

THE CONCHOLOGISTS' NEWSLETTER

No. 68

ISSN 0573-2336

Newsletter Editor: P.E. Negus,

March 1979

Chelsea Bridge Road,
London, [REDACTED]

Produced by THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

CONCHOLOGY, AN INHERITED OR ACQUIRED CHARACTERISTIC?

Whilst collecting material on people who have worked on the Mollusca of Cornwall, a curious web of relationships emerged. It was Mrs. N. F. McMillan who, some years ago, drew my attention to Miss Elizabeth Pocock who first discovered the rare Mactra glauca Born at Hayle in 1801 (Forbes & Hanley, 1848:367) and the scarce Pteria hirundo (L.) at Marazion (Sowerby, 1812:14). Apart from these two finds, she seems to have no place in conchological literature. Was she a resident, or a visitor to Cornwall? No mention of the family occurs in the works of Boase & Courtney (1874-1890), but Mr. F. L. Harris (pers.comm.) found that one Nicholas Pocock, Commander of the Falmouth Packet Princess Mary from 1804 to 1814, is recorded in the Falmouth Registers as marrying a Miss Elizabeth Carne in 1811: the coincidence of her name will become apparent. Nicholas was the third son of a famous marine painter, Nicholas Pocock, born in Bristol in 1741, who was a sea captain himself in his younger days and who came from a mercantile family (Benezit, 1924:505). If our Miss Pocock was related, she may have been a sister to the younger Nicholas, perhaps visiting him from Bristol when a young woman, a possibility supported by the evidence that a Miss Pocock of Bristol entered a landscape painting for a competition held by the Royal Cornwall Polytechnic Society at Falmouth in 1837. Circumstantial evidence that this is the right family, is suggested by the fact that another captain of one of the 'Packet' sailing ships at much the same time, Commander James Tilly, started a fine shell collection which was added to by Williams Hockin who became his son-in-law.

Williams Hockin, a Truro solicitor, lived from 1804 to 1874, and his conchological enthusiasm and expertise enabled him to form an almost complete collection of British shells, most of them being Cornish and forming the basis of his list, 'Cornish marine shells' (Anon, 1866). Many of his records are quoted by Jeffreys (1862-1869), and his collection was donated to the Museum of the Royal Institution of Cornwall (now the County Museum) in 1924 by his youngest daughter, Elinor Margaret Hockin. The majority of the specimens were either collected from Falmouth (doubtless by James Tilly) or from Hayle, the seat of the Hockin family since ca.1700. Williams Hockin himself was born at Phillack Rectory near Riviere Towans and Hayle's 'three miles of golden sands', a catchment coastal stretch for conchological flotsam and jetsam. His sister Susan also became a shell collector, and her many marine records from Hayle are included by Tregelles (1885 & 1896), whilst slugs from her Phillack garden are listed by Taylor (1902, 1903, 1905 & 1908). In 1870, Rev. Francis Kilvert, the famous diarist, visited Phillack Rectory where Susan kept house for her brother Frederick, the Rector, and proprietor of Riviere Estate. Kilvert had come to Hayle by train with other members of the Hockin family with whom he was staying at Tullimaar near Perranarworthal (between Truro and Falmouth) and he records "We picked up a number of shells on the beach, and I meant to take them home but unfortunately left them at Phillack Rectory". (Plomer, 1973:16).

Earlier in the century, another conchologist, Miss Elizabeth Carne - no known relation to the Elizabeth Carne who had married Nicholas Pocock - had lived

in the nearby Riviere House before she moved to Penzance. Daughter of Joseph Carne, a geologist of repute, Elizabeth herself published many papers on Cornish geology, and her conchological finds were recorded by Tregelles (1885 & 1896), together with those of Miss Hockin and Miss Hannah Tyacke of Penzance. That these three ladies were in conchological league, is shown by a few lines in Cornish (1873). "There is also a very perfect collection of shells, all from Cornwall, made and presented by Misses E. Carne, Hockin and Tyacke, contained in a case presented by Miss Carne, and including specimens of the stone-boring 'Pholas', the 'Teredo navalis', a wood-borer, the dread of ship owners, a gigantic oyster, a native from Mount's Bay, and a still more gigantic 'Pinna', specimens of the elegant and rare 'Ianthina fragilis' or 'English Nautilus' are all to be seen in it."

A century or more ago, no less than now, one can trace the effects of influence in inspiring an interest in what is still rather an obscure study compared with, say, ornithology. Certainly conchology is a subject in which guidance in the early stages is likely to ensure continued interest; but now, unlike the situation in the first half of the nineteenth century, we have the long-established Conchological Society to act in loco parentis when there are no friends or relations to help.

I would like to thank Miss A. G. D. La Touche of Riviere Towans, Phillack, a great-niece of Susan and Williams Hockin, for writing to me about her family. Thanks are also due to Miss M. E. Philbrick, authority on the Falmouth P.O. 'Packet' captains, for information about Nicholas Pocock and James Tilly.

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Stella M. Turk, Nov. 1978

Molluscs have been used as heraldic charges on coats of arms since medieval times. It is likely that their appeal was mainly derived from the distinctive shape of the two forms used. Each coat of arms had to identify one person, and the use of distinctive devices was essential. Also another reason of some importance was the punning or canting association with the names of the users of arms containing shells.

The two forms of shells regularly appearing on canting arms were scallops (described as "escallops") and whelks, other forms being only rarely used. Scallops and whelks were used as a pun on the SHELL element in a surname. In addition the whelk was used as a pun on the WILK part of a name. Not all users of scallops had puns in mind, and the device was also used by people with the JAMES surname, this shell being the attributed emblem of St. James, the Apostle. Other families have claimed that the scallop in their arms shows that an ancestor took part in a pilgrimage to Santiago de Compostela, in Spain.

Looking through Burke's Armory one finds that typical examples of arms containing scallops and whelks are those of SHELLEY (three whelk-shells), SHELDHAM (three escallops), SHELTON (one escallop), WILKINSON (three whelk-shells) and WILKIN(S) (three whelks). Strangely, the arms assigned to WELKE contain not whelks, but calves as charges on the shield. An interesting variation occurs in the arms of Robert SCALES (circa 1300) where the use of six escallops gives the illusion of fish scales.

The garden snail (Helix aspersa) appears in the arms of a SHELLEY, and is blazoned (described) as a "house-snail". It is understood that in some rural areas these snails are called "pulleys" or "poolies" and "dodmans". By coincidence the families of PULLEN and PULLEYN used a molluscan device, but these were scallops not garden snails. No DODMAN reference with a snailly connection has been found.

The only other armorial mollusc that I have found relates to the well known ammonites which appear in the arms of Whitby, and which are known as St. Hilda's snakes. I should be interested to hear of any other snailly arms.

E. J. Redshaw, 25th. Nov. 1978

THE COON OYSTER, LOPHA FRONS (L.): AN EXOTIC VISITOR TO NW EUROPE

Three left valves of the Coon Oyster or Frons Oyster, Lopha frons (L.) (Bivalvia: Ostreidae), were found on a fishing float stranded at Cross Beach on the Mullet Peninsula, Co. Mayo, in 1974 and collected by the late Mr. John Sides. They are now preserved in the National Museum, Dublin.

In the western Atlantic, L. frons occurs from Florida, Louisiana and the West Indies to Brazil, and in Bermuda (Abbott, R.T. (1974) American Seashells, 2nd edition, 663 pp., Van Nostrand, New York). We have been unable to trace any records of it in Europe except for the following description of its distribution: "Lusitanisches Meer, Kapverden, Westindien: Litoral - 208 m" (Nordsieck, F. (1969) Die Europäischen Meeresmuscheln (Bivalvia) vom Eismeer bis Kapverden, Mittelmeer und Schwarzes Meer, 256 pp., Fischer Verlag, Stuttgart), and Nordsieck (pers. comm.) has been unable to help us further with regard to the source of his records for either the Lusitanian Sea or the Cape Verde Islands. L. frons does not appear to be known from NW Europe.

The specimens were attached to a black cylindrical fishing float, about

11 cm in diameter and 3.7 cm high, of a type which is commonly used in eastern N. America (J.V. Dennis, pers.comm.) but rarely seen on our side of the Atlantic. It seems likely, in view of this and of the distribution of the species, that the specimens are of transatlantic origin.

We would like to thank Mrs. E. M. Sides for the specimens, Mrs. Nora F. McMillan for identifying them, Dr. Karl Partridge for searching some obscure literature, and Drs. F. Nordsieck and C. Altimira for their comments.

[REDACTED], Dublin 2
National Museum of Ireland, Dublin 2

A. B. West
C. E. O'Riordan

OYSTERS UNDERGROUND

A large number of oyster shells were recently uncovered at a site in Leigh, Lancashire, where some old property has been demolished to provide space for a small park. Some of the shells were brought to me, with an enquiry as to whether they could be fossil. This was not the case, as they were perfectly preserved valves, and both the common oyster (Ostrea edulis) and the Portuguese oyster (Crassostrea angulata) were present.

It appeared surprising that these should occur so far inland, but I have since been informed by the contractor clearing the site that this is by no means uncommon in this area. The shells are laid in trenches, and are a substitute for the more usual tiles or stones in field drains.

At a guess, the old houses which formerly occupied the site dated from fairly early in this century, so that the land may have been drained in late Victorian or Edwardian days. No information is forthcoming regarding the provenance of the shells, although they must have been brought to the spot in large quantities. The Cambridge Natural History (published 1895) does, however, mention a figure of sixteen hundred million oysters produced annually in Great Britain; the oyster-bars of the period must have had to dispose of a lot of oyster-shells.

Marjorie Fogan

DIVING FOR PINCTATA MAXIMA

A major portion of world production of large cultured pearls and half pearls comes from the silverlip oyster (Pinctata maxima) that grows prolificly along the continental shelf of north west Australia.

The principal shell grounds are located south west of Broome adjacent to the Eighty Mile Beach.

Since 1969 pearl diving techniques have been transformed. The traditional hard hat and lead-booted diver has been superseded by divers using rubber suits, flippers and hookah breathing apparatus. The new equipment, which was introduced from the abalone industry, has given divers greater mobility in the water and an increased catch rate. At the same time the risk factor has been decreased.

North west Australia is subject to a tidal range of up to 10 metres. Because of the limitations imposed by tidal currents, visibility and depth of water, diving takes place during the periods of minimal tidal variation (neap tides) with six to 10 consecutive diving days. During this time the depth of water fished varies between eight and 20 metres, tidal currents are slower and visibility is at its best.

The shells are found on a flat rock bottom covered with marine plants and creatures, and a thin layer of silt. They are extremely difficult to see. This means that divers have to develop a skill where in a glance they can see the shell amid its many camouflages. As he moves to pick up one shell a diver looks for the next one. The range of visibility is often less than three metres.

Collection of shells takes place as divers are towed across the shell patches by the luggers in the direction of the tidal flow. Each lugger tows two, three or four divers. With its motor idling to provide steerage it further regulates the rate of progress or 'drift' across the patch by using a drogue. Each diver holds on to a rope which trails behind a heavy weight (or 'shot') suspended about one metre off the bottom and adjusted by a pulley system from the surface. Hanging on to the rope the diver swims or runs back and forth across the bottom while being towed along. The running motion is a facsimile of the former hard hat methods and is popular with some of the Japanese divers who have made the change to Hookah gear.

As the shells are collected they are placed in a neck bag. When the diver decides he has enough shells in it he pulls himself along the trail rope to his main bag into which he transfers the shells. Using his air supply regulator he inflates a bladder or 'parachute' attached to the main bag so that it doesn't drag along the bottom and stir up the silt.

The 'drift' diver on each lugger sends instructions about drift speed, direction, shot height, termination of drift and dropping of marker buoys via an electric signal system run to the surface along his air hose. A high degree of understanding is needed between the drift diver, other divers and the helmsman or 'tender' on the lugger.

At the termination of the drift, the divers detach their main bags and ascend with them to the surface. The lugger steams back to the starting point of the next drift while the divers talk with the tender and deck crew about the previous drift, eat and have a short rest. At the same time their shells are being sized, cleaned, and placed in baskets for storage in the shell tanks where pump or venturi systems ensure that adequate sea water is circulated to keep the shell alive during the period between collection and relocation at the pearl farms.

Preparation for work begins at dawn with divers entering the water when there is enough light on the bottom to see the shells. Work ends when the sun goes down. A usual day's work consists of 12 to 14 40-minute drifts. The time spent underwater each day varies between seven and 10 hours.

Despite being in the tropics, divers need thick 5/16th wet suits to overcome loss of body heat. As the season progresses and water temperatures drop, an overlying vest is added for additional protection. Wet suits collapse under continual water pressure and therefore a set of suits for use on alternate days is necessary. Dry suits are being looked at with interest.

Careful attention to diet

Careful attention has to be given to diet in terms of providing fuel for the body's work and the elimination of gastric upsets. Small cuts and abrasions have to be given prompt attention or will infect and ulcerate. Ears have to be rinsed out and dried each night to avoid fungal infections.

Wet suit chafe is eliminated by use of panty hose, body stockings and daubs of Vaseline on the likely spots.

Each lugger is given a quota of shells to fish for the season which runs between March and September. A diver is paid on the number of shells he picks up and competition on the bottom is fierce. Here the divers work in close proxim-

ity, often racing towards the same shell.

The work, which is physically demanding, also requires a disciplined concentration. A diver needs to be able to observe and remember the different camouflages of the shells as he picks them up to see if there are clues such as an indicator sponge or predominant lie of the shell on a particular patch of reef. He has to be aware of his physical condition and capabilities in face of fatigue, cold and nitrogen saturation. Continual regulation of his search and catch techniques are made. The distance he is away from his main bag and rapidity of shell transfer from his neck bag, the height he swims above the bottom and the speed of the drift are critical factors. An error in any one of them can halve the catch.

The diver also needs to have worked out in advance what he will do in emergencies like the failure of his air supply or snagging up with a buoy. There is no time to stop to work it out when it happens.

Bitten by sea snake

In the 1976 season one diver was bitten by a sea snake. His life was saved because the only lugger in the fleet carrying an oxygen resuscitator was fishing nearby. Another diver was bowled over and badly bruised by a shark. He saw the shark an instant before the collision and vividly remembers the large mouth full of teeth.

At dusk, when decompressing in the same area, it is an uncomfortable feeling to see a pack of small tiger sharks appear below you. Peering downwards through the gloom you may see larger silhouettes a metre across. The decision is either to get out of the water, risking the bends, or to stay in the water and risk being attacked. The nearest decompression chamber is at Perth!

Shelter for 'dream fish'

The pearl shells often provide shelter underneath for small spiny fish called 'dream fish'. Not unlike bulrouts they inflict a painful wound that makes you 'climb the walls' for a few hours. Stone fish and other stingers are often observed and you don't pick up sand shark bills in murky water until you see if a shark is attached.

The danger of the work has to be understood and wherever possible reduced into calculated risk.

The main pleasures when at sea are to have a good meal and a sleep. Romantic notions about pearl fishing soon dissipate as the gruelling work proceeds, but the beauty of the sun rising and setting, brilliant moons over calm seas, raging low 'easters' lifting sheets of spray over the bow and the marine life cannot be denied.

Andrew Levings, a former abalone diver who now works out of Broome, Western Australia, in the pearl oyster fishery.

With acknowledgment to the author and 'Australian Fisheries' (April 1978)

(Submitted by Mrs. Betty M. Smith)

ASCOGLOSSAN NOTES (8)

I'm sorry - it's Placida viridis again! Elizabeth Platts, in a letter to me, points out that she did NOT send me the tail-end of a P. viridis. She must

be right, for the part in question was in an unlabelled tube, and Elizabeth always puts in a neat label with full details. So I apologize to her sincerely. It was my mistake; the tail-end must have belonged to one of the specimens from Livorno, Italy, that I had dissected some days previously.

David Heppell, on a visit to London, brought me a specimen of Calliopaea oophaga Lemche for examination. It was recognised by Graham Oliver among live material collected by members of the Inverness Branch of the British Subaqua Club at a depth of 5m in the Anchorage, Tanera Mor, Summer Isles, Wester Ross. This is the first record of C. oophaga for Scotland, and the specimen is deposited in the Royal Scottish Museum.

Hints on fine dissection. A cheap and efficient lighting system.

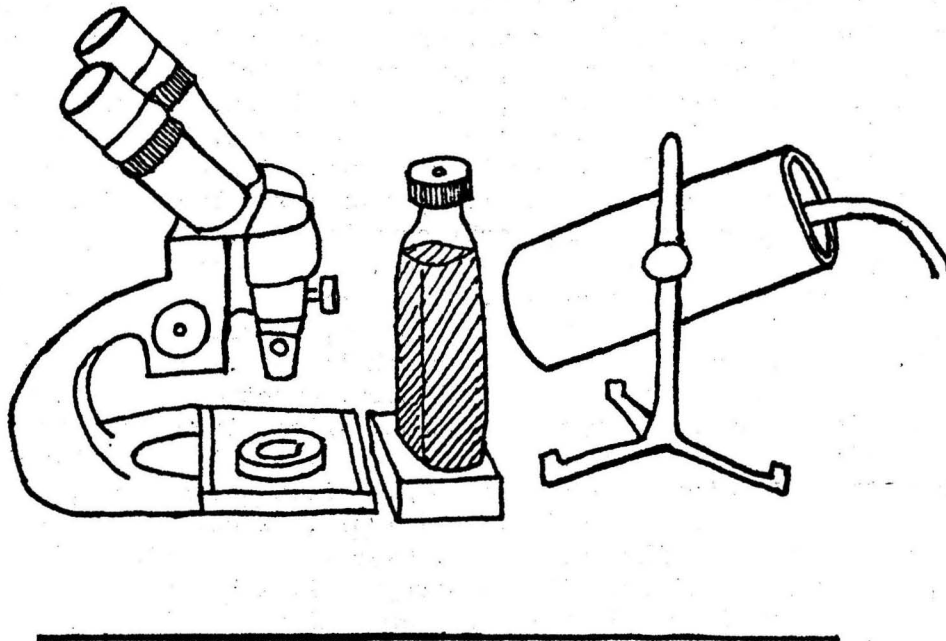


Fig. 1. Sketch of set-up. The microscope is a splendid 1950 Leitz.

The lamp (Fig. 1) is one used in some shops to display shirts, pullovers, and the like. It consists of a special bulb encased in a blackened cylinder containing a socket and lead. The low voltage bulb (12v, 50W) has a parabolic clear front and an Edison screw cap (E27/20). It is connected to a 12volt transformer and from this to the mains supply. The lamp costs about £17, a separate bulb £4, and the transformer £12; these items may be purchased from an electrical supply stores. The stand shown in Fig. 1 is an old one which I had already.

Between the lamp and the dissecting dish is a whisky flask nearly full of water. The water absorbs most of the heat from the light and so prevents the wax in the dissection dish from melting. A hole in the stopper allows warm air to escape. The illumination is quite satisfactory when dissecting at magnifications of x25 and x50.

The dissection dish is about 1cm above the table. This enables the forearm, from the elbow to the wrist, to rest relaxed on the table - a comfortable position during long periods of dissection.

Tom Gascoigne

A LIST OF THE NON-MARINE MOLLUSCS OF AVON

Since the formation of Avon in 1974, no list of non-marine Molluscs has been compiled. It is the purpose of this paper to fill the gap. The list has been compiled from a number of sources. The main one was the Atlas of the Non-marine Mollusca of the British Isles (edited by Kerney, 1976). Further species were added from personal field observation and correspondence with Dr. Kerney. Finally, some of the pre-1950 records were obtained from the literature.

An asterisk denotes the species has been recorded only pre-1950. The nomenclature follows that of Kerney (1976) and Waldén (1976).

Theodoxus fluviatilis, Viviparus viviparus, *Viviparus contectus, Valvata cristata, Valvata piscinalis, Pomatias elegans, Hydrobia ulvae, *Pseudamnicola confusa, Potamopyrgus jenkinsi, Bithynia tentaculata, Bithynia leachii, Acicula fusca, Carychium minimum seg., Carychium tridentatum, Ovatella myosotis, Leucophytia bidentata, Aplexa hypnorum, Physa fontinalis, Physa cf. acuta, Physa cf. heterostropha, Lymnaea truncatula, Lymnaea palustris, Lymnaea stagnalis, Lymnaea auricularia, Lymnaea peregra, *Myxas glutinosa, Planorbis planorbis, Planorbis carinatus, Anisus leucostoma, Anisus vortex, Bathyomphalus contortus, Gyraulus laevis, Gyraulus albus, *Armiger crista, Hippeutis complanatus, Planorbarius corneus, Ancylus fluviatilis, *Acroloxus lacustris, Succinea putris, Oxyloma pfeifferi, Azeca goodalli, Cochlicopa lubrica, Cochlicopa lubricella, Pyramidula rupestris, Columella edentula agg., Columella aspersa, *Truncatellina cylindrica - either T. cylindrica seg. or T. britannica, Vertigo antivertigo, Vertigo pygmaea, Abida secale, Pupilla muscorum, Leiostyla anglica, Lauria cylindracea, Vallonia costata, Vallonia pulchella seg., Vallonia excentrica, Acanthinula aculeata, Ena montana, Ena obscura, Punctum pygmaeum, Discus rotundatus, Arion ater agg., Arion subfuscus, Arion circumscriptus seg., Arion silvaticus, Arion hortensis agg., Arion intermedius, Vitrina pellucida, Phenacolimax major, Vitraea crystallina seg., Vitraea contracta, Nesovitraea hammonis, Aegopinella pura, Aegopinella nitidula, Oxychilus draparnaudi, Oxychilus cellarius, Oxychilus alliarius, Oxychilus helveticus, *Zonitoides excavatus, Zonitoides nitidus, Milax sowerbyi, Milax budapestensis, Limax maximus, Limax cinerioniger, Limax flavus agg., Limax marginatus, Deroceras leave, Deroceras reticulatum, Euconulus fulvus, Ceciloides acicula, Cochlodina laminata, Macrogastera rolpheii, Clausilia bidentata, Balea perversa, *Testacella maugeri, *Testacella haliotide, *Testacella scutulum, Candidula intersecta, Cernuella virgata, Helicella itala, Cochlicella acuta, *Monacha cartusiana - casual only, Monacha cantiana, Ashfordia granulata, Zenobiella subrufescens, Trichia striolata, Trichia hispida, Arianta arbustorum, Helicigona lapicida, Cepaea nemoralis, Cepaea hortensis, Helix aspersa, Unio pictorum, Unio tumidus, Anodonta cygnaeus, Anodonta anatina, Pseudanodonta complanata, Sphaerium corneum, Sphaerium rivicola, *Sphaerium transversum, Sphaerium lacustre, Pisidium amnicum, Pisidium casertanum, Pisidium personatum, Pisidium obtusale, Pisidium milium, Pisidium subtruncatum, Pisidium supinum, Pisidium henslowianum, Pisidium nitidum, Pisidium pulchellum, Pisidium moitessierianum, Pisidium tenuilineatum, Dreissena polymorpha.

The following species have only been recorded before 1950 and are doubtful records.

Truncatellina cylindrica, Laciniaria biplicata, Ponentina subvirescens, Theba pisana - casual only, Helix pomatia.

Acknowledgements

Grateful thanks for all their help are extended to Mr. C. Copp of the City Museum and Art Gallery, Bristol and Dr. M. P. Kerney of Imperial College, London.

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Peter F. Burns

FOSSIL PSEUDAMNICOLA CONFUSA (FRAUENFELD) FROM WESTMINSTER, LONDON

In the last issue of the Newsletter Dr. Frank Berry contributed an interesting article on the occurrence of the rare brackish-water prosobranch Pseudamnicola confusa (Frauenfeld) from a recent excavation near Tudor Street, Blackfriars (TQ31608096). Five shells were recovered from alluvial deposits apparently of late mediaeval age (Berry, 1978). This represented the most upstream record of this species in the Thames Basin.

Since this article appeared I have also examined some organic alluvium, collected in the late 1960's, from Abingdon Street, Westminster, approximately one mile upstream from Blackfriars. A section was exposed during excavations for an underground car park for M.P's, S.W. of the Houses of Parliament (TQ302793). The deposit is late mediaeval to Tudor in age and, like the alluvium at Blackfriars, yielded a rich freshwater assemblage, dominated by Valvata piscinalis, Bithynia tentaculata and Lymnaea peregra with Pseudamnicola confusa in lower numbers. There are several other old records of P. confusa from the lower reaches of the Thames and clearly it was formerly quite frequent there, although it is probably extinct in this area today. A faunal list from the sample analysed is as follows:

<u>Theodoxus fluviatilis</u> (L.)	<u>Ancylus fluviatilis</u> Muller
<u>Valvata piscinalis</u> (Muller)	<u>Sphaerium corneum</u> (L.)
<u>Pseudamnicola confusa</u> (Frauenfeld)	<u>Pisidium amnicum</u> (Muller)
<u>Bithynia tentaculata</u> (L.)	<u>Pisidium casertanum</u> (Poli)
<u>Bithynia leachii</u> (Sheppard)	<u>Pisidium subtruncatum</u> Malm
<u>Physa fontinalis</u> (L.)	<u>Pisidium henslowanum</u> (Sheppard)
<u>Lymnaea truncatula</u> (Muller)	<u>Pisidium nitidum</u> Jenyns
<u>Lymnaea stagnalis</u> (L.)	<u>Carychium minimum</u> Muller
<u>Lymnaea auricularia</u> (L.)	<u>Cochlicopa lubrica</u> (Muller)
<u>Lymnaea peregra</u> (Muller)	<u>Vallonia pulchella</u> (Muller)
<u>Planorbis carinatus</u> (Muller)	<u>Discus rotundatus</u> (Muller)
<u>Anisus vortex</u> (L.)	<u>Vitrea crystallina</u> (Muller)
<u>Bathyomphalus contortus</u> (L.)	<u>Trichia hispida</u> (L.)
<u>Gyraulus acronicus</u> (Férussac)	
<u>Gyraulus albus</u> (Muller)	
<u>Armiger crista</u> (L.)	

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- Berry, F.J. 1978 Pseudamnicola confusa (Frauenfeld) in Central London. Conchologists' Newsletter No. 67, 117-118.

R. C. Preece

REVIEWS

Dietary adaptations in animals. By J. J. Cloudsley-Thompson. Patterns of Progress (Zoology) No. 2, 70pp. 21 figs. Price: £2.80
and The size of animals. By J. J. Cloudsley-Thompson. Patterns of Progress (Zoology) No. 3, 58pp. 25 figs. Price: £2.80

Patterns of Progress (Zoology) is a series of small booklets, the first seven of which appeared with astonishing rapidity earlier this year (1978). The topics covered so far range from general subjects, such as the two reviewed here, to specific groups like isopods or even individual species like the Tuatara, *Sphenodon*. Molluscs have so far been largely ignored. The booklets are small, 14 by 20.3cm (5 by 8½ inches), illustrated with line drawings and photographs, the latter being less sharp than they might be, and to my mind, pricey (£2.80 for 70 and 58pp. respectively).

Dietary adaptations is a brief, informative review of feeding methods in animals. The introductory sections start with photo-synthetic protozoa and pass rapidly through saprophytes (which feed on nutrient solutions), filter feeders and deposit feeders. Two thirds of the booklet deals with larger food items and almost all examples are taken from vertebrates. Although some invertebrates are mentioned, treatment of molluscs is minimal.

The author apparently still believes that the enlarged canine teeth of 'sabre-toothed cats' contributed to their extinction and, as if to underline the point, the last five lines of this paragraph are repeated twice on p. 39. Members of this Society would have welcomed a broader treatment of invertebrate groups. Snails have a wide variety of feeding methods and specialized organs, the radula and jaw, modified for each method. Furthermore, molluscs of one sort or another exhibit all the broad categories of feeding mentioned. Perhaps I am being too chauvinistic.

The size of animals is again a brief and, I felt rather superficial, treatment of the topic. It covers most of the factors which influence the size of the largest and smallest animals. The early part reads like the Guinness Book of Records, from which several facts have been borrowed. The author uses allometry in phylogeny to explain the enormous antlers of the 'Irish Elk' despite the fact that Gould (1973) has produced a very plausible functional interpretation of these antlers.

The references are largely secondary, not very up-to-date and include the occasional error. The title of G. G. Simpson's famous book is "The major features (not factors) of evolution".

Both books then are introductions to the topics they cover, rather than penetrating analyses. They serve a useful function in stimulating interest to pursue such topics further, but there is little in them for the malacologist or conchologist.

C. R. C. Paul

Reference

Gould, S.J., 1973. Positive allometry of antlers in the "Irish Elk", *Megaloceras giganteus*. Nature, Lond. 244: 375-6.

Wagner & Abbott's Standard Catalogue of Shells. Muricidae, Supplement 1. Sept. 1978. Issued free to subscribers. 10pp. 13 text figures.

This supplement deals with the subfamily Muricinae da Costa, 1776 and whatever its faults it constitutes a very complete check list of names valid and invalid, for the Muricinae. The authors seem to have given little personal attention to details and a number of unnecessary mistakes occur, such as incorrect dates, the same name used twice with different authors and other minor details which should have been corrected in the proof stage. It is obvious they did not always check the original descriptions and figures and a number of untenable synonyms are the result. The genus Siratus is a case in point. Had they chosen to follow Radwin and D'Attilio, 1976 Murex Shells of the World, who made a thoroughly satisfactory revision of this genus, the resulting chaos would have been avoided. Unfortunately they have seen fit to follow only the less reliable aspects of this work, to the detriment of their own. The following are corrections and suggested amendments to the list:-

- aduncospinosus Sowerby, 1841 and of Reeve, 1845 (not 1846) are conspecific. ? a valid species.
- affinis Reeve, 1845, not 1846.
- 13-805 aguayoi Clench & Farfante, 1949, is formosus Sow. 1841.
- 13-814 after antelmi etc. add:-
- antillarum Hinds, 1844, is formosus
- 13-818 delete (+finlayi; gundlachi) insert (+nodatus)
- 13-826 beau. If as stated, formosus Sow. is considered an earlier name by some workers, then they can not have seen formosus!
- barclayana H. Adams, 1873 not '74.
- ballegladeensis Vokes, 1963 is a valid species.
- 13-838 bulbosa Perry, 1811 substitute Unrecognised for Recognised?
- 13-841 after 'Beck' add "in Sowerby, 1841".
- 13-843 after (+nitidus) add "is juvenile ambiguus Rve. 1845".
- elegans Beck, delete all.
- 13-878 delete (PHY) insert (SI).
- 13-880 delete (HEX) insert (PHY).
- 13-886 delete (PHY), whatever this species may be, it is not a Phyllonotus. This genus is, and always has been confined to the Caribbean and Panamic Provinces (Vokes, 1967). Probably a Siratus.
- 13-888 delete (HEX) insert (PHY).
- finlayi, delete articulatus insert formosus.
- gundlachi, delete is articulatus. This may be an older name for ciboney Clench and Farfante.
- kusterianus, after turbinatus Lam. 1822 add "(non Brocchi, 1814)"
- martinianus, delete 1945, insert 1845.
- megacerus, delete brevifrons insert megacerus Sow. 1841.
- Reeve, 1845 explanation to pl.6, sp.24 gives 'West Indies', an erroneous Cuming locality, the fig. nos. on the plate have been transposed. Fig. 25 is megacerus.
- nodatus, delete formosus, insert articulatus.
- nigrospinosus, delete "is tribulus". This is a valid species.
- occa, delete "is scolopax". A valid species.
- perelegans Vokes, 1965 n.n. pro. elegans 'Beck' in Sowerby, 1841 non Donovan, 1804. delete "is cailletti". This is a valid species.
- 13-970 delete all. regius Wood, 1828 is regius Swainson, 1821 (PHY).
- 13-976 delete (+thomasi)
- 13-987 delete occa.
- 13-997 How can the authors say this is a Phyllonotus, which it is not, when they state it is 'Not known to us'?
- 14-003 delete (PH?) insert (SI).
- trilineatus Reeve, 1845 (non Sowerby, 1813) is ciboney Clench and Farfante. delete "May be cailletti".
- 14-023 After Lam. 1822 insert "(non Brocchi, 1814) is kusterianus".
- 14-050 delete "no!" add "is anatomica".
- 14-040 anatomica not antomica.
- barclayana H. Adams, 1873 not '74.

T. Pain

SAND-MASON TUBES - A NEW DIMENSION IN SHELL COLLECTING?

The sand-mason (Lanice conchilega (Pallas)) is a segmented marine worm whose membranous composite tube can be found with its characteristically frayed top projecting from the sand. It inhabits sandy/muddy sediments of beaches from the middle shore downwards. The animal has a Mediterranean, Atlantic, English Channel and North Sea distribution.

These tubes on Southport's beach are typified by their consisting of mostly shells, shell fragments with few sand grains. A more representative tube would consist mainly of sand grains and perhaps small rounded pebbles with few shells. The shells, shell fragments and other detrital material are often aligned with their long axes at right angles to the tube, the attached whole shells usually have their exterior attached to the tube so exposing the hinge line. They are especially numerous on the strand line after storms when they are brought up by their thousands.

I believe a representative selection of tubes to look through would be a few thousand at least, this is very time consuming, but as I have found out, is very worthwhile in the end.

When looking for shells use a good hand lens and rotate the tube at different angles, small gastropods often become wedged under shell fragments and remain hidden until looked at from another direction.

Removal of some of the more fragile species is a problem and I have not found a totally satisfactory solution, save trying to identify the shell by hinge line alone. I find removing the shells by finger-nail less chancy than using forceps.

Identification is a problem as many young bivalve shells are present, also shells are often very worn which makes positive identification very difficult to impossible.

The following is a list of Mollusca I have found on examining sand-mason tubes:-

Gastropoda

Complete but worn shells, i.e. C on field card.

