lake it must at once be remarked how very unlike it is to shells of the same species found there now. As the lake must have been in existence for at least half a century when the shell was found, one might well suppose that conditions there had settled down into a state of equilibrium; however, the ensuing century and three quarters has possibly produced ecological changes in the area sufficient to result in the aberrant mussels found in the lake today.

The lake itself is aproned round its circumference with large slabs of Chilmark stone, the material used in the construction of the Abbey. These slabs pave an area from the water's edge to a 9-10 ft., and the mussel is invariably found up-ended in the joints of the stone, its posterior end well clear of the overlying mud. It is there in some quantity, often living at depths of as little as a foot or so, and it probably does not occur beyond the stone apron. Its size and proportions when adult are very constant but the ratios of its main dimensions depart drastically from those normally found with this species. Comparative measurements of four specimens chosen at random were

mm.	Length	Height	Width	H/L	W/L	W/H
	100	56	41	.56	.41	.73
	95	49	38	.52	.43	.77
	115	67	47	.58	.41	.71
	109	53	43	.49	.40	.81

The noticeable feature of the Tisbury anatina is their extraordinary tumidity. This occurs over the whole shell and markedly in the ventral area. The included angle between the two valves at their meeting point on the margin (6-7 year specimens) is usually over 100° compared with the 70°-75° for an average A. anatina: a straight edge placed across the umbones will touch them at points $\frac{1}{2}$ " apart whereas normally it would touch them both at their meeting point.

The following table will make clear the unusual proportions of the Tisbury mussels relative to normal samples: each set of proportions is averaged from a series of measurements taken to the nearest mm., for collections of 6-7 year old specimens obtained from other parts of England namely the Thames Valley (where duck mussels do not grow large: see Crowley 1956); Wiltshire localities near Tisbury, where the shells were found to be unusually compressed; and Nottinghamshire, where the shells grow larger than elsewhere but with normal dimensional ratios.

Locality	Sample	Length	Height	Width	H/L	W/L	W/H
Thames Valley	39	75.8	38.4	24.0	.51	.32	.63
Wiltshire	10	71.6	35.8	21.2	.50	.30	.59
Nottinghamshire	19	131.0	64.8	42.2	.50	.32	.65
Tisbury	12	102.0	53.7	41.6	.53	.41	.77
The Benet Shell	1	126	70	55	.55	.44	.78

It will be noticed that the Tisbury shells, shorter than those from Notts. by nearly 30mm., have approximately the same width. The Benet shell, larger than any

known from Fonthill Abbey Lake in recent times, is seen to have even more abnormal proportions, possibly favouring the idea that it came from this lake.

Tisbury mussels display marked irregularities of growth; many ridges and puck-erings are to be seen externally on the shell and many specimens are more or less seriously distorted in shape. Growth is clearly marked by thickened black lines on the periostracum and irregularities sometimes occur internally as well. The colour of the shells is a greenish black on the posterior surface shading to a pale yellowish brown in between the growth lines. One or two greenish rayed markings can be seen but these are never well marked. A great deal of erosion is always present, invariably round the umbonal area and usually on the centre of each valve, possibly where it touches the stones, and spreading along the growth lines towards either end: this invites the supposition that much of the erosion is caused by friction. It reveals a dead white chalky surface and is sometimes so severe as to expose the underlying animal. Probably when this stage is reached the death of the mussel follows soon after.

Umbonal rugae are never visible and the specific ascription of the mussels has been challenged; however, the long and powerful external hinge ligament and the lack of furrows on the inner surface of the shell will serve to identify the species. The body seems normally formed but very large.

As for the reasons for the formation of these aberrant shells, these must remain a mystery until a considerable amount of laboratory work can be undertaken. After all, *Anodonta* is a naturally variable genus as already stated, and no reasons for this have been put forward as far as I know. Certain suggestions, however, may be made.

The flesh of one specimen was stained and examined under the microscope: it appeared to have a heavy protozoan infestation. Dr. C. A. Wright was good enough to examine and report on the slides and informed me that cases of shells being modified in shape by parasitic infections were known but rare. He requested further material so that he and Dr. Canning could prosecute their own investigations, but all specimens sent proved to be completely free of infestation.

Several samples of the water from the lake were sent for analysis and the result indicated a very soft and pure water. One sample is here compared with a typical Thames water from the London area.

(Parts per million)	Fonthill Lake Water	London Water
Silica, SiO_2	9	7
Iron, Fe	neg.	neg.
Manganese, Mn	neg.	neg.
Calcium, Ca	27	104
Magnesium, Mg	1	4
Sodium, Na	11	22
Potassium, K	1	3.7
Bicarbonate, HCO_3	60	247
Sulphate, SO_4	19	60
Chloride, Cl	24	28
Fluoride, F	neg.	0.1
Nitrate, NO_3	neg.	26
Dissolved Solids	121	377
Hardness as CaCO_3	74	279
pH value	7.1	7.8

A. E. Boycott (1917) carried out a number of experiments to determine the

manganese requirements of British freshwater bivalves: he quotes H. C. Bradley as having found that 1% of the dry weight of most American species consists of this mineral, divided between shell and body, and Boycott confirmed this figure for Anodonta cygnea. Andrade and Paulini (1957) carried out analyses of the body and shell of Australorbis and determined the four principal shell elements to be sodium, calcium, manganese and iron. Bivalves, which pass large quantities of water through the system, are usually able to assimilate whatever minerals they require in any normal water, even if only traces are present, but in a case like Tisbury, where both iron and manganese are deficient, aberrations in the animal might be expected. On the other hand, both these minerals are apparently lacking in Thames water also, and the bivalves are normal, if small, throughout the Thames valley. Possibly the mussels may assimilate small quantities if it is present in bacterial form, in the mud.

It seems just possible that the Tisbury variation may have resulted from a lack of phosphorus. This is a mineral not normally covered in routine water analysis, but the chemist who carried out the work on the Fonthill Abbey water commented that it was completely lacking in phosphorus and that this was a most unusual feature. Phosphorus is a normal constituent of the body, but not of the shell, of most freshwater mollusca.

References

- Andrade & Paulini, 1957 Rev. Bras. Malariologia 2 (4), 559-563.
 Boycott, A.E., 1917 The Naturalist, 11ff.
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T. E. Crowley

TRUNCATELLINA CYLINDRICA AT A BRONZE AGE SITE IN SOUTH LINCOLNSHIRE

The report of Truncatellina cylindrica occurring in an uncharacteristic habitat at a Neolithic to Early Bronze Age site (Conchologists' Newsletter, June 1980) prompts me to place on record a similar occurrence at an Early to Middle Bronze Age site at Billingham, South Lincolnshire (NGR. TF/126334) in 1977.

A soil sample was taken from the bottom of an enclosure ditch by Mr. Peter Chowne of the South Lincolnshire Archaeological Unit, and snail shells were extracted by floatation. The sample (No. 77/F9) was analysed by the writer in March 1978 and produced the following selection of species:

Open country species:

Vallonia excentrica (52), Pupilla muscorum (9), Vertigo pygmaea (12),
Truncatellina cylindrica (6).

Shade-loving species:

Carychium tridentatum (c.500), Vitrea crystallina (44),
Vitrea contracta (55), Trichia plebeia (5), Punctum pygmaeum (2).

Aquatic species:

Valvata cristata (1), Anisus leucostoma (2).

The presence of Cecilioides acicula (80) may be of recent origin due to this species' burrowing nature.

It is assumed that the presence of the terrestrial species in the ditch arose from their presence in close proximity to it. The occupation level is on fen-edge gravels, possibly coastal in the Early Bronze Age period as seeds of Suaeda sp. and evidence of saltmaking have been identified from this level. Impounding of fresh-water between the gravels and rapidly accreting off-shore silt-bars created peat-fen (the bottom peat of the fen series), and it is suggested that the presence of the shade-loving molluscan species in association with those of a much drier habitat may reflect the change from dry coastal gravels to damp margins of

incipient peat-fen.

The only sites in Lincolnshire where Truncatellina cylindrica has been found live are, or were, coastal dune areas.

I am grateful to Dr. M. P. Kerney for identifying Truncatellina cylindrica for me.

E. J. Redshaw, 19.11.1980

RARE NUDIBRANCHS FROM S.W. IRELAND

Since coming to Ireland in 1975 I have been collecting nudibranchs from localities on the north-east, north and west coasts of Ireland and many new records have come to light, so that the Irish list is now almost on a par with the list for Great Britain. Furthermore most of the new British nudibranchs discovered in the last five years have been described at least in part from Irish material. The late Henning Lemche described five new species of Doto in 1976 on the basis of his collecting in the Galway area. The type specimens of Cuthona rubescens Picton & Brown, 1978 and Coryphella browni Picton, 1980 are from Irish localities. 1980 proved to be an exciting year; on a visit to Sherkin Island, Co. Cork, I collected specimens of a new species of Doto. A few days later, in Lough Hyne, Co. Cork, Greg Brown and I collected specimens of Dicata odhneri Schmekel, 1967 previously known only from Naples and Facelina dubia Pruvot-Fol, 1948, previously known only from the Mediterranean and the Bay of Biscay. In October I had frantic phone calls from Keith Wilson (Cork University) who had a nudibranch which he couldn't identify from the British literature. A visit to Lough Hyne in December with Keith confirmed that this was Cuthona genovae (O'Donoghue, 1929) another species previously only known from the Mediterranean.

I am intending to do more collecting on the south coast of Ireland in the summer of 1981. I would like to hear from anyone with an interest in nudibranchs who would like to spend a week at Sherkin Island Field centre in July, August or September. I am writing an account of the nudibranch fauna of Ireland in conjunction with Elizabeth Platts and I would be pleased to receive any records of nudibranchs or sacoglossans from anywhere in Ireland. All such information will be fully acknowledged.

Bernard E. Picton

CASSELL'S NATURAL HISTORY

The first books I can remember, apart from the First Primer (which one quickly mastered), are Arabella Buckley's "Eyes and No Eyes", the "Shown to the Children" series (T.C. & E.C. Jack), especially Flowers and Birds, Gordon's "Our Country's Birds", the bird books of the Kearton brothers, pioneers of nature photography (Cherry Kearton and my Uncle Dick married sisters), and Cassell's Natural History, bound by my father in blue cloth with red spines. Whenever I wanted these taken down from the shelves in his study, I asked for "the blue books with red backs". There is no date, but this work, in six volumes, must have been issued, presumably in parts, towards the end of the nineteenth century. It is lavishly illustrated with engravings, of a high standard, by anonymous artists. Many of the drawings have scenic backgrounds, in harmony with the anecdotal style of much of the text.

Memorable pictures include a ferocious gorilla (how David Attenborough has changed the image of this noble ape!), a hunted orang, dealing effectively with one assailant, though reinforcements advancing from its rear spell a reversal of

fortune, a most malevolent lion of Barbary, a lion and lioness attacking an elephant, hyaenas in a cemetery (a human foot protruding from the ground), a quagga ("bands of many hundreds are frequently seen"), three koodoo chased by a horseman leaping, apparently to destruction, over a precipice, and a giraffe hunt, sixteen animals (and more suggested off-stage) stampeding line abreast. Particularly haunting are two shipwrecked sailors, clinging precariously to the top of a mast just projecting above water, with three menacing sharks circling round: a ship on the horizon offers a faint glimmer of hope, but the odds are on the sharks.

Mollusca are mainly depicted by shells, but a Helix aspersa seems to crawl across the page, an octopus, balefully watched by another, is about to pounce on a crab, and sailors are trying to haul aboard a giant squid - it got away minus its 'tail'.

There are accounts of giant squids and encounters with octopus, besides familiar stories. "The late lamented M. Pourtales informed the writer (Dr. Henry Woodward) that he was present in 1879 in the Museum of the Jardin des Plantes, Paris, when a sea-captain offered ten specimens of the shells of Spirula to the Museum. Being told they were very common, and that it was the animal that was the rarity desired, he replied that he had taken all these ten examples alive in the open sea, with the animal, and had with his own hands cleaned them and removed the animal matter." "A Trigonia, taken alive from the dredge by Mr. S. Stutchbury, and placed on the gunwale of the boat, leapt overboard." In the version of this story I heard, it was the first living Trigonia ever seen, and it was a considerable time before any more were taken. There is the 'chestnut' of the crazy collector possessing a kind of shell of which only one other was known to exist, who bought it and forthwith crushed it, so that his specimen would then be unique. Such wanton destruction always distressed me, so I am grateful to Peter Dance (Shell Collecting, p.238) for quashing this apocryphal anecdote - but has he? One might as well hope to refute such entrenched fallacies as that Marie Antoinette said "Let them eat cake", that Mrs. Beeton wrote "First catch your hare", or that the mysteriously abandoned brigantine was named Marie Celeste. Such folk myths are as indelible as the Ten Commandments.

One still can derive entertainment from the text and illustrations of these old books, which gave such delight to a little boy. Second childhood? Skilled draughtsmanship has been killed by photography, more's the pity. Our knowledge of the world about us is more extensive and accurate these latter days, but is the cold scientific presentation really an advance?

A. E. Ellis

THE SLUG BOETTGERILLA PALLENS RECORDED IN NORTH WALES

The first record of Boettgerilla pallens Simroth 1912 in this country was made by Dr. Barry Colville in 1972, who found three juveniles in the Lake District (NGR. SD 403 985). A further four records were made prior to the publication of Kerney's "Atlas of Non-marine Mollusca of the British Isles" (Kerney, 1976). This was followed by the revised list of Norris (1978), which covered the period September 1974 - October 1978. This contained records from places as far apart as Jersey, Northern Ireland and London. Boettgerilla has now been found at a number of sites in North Wales and appears to be firmly established in some areas.

The first find was at a hill-side site near Llanfairfechan, Gwynedd (NGR. SH 637 713). Specimens were collected from beneath rocks and stones lying on grass and in walling. After consulting the relevant literature (Ellis, 1979; Kerney and Cameron, 1979), the identity of these slugs became apparent. This diagnosis was confirmed by Mr. Adrian Norris and Dr. Michael Kerney, who were sent descriptions, drawings and preserved specimens. The dominant flora at the site were the grasses

Dactylus glomerata, Festuca spp. and Lolium spp. and the herbs Bellis perennis, Rumex sanguineus, Taraxacum officinale and Urtica dioica. The site was situated around a converted barn used for holiday accommodation and lying some 20 metres below forestry land.

In July and August more finds were made in four 100 metre sites around Bangor, Gwynedd (NGR. 57-72-). Two of the sites were located in a large, disused garden while the other two sites were overgrown lawn, extending into a recreation area, and bordered by hedgerow and trees and surrounded by a stone wall. Boettgerilla was found at the surface of the soil, below rocks, stones or rubbish, never out in the open. Other common molluscs at the site were Arion ater ater, A. a. rufus, Arion hortensis agg., Ashfordia granulata, Deroceras reticulatum, Discus rotundatus, Limax marginatus, Milax budapestensis, Milax sowerbyi, Oxychilus spp. and Trichia striolata.

Due to lack of time, no detailed survey was made of the vegetation or the relative density of each species. However, in just a few brief searches through the area - totalling some 4 to 5 hours in duration, nearly 30 specimens of Boettgerilla were discovered. As this species was found in four out of only a dozen or so 100 metre sites examined, it would appear to be fairly common in this part of North Wales. An accurate assessment of its distribution will require a thorough search through the area and a careful monitoring programme to follow any spread into new areas.

M. J. Ashdown

TESTACELLA MAUGEI FÉRUSSAC IN A CORNISH GARDEN

The carnivorous slug Testacella maugei Férussac, which in the British Isles is confined mainly to the south-west, has by its subterranean habits always proved difficult to locate and is consequently likely to be significantly under-recorded in the current ten-kilometre mapping scheme. Apart from being troublesome to find, it is unusual to come across more than a single specimen at any one time. Recently while renovating a garden in St. Ives, Cornwall, I found, purely by chance, far greater concentrations of this species than I had previously seen, in what must generally be considered an inaccessible habitat. While turning over the flower borders, three or four T. maugei came to light during a period of several weeks. In order to re-shape some of the existing flower beds, it became necessary to remove parts of the lawn. When the grass was cut into turves approximately 6cm. deep, it was found that virtually each sod contained one or two specimens of T. maugei, giving on average nine or ten individuals per square metre. The difficulty experienced finding this slug in other areas of the garden would have led one to record the species as decidedly uncommon, though obviously this was not so. Clearly any opportunity to examine freshly lifted turf should be taken when searching for this slug, particularly turf originating from gardens and other cultivated places such as parks and cemeteries.

John Humphreys

ELONA QUIMPERIANA (FÉRUSSAC) AND OTHER SNAILS IN BRITTANY

While on holiday in southern Brittany in July 1980, I had a few opportunities to search for snails. Although the fauna is not as well known as that of Britain, it appears to be very similar to that of S.W. England, as might be expected from its climate and position. I did not expect to find many species with which I was not already familiar, and in general this turned out to be the case.

The rocks of Brittany are mostly granite, which give rise to very acid soils, and most of the woods and hedges I visited were very poor in species, with only Discus rotundatus, Vittrina pellucida and Clausilia bidenta being at all frequent. One wood only was exceptional, on the D769 road about 30 Km south of Morlaix, and 5 Km N.E. of the small town of Huelgoat, and just inside the Parc Regional d'Armorique. The wooded hillsides were very barren and acid, with heather and bilberry conspicuous, but one valley bottom with impeded drainage had a fen carr woodland, with Alders and Birches, and with typical fen plants such as Tussock sedge Carex paniculata and Meadowsweet Filipendula ulmaria, with nettles and rose-bay willow herb in more open places. On the edge of a farm track going through this fen, snails were more abundant, and I found a number of species, including Cepaea nemoralis and C. hortensis, Oxychilus helveticus (whose distribution in France is uncertain due to earlier taxonomic confusion) and Azeca goodalli. With these was Elona quimperiana, a large, thin-shelled Helicid related to Arianta arbustorum. This is a rare species of very limited distribution, being confined to W. Brittany and the extreme western Pyrenees and Cantabrians (Germain; Faune de France, regards the Pyrenean form as a separate species). It is an example of a species with an extreme "Lusitanian" distribution, like the Kerry Slug Geomalacus maculosus (recorded in Brittany 100 years ago but not seen since!) The habitat in which I found it matches the information in Germain very well - shady and damp underwood and hilly woodland, especially in nettles and ferns. It seems to be a coastal species, and Huelgoat (c. 45 Km from the west coast, 35 Km from the north) is the most inland locality known.

Had the site been in England, I should have expected to find Arianta arbustorum, (which doesn't occur in W. Brittany) and it is tempting to think of Elona as a Lusitanian equivalent of Arianta which never managed to cross the channel - Arianta is absent from S.W. Ireland, and uncommon in S.W. England in spite of the damp climate.

It is worth noting that there are a number of species which might well be found in Brittany but are at present not recorded or known from only a few sites. These include Zonitoides excavatus, Vertigo substriata, Leiostryla anglica, Ashfordia granulata, Ponentina subvirescens and Geomalacus maculosus. All tend to be found in very wet or acid woodland, or near warm wet Atlantic coasts, and many of them might well be found with Elona; a good challenge for any other conchologists visiting Brittany!

Robert Cameron

FINDING MARINE MOLLUSCS - HINTS AND TIPS NO. 2 OR SERENDIPITY AT DARTMOUTH

In spite of the resounding lack of response to the first in this series (?) (Newsletter 71, Dec. 1979, 181), my recent experience (September 1980) may be worth passing on.

The boat bringing me back from a tourist trip up the River Dart had difficulty in approaching the quay wall at Dartmouth (South Devon) because of the low tide. Gazing vacantly at the turbid, scummy, oil-filmed water sliding past as I awaited my turn to disembark, I realised that the Laminaria hanging listlessly from the wall was almost covered in a rich growth of hydroids and bryozoans - together with much silt, some rubbish and a faint smell of petrol!

Not very promising for molluscs, but I like looking at hydroids, so I collected enough Laminaria and Fucus serratus to fill loosely two small polythene bags 18 x 20 cm, where the weed stayed until, a day and a half later, I was able to put it into a tank with fresh sea-water.

A casual search showed only a couple of Littorina littoralis and I expected

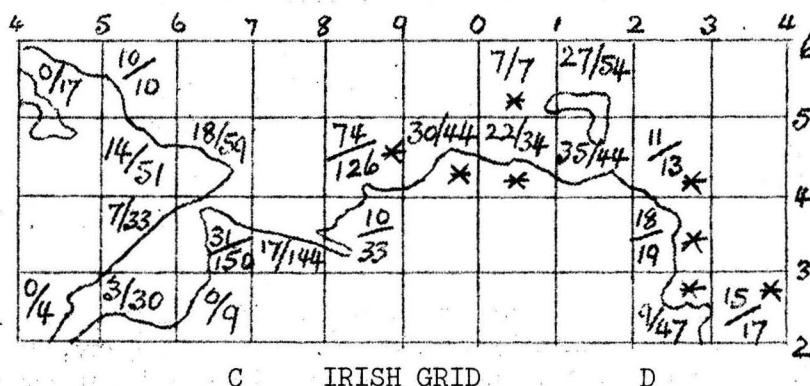
nothing more; in fact, gradually over the next ten days, thirteen sea slugs of nine species showed themselves! Most were juveniles and some were difficult to identify with certainty, but the list is as follows (with thanks to Dr. Greg Brown for help in identification):-

Goniodoris nodosa (two)
Acanthodoris pilosa (three)
Onchidoris oblonga
O. pusilla
Palio nothus (two)
Coryphella sp.? (probably C. browni Picton)
Coryphella sp.? (probably C. gracilis)
Facelina bostoniensis Couthuoy
Trinchesia foliata

Not to be expected every time of course, but it does make the point that, given the right food, the appropriate molluscs are quite likely to be there, though they may take their time over emerging.

D. R. Seaward, Marine Recorder

SEA AREA ANTRIM - PROGRESS REPORT FOR 1980



NORTH-EAST IRELAND

Records per 10 Km square
expressed as
 $\frac{\text{total A/}}{\text{total no. records}}$

*: Littorina saxatilis
siblings separated

Most of the recording this year has come from diving.

Thanks again to the generosity of the R. Ll. Praeger Fund I was able to spend a week on Rathlin in July. I dived on three wrecks around the island, as well as collecting along the shore. This yielded ten species new to the Area. Of the four new nudibranchs Antiope cristata is perhaps the most interesting. The only rissoid recorded was R. albella; yet most of the records from the mainland are for R. parva, and the rest for R. membrenacea. On shore, records from Bull Point (IG D 05) were obtained for the first time.

"Littorina saxatilis" siblings have now been identified from Portstewart to Garron Point. L. rudis Matus appears most frequently.

Snorkeling off Cushendun and Cushendall in August resulted in the addition of a few new species to these localities.

In June a few sites from Portstewart to White Park Bay were visited. Hermaea dendritica was found on Codium at low water at Portrush and Portstewart.

So far a total of 1029 records have been made for the Area. These represent 256 species, 113 alive at present.

A report on the finds from Rathlin, the north-east of the Area (1979) and Portrush (Ulster Museum, 1979) is in preparation for the R. Ll. Praeger Fund.

I am trying to store all 10 Km square records on the Cambridge IBM 370/165 computer. I hope to write programs to up-date these records, to produce the Master Card from them, and to convert Irish Grid references to Latitude & Longitude, to allow distribution maps to be plotted in either system.

During 1981 I hope to dive or snorkel at other sites throughout the Area. The shore from Red Bay to Cushendall (IG D22 and D23), although not particularly species-rich, is unusual, and looks promising. It would also be interesting to dive off Magilligan to see how many of the beached shell species can still be found alive offshore.

I am most grateful to the following for their help during 1980:

The R. Ll. Praeger Fund for Field Natural History, administered by the Royal Irish Academy.

Dave Stewart, and the other divers on Rathlin, from the North Down Branch of the British Sub-Aqua Club.

V. Fretter, Reading

D. Gillespie, Antrim

D. Hepper, Richmond

N. McMillan, Liverpool

E. Platts, Belfast

M. Walters, Tring

A. Wilson, Portrush

Michael J. Brisco, 17.1.81

BOOK REVIEW - "1,000 World Shells" Rare to common, with Values, by A. Gordon Melvin and Lorna Strong Melvin. Published by Charles E. Tuttle Company, Inc. of Rutland, Vermont. U.S. \$18.50. Hard Cover. England - Prentice-Hall International, £11.10.

This book is "an amplification and extension" of Melvin's earlier book, "Sea Shells of the World" published in 1966, and is the same size and much the same format. There are 170 pages, six for the introduction, 72 for descriptions of the shells illustrated, 52 plates of which the first 16 are in colour, 2 pages each to a glossary and a list of shell books, and 26 pages to an index.

In his earlier book Melvin had the text opposite the illustrations, but in this one the latter are all together after the text. Each plate contains from 5 to 32 shells which are numbered and a reference is given on the plate to the page on which the name and description as well as value are to be found. This is a considerable come-down from the earlier book.

Some of the illustrations, all of which are photographs, are good, but others are so small as to be of no help in identification. Also all the plates have a black background, against which a dark-coloured shell is at times almost wholly lost.

The choice of positioning of the shells is odd. To take the Muricidae for example, there are 2 colour plates, numbers 3 and 4, which are all Murex; there are 4 more Murex species with a variety of other shells on colour plate 16; plates 20 and 21 are all Murex in black and white and there is one odd specimen on each of plates 30, 32, 34, 48 and 49 mixed up with shells from a number of other families.

Similarly with other families.

The naming is inconsistent and confusing. In many cases the generic name on which a super-family or family name is based, e.g. Strombus in Strombacea and Strombidae, Murex in Muricacea and Muricidae and Bursa in Bursidae, is used as the generic name of a shell and the true generic name follows in parentheses as would normally a subgeneric name. Examples are Strombus (Tibia) etc., Murex (Coralliophila) etc., Murex (Latiaxis) etc. and Bursa (Colubraria) etc.. Authors' names are of course given, but sadly dates are not.

The prices given are the 'averaged-out prices of shells natural to or imported into the United States, valid at the time of publication'. Although this may be of some help as a guide to collectors, with inflation a world-wide problem and the way the value of shells themselves is apt to fluctuate as habitats are discovered or areas cease to be fished, I cannot think this aspect of the book will be of importance for very long.

While I cannot recommend this book as a 'must' to collectors, any book with reasonable illustrations is bound to be helpful at times, and certainly some of the illustrations are good and clear.

A. P. H. Oliver

"Tooth & Claw", Defensive Strategies in the Animal World, by J. L. Cloudsley-Thompson, Dent 1980. £9.95. Recommended

P. 61 "It has been found that Danish mussels, although belonging to the same species as the English variety are up to four times stronger. They close their shells more tightly, are more difficult for starfish to open, and accordingly, it is said, are preyed upon less by them. This may be so, but it would seem more probable that the extra strength may have been the result of even heavier predation from which only the toughest mussels escape to reproduce themselves."

P. 119 "Of the species of coneshell known to be responsible for stinging Man, the Geography Cone is the most dangerous. It is known to have been responsible for a number of deaths. Like many other poisonous snails, its natural food is fish, but even cones that feed on worms and molluscs can cause serious harm to susceptible individuals who allow themselves to be stung."

"The nature of the venom is little understood: it acts directly on the muscles, causing paralysis. The symptoms in Man consist of a sharp sting and numbness, bluish discolouration of the skin at the site of the puncture, paralysis spreading to all parts of the body including the throat so that speech is affected, loss of sight, and consciousness, followed, in severe cases, by death."

P. 169 "Sea-slugs and other marine molluscs autotomize their papillae which continue to writhe for some minutes after detachment and may, presumably, keep a predatory fish occupied while the mollusc crawls away: the papillae are regenerated later."

"Related molluscs autotomize and regenerate their tails, or even parts of the mantle."

"Some anchorite bivalves which live buried in sand or mud can regenerate a projecting siphon if this should be nibbled by a fish."

P. 180 "Among marine invertebrates, smell is often the most important of the senses, both in hunting for prey and in detecting predators. Starfishes, which feed on mussels and other bivalves, are attracted towards certain chemicals produced by their prey. Strange to say, the common starfish of European waters is attracted chemically to mussels only between the months of November and May." "Scallops react in a striking way to the chemicals secreted by the tube-feet of various species of starfish. They either swim away vigorously, jump about in a

protean manner, or rapidly close the valves of their shells. Larger starfish engender active locomotory escape responses in scallops more frequently than do smaller species, which feed mainly on sea-urchins and mussels."

Betty M. Smith

Two R. Tucker Abbott Bargains

"Seashells of North America", illustrated by George F. Sandstrom, Golden Press, New York, was published in 1968 at \$3.95, is much more than a field guide to U.S. sea-shells. It covers evolutionary history, reproduction and sexuality, development and growth, structure and pigmentation, feeding and movement, marine communities and environmental niches, dispersal and abundance, in marine shells among many topics. Much is to be learnt about molluscs from the excellent coloured illustrations alone. It is a book to go back to again and again, BUT it is out of print at present. It is well worth trying to get a second-hand copy, or obtain it from book sales of old stock.

Incidentally Tucker Abbott's famous "American Seashells" hardback costs \$40 plus, now.

"Seashells", a Bantam Book at 85p paperback, £1.45 hardback, has 160 attractive colour photographs, including live animals never photographed before. It presents an original approach for a small book with historical facts, breeding and feeding habits, location of the shell and its relatives, all condensed into brief reviews, written with great freshness.

The hardback can be bought at £2.15 with post and packing from J. Barnicoat (Falmouth) Ltd., P.O. Box 11, Falmouth, Cornwall. (Postal Paperback Specialists) Unfortunately the paperback is out of print. Published 1976.

"A Vision of Eden", by Marianne North. Webb and Bower, 1980, abridged from "Recollections of a Happy Life", 1893.

"I went to Washington with a parcel of clam-sandwiches in my bag, which Mrs. B made with her own dear hands, cutting a roll in half, buttering it, and putting the odd fishy things between; they come out of bivalve shells something like our scallops". P. 42.

"Roasted oysters are a great supper-dish at American evening parties, one oyster being as much as any one could eat at a meal. I think no food is better than those huge American shell-fish". P. 45.

Betty M. Smith

PUBLICATIONS RECEIVED

Poirieria, Special Edition, 1980.

This special issue was produced to celebrate the fiftieth anniversary of the Conchology Section of the Auckland Institute and Museum, New Zealand. It includes the history of the Club, an account of its major activities and aims, and much of information and interest beside.

The Club started when Dr. A. W. B. Powell, with five young founding members, started a boys' club on 11 October 1930 to study natural history in general and shells in particular. The Club met regularly on Wednesday afternoons, after school, and studied the shells in the museum. During the next five years they had frequent field trips to beaches in the Waitemata and Manukau areas and enrolled

many new members. On one of these trips a boy named Fleming found an extremely rare nudibranch, *Aglaja cylindrica*. The boy afterwards became Sir Charles Fleming but the account does not claim that this was a case of cause and effect.

Field trips were made the subject of essay competitions for prizes of shells donated by Dr. Powell and the winning efforts of the first two competitions are included in the Special Edition: they are remarkably good efforts for primary school-boys.

By 1935 the original members were no longer schoolboys and it was decided to form an adult club with a junior section. Meetings were held in the evening of the third Thursday in every month - and have been ever since. The Club was renamed the 'Auckland Marine Conchology and Natural History Club' but this was later considered to have been a mistake, the net had been cast too wide and membership increased only when it was decided to revert to conchology as the major interest. The Club went into recess during the war but activities were resumed on the return of peace and by 1963 there were 176 members, some living overseas, and united by the regular reception of the club magazine *Poirieria*, edited then, as now, by Mr. and Mrs. Norman Gardner. The Club had become a section of the Auckland Institute and Museum in 1953 and a few years later was allotted a clubroom within the Museum building and privileges of access to the libraries and collections; a rare and favourable situation indeed, which enabled the Club to evolve its own library, reference collections and equipment storage.

Dr. Powell retired from his Museum appointment in 1968 and Mr. Walter Cernohorsky (one of our own members) was appointed Museum Malacologist in his place. He has carried on to the full the tradition of help and encouragement, and the Club flourishes under his continued interest. In 1975 the Club embarked on a photographic project, to assemble a reference collection of molluscan colour slides to illustrate talks and provide programmes, and in 1976 a Molluscan Symposium was organised, mainly to study recent invasion in Northern New Zealand waters of alien and tropical species, and in 1978 a national Shell Show was organised, which proved an outstanding success and seems likely to become an annual fixture.

The Special Edition of *Poirieria* also contains a list of the Club Presidents, short notes on the Life Members, and a biographical appreciation of Dr. Barnard. The activities of the Club and its Publications as now organised, are defined and discussed in detail and in particular, the part which it aims to play in the urgent matter of wild life conservation.

I am sure I can speak for our own Society in sending sincere good wishes to the Conchology Section at Auckland, for their second fifty years.

T. E. Crowley

COLLECTORS IN EAST AFRICA - 3. JAMES HANNINGTON (1847-1885)

Hannington collected a number of shells which were described by E. A. Smith in two papers in the *Annals and Magazine of Natural History*. He was born on 3rd. September 1847 at Hurstpierpoint, 8 miles from Brighton where his father ran a warehouse. At 13 he entered the Temple School, Brighton, and joined his father's business two years later; he stayed in it for six years during which time he also rose to the rank of major in the Sussex Artillery Volunteers. But he had no taste for commerce and in 1868 went to St. Mary Hall, Oxford, where he took orders with some difficulty in June 1873. He later became MA in 1875 and DD in 1884; also FLS and FRGS. He seems to have gone in for amusement rather than study, being President of the Red Club and captain of the St. Mary Hall Boat. After leaving he became curate of Martinhoe and Trentishoe in Devon and from 1875 to 1882 curate without emoluments of St. George, Hurstpierpoint, a church his father had built. He

was keen on evangelistic and temperance work and became a favourite mission preacher, having been ordained by the Bishop of Exeter in 1874 and of Chichester in 1876. In 1882 he offered himself to the Church Missionary Society for the Victoria Nyanzan Mission, asking nothing but his travelling expenses. He was accepted and left London on the 17th. May 1882 and arrived in Zanzibar the following June. His intention was to march to Mamboia, then to Uyui and thence to Msalala and by boat to Rubaga, but after many hardships he arrived at Msalala in such a bad state of health that he had to leave his friends and return to Zanzibar in May 1883. He returned to Hurstpierpoint to recover in January 1883. Then once again he offered himself to the CMS and was fortunate in that just at that time it was decided to place the Mission Churches under a bishop. Hannington accepted this job and was consecrated in Lambeth on 24th. June 1884. He left on 5th. November for Africa via Palestine (he held an ordination in Jerusalem on December 28th. under commission from the Archbishop of Canterbury) arriving in Mombasa on 24th. January 1885. He was the first bishop of Church of England in East Equatorial Africa and set up his headquarters at Freretown but moved about a good deal. On May 31st. 1885 he held his first ordination at Freretown; Rev. W. E. Taylor the well-known botanical collector was ordained as priest. Before long he became impressed with the idea of opening up a new and shorter route to Lake Victoria through Masailand and got together an expedition with a caravan of 225 porters which left on July 22nd. After a patient and courageous journey to Kwa Sundu he left them and went ahead with 50 porters on the 12th. October. He managed 170 miles in a week and reached the shores of Lake Victoria on the 17th. October. Here he met with disaster - Mwanga, an 18 year old barbarian had followed the infamous Mutesa to the throne of Buganda at a time when foreign forces were pressing from all sides. He rather naturally suspected all missionaries, slave traders and the like. Moreover, there was a tradition that Uganda would be overwhelmed by foreigners coming from the east. Hannington was Mwanga's first victim; he ordered him to be secured and on 21st. October he was seized, and brutally murdered 29 Oct. at Unyalla on the banks of Lake Victoria after eight days confinement, together with almost all of his attendants. The last few days of Hannington's diary were published in the Church Missionary Intelligencer, December 1886, 891-5. The whole diary was later published as a pamphlet. During the Uganda Massacres, described in letters home from R. P. Ashe, A. M. Mackay and others, many of the young converted Christians were brutally hacked and burnt to death. It seems that the French Catholic Missionaries were not too helpful during these massacres. Hannington married Blanche Hankin Turvin on February 10th. 1876; she died in 1932.

A rather gruesome postscript can be added about Hannington's remains - Bishop Tucker gives an account in the Church Missionary Intelligencer, 1893: 272-276. During a visit to Uganda he visited Mumias on December 9th. 1892 (now a town well within the present Kenya border). After a great deal of prevarication, during which the local chief said he knew nothing about the whereabouts of Hannington's remains, he finally stated that they had been taken down to the coast in a box by a Mr. Jackson, but Tucker knew this was untrue and pressed for further information. Finally a man said he knew of another man who had been a friend of the guide who had accompanied Hannington to Busoga. He showed Tucker a hut where he was certain the box had been buried and working at night they finally found the box, verified that the contents were Hannington's bones, and removed them to Mengo for a proper burial.

B. Verdcourt

COLLECTORS IN EAST AFRICA - 4. E. C. GORDON (1858-1926)

The Rev. Edward Cyril Gordon, a nephew of Bishop Hannington, was born in 1858 at Atwick Vicarage, Hull, and was educated at Lincoln Grammar School and Marlborough College. He was at the Church Missionary College in 1880 and obtained a 2nd. class Honours in the Oxford and Cambridge Preliminary Theology Examination.

He was ordained in May 1882 by Bishop Perry for the Bishop of London and also in 1891 by Bishop Tucker of the Eastern Equatorial African Mission, to which Gordon had been appointed in May 1882. From 1882-7 he was at Msalala, 1887-8 at Rubaga, 1888-9 at Usambiro and in 1889 in Uganda. During this period he presumably collected the splendid Ampullaria gordonii which Smith described in 1892; this is now considered to be only a race of A. ovata, the common nilotic species. He must have brought his shells back to England and presented them to the Museum during his leave in September 1891. In 1893 he returned to the Eastern Equatorial African Uganda Mission and then spent from 1895-97 in the Sese Islands - one of the wettest places in East Africa and presumably then a thoroughly unhealthy place. He finally returned to England in 1902, was placed on the disabled list in 1905 and died at Clifton, Bristol in January 1926. In 1898 he had married Ellen Bazett, a sister of Mrs. R. H. Leakey (a family prominent in the development of both science and the Church in East Africa), and of three other Bazetts, all missionary women. Ellen Gordon long outlived her husband and died at Chobham in 1953 at the age of 93.

B. Verdcourt

A BEETLE (OCYPUS OLENS MUELLER) PREYING ON CANDIDULA INTERSECTA (POIRET)

Further to the note by Dr. June Chatfield relating to ground beetles feeding on snails (Conch. Newsletter: 75, 281), I can add the following observation of a British species of beetle, Ocypus olens Mueller (Family: Staphylinidae), predatory on Mollusca. Last autumn I saw this species, better recognised perhaps by its common name of Devil's coach horse, carrying a specimen of Candidula intersecta (Poiret) in its mandibles. A number of these beetles were established in the interior of a garden frame, where they had excavated a network of shallow tunnels beneath the surface of the soil. The snail was carried without difficulty to the entrance of one of these tunnels, which the beetle entered head first and stopped with just the tip of its tail visible. This unfortunately prevented detailed observation of precisely how the prey was attacked; however, a sharp rasping sound from the beetle's mandible gnawing on the shell was clearly audible two metres away. After approximately half an hour the beetle emerged leaving behind the snail. Examination of the shell, an adult specimen with a thickened lip and 7mm in diameter, revealed it to be intact, with no evident damage from the persistent gnawing that had taken place. On breaking open the shell about half of the body was found to be eaten, including the head and foot; the remaining parts lodged in the inner whorls were presumably inaccessible to the predator.

John Humphreys

REVIEW

Révision des Trophoninae D'Europe. R. Houart. Informations de la Société de Malacologie de Belge. Serie 9. No 1 - 2. Jan. - April 1981. 70pp. 6pls.

This well illustrated article is a complete revision of the European Trophoninae, 57 species names, including synonyms, are cited and 11 species are held to be valid, discussed, described and illustrated. One species Nodulotrophon scolopax (Watson, 1883) is new to the European fauna. In addition to the plates which are reproduced from photographs and are entirely satisfactory, there are numerous clear text figures drawn by the author, together with a distribution map for each species. This is a most useful contribution to the study of the marine Mollusca of western Europe and the author is to be congratulated on a job well done. In French with English abstract. Copies, price 300 Fr. Belge. + postage, from:- Roland Houart, [REDACTED] B-3330 Landen (Ezemaal), Belgium.

T. Pain

GENERAL NOTES

A BELATED CORRECTION

In his revision of Afrodonta Melv. & Ponsonby (Ann. Natal Mus. 20 (2): 341-364 (1970) Solem refers to a specimen of A. kempi (Connolly), which I sent to him, giving the locality - Nufenguri, Kenya. I know my writing is bad but it is quite a feat to derive this plausible-sounding name from Kitale which is the correct locality, the well-known town near the eastern side of Mt. Elgon. It seems worth correcting this since the species is still only known from the type and this single shell collected by J. G. Williams. Doubtless its small size 1.75 x 1 mm has led to it being overlooked.

B. Verdcourt

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

c/o British Museum (Natural History), Cromwell Road, London, SW7 5BD

ITZN 59 The following Opinion has been published recently by the International Commission on Zoological Nomenclature in the Bulletin of Zoological Nomenclature, Volume 38, part 1, 26 February 1981.

Opinion No.

1163 (p. 52) Conus moluccensis (Mollusca: Gastropoda) is available as from the work of Kuster, 1838.

The Commission regrets that it cannot supply separates of Opinions.

R. V. Melville, Secretary

FIELD MEETINGS 1981

Please note the arrangements for the meeting to West Runton, Norfolk, have been amended as follows: Meet at Norwich Station at 10.45. Train from Liverpool Street departs 08.30. Norwich arrives 10.42 (Breakfast and light refreshments available). The date, Saturday July 11th. remains unchanged. Transport to and from West Runton is available.

THE ANNUAL GENERAL MEETING

At the A.G.M. of the Society on 21st. March last the following were elected:- President - Mrs. Stella M. Turk; Editor (Journal of Conchology) - Dr. B. Coles; New members of Council - Dr. Colville, Messrs. Holyoak, Pinn and Willing and Major Whitehead. Other members of Council and Officers remain as before.

THE SOCIETY'S PUBLICATIONS

Back numbers of the Conchologists' Newsletter may be obtained from J. D. R. Fryer, Dept. of Geology, King's College, Strand, London, W.C.2, at 50p each plus postage. The Hon. Secretary, Mrs. E. B. Rands, can supply copies of the Marine

Concordance, 30p to members and 50p to non-members, the Atlas of Non-Marine Mollusca, £2.50 to members plus 85p post/packing and £3 to non-members plus 85p post/packing. Back numbers of the Journal of Conchology and Papers for Students can be obtained from Mr. A. Norris, Natural History Dept., City Museum, Municipal Buildings, Leeds, LS1 3AA.

PAPERS FOR STUDENTS

A revised 2nd. edition of No. 7, Guide to Selected Literature on British Mollusca by Stella M. Turk is now available, cost 70p (80p to non-members) per copy including post.

EXCHANGE WANTED

Owen Griffiths, [REDACTED], Centennial Park, N.S.W. 2021, Australia, is interested in non-marine molluscs and wishes to exchange specimens from Australia, New Guinea and Africa with members for English non-marine molluscs. Please write.

THE NEWSLETTER

I look forward to receiving some more articles and notes to maintain my stock of material for future issues of the Newsletter. I should particularly like to have some articles on the popular tropical marine molluscs which have such a wide appeal. Copy dates for any urgent notices and requests are:-

- 6th. January for the March issue
- 6th. April for the June issue
- 6th. July for the September issue
- 6th. October for the December issue.

P. E. Negus

FOR SALE

Kenneth Foxton, [REDACTED], Elham, Kent, [REDACTED], has over 150 different species of cowries for sale, comprising nearly 400 specimens, some quite rare. A free list will be supplied to anyone interested.

FOR SALE

We are suppliers of tropical sea shells, land snails, coral and sea curios to collectors, schools and colleges. S.A.E. for lists.
Nature of the World, 19 Bell Lane, Fetcham, Leatherhead, Surrey.

JOINT SYMPOSIUM - 26 SEPTEMBER 1981

There will be a joint symposium between the Conchological Society of Great Britain and Ireland and the Conchological Section of the Northamptonshire Natural History Society at the Humfrey Rooms in Northampton.

Doors will open at 10 a.m. when coffee will be available, the symposium will start at 11 a.m. There will be a break for lunch and the symposium will finish at 4.30 p.m.

There will be a Symposium dinner at 7.30 p.m.

For the symposium, speakers will be strictly limited to 30 minutes; it is suggested that talks last for 20-25 minutes so giving a few minutes for questions.

At some time during the day there will be a display of the Lunar Sample thin section Moon rocks for members to examine through microscopes.

Those who wish to attend please fill in the form below and send to Gordon Osborn, [REDACTED], Olney, Bucks., [REDACTED], by 1st. August.

Joint Symposium - 26 September 1981

Name

Address

Telephone

Will you give a talk?

If so, what title?

Apparatus required

Will you be attending the dinner?

Do you want overnight accommodation?

Do you wish to be met at the railway station?

Overall cost for the day approx. £5

Duplicated by: SPEEDWELL PRESS, Trap Road, Guilden Morden, Royston, Herts.

THE CONCHOLOGISTS' NEWSLETTER

No. 78

ISSN 0573-2336

Newsletter Editor: P. E. Negus,

Chelsea Bridge Road,
London,

September 1981 Copyright

Produced by THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

JANTHINA ON THE QUIBERON PENINSULA

The Quiberon Peninsula in Brittany is a long, narrow neck of land, about 14 kms. in length, projecting into the Atlantic some 26 kms. to the south-east of Lorient. It lies roughly on a north-south axis and at its narrowest point, about half way along its length, it is not much wider than the road which runs down to the port of Quiberon at the wider southern extremity. The narrow isthmus is mostly of sandy dunes on which grow patches of maritime pines once abundant but much reduced in numbers since the war years of 1944-45. The general disposition of the mainland coastline means that the eastern side of the peninsula helps to enclose the calm waters of Quiberon Bay while the western shore is exposed to the constant rollers of the Atlantic. This difference is responsible for the marked contrast between the molluscan fauna of the eastern and that of the western shores.

Along the eastern shore of the isthmus lie Les Sables Blancs where the tide rises and falls as calm water, normally, over long stretches of sand. At extreme low tide there can be seen extensive racks of the tuiles chaulées or lime-coated, curved tiles which are set out to provide a settling place for the oyster spat. Oyster culture is a notable industry in many parts of Brittany. The calmer conditions on this beach provide a very wide range of shells to be picked up including, at extreme low tide, beautiful unworn shells of Callista chione (L.).

Only a few hundred yards away, the range of mollusc shells to be collected on the west-facing shore shows a marked contrast. As is to be expected, the number of genera to be found there is much reduced and somewhat different.

During the first week of August 1980 the weather was fine in Brittany but a steady and strong wind from the west blew for several days from the open sea on to the exposed western shores of the Quiberon Peninsula, bringing in a lively surf. On 5th. August there were to be found along the strand line a number of shells of Janthina, some of which were empty but some still occupied by the dead or dying molluscs. The number to be picked up increased during the next three days with the wind still blowing steadily from the Atlantic and during this period I was able to collect fifty-five specimens along a stretch of shore about $1\frac{1}{2}$ kms. in length. Many were stranded intact with their raft of mucus bubbles in place and the egg capsules containing young Janthina¹ in a band beneath the elongated cluster of bubbles. The bubble rafts were tough and have survived drying out with little change. At the height of the 'invasion' individual Janthina could be found rolling in on the breakers and with the strong on-shore wind driving them in there was no means of restoring these beautiful and unfortunate animals to the open ocean. When they were picked up fresh from the water they discharged a few drops of an intense purple dye which stained the fingers for a few hours.² They were appearing in two sizes and at first I believed that the larger specimens represented the female and the smaller the male form of Janthina janthina (L.).³ On returning to England, however, a comparison of the specimens collected with the illustrations in Forbes and Hanley⁴ established (from the shape of the aperture) that the larger specimens

were J. pallida Thompson and the smaller ones J. janthina. The proportion among specimens collected of the former to the latter was about nine to one.

The same westerly wind brought in many specimens of the free-floating hydrozoan Velella velella (L.), otherwise known as 'By-the-wind-sailor' on account of the membranaceous sail which projects above the colony of specialised individuals. Janthina feeds on Velella and it was interesting to find that the latter had been coming ashore in large numbers and apparently beating Janthina to the shore with its larger sail. In most cases only the transparent oval 'skeletons' with diagonal sail remained, the animals having rotted away or been cleaned by the intertidal scavengers. The 'skeletons', looking rather like thin, transparent plastic, were scattered along the strand line in their hundreds.

Driven ashore by the same wind, there were many specimens of the 'Buoy-making barnacle', Lepas fascicularis Ellis & Solander which is also a free-floating animal and equally at the mercy of a persistent and strong westerly wind.

I do not know how common an occurrence it is to have Janthina coming ashore in such numbers, but the event was, for me, an exciting one.

J. E. Phorson, 6 June 1981

1. Fretter, V. & Graham, A.: British Prosobranch Molluscs. Ray Society 1962, pp. 408-409: J. janthina is viviparous and retains the eggs in the oviduct where they develop to become free veligers. In the case of J. pallida the egg capsules are not released but are retained along the under surface of the float of bubbles.
2. Ibid. p. 121: The purple secretion of the hypobranchial gland is thought to be a toxic secretion used to overcome Velella when Janthina is feeding on it.
3. Fretter & Graham, op. cit. p. 377: Males of Janthina are stated to be smaller than females and that a sex change probably occurs once only in the life of an individual.
4. Forbes, E. & Hanley, S.: History of British Mollusca London, 1853 Vol. IV, Plate LXIX.

DAVID LIVINGSTONE, CONCHOLOGIST

David Livingstone has been called one of the most distinguished naturalists of his age, but in quoting this, one must remember the very different attitude to science which characterised mid-victorian times, an attitude which had no need of change until after the rise of Charles Darwin. D.L. for instance never thought of describing any of the new species which he came across, nor did taxonomy have any meaning for him. However, when a child "he had a passion for natural history in all its branches and especially for botany" (1). Later, in connection with his medical training, he became a fully qualified botanist, but could still write, on the occasion of his discovery of the Victoria Falls, 17 November 1855, "Many flowers peeped out at the water's edge, some entirely new to us" (2) and leave it at that. Natural History was not what he was there for, and one could not do everything.

The motives for exploration are many and at times somewhat obscure. In the case of D.L., although the study of natural science was certainly not one of the things which took him to Africa, he became acutely aware of the importance of reporting back anything of interest to scientists and this he usually did, with the dogged conscientiousness which characterised him. He sent information and specimens whenever opportunity offered, to his friends among the experts at home,

and in particular to Dr. George Wilson, Professor of Technology at Edinburgh, Sir Roderick Murchison, Secretary of the R.G.S., Sir Richard Owen, Director of the British Museum (N.H.), Thomas Maclear, Astronomer Royal at Capetown, and J. J. Freeman, Official Correspondent of the London Missionary Society. These and many others are reported to have been frequently amazed at the fullness and accuracy of the reports they received, not only on matters of botany and zoology, but on every other relevant branch of science. According to his biographers, full notes of his observations in the field were always kept and even when starving, exhausted, wounded or desperately ill, hardly a day passed without detailed observations being entered up in his notebooks. It seems to have been generally agreed that, although he did not often regard it as his place to draw conclusions from what he saw, yet, like his contemporary Darwin, he was a most talented and methodical observer. His reputation then however, and ever since, rests on an utterly different basis, and the inspiration which many people, both black and white, still experience from a study of this man who died over a hundred years ago, rests perhaps even more on what he was than on what he did.

It seemed worthwhile to try to assess the results of some of his natural history observations; consequently I read his published letters and journals with this motive in view. The result was that they yielded an absolute minimum of useable data which might have contributed to natural science. Since none of his biographers do more than pay tribute to his work in general terms, it is not easy to understand his great reputation as a naturalist. Perhaps it lies in his notebooks and other unpublished documents, of which there is quite a quantity; he may himself have considered them to be of minimal interest except to the experts for whom he actually wrote them. There is no doubt whatever that he amply fulfilled his many promises made to scientists, and some of his specimens survive, but most of his own published observations on the new plants and animals he encountered were vague in the extreme. Few letters to scientists are among his published material and it could well be that a study of his notebooks would throw completely new light on his character. However, as his manifold observations certainly included something on conchology, it seemed worthwhile to trace any remaining records and specimens which came back to science.

D.L. arrived in Africa in 1841 and proceeded up country to Dr. Robert Moffat's missionary station at Kuruman. Within a year or two he was collecting rocks from the High Veldt for Prof. Buckland, and tusks, bulbs, seeds, roots, nuts, insects and skins for transmission to Prof. Owen. He was not content to remain at Kuruman; moreover his brief from the Directors was to penetrate more deeply into the unknown and to establish further mission stations. He found a suitable site at Mbotša from which he returned to Kuruman, married Mary Moffat and took her with him to establish their new home. Later, when water ran out at Kolobeng, he tried to cross the Kalahari with his wife and family in order to reach the great river. The first mention of shells comes on 8 July 1850 in a letter to his father-in-law: "Robert picked up a shell on the banks of the Nami and said 'I shall give it to Grandma'. I felt proud to hear it". (3) We may presume a bivalve because of its shine and size, which would make it more attractive to D.L.'s infant son, but there is no indication of a scientific attitude here, nor for some time after, since he says in a letter dated 12 Oct. 1852: "I have sketched out a grammar but done nothing else except collecting words and making notes. (A very few on natural history)". (4) One wonders where those notes are now.