<u>Hydrobia ulvae</u> (Pennant)	<u>Chrysalida obtusa</u> (Brown)
<u>Potamopyrgus jenkinsi</u> (Smith)	<u>C. spiralis</u> (Montagu)
<u>Natica</u> spp.	<u>Retusa obtusa</u> (Montagu)
<u>Turbonilla elegantissima</u> (Montagu)	<u>Buccinum undatum</u> L.
<u>Eulima glabra</u> (da Costa)	<u>Turbonilla? crenata</u> (Brown)
<u>Turritella communis</u> Risso (juvenile specimens)	<u>Acteon tornatilis</u> (L.)

Lamellibranchia

Live shells, i.e. A on field card.

<u>Astarte sulcata</u> (da Costa)	<u>Modiolus phaseolinus</u> (Philippi)
-----------------------------------	--

Whole dead shells, i.e. B on field card.

<u>Cardium edule</u> (L.)	(Juv.)	<u>Abra alba</u> (L.)	(Juv.)
<u>Astarte sulcata</u> (da Costa)	"	<u>Donax vittatus</u> (da Costa)	"
<u>Modiolus phaseolinus</u> (Philippi)	"	<u>Mysella bidentata</u> (Montagu)	"

<u>Mactra corallina</u> (L.)	(Juv.)	<u>Spisula elliptica</u> (Brown)	(Juv.)
<u>Spisula subtruncata</u> (da Costa)	"		

Single valves and broken specimens only, i.e. C on field card.

<u>Mactra corallina</u> (L.)	<u>Spisula elliptica</u> (Brown)
<u>Spisula subtruncata</u> (da Costa)	<u>Spisula solida</u> (L.)
<u>Ensis</u> spp.	<u>Nucula turgida</u> Leckenby and Marshall
<u>Nucula nucleus</u> L.	<u>Corbula gibba</u> (Olivi)
<u>Donax vittatus</u> (da Costa)	<u>Dosinia lupinus</u> (L.)
<u>Chlamys varia</u> (L.)	<u>Chlamys opercularis</u> (L.)
<u>Cardium edule</u> (L.)	<u>Acanthocardia echinata</u> (L.)
<u>Abra alba</u> (L.)	<u>Tellina tenuis</u> (da Costa)
<u>Tellina fabula</u> Gmelin	<u>Macoma balthica</u> (L.)
<u>Venus casina</u> (L.)	<u>Venus ovata</u> (Pennant)
<u>Venus striatula</u> (da Costa)	<u>Astarte? montagui</u> (Dillwyn)
<u>Astarte triangularis</u> (Mont.)	<u>Astarte sulcata</u> (da Costa)
<u>Pharus legumen</u> (L.)	<u>Cultellus pellucidus</u> (Pennant)
<u>Gari fervensis</u> (Gmelin)	

The above shells represent only a few of the total number found at Southport but they include some of this area's rarest shells, e.g. Astarte? montagui (Dillwyn) and Astarte triangularis which are both 'firsts' for this area. Has any member found these shells further south?

Chaster in his report of Southport's molluscs* at the turn of this century gave details of over 130 shells. Various recorders have found over 100 (a few new records) and with the help of the tubes many of the rarer shells which seemed doomed to obscurity have now been refound, the sand-mason tubes having added 8 more species, making the total number of species found at Southport now around 108.

The sand-mason tubes provide an ideal way of finding the minutissima such as Turbonilla, Chrysallida, etc., which could only be found with great difficulty if any other method was used.

A brief look at the sand-mason tubes of the beaches of Lytham and St. Annes has revealed equally interesting shells including a further Astarte montagui at Lytham. I believe that if other marine conchologists were to study these tubes (when present) on their local beaches they could add several more shells to the total number of species for their marine area.

Julie K. Yates

*Appendix to the first report of the Southport society of natural science 1890-91. A list of Mollusca by G. W. Chaster, M.R.C.S.

REPORT OF FIELD TRIP TO LYTHAM ST. ANNE'S, LANCASHIRE, SATURDAY 14th. OCTOBER 1978

LEADER - DR. P. LINGWOOD

Taking care not to get captured by the swarm of traffic heading towards the Illuminations at Blackpool, 8 members and friends met at Ansdell & Fairhaven Station at 1 p.m. on a day which was fine and warm except that a thick layer of cloud persisted for the whole of the visit. Lytham is on the north side of the Ribble estuary, and the shore is a mixture of mud and sand. The party divided into two groups, some to examine the strand-lines and upper reaches of the shore, others to take advantage of the low tide, and to gradually make their way to the edge of the river channel, marked here by a line of dumped rock. Digging and

sieving yielded only Macoma balthica (L.) alive in the upper third of the shore which was mostly of sand. In the middle third which was mostly mud, only living Scrobicularia plana (da Costa) was obtained. In the lower part of the shore, again predominantly sand, the sand contained a large amount of moisture and walking was difficult, especially on the edge of the river channel. Digging in this area revealed a fairly dense population of Cerastoderma edule (Linnaeus), 'guesstimated' at one point to be around 300 per square metre. An interesting feature of this dig was the presence also of a large number of juveniles about 10mm in diameter, but there were none of intermediate size.

By the collective endeavours of the party we were able to add to the list of species already recorded for this area and a list of those found may be obtained from Dr. Lingwood on request.

Wm. F. Edwards

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

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

ITZN 59

The following Opinions (listed by number) have been published recently by the International Commission on Zoological Nomenclature (see Bulletin Zoological Nomenclature, Volume 35, part 2, 31 October 1978).

Opinion No.

- 1108 (p.94) Conservation of Marstonia Baker, 1926 and of Amnicola lustrica Pilsbry, 1890 (Mollusca, Gastropoda).
1109 (p.97) Cerithium Bruguière (1789) (Gastropoda): designation of type-species under plenary powers.

The Commission cannot supply separates of Opinions.

The required six months' notice is given of the possible use of plenary powers by the International Commission on Zoological Nomenclature in connection with the names listed by case number.

- 2227 Dicranodonta Woods, 1899 (Bivalvia, CUCULLAEIDAE): request for determination of type-species.

Comments should be sent in duplicate (if possible within six months of the date of publication of this notice in Bull. Zool. Nom. 35, part 2), citing case number to:

R. V. Melville, The Secretary, International Commission on Zoological Nomenclature, c/o. British Museum (Natural History), Cromwell Road, London, SW7 5BD, England.

Those received early enough will be published in the Bulletin of Zoological Nomenclature.

GENERAL NOTES

ANNUAL SUBSCRIPTIONS, 1979

Members are reminded that the Annual Subscription for 1979 was due on 1st.

January. Will any who have not yet paid please send this without further reminder. Ordinary and Family Members may deduct the sum of 50p (U.S. \$1.50) from subscriptions paid before 31st. March. All cheques and postal orders should be made payable to the Society, and forwarded to the Hon. Treasurer.

Members are further reminded that only votes from paid-up Members will be valid in the election of Officers and Council Members.

No publications can be sent to Members whose current subscriptions are outstanding, although any publications withheld will be forwarded on receipt of the arrears.

Marjorie Fogan (Hon. Treasurer)

Atherton, Manchester,

Members Annual Subscriptions

Ordinary Member	£5.00	(U.S. \$15.00)
Family Members	£6.00	(U.S. \$18.00)
Junior Member	£1.00	(U.S. \$ 3.00)

Kensington, London,
01-370 5832

Dear Juniors,

As you will know I have taken over from Dr. Adrian Rundle as Officer-in-Charge of Junior Members.

As few Juniors are able to get to the indoor meetings of the Society, I hope that you will write to me with any queries concerning the Society or Conchological matters in general. I was pleased to receive letters from some of you already but would like many more!

I know that many of you want to contact members with similar interests and I can help you here in particular. Please do not hesitate to write about any problem, even if I cannot help directly, I can pass your queries on.

Finally, if any of you can come to the indoor meetings, and I hope you can, please make yourself known to me.

Best wishes,

Richard Preece

INFORMATION WANTED

Mr. P. S. Wright, Soil Survey of England and Wales, University College, Singleton Park, Swansea, SA2 8PP, is investigating relationships between soil conditions and the occurrence of Lymnea truncatula with a view to using soil maps to identify areas with liver fluke hazard. He will be grateful to readers for information regarding environmental factors governing the distribution of L. truncatula. He has prepared a preliminary paper 'Soil Conditions and the Distribution of Lymnea truncatula (Dwarf Pond Snail), the Intermediate Host of Fasciola hepatica (Liver Fluke).'

FIELD COURSES

A WEEK IN PEMBROKESHIRE Tutor: Dr. June Chatfield
8 - 15 August 1979 at Orierton Field Centre, Dyfed.

A course entitled 'Seashells, snails and slugs' designed for anyone interested in molluscs including beginners and those with some prior knowledge of conchology. Field excursions will be made to investigate the molluscan faunas of rocky, sandy and muddy shores and two days will be spent studying the land and freshwater species.

Course fee, including residence £56.

Further details from The Warden, Orierton Field Centre, Pembroke, Dyfed, SA71 5EZ

LAND SNAILS AND SLUGS IN SURREY Tutor: Dr. June Chatfield

29 August - 2 September 1979 at Juniper Hall Field Centre, Dorking.

A short course entitled 'Identifying land snails and slugs' suitable for both beginners and those with some prior knowledge. Both field and laboratory work will involve identification and an appreciation of ecology. Juniper Hall is situated on the chalk of the North Downs and thus has a rich molluscan fauna.

Course fee, including residence £36.

Further details from The Warden, Juniper Hall Field Centre, Dorking, Surrey, RH6 6DA

PORTSMOUTH POLYTECHNIC - THE SHORE ENVIRONMENT: METHODS AND ECOSYSTEMS

A Symposium on this topic has been arranged, to be held at Portsmouth on 2-6 April 1979. Papers will be given by invitation to explore topics under the above major headings and the proceedings will be published. The programme will also include workshop-discussions, laboratory displays and demonstrations of field-methods.

The registration fee is £15, reduced to £11.25 for Systematics Association members and to £7.50 for full-time students.

The organisers are J. Price (British Museum, Natural History), D. Irvine (Polytechnic of North London) and W. Farnham (Portsmouth Polytechnic).

Further details can be obtained from the local secretary: Dr. W. Farnham, Marine Laboratory, Ferry Road, Hayling Island, Hants., PO11 0DG

TETRAD MAPPING OF SUSSEX AND SUFFOLK LAND AND FRESHWATER MOLLUSCA

Tetrad mapping schemes for the British Land and Freshwater Mollusca are in progress for the Isle of Wight, V.C.10 (Dr. R. C. Preece, [redacted], Cowes, Isle of Wight), East and West Kent, V.C's. 15 and 16 (Mr. E. G. Philp, [redacted], Aylesford, Kent, [redacted]), Surrey, V.C. 17 (Dr. A. J. Rundle, [redacted]), Kew, Richmond, Surrey, [redacted]), Bedfordshire, V.C. 30 (Mrs. E. B. Rands, [redacted], Luton, Bedfordshire, [redacted]) and Northamptonshire, V.C. 32 (Mr. A. G. H. Osborn, [redacted], Olney, Buckinghamshire). It is proposed to start similar schemes for East and West Sussex, V.C's. 13 and 14, and East Suffolk, V.C. 25. We would be pleased to hear from anyone who would like to help with the schemes or who has records localised to a tetrad.

M. J. Willing, [redacted], Midhurst, W. Sussex, and I. J. Killeen, [redacted], Felixstowe, Suffolk, [redacted]

NEW INFORMATION RE SNAILS

An old crofter explained "If a downpour is going to be prolonged the snails crawl under the largest leaves. But if only light rain or a shower is coming, they remain on the outside. And they never seem to get it wrong". (and in the same Nature note)

"Some snails, preparing for rain, developed wee knobs or tubercles through which - mainly because drinking did not come easy to them - they absorbed moisture. And some became yellow if there was an immediate likelihood of a storm. After a downpour they turned blue again".

Ex Nature (a regular feature) of The Sunday Telegraph 21 Aug. 1977. (from Mrs. N. F. McMillan)

MOLLUSCS IN ESPERANTO

Members will be interested to hear that Mr. Wilfrid M. Appleby, of Cheltenham, has been booked to give another address in Esperanto on Conchology at the Congress of the British Esperanto Association in Cheltenham, Easter 1979.

U.S.A. ATTEMPTING TO DEVELOP 'SUPER OYSTER'

New South Wales growers might not be overjoyed, but oyster farmers in more southerly States will be pleased to hear that United States researchers are working to develop what's been dubbed a super Pacific oyster.

The Pacific oyster is regarded as an interloper amongst the generally smaller but tastier Sydney rock oyster in New South Wales. But growers in both Tasmania and South Australia are keen to expand production of the Pacific oyster.

From the U.S.A. comes news that Oregon State University is working to produce a Pacific oyster that will grow larger and faster. Professor Jim Lannan, assistant professor of fisheries at the University, hesitates to use the term 'super' for the oysters he hopes to produce, but says he is applying the well-founded principles of livestock breeding to the mollusc. Professor Lannan has bred several improved oyster lines since beginning his hatchery research in 1970, but warned that growth rates varied with environment.

With acknowledgment to 'Australian Fisheries' (from Mrs. Betty M. Smith)

MUSSELS AS FOOD

In the past a number of notes have been included in The Newsletter with regard to the different uses to which molluscs have been put when producing some exotic dish for the dining table. In contrast to this I thought the following extract taken from 'Shells of the New York City Area' by Morris K. Jacobson and William K. Emerson, published by Argonaut books of New York in 1961 may be of interest to our readers. The extract comprises the last paragraph on Mytilus edulis Linne The Common Mussel.

"We cannot easily forget a group of gypsies who came one Sunday to spend the day at Coney Island. Under their brilliant clothes they wore their bathing suits and each one brought along, wrapped in newspapers, a half loaf or so of bread and an onion. When lunch time arrived, they cut open the onion, rubbed it diligently onto the bread and then sauntered to the rock break-waters which the retreating tide had uncovered. Here with a strong knife each one cut loose a dozen small mussels, cut open the tight shells and sucked in the yellow contents between big bites of onion-covered bread. They ate with such gusto and apparent delight that it took much willpower to keep from asking them for a snack. We still reserve the right sometime to indulge in such a meal!"

A. Norris, Leeds

PUBLICATIONS AVAILABLE

The Best of the Nautilus: "Here is a treasury of nostalgic and often humorous writings taken from the first 40 years of America's oldest mollusk journal, covering the late pioneering period of 1886 to 1927. The noted malacologist and editor, R. Tucker Abbott, has carefully gathered a wide-ranging series of over 100 articles that depict the lore and excitement of shell hunting in the United States." 288pp., clothbound. \$13.95.

Living Marine Molluscs: C. M. Yonge and T. E. Thompson. "The first modern book on the biology of marine mollusks that is of textbook quality, yet so beautifully written and illustrated that the legions of amateur conchologists will readily

absorb its wealth of information" - R. Tucker Abbott, Ph.D. Clothbound, 288pp., 162 text figures, 16 plates with 18 glorious color photographs. \$14.95.
From: American Malacologists, P.O. Box 4208, Greenville, DE19807, U.S.A.

Announcing a New Scientific Journal - Monographs of Marine Mollusca. Taxonomic revisions of the living and Tertiary marine Mollusca of the world. Edited by R. Tucker Abbott.

Monographs of Marine Mollusca is a professional journal devoted to the systematics, biology, zoogeography and taxonomy of marine mollusks, both living and fossil. It is issued with color plates and in a convenient looseleaf form compatible with the former Indo-Pacific Mollusca. Subscribers to the latter should make certain they now apply for the continuing editorial production of the editor, Dr. R. T. Abbott. Numbers are issued irregularly as research is completed. Number 1 is "The Family Cerithiidae in the Indo-Pacific" by R. S. Houbbrick of the Smithsonian Institution. Numbers in preparation include the Mitridae by W. O. Cernohorsky, Babylonia by Altena and Gittenberger, and others. Subscribe by writing American Malacologists, Inc., P.O. Box 4208, Greenville, Delaware 19807, U.S.A.

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, WC2 at 25p 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

EXCHANGES WANTED. I would like to exchange shells with other members, preferably from overseas. I collect most of the popular ones but mainly: *Cypraea*, *Harpa*, *Conus*, *Oliva* and *Voluta*. Please send list with first letter: J.K. Lee, 2 Preston Road, W. Wimbledon, London, SW20 OSS, England.

Mr. B. van Heugten, Heezerweg 90, Eindhoven, The Netherlands, has European marine shells for exchange for British marine shells.

ANNOUNCEMENT: Fourteen Members have each purchased at 25p the index to Jeffreys' British Conchology mentioned on pp.89-90 in No. 65 of the Conchologists' Newsletter. With two "Keep the change" donations the sum of £4.08 has been realised for the Society's funds.

SHELL INSURANCE. Contact us for expert advice without obligation. Jaykel Insurance Services and Finance Ltd., 135 Mitcham Road, London, SW17 9PE Tel.: 01-767 2430.

HOW ABOUT THIS for a sequel to the tit-bit in the last Newsletter entitled "Post Office Snails"? David Orben, who is a professional American writer of jokes, made the following gag on the leisurely mail service there (Yes, they, too, suffer from "snail mail"): "If we are what we eat, the Post Office cafeteria must serve a lot of escargots." (From Jacques K. Lee)

PAPERS FOR STUDENTS No. 16 - CORRECTIONS

The first plate has unfortunately had the titles for *Cerastoderma edule* and *C. lamarcki* (= *C. glaucum*) transposed *C. lamarcki* being characterised by possessing a short ligament not long as depicted. A further error occurs in relation to the dimensions quoted on the second plate which should read 1 mm for *Parvicardium minimum*, *P. pepillosum*, *P. ovale*, *P. scabrum* and *P. exiguum* and not 1 cm as given.

Any inconvenience caused by these errors is much regretted.

THE CONCHOLOGISTS' NEWSLETTER

No. 69

ISSN 0573-2336

Newsletter Editor: P.E. Negus,

June 1979

Chelsea Bridge Road,
London, [REDACTED].

Produced by THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

IDEAS FOR A CONCHOLOGICAL HOLIDAY

A recent request from the Marine Recorder for all records of 20 selected species from each marine census area for the production of some trial maps, was an effective way of pointing out deficiencies in the existing records. Marine Census Area 22, Cardigan Bay, extends from Cemaes Head near Cardigan, northwards along the stretch of Cardigan Bay and along the south shore of the Lleyn Peninsula to Bardsey Island, and this is one of the most under-recorded of the census areas. This part of the Welsh coast is very attractive scenically and excellent holiday country. Admittedly this area is not known for the richness of its molluscan fauna and some beaches are certainly exposed and support a limited intertidal fauna. However, in certain areas like Ynyslas north of Borth, Mochras (or Shell Island) and Harlech, banks of shells are washed up in quantity and these include some interesting off-shore species. Scenically the Lleyn Peninsula is a very spectacular part of the Welsh coast, and distinctly wild at times. This area of shore is under-recorded and some of its beaches, like that at Abersoch, can provide a good range of shells.

Conchological holiday activities could well come into two categories. One would include recording the full range of species (both live and dead shell records) which occur in named sites, and with each site worked until the law of diminishing returns sets in. The other approach would be to select a few species which have a definite habitat preference and which can be confidently identified in the field, and to record the distribution of these species as fully as possible within the travelling range of the holiday. Either of these approaches would produce some new records. For example the very common Grey Chiton Lepidochitona cinereus is only recorded in the Census records for 4 of the 22 possible 10 km. squares in Area 22 and there is even scope for further records of the Common Edible Cockle, Cerastoderma edule which was listed from only 12 of the 22 squares.

The following list of 10 km. squares in Area 22 with the names of localities and the state of recording is given below. This will outline the sites for which no cards have been sent in and also which sites are obviously under-recorded and would merit further visits. The Area Representative will be pleased to give further advice to anyone planning field work in the Cardigan Bay area (Please note recent change of address given in the latest membership list). A list of references concerning the marine molluscs of this coast is given in the Appendix of a paper in the April 1979 edition of the Journal of Conchology.

Information on various types of accommodation in this area is to be found in "Where to stay in Wales" which is available from The Welsh Tourist Office, Dept. W.T.S., P.O. Box 151 WDO, Cardiff, South Wales.

J. E. Chatfield

A Summary of Recording in Area 22

10 km square	Locality	A records	B/C records
SN/14	Cemaes Head, Poppit Sands, Cardigan and Gwbert	12	14
SN/15	North of Gwbert	0	0
SN/25	Aberporth and Tresaith	3	68
SN/35	Llangrannog and New Quay	7	14
SN/36	New Quay Head	10	3
SN/45	East of New Quay	0	0
SN/46	Aberaeron	10	1
SN/56	Llanrhystud	0	0
SN/57	South of Aberystwyth	0	0
SN/58	Aberystwyth	14	12
SN/68	Lower Borth	21	68
SN/69	Borth, Ynyslas and Aberdyfi	6	48
SN/59	Tywyn to Aberdyfi	0	0
SN/50	Tywyn and Llwyngwrl	0	103
SH/61	Barmouth and the Mawddach estuary	10	37
SH/51	South of Tal-y-bont	0	0
SH/52	Dyffryn Ardudwy, and Shell Island (Mochras)	18	211
SH/53	Harlech, Porthmadog and east of Cricieth	16	80
SH/63	East of Porthmadog	0	0
SH/43	Cricieth	0	2
SH/33	Pwllheli and Llanbedrog	17	49
SH/32	Abersoch	10	66
SH/22	Hell's Mouth	0	0
SH/12	Aberdaron and Bardsey Island	11	11

These records are all post-1960 and do not include records from the literature or pre-1960 field records. The 10 km. squares used for the marine survey of the shore are shown in the annual A.A. Members' Handbook.

NOTES ON BRITISH SLUGS

In the two years or so since the publication of the Atlas of the Non-Marine Mollusca of The British Isles, more information on the distribution of two of the more recently discovered species has been forwarded to Dr. M. P. Kerney and myself. Recent evidence suggests that both Boettgerilla pallens and Limax pseudoflavus are spreading rapidly through the British Isles. It was felt, therefore, that the time is now right to summarize the situation with regard to these two species. In the future it may prove to be important to be able to establish how rapidly a slug new to the British fauna can colonize and spread, and by what means that spread takes place. It is essential, therefore, that any information available is gathered as soon as possible after the arrival of one of these two species in a new locality. I would like to ask all members to keep a special look-out for these two slugs in their own districts, particularly in gardens, and to get other people, naturalists and gardeners alike, to report any new or different species of slugs they may find. I am always willing to examine and identify any slugs that are sent to me at Leeds City Museum.

A. NORRIS, NATURAL HISTORY DEPT., LEEDS CITY MUSEUMS, 1st. JANUARY 1979

Limax (Limacus) pseudoflavus Evans 1978

Limax grossui Lupu Chatfield 1976 (non lupu 1970)

Limax hibernicus nom.nud. Kerney 1978

When the Atlas was published in 1976, only one record of Limax pseudo-

flavus had been confirmed for the British Isles, excluding Ireland. This specimen had been collected from woodland by Mr. S. P. Dance at Midroilyn in Cardiganshire, in June 1969, and was confirmed by dissection by Dr. June Chatfield. During 1976-77 information was reaching me that Limax pseudoflavus had been found in the Liverpool area, but I was unable to acquire specimens for confirmation until early 1978. Dr. I. D. Wallace of Liverpool Museum was asked by Mrs. Nora F. McMillan on my request, to keep a look-out for yellow slugs in the Liverpool area. As a result, he sent me in May 1978 a number of specimens from West Kirby on The Wirral, which I confirmed and submitted for the National census. In September he again forwarded to me a number of specimens, this time from a garden in Meols near Hoylake, thus establishing the species in two different 10 km squares in the Liverpool area. In October, as a result of a visit to Northumberland, Dr. Wallace contacted me with a further batch of material, this time collected at Berwick-on-Tweed.

In July of 1978 Dr. N. J. Evans published a description of Limax pseudo-flavus in the Irish Naturalists Journal. In this paper he lists several sites from the Liverpool area from a further two 10 km squares, the earliest record of which dates back to November 1972, some four years prior to the publication of the Atlas. Dr. Evans' records, combined with those from Dr. Wallace, thus confirmed the existence of Limax pseudoflavus in four different 10 km squares in the Liverpool area.

These records indicate that Limax pseudoflavus is very well established around Liverpool. It will almost certainly spread, probably rapidly, from this centre to other parts of Britain. It is important, therefore, that all yellow slugs found in Britain should be examined carefully to establish if they are Limax flavus or pseudoflavus.

Limax pseudoflavus is a large slug 70 - 100 mm in length and very similar to Limax flavus in appearance, but unlike Limax flavus this species seems to prefer wilder habitats, being found mainly in association with trees. In the Liverpool area, however, this seems not to be true, as most of the records are from gardens, in which it freely associates with Limax flavus. It is possible, therefore, that it has adapted its habitat requirements in England.

It differs from Limax flavus in being generally darker in colour, usually of a characteristic dark greenish-olive appearance, mottled with pale yellow-green blotches. They do, however, vary from orange-brown to greyish-green, with blotches of varying shades of yellow-green. The tentacles of Limax pseudoflavus are generally grey as distinct from Limax flavus whose tentacles are steely-blue.

Internally, Limax pseudoflavus can easily be separated from Limax flavus by the shape of the penis, and the point at which the spermatheca joins the free oviduct. In Limax pseudoflavus the penis is 'c' shaped and flattened in cross section, whilst internally it differs in only having one main longitudinal fold. The penis of Limax flavus is 's' shaped and contains two main longitudinal folds. The spermatheca in the two species joins the rest of the reproductive system at different points. In Limax pseudoflavus the spermatheca joins the base of the penis, whilst in Limax flavus it joins the free oviduct, forming a short common duct prior to entering the atrium.

List of localities in which this species has been recorded in Britain, (excluding Ireland), in date order:

June 1969	Midroilyn, Cardiganshire	V.C. 46	NGR. 22(SN)4656
Coll. S. P. Dance	Det. June Chatfield	Habitat	Woodland
Nov. 1972	Crosby, Liverpool	V.C. 59	NGR. 53(SJ)3-9-
Coll. N. J. Evans	Det. N. J. Evans	Habitat	Garden

Sept. 1973	Wallasey, Nr. Liverpool	V.C. 58	NGR. 33(SJ)302397
Coll. N. J. Evans	Det. N. J. Evans	Habitat	Garden
May 1974	Fairfield Crescent, Liverpool	V.C. 59	NGR. 33(SJ)379917
Coll. N. J. Evans	Det. N. J. Evans	Habitat	Garden
May 1974	Sefton Park, Liverpool	V.C. 59	NGR. 33(SJ)372873
Coll. N. J. Evans	Det. N. J. Evans	Habitat	Garden
May 1978	West Kirby, Nr. Liverpool	V.C. 58	NGR. 33(SJ)218863
Coll. I. D. Wallace	Det. A. Norris	Habitat	Gardens
Sept. 1978	Meols near Liverpool	V.C. 58	NGR. 33(SJ)233900
Coll. I. D. Wallace	Det. A. Norris	Habitat	Gardens
Oct. 1978	Berwick on Tweed	V.C. 68	NGR. 46(NU)0052
Coll. I. D. Wallace	Det. A. Norris	Habitat	Gardens

BOETTGERILLA PALLENS SIMROTH 1912

<u>Boettgerilla vermiformis</u>	Wikter 1959
<u>Boettgerilla compressa</u>	Simroth, Colville, Lloyd-Evans and Norris 1973 (non Simroth 1910)

Boettgerilla pallens was first recorded in Britain on 3 September 1972 by Dr. Barry Colville, who located three juvenile specimens under stones near the Abbey, Windermere (NGR. 34(SD)403985). In the four years from 1972 to the publication of the Atlas in 1976, four further records came to light, one each for Wales, Cornwall, Northern Ireland and the Channel Islands.

In the original publication in the Journal of Conchology (Colville, Lloyd-Evans & Norris 1974) we surmised how this slug might have been introduced into Britain, one of the possible means of entry being the plant nursery at the Lakeland Garden Centre near Windermere, where several specimens were located. An examination of the above sites, plus the further sites from five different counties throughout Britain and Ireland, indicates that man has been, and still is, the main factor in the spread of this slug. Most of the sites from which this slug has been recorded are in, or near, gardens.

Several descriptions of Boettgerilla pallens have been published over the past few years in various publications, but due to the rapid increase in the number of records of this species, a further short description is perhaps appropriate.

Boettgerilla pallens is a very slender slug, usually under 60 mm in length and between 3 and 5 mm broad. Typically, it is of a bluish-grey colour when adult, and nearly white when very young. It has a dorsal keel which extends from the mantle to the tip of the tail. It has dark tentacles, and can be distinguished internally from all other British slugs by the presence of the characteristic spindle-shaped swelling of the vas deferens.

List of localities in which this species has been recorded, in date order:

Sept. 1972	The Abbey, Windermere	V.C. 69	NGR. 34(SD)403985
Coll. B. Colville	Det. A. Norris	Habitat	Woodlands, amongst rubble
Dec. 1973	Mount Stewart, N. Ireland	V.C.H. 38	IGR. J555694
Coll. R. Anderson	Det. A. Norris	Habitat	Woodland
May 1975	St. Fagans Castle nr. Cardiff	V.C. 41	NGR. 31(ST)19733
Coll. D. C. Long	Det. D. C. Long	Habitat	Gardens
May 1975	St. Martins, Jersey	V.C. 113	GR. WV695531
Coll. Reg G. Long	Det. J. Chatfield	Habitat	Gardens

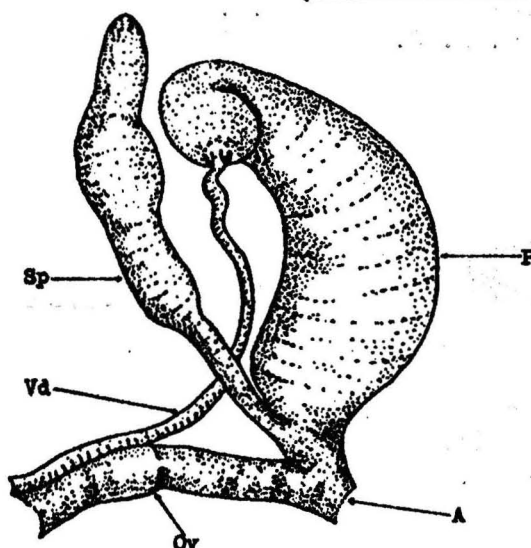
Sept. 1975	Reskadinnick, Cornwall	V.C. 1	NGR. 10(SW)638417
Coll. S. M. Turk	Det. S. M. Turk	Habitat	Garden
Nov. 1975	Rosemount, Creyabbey, N. Ireland	V.C.H. 38	IGR. J584682
Coll. R. Anderson	Det. R. Anderson	Habitat	Waste ground
Oct. 1976	Parkgate, N. Ireland	V.C.H. 39	IGR. J232879
Coll. R. Anderson	Det. R. Anderson	Habitat	Quarry
June 1977	The Lizard, Nature Reserve	V.C. 1	NGR. 10(SW)6-1-
Coll. A. J. Rundle	Det. A. J. Rundle	Habitat	Amongst rubble
June 1978	Buriton, Nr. Petersfield	V.C. 11	NGR. 41(SU)739199
Coll. A. J. Rundle	Det. A. J. Rundle	Habitat	Amongst rubble
Aug. 1978	Quarry Road, Belfast	V.C.H. 38	IGR. J389759
Coll. E. Platts	Det. R. Anderson	Habitat	Garden
Oct. 1978	Petersham, West London	V.C. 17	NGR. 51(TQ)1-7-
Coll. A. J. Rundle	Det. A. J. Rundle	Habitat	Woodland, amongst rubble
Oct. 1978	Hinckley, Leicestershire	V.C. 55	NGR. 42(SP)4392
Coll. G. Riley	Det. G. Riley	Habitat	Garden
Oct. 1978	Little Neston, Wirral	V.C. 58	NGR. 33(SJ)297774
Coll. C. R. C. Paul	Det. C. R. C. Paul	Habitat	Garden

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Actual Size

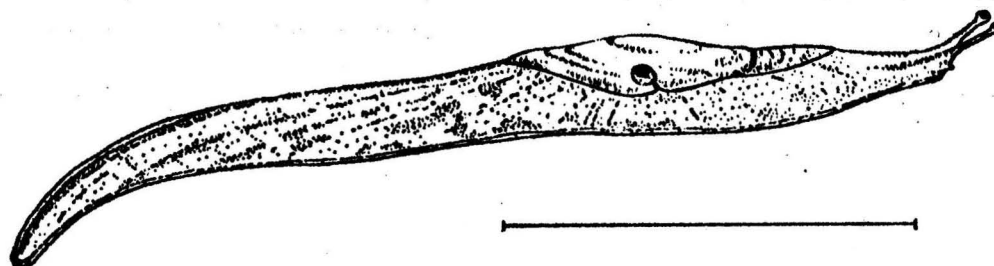


REPRODUCTIVE SYSTEM

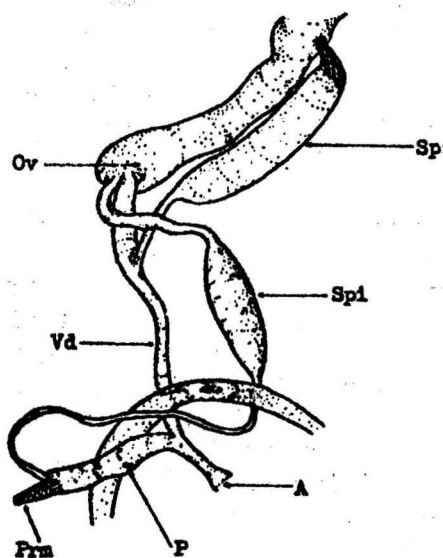
- A = atrium
- Ov = oviduct
- P = penis
- Sp = spermatheca
- Vd = vas deferens



DISTRIBUTION MAP



Actual Size



REPRODUCTIVE SYSTEM

- A = atrium
- Ov = oviduct
- P = penis
- Prm = penial retractor muscle
- Sp = spermatheca
- Spi = spindle
- Vd = vas deferens



DISTRIBUTION MAP

GOSSE ON WEYMOUTH, DORSET

The September 1978 Newsletter contained an article by Dr. Chatfield about a book which the Victorian naturalist Philip Henry Gosse wrote following a sea-side holiday in Tenby; she suggested that "It would be interesting to revisit some of these collecting sites, following Gosse's precise directions, and to see what change might have occurred in the 120 years which have elapsed since the publication of the book."