On the journey to Linganti in 1854, D.L. began to make up for a previous inattention to detailed natural history observations - in part due to a rebuke from the London Missionary Society for not having made more notes in connection with his discovery of Lake Ngami, and in part due to the influence of the enthusiastic Thomas Maclear.

D.L.'s first book 'Missionary Travels' was written under considerable pressure during his first return to Great Britain for a period of a little over a year in 1857. It consists largely of extracts from his journals, more or less edited and

includes one illustrated reference to the Mollusca.

The explorer was in 1854 at the native town of Kabompo or Shinte's in what is now Eastern Angola, Balonda country, and the local chief Shinte regarded his presence as a considerable honour. "As the last proof of friendship Shinte came to my tent then closing the tent so that none of his own people might see the extravagance of which he was about to be guilty, he drew out from his clothing a string of beads, and the end of a conical shell, which is considered, in regions far from the sea, of as great value as the Lord Mayor's badge is in London. He hung it round my neck and said 'There, now you have a proof of my friendship'. My men informed me, that these shells are so highly valued in this quarter, as evidence of distinction, that for two of them a slave might be bought, and five would be considered a handsome price for an elephant's tusk worth ten pounds." (5)

Accompanying this paragraph is a steel engraving entitled "Shell, and ornament made from its end". The shell depicted is a Conus litteratus L. and with it are shown two discs (or two views of the same disc), evidently formed of the cut-off spiral end of a similar cone shell with a very depressed spire, rubbed down smooth and pierced centrally for a thin plaited thong tied into a loop. The two views show thongs of different length, one apparently broken and hanging loose, seeming to indicate that two specimens are represented, although the title suggests otherwise. In view of their undoubted great value to Shinte and his contemporaries, it is noteworthy that although Kabompo is six hundred miles as the crow flies from the coast of Angola to the west, Conus litteratus is an Indo-Pacific species and must have come from the eastern coast at least 1100 miles away.

How these trophies were engraved for reproduction in the book must remain a mystery, since after journeying on some weeks from Kabompo, D.L. writes "We got away from this village of robbers on 24 March 1854 but not before the venerable and inexorable headman had deprived him of the talismanic shell, Shinte's parting gift, as payment in advance for guides." (6)

D.L. was at Kuruman, in the land of the Bechuanas, the then northern limit of known southern Africa, at various times in the 40s, his last recorded visit being September/December 1852, and it was probably then that he picked up a landshell of the family Achatinidae unknown to science; this shell he gave to Layard. Edward Leopold Layard 1824-1900, brother of A. H. Layard the excavator of Niniveh, lived at Capetown from 1855 to 1870, where he founded the South African Museum. D.L.'s final visit to Capetown was in the last week of April 1858, after he had spent sixteen months in Great Britain. Then, if at all in Africa, was when he met Layard, but D.L. was extremely busy at that time and most unlikely to have had the shell about him. They may have met later, in England, since the Journals contain several references to 'Layard' in London (7, 8); however, A. H. Layard was in London at the relevant time, and as he was now under-secretary of State for Foreign Affairs, D.L. had a certain amount of business with him. The point seems indeterminate.

It seems possible that E. L. Layard wrote to D.L. about 1860 enquiring for molluscs, since the response is on record: "In reply to your enquiry about snails I have to confess that there is a singular and blessed scarcity of them here" (9) However, it may have reminded the explorer that there was at least one specimen in his personal luggage; when he had left the Makololo country in 1855 he left in his wagon there boxes of books, medicines, specimens and so on, many of them from Kuruman, which he had not wanted to transport to Quelimane, whence he was sailing for home. When he retrieved the wagon in August 1860 he found everything intact. The likelihood is that he then sorted out the shell and sent it to Layard, who seems to have accepted it as a personal gift since it did not find its way into the Museum but remained in Layard's collection until his retirement to Budleigh Salterton in 1890, when the shell was apparently donated to the British Museum (Natural History) and became the holotype of what was later recorded as Archachatina (Tholachatina) livingstonei (Melville and Ponsonby), a species which, although scarce, is not now excessively rare (10).

Tantalising references to the Mollusca continue: "The Shire was in flood in the beginning of January 1862 swept down an immense amount of brushwood and logs which swarmed with beetles and the two kinds of shells which are common all over the African continent." (11) It would have been of much interest to know what was in the writer's mind here and whether by 'kind' he meant species, genus or family. One might reasonably assume that he was referring somewhat vaguely to Limicolaria spp. and Achatina spp. rather than to freshwater snails.

1861-2 were the years of the ill-fated Lake Nyasa exploration which was organised with such hopes of evangelising a whole new province. On their arrival after some appalling misfortunes, they found the area decimated by the slavers and the people captured or dead; before the end of the year D.L.'s beloved friend Bishop Mackenzie and his wife were both dead of fever.

Dr. (later Sir John) Kirk was present on this expedition and it was he who undertook most of the natural history observations. Lake Nyasa, discovered in 1859, was examined and partially mapped, and Kirk sent home a batch of land and freshwater shells which the British Museum (N.H.) received on 25 September 1862. Forty one specimens were listed, comprising probably twenty five different species including helicids, bulimulids, melanids, planorbids, lymnaeids, one Streptaxis sp. and one Succinea sp. Also two specimens of Anodon livingstonei Gray - which is a manuscript name for Spatha alata Lea - and several other bivalves including one which was named Unio kirki by Lea. Kirk had in fact, more shells named after him than D.L., and including Chytira kirki (Smith 1880) collected by E. Code Hore, Achatina kirki (Smith 1880) and Urocyclus kirki Gray, 1864. By contrast, two species of birds, each bearing the trivial name livingstonei, were named after D.L.'s much less well-known brother Charles.

In connection with the research carried out on Lake Nyasa at this time, Seaver has an interesting comment to make: "The present writer has found among the same papers a scrap of writing, undated and detached, which would seem to entitle Livingstone and Kirk to be called the first, though unwitting, discoverers of a great rift valley in the earth's crust extending from Palestine through the Red Sea to Lake Nyasa. It reads as follows: 'The birds and animals, shells and fishes, for instance, on Lake Nyasa are nearly all new and taken in connection with those lately brought to me from the Sea of Galilee, lead to the inference that a chain of lakes once existed from Palestine to South Africa'." What the 'same papers' were is not clear: the writer's last reference is to a letter from D.L. to Murchison c.1863. (12)

An enquiry to the David Livingstone National Memorial Museum at Blantyre elicited the fact that they possess a collection of shells brought home by the explorer. No further information was available, but the Warden kindly sent colour slides and the shells have since been examined by Mr. D. Heppell; they prove to be as follows: Harpa ventricosa Lam., four specimens; Lambis chiragra var. arthritica Röding, two; Tonna dolium L., one; Neritina sp., one; Lanistes carinatus (Olivier) (= boltenianus Röding), two; Rachis punctatus (Anton), six.

It would appear that the shells form a single batch, since D.L. was not in the habit of sending shells home and his motive for doing so on this occasion is unknown; quite possibly it was for the interest of his children. The assemblage is evidently from somewhere on the east coast of Southern Africa and near an estuary where empty land shells commonly floated down and were cast up on a beach. The fresh water shells are mangrove swamp dwellers and a review of possible collecting localities for the batch brings the tentative conclusion that they were picked up at the Kongone Mouth of the Zambesi, where the mangrove swamps extend twenty miles inland. Here too, was where D.L. had periods of enforced inactivity from 10 Nov. to 14 Dec. 1859 and 22 Feb. to 10 March 1860 as well as several other, shorter periods: plenty of time in fact, to collect things like shells, even common ones already well known to science.

I have been unable to trace any other molluscs brought or sent back by D.L., but various references to shells continue for a while in his journals:

27 March 1866 at Mikindini, on the coast: "Oysters abound on all the rocks and on the trees over which the tide flows: they are small but much relished by the people." (13) There are several species which might fit this observation but Ostrea cucullata Born is the commonest, a small oyster frequently attached to mangrove roots.

9 September 1866 at Kandango's on the east bank of Lake Nyasa, "with the mud we have many shells: north of Ngombo scarcely one can be seen, and there it is sandy and rocky". (14) A typical piece of observation and an inference correctly drawn without doubt. Nyasa has none of the stony freshwater winkles endemic to Lake Tanganyika, which are adapted to resist the violent storms which are frequent on both lakes. The muddy areas are usually those sheltered from stormy conditions.

10 June 1868 at Casembe's, north of Lake Bangweolo: "Kapita's wife had an ornament of the end of a shell called the cone; it was borrowed and she came away with it in her hair; the owner, without making any effort to recover it, seized one of Kapita's daughters as a pledge." (15) D.L.'s main concern and study throughout was tribal politics and local affairs. Compare the incident of Shinte's shell disc.

19 July 1868 at Masantu's on the Bangweolo shore: "The women have their hair ornamented with strings of cowries and well oiled." (16) These shells must have been valuable in proportion to their distance from the sea. The lure of the cowrie seems world-wide.

18 April 1871 on the banks of the Lualaba: "I found that the Lepidosiren is brought to market in pots with water in them, also white ants roasted, and the large snail achetina and a common snail." (17) Again, one would have liked to know what snail is 'common' there and used for food; probably only Limicolaria sp. would fill the bill (or menu) - smaller than 'achetina' but still large enough to be worth eating. The Achatinidae seem alone to furnish edible snails south of the Sahara.

28 April 1871 at the same place: "Abed sent over to Manuema to buy slaves for him and got a pretty woman for 300 cowries and a hundred strings of beads: she can be sold again to an Arab for much more in ivory." (18) This appears to be D.L.'s only reference to the use of cowries for money in central Africa; the main area for this was to the north and west of any regions known to the explorer.

10 August 1871, in the same place: "The Lualaba has many oysters in it with very thick shells. They are called MakeSSI and at certain seasons are dived for by the Bagenya women: pearls are said to be found in them, but boring to string them has never been thought of". (19) These bivalves may have been Etheria elliptica Lam. which tend to grow on each other and form an almost shapeless mass of nacre.

21 September 1872 on the east coast of Lake Tanganyika: "The Bangamwezi women are in general very coarse. On coming inland from the sea coast, the tradition says, they cut the end of a cone shell so as to make it a little of the half-moon shape; this is their chief ornament." (20) It is not clear whether D.L. saw any examples of the ornament he describes; the discs previously alluded to could not possibly be called half-moon shaped, but a section cut from a cone shell might have the shape of an inturned 'C'.

This is the last observation which concerns us and soon after this time the journal entries become short as the explorer, ill, weak and desperately discouraged, followed his destiny westwards into the interminable marshes round Lake Bangweolo where he died on 1 May 1873. It does seem possible that other shell references may come to light, particularly if further research into unpublished papers is carried out.

In compiling these notes I have had valuable clues and invaluable criticism from two internationally acknowledged authorities on David Livingstone; Gary W. Clendennen of Minneapolis, U.S.A., and William Cunningham, Warden of the David Livingstone centre at Blantyre. My grateful thanks are also due to D. Heppell for examining and reporting on the shells at Blantyre; and to T. Pain, Mrs. C. Pain, F. Pinn and P. Oliver for identifications and conchological advice.

T. E. Crowley

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16. Waller, H. Loc. cit.
17. Waller, H. Loc. cit. 2.
18. Waller, H. Loc. cit.
19. Waller, H. Loc. cit.
20. Waller, H. Loc. cit.

COLLECTIONS RESEARCH: CAN YOU HELP?

A large number of museum curators with responsibility for natural sciences collections have been collaborating as a team to record the existence (or known fate if lost) of all collections of natural science specimens in the British Isles. Recently the Federation for Natural Sciences Collection Research (FENSCORE) was formed, with representatives from many major provincial museums and from all the relevant national museums. The information being gleaned about collections is fed through FENSCORE into the national database being compiled by the Manchester Museum Computer Cataloguing Unit on the Manchester University computer.

The primary purpose of the database is to provide researchers with a means of rapidly locating collections containing material of relevance to their studies. For example, details can readily be retrieved of the collections known to:

- 1) Contain material of a given group
- 2) Be associated with a particular person or expedition
- 3) Be gathered from a particular area of the world

Until recently the curators involved have been concentrating on collections held in provincial museums and kindred institutions, but now wish to expand the scope of the Register to include details of collections outside museums, such as those in private hands or in the teaching departments of educational establishments.

If you own, or are in charge of, botanical, geological and/or zoological collections, and you think its existence should be recorded in the Register, then please get in touch with Mr. Pettitt at the address given below; note that arrangements can be made to keep the precise location of valuable collections confidential.

You will be sent the necessary forms and instructions, together with the name and address of the nearest involved curator, to whom the completed forms should be

returned, and who will be able to answer any queries you may have.

The work of compiling the Register is unfunded, so it would be appreciated if you could include a stamped, addressed envelope (at least 9" x 3½") with your letter.

Charles Pettitt
Computer Cataloguing Unit,
Manchester Museum,
Oxford Road,
Manchester, M13 9PL

CONCHOLOGY COMMENDED

A Guide to the Watering Places, on the coast, between the Exe and the Dart; including Teignmouth, Dawlish, and Torquay, embellished with a general view of Teignmouth and Dawlish, and the various seas around them, with a short description of the neighbourhood. Dedicated, by permission, to the Right Hon. Lord Viscount Exmouth. Teignmouth: printed and sold by E. Croydon, Public Library; also, to be had of Knighton and Westcott, Dawlish, and Cole, Torquay. 1821.

p.viii. Delicacy forbids the publisher from revealing the names of those who have assisted him; the articles of conchology, and botany, will speak for themselves: for the rest, he craves the indulgence of a liberal public. He trusts, if they do not reap information, they will amusement, in the perusal of this little work.

The appendix on "Conchology. An enumeration of such marine shells, as have been found on the adjacent coasts, with references to the best engraved figures" is by Dr. W. Turton, who lived at Teignmouth. From this the following paragraphs are quoted.

The accumulation of rare and beautiful shells has ever been viewed as forming a more elegant cabinet than any other department of natural history, not only for their easy arrangement, variety and beauty of colours, and singularity of shape, but from their durability and facility of collection. They have hence become an interesting source of amusement and delight.

But although it has been usual to consider conchology merely as a source of amusement or ornament to the collector, or as filling up a department in one of the classes of natural history, we may venture to offer it as a subject of much higher consideration and interest to the student in geology, as one of the means of elucidating the relations of the different parts of the earth, to which we can or may have access. The connexion of all the parts of natural history with geological knowledge, has at length been considered as a powerful instrument in the promotion of this sublime science, which, though as yet in its infancy, has, like the young Hercules, given glorious promise of a sound and vigorous maturity.

The philosopher, for example, will examine with delight and wonder, the vast mass of diluvian marine shells, mixed with siliceous sand in its several degrees of induration and cementation, and totally different from the sand of the adjacent shores, deposited near the very summit of Haldon hill, to the north of the town of Teignmouth, and enquire, with busy curiosity, by what process of nature they have been fixed there, at the height of eight hundred feet above the level of the sea. Probably a vortical deposition at the time of the general deluge, round the summit of the original mountain. Comparative measurement of the altitude of this testaceous stratum with other similar depositions, might lead to some valuable conclusions as to the height of the flood, in this region of the globe, and teach us where to seek for their level in other maritime mountainous countries.

This appendix was reprinted, with slight modifications, in The Teignmouth,

Dawlish, and Torquay Guide; with an account of the surrounding neighbourhood, its scenery, antiquities, etc. by N. T. Carrington, and others. Part 2. The natural history of the district; or, lists of the different species of animals, vegetables, and minerals, and their respective localities, scientifically arranged; with reference to the best standard works in which they are figured and described: together with a geological account of the rock strata, and the fossils contained in them. By W. Turton, M.D., and J. F. Kingston. Teignmouth: printed by and for E. Croydon, at the Public Library; and sold by C. and J. Rivington, Baldwin and Co., and Whittaker and Co., London; Gore, Dawlish; Cole and Luscombe, Torquay; and by all the booksellers in Exeter. 1830.

Conclusion: Natural science has now become so popular, that any arguments setting forth its importance and utility would be superfluous. "It tends," says an able naturalist, "to keep alive the better feelings and more valuable energies of our nature; affording to youth delights equally pure and vivid - to maturity, calm and grateful occupation - to old age, the most pleasing materials for agreeable and salutary reflection, and whilst their votary enjoys the disinterested pleasure of enlarging the intellect, and increasing the comforts of society, he is himself independent of the caprices of human intercourse and the accidents of human fortune. Nature is his great and inexhaustible treasure, his days are always too short for his enjoyment, ennui is a stranger to his door; at peace with the world, and his own mind he suffices to himself, makes all around him happy, and the close of his useful existence is the evening of a beautiful day."

They no longer write guide books like this!

from A. E. Ellis

ATLAS OF NON-MARINE MOLLUSCA: SOME ERRATA

In the five years since the Atlas appeared much additional information has been gathered, including many thousands of new 10 km square records and the recognition of further species living in Britain (e.g. Ferrissia wautieri and Vertigo genesii). A few mistakes have also come to light and it seems worthwhile giving here a list of these, pending the publication of a new edition. Reasons for these deletions are various and include computer errors, the incorrect gridding of place-names, misidentifications, and doubts about the true provenance of museum specimens, albeit rightly named. In the last of these categories the outstanding case concerns a number of species, the most important of which are Menetus dilatatus and Clausilia dubia, purporting to have been collected in the Hebrides in the 1930's but not re-found there despite search by other workers and about which serious doubt persists.

In the list which follows, the map number used in the Atlas is given before each species. Irish 10 km square grid references are prefixed by an (H).

ATLAS DELETIONS: 7 Pomatias elegans, 31/54; 8 Hydrobia ventrosa agg., (H)21/32 (=fossil); 16 Bithynia leachii, 22/10, 41/17; 23 Leucophytia bidentata, 16/58; 25 Physa fontinalis, 08/60, 10/72, 10/83; 31 Lymnaea glabra, 41/58, (H)21/51; 32 Lymnaea palustris, 07/69; 40 Anisus vortex, 20/04, (H)00/98, (H)02/64; 43 Gyraulus laevis, 17/80, (H)31/02 (=fossil); 42 Bathyomphalus contortus, 08/60, 18/19; 48 Segmentina nitida, 31/17; 50 Menetus dilatatus, 18/53; 51 Ancylus fluviatilis, 54/19; 54 Succinea oblonga, (H)21/09; 58 Azeca goodalli, 36/27; 61 Pyramidula rupestris, WV27, 33/18; 71 Vertigo moulinsiana, (H)11/29; 73 Vertigo alpestris, 35/96; 74 Vertigo geyeri, 44/92, 51/48; 77 Pupilla muscorum, 35/21; 83 Vallonia pulchella seg., (H)10/37, (H)10/67, (H)23/84; 105 Phenacolimax major, 45/08; 113 Oxychilus draparnaudi, 08/60, 08/73, (H)23/60; 116 Oxychilus helveticus, 40/57; 117 Zonitoides excavatus, 08/73, 36/26, 37/79; 129 Limax marginatus, 33/49; 139 Clausilia dubia, 18/19; 143 Testacella haliotideae, 34/45, (H)10/76;

148 Cernuella virgata, 18/20; 18/53, 25/67; 157 Zenobiella subrufescens, 18/19; 163 Ponentina subvirescens, 10/73; 167 Theba pisana, 21/48; 168 Cepaea nemoralis, 38/86; 170 Helix aspersa, 44/04; 172 Margaritifera margaritifera, 29/84, 29/95; 173 Unio pictorum, 30/99, 36/95; 174 Unio tumidus, 30/99; 179 Sphaerium rivicola, 30/99; 181 Sphaerium transversum, 30/08; 192 Pisidium henslowanum, 10/71, (H)24/14; 193 Pisidium lilljeborgii. The date-classes on this map are pre- and post-1930, not 1950 as stated; Pisidium hibernicum, 51/49.

M. P. Kerney

CAMBER SANDS, EAST SUSSEX

Camber Sands is a sandy beach to the east of the Rother estuary near Rye. It is a rich collecting site, particularly for bivalves and is an ideal locality for the beginner to visit as it combines an abundance of shells with a good range of species.

From the car park at Camber Sands, turn right and walk westwards along the beach towards the mouth of the river. The waves break obliquely on this shore carrying shells along the beach so that the best collecting is towards the river rather than below the car park. Even when the tide is almost in, shells can be found on the strand line and further discoveries are made as the tide recedes. The majority of these shells do not live in the sands of the shore zone but on sandy bottoms off-shore and thus dead shells from these populations keep up the supply of beach specimens. In sandy habitats bivalves are more common than gastropods. Those which are particularly abundant are the Rayed Trough Shell Macra corallina, Banded Wedge Shell Donax vittatus, Baltic Tellin Macoma balthica, Edible Cockle Cerastoderma edule and the Prickly Cockle Acanthocardia echinata. Other bivalves to be found include the Smooth Cockle Laevicardium crassum, Thin Tellin Tellina tenuis, Bean-like Tellin T. fabula, Grooved Razor Solen marginatus, Blunt Gaper Mya truncata, Queen Scallop Chlamys opercularis and Variegated Scallop C. varia. The shells of Macoma balthica in this locality are particularly colourful with deep pink and yellow coloured shells. Many of the bivalves like Macoma balthica and Donax vittatus bear a neat round hole near the top or umbral area of the shell and this is evidence of the activity of certain burrowing gastropods - the Necklace shells - which feed on bivalves. The Large Necklace Shell Natica catena is to be found washed up near the estuary. Other gastropod shells at Camber include the Netted Dog-whelk Nassarius reticulatus, Thick-lipped Dog-whelk N. incrassatus, Great Top-shell Gibbula magus and Common Wentletrap Clathrus clathrus.

Shells of molluscs which live on more solid bottoms can also be found in smaller numbers at Camber and among these are Common Edible Mussels Mytilus edulis, Common Limpets Patella vulgata, Saddle Oysters Anomia ephippium, Flat or European Oysters Ostrea edulis and White Piddocks Barnea candida. The shells found in this locality are illustrated in most of the identification books which are listed below.

Camber Sands has been visited on a number of occasions by Conchological Society field meetings, but it is always possible for new discoveries to be made on already well-recorded shores. The Marine Representative for this area (East Channel - Mrs. C. Pain) would be pleased to receive further records.

June Chatfield

BOOKS ON BRITISH SEASHELLS (IDENTIFICATION)

- | | |
|------------------------|---|
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Available from the Linnean Society, Burlington House, Piccadilly, London.
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This was once out of print, but it has now been reprinted and is available from the British Museum (Natural History), The Royal Scottish Museum, Edinburgh and H.M.S.O. bookshops.

LONGEVITY OF A UROCYCLID SLUG

Fred died on April Fools' Day, 1.4.1981. Mrs. Mary Leakey sent him to me from Laetolil Gorge, Tanzania together with some fossil slug shells with the idea of discovering if the fossils could be conspecific with the living slug. This is unfortunately virtually impossible to discover because the whole taxonomy of slugs (of any family) is based on genital anatomy. The slug, already quite adult, arrived in September 1978 and I had been asked to name it but found it quite impossible to kill. I decided to wait until it died a natural death. I had assumed it was Atoxon hildebrandti Simroth and Dr. van Goethem has now confirmed that this is in fact correct. I did everything to put off that evil day. I was surprised how fastidious Fred became as the months wore on. In Laetolil life must have been tough and some of the food available even tougher but, after a few months in a large glass jar, only the choicest lettuce was considered edible and even that was refused if the atmosphere was even slightly polluted by rotten greenery. By continuous cleaning and adequate feeding the life of this slug was extended to 2 years 7 months and if, as seems very likely, the beast was at least one year old when captured then it must have been 3 years 7 months old when it died. It might have lived even longer if I had not had to fall back on Brussel Sprouts outer leaves and allowed a very wet atmosphere to develop. This little episode does, however, show that Urocyclid slugs can live at least $3\frac{1}{2}$ years; in natural conditions it is unlikely that they would do so. Another point that can be made concerns the use of fossil slug shells as palaeoclimatic indicators. In my account of the Miocene non-marine Mollusca of Rusinga etc. (Palaeontographica 121A: 1-37 (1963)) I had indicated (p. 34) that slugs are only common in drier evergreen forest (35-45" of rain per annum) but this is not entirely true; quite large populations can exist in bushland or grassland with scattered trees with as little as 20-30" by restricting their activities to the bases of small trees and emerging in the early morning dew. They would certainly die if caught out in the midday sun. I saw hundreds of Polytoxon in the early morning dew on trunks when I camped near the S.E. end of Lukenya Hill on 6/7 April 1978. It would be dangerous to use the presence of numerous slug fossils alone to infer a rainfall higher than 30" and forest conditions.

B. Verdcourt

SCALLOPS IN SOUTHERN QUEENSLAND

Saucer scallops (Amusium balloti) provide a sometimes lucrative, though always unpredictable bonus for prawn fishermen in southern Queensland.

Saucer scallops have been taken by trawlers working the prawn grounds off

Bundaberg for almost 30 years. But with no processing facilities for scallops, they were treated initially as just another incidental 'trash' species.

However it did not take long for fishermen to recognise their market potential. By the mid-1950s shore-based processing facilities at Yeppoon, Bundaberg and Tin Can Bay had been modified to handle scallops.

Detailed catch data before 1973 are not available, but since then annual production figures indicate the variability of the fishery - meat weight production has been as high as 1014 tonnes (1973) and as low as 49t (1976). Because of this variability, scallops remain a secondary fishery for local fishermen. They make most of their money from prawns.

Gear

Scallops were taken at first with standard prawning rigs, but wear and tear on small-mesh nets, and large catches of trash fish, encouraged fishermen to increase mesh size to 75 mm. Net design has not changed greatly. The main development has been the increase in mesh strength from 36 to 90, 120 or even 150-ply netting. The size of nets towed varies with the size and power of the trawler. Most boats in the present fleet tow two or three Stebenhauser-type nets with a headrope length of five to 12 fathoms. Between 100 and 120 trawlers fish for scallops each year.

Fishing

Scallops occur in patches a few kilometres across. Most commercial trawling takes place between 18 and 22 fathoms. They can be caught night and day, and once a patch has been found trawlers operate continuously over it until all refrigerated space is filled with scallops. After periods of up to five days at sea, vessels return to port and unload to the factories. Processing involves either mechanical or hand shucking. Shell, viscera and roe are removed and the product is frozen. The final product is marketed locally and overseas.

Research

The Queensland Fisheries Service established a scallop research program in 1976. Initially a biologist and a technician were stationed at Bundaberg. The research program was expanded in 1979 with the purchase of a small trawler, and the construction of a laboratory. A FIRTA grant has enabled an extra biologist and technician to work on juvenile and larval scallops. Much of the work carried out by the research group in the past two years has been on the growth, reproduction and movement of saucer scallops.

Another aspect of the research project is the monitoring of fishing effort and catch through the voluntary use of log books. Fishermen fill out details of catch rate, number of trawl shots, the time fished in a series of 10 x 10 nautical-mile grids between Cape Manifold and Double Island Point. About 65% of the State's landings are being monitored in this program.

Marine park

The scallop grounds are in the immediate vicinity of the islands and reefs of the Capricorn-Bunker Group. This region has been zoned as a Marine Park. The boundaries of this park have been determined by the Great Barrier Reef Marine Park Authority and the Authority is in the process of deciding on a draft management plan. Besides reefs and islands, this park includes approximately 3,000 square miles of open ocean, most of which has trawlable bottom. About 25% of scallop landings in 1977 and 1978 were taken from an area now inside the Park boundaries.

Trawlers do not operate close to coral reefs because of the risk of gear damage, but workable scallop beds are often found one to three kilometres from

reefs. A notable instance was in late 1978, when approximately 200 tonnes (meat weight) of scallops were taken within a five-nautical-mile radius of Lady Musgrave Island.

(From 'Australian Fisheries' April 1980, submitted by Betty M. Smith) Mike Dredge

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

c/o. British Museum (Natural History), Cromwell Road, London, SW7 5BD A.N.(S.) 118

The Commission hereby gives six months' notice of the possible use of its plenary powers in the following case, published in Bull. zool. Nom., Volume 38, part 2, 30 April 1981, and would welcome comments and advice on this from interested zoologists. Correspondence should be addressed to the Secretary at the above address, if possible within six months of the date of publication of this notice.

Case No.

2238 Ledella Verrill & Bush, 1897 (Mollusca, Bivalvia): proposed designation of type species.

I.T.Z.N. 59

The following Opinions have been published recently by the International Commission on Zoological Nomenclature in the Bulletin of Zoological Nomenclature, Volume 38, part 2, 30 April 1981.

Opinion No.

1177 (p.112) Cossmannella Mayer-Eymar, 1896 (Mollusca, Bivalvia): designation of type species.

1181 (p.122) Microdryas Laseron, 1950 (Mollusca, Gastropoda): designation of a type species.

The Commission regrets that it cannot supply separates of Opinions.

R. V. Melville, Secretary

A WORKING GROUP ON GREEK MOLLUSCS

In compiling the next list of names of persons who have answered our call in the Conchologists' Newsletter 74: 251 (1980) we included names of systematic specialists and authors of faunistical studies known from the literature dealing with Greek molluscs. The names and addresses are followed by indications permitting conclusions about the taxonomic specialism, special interests and the geographic areas visited. Materials from those regions will be present in the collections. This information does not exclude general interest in Greek land, freshwater or brackish-water molluscs. If no extra information is given this information is not known and general interest in Greek malacology is assumed. The word "Marine" excludes particular interest in terrestrial and fluviatile molluscs. The conception Malacology includes Conchology.

The main reason for publishing this list is to offer a possibility for making mutual contacts of any kind be it a call for help in problems of determination or difficulties in consulting hard-to-get literature on areas and taxonomic groups. May good contacts and prosperous co-operation be the result of this list. An inquiring letter should always precede the sending of material. We will try to be of help when your own advisory resources fail.

Next meeting of the European Commission of the European Invertebrate Survey

(Unitas Malacologia) will be held at Leiden, The Netherlands, 21st., 22nd. and 23rd. of October 1981. We will bring our proposals into this meeting and will talk about the possibilities of an E.I.S.-section for Greek molluscs to be established in Athens or Thessaloniki when possible. Your proposals, opinions and co-operation will be appreciated. We would like to meet at Leiden in a separate session for the students of Greek molluscs or in a joint session with the European Commission. We therefore would like to know if you will come to Leiden next October.

L. J. M. Butot - P. Subai

STUDENTS AND COLLECTORS OF GREEK MOLLUSCA

- BACKHUYS, Dr. Wim, Oudorpweg 12, 3062 RC Rotterdam, Nederland. (Publisher, Bookshop).
- BANK, Ruud A., [REDACTED], 2033 XK Haarlem, Nederland. (*Carychium*).
- BAR, Ze'ev, [REDACTED], 1111 LR Diemen, Nederland. (Asia Minor, Greece, Cyprus).
- BIEKART, Jan-Willem, [REDACTED], 3532 VE Utrecht, Nederland. (Palaeontology, Crete).
- BRUINS, R.W.B., [REDACTED], 1231 AJ Nieuw Loosdrecht, Nederland. (Kos, Efeze, Samos, Crete, Kalimnos).
- BUTOT, Ing. Louis J.M., [REDACTED], 3723 AN Bilthoven, Nederland. (Mikonos, Delos, Santorini, Evvia, Skiathos, Kos, Patmos, Crete, Peloponnisos, Attika, Thessalia, Helicodontinae: Lindholmia).
- CLAUS, Dr. Eberhard, [REDACTED], DDR- 43 Quedlinburg/Harz, DDR.
- COLVILLE, Barry, [REDACTED], Leeds, [REDACTED], U.K.
- ELLIS-ADAM, Mevr. A.C., [REDACTED], 1024 BD Amsterdam, Nederland. (marine).
- FAUER, Wolfgang, [REDACTED], D-8561 Simmelsdorf, BRD. (Greece-continent, Clausiliidae).
- FORCART, Dr. Lothar, [REDACTED], CH-4052 Basel, Schweiz. (Vitrinidae).
- FRANK, Dr. Christina, [REDACTED], A-1090 Wien, Austria. (Malacocoenology).
- GITTENBERGER, Dr. Edmund, Rijksmuseum van Natuurlijke Historie, Postbox 9517, 2300 RA Leiden, Nederland. (Pupillacea, Helicellinae, Ionic Arch., fauna of caves).
- GIUSTI DI MASSA, Dr. Folco, Università di Siena, Istituto di Zoologia, Via Mattioli 4, I-53100 Siena, Italia. (Hydrobiidae, Helicellinae).
- GLÖER, Peter, [REDACTED], Eichberg 59, D-2000 Hamburg 73, BRD.
- HALI, G.P.J., [REDACTED], 1024 GP Amsterdam, Nederland. (Korfu).
- HELLER, Dr. Joseph, The Hebrew University, Department of Zoology, Jerusalem, Israel. (Enidae, Aegean Arch.).
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BRD = Germany, Fed. Rep. Nederland = The Netherlands. Ungarn = Hungary.
 DDR = Germany, Democratic Republic.

GENERAL NOTES

IDENTIFICATION OF EAST AFRICAN NON-MARINE MOLLUSCA

Among my many unpublished documents on East African Mollusca is a collection of photographs, drawings and xeroxes mounted on about 150 large pages. Although covering only a few of the smaller species, the coverage of larger snails is adequate for naming most of them. I had hoped to obtain funds to make a microfiche edition but sources were not found. I have therefore had the pages microfilmed at my own expense. One copy has been sent to the British Museum (Natural History) Mollusca room and the other two will probably go to East Africa. Now I have the negative, positives are obtainable at any time at about £10 each. Since there is a minimum charge for this kind of work it would be necessary to wait until four or five people expressed a desire for a copy. It is by no means easy to use but is provided with an index. Since there is virtually nothing dealing with the land molluscs since von Martens (1897) it might be useful to a few folk. It will serve to illustrate a much simplified check-list which will be available at the end of the year at least as a xerox.

B. Verdcourt

and overcast summers, however, breeding was a failure; dinoflagellates and bacteria grew instead of algae, and even adult oysters might die of starvation. In such years the addition of some nitrate and phosphate made a big difference, and encouraged growth of the right algae; in sunny summers such an addition made little difference."

"BIOLOGICAL CLOCKS" by J. L. Cloudsley-Thompson. £8.95. Weidenfeld & Nicolson 1980.

Chapter 8, page 106.

"In the tropics, annual periods of drought or rainfall are often responsible for seasonal breeding and peaks in population numbers. Land snails (Limicolaria martensiana) reproduce throughout the year in Uganda, but there are two main times of egg-laying, one in February and the other in July, the two driest months of the year. The ecological significance of this is that the young snails are consequently most abundant at the times of maximum plant growth, when there is least danger of dessication."

"THE CLOUD FOREST" by Peter Matthiessen. André Deutsch 1962. (Not in print)

Page 225

"Quebrada Grasa or Grease Creek, because of the shiny oil slicks which ooze from the mud of the bank, is a side creek of the river Mapuya. The still banks of this jungle stream are laced with the tracks of tapir, capybara, and other creatures, and its clear water, running quietly on sandy shoals, sparkles with the flash of the pretty sabalo. In the bends the water runs beneath stone banks and is a pure limpid green, and the trees, which lend their leaf colour to the water, soar away in great white columns. The queer and clumsy hoatzin huffs everywhere in the lower branches, and hidden birds of unknown shape and colour whistle and answer down the silences, in counterpoint and incredible clear harmonies. The tree frogs loose their prodigious croaks, and from a mile away resounds one of the mightiest sounds in nature, like nothing so much as an ominous moan of wind, the community howl of the red howler monkey. In the stream itself lie the striking shells of a variety of molluscs, including a gastropod so large - the size of a very large pear - that it is difficult to believe it is not a marine creature. (Louis Agassiz, a century ago, pointed out the marine character of the dolphins, fishes, and other aquatic fauna of the Amazon basin.)"

Betty M. Smith

"MOLLUSCS" by J. E. Morton (Professor of Zoology, Auckland, New Zealand). Hutchinson, £4.95 paperback, £10 hardback.

From the Preface to the 5th. Edition 1979.

"More students of the Mollusca have been at work in the 1970's than in any previous decade. Almost all the areas mapped out in former editions have been further enlarged, by more exact and comprehensive treatment."

"The great advances have been where new techniques have reopened old fields. Thus, with electronic recording E. D. Trueman and his school have given a new impetus to locomotor studies. Isotype tracers have pushed forward our understanding of algal symbiosis in giant clams and sacoglossans. Most significant advance of all, the electron microscope - both scanning and transmission - has reopened the whole field of fine structure. New methods of histo- and cyto-chemistry have made histology a frontier discipline again. Owen's studies of the digestive gland are a notable instance, in the wider context, of the rythmical nature of bivalve feeding and digestion.

In the classical field of origins phylogeny, where Neopilina has until recently held the stage, Salvini-Plawen's studies have given a new importance to the early Aplousobranchia. More than any other phylum, perhaps, the Mollusca have continued to be appreciated holistically with an integrated understanding of the functioning animal; and this at a time when "organismic" biology has so often lost ground, on the large scale to the ecosystem, and on the minute scale to the cell."

This book discusses the basic structure and evolutionary origin of Mollusca, and shows how the classes of living molluscs have arisen. It is convenient in size, weight and arrangement.

Betty M. Smith

ANNUAL GENERAL MEETING, MARCH 1982

Members are reminded that they can nominate candidates for election to the Council.

Rule No. 12: Candidates for nomination to the Council shall be paid-up members of The Society and shall be nominated by two members. Nominations, other than those made by the Council itself, shall be sent in writing to the Hon. Secretary at least six weeks before the A.G.M., and shall be accompanied by a signed declaration of the candidate's willingness to serve.

NOTE: Nominations must be received by the Hon. Secretary NOT LATER THAN
31 December 1981.

COLOUR POSTCARDS OF TROPICAL MARINE SHELLS

Glasgow Art Gallery & Museum, Kelvingrove, Glasgow, G3 8AG, has produced a set of 5 colour postcards of tropical marine shells for sale at 10p each card plus post/packing. They are very good reproductions and are most attractive; they can, of course, be used as postcards but probably most collectors will want to keep them for reference. A specimen set will be displayed at the next meeting of the Society for members to see.

FOR SALE: Journal of Conchology: Vol. 26, No. 6 (July 1971); Vol. 27, No. 1-7 (Oct. 69 - Dec. 72); Vol. 28, No. 1-6 (May 73 - June 75); Vol. 29, No. 1-4 (April 76 - Oct. 77). £1 per issue plus postage. All proceeds to Christian Aid.
G. Myers, [REDACTED], Pinner, Middlesex, [REDACTED]

FOR SALE: Mrs. June B. Peel, [REDACTED], Bradford on Avon, Wiltshire, [REDACTED] has a large collection of shells for sale. Some are 'live collected', others are beach worn, many cowries, cones, star limpets, etc., mostly from South Africa and Indian Ocean. Please write if interested, or telephone - [REDACTED].

FOR SALE: We are suppliers of tropical sea shells, land snails, coral and sea curios to collectors, schools and colleges. S.A.E. for lists.
Nature of the World, 19 Bell Lane, Fetcham, Leatherhead, Surrey.

EXCHANGE WANTED: Andrew Wakefield (junior member) [REDACTED], Clayton-le-Woods, Leyland, Lancashire, [REDACTED], has 90 species of cone shells to exchange, including Conus bullatus, C. marchionatus, C. legatus, majority in perfect condition. He would like cowries in gem condition. Send S.A.E. for details.

DUPLICATED BY: SPEEDWELL PRESS, Trap Road, Guilden Morden, Royston, Herts.

CONCHOLOGICAL SOCIETY OF GREAT BRITAIN & IRELAND

LIST OF PUBLICATIONS AVAILABLE

List compiled: JUNE 1981

The following publications are available from Mr. A. Norris, City Museum, Municipal Buildings, Leeds, LS1 3AA, England. The prices given INCLUDE POSTAGE AND PACKING. All enquiries concerning these publications should be addressed to Mr. Norris.

	Members	Non Members
1. ' <u>Journal of Conchology</u> ' (early volumes are very rarely obtainable. Numbers of 'parts' per volume varies. Prices given are per 'part'.) Volumes 1 - 25 Volumes 26 - 29 Volume 30	£ 1.25 £ 2.00 £ 3.50	£ 1.75 £ 3.00 £ 6.00
2. ' <u>Concordance to the Field Card for British Marine Mollusca</u> ' compiled by Stella M. Turk	60p	80p
3. ' <u>Atlas of the Non-Marine Mollusca of the British Isles</u> ' edited by M. P. Kerney	£ 4.00	£ 5.00
4. ' <u>A Nomenclatural list of the Land Mollusca and Fresh & Brackish-Water Mollusca of the British Isles</u> ' by Kerney/Waldén	50p	75p
5. ' <u>The British Marine Mollusca</u> ' by R. Winckworth (very scarce - only a few copies left)	£ 1.00	£ 2.00
6. ' <u>Special Publication No. 1</u> ' 'Marine Mollusca described by John Gwyn Jeffreys with the location of type material' by Anders Wärén	£ 4.50	£ 5.50
7. ' <u>Papers for Students</u> ' Nos. 2 - 17		
No. 2 - <u>Collecting Non-Marine Mollusca</u> by L. W. Stratton	50p	60p
No. 3 - <u>Key to Land Shells of Great Britain</u> by A. E. Ellis	50p	60p
No. 4 - <u>A short glossary of Molluscan terms</u> by T. Pain	50p	60p
No. 5 - <u>Preparation of the Radula</u> by D. Claugher	50p	60p
No. 6 - <u>Post-Pliocene Fossil Mollusca</u> by P. Cambridge	50p	60p
No. 7 - <u>Literature on British Mollusca</u> by S. M. Turk - New Edition	70p	80p
No. 8 - <u>Dissecting Snails</u> by M. R. Block	50p	60p
No. 9 - <u>The Identification of British Chitons</u> by G. Mathews	50p	60p
No.10 - <u>The care of a Collection</u> by A. Blok and T. E. Crowley	50p	60p
No.11 - <u>Collecting British Marine Molluscs</u> by S. M. Turk	50p	60p
No.12 - <u>Key to British Slugs</u> by A. E. Ellis - New Edition	50p	60p
No.13 - <u>Collecting Tropical Marine Molluscs</u> by A. P. H. Oliver	50p	60p
No.14 - <u>British Littoral Mollusca</u> by L. Llewellyn Jones	50p	60p
No.15 - <u>Hand lenses and microscopes for Conchologists</u> by J. E. Chatfield	50p	60p
No.16 - <u>A Key to the British Cockles</u> by S. M. Turk	50p	60p
No.17 - <u>An introduction to the Scaphopoda</u> by C. P. Palmer	50p	60p

The following publications are available from Mr. J. D. R. Fryer, Dept. of Geology, King's College, University of London, Strand, London, WC2R 2LS. The prices given INCLUDE POSTAGE & PACKING. All enquiries concerning these publications should be addressed to Mr. Fryer.

	Members	Non Members
1. 'The Conchologists' Newsletter' Nos. 1 - 76 (Some of the early Nos. are out of print but second hand copies occasionally become available)	50p	50p
2. Membership List	£ 1.00	£10.00
3. The Conservation of Snails, Slugs & Freshwater Mussels by Michael Kerney & Alan Stubbs (A Nature Conservancy publication)	50p	50p

THE CONCHOLOGISTS' NEWSLETTER

No. 79

ISSN 0573-2336

Newsletter Editor: P. E. Negus,

Chelsea Bridge Road,
London, [REDACTED]

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Produced by THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

OBSERVATIONS ON SOME MARINE MOLLUSCS IN BARBADOS

Barbados is the most easterly of the Lesser Antilles, and is somewhat cut off from that chain of islands, being on the windward side of the group. It is a small island, and the coastal geomorphology ranges from the sweeping, sandy bays of the west coast to the cliffs and promontories of the north. The east coast is continually pounded by the large swells of the Atlantic, while the west coast is sheltered.

Most of my hunting has been done on the west and south-west coasts, as the reefs and constant surf of the east coast precludes the use of my yacht. In addition to this, bathing and snorkelling on the west coast are free from dangers while the east coast has strong currents and eddies which make bathing unsafe.

Maycock's Bay offers a wide variety of marine molluscs, from the tiny Hyalina avena (Kiener) to the aptly-named Voluta musica (Linné). The coral outcrops at the northern end of the bay, which are covered at high water, have large colonies of Nerita tessellata (Gmelin), Littorina ziczac (Gmelin) and Nodilittorina tuberculata (Menke). Close inspection of the high water mark has yielded examples of Polinices lacteus (Guilding), Polinices hepaticus (Roding), Cypraeacassis testiculatus (Linné), Leucozonia ocellata (Gmelin), Nitidella ocellata (Gmelin), Melampus coffeus (Linné), and a superb white example of Natica canrena (Linné).

Gibbes Beach lies just north of Holletown on the west coast, and the gentle swells which wash it mean that many fine beach specimens can be found: Nitidella ocellata (Gmelin), Nitidella nitida (Lamarck), Nitidella laevigata (Linné) and Engina turbinella (Kiener) have all been observed in rock pools on the reef, and I have found Cymatium caribbeum (Clench & Turner), Cymatium femorale (Linné) and Cyphoma gibbosum (Linné) on the beach. The latter can also be observed feeding on sea-ferns and coral fans.

The stretch of beach which has revealed the greatest variety of shells is in Carlisle Bay. The tidal range is about $2\frac{1}{2}$ feet, the beach is bounded by walls on either side, and there appears to be little overlap in habitat. In a crevice on the southern wall, just below the high water mark, lives a colony of Purpura patula (Linné) who share the crevice with a few Chiton tuberculatus (Linné). The slipway, which is washed by the sea from mid to high tide is the home of large numbers of Nerita tessellata (Gmelin), Nodilittorina tuberculata (Menke) and Littorina ziczac (Gmelin). The northern wall is what one could call Nerita versicolor (Gmelin) country; I once counted 43 of them sunbathing well above the high water mark, ranging in colour from all black to strawberry pink with black stripes. Occasionally I have found a few Nerita peloronta (Linné) about 2 metres above the high water mark, together with some Cittarium pica (Linné) nestled in the seaweed among the sea-urchins at the foot of the wall. These urchins present perhaps the most dangerous aspect of searching for molluscs; the spines are exceedingly sharp, cause painful itching, and are very difficult to get out as they are so brittle.

The most profitable time for collecting beach specimens came after Hurricane Allen struck Barbados in early August 1980. Our usual sandy beach was washed away, and a great deal of shingle was washed ashore. I spent many happy hours scratching through the shingle with a digging stick, and collected examples of Astrae tuber (Linné), Planaxis nucleus (Bruguère), Epitonium lamellosum (Lamarck), Cypraea cinera (Gmelin), Trivia pediculus (Linné) (which in Barbados rejoices in the name Puppy Dogs' Eyes), Bulla striata (Bruguère), Conus mus (Hwass) and vast numbers of Columbella mercatoria (Linné).

As yet the larger shells have eluded me, although I have found dead juvenile specimens of Strombus gallus (Linné) in fish pots in Carlisle Bay, presumably taken there by hermit crabs. I hope that this will be remedied in the near future.

References

Michael Humphrey: Sea Shells of the West Indies
Warmke and Abbott: Caribbean Seashells

L. M. Riley (Ms)

MARINE CONSERVATION AREA AT WEMBURY

Agreement has been reached for the designation of a voluntary Marine Conservation Area at Wembury, on the south Devon coast. The Area, which extends along some 6km of coast between Plymouth Sound and the mouth of the Yealm, includes the whole intertidal zone, shallow waters offshore to a depth of about 10 metres, and habitats above high water mark at Renney Rocks and the Mewstone.

While local fishermen opposed the idea of a voluntary marine reserve because they feared that their activities might be restricted should a reserve later become a statutory MNR, they agreed to designation of a Conservation Area "where groups and individuals would be encouraged to conform to codes of conduct appropriate to their activity."

The Conservation Area includes rocky intertidal reefs at Wembury which are frequently visited by educational classes, and mainly rocky sublittoral areas of considerable interest to divers.

The Conservation Area is supported by a number of local and national organisations, including Fort Bovisand Underwater Centre, the Devon Trust for Nature Conservation, the Underwater Conservation Society, and the National Trust.

(from H. A. Holme, Marine Biological Association of the U.K.)

THE CONVERGENCE OF CEPHALOPODS AND FISH: AN ENERGETIC VIEWPOINT

Of all the molluscs, probably the Cephalopods deserve most to be in a group to themselves. Although conforming to the basic molluscan morphology, these creatures have become adapted to a very unmolluscan life-style, that of the aggressive, free-swimming predator. The extent to which they have converged with fish, with whom principally they share this ecological niche, has been excellently documented by Andrew Packard (1972). He reviews the considerable morphological and physiological metamorphosis these molluscs have undergone in order to compete effectively in this vertebrate dominated realm.

One aspect that is not covered, however, relates to the way Cephalopods store and utilize energy. The vast majority of molluscs, and particularly the bivalves, store energy in the form of glycogen. Although glycogen has a lower calorific

content than fat, the principal store in vertebrates (glycogen 4.10 kcal/g; lipid 9.45 kcal/g; Winberg, 1971), it is less expensive in energy terms to store and mobilize, and hence of great selective advantage to animals generally short of food. It is because of its ease of mobilization that it is used as an energy source in vertebrate muscle. Its main disadvantage is that it is bulky; more than double as much glycogen as fat is required to store a given amount of energy. However, for the slow-moving or sedentary molluscs this is no great burden. Interestingly, in the one situation where bulk becomes important for sedentary molluscs, in the eggs, then energy is again stored as fat. Fat has here the added advantage of also providing buoyancy, not a requirement of most adult molluscs.

What about Cephalopods? Several years ago, during studies on the energetics of bivalves in the Mediterranean, I had the opportunity to look into this particular question. A single male squid (*Loligo vulgaris* L.), caught at the beginning of April 1973 near Naples, was killed, blotted, weighed and then homogenized in a Waring blender. The homogenate was then freeze-dried to constant weight. Aliquots of this dried homogenate were then ground to a powder, ash content was determined by ashing in a muffle furnace at 550°C, and calorific content was determined by microbomb calorimetry as I have described elsewhere (Ivell, 1979). Other aliquots of this dried homogenate were used to determine lipid content by the method of Bligh and Dyer (1959). Parallel to these determinations, the same measurements were made on a number of cockles *Cerastoderma glaucum* Bruguière. The results (means and standard deviations) are given in the following table:

	<u><i>Loligo vulgaris</i></u>	<u><i>Cerastoderma glaucum</i></u>
total calorific content (kcal/g)	5.68 ± 0.13 (25)	3.64 ± 0.19 (10)
ash-free calorific content (kcal/g)	6.14 ± 0.14 (25)	5.28 ± 0.28 (10)
total lipid content (%)	12.82 ± 0.56 (12)	5.69 ± 1.44 (10)
ash-free lipid content (%)	13.86 ± 0.60 (12)	8.25 ± 2.09 (10)

(the figures in brackets represent the number of samples tested)

In several studies I have made of *C. glaucum* and its close relative *C. edule* L., the values for these bivalves of ash-free calorific content as well as of lipid content show little seasonal variation; thus the data in the table can be considered typical for a variety of seasonal conditions. Only the ash content in the animals used here was unusually high.

Although one should not infer too much from a single animal, the squid data show clearly a much higher lipid content - remember this is a male so there is no inflation of the value due to contained oocytes - and consequently a significantly higher ash-free calorific content. In fact, comparison of these data with calorific contents for a variety of other animals (Cummins & Wuycheck, 1971) make it clear that the squid, at least, belongs much more naturally among the vertebrates than among the molluscs.

And the reason is convergence. The Cephalopod, in order to compete effectively in the fish ecological niche, has had to abandon bulky glycogen as a calorie store and uses instead fat reserves, just as fish do. The use of fat means a reduced body weight, and more energy can be transformed into speed, essential to effective predatory (and escape) behaviour in a free-swimming niche.

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Richard Ivell, University of Hamburg, FRG.

COLLECTORS IN EAST AFRICA - 5 J. S. GIBBONS

J. S. Gibbons (1851-?)

John Stephen Gibbons collected a number of shells in Zanzibar some of which he described himself and others were dealt with by W. Nelson and J. W. Taylor. A few have yet to be identified since the types appear to be missing and no figures were given in one of the original papers. Not much has been found out about him. The son of Stephen Gibbons, he was born at Brocklesby, Lincolnshire on 1 April 1851. He was educated at Aberdeen University and graduated M.B., C.M. in 1872. Two years later he was living at Swallow Vale, Caistor, in Lincolnshire. He then became surgeon on a series of boats, MSS 'Roman' in 1875, MSS 'Kaffir' in 1876, MSS 'African' in 1877-8. During 1879-1880 he was surgeon to the Royal Mail Steam Packets and in 1881 was living at Moddersfontein, Victoria, western South Africa. Later (1892-3) he lived at Prieska in Cape Colony. From 1900-1906 he was district surgeon in Cape Colony but I cannot find out anything about him from 1907 onwards. Gibbons wrote about a score of papers (published in the first three volumes of the Journal of Conchology). He collected marine shells at various seaports in East and South Africa, West Indies and Brazil.

An interesting item concerning this collector is listed in Wheldon and Wesley's catalogue New Series 152 (1980), a manuscript of J. S. Gibbons offered for sale "Synopsis of East African Shells" 89 pp. 5 parts plus South African Shells 44 pp. 2 pts. This was unpublished but was presented to the Conchological Society by J. W. Jackson in 1925 and was obviously dispersed when the short-sighted decision was made to sell their library.