Gosse wrote a similar account of a period in 1853 spent at Weymouth collecting specimens of marine life, the main purpose of which appeared to be to provide stock for marine aquaria which he was then popularising by his writings and lectures; in fact he entitled this book "The Aquarium", which term had apparently until then only been used "to designate the tanks in which aquatic plants were reared."

Shores around Weymouth have a diverse mollusc fauna (134 species currently recorded alive in the ten kilometre square) and many of Gosse's records are still valid. My first acquaintance with the small black sea slug Runcina coronata was in 1971 when I found it in some quantity on Zostera marina growing near Sandsfoot Castle in Portland Harbour. It was with great delight that I later read that Gosse "took this little Mollusk by hundreds on the Zostera left dry at low spring tide, below Sandsfoot Castle." Not far away, another sea slug Elysia viridis is always present on the green alga Codium growing on the Nothe ledges, just as Gosse recorded it; likewise the bivalve Venerupis aurea still lives in sand in the Fleet near Wyke Regis.

Gosse is at his most amusing in an account of a dredging trip in Weymouth Bay. "The preparations are made, the dredges and keel-drag are overhauled, a goodly array of pans, tubs, jars, and bottles are put on board, my mackintosh and swimming belt are on, (for you can never tell what eventualities of weather or accident may occur) and a stout packet of sea-stores are snugly thrust into the locker." Of his boatman, he says "A clever fellow is Jone, and though only bred as a fisherman, he is quite an amateur naturalist. There is nobody else in Weymouth harbour that knows anything about dredging (I have it from his own lips, so you may rely on it); but he is familiar with the feel of almost every yard of bottom from Whitenose to Church-Hope, and from Saint Aldham's Head to the Bill. He follows dredging with all the zest of a savant; and it is amusing really to hear how he pours you forth the crackjaw, the sesquipedalian nomenclature. "Now, Sir, if you do want a Gastrochaena, I can just put down your dredge upon a lot of 'em; we'll bring up three and four in a stone." "I'm in hopes we shall have a good Cribella or two off this bank, if we don't get choked up with them 'ere Ophiocomas." He tells me in confidence that he has been sore puzzled to find a name for his boat, but he has at length determined to appellation her "The Turritella", "just to astonish the fishermen, you know, Sir" - with an accompanying wink and chuckle, and a patronising nudge in my ribs. Jone is a proud man when he gets a real savant alone in his boat; and he talks with delight of the feats he has achieved in the dredging line for Mr. Bowerbank, Mr. Hanley and Professor Forbes. I will say, I found him no vain boaster, but able to perform his professions; and can heartily recommend him to any brother naturalist who may desire to "dredge the deep sea under" in Weymouth Bay, as one who knows what is worth getting, and where to get it."

Perhaps this passage will strike a chord in the memory of those members who were present at the weekend dredging trip at Weymouth in 1973.

Gosse is not mentioned in either of the Dorset County marine mollusc lists (Mansel-Pleydell 1898 and Sykes 1945) and neither includes Aegires punctilucens or Sepioloa atlantica; recording of both these species in Weymouth Bay rests only on the references in "The Aquarium". Why was Gosse thus ignored by con-

A SECOND EDITION OF THE SOCIETY'S NON-MARINE ATLAS

The Atlas of the non-marine Mollusca of the British Isles was published in 1976. It was never intended to be definitive or that mapping at national level should thereafter cease. The volume of new data has certainly diminished in the past three years. Of course, now that the broad picture of distribution is known it is only right that our energies should increasingly be directed towards other matters (especially investigating habitats). Nevertheless, I think that a second edition of the Atlas is desirable for a variety of reasons and that now is the proper time to begin planning. The significance of the mapped patterns depends on evenness and completeness of coverage; this remains imperfect. Certain recently recognised taxa (especially slugs) are either inadequately mapped or not mapped at all. A finer discrimination of date-classes needs to be made on certain maps to show the accelerating effects of man. Lastly, there is room for improvement in the physical production of the book, especially its binding.

The map appended shows coverage to March 1979. I should be very glad of lists from the more poorly recorded squares. The worst major areas remaining are (a) the north-eastern seaboard counties of Scotland from the Firth of Forth to Aberdeenshire, and (b) a large area in north-central Ireland, in and around Co. Cavan.

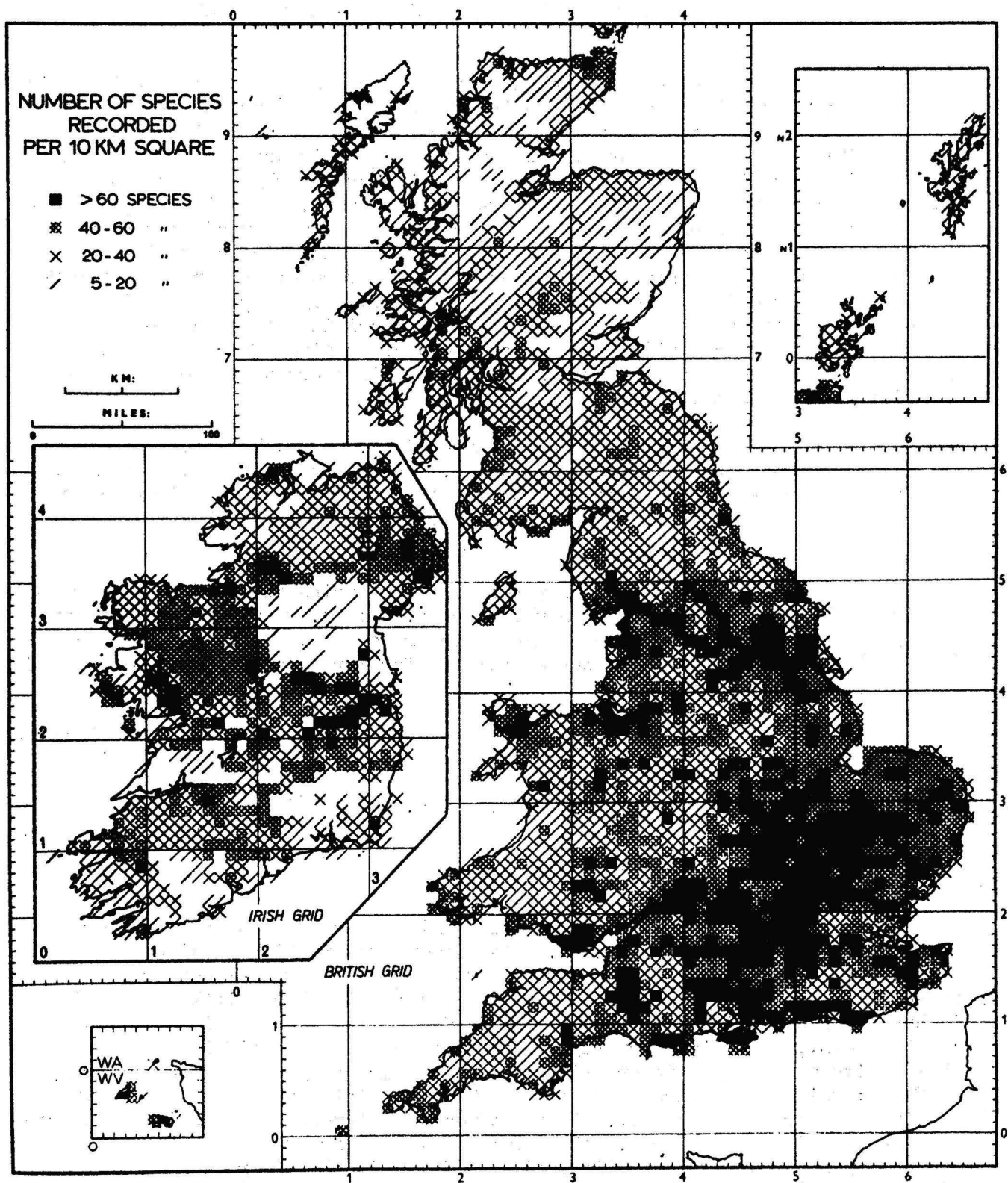
Members are reminded that a new record card bearing the current nomenclature is available, illustrated in Newsletter No. 64: 71. I will send a supply to any member on receipt of a 9p stamp to cover postage. Photocopies of existing 10-kilometre square master cards (but not for more than six squares please) will also be sent on request.

M. P. Kerney

COLLECTORS IN EAST AFRICA - 1. A. E. CRAVEN (1849/50-1937)

PART 1

My second Presidential Address dealt with some of the early collectors of non-marine Mollusca in East Africa. This proved too rambling a discourse to prepare for publication. Many of these collectors were well-known travellers whose lives are very completely documented but about others little or nothing is known. When I first arrived in East Africa I worked at Amani in the East Usambara Mts., Tanzania, formerly an extensive area of beautiful rain forest where quite a number of interesting snails, particularly Streptaxidae, were to be found; this is now largely destroyed for tea estates and many species must be virtually or quite extinct. I was naturally interested in previous collectors who had visited the area. The German Leopold Conradt and the Englishman Alfred Eugene Craven were particularly mentioned in the literature. I could find out nothing about Conradt but a little is known concerning Craven. One of his main claims to fame is a paper in the Proceedings of the Zoological Society of London for 1880 describing new species he had collected in the Usambaras; the paper was well-prepared and beautifully illustrated (by A. H. Searle) and it is clear that Craven had a good knowledge of African non-marine molluscs. He also published 14 other papers including a revision of Sinusigera which is I suppose the most important.



You will not find the genus Sinusigera D'Orb. in Thiele or other such references although in earlier works such as H. & A. Adams it is noted and figured. Even when Craven wrote his revision there was a controversy over the nature of this presumed genus of pelagic shells, some workers contending that they were larvae. Craven was well aware of this but had collected large numbers during his years at sea and their occurrence in vast numbers, the shells all identical in appearance, swayed him in his belief that they must be good species; he erred in good company. He later himself showed that he had been wrong and that they were indeed but larvae of a whole range of different Gastropods after all. Two short notes give this correction.

If ever one needed confirmation that the only thing that really survives one is work then Craven's life supplies it. I have found out virtually nothing concerning his private life but his work survives as a permanent record.

I have entirely failed to find out where or exactly when he was born. A search of the records at St. Catherine's House including births at sea, births abroad registered at consulates and the army lists failed to reveal any information. The Deaths Register records that he died at Hastings aged 87 on the 4th. March 1937. He must therefore have been born in 1849 or 1850. Although the records give details of two A. Cravens being born in each of these years at Keighley, Leeds, Nantwich and Birmingham there is no record of an A. E. Craven. His second christian name and the fact that he obviously spoke and wrote French quite well hints at a connection with a Francophone country; perhaps his mother was French or Belgian. He mentions two Belgian friends in his papers ('mon ami E. vanden Broeck' and 'my friend M. Jules Colbeau'). My attempts to prove that he might have been born in Belgium have met with no success, but he certainly lived there for a time.

Some of his early life was spent at sea as an officer on board ship; it is clear from his papers that as a result he travelled very widely as he mentions the Indian Ocean, Pacific Ocean, Southern Ocean, Atlantic Ocean, Mediterranean, Cochin, West coast of India, British Guiana, Brazil, Gulf of Bengal, etc.. There is evidence that he built up quite an extensive collection of molluscs during this period at sea. Some extracts from his papers are of interest. 'Le 1er février 1869 nous avons visité Adyar un de faubourgs de Madras -----'. Il a supporté le voyage jusqu'en Angleterre dans un vaisseau à voiles doublant le Cap de Bonne Espérance. D'Angleterre nous l'avons apporté en Belgique et le 4 nov. nous avons exhibé à la séance de la Société'. Discussing Hyalaea 'Quoique j'aie fait des recherches dans toutes ces mers (----) à l'exception de l'Océan Pacifique je ne l'ai rencontré jusqu'à présent que dans l'Océan Austral dans les localités suivantes 38-39 S x 2-3 E, 34-35 S x 13-14 E, 38 S, 25 E et 38-38½ S x 56-57 E. 'Ayant eu le bonheur pendant mes voyages en mer de recueillir un grand nombre de Sinusigera appartenant à seize espèces distinctes dont douze sont entièrement nouvelles. 'Mes devoirs comme officier à bord des navires dans lesquels j'ai recueilli ces mollusques ne me permettaient guère de travailler autant que je l'aurais voulu. Je regrette surtout de n'avoir pu m'occuper que fort peu de l'organisation de l'animal.' 'Ma collection de Ptéropodes étant déjà très considérable je ne me suis occupé, pendant deux années de voyages en mer, que de la récolte des êtres pélagiens microscopiques. Mes peines ont été récompensées par la capture d'une énorme quantité de mollusques de foraminifères de radiolaires de crustacés etc.' 'Au mois de février 1872 je me trouvais à Colombo ayant un jour de loisir que m'avait accordé le capitaine du navire où j'étais troisième lieutenant.'

At an evening meeting of the Royal Geographical Society on November 25th. 1878, the Rev. J. P. Farler of the Universities' Mission gave a lecture on the Usambara country. After the reading of this paper Craven rose and said 'he had had the pleasure of visiting Magila (a mission still, at the foot of Mt. Mlinga) during Mr. Farler's residence there, and partaking of Mr. Farler's hospitality for some little time. His object was to investigate the zoology of

the region and acclimatise himself preparatory to a journey of exploration to the Lake Regions; but he was unfortunately overcome by sickness and forced to return to England. During the time that he was there (i.e. in Usambara) he was impressed by the great natural beauty of the country which well deserved its name of the 'Switzerland of Africa'. He believed that every production of the tropics could be grown on its fertile soil. He had no doubt that higher up the mountains the climate was salubrious. His words were indeed prophetic since in 1902 the Germans established an agricultural research station at Amani and in the extensive surrounding plantations climbing 1000 to 3500 ft. practically every production of the tropics was indeed grown until a crazy then British administration chose to abandon the place and move to Nairobi. Higher up the mountains it was certainly salubrious, so much so that the German governor had a lodge at Wilhelmstal (now Lushoto) in the West Usambaras. Farler mentioned Craven during the lecture. 'In September last year (i.e. 1877) Dr. Kirk (the celebrated British diplomat who was doctor and naturalist with Livingstone during the Zambesi Expedition and later Consul in Zanzibar) and Captain Wharton, accompanied by Lieutenant Gordon and Mr. Craven, visited Magila. They started from Tanga, spent several days at Magila, and then returned to Tanga via Umba. Captain Wharton noted the heights of the mountains near, and took observations fixing the latitude and longitude of Magila; while Dr. Kirk explored the hills and collected botanical specimens'. I suspect Craven went along with Kirk and collected snails. Kirk himself also collected many snails in eastern Africa.

More details of this ill-fated expedition to East Africa have emerged from some of Craven's correspondence. Through the kindness of the archivist of the Royal Geographical Society I have been able to obtain copies of six letters written by Craven in a good legible hand to H. W. Bates (of Amazon fame) the assistant secretary at the time. By kind permission of the Director and Secretary I have been able to publish some of this material. The first on notepaper headed West Cliff Hotel, Folkestone and dated May 29th. 1877 begins 'I am as you are aware going almost immediately to Eastern Africa hoping to start on Thursday June 7th. My object is to study the natural history (more especially the entomology and conchology) of the districts I visit. I have had experience in travel in Southern Africa (Natal, Transvaal, Orange Free State and Cape Colony), India, Australia and British Guiana and also had much practice in taking astronomical observations during several years spent at sea'. He actually did leave U.K. for Zanzibar in June according to a brief mention in Petermann's Geogr. Mitteilungen. He planned to go to Mpwapa from Zanzibar and then proceed to Lake Tanganyika. He offered to do all he could to increase the geographical knowledge of the area concerned if the Exploration Committee would aid him with the necessary scientific instruments and also give him a grant. This was evidently agreed to since in Proc. Roy. Geogr. Soc. vol. 22 (meeting 12th. Nov. 1877) there is mention of Mr. A. Craven now engaged on a Natural History Mission to Mpwapa and beyond to whom the African Exploration Fund has made a grant in aid of 100 l to be paid on his arrival at the scene of his work. The next letter is from Gibraltar dated June 26th. 1877 and apologising for not calling in on the previous Wednesday i.e. 20th. since June 26th. was a Tuesday. He complains that the chronometer he had been given was worse than useless having compared it with the ship's chronometers. His next letter is from Zanzibar dated Aug. 25th. 'I arrived here after 17 days detention at Aden owing to the loss of the B.I. Steamer 'Cashmere' that was to bring me from there to this place. Kirk had told him that it was useless for him to attempt to go towards the Lake Victoria Nyanza (I doubt if Kirk used that phrase since Nyanza means lake) without first learning some Swahili. It was on Kirk's recommendation that he went to Magila some 30 miles from Pangani. 'It is situated at the base of lofty hills' (Mt. Mlinga which I could see from my window when I was living at Amani in 1950). He goes on to say that it appears to be a good place for a naturalist and he hopes to make a map and some description of the area. 'When I return to Zanzibar from Magila I hope to have learned sufficient Swahili to take me into the interior but in order to make a good start I should be very glad of the 100 l the Society granted me. I expect to be three

or four months at Magila and should it be possible I should much like to find it here on my return'. His expedition was, however, not to be. The fourth letter is headed Brookfield House, Folkestone and dated Feb. 24th. 1878. 'You will no doubt have heard from Rutherford of my return to England with that horrid complaint of dysentery which I cannot shake off. He describes his intense disappointment at having to give up the expedition and speaks of the great kindness of Dr. Kirk. He also asks if he should prepare a paper for the Geographical but points out that he has been over no new ground. I shall be much obliged if you can give me any hints or advice about this as I am new at writing anything for publication excepting descriptions of new shells, etc.. I have collected a good number of land shells many of which I believe to be undescribed and new to science and which I shall of course write about. He continues 'I suppose you do not frequent Folkestone at this time of year but if you do happen to be coming down please let me know. I shall always remember that it was you who introduced me to Horniman and shall always be grateful for what you have done for me and am only too sorry that I have failed in my undertaking'. The remaining two letters one just dated Monday (but obviously Nov. 25th.) and the other Nov. 1878 are very short. One asks if he will be able to get 'a seat anywhere near this evening to hear Mr. Farler's paper? If you think it of any good I might say a few words afterwards' (note that there was no doubt that a letter posted in Folkestone would arrive in London early the same day). As we have seen he did say a few words: the molluscs he mentions were described. The final letter asks about some rooms in Hanover Square which Bates had obviously told him about and he wanted to make an appointment to see Bates about them. This address does not appear in the list I give below but he may well have lived there also.

Craven moved about a great deal. In 1875 he was living at Kenwood-bank, Sharrow, Sheffield and later at Brookfield House, Folkestone; in 1879 and January 1881 he was at 36, Princes' Gate but in 1880 his address is given as 132 Cambridge Street, Warwick Square, SW. From later in 1881 he was at 65, St. George's Road, SW. until 1889 but in 1890 he had moved to 32, Warwick Square, SW. I expect he had a few more moves before 1912 when he was living at Hastings; there he moved once and seems to have lived for 20 years until 1935 at 34 Ashburnham Grove, Clive Vale, Hastings. His final residence from 1936-7 was 18 Upper Park Road, St. Leonards on Sea until his death.

There is little information about his further collecting activities after his East African expedition. In 1877 he collected snails on the Riffelalp near Zermatt at 2100 m. and was in Switzerland again in 1879 'ayant passé une grand partie de l'été dernier dans la vallée de la Kander dans l'Oberland bernois' (clearly he was not poor then!). In 1890 he was at the ruins of Vianden Castle in the Grand Duchy of Luxembourg.

There are in the Zoology Library of the British Museum (Nat. Hist.) three letters from Craven written to Dr. Gunther the then Keeper of Zoology. Since they are short and fill in a few more details I repeat them in full. All were written from 132 Cambridge Street, Warwick Square, S.W. The first (Zoology Archives: Letters Vol. 17 1880 no. 114) is dated Oct. 1st. 'Dear Dr. Gunther, You kindly gave me a few days to think over what you told me the other day and after due consideration and by the advice of my mother I have decided upon accepting the appointment at the Museum as a junior should you still consider me worthy enough to offer me that alternative. If you give me this appointment I shall be deeply grateful to you and you may depend upon my always doing my best to satisfy you and my superiors. A sailor's life has taught me discipline and the love of Natural History will soon teach me to forget the liberty I should be giving up. As the museum is being cleaned I am working at home this week but will of course go there at once should you send me word that you wanted me. Hoping that through your kindness I may soon belong to the museum. I remain dear Dr. Gunther yours sincerely and obediently'. That he did not obtain a post is clear from his second letter dated Oct. 3rd. (1880 no. 115).

'Dear Dr. Gunther, Many thanks for your kind letter and for the assurances it contains for the future. Of course I am disappointed but will hope for better luck before very long. Believe me to be yours most truly.' On the face of it Gunther appears to have gone back on his word but I do not know what the alternative to museum employment could have been. The third letter (1881 no. 105) is dated Sept. 26th. and is from the same address. 'Dear Dr. Gunther, It is with great regret that I write to tell you that I have had another bad attack of dysentery and am quite on my beam ends. My doctor advises perfect rest and consequently I intend going down to the country to follow his advice. He holds out hopes that a few weeks of this quiet combined with physic will put me to rights again. I am so sorry that I shall again have to put off working at the Pteropods, but hope when cured to be able to set to work with renewed vigour. I remain yours most truly and obediently'. The fact that the first letter is signed yours sincerely and the other two yours most truly suggests that Craven was hurt at not obtaining a post in the Museum.

He belonged to several societies, being elected to the Linnean Society on 16 Dec. 1875, the Royal Geographical Society in the same year and the Zoological Society of London. He was struck off the Linnean Society list on 15 June 1891 but was later re-elected on 21 Nov. 1912. I have not managed to find an obituary of him but his death was reported by the Linnean Society as 4 March 1937. He resigned from the Royal Geographical Society in 1890 and was dropped from the membership lists of the Zoological Society after 1891. He was a member of the Conchological Society in 1886 and continues to be listed in the List of Members for 1891, 1892 and 1893 but is missing from the 1894 list.

He joined the Société Malacologique de Belgique in 1869 when there were very few members and the address lists help to fill in quite a few years of his life in a very skeletal kind of way. His address on joining was 'rue du Champ de Mars 3, Ixelles-Bruxelles' and he was still there in 1871 his style being given as 'officier dans l'armée anglaise'. My attempts to obtain further information about this have met with no success. The Army Historical Branch and the India Office Library and Records has no records of him as a commissioned Officer. From 1872 to 1874 he is listed as 'Officier dans l'armée anglaise - Bombay (Hindustan)' but in 1875 as 'Membre de diverse Société savantes' with the address Brookfield House, Folkestone, Kent. London addresses follow until 1891 when he is again given a Brussels address, namely 'rue de L'Ermitage 82, Ixelles-Bruxelles' but he does not appear to have attended any of the séances during that year. He was still in Brussels during 1892 and attended the séances on 5 March, 2 April and 2 May but made excuses for his absence on 3 December. He was still in Brussels in 1893 but did not attend any meetings and he is missing from the 1894 list of members and there is no reason given for his leaving the Society which now had a considerable membership. On at least one occasion he visited Brussels to attend a séance whilst he was living in London, that on 4 February 1883 when he read his *Sinusigera* note which I have commented on elsewhere. At a séance on 2 Dec. 1869 at which Craven was present, under an item 'Communications et propositions diverses des membres' the following was read. M. Craven annonce qu'il va prochainement se rendre en Angleterre et qu'il sera heureux de pouvoir rendre quelques services à la Société. Il est décidé qu'une délégation sera donnée à M. Craven au nom de la Société à l'effet de chercher à nouer des relations avec les Sociétés scientifiques de ce pays.

The late Arthur Blok told me he bought a lot of shells in 1950 that contained several lots originally from Craven's collection and had a record that this collection was sold by auction (Athenaeum, Apr. 1891, 523 and Nature, 1891, cxcv). These references led me to a sale notice. This I am repeating verbatim. 'No. 3313 April 25 '91. Tuesday and Wednesday next, Natural History Specimens, Books and etc. Mr. J. C. Stevens will sell by auction at his Great Rooms, 38 King Street, Covent Garden on Tuesday and Wednesday next April 28 and 29 at half past 12 o'clock precisely the collection of shells formed by

A. E. Craven Esq. together with the cabinets a small collection of sea and rare land shells from the Andaman Islands including the rare *Cultellus lacteus* and etc. Curiosities from Africa, South Sea Islands and other parts, British and Exotic Lepidoptera including many fine varieties in splendid condition, Bird and animal skins, Eggs, Heads and horns, Skulls, minerals etc. Also a fine lot of Natural History and other books. On view the day prior 10 till 4 and morning of sale and catalogues had'. Mr. D. B. Janson has a copy of this catalogue 'Sale No. 8370-71' but unfortunately it does not contain any information on buyers or prices. The British Museum accessions book for 1891 lists '91.3.7. 1-89. Types from Mr. A. E. Craven's collection purchased of H. Sartoris Esq., Weekly, Kettering, Northamptonshire' also '91.3.8. 1-15 presented by A. E. Craven'. His collection must have been a nice neat one judging by the beautifully written specially printed labels which remain on the boxes of some of the types now in the British Museum (Nat. Hist.). Others are doubtless scattered throughout many collections, certainly some in the collection of Arthur Blok now in the Hebrew University of Jerusalem, and according to Dance some also at Brussels.

Linking this sale of his collection with his resignation or worse from several societies one can only assume that he fell upon hard times; it is probable that this was when he moved away from London. It seems less likely that he suddenly lost his taste for natural history.

During his last year at St. Leonards at least he must have known J. R. le B. Tomlin and Blok in his letter to me obliquely confirms this by adding that Tomlin once told him Craven was a heavy drinker but this scarcely fits in with his 87 years. The term is of course a very relative one.

His name is perpetuated in *Achatina craveni* E. A. Smith, 1881, a new name for *A. kirkii* E. A. Smith, 1880 which is a later homonym of *A. kirkii* Craven.

B. Verdcourt

(Part II, List of the Publications, will appear in the next issue, September 1979)

ADVENTURE OF A SNAIL HUNTER

Lancing College, 1st. November 1925. "Yesterday I walked across the Downs to Chanctonbury Ring, and spent some hours grubbing about in the beech woods near there for snails. I found *Clausilia rolfii*, which I had never found before, and so was happy. The woods were so delightful and autumnal that I stayed till 5 o'clock. As I was about to depart, I heard weird noises, and saw a flock of school-girls with lanterns singing at the Ring, presumably celebrating All Hallow E'en. When they had gone, I went up to the Ring, but it would have been wiser to have followed them. The sun set rapidly, thick fog came up, and after I had gone a few hundred yards I realised I was lost on the Downs, six miles from home. Luckily the moon rose soon and the fog was dispelled in large measure, so I was able to follow the track I was on. It was hopeless to wander about, so I decided to stick to the track and see where it led to, hoping it was Steyning, whence buses and trains run to Shoreham. After going for an estimated three miles and seeing no signs of any dwelling, nor of descent into a valley, I began to get a little anxious, and kept an eye open for a suitable haystack under which to spend the night. Luckily I met two people out for a stroll, and they told me I was near Findon, in the opposite direction from Steyning, on the London to Worthing road. I reached the village street just in time to see the rear light of the bus to Worthing. That meant walking all the way to Lancing by road, $7\frac{1}{2}$ miles, which took about $1\frac{1}{2}$ hours, and I got to the College half way through dinner. I shall never forget that steak and kidney

pudding! Between 1.30 and 7.45 I had walked some 17 miles with nothing to eat, but did not feel in the least tired or done up. After a hot bath, I was able to persuade myself that it had been quite an enjoyable walk."

A. E. Ellis

BRITISH SEASHELLS by Brian Barrett and June Chatfield. Portsmouth, Focal Point Filmstrips. (Half Century Series)

Dr. Chatfield has, as usual, been very busy. This time she and Mr. Barrett have produced a 35mm. filmstrip of fifty frames length on common British Molluscs with an accompanying twenty page booklet. The set is intended as a schoolteaching aid but would be quite suitable for talks and lectures on British Mollusca to other audiences. The publishers have supplied self-adhesive slide mounts so that, if you wish, the strip can be cut and mounted to make colour transparencies.

The set illustrates one chiton, thirty Gastropods, one Opisthobranch, one Scaphopod and twenty nine Bivalves. The molluscs are figured alive, in their natural habitats or as empty shells. The colours are rather too bright and in some frames the shells are over-illuminated, obscuring detail. Some of the frames are poorly filled. There is rarely any indication of scale on the photographs, but the average size is given in the notes. Only the larger and more common species which could be picked up on the shore are included. The booklet complements the filmstrip with an introduction and an overview of the Mollusca. The descriptions of each frame (and there are sometimes more than one species shown) include the latin name, the vernacular name, size, habitat, distribution and notes on shell and animal features which distinguish the figured species from closely related ones.

On the whole, a sensible selection of shells, well presented and at a reasonable price (£4.25 plus post and packing). A teacher friend tells me that there isn't anything else on the market which covers British shells. The filmstrip can be obtained from Focal Point Filmstrips Ltd., 251 Copnor Road, Portsmouth, PO1 2BR. Focal Point produce a wide variety of filmstrips, two others which may interest conchologists are 'Zonation of seaweeds and animals on the rocky shore' and 'The study of fossils'. A catalogue is available on request from Focal Point.

Celia Pain

FIELD MEETING ANNOUNCEMENTS

There will be a joint field meeting with the Kent Field Club on Saturday 18th. August 1979. Meet at Dover Priory Station (TR 313415) at 11.15 a.m. This meeting will be an extension of the meeting held last year in the same area which was so successful in re-locating 'old localities' for local land molluscs.

Leader: Dr. M. P. Kerney.

* * * * *

The Kent Field Club also cordially invite members of the Conchological Society to attend a field meeting on Sunday 9th. September 1979 at Leigh Village Green, Nr. Tonbridge, Kent (TQ 550466) at 11.00 a.m. This will be a general interest meeting, including molluscs, along the banks of the River Medway. Leader: Mr. D. Chambers, Kent Field Club.

The above meetings are additional to those shown on your 1979 Programme Card so please make a special note in your diary.

GENERAL NOTES

SLUG'S WAR EFFORT

From "Mushrooms and Toadstools" by John Ramsbottom (Collins 1953), p.180:

The Stinkhorn fungus (Phallus impudicus): "Though dung flies are the main agents for the removal of the dark green sugary mucus, the process is either begun or ended by the slow-motion nocturnal activity of slugs, particularly Limax maximus. Some slugs prefer fungi to green plants if a choice is offered them: they detect them by smell. Their tentacles are extremely sensitive to certain gases and make characteristic responses, a fact that was recalled when the need for a gas-detector by the United States forces arose when they went to the western front in the 1914-18 war. It was found that the tentacles of Limax maximus are sensitive to 1 in 10,000,000 of mustard gas, whereas man is sensitive only to 1 in 4,000,000. This sensitiveness accounts for a slug being able to locate Phallus (or other fungus) six or seven yards away."

FAIRY RINGS

From Richard Bradley, "New improvements of planting and gardening" (1718):

"Garden-Snails, the large black Dew-Snails*, and others without Shells call'd Slugs, when they couple, always make choice of short Grass to creep upon: It is their manner, when they generate, to take a large Compass upon the Ground, and meet one another: Thus I have seen them creep into a Circle for more than half an Hour, going over the same Ground at least twenty times before they could join, leaving upon the Grass where they crept, a viscous shining Matter. So that it may be, that Slime, when it putrifies, may produce the Mushrooms we find growing in Circles upon Commons; and I am the more apt to believe it so, because I have more than once observ'd, that where a Snail has left such a Tract upon the Grass, a few days afterwards I have found Mushrooms to come up: But it must be observ'd, that such as come up in this manner are not fit to eat."

*Arion ater

(both items from A. E. Ellis)

ALDERIA MODESTA ON A SANDBANK AT LWST

On 20 August 1978, I examined a sandbank in the Fleet, near Weymouth, Dorset (grid ref. 30/662764) at or a little below LWST. The surface (under a few inches of water) appeared to be clean sand, but sieving (aperture about 1 mm) showed fine strands of several species of algae, mainly Vaucheria sp.

Present within these sievings were several small molluscs mostly juveniles: Hydrobia ulvae, Haminea sp., Akera bullata, Cardium sp., Nucula turgida, Loripes lucinalis and Abra tenuis.

I kept a handful of the sievings for a few days in a dish covered with sea water. After 3 days, some small sea slugs appeared which, to my surprise, turned out to be Alderia modesta with clearly pulsating cerata. The animals were difficult to see among the Vaucheria strands but at least eleven were present, ranging in size from $\frac{1}{2}$ mm to 4 mm. They spawned at the edge of the dish but I do not think any larvae were produced.

The habitat of *Alderia modesta* is "invariably associated with *Vaucheria* spp. on salt marshes" (Thompson, 1976, Biol. of Opisthobranch Molluscs), so that its occurrence on a sandbank at LWST is "most unusual" (Dr. Gascoigne, in litt.). It may be worth consciously searching for the animal in other habitats where *Vaucheria* occurs, but I recommend keeping material so that it may be examined over several days; I certainly did not suspect the presence of *Alderia* in the field.

D. R. Seaward

TETRAD MAPPING FOR V.C. 55

A mapping scheme for V.C. 55 - Leicestershire and Rutland - has been in operation for several years and records for this area and enquiries will be welcome and should be addressed to John Mathias, Keeper of Biology, Leicestershire Museums, Art Galleries & Records Service, 96 New Walk, Leicester, LE1 6TD. A similar tetrad mapping scheme for Sussex and Suffolk land and freshwater molluscs was noted in the March issue, Newsletter No. 68.

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE - ANNOUNCEMENT - A.N.(S.)

108

The required six months' notice is given of the possible use of plenary powers by the International Commission on Zoological Nomenclature in connection with the following names listed by case number: (see Bull. Zool. Nom. 35, part 3, 19th. February 1979).

2239 *Conus fergusonii* G. B. Sowerby III, 1873 (Gastropoda, CONIDAE): request for conservation under the plenary powers.

Comments should be sent in duplicate (if possible within six months of the date of publication of this notice in Bull. zool. Nom. 35, part 3).

R. V. Melville, The Secretary, International Commission on Zoological Nomenclature, c/o. British Museum (Natural History), Cromwell Road, London, SW7 5BD England.

Those received early enough will be published in the Bulletin of Zoological Nomenclature.

THE SNAIL MAIL GETS THROUGH, NIBBLES AND ALL

There were strange shiny markings on the envelope of a letter received by the RAC at Plymouth, which had been posted in an old-type wall box at Coverack.

The envelope also appeared to have been nibbled in various places.

Yes, you've probably guessed it. This, in the most literal sense possible was Snail Mail.

The local postman who handled the letter hadn't panicked when he found the mangled letter. After all, this is Cornwall and these things happen.

He simply wrote on the envelope: "Snails in post box", and initialled his note.

It made a bit of a laugh for them in Plymouth. But as the RAC's Chief Supt. Witts pointed out to readers of "RAC World", with commendable insight into the way things are down here: "You will observe that in Cornwall we do have strong, healthy snails that will stop at nothing."

Or, as the RAC also couldn't resist putting it about the enthusiastic letterbox predator: "He's going well - he's going Shell".

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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 25p 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 £3.00 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

EVOLUTIONARY SYSTEMATICS OF BIVALVE MOLLUSCS: 238 pages, 29 plates, published in Philosophical Transactions of the Royal Society, Series B. Vol. 284, No. 1001, November 1978. Price including packing and postage £16.50 (U.K. addresses), £17.00 (Overseas addresses). To keep costs to a minimum it would be appreciated if, where possible, a remittance could be enclosed with the order. The Royal Society, 6 Carlton House Terrace, London, SW1Y 5AG

EXCHANGES WANTED

Mr. E. Blanken, [REDACTED] 2865 AK Ammerstol, Netherlands, is particularly interested in the Veneridae and would like to receive British species. He offers exchanges and will send a list to any member interested.

Giorgio Polzonetti, [REDACTED], 00165 Rome, Italy is interested in exchanges with members, foreign marine and fossils - Italian Pliocene for example.

WANTED TO PURCHASE

Marginella spp. Send full details, including price asked. John Humphreys, [REDACTED], St. Ives, Cornwall, [REDACTED]

Books, Journals, Offprints, etc., wanted on British, European and World non-marine mollusca. Particularly wanted are Forbes & Hanley, Jeffreys and Taylor's Monograph; also any vols. of the Journal of Conchology prior to Vol. 26. Send full details, condition and price. John Humphreys, [REDACTED], St. Ives, Cornwall, [REDACTED]

SHELL INSURANCE

Contact us for expert advice without obligation. Jaykel Insurance Services and Finance Ltd., 135 Mitcham Road, London, SW17 9PE. Tel. 01-767 2430.

ELIZABETH M. ALLISON, [REDACTED], Yarmouth, Isle of Wight, has 2 flat glass-topped cases of land shells from various parts of the world. She would like to sell or exchange these for marine shells. Any offers please?

JUST PUBLISHED: PINTÉR, L. - RICHNOVSZKY, A. - S. SZIGETHY, A.: Distribution of the recent Mollusca of Hungary. - Soosiana, Suppl. I, 1979: I-VI, 1-351. "Our present volume, save the introduction and the indices, contains two main parts: the distribution maps of recent Mollusca found in Hungary /1 to 222/ and according to the order of maps the known distribution data of the species."

/From the Introduction/.

This book is available in exchange for malacological books or journals /especially for back numbers of the Society's publications/. Any offers please? Write to: Mr. László Pintér, Hungarian Natural History Museum, H-1088 Budapest, Baross u. 13. Hungary.

TESTACELLA TRISECTING EARTHWORM. I went out this morning (14.3.1979) to look for slugs and found a half-grown Testacella scutulum, which I brought indoors and presented with a small earthworm, hoping to see how he tackled it. At that moment two visitors called (the sort who would consider slugs just slimy and nasty), so I missed the initial attack. When I had disposed of them, I immediately had a look and found the two ends of the worm left while only the middle portion was missing. This I found surprising, as one expects a Testacella to swallow a worm from the front end. Testacella maugei also occurs here, and I am hoping to find the third species, T. haliotideia.

Margaret Jaques, [REDACTED], Braunton, N. Devon

Shells are often seen as illustrations on postage stamps, but they are an unusual subject for picture cards. In 1925, however, Cerebos Custard issued a 'Sea Shells' series of 100 cards. Each had a coloured illustration of a species or group of shells, with a brief description on the reverse side. This is possibly the only set of trade cards ever issued solely on shells, although single cards from sets on other subjects, such as 'Nature Study', or 'Garden Pests' often show molluscs. Unfortunately the Cerebos cards are rare, and a complete set might cost upwards of £40.

An article in the Winter 1978 issue of the 'Countryman' magazine by a despairing Gwent gardener draws attention to the liking which snails have for plants imported from limy soils. The soil in upland Gwent is notoriously acid and lime-deficient. Some young Wayfaring trees (Viburnum lanata) taken from a chalky Kent garden were heavily attacked and stripped of their leaves by snails within a day of planting. With the help of slug repellents, one tree survived until the lime was safely out of its system. The same effect was noted with Artemisia lactiflora plants from a nursery on calcareous soil, but the same species bought from a nursery on more acid soil escaped the snails and slugs. The gardener also notes that, by improving the soil, extra lime encourages earthworms which in turn attract moles!

The 1978-79 Annual Bulletin of the Dundee Naturalists Society includes an article "Seashells on the Seashore" about shells of Fife & Angus. Although of no scientific value (it is intended only to convert some naturalists into naturalist-conchologists), members may be interested to hear about it. Naturalists' society publications are usually largely botanical, rarely even including bird-watching. Why can't more naturalists take up conchology instead?

Three items from C. McLeod, [REDACTED], Dundee, Scotland.

CHANGES IN MEMBERSHIP LIST. The Members List is at present being brought up-to-date, for publication in September. Will any Members whose entries require alterations, amendments or additions please notify these changes to the Hon. Secretary before 14th. July.

MRS. N. E. WILMOTT ([REDACTED], St. Clement, Jersey, C.I.) would be grateful for suggestions and details of good shelling areas, preferably somewhere warm. Perhaps someone would like to arrange a swap holiday - a month in Jersey with Mr. and Mrs. Wilmott, in return for a month's stay in his house for the Wilmotts.

NOW AVAILABLE. Papers for Students, No. 12: Key to British Slugs, by A. E. Ellis, 2nd. (revised) edition, containing all British species. Price 40p (Members), 50p (Non-Members) from A. Norris, Natural History Dept., City Museum, Municipal Buildings, Leeds, LS1 3AA

THE CONCHOLOGISTS' NEWSLETTER

No. 70

ISSN 0573-2336

Newsletter Editor: P.E. Negus,

September 1979

Chelsea Bridge Road,
London, [REDACTED].

Produced by THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

EDWARD STEP AND THE LONG DRANG, PORTSCATHO, CORNWALL

Delving into the past and assessing the present with an eye to the future

During the past year or two, my low-tiding expeditions have become increasingly orientated to the surveying requirements of the South-West Marine Biology Study Group, formed to increase our knowledge of the richly-diversified life of the S.-W. before further pressures inevitably pose more threats to the marine fauna and flora. Recently Mr. G. W. Pitchford wrote (Conch. Newsletter No. 63; 52) deprecating the effect of stone-turning at Swanpool Pt., Falmouth, and adding that, with the adjacent Gyllyngvase Beach, it would have been a naturalist's paradise years ago when largely unspoilt by extensive human intrusion. Bearing this out, Dr. James Clark wrote of Gyllyngvase in 1907 (Rep.R.Cornwall polyt. Soc.75: 47-510) as "one of the finest beaches in Great Britain for shore collecting, and Falmouth Bay one of the richest dredging grounds for the naturalist in the British Isles."

Apart from assessing each rocky or sandy shore in a standard way, using the headings set out on the Group's Rocky and Sandy Shore Field Cards (designed for computer retrieval) I have found it valuable as well as interesting to seek for any historical association, in the manner shown by Dr. June Chatfield writing about Philip Gosse at Tenby (Conch. Newsletter No.66: 42-43). Indeed when a small group visited Portscatho in April 1978, we were bent on re-tracing the steps of that 'prince of naturalists', Edward Step who spent 4½ years in this seaside village at the end of the last century. It was Dr. Gillian Matthews who had recognised photographs in his books By the deep sea and A naturalist's holiday, although nowhere does he mention Portscatho by name. As she had lived there as a child, she was able to take us to the very reefs with the feature which he describes as 'the Long Drang' in chapter 17 of the latter book, entitled 'An hour in a drang'. He explains that a marine drang is a long, deep and straight-sided fissure in the rocks, resembling closely one worked by man; this particular one is only free of water for a couple of days a month, and then is only safe to explore for about an hour, for it lies parallel to the shore line, and the water flowing in at both ends can easily trap the preoccupied naturalist. The gully, some 125 metres long, is still known locally as 'the Long Drang'.

During the three hours we spent in the Drang and on the adjacent reefs we identified nearly 60 species of seaweeds and lichens, and about 100 species of animals. The following account gives a summary of our findings, using Field Card headings as described above, and adding a few of Edward Step's own records and observations where relevant. It was a happy circumstance that here, at least, little seemed to have changed.

DATE: 8.4.1978 TIME ON SHORE: 11.30-2.30
GRID REF.: SW880351 (centre of the Long Drang)
ACCESS: by footpath from park ca.400 m.

TIME OF LOW TIDE: 1 p.m. (approx)
DISTANCE H.W.-L.W.: c.100 m.
DESIGNATION: Heritage Coast

POLLUTION: some broken plastic foam rubbish at H.W.; sewer outfall on N.E. side of Pencabe Point.

OBSERVERS: Miss Jane Goodhead (geological notes); Mr. M. D. Hallett (photographs); Dr. J. D. Guiterman; Mr. B. E. Jackson and Mrs. E. Jackson; Dr. Gillian C. Matthews; Mrs. S. M. Turk. Also Michael Bennett, Mark Bolton and Malcolm Green, all 13-year-old pupils of Dr. Guiterman.

COAST: cliffs. These are c.6 m. and covered with vegetation.

DOMINANT TYPE OF SHORE: continuous reefs. Cut by a single deep wide gulley - the Long Drang.

SECONDARY FEATURES: boulders; cobbles; pebbles; sand.

All these occur at the base of the Drang, the gravelly sand being mostly covered by the boulders and cobbles, providing habitats for lugworms (Arenicola ecaudata) and Netted Dog-whelks (Nassarius reticulatus).

HABITATS: turnable rocks; shaded; crevices.

Step writes of the base of the Drang "Broken masses of rock are strewn around, the wracks and tangles hang limply down and lie tumbled on the floor." This broken rock varies from large pebbles to flat slates about .5 m. across. Shade is provided by the sides of the gulley and the peaks of bed rock that rise from its floor. Crevices are plentiful both on the rock walls and over much of the reefs, as this is a soft slate.

SLOPE: gentle (overall)

WAVE-EXPOSED: exposed (on platforms) and upper part of sea-facing Drang wall.

POOLS: upper shore: deep; moderate; shallow - common: lower shore: deep; moderate; shallow - common.

FUCOID COVER: lower shore.

Bladder Wrack (Fucus vesiculosus) is scattered, and Serrated Wrack (F. serratus) is mainly confined to the base of the Drang and to the reefs on its further side.

PELVETIA: scattered.

ASCOPHYLLUM: scarce - a few torn stunted plants.

KELPS: distinct zone at low water.

Tangle (Laminaria digitata) grows thickly, immediately below a well-developed belt of Thong-weed (Himanthalia elongata), on the lower part of the vertical sides of the Drang as well as on its floor where it is interspersed with Sea Belt (Laminaria saccharina)

'LITHOTHAMNION': scattered patches (on walls of Drang), and in pools.

LIMPETS: plentiful.

Patella vulgata is abundant on the reefs, and P. aspera is plentiful and large in most of the pools.

BARNACLES: plentiful.

Chthamalus montagui is dominant, interspersed with C. stellatus, a species which is dominant only on very exposed shores. Balanus perforatus is abundant on parts of the lower shore, and Verruca stroemia was present under cobbles and boulders.

TOP-SHELLS: upper shore: scattered; middle and lower shore: scattered.

Monodonta lineata, not more than 6 to the sq.m. and Gibbula umbilicalis in small groups in and by pools. Gibbula cineraria under boulders at base of Drang. Several specimens of Calliostoma zizyphinum noted.

PERIWINKLES: upper shore: plentiful; middle and lower shore: scattered.

Littorina neritoides and L. saxatilis plentiful, whilst L. littorea and L. littoralis are scattered.

MUSSELS: scattered.

Present in scattered but dense aggregations c.10 cms. across in some upper shore pools, and sparsely distributed in cracks and crevices.

ACTIVITY: birds; bait; fishing; food-collecting; recreation.

Shags, gulls and Turnstones were seen in the immediate vicinity on this occasion, and Great Northern Divers are recorded most years; M.G. (who lives at Portscatho) said that fishermen collect lugworm from the base of the Drang, as well as soft crabs from under the boulders; mussel, limpet and winkle collecting is carried on here as well as adjacent reefs, and occasionally crabs and lobsters may be taken at very low water; people sunbathe and picnic on the small spit of coarse sand beneath the cliffs, above the south end of the Drang; during this April visit, a group of divers from the Biology Dept. of East Anglia Univ-

ersity were investigating the water rather too close to the point where the sewer discharges, and later spoke of poor visibility!

NUMBERS OF SPECIES: plants: medium; animals: high.

NUMBERS OF INDIVIDUALS: plants: medium; animals: high.

GENERAL DESCRIPTION OF SHORE, WITH EMPHASIS ON THE LONG DRANG.

Long Drang reef lies in Vryan Bay, to the south-west of Pencabe Point. It consists of a gently-sloping platform, formed of undifferentiated Devonian slates impregnated with milky quartz. Barnacles cover much of its surface, fucoid cover only becoming apparent on the lower shore. Rock pools are numerous and of all depths throughout the reefs. But its most conspicuous feature, clearly marked on the 2 $\frac{1}{2}$ " O.S. map, is the Long Drang, extending the whole width of the reef (125 m.), parallel to the shore line, and dissecting the reef in two as it stretches c.100 m. seawards. It is possible to walk on the base of this great gully only at the lowest spring tides, and as it is sheltered and covered with broken rock, there is a wealth of under-cover life, whilst the walls, vertical and with many overhangs on the sheltered shoreward-facing side, have the expected growth of Algae and associated fauna. The two sides of this great channel, which lies 2-3 metres below the level of the rocky platforms, and is 3-4 m. wide, are markedly different, the sea-facing wall being less diversified: the dominant plants, clearly zoned on this west-facing wall are Pygmy Lichen (Lichina pygmaea), Pepper Dulse (Laurencia pinnatifida), Thong-weed (Himanthalia elongata) and Tangle (Laminaria digitata), whilst on the east (shore-facing) side, there is 1-2 m. of Lomentaria articulata, some Agar-weed (Gigartina stellata) and an extensive cover of lithothamnoid growth. The softness of the slates allows for the maximum number of crevices and much under-cutting, creating ideal habitats for many species. Of particular note is the scattering of Jewel Anemones (Corynactis viridis) throughout most of the sheltered side of the Drang, and the presence of good growths of the sponge Stylostichon plumosa, not often found between tide-marks. Edward Step found Plumose Anemones (Metridium senile) here, but although we found a total of eight species - including the scarce Latticed Corklet (Cataphellia brodicii), we failed to find Metridium. Crabs were plentiful, under boulders and in deep crevices, and again we found eight species, including the fierce Velvet Swimming-crab (Portunus puber), described by Step as a 'born fighter'. Additionally Step records Xantho sp., locally known as 'devil crab', and the occasional lobster (Homarus vulgaris), which M.G. says are still to be found at very low tides. Of the several species of fish, we saw one Cornish Sucker (Lepadogaster lepadogaster), but none of the local Montagu's Blenny (Blennius montagui), a southern species which Step says may be found "in any of the half-tide pools."

LIST OF MOLLUSCA

All the following species were found alive and in April 1978, except Aporrhais which was found only by Step and Diodora, found in the past by G.C.M. Those also found by Step are marked with an asterisk.

GASTROPODA: PROSOBRANCHIA

Aporrhais pespelicani. E.S. speaks of it as one of the types of sea-snail that wanders over the rocks!

Barleeia rubra. One on weeds.

*Calliostoma zizyphinum. Several, in Drang.

Diodora apertura. Found in the Drang in past years by G.C.M.

Gibbula cineraria. Scattered under stones and boulders.

*G. umbilicalis. In and around pools, and in crevices with Monodonta.

Lacuna vincta. Egg circle noted.

Littorina littoralis. On Fucus.

L. littorea. Scattered.

L. neritoides. Common.

L. saxatilis agg. Common.

Monodonta lineata. Maximum count of 6 per sq.m. (Counts of 80 per sq.m. have been made on some Cornish shores).

Nassarius incrassatus. Common under stones and boulders.

Nassarius reticulatus. Several in silt under boulders.

*Nucella lapillus. Common.
Patella aspera. Common in lithothamnoid-encrusted pools.
P. vulgata. Plentiful.
Patina pellucida. On Laminaria digitata.
Rissoa parva. Common on weeds and under stones.
Trivia artica. One.
 *T. monacha. A few.

GASTROPODA: OPISTHOBRANCHIA

*Aeolidia papillosa. A few.
 *Aplysia punctata. Numerous juveniles.
 *Archidoris pseudoargus. One. Also spawn.
Jorunna tomentosa. One juvenile.
Rostanga rufescens. One.
Runcina coronata. In large numbers, crawling over lithothamnoid-encrusted pool, upper shore.

LAMELLIBRANCHIA

Lasaea rubra. Common at base of Lichina pygmaea and Corallina.
Mytilis edulis agg. In a few pools they were packed in aggregations of several hundred in ca. 10 sq. cms.; elsewhere they were confined to a few in crevices.

NOTE ON EDWARD STEP

All but the most juvenile of the Junior Members of the Conchological Society, will need no introduction to Edward Step's Shell Life in Warne's Wayside and Woodland Series: the first edition appeared in 1901, and the latest in 1947, but its place in the Series has now been taken by N. F. McMillan's British Shells. However, despite the fact that he was at one time a member of the Conchological Society, no obituary appeared in J. Conch., nor did there seem to be any mention of his death in Cornish papers, relating to the time he spent in the county. An obituary by the botanist H. W. Pugsley in Proc. Linn. Soc. Lond. 144: 189-190, speaks of him as "a kind of liaison officer who interpreted to a wider public the achievements of more strictly scientific workers." Pugsley adds that Step was himself "an observer of the first order whose interest was spread over various phases of botany, as well as entomology and conchology; and to these qualifications he added an indefatigable industry which led him to spare no pains to attain the greatest possible accuracy in all he wrote. As a result the soundness of his work lends it a value not commonly found in popular works on Natural History." He was born in November 1855 and died in November 1931, and from the age of 14 to his retirement, he worked for various publishers, including Warnes, in whose Wayside and Woodland Series, several of his books appeared. In the 1890's soon after he became associated with Frederick Warne and Co., he left London for Portscatho where he worked on his natural history books for some years; and when he returned to London he became literary adviser to the firm. He remained in good health until the autumn of 1930 and enjoyed long natural history rambles. Pugsley tells us that "One of his greatest pleasures was to be told how a love of nature had been awakened in some younger naturalist by perusal of his books." He would indeed have been gratified to know how great an inspiration his work has continued to be to successive generations.

Stella M. Turk, Nov. 1978

N.B. If anyone visiting Devon or Cornwall is interested in completing some of the Field Cards for the South-West Marine Biology Study Group, they should contact Dr. N. A. Holme, The Laboratory, M.B.A., Citadel Hill, Plymouth, PL1 2PB or Prof. David Nichols, Dept. of Biological Sciences, University of Exeter, Hatherly Laboratories, Prince of Wales Road, Exeter, EX4 4PS

A NOTE ON THE DECLINE OF THE GOWER COCKLE FISHERY

The Llanrhidian Sands situated on the north Gower Coast of West Glamorgan are famous for the cockle (*Cerastoderma edule*) fishery that they support. The cockle fishers have for many generations been a familiar sight on this coastline, following the receding tide with panniered donkeys or, more recently, two-wheeled horse-drawn carts, to the distant sands in which the rich cockle beds lie.

In May 1978, whilst leading a sixth form biology field course based at Oxwich Bay, I visited the North Gower coastline in order to introduce a study of the muddy and sheltered sandyshore habitats that are here so richly represented.

Very few of the cockle carts were seen to be heading for the cockle beds and when several of the fishermen were questioned they remarked that the cockle industry had declined very severely in recent years and might not prove to be economically viable in a fairly short time.

It would seem that at least three main factors may be contributing to this situation, (1) oyster catcher cockle predation (2) over collection of cockles and (3) an increase in the proportion of salt marsh and muddy shore.

Several years ago the cockle fishermen asked for governmental controls of the oyster catcher population which, they claimed, had grown to such a size that its predation on the cockle beds was causing a considerable reduction in the cockle population. Although these birds are most numerous on the sands during the winter months, they were still seen quite frequently during May. Evidence of their cockle predation was also noticed on the sands by the small piles of broken cockle shells that occurred quite regularly spaced on small patches of drier sand. It is to these slightly firmer zones that the oyster catchers carry cockles in order to prize the shells open more easily.

Another possible cause of the cockle decline is over-collection. This factor alone would seem to be an unlikely cause for there is little evidence of a recent expansion of the fishery. The fishermen also restrict their catch to adult cockles by the use of sieves that only retain specimens of a regulated minimum size. Collection is also regulated so that a systematic search is made of certain areas of sand, ensuring that time is allowed for cockle growth and breeding before such areas are revisited.

One of the fishermen questioned suggested that quite a different cause could be found for the cockle decline. He explained that in the last ten years the proportion of salt marsh and muddy shore had gradually increased with a consequent decline in the area of sand. He noted that until fairly recently cockles could be found within a few hundred yards of the shore at Crofty in areas now colonized by the halophytic 'cord grass' *Spartina anglica* (*S. townsendii sensu lato*).

The rapid colonization of other very sheltered sandy and muddy shores by this plant on the south coast of England is well known. The grass exhibits an exceptional ability to colonize muds, including those at a lower level in the tidal range than can be colonized by the more usual pioneer plants of true salt marsh. As it does this, silt and other suspended material is deposited and trapped between the stems on the incoming and slack water at high tide. The rhizomes of the grass also help to stabilise the deposits. The fishermen claimed that as the marsh had extended seaward and risen in height the falling tide, instead of retreating gently over a broad front across flat sands had, in many places, cut gullies which carried retreating water with a greater force, washing and dislodging many cockles from just beneath the surface.

The saltmarsh expansion would obviously also tend to reduce the area of sand and silty sand replacing it with fine mud, a medium far less suitable for cockles. A general reduction in the size of the cockle beds would of course increase the pressure from both commercial exploitation and oyster catcher predation on the remaining beds.

The considerably increased levels of organic matter in the form of a higher amount of drift deposition and disintegrated detritus coming from the Spartina anglica 'fields' might also be significant.

The scale of the cockle industry recession is also evident in the towns of Crofty and Pen-clawdd. Many of the former cockle sheds where cleaning and steaming took place are now abandoned and of the few remaining, one now only deals with the production of "laver bread". Some of the firms still bottling cockles now import their catches from beds as far away as the Wash and even North Holland.

It is obviously impossible after a short visit to assess fairly the relative importance of these different factors in the apparent decline of the cockle population. Whether one cause predominates in this change, or, as is more likely, it is a complex reaction linking all of them in some degree is not known. Certainly further long term study is needed to assess these problems.

Martin J. Willing

THOMAS HARDY AND SNAILS

When the Present has latched its postern behind my tremulous stay,
And the May month flaps its glad green leaves like wings,
Delicate-filmed as new-spun silk, will the neighbours say,
'He was a man who used to notice such things'?

So said Thomas Hardy the poet, in "Afterwards" published in 1917 when he was seventy-seven. Most of Hardy's poems were intensely personal, and based on memory or experience, with only a change of name or place occasionally hiding the truth. But although Hardy was so caught up with life's tragedy, often reflecting on what was unfulfilled and lost beyond recall in his own, he did not forget to pay attention to detail. In fact his observations of nature were quite acute. Take for example this verse from "On Sturminster Foot-Bridge":-

On a roof stand the swallows ranged in wistful waiting rows,
Till they arrow off and drop like stones
Among the eyot-withies at whose foot the river flows:
And beneath the roof is she who in the dark world shows
As a lattice-gleam when midnight moans.

This descriptive use of what must have been to him a familiar sight, is typical of many poems. The blending of natural observations of birds, plants and animals with the tragic nature of the poetry, is a mark of Hardy's genius.

In his vast output of nearly 950 poems, one would expect him to mention snails? Apparently not so. For until we come to his epic poem "The Dynasts", molluscs are absent. "The Dynasts" is "an epic-drama of the war with Napoleon in three parts, nineteen acts, and one hundred and thirty scenes". I can find only three places referring to molluscs.

Her rock-rimmed situation walls her off
Like a slim selfish mollusk in its shell
From the wide views and fair fraternities

Which on the mainland we reciprocate,
And quicks her quest for profit in our woes.

Napoleon is here speaking, in Act IV of part I, to Francis Emperor of Austria before the battle of Austerlitz. The woman he refers to is England, and the simile of the mollusk in its shell to a land surrounded by sea is very apt. Much later on, in part three, Hardy employs a "Chorus of the Years" in some beautiful poetry describing the wasted attempts of animals to escape the rumble of wagons and trampling of horses on the field of Waterloo:

Yea, the coneys are scared by the thud of hoofs,
And their white scuts flash at their vanishing heels,
And swallows abandon the hamlet roofs.

The mole's tunnelled chambers are crushed by wheels,
The lark's eggs scattered, their owners fled;
And the hedgehog's household the sapper unseals.

The snail draws in at a terrible tread,
But in vain; he is crushed by the fellow-rim;
The worm asks what can be overhead,

And wriggles deep from a scene so grim,
And guesses him safe; for he does not know
What a foul red blood will be soaking him!

Later, on a hillock near the farm of Rossomme, Napoleon stands next to a table on which maps are spread. He puts a glass to his eyes and gazes through it across the fields of rye, wheat and clover at St. Lambert's Chapel Hill, some miles away to the right.

"I see a darkly crawling, slug like shape
Embodying far out there, -troops seemingly-..."

Napoleon believes them French troops. Later they turn out to be part of the opposing force. The defeat has begun.

Peter Topley

COLLECTORS IN EAST AFRICA - 1. A. E. CRAVEN (1849/50-1937)

PART II

LIST OF THE PUBLICATIONS OF A. E. CRAVEN

- 1869 Observations sur l'*Helix ligulata* Fér. de Madras. Annls. Soc. malac. Belg. 4: 93-95.
- 1869 Resultats d'une excursion malacologique faite à Ostende les 6 et 7 Novembre. Op. cit. 4: xcvi-cc (with Malzine, F. de).
- 1870 Mollusques terrestre et fluviatiles recueillis en Suisse. Op. cit. 5: lli-liv.
- 1873 Quelques observations sur le *Hyalaea tridentata* Lamarck. Op. cit. 8: 70-72, pl.3. (gives radula drawing)
- 1877 Monographie du genre *Sinusigera* d'Orb. Op. cit. 12: 105-127, pl.2/1-5, pl.3/1-5, pl.4/1-6 (three coloured plates)
- 1879 Mollusques recueillis en Suisse en 1879. Op. cit. 14: lxxxv-lxxcvii.
- 1880 Une journée malacologique à Colombo, Ceylan. Op. cit. 15: xciii-xcvi.
- 1880 Descriptions of three new species of land and freshwater shells from Nossi-Bé Island (N.W. coast of Madagascar). Proc. zool. Soc. Lond. 1880: 215-216, pl.12/5, 8, 10.

- 1880 On a collection of land and freshwater shells made during a short expedition to the Usambara Country in Eastern Africa with descriptions of seven new species. Op. cit. 1880: 216-219, pl.12/1-4, 6, 7, 9.
- 1880 On a collection of land and freshwater shells from the Transvaal and Orange Free State in South Africa, with descriptions of nine new species. Op. cit.: 614-618, pl.57/1-6, 10-12.
- 1880 Description of three new species of land-shells from Cape Colony and Natal. Op. cit.: 618-619, pl.57/7, 8, 9.
- 1882 Liste d'une collection malacologique provenant de Landana près de l'embouchure du Congo (Afrique occidentale). Annls. Soc. malac. Belge 17: 15-19.
- 1883 Note sur le genre *Sinusigera*. Op. cit. 18: xxv-xxvi.
- 1883 On the genus *Sinusigera*. Ann. Mag. nat. Hist. (5)11: 141-142.
- 1888 Note sur *Helix harpa* Say. Journ. de Conchyl. (3)28(=36):101-103.
- 1891 Notes on the viviparous nature of *Balea*. Journ. Conch. 6:421-422 (with Smith, E.A. - actually two separate notes not a joint paper).
- 1892 [1894] Sur les variétés du *Purpura* (*Cuma*) *coronata*, Lmk., et sur la position systématique du *Melongena fusiformis* Blainv. Annls. Soc. malac. Belge 27: xxiii-xxvi.

LIST OF MOLLUSCA DESCRIBED BY A. E. CRAVEN

These are listed alphabetically under the generic names used by Craven. Where I am certain of the modern name for these species I have added it in parenthesis afterwards.

- Achatina kirkii 1880, Tanzania, Magila (Pseudoglessula leroyi fasciata Connolly).
- Achatina mamillata 1880, Madagascar, Nossi-Bé (Subulina m.).
- Achatina smithi 1880, S. Africa (Same).
- Alaba rectangulata 1880, Ceylon.
- Ancylus transvaalensis 1880, S. Africa (Burnupia t.).
- Bulimus magilensis 1880, Tanzania, Magila (Euonyma m.).
- Bullia (Pseudostrombus) fuscus 1882, Cabinda, Landana.
- Corbicula oliphantensis 1880, S. Africa (C. africana (Krauss) var. albida (Krauss)).
- Cyclophorus magilensis 1880, Tanzania, Magila (Maizania sp. type is juvenile and too poor to identify).
- Cyclotus alabastris 1880, S. Africa (Chondrocyclus a.).
- Ennea crassilabris 1880, S. Africa (Gulella c.).
- Ennea infans 1880, S. Africa (Gulella i.).
- Ennea natalensis 1880, S. Africa (Gulella n.).
- Helix symmetrica 1880, S. Africa (Sheldonia s.).
- Helix usambarica 1880, Tanzania, Magila (Tayloria u.).
- Helix zanguebarica 1880, Tanzania, Magila and Zanzibar (Afropunctum z-um).
- Lanistes farleri 1880, Tanzania, Magila (same).
- Nassa (Hima) weyersii 1882, Cabinda, Landana.
- Paludina colbeaui 1880, Madagascar, Nossi-Bé (type looks rather like a Cleopatra to me but card in index bears Viviparus in Connolly's handwriting).
- Phasianella petiti 1882, Cabinda, Landana.
- Physa lirata 1880, S. Africa (Bulinus tropicus (Krauss)).
- Pupa cafaeicola 1880, Madagascar, Nossi-Bé (?Gulella, not in the type collection at the BM).
- Pupa (Vertigo) sinistrorsa 1880, S. Africa (Pupilla tetrodus (O.Bttgr.)).
- Pupa usambarica 1880, Tanzania, Magila (Gulella u.).
- Sinusigera braziliensis 1877, Brasil.
- Sinusigera broeckiana 1877, Indian Ocean.
- Sinusigera colbeauiana 1877, Malabar.
- Sinusigera dubia 1877, Indian Ocean.
- ditto var. costata 1877.
- Sinusigera fusiformis 1877, Indian Ocean.

Sinusigera minima 1877, W. India.
Sinusigera nysti 1877, Indian Ocean.
Sinusigera perversa 1877, Cochin, W. India, etc.
Sinusigera reticulata 1877, Cochin, W. India, etc.
Sinusigera rosea 1877, Cochin, W. India, etc.
Sinusigera striata 1877, Cochin, W. India, Indian Ocean, etc.
Sinusigera tecturina 1877, Indian Ocean.
Vitrina transvaalensis 1880, S. Africa (Sheldonia t.).
Vitrina vandenbroeckii 1880, S. Africa (Sheldonia v.).