A little additional information was obtained by examining his will at Somerset House. It confirmed my suggestion that he was rather better off towards the end of his life. The will is dated 30 January 1936, with a codicil about furniture and personal effects added on 14 October 1936. Probate was granted at Lewes on 5 February 1937 and the executors were Charles E. Craven (described as a Stockbroker although the Stock Exchange archives contain no reference to him) and a Mrs. Marion Jane Putland (wife of Alfred Bernard Putland) who lived at Thornton Heath and may have been related to some Putlands who lived in Lewes. The estate was £3944. 1.11d.; £1000 free of duty was left to Charles and £100 free of duty to Mrs. Putland to acknowledge her trouble as an executor (which seems quite a lot for those days). The main beneficiary was Marion Ethel Craven Ellis "now residing at East Cliff House No. 74 All Saints Street, Hastings" "for her absolute use when she shall attain the age of twenty one years or marry under that age" the "income to go to her during her minority". I have not managed to trace this person nor find out her relationship with Craven. The will also mentioned a wish to be cremated.

K. S. Erskine, who obviously read the Wheldon and Wesley Catalogue before I did and managed to purchase the manuscripts, has very kindly lent them to me. I am also very grateful to Messrs. Wheldon and Wesley for putting the purchaser in touch with me at my request. The manuscript is octavo in size, stitched, and bears the

title mentioned above together with the Conchological Society's stamp and date "15.8.25 from J.W.J." It dates from about 1875, and is written in a very legible hand. Part 1 is entirely introductory; he defines the district in which he operated including visits to Mozambique (15°2'S, 40°48'E) and Zanzibar (6°28'S, 39°33'E), Delagoa Bay and Natal (he actually wrote 40°48'W! a curious slip for a seaman) in all, about 1000 miles of coast. The manuscript continues with notes on the "Physical aspects", "Currents", "Distribution of Shells", "Economic aspect", "Hunting Grounds", "Opportunities of collecting etc", "Naming", "Results", "Land and Freshwater Shells". These notes contain much of general and historical interest and it is to be hoped that Mr. Erskine can in time find some way of making the manuscripts more generally available. Under economics Gibbons mentions that 8,000,000 *Cypraea moneta* valued at £51,000 were annually exported from Ras Hafun by the Arabs (getting the information from Burton) to the west coast of Africa but that the trade had almost ceased. He makes his apologies for not collecting more than he did. "Passing up and down the coast as I have done once a month it might be supposed I had ample opportunities for collecting, and, to a certain extent, such was the case, but, although calling at Mozambique twice a month, only a very short time is spent by the steamer and if, as often happens, that the tide should be high I can get no marine shells whatever, at Zanzibar on the other hand, three, four or even five days a month are spent but the necessity of cleaning the shells very shortly after they are taken consuming part of this time and the great heat prevents any very energetic hunting". He goes on to say that an easier method of collecting was to buy from the natives and even at this early date a hint of conservation awareness is present - "they ruin the reefs by collecting every shell they find of any value". Speaking of the non-marines he states "It is somewhat strange that so few land shells should have been found here" but of course he could never have had an opportunity to reach even the nearest coastal forests on the mainland. "With the exception of *Achatina* the land shells are insignificant in size and colouring. They are not only deficient in number of species but even individuals are usually sparing and always extremely local. About Zanzibar for instance *Achatina* is the only shell usually found - Bulimi, Pupas etc being confined to small areas on the coast and to the coral islets". Part 2 of the manuscript begins the list of Marines; it is very likely some of his records are the first for the East African coast. The cowries are the only East African Marines I know about so it is interesting to peruse his list (using his names) - *tigris*, common, brought to ship in large numbers by the natives; *arabica*, widely distributed but rare; *histrion* occurs at Zanzibar; *mauritanica*, very rare; *talpa*, only seen once in a canoe at Zanzibar; *onyx*, common at Inhambane, rare higher up; *broderipii* "Zanzibar, two specimens were obtained about 1850 by the British Consul (Burton's Zanzibar). There is no proof that these were obtained within East African waters although it is quite possible but to my knowledge no others have been found in East Africa. I have checked in Burton's Zanzibar - R. F. Burton (Zanzibar; city, island and coast, (1872)) mentions that "Lieut.-Colonel Hamerton was fortunate enough in those early days to obtain two specimens of the *Cypraea Broderipii* (sic) or orange-cowrie with a stripe down the dorsum. Exaggerated ideas of its value had been spread and it was reported that £500 had been offered for a single shell"; *pantherina*, no specimens seen; *arabica*, recorded from Zanzibar but no specimens seen; *caput-serpentis*, not uncommon; *lynx*, rather common; *caurica*, very common; *erosa*, moderately common; *vitellus*, common; *cruenta*, occurs at Zanzibar; *argus*, "Mozambique, not uncommon in canoes very closely allied to *Cyp.vitellus*, common at Inhambane" - someone has pencilled in "this is *Cyp. ocellata*" (sic) - the *argus* has mihi after it indicating it was a name Gibbons meant to give it himself seemingly having forgotten there is a very different *C. argus* L. - what his *argus* was I do not know. *C. ocellata* is a Ceylonese species not close to *C. vitellus*; *carneola*, moderately common; *isabella*, rarely seen in good condition; *lutea* extremely common - *lutea* is an Australian species and obviously an error; *undata* Zanzibar, Mozambique, common at latter place (= *diluculum*); *zigzag* (sic), Mozambique from canoes by natives; *oblonga* mihi, Mozambique two specimens, two specimens from boat, it is allied to *Cyp. undata*; *quadrifasciata*, Mozambique, two only from boats; *staphylea*, Zanzibar, Mozambique two only from boats; *limacina*, Mozambique, one live specimen whilst depositing its ova on a large stone at low water; *moneta*, Zanzibar, Mozambique, sometimes but not often washed up, rarely found alive I believe - much commoner in my

day so possibly recovered from massive over collecting last century; annulus, common; lamarckii Zanzibar, Grant's list; helvola, Zanzibar, Grant's list; tabescens, Zanzibar, Grant's list - presumably teres. There are obviously a few misidentifications and names which cannot be placed; without his collection it is not possible to establish the true identity of these. Part 3 continues the marine species starting with Conus but it also contains mention of brackish and freshwater species as well as those from mangrove swamps eg. Potamides decollatus and Pyrasus palustris. Most of the freshwater species are from Grant's list and not his own collecting; of 9 Ampullaria (including Lanistes) listed he only found A. olivaceus in S. Zanzibar, numerous in lagoons on the mud. He mentions Littorina intermedia and L. glabrata, the former able to withstand great heat and dryness and the latter high above tide-mark on rocks; L. angulifera at Mozambique; L. natalensis Zanzibar; L. (Modulus) candida Zanzibar, one specimen sub-fossil, old sea beach, coral island; L. (Modulus) unidentata mihi Zanzibar, one specimen at low water. He found one species of Neritina at Zanzibar, one dead and worn at low tide and several others on mud flats but always water-worn. Part 4 continues the marine species and contains all the terrestrial species. He dismisses a report by a Mr. Shepperd of HMS London, that Clausilia and Vitrina occurred on Zanzibar, as erroneous. Of Helix he records Helix (Nanina) mozambicensis "as common dead on the island of Mozambique At Zanzibar on a Coral Islet specimens occurred that were pronounced to be H. jenynsii (Pfr.) by Mr. Smith of the British Museum but which appear to me to be merely a variety". Actually Sitala jenynsi is generically distinct from Trochonanina mozambicensis. He goes on to list "2 Helix dubia mihi Zanzibar not uncommon dead at roots of grass in a shady place near the sea". Presumably the same as the species later described by Taylor under the same name, although unfortunately it cannot be identified, "3 Helix (Zonites) ventricosa (mihi) Zanzibar. One dead specimen among dead leaves. Mr. Shepperd obtained live specimens at the roots of Banana trees. 4 Helix (Streptaxis) pupa mihi Zanzibar. Three specimens with the last alive." He then lists a number of Bulimus taken from Grant's list covering what today would be placed in Burtoa, Limicolaria, Rachis, Rhachistia etc. and species found by himself "1 Bulimus mozambicensis Pfr. Mozambique very numerous 2 B. punctatus (Anton) Zanzibar and Mozambique ... common 3 B. similis Mozambique two dead under stones on the Mainland 4 B. olivaceus mihi. Zanzibar. Numerous among dead leaves and empty shells under bushes. Bawri Island, confined to this locality. 5 B. tumidus mihi. Zanzibar occurs sparingly about Zanzibar and dead only. Absent from Bawri Island but found on other Islets. 6 B. obesus mihi Zanzibar. Two dead and aged specimens from Bawri Island. I almost fancy this is a member of the subgenus Gibbus a group found at Mauritius. 7 B. bawriensis mihi Zanzibar. Rare and dead only in old shells among decaying leaves. Bawri Island only. The next two species with this form a section in which are some S. Australian Bulimi. B. pacificus Pfr. from Queensland appears exactly the same as this but may be distinct. 8 B. zanguebarica mihi. Zanzibar. Numerous dead in a sandy place down the coast in company with H. dubia. 9 B. cinereus (mihi). Zanzibar - one dead specimen with the last species. 10 B. costatus mihi, Zanzibar two dead specimens under dead leaves. 11 B. (Stenogyra) delicatae (sic) mihi Zanzibar. Local in interstices of loose coral in shady places 1 Pupa cerea Zanzibar. Not uncommon about Zanzibar and on Bawri Island in or under dead shells. This may perhaps be a Vertigo!. 2 P. turricula mihi Zanzibar. Rare and dead only among dead leaves and grass. 3 P. (Ennea) bidentata mihi. Zanzibar. One dead shell with Helix dubia in a sandy place." Many of these were described by Taylor and Gibbons (see list at end) but quite a few are now unidentifiable due to lack of authentic specimens. He lists 10 Achatina but had not seen all himself. "1 Achatina fulica (Fér.) Zanzibar (Seychelles Grant's list) Common at Zanzibar and different being the only land shell that is so. It occurs in hedges, trees and among grass under bushes (graveyard Zanzibar pencilled in). 2 A. panthera (Pfr.). Common at Mozambique living on trees or in cavities of rocks shaded by trees. This species lives in trees hibernating in holes in the trunk. I have seen them 30 or 40 feet from the ground - resembles A. immaculata (Lamk) from Delagon Bay (he was right - they are conspecific) 3 A. immaculata (Lamk). Inhambare (Delagoa Bay) two specimens only but said by Mr. da Costa to be common living on the ground. 4 A. reticulata Pfr. Lindi Bay, Zanzibar (Grant). Specimens dead from the former place presented to me by

Dr. Turnbull and said to be numerous. 5 A. lactea (Reeve). Zanzibar. This appears to be a small bleached form of A. reticulata (actually a quite different species from Somaliland - persistent records of it from Zanzibar are undoubtedly based on young bleached A. reticulata or mislabelled specimens). 6 A. rodatzii (Dunker). Zanzibar, occurs sparingly with A. fulica to which it is closely allied differing little except colour (just a variety). 7 A. allisa (Reeve) Zanzibar (Cape Palmas, W. Africa) One dead specimen from a Coral Island, Zanzibar Channel. (This is actually A. iredalei Preston but allisa may well be an earlier name in which case Reeve's original locality is erroneous) 10. A. (Subulina?) intermedia (mihi) Zanzibar - found this in one place under a thick bush, the shells were buried in the loose mould just beneath the surface and were moderately numerous". He interestingly records a Succinea - "S. ventricosa mihi Zanzibar. Rare in a dry sandy place where however in the wet season the ground would? marshy - this species closely resembles S. vitrea Pfr from Bombay". What "1 Limax fusca mihi under leaves and stones in shady places Zanzibar" might have been we shall never know. Next he mentions "Urocyclus (Gray). A genus allied to Arion described in Zoo. Soc. Proceed. 1864 p. 250. 1 Urocyclus kirkii (Gray). Mozambique (Lin. Soc.??) This is probably the slug I found so numerous on the Island of Mozambique on bushes. An allied species is found in Delagoa Bay and Natal". Another interesting entry refers to Oncidium. "I found a species of Oncidium at Zanzibar on moss in a crevice. Bawri Island. The sea entered the crevice at high water. I unfortunately did not secure specimens". Gibbons refers to this in his paper (see bibliography). I do not think it has ever been seen again in East Africa. He records also "Vaginulus ates? mihi Mozambique. Plentiful under stones and on the ground in stony places". "1 Physa minuta mihi Zanzibar, one dead shell in a ditch filled with weeds." and "2 Physa (Physopsis) palustris mihi Zanzibar, one specimen dead with last species" are also recorded together with "1 Planorbis Zanzibar about a dozen specimens in a stagnant pool" which is presumably the Planorbis gibbonsi of Nelson (see bibliography). Under Auriculidae he records "1 Auricula (Ellobium) amplex (H. & A. Adams) Zanzibar a few on long weeds under a canoe in marsh close to the sea and at the mouth of a stream. 2 Auricula (Ellobium) mucronata mihi Zanzibar, rare among weeds in a marshy spot. 3 Auricula (Cassidula) zonata (H. & A. Adams). Zanzibar, rather scarce in marshy spots. 1 Melampus obconica mihi Zanzibar 2 Melampus varians mihi Zanzibar. Very numerous on marshy spots among weeds and often associated with Cerithidea decollata and Littorina intermedia; there is a banded and a light coloured variety. 3 Melampus purpureus mihi Zanzibar. Three dead specimens on Chapani (one of the coral islands) - differs very little from the last". Of Cyclostomatidae he lists four species. 1. Cyclostoma creplini Zanzibar (Woodward), 2. C. zanzibaricum (Petit) (sic) Mozambique - rather rare at Zanzibar, common on the island of Mozambique on shrubs and trunks of trees. 3. C. calcareum (Sowerby). Mozambique (near Tete and Lake Nyassa - Grant's list) numerous as subfossil in a sandy formation on the Island of Mozambique. Now extinct on the island. 4. C. kraussiana (Pfr.) Inhambane (Delagoa Bay, Natal). This is a Natal species that extends to the tropics. Truncatella palustris is recorded from Zanzibar as rather numerous dead shells. Part 5 is entirely taken up with marine bivalves and the other two parts with South African Marines.

Perhaps some South African reader can say what happened to Gibbons in that country. I am indebted to Colin A. McLaren, Archivist and keeper of Manuscripts, Aberdeen University Library for his date and place of birth.

List of molluscs described from material collected by J. S. Gibbons:

- Buliminus cinereus Taylor, 1877. Zanzibar. = Edouardia conulina (von Martens, 1869). Type not found.
Buliminus costatus Taylor, 1877. Zanzibar. Not identified. Type not found.
Buliminus gibbonsi Taylor, 1877. Mozambique. = Pseudoglessula gibbonsi (Taylor, 1877). Types in B.M. (1910.9.5. 13-14)
Buliminus obesa Taylor, 1877. Zanzibar, Bawri Is. = Edentulina obesa (Taylor, 1877).
Buliminus olivaceus Taylor, 1877 (not of Pfr.). Bawri Is. = Pseudoglessula subolivacea (Smith, 1890). Types in B.M. (1910.9.5. 9-12)

Buliminus tumidus Taylor, 1877. Zanzibar and Chapin Is. (? Chapani Is.). = Edouardia tumida (Taylor, 1877). Type in B.M. (1910.9.5 -15)

Bulimus bawriensis Taylor, 1880. Zanzibar, Bawri Is. = Pupoides coenopictus samavaensis (Paladilhe, 1872). Type not found.

Bulimus zanguebaricus Taylor, 1880. Zanzibar. = Pupoides coenopictus sennaariensis (L. Pfr., 1855). Type not found.

Ennea taylori Gibbons, 1879. Zanzibar. = Streptostele (Raffraya) taylori (Gibbons, 1879). Type in B.M. (1910.9.5 -19).

Gonaxis Taylor, 1877. Unchanged.

Gonaxis gibbonsi Taylor, 1877. Zanzibar. Unchanged. Types in B.M. (1910.9.5. 26-8).

Helix dubia Taylor, 1880. Zanzibar. Type not found and unidentified. No true Helicid would live in Zanzibar; from the description it sounds like a juvenile Trochonanina.

Opeas delicata Taylor, 1877. Zanzibar. = Opeas delicatum. Types in B.M. (1910.9.5. 20-25).

Planorbis gibbonsi Nelson, 1878. Zanzibar. Position uncertain but possibly Afrogyrus coretus (de Blainville, 1826). Type not found.

Pupa (Ennea) sexdentata Taylor, 1880 (not von Martens, 1865). Zanzibar. Type missing and identity unknown; it could possibly be the same species later described by Preston as Gulella gwendolinae (Prest.).

Pupa turricula Taylor, 1880. Zanzibar. Type not found and unidentified.

Stenogyra lucida Gibbons, 1879. Zanzibar, Bawri Is. Streptostele lucida (Gibbons, 1879). = Opeas bawriense Pilsbry, 1906. (Type in B.M. (1910.9.5.7)).

Subulina intermedia Taylor, 1877. Zanzibar. Unchanged. (given as pl. 3 fig. 4 but is actually fig. 5). Type mislaid?

Urocyclus flavescens Keferstein var. pallida Gibbons, 1879. Mozambique. = Elisolimax flavescens (Keferstein, 1866). Type not found.

Zonites? ventrosa Taylor, 1877. Zanzibar. Sometimes referred to Tayloria but said to be a rich brown colour and more likely to be a juvenile Thapsia, type not found.

Bibliography

- Gibbons, J.S. (1879). Descriptions of two new species of land shells and remarks on others collected on the East African coast. J. Conch. 2: 138-145
- Nelson, W. (1878). Description of a new species of Planorbis. Quart. J. Conch. 1: 379
- Taylor, J.W. (1877). Descriptions of new species of land shells from the east coast of Africa. Quart. J. Conch. 1 (3): 251-255, pl. 2
- Taylor, J.W. (1877). Descriptions of new species of land shells from the east coast of Africa. Quart. J. Conch. 1: 280-283, pl. 3
- Taylor, J.W. (1880). Descriptions of new species of land shells from the east coast of Africa. J. Conch. 3: 142-144 (reference was made to a pl. 1 but I have never seen this in any copy* of the journal concerned)

*Adrian Norris tells me it is missing from Taylor's own copy of vol. 3 so it can safely be assumed that it never appeared in a published form even if it had ever been drawn.

B. Verdcourt

PETRICOLA LITHOPHAGA (RETZIUS) IN VICTORIAN SHIP BALLAST IN LONDON

It has often been suggested that imported ship ballast might account for some of the more surprising 19th. century records of exotic marine shells on our shores (see Conchologists' Newsletter No. 75, p. 266). An actual case of such transport is described below.

Towards the upper (southern) ends of Point Hill and Hyde Vale, Greenwich, London, S.E.10, there are low stone retaining walls, built probably about 1870 to protect the grassy edges of the open common land of Blackheath from erosion. My attention was several years ago drawn to these walls because of the extraordinary variety of rocks of which they are composed: granites, basalts, quartzites, cherts, conglomerates, limestones and sandstones - a veritable geological museum. Some fragments are clearly of British origin (e.g. Purbeck Limestone from Dorset) but others are very hard to place. The possibility of ship ballast suggested itself when I noticed that many of the blocks were rolled and waterworn, as if they had come from beaches or harbours. After careful search in August this year, the matter was clinched by finding on a few blocks traces of barnacles and of molluscan borings (crypts), and in one spot (in Hyde Vale at grid ref. TQ38677686) some of the bivalves responsible still in situ in the holes they had made. They were in excellent condition, with the ligament preserved. They proved to be Petricola lithophaga (Retzius), a rock boring species well known in the Mediterranean. It is recorded also from the Atlantic coasts of France, Spain and Morocco, the Gulf of Suez, Aden, the Philippines and the "China Seas". Jeffreys says "this species has not been authenticated as British", adding significantly, "Mr. J. D. Humphreys's collection of Irish shells contains a specimen found by him in Cork harbour, but I have reason to suspect that it came from a piece of ballast stone" (British Conchology 2 (1863), p.348). A good figure of P. lithophaga will be found on page 138 of Step's Shell Life (all editions). The boulder containing the Petricola was a dark, completely recrystallized limestone, evidently from some area of ancient or highly folded rocks, but it is unlikely that its source can be more precisely determined.

Greenwich of course was at the centre of a great merchant shipping port throughout the 19th. century. An examination of the published annual reports of the Greenwich Board of Works for the 1880's and 1890's quickly revealed the very interesting fact that "ship stone" was regularly used in highways and other public works. For example, the Road Surveyor's statement for 1884 records the use of 811 cubic yards of "Bombay, Port Phillip (Melbourne), rag and other ship stones". Elsewhere "China ballast" is referred to.

I am indebted to Dr. Noel Morris for help with identifying Petricola lithophaga. The specimens have been deposited in the Department of Zoology, BMNH.

Michael Kerney

EXTRACT FROM GLAUCUS; OR THE WONDERS OF THE SHORE. THE WORKS OF CHARLES KINGSLEY
VOL. 5, LONDON: MACMILLAN & CO. (1881). FIRST PUBLISHED IN 1855. PP.61-71

Charles Kingsley spends no less than sixty pages of the 245 pages of 'Glaucus', stressing the value of natural history studies, and the 'wonders of the shore', before he describes and illustrates what may be seen on the beaches of Torquay. He begins in a way which tells us quite a lot about Victorian holidays at that resort:

"You are going down, perhaps, by railway, to pass your usual six weeks at some watering-place along the coast, and as you roll along think more than once, and that not over-cheerfully, of what you shall do when you get there. You are half-tired, half-ashamed, of making one more in the ignoble army of idlers, who saunter about the cliffs, and sands, and quays... You foreknow your doom by sad experience. A great deal of dressing, a lounge in the club-room, a stare out of the window with the telescope, an attempt to make a bad sketch, a walk up one parade and down another, interminable reading of the silliest of novels, over which you fall asleep on a bench in the sun, and probably have your umbrella stolen; a purposeless fine-weather sail in a yacht, accompanied by many ineffectual attempts to catch a mackerel, and the consumption of many cigars; while your boys deafen your ears, and

endanger your personal safety, by blazing away at innocent gulls and willocks, who go off to die slowly; a sport which you feel to be wanton, and cowardly, and cruel, and yet cannot find it in your heart to stop, because "the lads have nothing else to do, and at all events it keeps them out of the billiard-room;" and after all, and worst of all, at night a soulless *réchauffé* of third-rate London frivolity; this is the life-in-death in which thousands spend the golden weeks of summer, and in which you confess with a sigh that you are going to spend them."

Follow us, then, reader, in imagination, out of the gay watering-place, with its London shops and London equipages, along the broad road beneath the sunny limestone cliff, tufted with golden furze; past the huge oaks and green slopes of Tor Abbey; and past the fantastic rocks of Livermead, scooped by the waves into a labyrinth of double and triple caves, like Hindoo temples, upborne on pillars banded with yellow and white and red, a week's study, in form and colour and *chiaroscuro*, for any artist; and a mile or so further along a pleasant road, with land-locked glimpses of the bay, to the broad sheet of sand which lies between the village of Paignton and the sea-sands trodden a hundred times by Montagu and Turton, perhaps, by Dillwyn and Gaertner, and many another pioneer of science. And once there, before we look at anything else, come down straight to the sea marge; for yonder lies, just left by the retiring tide, a mass of life such as you will seldom see again. It is somewhat ugly, perhaps, at first sight; for ankle-deep are spread for some ten yards long by five broad, huge bivalve shells, as large as the hand, each with its loathly grey and black siphons hanging out, a confused mass of slimy death. Let us walk to some cleaner heap, and leave these, the great *Lutraria elliptica*, which have been lying buried by thousands in the sandy mud, each with the point of its long siphon above the surface, sucking in and driving out again the salt water on which it feeds, till last night's ground-swell shifted the sea-bottom, and drove them up hither to perish helpless, but not useless, on the beach.

See, close by is another shell bed, quite as large, but comely enough to please any eye. What a variety of forms and colours are there, amid the purple and olive wreaths of wrack and bladder-weed, and tangle (ore-weed as they call it in the south), and the delicate green ribbons of the *Zostera* (the only English flowering plants that grow beneath the surface of the sea). What are they all? What are the long white razors? What are the delicate grey-green scimitars? What are the tapering brown spires?The great red starfish, which Ulster children call "the bad man's hands"; and the great whelks, which the youth of Musselburgh know as roaring buckies, these we have seen before; but what, oh what, are the red capsicums? -

Yes, what are the red capsicums? and why are they poking, snapping, starting, crawling, tumbling wildly over each other, rattling about the huge mahogany cockles, as big as a child's two fists, out of which they are protruded? Mark them well, for you will perhaps never see them again. They are a Mediterranean species, or rather three species, left behind upon these extreme south-western coasts, probably at the vanishing of that warmer ancient epoch, which clothed the Lizard Point with the Cornish heath, and the Killarney mountains with Spanish saxifrages, and other relics of a flora whose home is now the Iberian peninsula and the sunny cliffs of the Riviera.

Rare on every other shore, even in the west, it abounds in Torbay at certain, or rather uncertain times, to so prodigious an amount, that the dredge, after five minutes scrape, will come up choked full of this great cockle only. You will see hundreds of them in every cove for miles this day; a seeming waste of life, which would be awful in our eyes, were not the Divine Ruler, as His custom is, making this destruction the means of fresh creation, by burying them in the sands, as soon as washed on shore, to fertilize the strata of some future world. It is but a shell-fish truly; but the great Cuvier thought it remarkable enough to devote to its anatomy elaborate descriptions and drawings, which have done more perhaps than any others to illustrate the curious economy of the whole class of bivalve or double-shelled, mollusca.

That red capsicum is the foot of the animal contained in the cockle-shell. By its aid it crawls, leaps and burrows in the sand, where it lies drinking in the salt water through one of its siphons, and discharging it again through the other. Put the shell in a rock-pool, or a basin of water, and you will see the siphons clearly. The valves gape apart some three-quarters of an inch. The semi-pellucid orange "mantle" fills the intermediate space. Through that mantle, at the end from which the foot curves, the siphons protrude; two thick short tubes joined side by side, their lips fringed with pearly cirri or fringes; and very beautiful they are. The larger always open, taking in the water which is at once the animal's food and air, and which, flowing over the delicate inner surface of the mantle, at once oxygenates its blood, and fills its stomach with minute particles of decayed organized matter. The smaller is shut. Wait a minute, and it will open suddenly and discharge a jet of clear water, which has been robbed, I suppose of its oxygen and organic matter. But, I suppose, your eyes will be rather attracted by that same scarlet and orange foot, which is being drawn in and thrust out to a length of nearly four inches, striking with its point against any opposing object, and sending the whole shell backwards with a jerk. The point, you see, is sharp and tongue-like; only flattened, not horizontally, like a tongue, but perpendicularly, so as to form, as it was intended, a perfect sand-plough, by which the animal can move at will, either above or below the surface of the sand.

But for colour and shape, to what shall we compare it? To polished cornelian, says Mr. Gosse. I say to one of the great red capsicums which hang drying in every Covent-garden seedman's window. Yet is either simile better than the guess of a certain lady, who entering a room wherein a couple of *Cardium tuberculatum* were waltzing about on a plate, exclaimed, "Oh dear! I always heard that my pretty coral came out of a fish, and here it is all alive!"