B. Verdcourt

ZONITOIDES ARBOREUS (SAY) ATTACKING ORCHID ROOTS

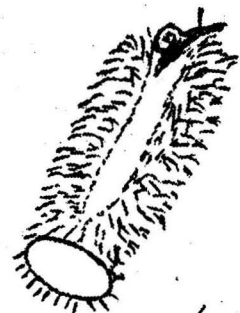
Miss P. Halliday brought to me for identification some small snails given to her by Mrs. Barbara Everard the well-known botanical artist. These snails were found in the soil around the roots of Paphiopedilum cv. F.C. Puddle and chew pathways through the root-hairs. They proved to be Zonitoides arboreus a native of North and Central America but now very widely dispersed and frequently found in greenhouses in botanic gardens, etc.. Doubtless they must be known to other orchid growers and may be mentioned in their literature. My only previous encounter with such an association was when naming some snails for a Dr. Stirling, Northwich, Cheshire in 1947-1948; these I feel certain from memory were also attacking orchids in some way. Quite recently Kew received an envelope of "insects" for identification which had been sent to the editor of a popular gardening magazine with a request for a method of ridding orchids of them. These proved to be Lauria cylindracea (da Costa), almost certainly merely living in the moss used and not doing any damage. Compost and moss must frequently contain small molluscs but few are likely to injure living plants. Pat Halliday has reacted characteristically to Barbara Everard's snails as follows:

"There's a snail in my orchids-"
 Mrs. Everard exclaimed,
 "And it's chewing away at the roots",
 "There's a little green path through the rusty-brown fur-",
 "It had better not start on the shoots".

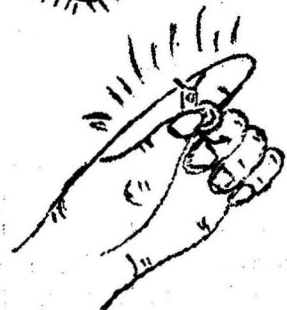


"This snail in your orchids -",
 I asked Barbara E.,
 "What's it like, is it little or large?",
 "It's a charcoal-grey midget", that lady replied,
 "I'd be glad if you'd take it in charge".

"For although it is built on a minuscule scale",
 "It's teeth seem a bit out of prop.",
 "To judge by the baldness of my orchids' roots",
 "It doesn't seem able to stop".



"Which could be a problem", opined Mrs. E.,
 As she squished one 'twixt finger and thumb,
 "I won't do what crazy Pat Halliday does",
 "And supply the damn things with a home".



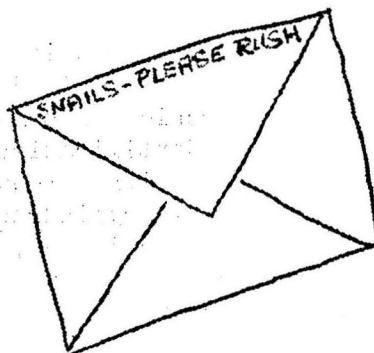
"If you send me a sample -",
 I told Mrs. E.,
 "The Expert might find them a name",
 "And when folk complain about bald orchid roots",
 "You can tell them which snail is to blame".

"My Paphiopedilums"
 "Should yield a few",
 Barbara mused,
 "I'll look round 'F.C.Puddle'",
 "If I water it madly I should get results",
 "Cos they'll all be washed out in the flood-le".

Through the post some days later,
 A package arrived.
 'Twas the Sample packed snugly - no crush -,
 There were four active snails, very hot, very cross,
 In an envelope marked:- "Snails - please rush".

"Zonitoides arboreus - that's what they are",
 The Expert pronounced in due course.
 "An American species, it lives in the soil",
 "And is usually present in force".

"It turns up in greenhouses",
 "Dotes on the heat",
 "And it's shell is striated and brown",
 "In size it achieves roughly 3mm. plus",
 "And its numbers make gardeners frown".



P. Halliday
 B. Verdcourt

PUBLICATIONS RECEIVED

Poirieria Vol. 9, Part 6 (October 1978)

This issue contains a quantity of fine and varied fare for those interested in the Mollusca of the antipodes. The opening article, well illustrated, concerns a rare and elegant Trophon recently dredged in 400 fathoms off Lord Howe Island. Tentatively identified as T. c.f. coulmanensis, it bears a resemblance to several Antarctic species.

The Marlborough Sounds form a portion of the better-known Queen Charlotte Sound, and it is there that Resolution Bay, the anchorage of Captain Cook, is situated. G. Forman engaged in a survey of the land snails of the area, and in particular, of Blumine Island, where Paryphanta hochstelteri bicolor Powell survives. 16 species were logged from the Island and twenty, including a Rhytida, from Resolution Bay.

C. Bissett contributes a note on the marine shells found in the Waikawa Harbour area, right at the South end of New Zealand; a wild and rocky coast, full of interest. In contrast, Betty Grange reports the results of an unusually productive 'wash up' on Kainamau Beach in the far north; there is not a single species of mollusc common to both articles. An interesting observation is made by Bob Penniket on finding Chlamys gemmulata in quantity in enclosed spaces in

shipwrecks; clean, large and finely coloured specimens were living in the calm surroundings of small rooms.

Other articles deal fully with the New Zealand representatives of the unrelated families Mitridae and Volutomitridae; the detailed descriptions make these papers valuable for reference purposes. Patricia Vause writes on the shells of Orewa Beach, North Auckland, an area evidently under her observation for a long time, and the variety of species recorded is enormous. Obituaries and abstracts of new publications complete the Journal, which is issued by the Conchological Section of the Auckland Institute and Museum, and edited, as for so many years past, by Mr. and Mrs. Norman Gardner, [REDACTED], Birkenhead, Auckland 10, New Zealand.

T. E. Crowley

Protecting public from micro-biological pollution of oysters

Experiences in Europe and the USA earlier this century clearly established the role of oysters in transmitting typhoid and cholera to humans. More recently, hepatitis outbreaks from oyster consumption have been a problem in the USA as has gastroenteritis in Australia.

But why are oysters potentially hazardous as a food for humans? Basically, there are two reasons:

oysters are filter feeders and can concentrate in their bodies any pathogenic (dangerous) micro-organisms that might be present in their growing waters - thus the safety of an oyster as a food depends largely on the quality of the water; and the oyster-loving consumer has a strong preference for eating uncooked oysters - but cooking is an extra safety step which helps to kill any dangerous organisms.

Sewage pollution of waterways (and oysters) is readily monitored by measuring the levels of *Escherichia coli*. *E. coli* is a bacteria which occurs in the gut of healthy humans and is discharged with the faeces, so finding this organism in waterways or oysters above certain levels indicates sewage pollution and therefore the possible presence of other disease-causing bacteria and viruses.

The National Health and Medical Research Council of Australia (NHMRC) has introduced a microbiological standard for oysters, stating that oysters for human consumption should not contain more than 2.3 *E. coli* cells/gram. Oysters with levels of *E. coli* greater than 2.3/g will have suffered from unacceptable levels of sewage pollution and therefore represent a potential danger to public health. This is the generally accepted international standard.

Oysters taken from the Georges River at the time of the food poisoning outbreak during June-July last year showed *E. coli* levels 10 times more than the NHMRC standard. This indicated extensive sewage pollution of the oyster growing areas at that time. What has happened to the Georges River already is a preview of what could happen to the cleaner waterways in the north and south five to 10 years from now. Of course, microbiological pollution is not the only problem - lurking on the horizon is pesticide pollution, which can kill oysters outright.

Oyster cleansing

The only practical alternative to closing down operations in waterways which continually yield contaminated oysters is to develop ways of cleansing these polluted oysters to make them safe.

Studies in the UK and USA have shown that polluted oysters will cleanse themselves of microbial contaminants naturally if allowed to feed in clean,

unpolluted waters.

Relaying polluted oysters for one to two weeks in pollution-free waterways is one way of making them clean but the handling and transport costs of such an operation are rarely economic. Also there has to be some assurance that the waters in which the oysters are relayed remain pollution free.

Commercial depuration plants are common in the UK, Europe, the USA and Japan, and have operated successfully and economically in those countries for many years. Depuration has not been practised commercially in Australia but most certainly will have to be introduced in some areas within the year.

There are several ways of producing sterile seawater for oyster depuration. Chlorination was used at first but eventually replaced by other methods because it interfered with oyster feeding, and hence their rate of cleansing.

Ultra-violet lights are now widely used to sterilise seawater. They have been operating in a number of overseas countries for at least 15 years and there are some 24 commercial UV depuration plants in the UK alone. Ultra-violet light is very effective in killing both bacteria and viruses, and is cheap to produce and maintain.

Recently ozone has been used to sterilise seawater for oyster depuration plants, particularly in France and Spain. Ozone is very effective in killing both bacteria and viruses but is generally more expensive than ultra-violet light. Also if the ozone is not inactivated in the water before reaching the oysters, some oysters might be killed. Attempts to introduce ozone depuration systems into Britain to replace UV systems were not successful; however ozone depuration plants have been operating successfully in France and Spain for around five years.

Now further studies are underway to optimise oyster-water ratios and tank design, and to scale up operations to handle 20,000 oysters at a time. Anyone interested in the results of this work can contact the author for further information.

Graham H. Fleet

Dr. Fleet is a lecturer at the School of Food Technology, University of New South Wales, and has been conducting research into the microbiological pollution of oysters for the past three years. This article was taken from a paper presented at the oyster farmers' open day at the NSW State Fisheries Port Stephens research station.

Extracted from 'Australian Fisheries', Dec. 1978 (submitted by Mrs. Betty M. Smith).

COLLECTING IN SOUTH WEST IRELAND

Whilst on holiday in S.W. Ireland during August/September 1978, the opportunity of doing some recording/collecting was taken. Unfortunately very little material could be brought back due to the fact that it was a camping/backpacking holiday.

Some 10 sites were visited and explored on the coast of Co. Cork and Co. Kerry (sea areas Cork and Fastnet) many of which seemed worth exploring further than we had time for. They were as follows:

1) Garrettstown Strand, Co. Cork (25.8.78)

A long sandy strand frequented by bathers, but the rocks at either end were quite productive; especially common was Lepidochitona cinerea.

2) Inchydoney Strand and Virgin Mary Rocks, Co. Cork (27.8.78).

This was a lovely sandy beach; however it was unfortunate that we picked a Bank Holiday to visit it, since the crowds of people tended to inhibit collecting. Bivalves, especially Macra corallina, were, as is to be expected, plentiful. Having heard of a mysterious 'Virgin Mary shell' which was supposed to be found here (in association with Virgin Mary Rocks), we made a concerted effort to find and identify it, unfortunately to no avail. Later we met a lady who claimed to have found 6 or 7 specimens here over the years, and from her somewhat hazy description, I would tentatively identify it as Pandora albida.

3) Ownahincha Strand, and 4) Castlefreke Strand, Co. Cork (28.8.78)

Both were quite nice bathing beaches, but rather unremarkable conchologically. On the rocks at the eastern end of Castlefreke Strand, Lasaea rubra was discovered to be plentiful amongst the byssus of Mytilus edulis.

5) Cockle Beach, 6) Barley Cove, and 7) Galley Cove, Co. Cork (31.8.78)

All three of these sites were within a mile of each other and Cockle Beach proved to be one of the most interesting of the whole trip.

Galley Cove was pebbly and singularly unexciting.

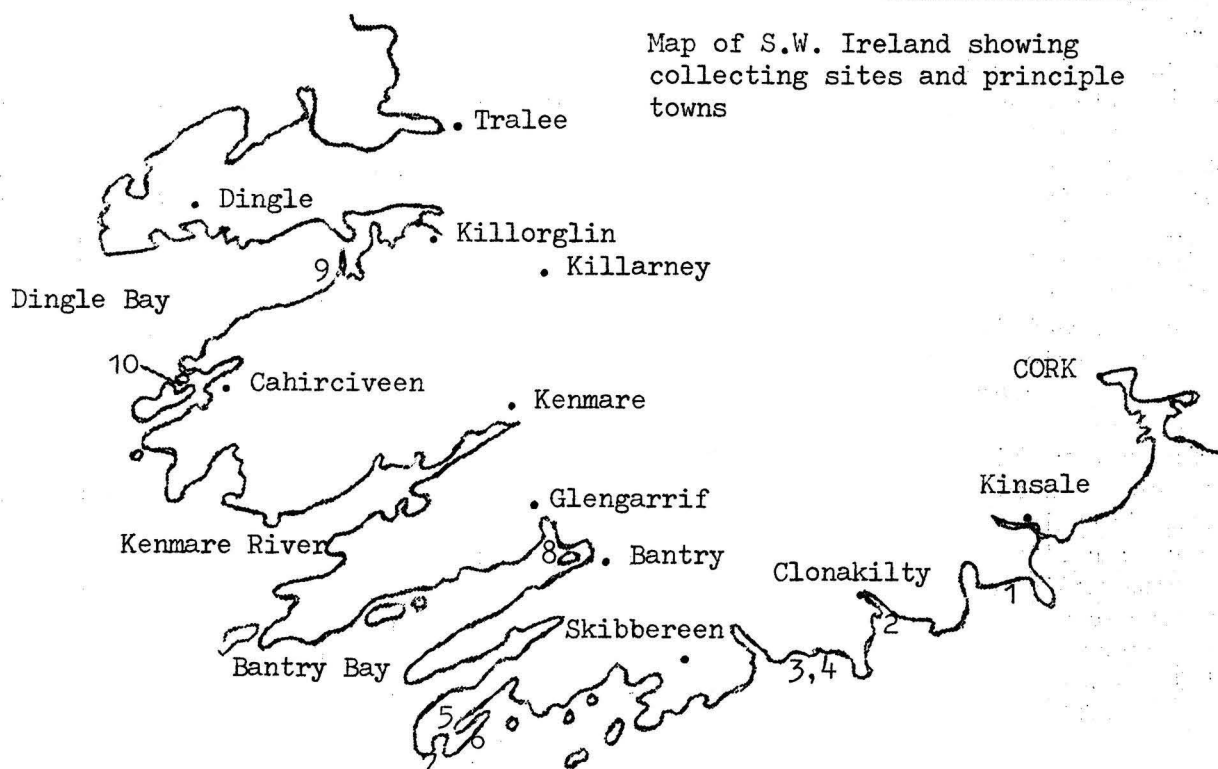
Barley Cove had very little except a few rather battered bivalves; but it was on a specimen of Dosinia exoleta that a single specimen of Lepidopleurus asellus was found.

Cockle Beach was just as the name states - a beach composed of Cerastoderma edule. The lower beach was full of live C. edule just below the surface of the sand, whilst the upper shore was littered with piles of dead cockles. Hydrobia ulvae also existed, alive, in countless numbers. Mya arenaria was quite frequent, and was also found alive. Large single valves of Pecten maximus were common, but unfortunately no live specimens were seen. Several other bivalve species were common.

Cockle Beach probably owes its wealth of bivalves to its very sheltered position in a calm inlet.

8) Seal Harbour, Co. Cork (3.9.78)

This was, without a doubt, the most productive site. It was basically a small rocky and pebbly inlet on Bantry Bay, and its variety of species must surely be due to the effect of the Gulf Stream on Bantry Bay. The rocks were covered with various weeds, and it was here that most of the gastropods were found. One, highly pleasing, find was a single valve of Gastrana fragilis.



9) Rossbeigh Beach, Co. Kerry (8.9.78)

This beach, really a long sand spit sticking out into Dingle Bay, looked very promising, although we did not have time to explore properly, particularly for bivalves.

10) Knightstown Pier, Valentia Island, Co. Kerry (9.9.78)

This was a remarkably good rocky shore, with an excellent variety of gastropods. Valentia Island is apparently a good centre for diving, since the water around the island is remarkably clear and unpolluted.

SPECIES LIST

	1	2	3	4	5	6	7	8	9	10
<u>Lepidochitona cinerea</u>	A							A		
<u>Lepidopleurus asellus</u>						A				
<u>Aporrhais pespelicani</u>							C			
<u>Bittium reticulatum</u>								B		
<u>Buccinum undatum</u>								C	C	
<u>Calliostoma zizyphinum</u>				B				A		A
<u>Diodora apertura</u>										B
<u>Gibbula cineraria</u>	A	C			A	A	C	A	B	A
<u>Gibbula magus</u>								C		C
<u>Gibbula umbilicalis</u>	A				B			A		A
<u>Hydrobia ulvae</u>					A					
<u>Littorina littoralis</u>	A		A	A	A		C	A	A	A
<u>Littorina littorea</u>	A	A		A	A		C	A	C	A
<u>Littorina neritoides</u>			A			A				
<u>Littorina saxatilis</u>	A	A	A	A	A		A	A	A	A
<u>Monodonta lineata</u>								A	A	A
<u>Nassarius incrassatus</u>								A		B
<u>Nassarius reticulatus</u>								C	C	C
<u>Natica catena</u>		C								
<u>Nucella lapillus</u>	A	A	A	A	A	A		A	A	A
<u>Ocenebra erinacea</u>								B		
<u>Patella vulgata</u>	A	A	A	A	A	A	A	A	A	A
<u>Patina pellucida</u>	C							A		C
<u>Rissoa parva</u>								A		
<u>Trivia arctica</u>										B
<u>Turritella communis</u>										B
<u>Abra alba</u>					A					
<u>Abra tenuis</u>								B		
<u>Acanthocardia echinata</u>			C							
<u>Anomia ephippium</u>			C	C	C			A		C
<u>Barnea candida</u>									C	
<u>Cardium edule</u>	C	C	C	C	A		C	B	C	B
<u>Chlamys varia</u>								C		C
<u>Donax vittatus</u>	B	B	C						B	
<u>Dosinia exoleta</u>		C				C		C	C	C
<u>Ensis siliqua</u>	C	C	C	C	B	C	C	B	B	C
<u>Gastrana fragilis</u>								C		
<u>Hiatella artica</u>			A							
<u>Laevicardium crassum</u>								C		
<u>Lasea rubra</u>				A						
<u>Lucinoma borealis</u>	C							C		
<u>Lutraria lutraria</u>		C	C			C	C	C	C	C
<u>Macoma balthica</u>					B					
<u>Mactra corallina</u>	C	B	C	C					C	
<u>Modiolus modiolus</u>									C	
<u>Mya arenaria</u>					A			C		C
<u>Mya truncata</u>						C			C	C
<u>Mytilus edulis</u>	A	A	A	A	A	A		A	A	B
<u>Ostrea edulis</u>					C			C	C	C

	1	2	3	4	5	6	7	8	9	10
<u>Pecten maximus</u>					C			C		C
<u>Spisula solida</u>			C				C		A	
<u>Tellina crassa</u>		C			B					
<u>Tellina squalida</u>					B					
<u>Tellina tenuis</u>		B			B				C	
<u>Venerupis aurea</u>					B			B		C
<u>Venerupis decussata</u>					B		C	B	C	C
<u>Venerupis pullastra</u>		C			B	C	C		C	A
<u>Venus fasciata</u>	C	C								
<u>Venus striatula</u>		C	C					C	C	
<u>Venus verrucosa</u>								C		B
<u>Zirfaea crispata</u>									C	

All in all, considering the short amount of time available to us at each site, the trip was very well worthwhile. We recommend members to give Ireland a try sometime in the future - you'll find the locals very hospitable - we did!

Rupert Honnor, Julia Nunn

MARINE CENSUS AFFAIRS

I have accepted the post of Marine Recorder following Phil Palmer's resignation. Nature Conservancy Council have offered to produce and publish the Marine Atlas in return for the data, and in May I visited NCC at Huntingdon. First examples of the preliminary distribution maps of a few selected species (initiated in Phil Palmer's "reign") were available plotted on different grids for comparison.

In June I arranged a meeting of Area Representatives at the South Shields Museum by kind permission of Fred Woodward who is both an Area Representative and Principal Keeper of Natural Sciences at the Museum. About a third of the sea areas were represented and discussion included consideration of the preliminary maps and the various geographical grids for portraying distribution, the present state of recording, means of monitoring progress and improving cover, production of guides to "difficult" groups and to finding molluscs, a panel of referees for authoritative determination, revision of nomenclature, recording cards, publication of reports from area representatives and the Marine Recorder. The same topics have also been aired with a few representatives who were unable to get to the meeting.

Much effort so far has concentrated on shore recording; while this is important and there are still many gaps - geographically and for some groups of molluscs - I wish to encourage an increase in offshore effort, and should be pleased to see hints and tips in The Newsletter from conchologists who get material at sea without actually hiring a trawler! It is also important to ensure that our recording can fit into any system of mapping, which means keeping a separate record card for each site, with an accurate location reference.

I hope soon to show that we are making tangible progress in the form of the set of area master cards, which NCC have agreed to publish.

D. R. Seaward, Marine Recorder

MARINE MOLLUSC MAPPING SCHEME - SEA AREA PORTLAND S.16

PROGRESS REPORT No. 5 - 1978

Field Work: The Dorset Underwater Survey (DUS) is now complete, the third

survey greatly improving knowledge of the shallow sub-littoral from Chesil Cove westward. My own detailed survey of the Fleet has continued and I have done some shore work at Lannacombe, Torquay, Sidmouth, Lyme Regis, Seatown, Portland and Osmington. PS provided data for Torbay and Exmouth. Valuable off-shore records came from NAH from his Channel brittlestar survey of 1972/3, and from WNG.

New and Updated Records: The following have been notified or confirmed since my last Report:-

<u>Calliostoma papillosum</u>	a to <u>A</u>	East of Start Point		1975	WNG
<u>Colus gracilis</u>	c to <u>A</u>	East of Start Point		1975	WNG
<u>Lacuna crassior</u>	a to <u>A</u>	off Burton Bradstock	30/48	1978	DUS
<u>Littorina arcana</u>	new <u>A</u>	Portland Bill	30/66	1978	DRS
(J Conch. 29:304(1978))					
<u>Aegires punctilucens</u>	a to <u>A</u>	Sidmouth	30/18	1979	DRS
<u>Eubranthus vittatus</u>	new <u>A</u>	Fleet	30/67	1979	DRS
<u>Haminoea navicula</u>	a to <u>A</u>	Fleet	30/67	1978	DRS
<u>Dentalium entalis</u>	C to <u>A</u>	East of Start Point		1975	WNG
<u>Astarte sulcata</u>	B to <u>A</u>	East of Start Point		1975	WNG
<u>Lima hians</u>	C to <u>A</u>	Channel		1973	NAH
<u>Turtonia minuta</u>	a to <u>B</u>	Lannacombe	20/83	1978	DRS
<u>Loligo vulgaris</u>	new <u>A</u>	Great West Bay (N A Holme, JMBA	54:481-503	(1974))	
<u>Sepia officinalis</u>	a to <u>A</u>	off Abbotsbury	30/58	1978	DUS

Master Card for S.16: A total of 410 species is now recorded, of which 261 are post-1950 live records.

My thanks are due to all those below who have kindly helped me, in the field, with records or determinations, or in other ways.

G. H. Brown, Bristol
Dorset Underwater Survey
M. Edmunds, Preston
Dr. V. Fretter, Reading
Dr. T. Gascoigne, London
W. N. Gray, Brixham

Dr. N. A. Holme, Plymouth
Mrs. C. J. Pain, London
Elizabeth Platts, Belfast
P. Shannon
Dr. T. E. Thompson, Bristol
Mrs. S. M. Turk, Camborne

Dennis R. Seaward

Area Representative S.16 Conchological Society, [REDACTED], Yeovil, Somerset,
March 1979 [REDACTED]

<u>Key to categories of records:</u>	pre 1900	1900-1950	post 1950
Live record	a	A	<u>A</u>
fresh shell	b	B	<u>B</u>
worn shell	c	C	<u>C</u>

REPORT FOR SEA AREAS 18, 19 AND 20 (FROM MID-FEBRUARY 1978 TO 26.2.1979)

The concentration on site recording has continued to bring immediate rewards in the terms of usefulness. Such site records are invaluable for 'conservation' purposes (knowing what is where - see Conch. Newsletter No. 57:501), educational needs (marine ecology for schools, colleges and universities) and research on particular species. It also made it feasible to provide detailed grid data on most of the 20 species selected by the Nature Conservancy Council for the preliminary maps of marine molluscs: the best distribution coverage was for Lepidochitona cinereus, Monodonta lineata and Rissoa parva.

AREA 18 PLYMOUTH (10/49-30-)

Long Rock, Mount's Bay (10/49-30-). C.J.P. & T.P. added several more species to the list from this interesting reef which can be reached only at low water, and which they visited in September.

Polurrian Cove, The Lizard (10/66-18-). General survey notes and lists were compiled by B.E.J., E.J. & S.M.T. in October.

Durgan, Helford Passage and Rosemullion Head (all in 10/72) were visited by D.R.S. in September, increasing by seven the post-1950 live records for this productive part of the coast. All 138 species found living since 1950 occur in the actual estuary (including Gillan Inlet), although many are, of course, found on the nearby open coast as well. A form of Eubranchius farrani was noted by D.R.S. at Helford Passage, spawning on Zostera marina and associated with Obelia sp, on which it was presumed to be feeding.

N.F.McM. sent further details of certain of the species held at the Merseyside Museums and collected by T.G.W.F.; he had collected alive (probably in the 1940's) the following species in Helford Estuary: Acanthocardia aculeata, Arca lactea, Diplodonta rotundata, Lima hians and Modiolus adriaticus.

Castle Beach, Falmouth (10/81-31- to 82-31-). K.M.C. has added more species to former lists and upgraded others. Although shells of Crepidula fornicata are often cast-up on this beach, she has now found one with the animal still alive; as it was on the strandline, it will still be recorded as category 'B' on the Field Card, but of course full notes will be kept on S.M.T.'s card index.

N.F.McM. loaned some perfect specimens (i.e. with ligament intact and remains of periostracum visible) of Lutraria magna from Merseyside Museum collections. One, undated, comes from the Salisbury collection and was dredged off Falmouth. Others come from Torbay, Torquay and Weymouth. All have been checked by N.A.H., and although undoubtedly rare, and perhaps becoming rarer, it seems certain that the species has been taken alive off the south coast within the past half-century or so.

Carne, Gerrans Bay (10/90-37-) has been visited by K.M.C., and a further list submitted.

Portholland, Gerrans Bay (10/95-41-). S.M.T. acted as recorder on an Exeter University Extra-Mural Dept. Field Day, led by G.C.M. This shore has been visited by the same group on several occasions now, but on this September meeting some new species were added, including Onchidella celtica.

Porthluney (10/97-41). K.M.C. sent records from here, upgrading one species.

AREA 19 SCILLY ISLES

C.J.P. & T.P. sent a list of 40 living species from St. Martin's Flats (00/92-15-), recorded in September. Of these, one (Ensis ensis), is a new 20th. century record from Area 19.

AREA 20 NORTH CORNWALL

Gala Rocks, Zennor (10/45-39-). S.M.T. visited this extensive pool-studded rocky platform with B.E.J., P.J.W., B.D.S. and A.E.S. to prepare a general survey.

Godrevy, St. Ives Bay (10/57-43-). On the occasion of a visit of Camborne-Redruth Natural History Society, led by J.K.W., the opportunity was taken to do some specialist as well as general recording.

Crantock Beach (10/78-61-). Records added by K.M.C.

Harlyn Bay (10/87-75-). K.M.C. sent a list, adding two new species from shell sand.

Porth Mear (10/84-71-). R.L.D.P. sent the results of some years of recording with school groups he has taken on field study courses.

Marsland Mouth (21/20-17-). K.M.C. has supplied the only list so far received from this site.

A.E.S. Miss A. E. Spencer
B.D.S. Miss B. D. Stephens
B.E.J. Mr. B. E. Jackson
C.J.P. Mrs. C. J. Pain
C.P.P. Mr. C. P. Palmer
D.R.S. Mr. D. R. Seaward
E.J. Mrs. E. Jackson
E.T. Mrs. E. Tregenza
G.C.M. Dr. G. C. Matthews

K.M.C. Miss K. M. Cobley
N.A.H. Dr. N. A. Holme
N.F.McM. Mrs. N. F. McMillan
P.J.W. Miss P. J. White
R.L.D.P. Mr. R. L. D. Pearce
S.M.T. Mrs. S. M. Turk
T.G.W.F. Mr. T. G. W. Fowler
T.P. Mr. T. Pain

Stella M. Turk

SEA AREA 29A (ANTRIM) PROGRESS REPORT FOR 1978

A total of about 750 records have now been compiled for the Area. Of the 320 new records, just over half are from a literature search. So far, records for 218 species have been received: 53 of these are grade A, 57 are pre-1950 compiled from literature.

A collecting trip was made to the eastern coast of the Inishowen Peninsula, part of the Area for which no recent records had previously been located. A few beaches were re-visited, but it is intended to spread attention over the whole area, rather than to concentrate on a particular part of the coast.

Some of the more significant published fauna lists for the Area were consulted in 1978. All the records thus located are pre-1950, many from dedgings. It is unfortunate that no more recent works appear to exist.

At this stage, it would be pointless to provide a list of updated or up-graded records. Species for which records were compiled for the first time in 1978 are indicated on the Master Card. Of these, perhaps the most interesting is Lutraria angustior Philippi, which was first recognised in Irish waters in 1968, and has since been found chiefly in the south and west.

I am grateful to the following for their help during 1978:

V. Fretter, Reading
N. McMillan, Liverpool
T. & C. Pain, London

B. Picton, Belfast
H. Ross, Belfast
B. Zoder, Netherlands

Michael Brisco

SEA AREA SUTHERLAND (S2). ANNUAL REPORT FOR 1978

Only two species were upgraded, leaving the grand total at 213, with a single increase to the post-1950 live total of species (158 to 159).

The two upgradings are:

Mya truncata B to A Lower Loch Eriboll 29/45 RGM

Sepia officinalis C to B Traigh na H'uamag Bay 29/46 RGM

R. G. Meiklejohn (Area Representative)

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE c/o. British Museum
(Natural History), Cromwell Road, London, SW7 5BD, United Kingdom.

AN(S) 109

June 1979

The Commission hereby gives six months notice of the possible use of its plenary powers in the following cases, published in Bull. zool. Nom. vol. 35, part 4, on 31st. May 1979, and would welcome comments and advice on them from interested zoologists. Correspondence should be addressed to the Secretary at the above address.

2253 Chromodoris californiensis Bergh, 1879 (May): proposed conservation over Chromodoris glauca Bergh, 1879 (March) (Mollusca: Gastropoda).

2254 Prohysterocheras Spath, 1921, and Neokentrocheras Spath, 1921 (Ammonoidea): proposed designation of type species.

The following Opinions have been published recently by the International Commission on Zoological Nomenclature in the Bulletin of Zoological Nomenclature, Volume 35, part 4, 31 May 1979.

1122 (p.227) Loligo opalescens Berry, 1911, given nomenclatural precedence over Loligo stearnsii Hemphill, 1892 (Cephalopoda).

The Commission regrets that it cannot supply separates of Opinions.

GENERAL NOTES

SELBORNE - APRIL 1980

An advance notice of a weekend meeting on "Molluscs in Hampshire" to be held jointly with the Malacological Society of London at the Gilbert White Museum, Selborne, Hampshire, on 26-27 April 1980.

Detailed programme to follow in the December Newsletter.

EVOLUTIONARY SYSTEMATICS OF BIVALVE MOLLUSCS

A two-day conference on this topic, organised by the Royal Society and the Malacological Society of London, took place in London on 18-19 May 1977 and this proved a very stimulating meeting. Papers were contributed from malacologists working on bivalves in various parts of the world and the meeting also included both the zoological and palaeontological points of view so there was a wide spread of interest.

The papers presented at this meeting have now been published in a part of the Philosophical Transactions of the Royal Society, Series B, Vol. 284, No. 1001. This is now available from The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG at £16.50 (U.K.) and £17.00 (overseas). Prices are inclusive of postage and packing.

From June Chatfield

A COURSE ON MARINE BIOLOGY

This course will be held at the British Museum (Natural History), Cromwell Road, London, S.W.7 at 6.30 p.m. on Thursdays, commencing 11th. October 1979. Term dates - 11th. Oct. to 13th. Dec. 1979 & 10th. Jan. to 13th. March 1980 inclusive. Apply to Mrs. Julie Robins, Dept. of Extra-Mural Studies, University of London, 26 Russell Square, London, WC1B 5DQ for forms and information. Course fee £10. Talks by Dr. A. A. Fincham and staff of the Brit. Mus. (Nat. Hist.) include 'Diving a marine biological tool', 'Coral reefs', 'Intertidal ecology of rocky shores' and many other topics. Opportunities for field trips and practical work. Conchologists will find much of interest and use in this course, both in specialist and general terms.

UNITAS MALACOLOGICA - FIRST ANNOUNCEMENT - SEVENTH INTERNATIONAL MALACOLOGICAL CONGRESS

Date: 31st. August (registration) to 6th. September 1980
Place: in France, Perpignan and Banyuls-sur-Mer
Excursions: Perpignan is fifteen kilometers from sandy shores, thirty from rocky shores and the "Laboratoire Arago", biological station of the Universities of Paris, twenty from Pyrenean Mountains. Many scientific excursions will be possible, interesting marine, brackish water and land Molluscs.
Languages: English, German and French
Topics: All topics about living or fossil Molluscs are welcomed
Publication: International Malacological Review MALACOLOGIA
Postal: Secretariat du 7eme Congres International de Malacologie,
Address: Laboratoire de B.I.M. et Malacologie, 55 Rue de Buffon, F-75005 Paris, France.

THE SECOND INTERNATIONAL CONGRESS OF SYSTEMATIC AND EVOLUTIONARY BIOLOGY (ICSEB-II) will be held at the University of British Columbia, Vancouver, Canada, 17-24 July 1980.

Those interested in receiving an information circular should write to the following: Dr. G. G. E. Scudder, Department of Zoology, The University of British Columbia, 2075 Wesbrook Mall, Vancouver, B.C. V6T 1W5, Canada.

SCALLOP PROCESSING EQUIPMENT

Equipment for processing scallops is now available in Australia. The equipment is manufactured by Intel Engineers in Scotland and marketed by Jonell Equipment Co. in Victoria.

It consists of five units. Whole shell-on scallops are fed into a washing machine, pass through a hot-water opener, a separator removes meat and viscera from the shell, a brine flotation tank cleans it, and an eviscerator produces roe-off meat.

The manufacturers claim scallops move through the processing line in less than five minutes, with throughput of about two tonnes an hour.