"*C. tuberculatum*", says Mr. Gosse (who described it from specimens which I sent him in 1854), "is far the finest species. The valves are more globose and of a warmer colour; those that I have seen are even more spinous". Such may have been the case in those I sent; but it has occurred to me now and then to dredge some specimens of *C. aculeatum*, which had escaped that rolling on sand fatal in old age to its delicate spines, and which equalled in colour, size and perfectness the noble one figured in poor dear old Dr. Turton's "British Bivalves". Besides, *aculeatum* is a far thinner and more delicate shell. And a third species, *C. echinatum*, with curves more graceful and continuous, is to be found now and then with the two former. In it, each point, instead of degenerating into a knob, as in *tuberculatum*, or developing from delicate flat briar-prickles into long straight thorns, as in *aculeatum*, is close-set to its fellow, and curved at the point transversely to the shell, the whole being thus horrid with hundreds of strong, tenter-hooks, making his castle impregnable to the raveners of the deep. For we can hardly doubt that these prickles are meant as weapons of defence, without which so savoury a morsel as the mollusc within, (cooked and eaten largely on some parts of our south coast) would be a staple article of food for sea-beasts of prey. And it is noteworthy, first, that the defensive thorns which are permanent on the two thinner species, *aculeatum* and *echinatum*, disappear altogether on the thicker one *tuberculatum*, as old age gives him a solid and heavy globose shell; and next, that he too, while young and tender, and liable therefore to be bored through by whelks and such murderous univalves, does actually possess the same briar-prickles, which his thinner cousins keep throughout life. Nevertheless, prickles, in all three species, are, as far as we can see, useless in Torbay; where no wolf-fish (*Anarrhichas lupus*) or other owner of shell-crushing jaws wanders, terrible to lobster and cockle. Originally intended, as we suppose, to face the strong-toothed monsters of the Mediterranean these foreigners have wandered northward to shores where their armour is not now needed; and yet centuries of idleness and security have not been able to persuade them to lay it by.

This - if my explanation is the right one - is but one more case among hundreds in which peculiarities, useful doubtless to their original possessors, remain, though now useless in their descendants... Enough of *Cardium tuberculatum*. Now for the other animals of the heap; and first, for those long white razors.

They, as well as the grey scimitars, are Solens, Razor-fish (Solen siliqua and E. ensis), burrowers in the sand by that foot which protrudes from one end, nimble in escaping from the Torquay boys, whom you will see boring for them with a long iron screw, on the sands at low tide. They are very good to eat, these razor-fish; at least for those who so think them; and abound in millions upon all our sandy shores.

Now for the tapering brown spires. They are Turritellae, snail-like animals (though the form of the shell is different) who crawl and browse by thousands on the beds of Zostera, or grass wrack, which you see thrown about on the beach, and which grows naturally in two or three fathoms of water.

On page 59, Kingsley writes;

"No wonder that such a spot as Torquay, with its delicious Italian climate, and endless variety of rich woodland, flowery lawn, fantastic rock-cavern, and bright tide-sand, sheltered from every wind of heaven except the soft south-east, should have become a favourite haunt, not only of invalids, but for naturalists. Indeed, it may well claim the honour of being the original home of marine zoology and botany in England, as the Firth of Forth, under the auspices of Sir J. G. Dalyell, has been for Scotland. For here worked Montagu, Turton, and Mrs. Griffith, to whose extraordinary powers of research English marine botany almost owes its existence, and who survived to an age long beyond the natural term of man, to see, in her cheerful and honoured old age, that knowledge become popular and general which she pursued for many a year unassisted and alone. Here, too, the scientific succession is still maintained by Mr. Pengelly and Mr. Gosse, the latter of whom by his delightful and happily, well-known books has done more for the study of marine zoology than any other living man. Torbay, moreover from the variety of its rocks, aspects, and sea-floors, where limestone alternates with traps, and traps with slates while at the valley-mouth the soft sandstones and hard conglomerates of the new red series slope down into the tepid and shallow waves, affords an abundance and variety of animal and vegetable life, unequalled, perhaps, in any other part of Great Britain."

(Submitted by Stella M. Turk)

BORED DRIFTWOOD FOUND ON TIREE, IN JUNE 1981 - A CAUTIONARY TALE

Tiree, one of the more remote of the Hebridean islands (approximately 56°30'N 06°50'W) is an ideal place for the stranding of driftwood which is thrown up onto the top of storm beaches and onto the machair during gales. Since there are no trees on Tiree, driftwood is a valuable commodity. Most parts of the shore are accessible by motor vehicle, hence wood does not lie around for long except on one stretch of coast on the north shore, between the Ringing Stone and Vaul Broch which is guarded by a mile of bogs and rough ground. Most of this wood has been heavily infested by Teredinids, by far the commonest species being the ubiquitous Psiloteredo megatara (Forbes & Hanley, 1848). Unfortunately much of the wood has started to rot and has attracted woodlice, millipedes and land molluscs which between them have destroyed many shells and most pallets.

One baulk of timber, about 1m long and 20cm x 20cm in section contained numerous shells corresponding to the following forms previously found in Britain (Turner, 1966), listed in order of abundance.

1. Form of Teredo navalis (L., 1758)
Nausitora fusticula (Jeffreys, 1860)
Bankia fimbriatula Moll & Roch, 1931
Lyrodus pedicellata (Quatrefages, 1849)
2. Form of Psiloteredo megatara
3. Form of Bankia bipennata (Turton, 1819)

Teredora malleolus (Turton, 1822)

4. Form of Nototeredo norvagica (Spengler, 1792)

Pallets of only one form were found, corresponding to

Bankia fimbriatula

Bankia bipennata

The wood was sawn into four pieces in the field and two pieces were split and examined in situ. These yielded shells mostly of form 2, with some form 1 and form 3 and the only example of form 4. One piece was given away and the largest brought home for examination. This contained mostly form 1, a few form 2, fewer form 3 and all the pallets.

The enigmatic "Teredo" has not given up its secrets and I can record only Psiloteredo megatara and Nototeredo norvagica with confidence. Additionally there was Bankia sp., more likely B. fimbriatula; B. bipennata and/or Teredora malleolus; possibly any of the other species mentioned.

Reference

Turner, R.D., 1966 A survey and illustrated catalogue of the Teredinidae.
Museum of Comparative Zoology, Cambridge, Massachusetts.

Shelagh M. Smith, Dept. of Natural History,
Royal Scottish Museum, Chambers Street, Edinburgh, EH1 1JF

.....
A CONTRIBUTION TO THE MARINE CENSUS - LITTORINA MARIAE SACCHI & RASTELLI

Recently I had occasion to list Merseyside County Museums' holdings of Littorina littoralis (L.) and L. mariae Sacchi & Rastelli 1966, and the records may be useful to the recorders for various Sea Areas. The specimens were all determined by T. Reimchen who worked through our material in 1972.

I had previously separated Icelandic material into two groups - forms, varieties or spp. ? - (coll. NFMCM. in 1962) and was therefore naturally pleased when Reimchen agreed with my grouping, naming the specimens L. littoralis and L. mariae.

Here are the records of L. mariae:

Shellness, Sandwich (Salisbury Coll.).
Hillswick, Shetland "
Scarborough, Yorks. "
Goodrington, Sussex "
Bognor, Sussex "
Shetland (Mason Coll.).
Weymouth "
Filey, Yorks. "
Folkestone, Kent (Mason Coll.).
Holyhead, Anglesey (Kitchen Coll.).
Egilsay, Orkney, Sept. 1963. coll. NFMCM.
Tenby, Pembrokeshire (Mason Coll.).
Jersey (Kitchen Coll.).
Giltar Point, Pembroke, June 1939 (J. W. Jackson Coll.).
Nr. Stromness, Orkney (Mason Coll.).
Barricane Beach, nr. Woolacombe, Devon, May 1938 (Jackson Coll.).
Lyne Regis, Dorset (Lancaster Coll.).
Falmouth & Portscatho, Cornwall.
Pwlheli, Caernarfon.
Birsay, Orkney.
Reykjavick, Iceland, July 1962 (coll. NFMCM.).

Plus 2 lots from Oban.

Unfortunately most of the material listed above is not dated.

Nora F. McMillan
Merseyside County Museums, Wm. Brown Street, Liverpool

ANOTHER MIRACLE OF NATURE APPERTAINING TO THE MOLLUSCA

There was a snail who for his spouse
Fancied a certain dainty mouse,
So one night when the stars were cold
And loneliness had made him bold,
He asked her if she'd have him. "Well,
If there is room inside your shell
I might consider it", she said,
"But tell me, where is fancy bred?"

He shuffled off across the floor
And brought her breadcrumbs by the score,
Malt, Hovis, sliced: she shook her head,
Until he found some gingerbread -
She smiled at him, and with great glee
He took Miss Mouse upon his knee.....

Their grand-daughter comes to our house,
She's clearly part-snail, partly mouse:
Her favourite diet, if you please,
Is lettuce, gingerbread and cheese.

Anne Shaw

CYPRAEA PROBLEMATICA HEILPRIN - CALOOSAHATCHEE RIVER, FLORIDA, U.S.A.

"There is no record of the occurrence of Cypraea problematica in any other formation, and no descendant is recognised in the Recent fauna. According to Dall (1890) it is the only member of the family in which the terminal commissure is bent to the left of the apex." Florida Geological Survey, Bulletin 40.

While staying with Jean and Crawford Cate in their enchanting bungalow by one of the canals on Sanibel, where we used to watch the fishes leap, in 1970, I counted myself very fortunate to be taken to the La Belle fossil beds by the Caloosahatchee River.

I have six Cypraea problematica graded from seven centimetres to four centimetres, and one other with the enamel still preserved on both sides. Among other fossil shells I brought back from the Caloosahatchee marl were:

Vasum horridum Heilprin which is "one of the most characteristic and elegant fossils of the marl. The species is characterised by its biconical form, spiral cords, and numerous fluted spines. According to Dall (1890), no related species occurs in the Recent fauna."

Chama heilprini Nicol which is confined to that formation, is a "large, circular, heavy shell, and possesses two or more whorls, the left valve being larger and more convex than the right. The surface is covered with low, irregular lamellations. There is prominent posterior sulcation. The interior margin is noncrenulate. The adductor scars are large, almost equal."

Busycon rapum (Heilprin)

Anadara rustica (Tuomey and Holmes)

Cymatosyrinx lunata (Lea)
Cancellaria conradiana Dall
Rhinoclavis caloosaensis (Dall)
Marginella apicina Menke
Murex recurvirostris rubidus F.C. Baker
Bulla occidentalis A. Adams
Scaphella floridana (Heilprin)
Turritella subannulata Heilprin
Transennella conradiana (Dall)
Conus adversarius tyroni Heilprin. Probably restricted to Caloosahatchee marl.
Oliva sayana Ravenel

We wandered about over mud banks and "dunes", making our finds from the surface. Dredging and excavating was in progress.

I understand this area at La Belle is closed to the public now because it is dangerous, which I can well believe, but it was very exciting and stimulating. Those who might be interested should buy the Florida Geological Survey, Bulletin 40, from The Director, State Board of Conservation, Tallahassee, Florida, U.S.A. It provides a good idea of the area, maps of the river, illustrations of the fossil shells, and descriptions of them, and a history of the palaeontologists who worked there.

Betty M. Smith

GENERAL NOTES

CHRISTMAS 1981

The Newsletter Editor sends Christmas greetings and Good Wishes for the New Year to every reader.

1982 - THE NEWSLETTER - A REMINDER AND A REQUEST

Copy for the March issue should reach me before	6th. January
" " " June " " " "	6th. April
" " " September " " " "	6th. July
" " " December " " " "	6th. October

Please send me some more contributions, long, short or just medium. All kinds are welcome to maintain my stock of material which I need when planning and preparing issues for 6 or 9 months ahead. Do not be disappointed if your 'offering' does not appear for perhaps 12 months, unless it is an urgent item! As explained before, I do not send acknowledgments in order to keep down expenditure. If a specific query has to be answered, a stamped, addressed envelope would be appreciated by the Society.

P. E. Negus

ANNUAL SUBSCRIPTIONS, 1982

Dear Members,

Please do not forget that the subscription rates for 1982 are those given below.

Annual Subscriptions are due on 1st. January. Ordinary, Family and Institutional Members may deduct the sum of £1 if the subscription is paid in full before 31st. March.

Cheques and P.O.'s should be made payable to the Society and sent to me.

I shall be very grateful if you will send the correct amount promptly as it is now very expensive to send reminders. Perhaps you will consider paying by Covenant,

if you do not already do this, as the Society will be glad of this additional revenue.

Marjorie Fogan (Hon. Treasurer)

[REDACTED], Atherton, Manchester, [REDACTED]

N.B. Only Members whose current subscriptions are paid are entitled to vote at the A.G.M. and in the postal ballot for the election of Officers and Committee.

Ordinary Member	£10	(U.S. \$25.00)
Family Members	£12	(U.S. \$30.00)
Institutional Member	£15	(U.S. \$37.50)
Junior Member	£ 2	(U.S. \$ 5.00)
Entrance Fee	£ 1	(U.S. \$ 2.50)

MULTITUDINOUS POND-SNAILS

A problem to which I have never found the answer, which has always nagged at my mind wondering what happened in the end, is that years ago when staying with relations in Winchester, I went to Ladle Hill. On the top was a fair-sized dew-pond, which was drying up, though it still contained about 18 inches depth of water. The pond was completely full of water snails: I did not then know which species they were, but they were about $\frac{3}{4}$ inch as far as I can remember (probably Lymnaea peregra). They were packed solid up to the top, so much so that one could hear the shells moving over each other, as the top layer was partly above water. I have never seen anything like it before or since. I would dearly like to know what happened in the end, or how such thousands of snails could possibly have survived for so long, as there did not seem to be a vestige of any weed or algae - though if there had been one could not have seen it for snails. I was not able to go back, but how did they survive to build up such numbers? I felt down to the bottom of the pond, and there seemed to be solid snails. They were all alive and just hopelessly crawling over one another. (Miss) Margaret Jaques, [REDACTED], Braunton, Devon.

VERONICELLID SLUG INTRODUCED INTO BRITAIN

In Journ. Conch. 26: 212 (1967) a very brief report was published concerning a record of Veronicella from Durham. Further details are given here. A specimen was found at Framwellgate Moor, Co. Durham by J. Richardson, entomological assistant in the Zoology Dept. of Durham University, not far from a greengrocer's shop, and kept alive for about six weeks on lettuce. Dr. L. Forcart of Basel has kindly identified it as Veronicella sloanii (Cuvier) a Jamaican species. This species is known to have been introduced into Nantucket with bananas in 1896 and a related species was introduced into Basel in 1926 also with bananas. There seems little doubt that this present specimen arrived here by the same means. The species could not breed here since they only occur in the tropics. Cuvier's Onchidium sloanii was based on Limax nudus cinereus terrestris of Sloane's famous work on the natural history of Jamaica (2: 190 pl. CCXXXIII/2, 3 (1725)). B. Verdcourt

FOR SALE. We are suppliers of tropical sea shells, land snails, coral and sea curios to collectors, schools and colleges. S.A.E. for lists. Nature of the World, 19 Bell Lane, Fetcham, Leatherhead, Surrey.

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE, c/o. British Museum (N.H.), Cromwell Road, London, SW7 5BD. ITZN 59 - 5 August 1981. The following Opinions have been published recently by the International Commission on Zoological Nomenclature in the Bulletin of Zoological Nomenclature, Vol. 38, pt. 3, 30 July 1981. Opinion No. 1182 (p.174) TETHYIDAE in Mollusca, Porifera and Tunicata: removal of the homonymy.

1185 (p.185) Simrothiella Pilsbry, 1898 (Mollusca, Solenogastres): designation of a type species.

The Commission regrets that it cannot supply separates of Opinions or Directions.

R. V. Melville, Secretary

Duplicated by: SPEEDWELL PRESS, Trap Road, Guilden Morden, Royston, Herts.

STOP PRESS

FOR SALE. Books on CONCHOLOGY and all other branches of Natural History always for sale. Lists issued at intervals. Please write if you wish to be placed on my mailing list. I also buy books and periodicals on Mollusca. F.E.B. Johnson, [REDACTED], Thornham, Hunstanton, Norfolk, [REDACTED] Tel. [REDACTED].

FOR SALE. A set of one reprint each of A.E. Boycott's classic papers "The Habitats of Land Mollusca in Britain" and "The Habitats of Fresh-water Mollusca in Britain" - kindly donated by his son Mr. W. Boycott for the benefit of the Conchological Society. Two similar sets recently fetched £16 each. Best offer secures. Apply: D.C. Long, [REDACTED], Leckhampton, Cheltenham, Gloucestershire, [REDACTED]

FOR SALE. Mrs. Doris Shord, [REDACTED], Trowbridge, Wiltshire, [REDACTED], invites offers for a collection of approx. 7000 tropical marine shells collected during world-wide travels. This collection was exhibited at the Tropical Bird Gardens, Rode, nr. Bath, for several years. Please write with enquiries and offers.

EXCHANGE WANTED. Mike Christie, [REDACTED], Brockworth, Gloucester, would like to obtain specimens of any of the following British Terrestrial Molluscs: Truncatellina cylindrica, Vitrea subrimata, Helicodiscus singleyanus, Cochlicella barbara, Vertigo pusilla, V. moulinsiana, V. lilljeborgi, V. geyeri, V. alpestris. He has most of the British species for exchange, including: Catinella arenaria, Truncatellina callicratis, Ena montana, Helicodonta obvoluta, Theba pisana, Hygromia limbata, H. cinctella, Cernuella elegans, Phenacolimax major, or would exchange for British Marine if preferred. Please write if interested, or telephone [REDACTED].

OFFERS are invited for exchanges for the following species: Gemmula congenor cosmoi (Sykes), Latiaxis dunkeri (Kuroda & Habe) (some trawl damage to shoulder ornament), Columbarium eastwoodae (Kilburn), Phalium craticulatum (Euthyme), Fusivoluta clarkei (Rehiler). Several specimens of each available, all trawled, but operculum missing on most. Offers to: Mr. D.J. Howlett, [REDACTED] [REDACTED] Norwich, Norfolk, [REDACTED] All enquiries answered.

CONCHOLOGICAL SOCIETY - MALACOLOGICAL SOCIETY - JOINT CONVERSAZIONE

Saturday 20 February 1982 - 2.30 p.m.

British Museum (Natural History), East Wing Demonstration Room. An exhibition meeting is proposed! We are inviting exhibits and posters to be displayed within the general theme 'The Mollusca - The Animals and Their Shells'.

Please tear off the section below and return it to either Mr. P. E. Negus, or Mrs. S. Morris, Mollusca Section, Dept. of Zoology, British Museum (Natural History), Cromwell Road, London, SW7 5BD

Name:

Address:

Exhibit/Poster: Please give title and description, with approximate space requirements:

THE CONCHOLOGISTS' NEWSLETTER

No. 80

ISSN 0573-2336

Newsletter Editor: P. E. Negus,

Chelsea Bridge Road,
London,

March 1982 Copyright

Produced by THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

GASTRONOMY - SNAILS

Spring through to Autumn is the time for snails, those non-marine molluscs considered edible since that moment when one of our remote ancestors, thousands and thousands of years ago, discovered that the insides of these shelly casings housed little animals, and, stimulated surely by a dreadful hunger, overcame his natural repugnance and, for the first time, ventured to sample a snail, in spite of its unpleasant aspect.

Anyhow, the presence of the snail in ancient kitchens has been proved, and in ancient Rome it enjoyed great gastronomic prestige, the Romans effectively being the first snail-farmers. About one of them, at least, we have concrete evidence - one Fulvius Hirpinus had a special plot of land in Pompeii, shady and humid, and fenced in by an embankment of ashes to stop the snails wandering off. In enclosures such as this one - "snail farms" - the gastropods were specially fed, to fatten them up and give their meat that special flavour, on a mixture of selected vegetables and boiled bran, to which they usually added a little wine and some laurel leaves. It appears these farm-raised snails, so generously fed and given very little opportunity for exercise, fattened up well and were a popular buy in the markets. That isn't to say, however, that these snails were of the best quality - certain connoisseurs still preferred the 'free-range' variety, which according to the "Larousse Ménagier Illustré" were "meatier, with a more incisive flavour". In any case, snails continued to interest the more enlightened authors of classic gastronomy, Greek as well as Roman. Ateneus of Neucratis soon cooked up a series of very piquant sauces to use as seasoning; and Opianus, the Roman, has left us his intellectual considerations on the alimentary values of snails, plus a selection of recipes for their cooking.

One way or another, throughout history, snails have merited greater consideration by pharmacists than by chemists - certain syrups based on the animal's fleshy internal parts, for example, have been suggested as efficacious remedies for pulmonary infections, chronic catarrh, anaemias, and other complaints. Their gastronomic prestige is relatively recent, though.

Historians generally agree on Italy as where this mollusc was first cooked. From there this culinary custom passed to Provence - Provence snails are still today an accredited plate with many enthusiastic supporters - and later, in more modern times, all over France and to those countries with a French gastronomic influence, where they continue to be consumed in large quantities. According to the Catalan writer, Josep Pla, in his book "El que hem menjat" ("What we have Eaten"), in Paris restaurants alone, 150 million (sic) snails are served each year. But in Spain above all, snails have never ceased being 'good simple fare to eat with bread', and even as recently as a few decades ago, were considered as just a humble, inexpensive tidbit, and when served as a "tapa" (aperitive) in restaurants were hardly ever included in the bill. Covarubbias, however, wrote this following, well-rounded, 17th.-century condemnation of the snail: "Its meat is hard to digest - a base and coarse food for delicate stomachs". But nowadays, like almost everything, snails have become an expensive dish, even when their seasoning - as in the

case of the recipe "Caracoles a la Madrileña" ("Snails Madrid-style"), for example - comprises only oil, onion, a little flour, garlic, and pepper.

Innumerable species of snails exist, but we'll only mention here those of greater gastronomic prestige:

Our list is dominated by the vineyard snail, also called Burgundy, whose scientific denomination is *Helix pomatia*, one of the most widespread European species, and which has also been assimilated by North America. These particular gastropods inhabit wide areas - mainly dry regions covered by grass or brush, but especially vineyards, as the animals have a sweet tooth for the tender shoots of the vines. They are the largest-sized snails of our continent, are found also in the Champagne region of France, in Switzerland, Austria, and in Germany. Here we have to point out that a large percentage of so-called vineyard snails consumed in restaurants, including French, originate elsewhere and are actually quite different species: they are presented in the guise of Burgundy snails, and are certainly cooked in the Burgundy fashion, and also "A la Chablissienne", using the wine as seasoning.

Some of the most frequently eaten snails in Spain include the following: "Viudes" ("Widows"), which have a long tradition in Mallorca, being greatly esteemed there, and which live in the dryland areas; the "Bovers" (?) which live and breed on irrigated areas of land. Special prestige is enjoyed by the orchard-dwelling species from the north-eastern and the southern regions of Spain, which although of no great size possess a delicate meat, rich in fats and gelatine. Equally, the "Chupaderos" ("Suckers"), from the orchards of Murcia, with their rich red chestnut colour (similar to the French *Helix pomatia*, although the meat is finer), or the "Judios" ("Jewish") snails, which have a darker-coloured body and are eaten in Andalucia; the "Zopenco" ("Dullard"), of a greenish hue, with a lesser gastronomic consideration, and the "Serrano" ("Highland") snail, very highly esteemed for cooking purposes, which are known in Catalonia by the name of "Vinyal" ("Vineyard"). Final mentions go to the snails of the Levante (north-east) and Catalan regions, which are known as "Monjes" ("Monks"), usually adorning the typical Valencian "paella"; and the "Cabrillas" ("Whitecaps") from Castille province, which have good culinary fame.

"La Vanguardia" Week-end Colour Supplement, June 1981. Luis Bettonica
(This article, which is reprinted by permission of the author, was translated by Mrs. G. M. Baillie, our member in Barcelona)

FURTHER BIOGRAPHICAL NOTES ON A. E. CRAVEN

Mainly as a result of some hours of work in Brussels during February 1980 on a file unearthed by Dr. Jackie van Goethem of the Institut Royal des Sciences Naturelles de Belgique, I am able to give a good deal more information about A. E. Craven to supplement my original article (*antea*, 1979 69: 151 and 70: 165-167); but I still do not know when or where he was born nor the names of his parents!

By enquiries at the Registrar of Births and Deaths at Bohemia Road, Hastings, I obtained a copy of the death entry. This gives sparse information to the effect that Alfred Eugene Craven died at [REDACTED] on 6th. January 1937, aged 87 years, of independent means, from haemorrhage, carcinoma of lung and epithelioma of the lip, certified by John Walker LRCP and that his son Charles A. Craven of [REDACTED], Streatham, [REDACTED] (off the Streatham High Road) was in attendance.

As a long shot I thought perhaps some descendents of the son might still be in London, 43 years later. I therefore circularised every Craven listed in the London telephone directory but despite a surprisingly full response no-one claiming A. E. Craven as a forebear answered. It became clear that formerly two main branches of the family existed, one in Ireland and the other in Yorkshire and that basically the name is a Yorkshire one. So at least we know that Craven had a son.

The British Library, Newspaper Library at Colindale searched the Hastings and

St. Leonards Observer around about the date of Craven's death but no notices of it could be found.

Just before I went over to Brussels Dr. Peter Lingwood sent me a short note on Craven he had prepared for the Newsletter but my findings modified this and he agreed to its incorporation here. It is clear that A. E. Craven intended to describe the Pteropoda and Heteropoda collected during the historic oceanographic voyage of H.M.S. "Challenger" between 1872 and 1876. Sir Wyville Thomson (1830-1882), the Director of the Civilian Scientific Staff and one of the original motivators of the expedition, was charged with the task of publishing the discoveries of the voyage. Many of the authors selected were world authorities in their fields and obvious choices for such work. Craven presumably was numbered among these since he was known to have a special interest in Pteropods and to have a good collection of them made during his years at sea; moreover he had already briefly published on them. It seems certain that A. C. L. Gunther (1830-1914), Keeper of Zoology at the British Museum, recommended Craven; the letters from Craven to Gunther referred to in my original account (page 151-152) would indicate this. It is difficult to establish when Craven agreed to describe the Challenger material but he is listed as an author in 1882 (Challenger Report 1885 1 pt. 2 Appendix 7). In September 1881 Craven informed Gunther that his attacks of dysentery were delaying work on the Pteropoda - in fact it seems probable he did very little if anything with them and eventually the work was given to Paul Pelseneer (1863-1945) in 1883. Craven may have had some influence in his selection, both having been members of the Societe Malacologique de Belgique and both having worked at the Institut Royal des Sciences Naturelles de Belgique although Pelseneer would have been a very young man at the time. The Pteropoda reports were finished in 1888 (Challenger Reports 1887 Zoology 19 pt. 56, 1888 Zoology 23 pt. 65 & 66) and Pelseneer went on to describe the "Anatomy of the Deep Sea Mollusca" (Challenger Report 1888 Zoology 28 pt. 74) and the "Genus Spirula" (Challenger Report 1895 Summary 2 pt. 83) with T. H. Huxley (1825-1895). Craven did nothing with the Heteropods either, presumably due to deteriorating health; these were transferred in 1887 to A. E. Smith (1847-1916), then an Assistant in the Zoological Department but later to become Keeper in 1895.