The most complex (and expensive) component in the processing line is the eviscerator. It has a series of closely-spaced oscillating rollers which pull the viscera away from the meat, in much the same way as a prawn peeling machine. One major Australian processing plant is operating an Intel eviscerator successfully. The eviscerator costs about \$30,000; an entire processing line would cost about \$100,000.

(Reprinted from 'Australian Fisheries', Dec. 1978 issue - submitted by Mrs. Betty M. Smith)

CONE SHELLS: A synopsis of the living conidae, by Jerry G. Walls.

309 valid species fully illustrated in over 1160 color photos. Indexes of over 1400 living and 1300 fossil names. Hardbound, 5½ x 8½". Price \$30 + post (must

be paid in U.S. dollars). Published by: T.F.H. Publications, Inc., Box 427 Neptune, N.J. 07753; U.S.A.

WANTED: JOURNAL OF CONCHOLOGY, Vol. 25, Parts 1 to 6, Vol. 26, Parts 1 and 2, Vol. 27, Parts 3 and 4. Mr. Robert A. Foster, [REDACTED], Santa Barbara, Calif. 93105, U.S.A. would be happy to pay for them at an advanced rate, or trade shells for them.

ANNUAL GENERAL MEETING - MARCH 1980

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 1979.

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 25p 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 £3.00 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.

SHELL INSURANCE

Contact us for expert advice without obligation. Jaykel Insurance Services and Finance Ltd., 135 Mitcham Road, London, SW17 9PE. Telephone: 01-767 2430.

DO POND SNAILS TRAVEL OVERLAND?

Is Lymnaea peregra given to wandering about on land? Its specific name, meaning living abroad or a traveller, suggests it may. I have a plastic pond 2½ x 3 feet which was full of them, and in 1978 Elodea canadensis took over, as well as thread-like green algae, and I pulled out handfuls of the weed. As I thought it might contain various living things I left it for a fortnight in a heap overhanging the pond, so that any snails, etc., could easily get back. To my surprise some weeks later I found a fibreglass 30 gallon tank, which is fed by a pump from a well, had a number of water snails in it. This is a good 12 feet from the pond and I think they must have come out of the weed, as I never dip water out of the pond and when it needs topping up I never touch the water with the bucket or can, so that I cannot have picked up any on the bottom of the can. I run in the water over the stones surrounding the pond without touching the ground. By the autumn there were dozens in the tank and there are still quite a lot (April), though they have only a very thin rim of algae on the side at the surface to live on. They all seem to have made the excursion safely as I have searched the area between pond and tank and found one empty shell. It seems odd that they should go to all that trouble when the pond was so close and

full of food. It is called the 'wandering snail', but one would not have expected it to choose a dusty dry garden bed and then a length of gravel path and up the side of a fibre-glass tank - in a drought. Besides, how did they know there was water in the tank? It was half full at the time.

Margaret Jaques (Velator, N. Devon)

JOINT AUTUMN MEETING of The MALACOLOGICAL SOCIETY OF LONDON and the UNDERWATER ASSOCIATION to be held on Saturday 17th. November 1979 in the Zoology Department, Williamson Building, University of Manchester, Oxford Road, Manchester, M13 9PL

Admission	<u>Programme</u>	
10.00 a.m.	Coffee	
10.30	Dr. G. Brown, University of Bristol	Zoogeography of Sea slugs of the N.E. Atlantic
11.05	Dr. R. N. Hughes, University College, Bangor	Shore crab predation of molluscs
11.40	Dr. J. D. Taylor, British Museum, Nat. History	The biology of predatory reef gastropods
12.15	Dr. J. Messenger, University of Sheffield	The colours of cephalopods
	Lunch	
	<u>Afternoon session on the Biology of Scallops</u>	
1.40 p.m.	Introduction: The Monomyarian condition by the Chairman, Sir Maurice Yonge, FRS	
2.10	Dr. P. Gabbott, NERC Invert.Biol.Unit, Menai Bridge	How far can a scallop swim? A biochemists viewpoint
2.40	Mr. C. Chapman, Fisheries Laboratory, Aberdeen	Responses of <u>Chlamys</u> to fishing gear
3.10	Dr. Llyr Gruffydd, NERC Unit, Menai Bridge	Scallops and currents
3.40	Tea	
4.00	Dr. A. R. Beaumont, NERC Unit, Menai Bridge	Population genetics of <u>Chlamys</u> <u>opercularis</u>
4.30	Dr. N. Mathers, Heriot Watt University	The biology of scallops in Loch Creran
5.00	Dr. A. R. Brand, Marine Lab., Port Erin, I.O.M.	The settlement and cultivation of scallops
5.30	Dr. Ventilla, White Fish Authority, Edinburgh	Japanese culture methods of scallops
6.00	Dr. A. Taylor, University of Glasgow	Growth and development of scallops

Further details can be obtained from the meeting secretary, Dr. R. Earll at the Zoology Department, Manchester University, Oxford Road, Manchester, M13 9PL, 061 273 7121 ext. 5501.

If you require the following please tick the appropriate box.

Accommodation ()

Lunch will be available at the University cafeteria from 80p - £1.20 ()

Name: Address:

THE CONCHOLOGISTS' NEWSLETTER

No. 71

ISSN 0573-2336

Newsletter Editor: P.E. Negus,

December 1979

Chelsea Bridge Road,
London, [REDACTED].

Produced by THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

FINDING MARINE MOLLUSCS - HINTS AND TIPS No.1

Several conchologists have asked if I can initiate exchange of information between those interested in marine molluscs to improve expertise in finding the animals. I claim no proficiency in this direction and my experience is from a limited geographical area so it is very much in an attempt to elicit response from others better qualified than I, that the following disjointed notes are submitted:

I am particularly interested in the smaller molluscs which are often overlooked, and I make small collections of substrate in the field, bring them home and keep them in separate containers in fresh sea water. Good labelling of containers is essential and I use wax crayons. Make a habit of always bringing back fresh supplies of sea water when you visit the coast. Collections will keep for several weeks in cool shady conditions, and for longer periods if well aerated. Examine frequently - it's amazing how often something new appears as you are about to leave for the office or go to bed. Keep a fine paint brush handy for picking animals off the side of the container. And don't be too hasty to dispose of the collection - fresh species may appear after a few weeks. These comments apply equally to collections from the shore, or from divers, or from dredging. Final disposal is, of course, where practicable, back to the sea in the locality and habitat they came from.

One soon knows what animals to expect from what substrate. In my area the green alga Codium frequently has Rissoa guerinii and Elysia viridis and occasionally Hermaea (Placida) dendritica; Zostera often has Rissoa membranacea. A handful of small red algae, particularly if scraped off carefully to include some silt from around the bases, will usually produce Rissoa parva and R. guerinii, Cingula semicostata, Barleeia rubra, Skeneopsis planorbis, Musculus discors and several more. A handful of Mytilus or a stone covered with tube worms usually produces Odostomia; and so on.

A small mesh plastic kitchen sieve held underneath small red algae growing in a rock pool while they are vigorously shaken will often produce many rissoids and a few Lacuna sp. The same sieve fastened to the end of a stout 6 ft. bamboo pole and pushed along just below the surface of sand as you wade at low tide will help you discover retusids, Nassarius, small bivalves, etc..

You probably have much better methods; if so, let's all share in them.

D. R. Seaward, Marine Recorder

BLASTING LIMPETS ON THE BARBARY COAST

(After a drawing by W. Heath Robinson)

We awoke on board. The captain's
clock had pendulumed to morning,
struck the hour like a church
and rested. A droplet of a dingy was
inched into the fishy water.
Full of people it corked about
with top hats seeming ridiculous
and the captain's clock tied on
the moist planks.

I watched it as it shrank,
a spider
or pond skater
towards grey cliffs gulping sea.

And on the rocks a plague of limpets crawled
cowing the algae, revolving pale circles
against water.

They were fine Patellidae;

and as we loaded

gunpowder

string

paraffin

candles

into a boat and patted briefly
near the ship-side, a frigate-bird
sailed from the sun.

An hour later the inventor was behind
his big umbrella, and the captain's clock
spilt paraffin on a candle.

Gunpowder is ideal for blasting limpets.

Peter Topley

POEM ON THE LIMPET

The following verse appears on the title-page of the Monograph of the genus
Patella, *Conchologia Iconica* vol.8, by Lovell Reeve (1854-55):

"At distance viewed, it seems to lie
On its rough bed so carelessly,
That 'twould an infant hand obey,
Stretched forth to seize it in his play.
But let that infant's hand draw near,
It shrinks with quick instinctive fear,
And clings as close, as though the stone
It rests upon, and it, were one;
And should the strongest arm endeavour
The Limpet from its rock to sever,
'Tis seen its loved support to clasp,
With such tenacity of grasp,
We wonder that such strength should dwell
In such a small and simple shell." --Wordsworth.

This poem is not to be found in William Wordsworth's published works, nor is there any reference to it in Lane Cooper's Concordance to Wordsworth (1911). If any reader can supply information on the source of this verse, it would be much appreciated. It is a curious coincidence that there is a "Song in praise of Paella" by C.W.V. Wordsworth--but this is not a misprint! I am indebted to Mr. Alan Davidson and Mr. David Heppell for their interest and assistance in this hitherto baffling search.

A. E. Ellis

MOLLUSC RECORDING IN SOLWAY (CENSUS AREA S.25)

General Introduction - Geography

Solway S.25, apart from its inherent biological aspect, is important in view of the interest shown in possible future barrages across both the Solway Firth and Morecambe Bay, and/or other water storage developments plus the increasing industrialisation of the West Cumbria coast and nuclear projects at Chapelcross, Winscales and Heysham. How these developments have affected, or may in the future affect, the area as a whole, or locally, is not at all clear, and whilst the whole area is subject to considerable monitoring, it is essential that species lists should be maintained and updated as a measure, or base line, for the future.

This report summarises the position as at 31 December 1978, and draws upon all known published literature for this area, together with an increase in field work. Principal sources of published material are the excellent reports of work undertaken by Dr. E. J. Perkins and his team from the Marine Laboratory, University of Strathclyde, and in particular THE MARINE FAUNA AND FLORA OF THE SOLWAY FIRTH published on behalf of the Dumfriesshire and Galloway Natural History and Antiquarian Society in 1973. However LAKELAND MOLLUSCS by Marjory Garnett and Mary M. Milne published in 1967 as Volume XI of the Carlisle Natural History Society Transactions, forms the basis of the present study. Every aspect of LAKELAND MOLLUSCS has been re-examined and updated, the complete coastline has been resurveyed to varying degrees with special reference to the Marine Census and 10km square recording. All known post-1950 records are being plotted on to A3 size maps, with provision for updating as found necessary; older records are generally not sufficiently detailed, but are kept on file for possible future upgrading.

No special projects have been, or are being, undertaken. Our programme now is an intensive effort to cover as many as possible of the coastal and offshore 10km squares with an initial object of recording at least the common species in all previously unrecorded squares. In the past, most attention has been paid to the strandline, however during the past three years a considerable amount of work has been undertaken in the eulittoral and sublittoral zones and during 1977/8 offshore dredging was commenced in various parts of the area and this we hope to expand in the future. The most striking feature of the coastline of Solway S.25 is the great lateral range of the tide which, apart from the Kirkcudbrightshire cliffs and St. Bees headland areas, retreats for miles, leaving wide sand flats with distant mussel scars, shifting channels and a few shingle beaches. The fine-grained silt of the upper reaches of the many estuaries holds moisture for some time after the ebb, but unlike the glutinous ooze of many East Anglian estuaries, it dries out very quickly after a few hours exposure to wind and sun and the visiting conchologist will find that it is firm and hard to walk on, but whether it is wet or dry, he should beware of occasional quicksands. A mountain storm many miles away could inject a vast quantity of fresh water into a given area - beneath the surface - and should that surface begin to quiver like a jelly, a rapid departure is recommended! In cases of doubt local advice should be obtained before setting out.

The extreme tidal range is approximately 9m and well above average for the British Isles generally, Liverpool being the standard port for tidal heights in the north east Irish Sea with corrections required for most parts of Solway S.25. The innermost areas of both the Solway Firth and Morecambe Bay may be up to an hour later, both heights of and times being very sensitive to the wind direction and strength. Spring tides move into the estuaries with considerable speed, occasionally accompanied by a small 'bore', high water occurring within two hours of that bore, with the ebb taking four or more hours to drain the lower reaches. Low water springs occur in the late afternoon and early mornings, which means that maximum exposure cannot occur with maximum light, thus restricting study during winter months.

The extensive intertidal sand flats are highly productive and support a varied fauna. Significant amounts of the biomass provide food for the large resident and migrant bird populations for which the Solway Firth and Morecambe Bay are now well known.

The prevailing south west wind together with tidal streams combine with fast currents to produce a weak north easterly beach drift from St. Bees Head with industrial slag and sea coal generally distributed northwards to Silloth along the whole strandline with Allonby Bay the principal collecting area. In contrast, along the Cumbrian Irish Sea coast, the longshore current is against the drift and the Silecroft to Walney Island area becomes the principal collecting ground.

The living molluscan fauna of Solway S.25 varies considerably within the area, and due to the very strong tidal currents drift specimens are often carried a very long distance from any breeding zone.

Solway S.25, situated in the North East Irish Sea, can be divided into three distinct regions:-

- (a) The Solway Firth
- (b) Cumbria Coastal Waters
- (c) Morecambe Bay

The Solway Firth is a tidal inlet which runs from the North Irish Sea in a north easterly direction; it is sheltered from the south, east and north by the mountains of Lakeland, the North Pennines and the Scottish Lowlands respectively. The name Solway was first applied to the eastern ford of the estuary as 'Sulwath' and later to the lower waters of the Esk, then known as the 'Water of the Solway' with the whole extremity of the Firth being known as the Solway Sands, the Firth proper being regarded as an arm of the Irish Sea. Successive generations, however, considered that its boundary should be located further to the west and in 1868, the Salmon Fisheries (Scotland) Act defined the Solway Firth as the area which lay to the north east of a line from Hodbarrow Point (Cumberland) to the Mull of Galloway (Wigtownshire). These boundaries are of no practical use for the present study extending as they do into Isle of Man S.26. We therefore take that part of the Solway Firth lying west of a line from the Metal Bridge to Rockcliffe Village downstream to a line drawn from St. Bees Head (North) Cumbria to Mullock Bay, Kirkcudbrightshire.

The position of the Solway Firth is unique in the sense that the northern and southern shores lie in Scotland and England respectively, consequently Scottish and English laws apply to the appropriate parts and irregular situations can arise. The bed of the Solway Firth is covered by extensive deposits of fine sand overlaying a stratum of boulder clay, there being very few muddy areas. At low water springs approximately 250 sq.km. of sand flats are exposed. Studies of the movement of sea bed materials in the Solway Firth indicate that this sand had its origin in the Irish Sea with a very small proportion being contributed by the rivers. Within the estuary itself, sand is kept in suspension largely by wave action and is thus readily transported by strong tidal streams

which prevail, especially on the flood tide. During times of storm, particularly with gales from the north west, considerable changes in the position and configuration of the many sand banks, and scars, takes place through both tidal and fluvial influences and this in itself has a bearing on the distribution of living molluscs and strandline deposits within the area.

Principal tributaries are the Rivers Urr, Nith, Annan and Esk running down from the Galloway Hills and Scottish Lowlands on the north side; the River Eden from the North Pennines; the Rivers Wampool, Waver and Ellen from the Caldbeck Fells and the River Derwent from central Lakeland.

The North Solway shore from Mullock Bay eastwards is generally of red sandstone cliffs with a rocky undercliff to Balcary Point, small marshy areas at Barlocco Bay and Rascarrel Bay, with the intensive inlets of Auchencairn Bay, Orchardton Bay and Rough Firth. Rocky cliffs of Rough Island and Almorness Point dry out at low tide but the southern half of Hestan Island is in deep water. High cliffs with rocky outcrops from Castle Hill Point to Nether Clifton, with the exception of Sandy Hills Bay, then give way to the extensive Mersehead Sands flanked by the marram covered sand dunes of Preston Merse, with the last small rocky outcrops at Southernness Point.

East of the River Nith, the Solway Firth changes character completely with extensive sand banks dotted with changing stony/mussel scars and banked with extensive salt marshes and boulder clay cliffs to Silloth on the southern shore.

The south shore, from Silloth westwards to industrial West Cumbria, is generally of a stony, rocky nature with small sandy areas, boulder strewn with vast Sabellaria colonies and extensive Laminaria forests. Continuing westwards Workington is flanked by industrial waste, followed by sandstone cliffs to Lowca, an impressive amphitheatre formed by Whitehaven harbour and the adjacent sandstone cliffs of Bransty and Wellington. The land generally increases in height via Saltom Bay to the seabird citadel at St. Bees Head (112m). The littoral zone throughout the whole length of this coastline from Workington to (and including) Saltom Bay is boulder strewn or rocky and subject to industrial and domestic pollution.

Cumbria Coastal Waters is an area of approximately 1800 sq.km. bounded in the west by longitude 4 deg. west running due south from Mullock Bay, approximately 90 kilometres to latitude 54 deg. due west of the River Lune estuary, but joining up with Hilpsford Point, South Walney.

From the lofty heights of the New Red Sandstone cliffs of St. Bees Head (112m) with its rocky undercliff (the only cliff headland dropping into deep water between Wales and Scotland) the coastline south to the Duddon is relatively isolated backed by agricultural low lying land with an attractive landscape against an impressive background of lakeland mountains. Low boulder clay cliffs give way in places to extensively blown sand dunes as at Drigg and Haverigg with a hard sandy foreshore and many stony, rocky areas, broken only by the confluence of the Rivers Irt, Mite and Esk forming the Ravenglass estuary and the wide expanse of the Duddon Estuary. South of the Duddon, Walney Island forms a long low 92m wide breakwater between Barrow-in-Furness and the open sea, with a western shore line predominantly boulder strewn and many rocky scars in the wide intertidal zone.

This Cumbrian coastal region of the North Irish Sea is little influenced by fresh water except at the mouth of the Ravenglass and Duddon estuaries, even then such influence is local and subject to rapid change. In general the area is relatively shallow and rarely exceeds 40m and for the most part has little clear water at any time due to the vast amount of sediment held in suspension and drainage from the two major estuaries and river systems. The area receives radioactive waste together with quantities of sewage and other industrial

sludges in which the increasing presence of heavy metals gives cause for concern. During the autumn of 1969 a massive mortality of seabirds in the area was thought to have been due, in part, to the effects of PCB's which had stored in body fat after being ingested. The origins of many pollutants may not be readily determinable and hazards to all forms of marine wildlife may go undetected despite constant monitoring, by both professional bodies and amateurs.

Polystyrene spherules are becoming a common component of sediments in many parts of the eulittoral zone and littoral fringe and whilst their unnatural presence has not, as far as is known, had any effect on molluscs, they have been found, in several places, in the construction of Sabellaria alveolata colonies.

The Cumbria coast is fairly exposed and although the fetch across the Irish Sea to the west is relatively short, with an average wave height of approximately 3m, that from the south west and the southern Irish Sea can result in considerably more, particularly at Walney Island.

Morecambe Bay - the 'Sea of the Hollow' or 'Mar-y-Cwm' of the ancient Celt has, in recent years been under threat from barrage development schemes and this has promoted a considerable amount of study into the ecology of the area. Whilst such schemes are for the time being shelved, and may not even be feasible in the immediate future, the 'bay' is today subject to increasing threats from possible oil and/or gas exploration and production, all of which could completely change the natural epifauna of this extensive estuarine area.

Morecambe Bay is usually defined as the area from Rossall Point in the south to Walney Island in the north, and extending eastwards to Arnside and Carnforth. The substratum is predominantly quartz sand brought in by tidal currents; its organic content is low, there being few areas in which silt or clay exists and alluvial mud is virtually absent. At extreme low water springs approximately 310 sq.km. of sandflats are exposed with constantly changing channels and a few stony 'skears'. Extensive mussel beds lie off the Bardsea-Rampside coastal road with a 'South American' seed bed and the Outer Skear off Roosebeck in the west, and extensive mussel skears on the south Kent Channel between Morecambe and Heysham. As with the Solway Firth these beds may, from time to time, be covered with several metres of sand following severe north westerly gales when tidal scouring promotes the movement of vast quantities of sand, the flora and fauna of those affected leading a very precarious existence; usually low-lying cobble reefs or those skears resting on glacial boulder clay remain unaffected. Most of the coastline is undeveloped with large areas of salt marsh on the eastern and southern shore and shingle beaches and islands on the west.

Five principal river systems feed into Morecambe Bay bringing, in the north, soft water via the Rivers Crake and Leven running down from south Lakeland mountains, while in the east hard water via the Rivers Kent, Keer and Lune, from the limestone areas of Eastern Lakeland and the Northern Pennines.

The Lune estuary is backed by low boulder clay hills between 15m and 30m high with a frontal salt marsh or alluvia area. South of Morecambe and Heysham (flat alluvial areas with sandy shore) the coastline is predominantly flat apart from an outcrop of Permian red sandstone at Heysham Head. The eastern side of the 'bay' comprises a frontal zone of salt marsh backed in the south by flat land and drumlins, and in the north around Silverdale by limestone territory often in the form of outcrops along the shore line. The northern shore comprising the Cartmel Peninsula is predominantly flat salt marsh and alluvium from Humphrey Head where a Carboniferous Limestone outcrop reaches a height of 54m.

Morecambe Bay was in former years famous for its cockle industry when enormous quantities were harvested each year for human consumption; today this industry

still survives but on a much reduced scale and principally from the Flookburgh grounds on the extensive Cartmel Wharf and in the Middleton Sands/Sunderland Bank area.

Solway S.25 includes virtually the whole of Morecambe Bay apart from approximately 65 sq.km of the southern sector.

As at 31 December 1978, we total 151 positive records made up as follows:

88		Grade <u>A</u>
53		Grade <u>B</u>
1		Grade <u>C</u>
9		pre-1950 records.

NOTE - Copies of the Master List for this Area, the References and Summary of Post-1950 Records are available from the author -

Norman Hammond, [REDACTED], Aspatria, Carlisle, Cumbria, [REDACTED]

A CARIBBEAN LAND SNAIL IN LANCASHIRE

Whilst engaged in my ten-yearly sort through old correspondence I re-found the letters referring to the odd discovery of a New World land snail in England. I cannot recall putting the fact on record at the time. The shell was found on 15 January 1967 at high water line amongst debris deposited by the high tide on Ainsdale beach, Ainsdale National Nature Reserve (SD 283105), between Freshfield, Formby and Southport at 3.30 p.m. (low water 2.15 p.m.) on an overcast day with westerly wind by C.W. Clifford; it was an empty but fresh shell and was sent by Mr. M.J. Morphy of The Nature Conservancy for naming and finally was passed to me. Mr. Morphy mentioned "when it was brought to me it smelt quite strongly of animal decomposition and might have only been recently dead". No one could put a name to it but by chance Dr. A. Solem of the Field Museum of Natural History, Chicago was in the country at the time and I passed the specimen to him. Eventually he named it as the camaenid Pleurodonte (Caprinus) orbiculata (Fér.) a species found in Dominica, St. Lucia and Martinique. It seems very unlikely that a live specimen had escaped in the area or that a conchologist threw a specimen away; most likely I think that a specimen was imported in some crates, etc. from the West Indies which were thrown in the sea from a ship and the shell of the drowned animal eventually washed up where it did. The coast at the point of discovery is subjected to tides which flow across the Mersey estuary and this is of course an important shipping lane. I am not sure if this species has ever been recorded in crates of fruit, etc. previously in this country.

B. Verdcourt

NAUTILUS IN THE INDIAN OCEAN

Another letter dated Mombasa 5th. May 1967 from Roger Gomm may also be worth recording. It runs as follows:-

"I understood that the Pearly Nautilus - Nautilus pompilius was found in the tropics of the Pacific and had never(?) been found in the Indian Ocean. However I picked up a large chunk of this creature on Shelly Beach, Mombasa, 2nd. of May. I am absolutely certain about the identification since I handled a specimen of same while identifying fossil nautilids from the London Clay. However these are the details.

The specimen represents between a quarter and a fifth of the whole shell. The whole shell would have been about 7 inches in diameter, and 3"-4" at its maximum width. The outer shell is tough, white and striped over the back with irregular lines of rusty red. Inside the creature is divided into chambers by septa which are concave frontally for most of their area, the curve being reversed at the bottom, i.e. near the inside edge of the shell spiral. The septa are cream coloured and slightly pearly frontally, and completely silver on the back. They are fissile breaking into small silver flakes. Each septum is perforated near the top and the perforations produced backwards into a short canal. The union of the septum with the outer shell (i.e. with the septum behind it) is straight (i.e. not crenulated).

The specimen was found in a bank of weed at or near normal high water mark and was waterlogged when found. Apart from a little weed plastered onto the shell there are no encrustations of other marine life and the shell looks fairly fresh.

It strikes me that it is rather surprising that a free-swimming animal found in the tropics of the Pacific should not be found also in the tropics of the Indian Ocean at least occasionally and I would be interested to know of similar finds.

I checked with the only book which is available to me here - Marine Shells of Southern Africa - D.H. Kennelly 1964, who says "It lives in the tropics of the Pacific Ocean and does not occur in the Indian Ocean so far as is known" p. 21.

Have any members authenticated records of living animals from the East African Coast? James Hornell's book 'Indian Molluscs' (Bombay, 1951) bears a nice picture of the pearly nautilus on its cover but gives little information on the presence of the species in the Indian Ocean beyond the fact that "and occasionally an empty shell of the Pearly Nautilus is driven ashore" in the Bombay area. In "The Common Molluscs of South India" (Report No. 6 Madras Fisheries Bulletin 14 : 97-215 (1922)) the same author reports "Last of the Indian Cephalopods, but represented solely by shells drifted ashore, is the four-gilled Pearly Nautilus."

B. Verdcourt

MORE SALT IN THE THAMES

In an earlier Newsletter (Berry 1978) I drew attention to the occurrence of Pseudamnicola confusa (Frauenfeld) - an aquatic snail requiring slightly saline conditions - found among late Mediaeval sediment at Blackfriars. Dr. Preece (1979) followed this with another record much higher up at Westminster in sediment of Tudor age. However it is possible that all these records are simply observations of drifted materials, brought up-river by strong tides, of which there are records in plenty in Brazell (1968).

So I was interested to see recently a great number of valves of Cerastoderma edule (L.) and also a few valves of Macoma balthica (L.) which Dr. G.J. Dawson, curator of the Cuming Museum, had obtained from archaeological excavations at Montague Close, Southwark (NGR TQ 32708032) and just upstream from London Bridge. These had been reported on in 1976, by Dr. Dawson (see refs.) but in literature which lay somewhat off the line of my immediate interests.

These shells are not part of a midden, but occurred as a life assemblage in sandy gravel. From general archaeological and sedimentological evidence Dr. Dawson offers convincing evidence for correlating this deposit and the growth

of the cockle bed with a large and disastrous flood recorded in the annals of Bermondsey Abbey in 1294.

A study of rib numbers on the shells showed that the salinity of the water in which they grew varied from about 20 to 25 parts per thousand - appreciably higher than that at London Bridge today (0 to 5 parts per thousand). In addition the shell bank appears to have persisted for about 2 to 5 years before dying out. The brackishness therefore, was not just a local freak condition.

Brazell (1968) records salty incursions associated with severe drought in 1325 and 1326 and, again, in 1540 and 1541. As the Thames was used for drinking water until well into the 19th century, there is no doubt that these salt incursions should be very apparent. However, although Brazell notes a strong tidal flood in 1294 there is no mention of salt.

Dr. Dawson's discovery extends the known dates of salt intrusions from 1294 until 1541. Was this phenomenon limited to those 250 years of Thames history and can any reader supply further data? If Dr. Dawson's shortest estimate for the life of this cockle bank is accepted, is there any reason for the occurrences persisting for pairs of years? At present the Thames is one of those rivers in which salt becomes thoroughly mixed and does not form what is known as a "salt wedge", i.e. the salt is not separated as a lower stratum by differences of temperature and density and would be thoroughly diluted with run-off.

- Berry, F.G., 1978 Pseudamnicola confusa Frauenfeld in Central London. Conchologists' Newsletter No. 67, p. 117-118.
- Preece, R.C., 1979 Fossil Pseudamnicola confusa (Frauenfeld) from Westminster, London. Conchologists' Newsletter No. 68, p. 129.
- Brazell, J.H., 1968 London Weather, HMSO.
- Dawson, G.J., 1976 Montague Close Excavations 1969-73; Research Volume of the Surrey Archaeological Society No. 3, published by the Surrey Archaeological Society, Castle Arch, Guildford. pp. 49-50.

F. G. Berry

SNAILS AND SLUGS IN SHAKESPEARE

Or as the snaile, whose tender hornes being hit,
Shrinks backward in his shellie caue with paine,
And, there all smoothred vp, in shade doth sit,
Long after fearing to creepe forth againe.
Venus and Adonis, stanza 173.

This shows personal observation of the reactions of snails, probably recollected from teasing snails when a schoolboy.

Biron. Loves feeling is more soft and sensible,
Than are the tender hornes of Cockled Snayles.
Love's Labour's Lost, act 4, scene 3.

Menenius. 'Tis Aufidius,
Who, hearing of our Martius Banishment,
Thrusts forth his hornes againe into the world
Which were In-shell'd, when Martius stood for Rome,
And durst not once peepe out.
Coriolanus, act 4, scene 6.

Jacques. Then the whining Schoole-boy, with his Satchell,
And shining morning face, creeping like snaile
Unwillingly to school.

As You Like It, act 2, scene 7.

King Richard. Delay leds impotent and Snaile-pac'd Beggery.

King Richard the Third, act 4, scene 3.

Rosalind. Nay, an you be so tardie, come no more in my sight, I has as
liefe be woo'd of a Snaile.

Orlando. Of a Snaile?

Ros. I, of a Snaile: for though he comes slowly, hee carries his
house on his head; a better ioyncture, I thinke then you make
a woman: besides, he brings his destinie with him.

Orl. What's that?

Ros. Why, hornes: that such as you are faine to be beholding to
your wives for: but he comes armed in his fortune, and preuents
the slander of his wife.

As You Like It, act 4, scene 1.

Nestor. Go, bear Patroclus' body to Achilles;
And bid the snail-pac'd Ajax arm for shame.

Troilus and Cressida, act 5, scene 5.

Foole. Can'st tell how an Oyster makes his shell?

Lear. No.

Foole. Nor I neither; but I can tell why a Snaile has a house.

Lear. Why?

Foole. Why to put's head in, not to give it away to his daughters, and
leave his hornes without a case.

King Lear, act 1, scene 5.

Weauing Spiders come not heere,
Hence, you long leg'd Spinners, hence:
Beetle black approach not neere;
Worme nor Snayle doe no offence.

A Midsummer Night's Dream, act 2, scene 3.

Luciana. Why prat'st thou to thy selfe, and answer'st not?
Dromio, thou Dromio, thou snaile, thou slug, thou sot.

The Comedy of Errors, act 2, scene 2.

Prince of Wales. I thank you, good my lord, and thank you all:
I thought my Mother, and my brother Yorke,
Would long, ere this, haue met vs on the way.
Fie, what a Slug is Hastings, that he comes not
To tell vs, whether they will come, or no.

King Richard the Third, act 3, scene 1.

(from A. E. Ellis)

REPORT ON THE JOINT MEETING OF THE YORKSHIRE CONCHOLOGICAL SOCIETY AND THE
CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND TO SUNBIGGIN TARN NEAR ORTON,
CUMBRIA, 4th. - 6th. MAY 1979

The success or failure of a weekend of this type is often dependent on the
prevailing weather conditions. It was with great trepidation therefore that we
set forth on the Friday evening to travel the 80 miles or so from Leeds to

Ravenstonedale. The weather, which had shown little respect for such an auspicious occasion, was soon doing all it could to cause the abandonment of the weekend programme. Most of the members who, like ourselves, travelled that Friday evening had to contend with high winds, rain and even driving snow. I have always had a great deal of respect for the intrepidity of conchologists and, therefore, it was of no surprise to me to find that all the members who had booked for the weekend turned up even though some of them had travelled over three hundred miles to get there.

Early the following morning a telephone call informed us of our one and only cancellation. One of the members who had only a short distance to travel, and therefore had not stopped overnight, rang to inform us that it was snowing so hard where he lived he could not see to get his car out on to the road, and therefore would not be able to come along. (I may add that at this stage none of us needed informing of the weather conditions.)

The alkaline flush near Sunbiggin Tarn, the venue for the weekend's perambulations is situated in a slight depression in the centre of a large expanse of open moor. A great deal of concern was expressed after the heavy snow falls of the Friday night and Saturday morning as to the possibility of getting to the marsh at all. By 11 a.m. however, such is the vagary of the English climate, not only was it possible to get to the marsh, but little trace of the recent snow could be found. By 12 noon even the sun was shining!

The primary aim of the meeting was to locate specimens and examine the habitats of two of the rarest species of Mollusca in Britain, Vertigo geyeri Lindholm and Catinella arenaria (Bouchard-Chantereaux). It never fails to amaze me, however, how much expert knowledge can be gathered together when a number of conchologists get together. On this occasion, as well as the Yorkshire county recorder for mosses and liverworts who had agreed to come along and examine the site for us, we had people collecting and examining material ranging from the Mollusca through woodlice, millipedes, centipedes, ants, bugs, beetles, flat worms, leeches, crustaceans, flowering plants and lichens.

Most of the day was spent examining the alkaline flush and some 26 species of molluscs were found, bringing the total for the area, including the tarn itself, up to a total of 48 species, a full list of which is included.

In the late afternoon we moved a few miles further west to examine the limestone pavement of Orton Crag in the hope of finding specimens of Vitrea subrimata. In this we were successful as several living specimens were located.