Through the kindness of Janson I have been able to obtain a reproduction of the original catalogue of Sale No. 8370-71 at Mr. J. C. Stevens' rooms held on 28th and 29th April 1891*. The title page runs as follows: "A catalogue/of the/Collection of Shells/formed by A. E. Craven, Esq.,/including the rare Bulimus labeo and other scarce species./Together with the Cabinets;/also a small collection of/ ----!" The rest of the title seems to refer to other properties. The first 111 lots were all from Craven's collection and include the following items chosen out of interest. The note preceding the enumeration of the lots states "All the shells in Lots 1 to 40 and Lots 49 to 111 are neatly mounted on black cardboard and enclosed in rectangular glass-topped boxes. All the species are named. Lot 3 Ennea planti, gouldi, crassidens, pfeifferi, dupuyana, ovoidea, obesa and wahlbergi, presumably collected by himself during his South African expedition. Lot 12 Bulimus labeo (a fine specimen). Lot 34 Otopoma balfouri, complanatum, clathratulum, Tudora marginalbum, quaternatum, Choanopoma fimbriatulum and others. Lot 35 Cyclophorus nilaghericus, indicus, denselineatus, wahlbergi, strigatus, Leptopoma decipiens, Lithidion marmorosum and other species. Lot 70 Scalaria pretiosa 2, australis, clathrus, consors and other species of Scalaria. Lot 48 Argonauta tuberculata 2, Spirula in spirit and other shells. Lot 57 Fusus longicauda, Murex acanthopterus, Euthria lignaria and others. Lot 59 Harpa imperialis, rosea and nobilis. Lot 62 Marginella mosiaca, piperata, adansoni, conoidalis, formiculata, Erato nana and other species. All together the collection numbered at least 2000 species and probably more in the order of 4-5000.

Presumably he could not have collected all these himself during his travels but I suspect quite a proportion were; not all his collection was disposed of at this sale. He gave most of his types to the British Museum and some specimens to other Museums. The British Museum at least obtained some specimens via buyers at the sale.

*This copy has been deposited in the British Museum (Natural History) Mollusca Library, together with other notes, etc..

Unfortunately the Janson catalogue is practically unpriced, only a very few lots having the price pencilled in. Lot 40 Venus lamellata and many species of Venus, Tapes, Sphaerium, etc. contents of drawer fetched 10/-. Lot 74 - 270 well-made rectangular glass-topped boxes of various sizes 17/- (i.e. 3 farthings each - 0.3 new pence). Lot 75 - three trays containing 170 ditto 9/-. Lot 76, 248 ditto, contents of 2 drawers 20/-. Lot 77 - quantity of cork in sheets 7/-. Lot 78 - four entomological store boxes 5/-. Lot 79 - mahogany cabinet 5 feet 4 inches high, 4 feet 2 inches wide and 22 inches back to front, 32 drawers 2 $\frac{3}{4}$ inches deep inside in 2 tiers £5.10. Od. (A cabinet maker friend tells me this would cost at least £1600 today). Lot 80 - oak and deal cabinet 5 feet high, 3 feet 3 inches wide, 26 inches back to front, 24 drawers 16 $\frac{1}{2}$ inches by 22 $\frac{1}{2}$ inches, 3 $\frac{1}{4}$ inches deep inside, £2.15. Od. Lot 81 - companion to above £2.12. 6d. Lot 82 - Turbo elegans, cidaris, coronatus, Trochus radiatus, erythroeus, depictus, and many other species of Trochus, Turbo, Neritina, etc. 8/-. Lot 83 - Patella compressa, umbella, Chiton gigas, garnotii, capensis, squamosus, virgulatus, and others, about 38 species 6/- (i.e. less than 2d. each!).

The file at Brussels covers the period December 1891 to 2 October 1895 and contains a large amount of very detailed information concerning Craven's work there and about a dozen letters written in his very neat and legible hand. It is clearly impossible to give this material at length and it would in any case be extremely boring. Craven seems to have gone over to Belgium soon after dropping out from or being struck off the lists of the Linnean and Zoological Societies. It seems certain this was due to financial distress and not because he was leaving England. It is clear that he must have spent some months of 1891 in Brussels since in the files part of the lists of work performed by Craven is headed Relevé des coquilles vivantes révisées au 31 Décembre 1891 i.e. before he was officially employed. The molluscs revised total 138 species and 140 additional varieties in 50 genera contained in 50 "plateaux". These were all marine molluscs including Terebra, Conus (104 species), Cancellari, Oliva, Harpa, Marginella, Voluta, Lyria, Mitra, Fusus, Latirus, Buccinum, and such things. It must have taken him two to three months at the least.

The first letter in the file is a letter from Craven to the Director from 20 Rue de Paris, Bruxelles, dated 4 January 1892. It also bears a note from the Director to "M. le Conservateur Rulot" asking him to examine the proposition. There had obviously been some preliminary negotiations with a M. van den Broeck acting as an intermediary. Craven was offered '15 fr. for each revised plateau' and was expected to complete 15 a month resulting in an 'indemnité mensuelle' of 225 fr. He accepted this offer and promised to revise an average of 15 a month and not to accept any other employment until the job was finished. He also proposed giving his collection of Pteropods to the museum "résultant de plusieurs années de draguages en haute mer ayant fourni des spécimens d'une fraîcheur exceptionnelle". Rulot made his lengthy report on 10 January. After some comments on the state of the fossil mollusc collections, he goes on to state that the living mollusc collections are in much need of revision, despite the fact that a M. Nyst had put them in order 20 years previously. Numerous changes in nomenclature and additional material obtained by gift, purchase and exchange, made him consider the time was ripe for a further revision and he supported the proposed engagement of M. Craven quite enthusiastically. The presence of Craven in Brussels for a certain time presented the Museum with "une occasion exceptionnelle". Craven "ex-officier de la Marine anglaise" was described as having made a reputation by his publications on diverse groups of molluscs and employment at the British Museum to determine certain parts of their collection. The Director had presumably asked for some idea of the cost of the revision and the answer was 1200-1500 fr. Rulot makes a plea not to let opportunity pass. It seems likely Rulot was quite friendly with Craven and laid it on a bit in his reports. It is clear Craven got the job but no letter is present in the files. In February 1892 Craven sold 390 Pteropods to the Museum for 1500 fr. despite the statement "je fais don au Musée" in his original letter. It seems someone was being generous since 1500 fr. at that time would have been worth £60, each specimen (or lot?) working out at about 3s.

A letter dated 20 April 1892 with no address and presumably written from the Museum is very interesting. He asks for permission for four days leave to go to

Dover to collect his wife and children. It is the first intimation he had a family. He pointed out that he was well in advance of Dujardin and Leduc "aide-préparateurs" who were helping him and that he had worked over the Easter Holiday. He points out that with the exception of Friday he would come to the Museum every morning to make sure that all the specimens were orientated properly before being stuck down. He needed the 4 days to install his family. It is clear he was a conscientious worker. There is a long report to the Minister in charge of the Museum dated 9 May 1892 from the Director pointing out that the established staff of a Museum were not always adequate for the work which needed doing and that they could not have specialist knowledge in all fields; it mentions that specialists had been used in entomology who gave their service free but others had worked on fossil whales and Carboniferous fossils and received remuneration; also that other Museums, notably the British Museum used external specialists on "une grande échelle" (!); it pointed out that the collection of living molluscs comprised 10000 species of which 8000 had been well determined by the late H. Nyst, Conservateur au Musée, but now needed some revision because "le science a marché"! The Director then mentions Craven, a distinguished specialist and explains the work he is doing "qui naturellement ne peut être gratuit" but asks the Minister's "approbation d'une indemnité mensuelle de 9 livres sterling/225 fr." and estimates the task will take a year. Other help with Cretaceous fossils involved help from a palaeontologist from Maastricht and 250 fr., presumably his train fares to Brussels. It seems incredible that the expenditure of such small sums needed approbation from a Minister but this was how Europe ran efficiently in Victorian days. Government departments had not yet obtained a reputation for crass waste! The sum would now hardly pay for an hour's private telephone calls on the part of staff in most modern scientific Government departments. This report is useful in giving a sterling equivalent since I had found difficulty in obtaining one for that date; at that time £2.25 a week was fair money for an ordinary worker but living in Brussels with a family would have been difficult without other funds.

Work seems to have proceeded well during 1892 according to the quite detailed lists which were kept; 16 plateaux were dealt with in January containing 202 species and 64 varieties which included such difficult lots as 59 Nassa, 51 Columbella and 53 Murex. During February he dealt with 11 plateaux, 87 species and 18 varieties including 33 species of Purpura and the figures for March were 17 plateaux, 117 species (including 52 Triton and 26 Cassisi) and 15 varieties. Clearly during these three months he had kept closely to the schedules he had originally suggested. Monthly figures are not available beyond March but are given for longer periods of time.

A brief note written to the Director on 16 September 1892 from 82 Rue de l'Hermitage tells that he has received news that his father is dying and that he is forced to return to England immediately. He promises to return quickly.

On 22 September 1892 M. Béclard the Museum Secretary, and also I think a friend of Craven, sent a note to the Director pointing out that up to 15 September Craven had revised 148 plateaux giving him the right on the terms laid down to 2220 fr. whereas he had received only 1500 fr. Would the Director please do the necessary to pay the 720 fr. owing. I do not understand the accounts and I came to the conclusion after wrestling with the file that no-one else did either. They are a jumbled nightmare, mostly due to the peculiar basis on which they were decided. Either he was to receive 225 fr. a month or 225 fr. per 15 plateaux but to have a mixture of the two methods led to great confusion. On my reckoning in 8½ months Craven should have got 1912.5 fr. but Béclard was reckoning on him being paid per plateau which was obviously fairer. A note from the Ministry dated 17 October 1892 stated that before making a new payment to M. Craven he must know about the state of his work. Unfortunately the writing was difficult and I could not understand some of the note but it suggests Craven was in arrears by 36 plateaux and the Director did not understand the accounts.

In a very well written letter from the Museum dated 16 November 1892, addressed to the Director, Craven explained (in response to an enquiry from the Director passed on by Béclard concerning the number of plateaux revised) that the time taken to revise one plateau varied by considerable limits according to the taxonomic

difficulty of the groups concerned and according to the number and size of the shells - the number per plateau could vary from 10-700! Very small shells each had to be examined under a lens. Moreover, he was carrying out additional work supplementary to the terms of the agreement in dealing with enormous numbers of duplicates which he reckoned amounted to the equivalent of 73 plateaux. He goes on to complain that the two preparators aiding him were frequently called away to other jobs and he had to do some of their tasks, such as washing specimens, himself. He promises that despite all the unfavourable circumstances surrounding the work he will at its conclusion be "absolument en règle avec le terme de mon engagement". He then details his work up to that date. Plateaux finished before my engagement 35; since engagement and already exposed in the galleries 115; awaiting labelling and glueing 14 - Total 164. He should have finished 165 since his engagement or 200 including those done before then, so he was actually 36 behind. Work seems then to have gone on smoothly and he accomplished a great deal between 1 April 1892 and 22 April 1893. A detailed "relevé des coquilles vivantes revisées" exists for this period. It shows that he revised 1673 species and 144 varieties contained in 120 plateaux; it includes 105 species of Cypraea, 35 Strombus, 45 Cerithium, 24 Turritella, 57 Melania, 34 Pleurocera, 34 Goniobasis, 57 Rissoia, 49 Ampullaria, 61 Natica, 30 Nerita, 37 Fissurella, 56 Neritina, 41 Patella, 42 Chiton, 34 Choanopoma, 73 Omphalotropis, 127 Helicina, 92 Ariophanta and smaller numbers of species of 182 other genera. To me this seems an incredible year's work and he must have dealt with 6 species per day. A pencilled note at the end of the list totals the work done 1891 50 plateaux, Jan. 1892 16, Febr. 1892 11, Mar. 1892 17, then 120 up to Apr. 1893, altogether 214. It also mentions that revised duplicates totalled 91 plateaux.

The first dated document for 1893 is one from the Minister de l'interieur et de l'instruction publique to the Director dated 29 March 1893 stating that an account for 225 fr. due to Craven was not accompanied by a note of "approbation from the Director". It seems incredible now that two such high officials could correspond over £9.

A letter from Craven dated 5th May 1893 is on black-edged paper indicating that his father died between mid-September 1892 and the beginning of May 1893. I thought it might be possible to trace his father from the register of deaths for this period. He would have had to be over 60 and probably a good deal older. Even with this proviso there were 16 male Cravens over 60 who died during the period; all but one of them died in Northern England - a Charles aged 74 died in Brighton but I have not followed any of them up. The letter is headed Hotel des Ardennes, Diekirch (Luxembourg) and begs the Director to excuse his brusque departure and allow him his month of absence as agreed in their last conversation. He states that Dujardin was also absent so that his duties would not be inconvenienced by his leave. He states that he needs a change of air without which he will be unable to finish but hopes to return on the 1st of June restored for work. Another black-edged letter dated 5 September to M. Béclard from 82 rue de l'Ermitage states that he is still suffering and is going to London this evening to consult Sir Joseph Fayrer (1824-1907) who had cared for him when he returned from Central Africa. He would hasten back to his work as soon as he was capable of travelling. A note at the bottom of the letter notes that he returned to the museum on the 11th September 1893. A copy of a letter from Craven to the Director dated 13 September 1893, written from the museum, explains that he would not be able to finish the revision of the molluscs within the time fixed, because he did not know of the existence of a large number of species in the museum store not represented in the collections which had been thought to be duplicates and, also, because the museum had obtained a large number of shells after the installation in the galleries of the collection studied by M. Nyst. These facts and numerous other difficulties obliged him to ask for an extension of time until September 1894 and promises that if he has not finished by then any other necessary work would be completed on a voluntary basis, not only to complete the revision of the general collection and duplicates, but also the local collection of Belgian species. A report to the Minister dated 20th September 1893 from the Director points out that although the work which had been authorised was due for completion by that date (according to the original estimate of time by the Conservateur) "Ces estimations de durée pour des travaux intellectuels de cet ordre sont extrêmement difficiles parce qu'ils n'ont pas une marche uniforme!"

He therefore asks for permission to employ Craven for an extra year and encloses Craven's original letter of 13 September with its guarantees. He recommends the acceptance of this extension and was clearly pleased with the way the collections were being put in order; he points out to the Minister that Craven's revision "est tres bien faite" and that the collections were now at a level with the vanguard of science for a limited expenditure and that similar work could not possibly be obtained for a better price. It seemed, therefore, that Craven was all set to work for his 225 fr. a month for another year but trouble of his own making was just ahead. A financial note dated 21 September 1893 details the money expended up to that date and is somewhat at variance with previous notes since it suggests Craven was engaged in December 1891. A new demand for credit of 2700 fr. is introduced to carry on until 31 August 1894, i.e. for 12 months at 225 fr. per month. The situation up to 22 April 1893 included 35 plateaux finished before his engagement, 15 finished up to 31 December 1891 and altogether 188 including 9 awaiting mounting. At 15 fr. each this amounted to 2820 fr. i.e. about £113. Craven had received 1350 fr. for the period 15 December 1891 to 15 June 1892, 675 fr. for 15 June 1892 to 15 December 1892 and 1350 fr. for 15 September 1892 to 15 March 1893 i.e. 3375 fr. (£135) - by their reckoning he had had 555 fr. too much, equivalent to the 37 plateaux he was behind on 22 April 1893. If, however, the 91 plateaux of duplicates was counted then he would be due 4185 fr. and a further 810 fr. was due to him.

On 19th October the Minister's secretary wrote to Director Dupont asking for the feelings of the conseil de surveillance (presumably equivalent to a board of museum trustees) concerning the revision of the molluscs. Attention is drawn to the facts that in September 1892 it was stated the work would terminate this year (i.e. 1893) and that the trustees had no knowledge of the desire to prolong the work for a further year with an additional expense of 2700 fr. The minister asks for a more detailed explanation and states that the next meeting of the trustees will take place probably at the museum, on the first Saturday of the next month; "il sera indispensable" if on that day one of the director's staff could attend and "mettre sous nos yeux" that work which Craven has finished and that which he has not finished. It seems from this pretty abrupt letter that the minister was not happy about the situation. It was Rulot who was given the job of attending the meeting and Director Sauveur, under cover of a note dated 30 October 1893, sent him a dossier on Craven containing six items and told him the Conseil de Surveillance was going to meet next Saturday morning at the Museum. The dossier contained Craven's letter of 4 January 1892, Rulot's report of 10 January 1892, Minister's report of 9 May 1892, Craven's letter of 13 September 1893, Minister's report of 20 September 1893 and letter from Conseil de Surveillance of 19 October 1893. The dossier was returned by Rulot on 19th December. Between 22 April and 31 December 1893 he dealt with 1514 species in less than 200 days, a total of 79 genera - including 550 species of Helix, 101 of Cochlostyla, 173 of Bulimulus, 127 of Clausilia and many other non-marine genera as well as marine bivalves. It is not clear what was involved in this revisional work but one assumes there was not much naming absolutely from scratch since he also dealt with an additional 40 trays of material. Anyone who has tried general naming will know that to name over ten a day from scratch would be difficult - some species can take over a day and involve much bibliographic work. Rather it would seem he was going through a collection already named to some extent, correcting things he knew to be wrong and revising the nomenclature, itself a task involving detailed up to date knowledge. I think there is no doubt that Craven had an excellent all-round knowledge of the Mollusca, probably approaching that of Smith himself, such as relatively few collectors have today.

From now on it was nearly all trouble. The file contains a document written in very difficult legal French with a stamp "Joseph Matheys, Huissier, 76 Rue de Ruysbroeck, Bruxelles"; it is dated "L'an 1880 treize le treize Décembre" which simply means 13 December 1893. A huissier translates as a bailiff or sheriff's officer or process server. The process was made at the request of a Madame Cornelié Engels a "hégociante épouse séparée" of the estate of M. Francois Dezuther with whom she was presumably living at Montagne de la Cour 9 Bruxelles. Craven owed her 500 fr. to which was to be added costs of 28.71 fr. The huissier had visited M. Béclard to enforce the repayment of this debt by deduction from the amounts due to Craven from the state. At the bottom of the document is a statement

signed by Craven relinquishing his rights to his money up to the amount owed. It also mentions it had been owed since the 1st Novembër last for supplies and merchandise. On the 18 December there were two communications from the Minister to the Director. The first was an authorisation to go on paying Craven 225 fr. a month up to September 1894 and accepting the undertaking from Craven, that, if the work was not finished by that date, then it would be completed without any supplementary remuneration. This letter bears a pencilled note "M. Craven a quitté en Juin 1894 sans terminer". The second, marked urgent, informs the director that the minister's department had received a writ dated 13 December assigning from his salary in favour of Mad. Engels a sum of 500 fr. excluding the costs. Next day the Director sent Craven a letter informing him of the contents of both the above communications from the Minister. He adds his own thoughts on the subject, more or less as follows - I must tell you that an act of this sort, even in the temporary position which you requested to accept amongst us, is likely to cast a slur on the Museum and its personnel. Craven replied to this on the 21 December saying that the assignment against his fees was made by him much against his wishes but he was acting under the menace of a court order; he added he was desolated to think he had caused a slur on the Museum's good name. There is a receipt for 28 fr. received by C. Engels from M. Béclard dated 22 December and another for 408.21 fr. dated 30 January 1894 which mentions a third sum of 120 fr. 13th December "Reçu mandat". The whole debt was therefore paid. At the bottom of this receipt is a note written in red "Approuvé les deux paiements fait pour un compte par M. Béclard d'ensemble fr. 528.75 a reçu pour solde ?? fr. 71.45" signed A. E. Craven. I do not understand this and it's not clear how the finances were arranged. Another note with the Museum stamp dated 29 January 1894 and signed by Craven confirmed that he was absent between 26th and 31st December and that his January fees should be reduced by 1/5 of 225 fr. i.e. 45 fr. Little wonder he dropped out of even his most treasured societies - he would just not have been able to pay his dues. Worse was to come when on 17 February 1894 a huissier again visited the Museum. A notice attached to a piece of paper is stamped, Ph. Matagne, Huissier, 59 rue du Conseil, Ixelles; L'Huissier a protesté un effet de fr. 1500 remis par Midas Petroff domicilié a Bruxelles Ixelles de 17 fevrier 1894. The attached piece of paper bears the abrupt statement in blue pencil 'La 3^e fois qu'un huissier se presente au Musée pour M. Craven'. Clearly he was in grave debt and owed six months wages. I do not know how he dealt with this catastrophe but on 18th May he wrote to the Director briefly asking for 10 days leave. Dujardin was again absent so his work would not be affected. He goes on to say that he is about to finish the revision of the bivalves and that only the Brachiopods, Pteropods and Nucleobranches (altogether 4 plateaux) remain before arriving at the Belgian collection. Presumably the 1500 fr. had been found in some way or repayment delayed. About 15 June 1894 he abruptly left his work and no further documents are available until 14 August 1894 when the Director wrote to Béclard asking if there was any news and pointing out that the local Belgian collection remained to be put in order and that it would be truly regrettable if the work was not brought to a good finish. On the 18th August the Director wrote to Craven himself asking him if he had any intention of continuing the work at the Museum but no more correspondence is recorded for that year. On 15 January 1895 Craven wrote to the Director wanting to start his work at the Museum again. The letter is quite a long one written from 70 Rue Albert, Ostende. He wishes very much to continue the work which was interrupted by disease and personal circumstances he had not expected. He asks the Director to accept his sincere apologies for the delay but promises to complete the work and that he would be desolated to think of it remaining unfinished through his fault. Now he is living in Ostend he would prefer to travel three days each week if convenient although he would be prepared to travel every day, but hopes it will not be necessary to make the long journey every day. He adds that he has been busying himself with the Belgian marine fauna and hopes to improve the Museum collection by personally dredged examples and believes the representation of Belgian molluscs at the museum will have lost nothing as a result of the delay he has been forced to make. He also informs the Director that he has experience of a conserving liquid for "Actinies et les Meduses" which has been very successful and much superior to alcohol. He expects to present his respects at the museum on the following Friday and start work on the Monday if permitted. What happened is not known but I presume he did not recommence working. A month later the following notice appeared in the evening 'Le National' for 15 February 1895 "Disparition mystérieuse. Depuis le

1^{er} courant on signale la mystérieuse disparition de M. Alfred Craven âgé de 46 ans, anatomiste, attaché au Musée d'histoire naturelles de Bruxelles. M. Craven habitait rue Albert à Ostende avec sa famille. On croit qu'il lui est arrivé un Malheur". What happened to him I do not know, but the next letter to the Museum was written on 4th July 1895 from 11 Newberry Terrace, Weymouth. He apologises for having to cease his work at the Museum which was due to circumstances entirely independent of his wishes and "par un cas de force majeure". He will always regret the unfinished task and will never forget the goodwill shown him by the Director and staff. He then asks if the following things which he left at the museum could be sent to him 1) Fischer's Manual and also that of Chenu together with "quelques brochures" 2) Manuscripts and notes in his handwriting 3) Collection of English Molluscs in glass boxes, each of which carried his name on the label 4) empty glass boxes. He also asks "je voudrais bien que mon compte soit réglé; c'est peu de chose mais même cette petite somme me serait fort utile". He goes on to suggest that the Museum should buy his collection of Nucleobranches and Heteropods which can be found on the plateau of this group at the Museum. Almost all the fragile species of Atlanta and Oxygyrus were represented by fresh material. He thought that 100 fr. would not be too dear; he then makes more excuses for his "départ involontaire". Not receiving any reply he wrote again on the 31st July this time "Mon cher ami" presumably to M. Béclard. He points out the fact that it is over three weeks since he had written to the Director and it had not been acknowledged. He hoped he had written nothing which had offended the Director. That which astonished him most was the lack of response concerning his books and collection of which he had great need. Also the long delay in settling his account; the sum involved although very small would save him from an embarrassment for he was "absolument à sec" - stony broke! He hopes Béclard would be able to help with these matters. On a spare page of this letter is a note by van den Broeck, much of which I was unable to read. It is dated Jeudi soir. It begins "Mon cher Monsieur Béclard, Je reçois avec étonnement cette lettre de notre malheureuse ami Craven". He supposes all the vote for Craven's work was long ago used up but in all humanity Béclard should tell the Director of the affair and have him send Craven a word of reply. Some illegible financial jottings also appear. In a note to the Director Béclard points out that Craven had been paid up to May 1894 inclusive but during 15 days in June had revised 9 plateaux i.e. was due 135 fr. A short note from Craven dated 10th September states he had signed the enclosed declarations and it would give him great pleasure if Béclard could hasten the liquidation of his accounts. There is no evidence in the file confirming any purchase of the collections Craven mentioned but the declarations mean that something was sent to him which required a receipt - perhaps merely his books and British collection. Two letters only remain in the file, exchanged between the Minister and the Director. One from the minister dated 30 September 1895 states following your letter of 12 September you have been authorised to remunerate up to the month of September 1894 and it was understood that if the work was not completed by then Craven would finish it without any additional remuneration. There is then something about 2700 fr. not being entirely used up but before authorising the liquidation of the account he was to know Craven's motifs for the delay in the completion of the work. The Director's letter to the Minister is dated 2 October 1895 so poor Craven obviously had to wait some months for the 135 fr. (£5.40). He explains that in June 1894 when the revision was "en bonne voie d'achèvement" Craven had abruptly left the Museum without giving any explanation. It is only recently that he has made known to me that it was due to circumstances totally outside his control - un cas de force majeure and finding himself in a very difficult position has asked for the settlement of his remuneration amounting to 135 fr. He points out that the work was well done. Presumably Craven got his 135 fr. but there is no proof of this. The files contain several other documents, all attempts to work out the money available for the work, the amount already paid to Craven, what should be subtracted for his various periods of leave and what was left. As might be expected Rulot's original estimate of 1200-1500 fr. was far exceeded, as is usual in such matters. If the true estimates were given many such tasks would never be started. My original notes made in Brussels are deposited in the British Museum (Natural History) Mollusca library; they contain as far as possible transcriptions of all the material in the file.