The village of Ravenstonedale itself proved very interesting with a total of 41 species being found including both Vertigo pusilla and Vertigo alpestris, which were found on an old moss-covered wall bordering the stream opposite the local hostelry. The Sunday morning found us examining the old walls in the village and a small tarn a short distance outside the town.

A total of 77 species is now recorded from the four sites visited.

I would like to thank all those members who braved the weather and helped to make the weekend such a success. In particular, Mr. & Mrs. T. Blockeel for their kindness in joining the party and for examining and naming the mosses and liverworts in the flush. Thanks should also be extended to Mrs. Hilary Mirrey of the Bield, Ravenstonedale for her kind hospitality and the warm welcome she extended to the party.

List of members and friends present -

J.F.M. de Bartolome, Ed. Bishop, Mr. & Mrs. T.L. Blockeel, Brian Coles, Barry Colville, Mr. & Mrs. M. Fogan, Dr. & Mrs. L. Lloyd-Evans, Adrian Norris, Bernard Nau, Richard Preece, Mr. & Mrs. D. Rands, Adrian J. Rundle, Rendle Williams and Martin Willing.

LIST OF SPECIES

Valva	cri	ST				Lauri	cyl		OC	RD	TS
	pis	ST				Ena	obs		OC		
Potam	jen	ST			TS	Punct	pyg	ST			
Bithy	ten	ST				Discu	rot		OC	RD	TS
Lymna	tru	ST	OS		TS	Arion	ate	ST	OC	RD	TS
	pal	ST			TS		sub	ST		RD	TS
	per	ST			TS		cir			RD	TS
Anisu	leu				TS		sil	ST	OC	RD	TS
Bathy	con	ST					fas			RD	TS
Gyrau	lae	ST			TS		hor A	ST	OC	RD	TS
	alb	ST			TS		int	ST		RD	TS
Armig	cri	ST			TS	Vitri	pel			RD	
Ancyl	flu			RD		Vitre	sub		OC		
Pisid	cas	ST			TS		cry	ST		RD	TS
	per	ST			TS		con		OC	RD	
	obt	ST				Nesov	ham	ST	OC	RD	TS
	mil	ST			TS	Aegop	pur	ST		RD	
	sub	ST			TS		nit		OC	RD	TS
	lil	ST				Oxych	cel	ST	OC	RD	TS
	nit	ST					all		OC	RD	TS
	pul	ST				Zonit	nit	ST			
						Milax	bud			RD	
Caryc	min	ST		RD	TS	Limax	max			RD	
	tri	ST	OS	RD			fla			RD	
Catin	are	ST					mar		OC	RD	
Oxylo	pfe	ST			TS	Deroc	lae	ST		RD	TS
Azeca	goo			RD			agr	ST			
Cochl	lub	ST	OS	RD	TS		ret	ST	OC	RD	TS
	lubri		OS	RD			car			RD	
Pyram	rup	ST	OS	RD	TS	Eucon	ald	ST		RD	
Colum	ede	ST	OS				ful	ST		RD	
Verti	pus			RD		Claus	bid		OC	RD	
	ant	ST			TS		dub			RD	
	sub	ST			TS	Balea	per			RD	TS
	pyg	ST	OS			Trich	str		OC	RD	TS
	lil	ST					his	ST	OC	RD	TS
	alp			RD		Arian	arb		OC	RD	
	gey	ST				Cepae	nem		OC		
Abida	sec		OS								

Localities ST = Sunbiggin Tarn
OS = Orton Scar
RD = Ravenstonedale
TS = Tarn Syke

NGR 35/672073
NGR 35/63-10-
NGR 35/7--0--
NGR 35/75-03-

SOME YUGOSLAV LAND SNAILS FROM HVAR

Last May my wife and I spent a week on the island of Hvar which lies roughly East to West off the Dalmatian coast and some 23 miles South of Split.

The island is a limestone rock, nearly 40 miles long, shaped rather like a tadpole and with most of the resorts at the western or head end. There is also a small town at the eastern tip of the long thin tail. As far as we could ascertain there is no surface fresh water on Hvar and the rocky shore appeared to be inhabited by quite predictable Adriatic littoral dwellers.

Within the time limitations imposed by other holiday activities, we decided

to concentrate on the land Mollusca and to restrict our search to a comparatively small area. We were staying at the hotel Amfora, about half-a-mile from Hvar Town centre and did all our collecting within a radius of about a mile from the hotel including the outer walls of the fortifications which, at a height of 360 feet, dominate the town.

Eobania vermiculata (Müller) was by far the most common species seen and displayed an impressive range of size, colour and banding variations. It seemed to be everywhere, on Oleander and Myrtle bushes, on the ubiquitous Agave, on rocks, walls, etc..

The most exciting finds were a single dead shell of the large zonite Aegopis acies (Portsch) and a number of, mostly weathered, shells of Poiretia algira (Bruguère) with a single live juvenile.

In spite of the comparatively small number of species found I feel that a list of these might be of interest and form a basis for further search by members who might visit the island some day.

<u>Cochlostema septemspirale</u> (Razumowsky)	<u>Helicella</u> sp.
<u>Pomatia elegans</u> (Müller)	<u>Monacha syriaca</u> (Ehrenberg)
<u>Pupilla muscorum</u> (Linné)	<u>Eobania vermiculata</u> (Müller)
<u>Abida frumentum</u> (Draparnaud)	<u>Helix aspersa</u> Müller
<u>Chondrula quinquedentata</u> Mühlendorf	<u>Aegopis acies</u> (Portsch)
<u>Rumina decollata</u> (Linné)	<u>Vitrea subrimata</u> (Reinhardt)
<u>Delima ? semirugata</u> (Ziegler)	<u>Poiretia algira</u> (Bruguère)
<u>Clausilia bidens</u> (Linné)	

I am very much indebted to Dr. Peter Morden of the Mollusca Section, British Museum (Natural History) for his invaluable help in naming most of the above species.

Roger Fresco-Corbu

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

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

ITZN 59 August 1979 The following Opinions have been published recently by the International Commission on Zoological Nomenclature in the Bulletin of Zoological Nomenclature Volume 36, part 2, 1 August 1979.

Opinion No.

- 1135: (p.105) Murex lotorium Linnaeus, 1758 (Mollusca: Gastropoda): ruling on interpretation.
- 1141: (p.122) Donacilla Blainville, 1819 (Bivalvia) suppressed: Donacilla Philippi, 1836, Mesodesma Deshayes, 1832 and Semele Schumacher, 1817 (Bivalvia) added to the Official List.

The Commission regrets that it cannot supply separates of Opinions.

REVIEW - NORTH ATLANTIC SEAFOOD by Alan Davidson, published by Macmillan at £12.95

This is a compendium of interest both to fish devotees and people who have enjoyed eating seafood abroad and been unable to identify the ingredients with a pocket phrasebook. Mr. Davidson catalogues species of fish, molluscs and other items, including seaweed, and provides drawings, descriptions and lists of common names in various languages. After the catalogues, the Author supplies

recipes grouped under territorial headings. Cross references are made to recipes under the relevant species entries.

The reviewer asked friends from abroad to comment on the lists of common names and, in general, their remarks were very favourable, especially as regards the fish. The molluscs seemed to have caused the Author some difficulties. Bearing in mind that he acknowledges help given by Mrs. McMillan and Dr. Chatfield and quotes from Step (British Shells), the reviewer was surprised to find that Arctica islandica (rendered in English as the ocean quahog, black or mahogany clam) "is also available in Northern European waters, but is little known there". Gastronomically perhaps, but many a conchologist finds remains of Iceland clams on our Atlantic shores. British readers would easily have recognized Mya arenaria as the sand gaper whereas the Author refers to this species as "soft shelled clam, long neck, steamer" even "old maid" which he attributes to Step.

The reviewer does not intend to carp on. The Author has a place for everything (although curiously enough not all that much listed under plaice) and garnishes the work with literary tit-bits, drawings of historical items such as traditional equipment for catching and cooking fish and an account of the terminology of oysters in Britain and France. These help make it a book worth dipping into. Readers expecting lavish colour photographs will be disappointed - there are none.

The recipes are clearly written and indicate the number of servings and, where the Author considers it necessary, give metric and imperial measures. Useful notes are provided on ingredients not usually obtainable outside the country of origin of the recipe and suggestions made as to adequate substitutes.

A pleasure to read after struggling with recipes in foreign languages, Mr. Davidson's selection looked very promising. The reviewer spent so long trying to decide which to attempt that none have been tried at the time of writing. The local fishmonger may, however, expect more adventurous purchases in weeks to come.

As few of the molluscan species mentioned are commonly marketed in Britain, readers wishing to try recipes for cooking molluscs listed in Mr. Davidson's book will find it is mostly a case of "first dig up your clams". Instructions quoted from Mrs. Lincoln's Boston Cook Book under the recipe for A Rhode Island Clambake explain how to do just this.

As a compilation NORTH ATLANTIC SEAFOOD is impressive and will provide much food for thought!

Eleanor Fogar

GENERAL NOTES

ATTENTION! - JUNIOR MEMBERS. We regret that a mistake occurs in the list of new subscription rates for 1980. The rate for Junior Members appears as £1.25, but this should be £1.50. (The dollar rate is correct).

ANNUAL SUBSCRIPTIONS, 1980.

Dear Members,

I write to remind you that all Annual Subscriptions for 1980 are due on 1st. January. I shall be very grateful for your co-operation if you will remember to send these promptly without further reminder. Will you also please take care to send the correct amount - it has been necessary to raise the Subscription to:-

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

Ordinary and Family Members and Institutional may deduct 50p (U.S. \$1.25) from Subscriptions paid before 31st. March.

If you pay by Banker's Order please make sure that this has been amended. I can supply Banker's Order forms if required.

There is still time to sign a Seven-Year Covenant to take effect in 1980, and the Society is very much obliged to all Members who pay their Annual Subscriptions in this way. Please apply to me for a Covenant form and explanatory letter if you would like to consider this.

Members whose Subscriptions are in arrears will not receive publications until these are paid, and they are also disqualified from voting in the election of Officers and Committee.

Please make all cheques and postal orders payable to the Society and send them to me. Receipts are not sent unless specially requested, and any such request must be accompanied by a stamped addressed envelope.

Marjorie Fogan (Hon. Treasurer)

[REDACTED], Atherton, Manchester, [REDACTED]

DR. P.F. LINGWOOD - CHANGE OF ADDRESS: As from 25th. May 1979 the address for all correspondence is:- [REDACTED], Boston, Lincolnshire, [REDACTED] Previously of [REDACTED], [REDACTED], Cerrigydrudion, Clwyd.

CHRISTMAS 1979

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

I look forward to receiving many more contributions for our Newsletter early in 1980. Long articles, information notes, news items, field meeting reports and requests will be welcome. It is essential that I have plenty of material on which to draw when I am preparing the quarterly issues, one after the other, during the year.

Copy dates for Newsletter issues -

Copy for the March issue should reach me by	6th. January
" " " June " " " " "	6th. April
" " " Sept. " " " " "	6th. July
" " " Dec. " " " " "	6th. October

P. E. Negus, Newsletter Editor

Dear Colleagues,

During recent field work in Australia and New Zealand, followed by discussions with several malacologists attending the American Malacological Union Meeting, I have focused on an interesting aspect of land molluscan diversity. I want to share this with you and solicit your cooperation in trying to compile evidence from several areas of the world concerning this problem.

Perhaps it is equivalent to asking "how many angels can dance on the head of a pin", but there do seem to be significant aspects to the question "how many land

snail species can live in one place." Most of us have anecdotal "feelings" about this, but I am hoping that sufficiently detailed information exists so that something can be pulled together about the overall patterns of land snail diversity, at least to the extent of posing reasonable questions for future investigations.

Let me contrast two areas. In New Zealand, dedicated land snail collectors consider that a patch of bush with less than 30 land snail species has "something wrong with it." They have documented situations of 64 species being taken under a single log. Frank Climo has a number of records where a bag of leaf litter taken from a few square feet, or even one square foot, has 40-50 species represented. In Eastern North America, however, the maxima that I have been able to document, thanks to Leslie Hubricht, are 29 species from "an area 20 x 30 feet," 40 species in an area of "less than a 100 yards square," and 41 species "along a half-mile of canyon." In Central America, I have collected one locality with 27 species from an area 10 x 15 feet, but in most mainland American localities, an average diversity level might be as low as 5 species, whereas 10 represents a good collection, and over 15 is excellent. All of the above localities represent live or just dead in litter situations. They are not from cave or drift deposits representing "washed in" accumulations from different habitats. They represent "single vegetation type" occurrences, not situations where two or more very different plant associations each have a specialized snail fauna.

I would deeply appreciate, if, at your convenience, you could provide me with detailed data on your maximum diversity collecting localities (type of habitat, basic geology, how big an area sampled, geographic locality, list of species collected). I am fully aware that this will be anecdotal, that the samples will not be strictly comparable to size of area sampled, that generic concepts differ violently among areas, and that this will take a fair bit of checking on your part.

Nevertheless, I think it would be highly useful to stimulate interest in our field if a compilation on such "sites of great diversity" could be prepared. Where are the major centers of land molluscan diversity? What features do they have in common? What differences? Perhaps we can stimulate ecological research on habitat partitioning by land snails. Are the areas of "high diversity" the result of colonization by numerous genera? Speciation occurring within genera? Higher in island faunas than in mainland areas? I'm certain all of you can think of additional queries.

I will look forward to hearing from you as soon as possible.

Dr. Alan Solem, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, Illinois 60605, U.S.A.

UNIVERSITY OF CALIFORNIA, LOS ANGELES: Subject: Radiocarbon content of marine shell from the Caribbean.

Acceptable control samples are needed in order to calibrate radiocarbon dates based on marine shell samples from the Caribbean. I propose to gather samples of pre-bomb marine shell from throughout the Caribbean area to establish standards for the correction of radiocarbon dates of marine shell from archeological sites.

Specifications for samples: The modern shell samples must have a known date of collection (pre-bomb, 1900-1950), and must be from a known location. Please make every effort to verify the credentials of the sample. The samples will be dissolved hence the shells will be destroyed.

Your assistance in this project will be much appreciated. The data will be made generally available in Radiocarbon. Douglas V. Armstrong
Anthropology Dept., University of California, Los Angeles, Calif. 90024, U.S.A.

TO COMPLETE A STUDY of the biogeographical distribution of Macra corallina (Bivalvia) and a biometric study of the same species, I would like to contact somebody who can send me about three hundred specimens of M. corallina. These must have been collected, if possible, in three areas of the United Kingdom, preferably about 80-120 specimens from the North Sea, 80-120 from the British Channel and 80-120 from the west coast of England or Ireland. It's very important: 1. The specimens must be collected live or recently dead. 2. Don't disturb artificially the relation, in each sample, of two varieties of M. corallina, the brown and the white (M. c. stultorum). 3. I need all sizes of specimens, from very young to adults, in order to get the biometric studies. Anybody interested, please write to: Fernando Robles, Dpto. de Geologia, Facultad de Ciencias Biologicas, Dr. Moliner s/n. Burjasot, Valencia (Spain).

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 25p 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 £3.00 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

MR. R.N. ELLIOTT, [REDACTED], [REDACTED], near Uckfield, Sussex, would like to know details of a private shell collection believed to exist at Basildon Court, Essex. Will anyone with information on this, or any other private shell collection, please write.

SHELL INSURANCE. Contact us for expert advice without obligation. Jaykel Insurance Services and Finance Ltd., 135 Mitcham Road, London, SW17 9PE. Telephone: 01-767 2430.

MOLLUSCS IN HAMPSHIRE

A joint meeting with The Malacological Society of London at THE GILBERT WHITE MUSEUM, SELBORNE, ALTON, HAMPSHIRE. Saturday 26 - Sunday 27 April 1980.

Provisional programme:

Saturday 26 April:

- 10.00 - 11.15 Coffee and the museum galleries open for viewing
- 11.15 - 11.30 Introduction and welcome to the museum
- 11.30 - 11.50 "Molluscs in the parish of Selborne" Dr. June Chatfield
- 11.50 - 12.20 "Tetrad mapping of non-marine molluscs on the Isle of Wight"
Dr. R. Preece (Imperial College)
- 12.20 - 12.50 Detailed studies of a particular species of snail in Hampshire
(Speaker to be announced later)
- 1.00 - 2.30 Buffet lunch in the museum
- 2.30 - 3.00 An account of the marine molluscs of the Hampshire coast (Speaker to be announced later)
- 3.00 - 3.30 "Marine molluscs in Southampton Water" Dr. J. Coughlan (Central Electricity Generating Board Laboratory, Fawley, Southampton)
- 3.45 Tea

A small temporary exhibition on "Snails and slugs of the chalklands" will be on display in the museum.

Sunday 27 April:

- 10.00 - 12.30 Field meeting on the hanger (a beech wood on a slope) and Selborne Common. This has a rich molluscan fauna. Phenacolimax major has been recorded from this locality.

12.30 - 2.00 Lunch (either packed lunches or a snack or meal in one of the pubs, with members making their own arrangements).
2.00 - 4.30 Field meeting in either the Short and Long Lythes or on Nore Hill for chalk downland.

For field meetings, please meet in the yard outside the Field Study Centre which is reached through the black gate outside the Selborne Bookshop.
The Selborne Bookshop specialises in books on the countryside and this will be open over the weekend.

TRAVEL: Selborne is best reached by road. Selborne is 4 miles south of Alton on the B3006. There is a large public car park behind the Selborne Arms.
By public transport: Trains to Alton or Petersfield and buses from there to Selborne. Please send a stamped addressed envelope if you require further details of trains and buses.

ACCOMMODATION: Members are asked to make their own arrangements. A list of hotels and guest houses follows:- Selborne: The Queens Hotel (Selborne 272)
The Old Vicarage (Selborne 310)

Alton: Alton House Hotel (Alton 82369), Swan Hotel (Alton 83777)

Petersfield: The Red Lion Hotel (Petersfield 3025)

MEALS: Coffee, tea and a buffet lunch will be available at the museum on the Saturday. Please book for these on the form provided. The charge for tea and coffee will be 20p and for lunch £1.00.

Please return the form to: Dr. J.E. Chatfield, The Gilbert White Museum, The Wakes, Selborne, Alton, Hampshire, GU34 3JH (Telephone: Selborne 275)

Booking Form

MOLLUSCS IN HAMPSHIRE: 26-27 April 1980

Name(s)

Address

Telephone number

I/We plan to attend: 1. The museum meeting on 26 April YES / NO
2. The field meeting on 27 April YES / NO

I enclosep for coffee and tea

£ for buffet lunches

(Please be sure to indicate your requirements for refreshments)

I will be travelling By car

By rail and bus

I require further details on public transport and enclose a stamped addressed envelope YES / NO

THE CONCHOLOGISTS' NEWSLETTER

No. 72

ISSN 0573-2336

Newsletter Editor: P.E. Negus,

March 1980

Chelsea Bridge Road,
London, [REDACTED].

Produced by THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

JANTHINA

No "active" shell collector needs explaining the difference between buying a shell in a shop and finding it in its actual habitat. The bought specimen will remain to most people an object of certain scientific and/or aesthetic interest, whereas the found specimen becomes invested with a magic power which can set into motion a mental film conjuring up that glorious day, place and company which made the finding into an unforgettable experience. Moreover, the experienced knowledge of a mollusc's ecological environment adds considerable interest to each specimen and enables us to see it as one of a multitude of tesserae which go into the making of that wonderful mosaic representing "Nature" or "Creation". This truth was driven home to me last summer on the Kenya coast.

It was after a tempestuous morning when the monsoon-like rain had stopped that we rushed down to the beach to see what the receding tide had left behind. There, halfway up the beach, was a dark line indicating the high-water mark as far as the eye could see. On closer inspection that "line" turned out to be hundreds of Janthina janthina, Janthina globosa, physalia, velella and porpita. Many of the shells (see figs. 3 & 4) still retained the live mollusc with the float attached to the foot. Although I had picked up in the past the odd battered Janthina janthina, considered here a scarce shell indeed, I had never seen a sight like this before. In my rapturous delight I was reminded of the descriptions by various authors, especially Jeffreys' poetical account of "the wandering and restless course of the Janthina, floating passively on the surface of the ocean, with its shell downwards and its foot to the skies, the continual sport of winds and waves, and driven hither and thither without choice, without hope of reaching any goal. But woe to them if they approach the shore! That is not the haven where those sailors would be; for here they are inevitably wrecked and stranded.." Stranded and wrecked they were: many of the shells had been broken by the violent thrust of the waves; many had already lost the animal. Naturally, we picked up only the perfect specimens and as many of the live ones as our small aquarium would accommodate. But the experience did more than provide an ample supply of janthinas. It brought to life everything I had read about the genus and will be lastingly imprinted on my memory. It also made me decide to find out more about these beautiful shells.

Most conchological writers wax enthusiastic when they come to janthina: "a wonderful pelagic mollusc" - "the strangest and most interesting of all shells" - a "remarkable mollusc" - wonderful, strange, remarkable, interesting - not many molluscs can boast such a string of laudatory adjectives; few genera, too, can have given rise to so many strange notions, due no doubt, to its extraordinary habits. Most of these "notions" come from literature of previous centuries and are quoted here, since such information is not easily available to the general reader, the chief source being J.G. Jeffreys' "British Conchology". The newcomer to shell collecting may never have heard

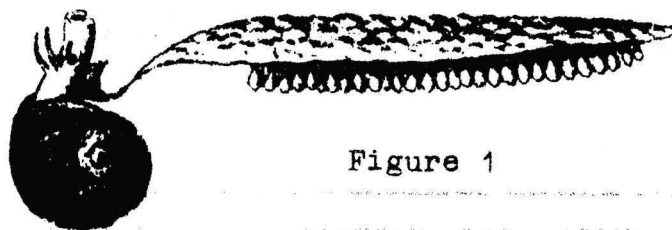


Figure 1

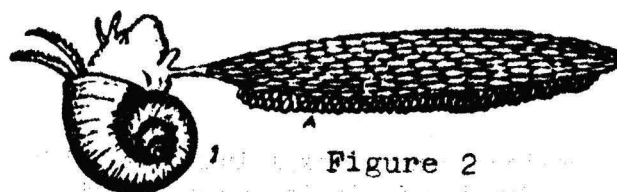


Figure 2

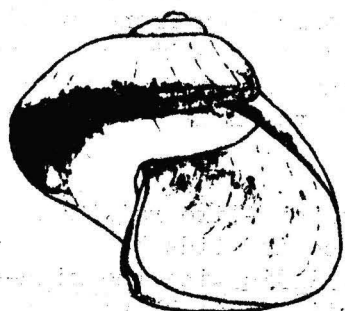


Figure 3

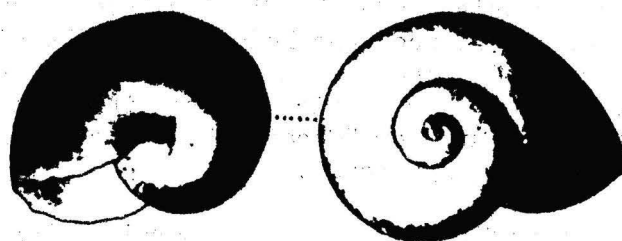


Figure 4

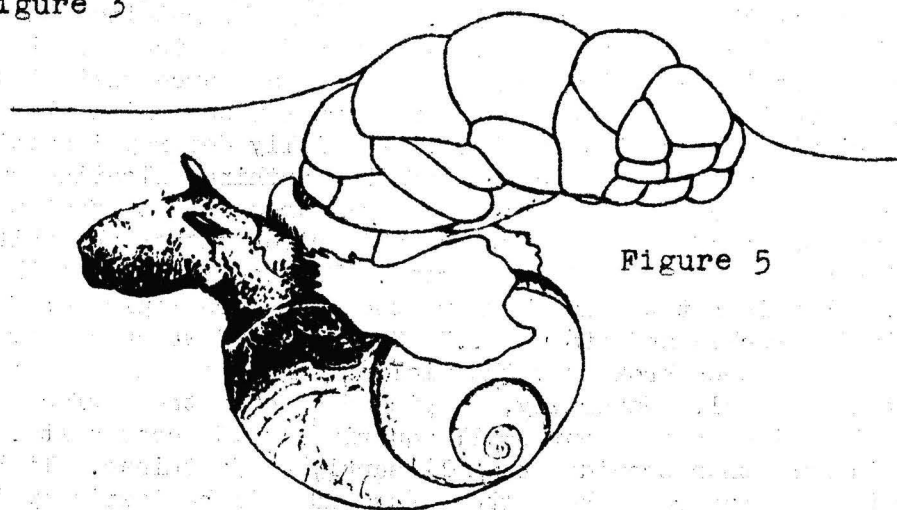


Figure 5



Figure 6

of him, others may have no access to these precious volumes.

It usually pays to refer to Jeffreys, if not for information then for entertainment. What other scholars would have turned into "dry papers" he turned into a battlefield. The pages of his "Conchology" are fairly littered with the corpses of combatants who were disposed of by the deadly point of his wit and sarcastic pen. Some of his victims probably never intended to cross swords with the great man; it was their careless mistake of going into print with some equally careless "observations" which drew upon them the devastating antagonist. However, often Jeffreys provides both information and entertainment such as in the case of *Janthina*.

HISTORY

After a very detailed and exhaustive description of animal, shell and habitat, Jeffreys goes into *Janthina*'s historical background in scientific literature:

"The earliest notice which we find of this remarkable mollusc, or "blue snail", is in the "Opusculum de Purpura" of Fabio Colonna (one of the many noble authors whose writings are not less illustrious than their names), published at Rome in 1616. It contains a fair representation of the naked animal, with its forked tentacles, and the cellular apparatus or float by which it is suspended in the water. This apparatus he compares to a mass of cartilaginous and glassy foam, or to a cluster of small soap bubbles, such as the Neapolitan boys were in the habit of making for their amusement and launching out of a window, balloon fashion, which he, perhaps feelingly, called "jocum non jucundum"! The beautiful purplish-blue dye which is copiously emitted by the *Janthina*, staining not only the hands of those who collect it but also white paper and linen, and which gives the shell its permanent colour, was likewise the theme of his learned and accurate observation. But either the simplicity or the prurience of the scientific language used in his time unfortunately prohibits the above excellent treaty being now reproduced at greater length. Even some of the works of Linne, whose style was more severe than loose, are not free from what in the present day would be reckoned faults of indecency. Nearly a century after the date of Colonna's work Breyn again figured the animal of *Janthina*, although badly. Further information seems to have been wanting until 1757, when Carburi, a noted Greek mechanician, briefly redescribed it in a letter to Marco Foscarini. He mentions a strange notion entertained by his countrymen, viz. that the *Janthina* produces the *Velella* (Sailor-by-the-wind), a well-known kind of oceanic Hydrozoa, which usually accompanies the *Janthina* and is wafted along by means of its erect gnomon-like crest. They consequently gave it the name of "Armenistarimane", compounded of two hellenic words signifying mother of the sail-berry. That idea must have originated in the mollusc being sometimes found attached to the hydrozoon, as if the latter issued from it. Carburi had often seen this, and he observed that the *Janthina* held the *Velella* by its mouth, not infrequently swallowing half of it; he also on several occasions discovered young *Velellae* in the stomach of a *Janthina*. Jeffreys comments on the more far-fetched scientific deductions and inductions: "Some of the old naturalists must have drawn largely on their bank of imagination in making up their accounts of the *Janthina*. Born gravely assures us that it lives in the depth of the sea, and in stormy weather rises to the surface, shining with a phosphoric light. I do not know where he got this idle tale".

In passing it might be mentioned that it is not only authors who drew on "the bank of their imagination". Artists, too, no doubt pressed by the publisher into producing a "pretty picture", were not above filling the gaps in their factual knowledge with fictitious details. Thus one can only wonder how the meticulous Mr. Jeffreys allowed his fourth volume of his "British Conchology" to have as a frontispiece an illustration of *Janthina* with a float

of a sausage-shaped balloon attached to a wholly RED snail! G.B. Sowerby also, in a flight of fancy, illustrated his "Popular British Conchology" of 1854 with a somewhat imaginative drawing (figure 1).

HABITAT

Janthina is a "pelagic" mollusc - a "wanderer" or "accidental voyager" in the currents of the Atlantic, Pacific and Indian Oceans. It has no eyes and therefore drifts blind and blindly on the surface of the warm waters wherever currents and wind carry it.

Janthina moves in large shoals which sometimes reach gigantic sizes, such as one reported in the Atlantic Ocean extending nearly 200 nautical miles, and another, off the coast of Florida, 90 miles wide!

JANTHINA'S PROTECTIVE COLOUR

A creature spending all its life on the surface of the sea is much exposed to attacks from sea-birds. Nature's provision of protection is particularly obvious in Janthina janthina: the body of the shell is a light blue or purple whereas the base is of a deep shade of the same colour. As the shell reverses its position when floating, the dark blue or purple matches the surrounding surface of the sea, whereas looked at from below, the underpart blends with the pale colour of the water.

Both animal and shell, no doubt, derive their colour from the same gland, or process, which produces the purple ink used as an offensive and defensive weapon.

THE RAFT OR FLOAT

Janthina's habit of living on or very near the surface of the sea seems to indicate its need for oxygen from the air rather than from water. It reminds one of the water spider which hunts, feeds and breeds under water yet builds a nest of air bubbles among the pond-weeds into which it retires from time to time for "refreshment" in its "air-conditioned" home. Similarly, janthina, floating a few millimeters below the water surface, has been observed at intervals to raise itself above the surface for what looked like a "breath of fresh air" and then sink back again into its former position. This aspect of janthina does not seem to have been investigated at all, or no satisfactory answers have come up. The fact is, that the moment janthina leaves the water surface and sinks to the bottom of sea or tank it is doomed and dies within a very short time. This vital dependence on immediate contact with air forces janthina to produce one of the unique "gadgets" in the world of molluscs: the raft or float (see figure 5).

Its appearance is that of a number of small soap bubbles joined into one "bubble-raft" of irregular shape, about 10 cm long and 2-3 cm wide (approximately double the diameter of a janthina shell). The formation of the raft presents another parallel with the water spider, because both janthina and the spider use their feet in this complex procedure. The most detailed account of what actually happens is quoted by Jeffreys from a journal published in 1826, describing the observations of a Dr. Reynell Coates made during a voyage to the East Indies. "As to the mode in which the float is constructed: ..the foot was advanced upon the remaining vesicles (part of the float had been cut off) until about two thirds of it rose above the surface of the water; it was then expanded to the uttermost, and thrown back upon the water, like the foot of a Limnaea when about to swim; in the next place it was contracted at the edges, and formed into the shape of a hood, enclosing a globule of air, which was slowly applied to the extremity of the foot. A vibratory movement could now be perceived throughout the foot, and when it was again thrown back to

renew the process, the globule was found enclosed in its newly constructed envelope.." A few details were later added by a Prof. Lacaze-Duthier: "The foot of the animal is divided into two distinct parts. The hinder and larger part is flat, and to this float adheres; the anterior part is rounded in front, and it is this part which constructs the float... The anterior part of the foot is extremely flexible, and the animal has the power of causing its extremity to assume a cup-shape; when in this position the foot is laid on the float at the spot where a new cell is to be added, the edges of the foot embrace the float, and the extremity or point is raised up, out of the water, in the cup-shape already mentioned, so as to collect a small portion of air. The animal is now seen to move the foot backwards and forwards, as if to secure the firm attachment to the float of a glutinous film or layer which at the same time exudes from the foot. When the animal removes its foot, this glutinous film has become a cell and remains attached, with its imprisoned air-bubble".

But closer inspection has shown that this is not all. Like any spider, *Janthina* can produce secretions of different quality according to requirement. Thus the mucus coming from the propodium in the forepart of the foot entangles bubbles of air and then hardens. A second secretion, however, from the middle section of the foot is fibrous, like a kind of byssus, and serves as a support for the foamy portion.

The shape of the float is said to vary with the species. I have only seen *Janthina janthina* and *globosa* with their floats, and it will appear that the upper side of *J. janthina*'s raft is roof-shaped length-wise whereas *J. globosa*'s is flat.

The air cells of which the float is composed are polygonal owing to their mutual pressure. But their original form is circular, as may be seen in those on the extremities of the float.

Repeated experiments have shown that the loss of part of the float - snapped off by a passing fish for instance - is not dangerous as long as enough remains to keep the shell afloat. When a portion is cut off, the float is enlarged at the end next the foot of the animal. But once too large a part or the whole of the float has been lost, the mollusc will sink to the bottom and is doomed and will "die in a few days". In an experiment in which a floatless *Janthina* was suspended near the water surface, the snail managed to produce a new float and lived on happily (perhaps).

It is this unique appendage of a float which enables *Janthina* to distinguish itself by yet another uniqueness, for it is probably the only mollusc which spends all its adult life in an upside-down position. The animal floats shell downwards with the vesicular buoy above it directed backwards. The anterior part of the foot is mobile, free, rounded and dilated, and the sides are usually folded inwards, forming a shallow cup which embraces the smooth anterior rounded end of the float. When the animal wishes to bring its head to the surface of the water, this part of the foot is made to glide over the back of the float. Thus the animal can raise and lower itself at pleasure by means of its own float.

But the float is one of those multi-purpose inventions in which nature abounds, for it also serves as the carrier of the egg-capsules in the oviparous *Janthina* species, neatly attached on the underside, and usually covering the entire surface.

Thus the float has three tasks -

(1) It is the buoy which keeps it close to the vital supply of oxygen; (2) It is the vehicle by which *Janthina* is carried from one feeding ground to another across the oceans of the world; (3) It is *Janthina*'s creche or nest to which

its brood is attached until they can fend for themselves.