My thanks are due to Sheryl Ann Jones of the Department of Zoology, National Museum of Wales, Cardiff for unearthing a letter from Craven to E. A. Smith in the

Tomlin Correspondence. It is dated 12 May 1898 and its interest chiefly lies in that it shows Craven to have been working for 'The Goldfields of Matabeleland, Ltd., 15 and 16 George Street, Mansion House, E.C.' and that he was still interested in molluscs. Smith had sent Craven some "Zoo" tickets (presumably free ones given to Fellows of the Zoological Society) and obviously mentioned the acquisition by the Museum of a second species of Pleurotomaria. The short letter reads 'Many thanks for the Zoo tickets. The first day I can get away during business hours I will give you a look up as I should much like to see the second species of Pleurotomaria! He was clearly on friendly but not too intimate terms with Smith since the letter begins "Dear Mr. Smith" and finishes "Yours sincerely"; it seems possible he was still poorly off since one tends to give free tickets to those who can least afford to pay. The Pleurotomaria would have been Mikedotrochus beyrichii (Hilgendorf, 1877). A specimen in the British Museum (Natural History) bears the registration number 98.5.22.1 and must be it; it is the one found alive by a Japanese fisherman at the Okinosi Bank off Boshu and obtained for the Museum by Mr. Charles Lund when visiting Japan.

B. Verdcourt

AMMONITES IN ARCHITECTURE

Dr. Gideon Mantell (1790-1852) was one of the pioneers of geology, perhaps best remembered today for his discovery of the dinosaurs. His house in Lewes High Street (Castle Place, No.166) will be known to many visitors to that attractive town: its handsome Regency facade has pilasters whose capitals bear curious pseudo-ionic volutes in the form of pairs of ammonites (or rather of ammonite impressions) placed back-to-back. The generally accepted story, as given by Spokes (1927) and Curwen (1940, pl.2) is that Mantell himself designed the facade. The presence of similar capitals in houses in Brighton, where Mantell later moved, has given further circulation to this idea. The true story is rather different.

The 'ammonite order' was invented by the London architect George Dance (1741-1825) and first used in 1788 in the facade of his long-demolished 'Shakespeare Gallery' in Pall Mall (illustrated in Stroud, 1971, pl.53b). One may speculate that he came by the idea in the following way. The classical ionic volute was believed by some 18th century writers, such as the architect John Wood of Bath (1741), to have been derived from coiled rams' horns, like those traditionally assigned to the god Jupiter Ammon. On the other hand Dance's contemporary Giovanni Battista Piranesi had more recently argued at some length that mollusc shells ('periwinkles') may instead have been the inspiration (1769, p.20). The fact that the term ammonite (from cornu Ammonis, the horn of Ammon) had been used for the shells of fossil cephalopods may well have brought about the neat association of these two ideas in Dance's mind. Dance's ammonites are stylized, but significantly have strong 'capricorn' ribbing (caper, a he-goat, + cornu, horn) as found in, say, the Liassic ammonites Echioceras or Androgynoceras. A feeling for the primitive, which strongly affected many English and French architects of the period, must also have played a part: what could be more 'primitive' than an ammonite?

Dance's pupil Sir John Soane praised the invention highly in his Royal Academy lectures in 1810 and several English Jurassic ammonites may indeed still be seen among the classical fragments used as teaching material in Soane's house in Lincoln's Inn Fields (now the Soane Museum). Soane himself does not seem ever to have employed the motif, though it was used, about 1818, on a group of buildings in old Regent Street probably (though not certainly) designed by the great John Nash. These were demolished about 1920.

Castle Place, Lewes, is said to have been built soon after 1806 by Amon Wilds (c.1762-1833), a local architect and builder (Colvin, 1978). Contrary to statements by Pevsner (in Nairn and Pevsner, 1965, pp.64, 557), its present facade must however date from 1819 when, as Mantell's journal records, he acquired the house adjoining his own and converted the two into a single residence with a common front. The architect for these alterations is likely also to have been Wilds, to

whom a purchase payment of £600 is recorded in May 1819 (Spokes, 1927, p.5; Dale, 1947, p.25). Possibly Mantell suggested the ammonite idea, but its sophisticated professional execution must surely be ascribed to Amon Wilds, whose unusual christian name no doubt made particularly receptive to Dance's invention. It is quite clear that the details of the capitals were copied either from the Shakespeare Gallery, or from the new buildings in Regent Street.

Wilds's son and partner, Amon Henry Wilds (c.1790-c.1850) had an extensive practice as an architect in Brighton after 1820 (see Dale, 1947) and was responsible for a number of terraces there in which the ammonite order is used (e.g. Hanover Crescent, 1822; Oriental Place, 1825; Western Terrace, 1827; Montpelier Crescent, 1843). The motif also appears framing a plate in Pugin's Contrasts (1836), satirizing the decadence of current architectural practice. It seems to be very rare outside Brighton. It occurs in a house of about 1830 in Tunbridge Wells (Newman, 1969), and in a small terrace and an adjoining group of charming stucco cottages of about the same date in S.E. London, now derelict: Nos.864, 866, 880-884 Old Kent Road and Nos. 6-12 New Cross Road ('Carlton Cottages'); the last are illustrated in Cruickshank and Wyld, 1975, p.80. The architects of all these are unknown, though it is tempting to seek some connection with Brighton and A. H. Wilds.

I should like to hear of other examples of the ammonite order known to readers, or to receive further information about its connection with the Wildses, father or son.

Michael Kerney

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*These books contain illustrations of the ammonite order.

REVIEW

JOHN ORR, 1981. Hong Kong Nudibranchs. Published by the Urban Council of Hong Kong. 94 pages, with 54 colour photographs and many line drawings. Price 17 Hong Kong dollars (about £1.50), postage extra. Copies may be obtained by writing to The Librarian, Hong Kong Government Office, 6 Grafton Street, London, W1X 3LB. Delivery should be about a month.

John Orr's slim volume is well written and attractively produced. Though intended for the general reader, conchologists and zoologists will find it stimulating and profitable to read. The many fine colour photographs show that there is a general similarity between the nudibranchs of Hong Kong and those of the British

Isles, except that the former are more strikingly coloured. The descriptions reveal that the author is a perceptive observer and an experienced writer with a gift for selecting the right words.

The Introduction contains sections on classification, evolutionary trends, food and feeding, special strategies, anatomy, how to find nudibranchs and how to photograph them. All sections are clear and concise, those on classification and anatomy especially so. It was a splendid idea to slough off the burden of technical terms by a series of labelled drawings, a page for each of the four suborders, and by including sketches illustrating the various types of rhinophores, tentacles, gills, mantle, and egg masses.

The main part of the book consists of descriptions of 54 Hong Kong nudibranchs, one page for each species. Consider, for example, page 74. It begins with an excellent colour photograph of Armina japonica. The animal is depicted in a lively and characteristic attitude, with external features clear and distinct. It contrasts well with the natural background and is neither too large nor too small for the size of the photograph. The classification is plainly set out in suborder, family, genus, and species-name. The description reads well, with minute details beautifully described. Habitat, feeding, and distribution are briefly noted. The page ends with the size of the animal in mm and its radular formula. With so much information so effectively displayed one immediately recognises that Armina japonica closely resembles the British species, Armina loveni and that both are probably on the same evolutionary line, perhaps a rassenkreis. The other species pages follow the same pattern as for page 74 and reach a high standard. The printers deserve praise for the effective design of these pages.

The book concludes with a Glossary of Terms, Bibliography, Classification Table, Index, and a map of Hong Kong and its New Territories. Of course, as the author points out, there are certainly many more nudibranchs to be discovered off the shores of Hong Kong. I hope that, in due course, many of these will appear in a supplementary volume with, if I may suggest, species of the closely related order, Ascoglossa.

The present volume is strongly recommended and should be in the libraries of all institutions interested in marine zoology. If the book were published by an academic press it would cost at least £4 - at £1.50 it is a bargain. And if you should ever make a journey to Hong Kong be sure to take John Orr's delightful book with you!

Tom Gascoigne

FIELD MEETING REPORT, CAMBER SANDS, 9 MAY 1981

Fourteen members and friends turned out on a cool and slightly damp day to scour the beach at Camber. Most of the party turned towards the River Rother for their collecting and in the process collected 42 species. Of these, two were upgraded records for the square (51/9--1--); they were Hydrobia ulvae B to A and Pecten maximus B to A. There were three new records for the square too, Lora rufa, A; Nassarius pygmaeus, B and Venus ovata, C. These additions bring the total number of species collected in the Rye Bay 10km square to 107, of which 37 were live collected. The Lora rufa upgraded the area 14 record from A to A. The members of the party were entertained to tea and shells at the beautiful home of Mr. and Mrs Peter Oliver, which was very much appreciated. My thanks to them for their timely hospitality. All in all, a very satisfactory field meeting.

Celia Pain, Area Recorder, Sea Area 14

This moderate deep water Colus is today confined to the east coast of North America, from the Grand Banks off Newfoundland to the Georges Bank off Massachusetts.

The shell is very inflated for a Colus, of almost five whorls, with wide, rather faint spiral cords; the aperture is large and slightly longer than the spire. Average length 55 mm. A somewhat thicker more elongated form also occurs, which Harmer (1916, 369) considered a distinct species and which he described as Neptunea tenuistriata. There is however no doubt that this is nothing more than a not uncommon variation of typical C. ventricosus and found living with it. For figures see R. T. Abbott (1974, 209, text fig. 2285) and Harmer (1916, pl. 37, fig. 1).

There is in the S. V. Wood collection in Norwich Museum a shell from the Red Crag of Felixstowe, which Harmer considered to represent Colus ventricosus (Gray), and which he figured (Harmer 1914, pl. 23, fig. 20). Through the kindness of Mr. P. Lawrence, Mr. P. Cambridge and myself have been able to examine this shell, and carefully compare it with recent examples of C. ventricosus from the Grand Banks. There is in our opinion no doubt whatever that it is a small specimen, length 32 mm and somewhat worn, of typical C. ventricosus, and that Harmer's identification is correct.

Three other Pleistocene specimens have been referred to C. ventricosus. One, very imperfect, found by Harmer at Oakley, the identification of which must remain in doubt. Another from the Red Crag of Hollesley is figured by Harmer (1920, 521, pl. 46, fig. 13) and is said to be in his collection. This shell is in very poor condition, the base of the siphonal canal is apparently broken off and the surface is too worn to show any sculpture, if ever present. Its identification must remain unproven, in spite of Harmer's statement to the contrary.

The third specimen is from the Pleistocene of Bridlington, Yorkshire. This shell is figured by Wood (1872, 22, pl. 3, fig. 4). It is somewhat damaged, but characteristically inflated and has well preserved spiral cords and a large aperture. It can reasonably be considered an immature specimen of C. ventricosus.

The occurrence of this North American species in the British Pleistocene furnishes evidence of some connection between the two faunas, as pointed out by Harmer. However the common Colus of eastern North America, C. stimpsoni (Mörch, 1867) has not so far been recorded here.

It would seem very probable that further examples of C. ventricosus may already be present although unrecognized in collections, or be collected in the future. It is hoped this note may persuade those concerned to keep a look out for it.

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(Reprinted from Bull. Geol. Soc. Norfolk, 29, 56-57)

T. Pain

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE, c/o. British Museum (N.H.), Cromwell Road, London, SW7 5BD. 8 December 1981. A.N.(S.) 120.

The Commission hereby gives six months' notice of the possible use of its plenary powers in the following case, published in Bull. zool. Nom. volume 38, part 4, 8 December 1981, and would welcome comments and advice on this from interested zoologists. Correspondence should be addressed to the Secretary at the above address, if possible within six months of the date of publication of this notice.

Case No. 1986 Aeolidiella Bergh, 1867 (Gastropoda, Opisthobranchia), proposals to clarify the type species of the genus.

ITZN 59 The following Opinions and Directions have been published recently by the International Commission on Zoological Nomenclature in the Bulletin of Zoological Nomenclature, volume 38, part 4, 8 December 1981.

- Opinion No. 1189 (p. 243) CIRCINAE in Aves and Mollusca: removal of the homonymy.
1195 (p. 259) Pleurocera Rafinesque, 1818 (Gastropoda), the type species is Pleurocerus acutus Rafinesque in Blainville, 1824.
1197 (p. 270) Cypraea piperita Gray, 1825, C. comptonii Gray, 1847, C. bicolor Gaskoin, 1849 and C. angustata Gmelin, 1791 (Gastropoda), placed on the Official List.

The Commission regrets that it cannot supply separates of Opinions or Directions.
R. V. Melville, Secretary

INVOLUNTARY TRANSPORT OF PLANTS AND ANIMALS

Judging from reports published occasionally in journals, such as the Irish Naturalists' Journal, and from personal contacts, there seems to be a keen, if fleeting interest in the long-distance transportation (by means of wind and ocean currents) of plants and animals to Ireland. These occasional "events" hold substantial interest for biogeographers. While I am personally interested in long-distance transport of plant disseminules, especially the so-called drift-seeds of tropical origin which are washed ashore on beaches, I am aware of other work being carried out on trans-oceanic transport of molluscs and other sedentary marine animals, and of the recording of American bird species in Ireland.

I would be interested to hear from members of the Conchological Society interested in this general subject, who would be prepared to participate in an informal one-day meeting, perhaps in the autumn of 1982. No plans have been made, but if a sufficient number of people indicate their willingness to speak and/or attend, I would be willing to organize a suitable venue. I am particularly keen to hear from ornithologists and entomologists, and from anyone working in oceanography and meteorology who would be prepared to provide biologists with the physical background to these phenomena.

Dr. E. Charles Nelson, National Botanic Gardens, Glasnevin, Dublin 9

"A NATURALIST IN BORNEO" by Robert W. C. Shelford. Pub: T. Fisher Unwin Ltd. 1916

Chapter Eleven "Animal Life of the Shores" p. 295-297

"The stems of the Nipa-palms that grew in the mangrove swamps at Santubong were closely studded with peculiar flat shells that presented a sufficiently near resemblance to shells of Lingula, a brachiopod that has persisted from the most ancient geological times to the present day, to lead me at first to think that I had made a great find. A closer examination, however, showed that these were the shells of a true mollusc belonging to the Anomiacea, a sub-order that includes the common Anomia ephippium of Europe, and is related, though distantly, to the oysters. The name of this mollusc Aenigma aenigmatica shows that it had puzzled naturalists before me. The shell is a bivalve; the left valve, which is the only one that the observer can see before the animal is removed from the palm stem to which it is attached, is elongate-oval, dark purplish-red in colour, very thin, and more or less translucent; the right valve is much smaller, white, transparent and very delicate; it is perforated in the middle, and through the hole passes a structure called the byssus, which attaches the animal firmly to the surface on which it is found.

The shells are attached to the palm stems well above low-water mark, and in many cases above the high-water mark of neap-tides; consequently for the greater part of their lives they are exposed to the full glare and heat of a tropical sun.

The shells, when above water, fit so closely to the palm stems that they can hardly be removed with the blade of a sharp knife. Having grown in one position, they are perfectly adapted to all the slight irregularities and inequalities of curvature of the palm stems, and the space under the left valve, in which of course the animal lies, must be well-nigh air-tight. When the shells are immersed in water the byssus relaxes slightly, and as this organ is attached at one end to the inside of the left valve, and passing through the animal and through the right valve, at the other to the palm stem, the effect of its relaxation is the loosening of the left valve so that water can flow under it and bathe the tissues of the mollusc. It is only during these periods of immersion that the animal can feed, and it is probable that it lives on small particles that are swept into its mouth along some ciliated grooves that traverse the foot.

Professor G. C. Bourne has made a careful anatomical study of this animal, and has discovered some interesting features adapted to protect it from dessication".

"In Aenigma aenigmatica the lower parts of the mantle lobes are much thickened and corrugated; the thickenings help to seal up the mantle cavity and the corrugations probably contain a certain amount of water, so that the mantle-cavity is always moist, and evaporation is reduced to a minimum."

"The mantle cavity is also produced here and there into sinuses which run into the body, and they can be cut off from the main cavity by ridged folds with interlocking hairs. Professor Bourne considers these extensions to be water reservoirs".

"There occurs on the left or upper mantle-lobe a ring of pigmented spots; these are rudimentary eyes with cornea, lens, and retina, or at least primitive representations of these structures. Probably the utmost extent of their powers is to discriminate between darkness and light to give warning to the animal to keep the valves closely pressed to the palm stem during the heat of the day."

from Betty M. Smith

GENERAL NOTES

FIELD COURSES 1982

PEMROKESHIRE, SOUTH WALES: 4 - 11 August 1982

A course on marine, land and freshwater molluscs in a part of the country which supports a wide range of species. Beginners welcome. Tutor Dr. June Chatfield. Accounts of previous courses at Orierton have been published in past newsletters. Cost of residential course £97. Further details from The Warden, Orierton Field Centre, Pembroke, Dyfed.

DORKING, SURREY: 30 August - 3 September 1982

A course on land snails based near Box Hill, a classic collecting area on the North Downs where a wide range of species may be found. Tutor Dr. June Chatfield. Cost of residential course £67. The Centre now has a splendid new purpose-built accommodation block. Further details from The Warden, Juniper Hall Field Centre, Dorking, Surrey.

Both of these field centres offer visitors use of a good library and microscopes.

FIELD MEETINGS 1982 - DATE ALTERATION. Marine field meeting to Bexhill, East Sussex. Please note that this will now be held on Sunday 2nd. May NOT on Saturday 1st. May as advertised in the printed programme.

ROMAN CONCHOLOGISTS

Life and Letters of Cicero, p.334, footnote f. Cicero's Letters to his friends, translated by William Melmoth (Chatto & Windus, 1875).

Scipio Africanus the younger, to whom Cicero here alludes, was consul in the year of Rome 605; as Laelius was in the year 612. The strict intimacy which subsisted between these distinguished Romans, is celebrated by several of the classic writers: but Cicero has paid it the highest honours in his Dialogue upon Friendship. Scipio and Laelius used to retire together from the business of the state, to a villa situated on the sea-shore, near Laurentum; where these illustrious friends did not think it beneath their characters to descend to the humblest of recreations. The virtus Scipiadae et mitis sapientia Laeli, the heroism of Scipio and the wisdom of Laelius could unbend in gathering shells and pebbles on the coast; and perhaps it is some evidence of their merit that they were capable of being thus easily diverted. Less virtuous minds generally have recourse to more agitated relaxations, and are seldom entertained without carrying their passions into their amusements.

(from Mrs. Stella Turk)

Shell collecting the humblest of recreations! Laelius was surnamed Sapiens; he was consul in 140 B.C. His friendship with Scipio Africanus the younger was so close that Cicero, in his Laelius, sive de Amicitia, has introduced him as explaining the real nature of friendship, with its attendant pleasures. His modesty, humanity, and patronage of literature and philosophy were as celebrated as his greatness of mind and integrity as a statesman. Scipio was also devoted to literature and saved many Phoenician works from the flames of Carthage. As the result of a victory he acquired the new surname of Numantinus. He is supposed to have been murdered by Carbo (who himself committed suicide). (Beeton's Classical Dictionary)

SLUGS AND TURTLES CONTRASTED

Slugs have ridden their contempt for defensive armour as much to death as the turtles their pursuit of it. They have hardly more than skin enough to hold themselves together; they court death every time they cross the road. Yet death comes not to them more than to the turtle, whose defences are so great that there is little left inside to be defended. Moreover, the slugs fare best in the long run, for turtles are dying out, while slugs are not, and there must be millions of slugs all the world over for every single turtle. Of the two vanities, therefore, that of the slug seems most substantial. In either case the creature thinks itself safe, but is sure to be found out sooner or later.

Samuel Butler, *Ramblings in Cheapside*

HOUSE OF SHELLS. Country Life, 22 October 1981, p.1394:

Sir - Your readers may be interested in the photograph of a remarkable property in St. Blazey, Cornwall, which has recently been listed by the Department of the Environment as an important building, partly because of its unique frontage.

The house and shop are those of an appropriately named fishmonger, Mr. Len Roe, and the whole front is covered with thousands of shells which form pictures depicting among other things facets of Cornwall's history.

Mr. Roe's late wife, Ruth, started the work in 1961, and spent over a year on it, but unfortunately died before she could finish it. The work was completed by Mr. Roe and his son, and is kept in excellent state of preservation. The building itself is a 200-year-old stone-built miner's cottage.

Joan Rendell (Miss), [REDACTED], Launceston, Cornwall

F. A. & S. M. TURK, Cornish Biological Records 4, Oct. 1981. Institute of Cornish Studies, Trevenson House, Pool, Redruth.

Records of Janthina janthina, J. pallida, Littorina saxatilis complex, Lymnaea stagnalis, Onchidella celtica, Testacella scutulum, and Sphaerium lacustre. Charonia lampas taken off Fowey in 1979 is still living in Plymouth Aquarium. Particulars are given of the colony of Theba pisana recently discovered at Treyarnon Bay.

DESERT SNAILS. From "Wildlife of the Deserts" by John Cloudsley-Thompson. Hamlyn, 1979. £3.25.

"In Israel, North Africa, parts of Arabia, and California where drought is not too intense, snails are quite common. During the dry season, they remain sealed up inside their shells in a state of suspended animation. In this way they survive

for several years. A spectacular example is afforded by two specimens of *Erimina desertorum* which were glued to appropriate supports and exhibited in the British Museum (Natural History) from March 1846 to March 1850, when one revived and fed. Two others, collected in Egypt in May 1854, were still alive five years later, and some specimens of *Otala lactea* from a region of the Sahara where there had been no rain for five years, were kept dry in a bottle for another three and a half years, and then recovered when provided with water!"

"Because their moist bodies would freeze solid, snails are not found in polar deserts. The Giant Snails of the hot West African deserts have, however, been introduced into many other parts of the world because of their food value."

Betty M. Smith

ANNUAL SUBSCRIPTIONS, 1982

Dear Members,

Will those of you who have not yet paid your subscriptions for 1982 please send them as soon as possible. Some Members have paid at last year's subscription rate, and are asked to forward the balance. Current rates are listed below.

All cheques and postal orders should be made payable to the Society and sent to me. Receipts will not be sent unless requested, and each request must be accompanied by a stamped addressed envelope; overseas Members should add 20p to the amount of their remittances if requiring receipts.

The Society regrets that no further publications can be sent to Members whose current subscriptions remain unpaid, although any which have been withheld will be sent upon payment of arrears. You are also reminded that Members in arrears are not eligible to vote at the A.G.M. or in the postal ballot for the election of Officers and Council.

Please make a note to send unpaid subscriptions without individual reminders, since postage is now so very expensive. Should any Member wish to resign from the Society, (which I hope will not be the case) please notify the Hon. Secretary to this effect, as unwanted reminders are an unnecessary expense to the Society and can only be irritating to the recipients.

Have you considered paying your subscription by covenant? I can supply the necessary form on request. The additional revenue from covenants is of great help to the Society.

Marjorie Fogan (Hon. Treasurer)

[REDACTED], Atherton, Manchester, [REDACTED]

Subscription Rates, 1982

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Ordinary, Family and Institutional Members may deduct the sum of £1.00 (U.S. \$2.50) from subscriptions paid before 31st. March.

INDOOR MEETINGS OF THE CONCHOLOGICAL SOCIETY

We have received a request to include a summary of meetings and exhibits in the Newsletter and now commence with the December 1981 meeting.

In the Chair: Mr. J. F. M. de Bartolome with 24 members and friends present.

Apologies for absence: numerous, due to weather conditions and illness.

Death of Member: The death of Mr. L. W. Hill of Bourton-on-the-Water, Glos. was announced.

Elections to Membership: 3 Full Members

Boatman, Mrs. C.H., [REDACTED], Braintree, Essex, [REDACTED]

D'Oyly, M.J., B.Sc., [REDACTED], Shrewsbury, Salop, [REDACTED]

Hoeksema, D.F., [REDACTED], 4337 CL Middelburg, The Netherlands.

Lecture: 'Architectural Molluscs' by Miss Eleanor Fogan.

Announcements and Correspondence: Nominations for Membership of Council must reach the Hon. Secretary by 31st. December 1981.

The Meeting on 20th. February 1982 is to be held jointly with the Malacological

Society with the theme, 'The Mollusca, the animals and their shells'. Further details and an invitation for exhibits and posters will be sent with the Newsletter. An Italian collector has written to request exchange of Pliocene and Pleistocene fossil shells.

Mr. Newbury of Exeter has a Collection of tropical shells for sale.

A 'get well' card is being sent to Mr. Oliver.

Exhibits: J. F. M. de Bartolomé - Silver snail as memento.

C. Finley - Allied *Cypraea*.

E. Fogan - Illustration of shells in architecture.

T. Gascoigne - Publication on the nudibranchs of Hong Kong.

J. Llewellyn-Jones - Shell artifacts and the cameo.

P. E. Negus - 'Porcupine Newsletter', and 'what is it?'.

T. Pain - *Cochlostyla* (*Helicobulimus*) *marinduquensis* (Hidalgo) from Romblon Island, Philippines.

E. Pinn - 'The Cockle' (notes for teachers).

E. Sandor - Family Mitridae: subfamilies *Cylindromitrinae* and *Imbricariinae*.

Meeting closed at 4.50 p.m.

JOURNAL OF CONCHOLOGY

I have the following copies of the Journal of Conchology for sale. The price quoted beside each set is the minimum price I will accept, as the money raised will go into the Society funds. In order to give overseas members a chance, I will wait three months after publication of this notice before accepting the highest offer:

Small format Journal of Conchology, now no longer obtainable -

Volume 23, Nos. 5, 6, 7, 8, 9, 10, 11, 12 £10.00 lowest

Volume 24, Nos. 1-12 complete £15.00 lowest

Volume 24, No. 10 £ 2.00

Volume 25, Nos. 1-8 complete £15.00 lowest

Volume 25, Nos. 4, 5, 6, 8 £ 8.00 lowest

Please send your offers immediately to: Mrs. E. B. Rands, [REDACTED], Luton, Bedfordshire, [REDACTED]. Do NOT send money. You will be invoiced with postage added. Overseas offers please indicate whether AIR or SEA MAIL is desired.

INZANI Andrea, [REDACTED], 29100 Piacenza, Italy. I am able to offer you a lot of fossil mollusc species, found in North Italy, from Pliocene and Pleistocene, in exchange for fossil molluscs, found in your area, and are from Miocene, Pliocene and Pleistocene. Please write.

SHELL BADGES.

Badges 2 $\frac{1}{4}$ inches in diameter with a colour picture of two Tiger Cowries *Cypraea tigris* and produced by the World Wildlife Fund are available at 44p (inclusive of postage) from The Gilbert White Museum, The Wakes, Selborne, Alton, Hampshire, GU34 3JH. Other World Wildlife badges also in stock:- Large Blue Butterfly, Great Raft Spider, Sea Fan, Essex Emerald Moth, Wart Biter Bush Cricket and Edible Sea Urchin.

FOR SALE. Books on CONCHOLOGY and all other branches of Natural History always for sale. Lists issued at intervals. Please write if you wish to be placed on my mailing list. I also buy books and periodicals on Mollusca.

F. E. B. Johnson, [REDACTED], Thornham, Hunstanton, Norfolk, [REDACTED].
Tel: [REDACTED].

FOR SALE. We are suppliers of tropical sea shells, land snails, coral and sea curios to collectors, schools and colleges. S.A.E. for lists.
Nature of the World, 19 Bell Lane, Fetcham, Leatherhead, Surrey.

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