This float without a parallel could not fail to baffle quite a number of naturalists and give rise to some "strange notions". One Bosc "hazarded the unwarrantable assertion that the janthina absorbs the air contained in its float cells and refills them at pleasure." The illustrious Cuvier "regarded the float as the rudiment of an operculum, transmuted by organic action; and he believed that the animal could withdraw it into its shell, as well as that some individuals have naturally no float, or that it is developed at a certain age or at a particular season of the year". But it was a Mr. Clark who roused Jeffreys especial contempt for he "combated the idea that the float or vesicular mass attached to the foot is a hydrostatic apparatus", and he asserted that this organ is "the membranous vehicle of the contents of the ovarium and matrix and has descended from under the mantle, and fixed itself to the foot, for a very obvious purpose of the animal economy in reference to the pulli in the genial season". "I will not comment on this curious assertion further than by observing that every janthina of both sexes, viviparous as well as oviparous, has a float, and the mode of its construction was fully explained more than a quarter of a century before Mr. Clark wrote." ...Even the egg-cases were assumed by one authority to be attached, cuckoo-like, by another mollusc.

Perhaps the most fictitious description of the formation of the float comes from Verrill's "Strange Seashells.." and that although "the mode of its construction was fully explained more than a century before Mr. Verrill wrote "The year is 1936". But when the shell decides to turn sailor and go cruising about the oceans wide, it exudes a little sticky mucus or slime. Then it draws air into its siphon and permits the bubbles to escape beneath the mucus to which they adhere. In a way the process is very much like blowing bubbles by placing a tube or pipe beneath the surface of soapy water and blowing air through the tube or the pipe stem.. when the shell blows its bubbles, they are confined by the mucus which soon hardens and forms a tough strong float supported upon a layer of air bubbles.(I)" Verrill's text drawing (figure 2) is just irresistible; but one shudders to think of the amount of acid Jeffreys would have poured on both the text and the drawing.

Lastly the notorious Mr. Ostler, full of speculations, "suspected with scarcely any reason, that Natica and Janthina are insectivorous; he imagined that the foot of the one and the float of the other might be bait to attract the prey which these molluscs were unable to pursue!"..

FOOD AND FEEDING

Janthina's menu includes planktonic animals, jellyfish, crustacea and goose-neck barnacles (lepas). In times of dire necessity it may even become cannibalistic and devour its own kind. But beyond doubt, Physalia (Portuguese -man-of-war), Velella (Jack-sail-by-the-wind) and Porpits are its favourite food. By all accounts Janthina appears to be able to find enough of these to eat, though it is still a mystery how predator and prey drift into each other with such regularity; for whenever schools of janthina are washed up they are accompanied by one or the other or all three of these jellyfish (called Syphonophores).

Janthinas have been observed to be very skilful at spearing small jellyfish on their long prehensile proboscis. They are also ravenous and greedy feeders. Two medium-sized janthinas were watched devouring a Physalia colony with a 10 cm long floating bladder within 24 hours!

It is perhaps not quite coincidental that many first-hand accounts of janthina's feeding habits happen to describe it demolishing Velella. There were Carburi's observations of 1757 - misinterpreted - and there is Peter

Parks' detailed description of 1976, accompanied by excellent photographs taken under ideal conditions (in: *The World You Never See: Underwater Life*, Hamlyn, 1976 - a beautiful book worth possessing!). Thanks to all the extensive and expensive equipment any researcher could wish for, he was able to watch the slaughter committed by *Janthina* more closely probably than anyone has done before, and this is what he saw:

"Drifting, *Janthina*, comes into contact with fleets of *Velella*. As it approaches such a fleet, it seems to detect its future victims from a small but finite distance. At this point in time, this otherwise lethargic mollusc explodes into activity: its antennae curl up and out, its proboscis shoots out and its whole muscular foot flexes. The lip of the proboscis makes contact with the *Velella* and immediately takes a large mouthful out of the soft mantle. The snail's jaws or radula act in the same way as the diamond-tipped teeth of an oil-well drill, thus enabling a mouthful of tissue to be bitten off without losing grip of the victim. Mouthful after mouthful of *Velella* disappears in this way until eventually little more than the float and the sail remain.."

A more dramatic version of the same situation comes from Verrill's "Strange Seashells and Their Stories":

"No swash-buckling dare-devil of a buccaneer ever swept down on a ship and boarded her with more murderous intentions than the purple *Janthina* exhibits when it comes within reach of some unsuspecting jelly-fish: the purple shell pirate ranges alongside and seizing the prize with its proboscis, tears it apart with its long rasp-like tongue covered with sharp razor-edged teeth. It is a marvellous, a truly amazing and almost incredible sight to see a little shell barely 2 inches in diameter seize a 6 inch stinging *Velella* and kill and devour the creature."

THE VIOLET DYE

But the picture on conquest is not quite complete yet without one more observation: Before beginning with the meal *Janthina* has been seen exuding the famous violet dye which appears to act as an anaesthetic. It has been suggested that this effects the stinging tentacles staying contracted and enables it to browse upon its prey without resistance.

Whilst the stinging cells of *Velella* and *Porpita* are only mildly unpleasant (to humans), the ferocity of *Physalia*, or the Portuguese-man-of-war, is feared by all who have ever come into slightest contact with it. The question arises: How does *Janthina* succeed in gobbling up many feet long stinging tentacles without any apparent ill effect on its digestive system? A yet unproven hypothesis is that the violet excretion serves not only as an anaesthetic but also as an antacid which neutralises the acid of the stinging cells and turns the tentacles into so many feet of perhaps even tasty jelly.

Whilst on the subject of the purple dye: It has been suggested that the excretion is a dual purpose weapon of offence as well as defence: when irritated or agitated *Janthina*, like the seahares, emits the same violet liquid causing, it must be assumed, at least acute nausea to any creature taking in a gill-full of this anaesthetic antacid, though the effect might be much worse, only we don't know.

Occasionally *Janthina* shells can be picked up carrying a number of small goose-neck barnacles. These barnacles in the early stages of their development swim about in the sea looking for a foothold when their time has come to settle down. What better spot than a wandering *Janthina* which is constantly on the move to "pastures new". Whether this attachment can be explained as a kind of symbiosis by serving as camouflage or increasing *Janthina*'s buoyancy is not known. But *Janthina* does not seem to object. On the contrary, from

analyses of stomach contents it has been established that Janthina probably regards the barnacles as an "emergency ration" carried fresh and alive for times of famine like the sheep and fowl on the sailing ships of the past...

SEXES AND PROPAGATION

Janthinas are "protandric hermaphrodites", which means they go through a male and a female phase. In the male phase, first, the gonads produce the sperms which are spilled into the sea. This is followed by a female phase in which the eggs are produced and retained awaiting fertilization.

"Janthina has a remarkable way of insemination: Like the cephalopods Janthinas lack a penis but instead produce large carrier sperms with degenerate nuclei to which other sperms attach. These carrier sperms can swim strongly in sea water and probably convey the "passengers" sperm directly into the oviduct of the females."

Janthinas are either viviparous or oviparous. Thus, Janthina janthina is viviparous in the sense that only the already active veliger larvae are released from the oviduct. Janthina globosa, Janthina exigua and Janthina pallida, however, are oviparous: they attach their egg capsules to the undersides of their floats: when the eggs hatch, the young Janthinas are said to be perfect miniature replicas of the adult. They cling to their mother's float until they have been able to form their own and gain independence.

JANTHINA'S ENGLISH NAMES

Although many shells have several synonymous Latin names - up to 64, I believe - from error or ignorance, few can boast of so many English names as Janthina. Here is a list of its English "synonyms":

1. Violet snail
2. Purple shell
3. Bubble-raft snail
4. Storm shell
5. Upside-down shell
6. Bullhorns (called so by the fishermen's wives at Land's End in 1834)

A PHILATELIC BLUNDER

It might not be out of place to put here on record the saga of the Kenya 50 cent Janthina stamp (fig. 6).

For a number of reasons Janthina has always attracted my attention and I knew well the two species found on the Kenya coast: Janthina janthina and J. globosa, the latter being very rare indeed. Nobody who has ever seen and compared the two species can be in the slightest doubt as to which is which. When therefore the Kenya Post Office brought out a colourful set of shell stamps - I happened to be a Kenya resident then - I was puzzled by the legend on the 50 cent stamp: Janthina globosa. It could not be globosa! Globosa indeed! Obviously somebody had slipped up very badly. But I was going to move carefully. By chance the well-known conchological adviser to the Post Office was a neighbour of mine and I paid him a friendly visit. I had brought with me the two species of Janthina as part of a collection to be identified by him. When I showed him Janthina globosa he said he did not know what it was, but the other one - "We have always called that one globosa," definitely: and to prove his point he produced the actual shell which had served the artist as the model for the 50c stamp - Janthina janthina! I quietly dropped the subject and went on to other shells. It is always rather embarrassing to see a strong man's weakness revealed - and so emphatically defended...

Further investigation and confirmation clinched the matter, and I took the two species with all available textbooks to a senior official at the G.P.O. He was convinced, and when the shell set was reprinted the 50 cent stamp was brought out under its proper name - Janthina janthina.

So philatelists among the conchologists, do make sure you have got both in your collection - the wrong and the right janthina!

Fred Pinn

MONOS IN DANGER

In 1952, a Danish biologist, Lemche and his Swedish colleague, Wingstrand, working at the University of Copenhagen, discovered among some sea animals taken by the Galathea Expedition from the Costa Rica Trench off Central America a few molluscs of the class monoplacophora. Monoplacophorans - monos for short - occur among the oldest invertebrate fossils, certainly Upper Cambrian, possibly Lower Cambrian, and until this discovery were believed to have become extinct by the end of the Devonian era (some 350 million years ago). Because the modern monos were very similar to the fossil pilina which lived 400 million years ago, they were given the generic name Neopilina and specific name galatheae from that of the expedition.

Since then other species of monos have been found off South America, Baja California, the Red Sea (Neopilina adenensis Tebble, described by Norman Tebble of the B.M.N.H.) and the far South Atlantic. All were from very deep water, were mixed with masses of mud, and the animals were in no case well preserved. The possibility of collecting, getting to a research station and studying alive was virtually non-existent.

Monoplacophorans are limpet-shaped creatures a few millimetres in diameter, with very thin shells. They have no torsion, being bilaterally symmetrical. Their bodies are segmented. Their gills and muscles are paired. They have no cephalic eyes or tentacles, but they do have a radula.

These molluscs are of great interest to palaeontologists, marine zoologists and marine ecologists among other scientists. Similarities to primitive segmented worms, to primitive snails and to primitive cephalopods as well as to the chitons are causing a deal of re-thinking on the whole of the molluscan phylum.

Recently J. McLean of the Los Angeles County Museum, discovered a very small mono from the relatively shallow water on the Cortes-Tanner Bank about ninety miles off Los Angeles. Several small groups of these have been collected and studied alive. A great deal more work has still to be done, including delineating the area or areas on the Bank where they exist.

Unfortunately for science the Cortes-Santa Rosa Ridge off California may well lie over oil-bearing strata, and recently the State Government of California started proceedings for the issue of exploration licences in the area.

Had drilling taken place in or near the area where the monos live, there is no knowing what the effect might have been. The discharge of drilling mud and waste, while not necessarily toxic, would quite probably have so affected the substrate as to make it uninhabitable for these molluscs, and also for other animals in the same area. In addition to the monos there are other forms of life which are of very great interest to science. The loss could have been disastrous. No other such accessible area has yet been found any-

where in the world, and work on the monos from here has virtually only just started. Work which should lead to a considerable increase in knowledge and understanding of the Earth's second largest phylum.

Fortunately scientists in America saw the danger in time, and alerted the Californian State and U.S. National Governments. They also approached the Conchological Society giving us details of the position and requesting our help. An official letter was sent to the U.S. Secretary of The Interior over the signature of our President, and an answer received. Other world scientists are taking similar action.

The battle for the monos is by no means won as yet, but the outlook is somewhat brighter, and we can be satisfied that our colleagues in America are doing all they can to stave off the extinction of this exciting and most important mollusc.

A. P. H. Oliver, 10.11.79

SOME OBSERVATIONS UPON OVATELLA MYOSOTIS (DRAPARNAUD, 1801)

During a recent course on Mollusca conducted by Dr. June Chatfield at the Orielton Field Centre, Pembroke, those taking part searched some of the mud flats at Cosherston Creek (grid reference 22/004034) looking for specimens of Ovatella myosotis (Draparnaud, 1801). Several were found, the bulk live.

On examining the specimens under the microscope back in the laboratory it was found that a number of specimens, juvenile and adult, displayed below the suture line and running parallel with it towards the apex a line of short hairs. None of the available modern works referred to this ciliation, e.g. Beedham (1972), Ellis (1926/1969), Janus (1965) and Macan (1949), though the illustration of Potamopyrgus jenkinsi in Macan showing the keel gives a rough impression of what the ciliation looks like, although it is rather nearer the suture line than in jenkinsi, and it was thought that we might have found something unrecorded; however, a search of the literature available to me on returning home quickly revealed that the existence of this "keel" had been recorded; nevertheless, it is perhaps timely that attention should again be drawn to it.

The first specific reference to the line of hairs I found was in Gray's edition of Turton (1857), which gives the name as Conovulus denticulatus (Montagu 1852), Swanton (1906) also refers to the ciliation, but in a later work (1912) omits any reference to its existence. Swanton gives the name as Phytia myosotis. The latest change is in Kerney (1976).

Although it is clear that the ciliated variety is known, the lack of modern references to it is strange, to say the least. It has been asserted (Gray) that the hairs rub off the dried shells easily, and an examination of the examples I collected indicated that the hairs do indeed come off, however, as I collected specimens from the juvenile to the mature stages (all live) bearing a considerable assemblage of the hairs, as well as others from juvenile to mature without any trace of them, it may well be that this is a distinct variety and that the specimens without hairs are not simply examples which have lost them.

I would like to thank Dr. June Chatfield, who confirmed the identification of the species, for helpful suggestions, as well as the other members of the course who made specimens they collected available for examination and comparison.

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R. W. Morrell

DR. THORNDYKE'S SNAILS

In his Presidential address Fictional mollusca T.E. Crowley referred briefly to stories by R. Austin Freeman. At the time he did not have access to these, so a fuller account may be of interest.

R. Austin Freeman was the author of a long series of detective novels and short stories published in the early years of this century. I regret that I am unable to give publication dates; the publisher has always tended to omit these. Biographical information regarding the author is also scanty. I have been told that he was a medical man and that he had an interest in natural history. The omnibus volume of the short stories, The Famous Cases of Dr. Thorndyke, was first published in 1929.

Dr. Thorndyke is of course the character whose prowess in detection is the subject of the stories. He is engaged in medico-legal practice (which ensures that he has plenty of cases!) and is also possessed of a very large stock of items of fairly unusual lore which prove surprisingly useful on occasion. Unfortunately Freeman made little or no attempt at characterisation (in the preface to the omnibus volume he states "The Detective Story differs from all other forms of fiction in that its interest is primarily intellectual. Emotion, dramatic action, humour, pathos, 'love interest,' may all be present. But they are mere accessory factors which may at will be omitted without vital injury to the story. The one essential, sine qua non, is a problem, the solution of which shall afford the ingenious reader an agreeable exercise in intellectual gymnastics.") Thorndyke and his assistant and amanuensis, Dr. Jervis (a stock "Dr. Watson" figure) are cardboard creations. Freeman did, however, display considerable skill and ingenuity in constructing a puzzle which can be solved by the knowledge of one simple fact.

Each of the stories which deal with conchology sets a problem, the solution of which depends upon a fact known to anyone who has ever engaged in any kind of field work.

In The Naturalist at Law Mr. Cyrus Pedley is found dead. His body lies in a ditch. The autopsy shows that he met his death by drowning. His lungs and stomach contain ditch-water. Obviously he was drowned where he was found,

and the only doubt is whether it was a case of accident or suicide. But stay! - Dr. Thorndyke has been retained by the dead man's brother, who hopes to rebut the suggestion of suicide. He examines the body, noting that a strand of weed is clutched in one hand, and observes that the ditch-water extracted from the stomach contains duck-weed and water-snails; the latter are described by Dr. Jervis as "tiny flat shells like miniature ammonites."

Thorndyke now visits the ditch where the body was discovered, and points out that it is swarming with water-snails. "Succinea putris it is," he observes "a queer little left-handed shell with the spire, as you see, all lop-sided." He pays a good deal of attention to the duck-weed in the ditch, and subsequently tells Jervis that they are dealing with a case of homicide.

In the dead man's pocket was a railway ticket, and the two sleuths travel to the destination shown upon it - Great Buntingford Halt, a tiny station on the Thames marshes. The station-master is able to recognise the description of Mr. Pedley, and mentions his presumed connection with the local Golomite Works. They approach the factory, and near it find a ditch, which Thorndyke proceeds to investigate. He finds "duck-weed, horn-weed, Planorbis nautilus but no Succineae" and asks Jervis for his opinion. Jervis recognises the horn-weed as the same weed as that in Mr. Pedley's hand, while the "ammonite-like shells" resemble those taken from his stomach; "Duck-weed" he remarks loftily "is duck-weed, and there's an end of it." (Actually he is dead wrong, as that is a different species too.)

A villainous character (and a Slav, at that) now expels the two doctors from the private land belonging to the factory, but in retreat Thorndyke contrives (how very fortunately!) to hook from the ditch Mr. Pedley's false teeth, thereby completely clinching what by now we already know - that it was in this ditch that he met his death.

The Golomite Works later proves to be "a factory where high explosives were made by a gang of cosmopolitan revolutionaries who were all known to the police" and it is found that Pedley of the Foreign Office was killed by them as a spy. But no doubt this would never have come to light had Dr. Thorndyke not remembered something which we all know - that ditches do not all contain the same flora and fauna.

In A Fisher of Men Thorndyke and Jervis, investigating a case dubbed by the press "The Blue Diamond Mystery" call at Scotland Yard for information. While there Thorndyke is shown a bag and walking-stick, both jettisoned by a suspicious character in avoiding the attention of a police constable. By examining the contents of the bag Thorndyke is able to outline the age and appearance of its owner - he is middle-aged or elderly, bearded, neat and careful, and a hair from his beard shows he has an unusual condition of the hair - but the bag also contains an incongruous parcel consisting of some burglar's tools, packed with grass and rolled up in a dirty shirt and half-towel. In the grass is a shell, identified by Thorndyke as Clausilia biplicata. The walking-stick is a common ash stick, but has a peculiarity; its ferrule has been worn away and replaced by a boot-stud.

Leaving Scotland Yard, Thorndyke and Jervis pursue the case upon which they are engaged. En route for a nursing-home where they are to interview the victim Thorndyke explains that he is a dealer who has been robbed of a valuable diamond necklace while travelling by train to Isleworth, and has been found lying chloroformed under the seat in a railway carriage. They find him unconscious, but notice that he closely resembles Thorndyke's theoretical description of the owner of the bag which they have recently seen at Scotland Yard, and as he is also affected by the rare hair condition also remarked, it is virtually certain that he is indeed the owner of the bag.

At this stage Dr. Jervis is cruelly puzzled. He is led into a fishing-tackle shop where Thorndyke buys an odd assortment of tackle, and subsequently taken to the towing path at Hammersmith Bridge. After peering around him for some time Thorndyke orders poor Jervis to fish, while he takes plaster casts from some holes; these prove to have been made by a stick tipped with a boot-stud - "the stick that we saw at Scotland Yard!" Thorndyke then finds a disturbed patch of soil and digs there, uncovering the stolen diamonds. He re-buries them and departs in haste to bring the police, leaving Jervis in ambush. The thief duly returns to his booty, but cannot disinter it before a witness. He fatally incriminates himself by flight at the sight of the police, and is successfully apprehended.

Jervis cannot understand how Thorndyke knew that they should go to Hammersmith. He is informed that Clausilia biplicata, found in the grass, told where the grass had been gathered. "I can't imagine how" he says. "Surely you find shells all over the country?" Thorndyke explains, rather lengthily, that this species is only found in two localities in this island: one is in Wiltshire, the other is the right bank of the Thames at Hammersmith. There was nothing to connect the case with Wiltshire, but the thief was thought to have left the train at Chiswick, quite near Hammersmith. Once again, a solution reached by employing one simple fact - some species have a very restricted distribution.

Probably the strangest thing about these two stories - which many readers must have noticed - is that in both cases Dr. Thorndyke, with all his expertise, did not get it quite right! Even today, after becoming extinct in earlier sites, Clausilia biplicata is known from more than two sites, and in the earliest Conchological Society census (1885) it was known from three counties. We may, I feel, allow Freeman this licence: probably he diminished the number so that his story should not be of inordinate length, and the solution probably stands up, since the number of sites within a reasonable radius would have been small enough to check. (He might, of course, have taken his information from Rimmer's Shells of the British Isles, as the 1907 edition still says that Clausilia biplicata is only found in Wiltshire and at Hammersmith.) But what can we say about his sinistral Succinea putris? This must be a mistake - we all know that this species is normally dextral, and find it hard to visualise a swarming population of sinistral individuals. Did he mean Physa fontinalis? Although, provided the two ditches had different species it presumably does not matter (to a sleuth) what they are called.

Let us end as we began: I leave you with a quotation from T.E. Crowley. "Unless he is as much a conchologist as a writer he can hardly avoid dropping bricks in dealing with shells, and it is better for him to skirt warily round the edges."

Marjorie Fogan

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PEARLING - COLOURFUL HISTORY, BRIGHT FUTURE

Pearling is an industry with a colourful history and apparently a bright

future. Pearls exported from Australia over the past 12 months were worth \$13 million, with most produced in Western Australia, where the pearling industry began last century.

Pearling began at Shark Bay in 1850 with the shipment of three tonnes of shell to Fremantle. At that time the industry revolved round the shell, mother-of-pearl, rather than pearls themselves. The mother-of-pearl shell from silver or gold-lipped pearl oyster was used for making buttons and ornaments, and natural pearls were a bonus.

Pearling soon spread from Shark Bay. In 1861 divers began gathering shell and pearls near Nickol Bay. Aboriginal divers were employed in the early years and later divers from Java and Timor. By 1873 more than 80 boats were working in this area. Other boats operated from Onslow and Port Hedland, and the methods developed in Western Australia were taken to the Northern Territory and Queensland.

As pearl shell on the shallow reefs was worked out divers went deeper, using suits and 'hard-hat' helmets. Men from Malaya and the South Sea islands joined the diving teams, and then from the 1880s Japanese divers gradually assumed the major role in pearling operations.

During this same period Broome became the major centre for pearling. By the early 1900s it had a fleet of more than 300 luggers and a permanent population of 4,000 people.

Diving for pearl shell has always involved an element of risk, with the dangers of shark attack, a sea snake bite or the bends and other diving-related illnesses worsened by the remoteness of the areas worked.

But cyclones were the greatest threat. Though not as serious as an 1899 cyclone off Cape York Peninsula that destroyed 50 boats and killed at least 300 men, cyclones along the north-west coast in 1908, 1910 and 1935 sank luggers and caused more loss of life.

In its heyday the Australian pearling industry supplied 80 per cent of the mother-of-pearl use throughout the world, half of it coming from Western Australia. However the industry was severely disrupted during World War II, and then increased use of plastics reduced demand for the natural mother-of-pearl and Australian production fell.

Interest in pearling was revived with the establishment of culture farms. Techniques for artificially stimulating pearl production in pearl oysters were developed in Japan early this century. Large-scale pearl culture began in the 1950s, and in 1955 a joint Japanese-Australian firm established a pearl farm at Kuri Bay in Western Australia. Australia's first harvest of cultured pearls came from the Kuri Bay farm in 1957.

Currently there are eight pearl farms in Australia: five in Western Australia, two in Queensland and one in the Northern Territory. Annual production averages 80,000 round and 25,000 half pearls.

These pearls traditionally have been sold directly to buyers in Japan, but now at least one wholly Australian-owned farm is interested in marketing its own pearls within Australia.

The company is Broome Pearls, established in 1977 by diver John Lowe and marine biologist Bill Reed with the assistance of Kailis Gulf Fisheries.

They took up a lease on a square-mile section of ocean floor in Roebuck Bay, off Broome, working initially from a Shark Cat power boat and then bring-

ing in a barge as the scale of their operations increased. The shells are held in baskets on the sea bed.

Mr. Lowe said recently they already had pearls on sale in Broome (after setting in Perth) and planned to expand marketing as production increased.

PEARL FARMS THRIVING

Seven types of pearls are being cultured at 20 farms established by C. Denis George and Sons near Samari in Papua New Guinea.

Headquarters for the venture is Pearl Island where pearls and shell are processed for marketing around the world. Besides three types of spherical and four kinds of half pearls the company is manufacturing a range of jewellery and ornaments from pearl shell, pearl buckles and buttons.

The 20 outlying pearl cultivation farms around Samari had been established in partnership with Papua New Guineans, he explained. Mr. George went from northern Australia to Papua New Guinea to set up pearl culturing in that country.

(Reprinted from 'Australian Fisheries', August 1979 issue. Submitted by Mrs. Betty M. Smith)

THE MYSTERIOUS VIRGIN MARY SHELL

In the course of an interesting article on 'Collecting in South West Ireland' published in Conchologists' Newsletter, No. 70, September 1979, Rupert Honnor and Julia Nunn drew attention to the reported occurrence of the mysterious Virgin Mary shell which was reputed to be found near the Virgin Mary Rocks at Inchydoney Strand, Co. Cork.

The authors tried to find it without success, but from a description given by a local person, thought that it might be Pandora albida. Apart from the fact that P. albida is quite rare in the south coast, it is not surprising that the authors failed to find examples of the Virgin Mary shell, because this shell is not a mollusc at all. In fact the shell in question is the test of Echinocardium cordatum (Pennant) denuded of its spines and cleaned by the sand.

On the aboral or dorsal surface of the test is a deep groove bounded by an ovate dorsal impression from which radiate four ambulacra, and a deep indentation. On examination of the test, with the indentation facing downwards one obtains the impression of a grotto with an indistinct impression of the Virgin as she is typically engraved on many religious medals. In the past it was assumed by the local inhabitants that these "shells" were associated with the Virgin Mary Rocks.

Colm E. O'Riordan

MOLLUSCS EATEN BY THE HADZAPI PEOPLE, TANZANIA

During the early part of 1972 an exhibit of the way of life of the Hadzapi people (also called Kindiga or Tindiga) was staged at the Ethnography Department of the British Museum in Burlington Gardens (Museum of Mankind) based on material collected by Mr. Woodburn. This tribe lives around Lake Eyasi, speaks a curious click language quite unrelated to any Bantu tongue and

used to exist in a bushman-like way. This way of life has now, of course, mostly changed or is changing rapidly. In the exhibit were two molluscs which were said to be common articles of diet. Unfortunately I could not actually examine either of them closely but one was a species of Aspitharia, a fairly large bivalve, and the other Achatina fulica bloyeti Bourguignat as far as I could tell although the single shell on show was not very typical. As is very well known A. fulica fulica Bowdich is eaten by many people in the areas to which it has spread, indeed it owes its spread partly to the introduction by the Japanese as food to many areas in the Pacific. I had no records of it having been eaten in its native home East Africa and it is interesting to see that one race of it has formed an article of diet in Tanzania.

B. Verdcourt

MARINE CENSUS AFFAIRS

In a previous note (Newsletter No. 70, Sept. 1979, p.173), I mentioned that "I hope soon to show that we are making tangible progress in the form of the set of area master cards, which NCC have agreed to publish". This publication, in the form of species lists for most of the marine census areas around Britain and Ireland, should be available by the time you read this report. Area representatives will receive a copy direct; I am grateful to them for providing the data.

Although the publication brings together much information not previously easily available, it is soon apparent that there are many gaps and surprises. Many species do not seem to have been seen alive in recent years - are they under-recorded, or becoming scarcer?

I hope that interest in marine molluscs may be stimulated, and that accelerated recording will soon render these lists obsolete and the proposed atlas more representative.

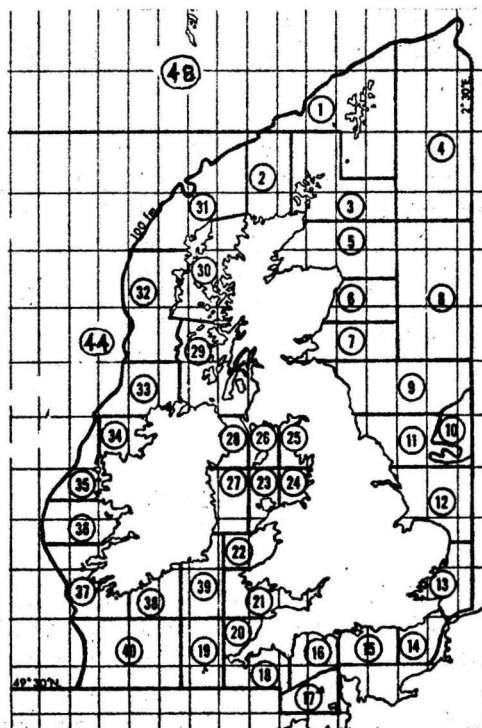
D. R. Seaward, Marine Recorder

MARINE MOLLUSC DISTRIBUTION MAPS

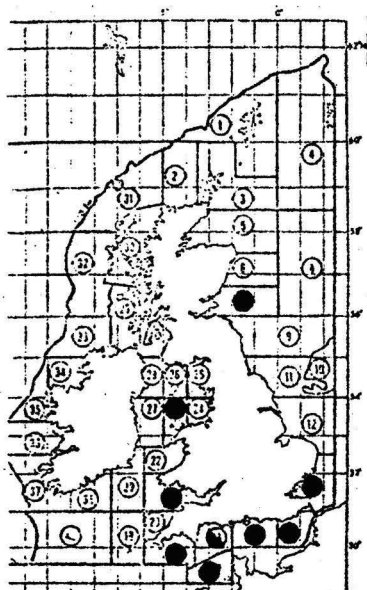
Preparation of the publication referred to above has enabled me to draw tentative distribution maps and several are reproduced on the next two pages in the hope that they will stimulate comment, discussion and field work. These are rather crude and clarity has suffered in reducing the size of the base map. Some boundaries have changed somewhat since the base map was prepared some years ago but they are not significant for present purposes.

For simplicity I have reduced the scheme's nine categories to two; presence of a species in an area is indicated by filling in the number circle for a live post-1950 record, or by half filling the circle for any other record (● or ◐).

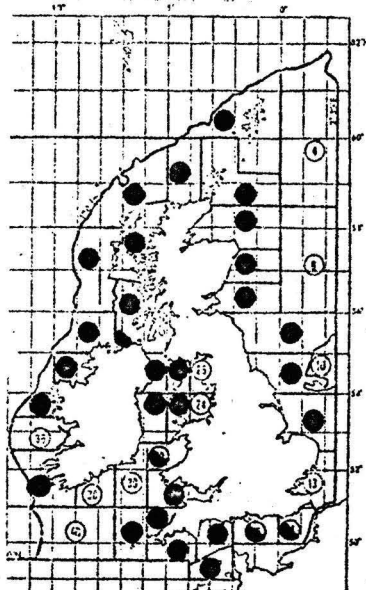
Maps for the first few species on the field card, including all the chitons, are given. Area representatives will be pleased to hear from readers who have data which will fill gaps or otherwise update these maps.



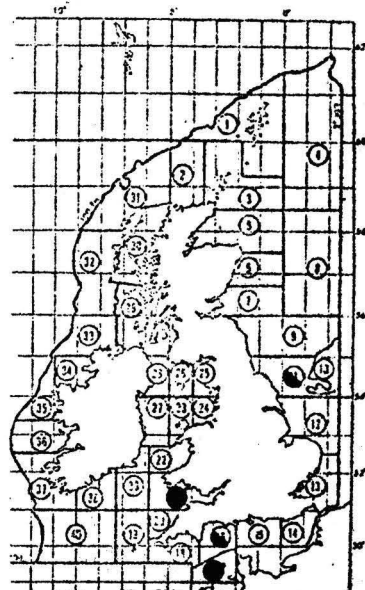
D. R. Seaward, Marine Recorder



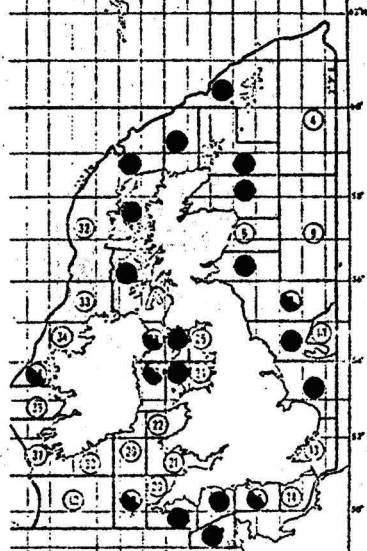
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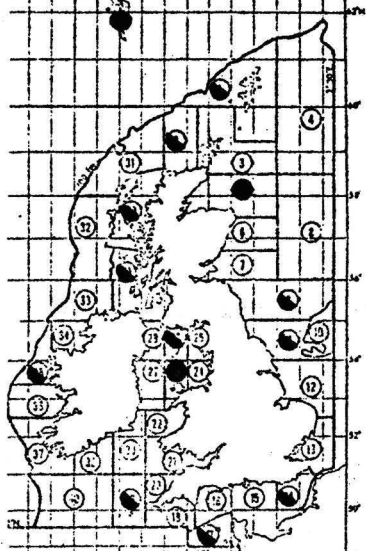
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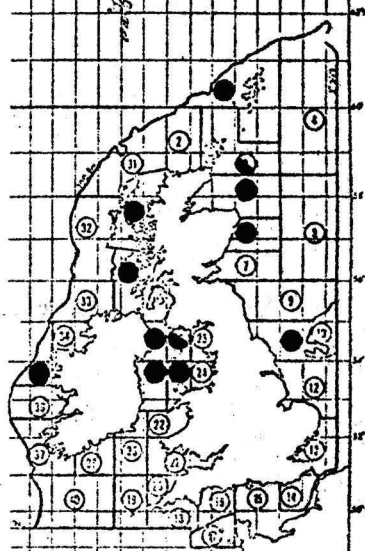
103 *Acanthochiton gracilis*



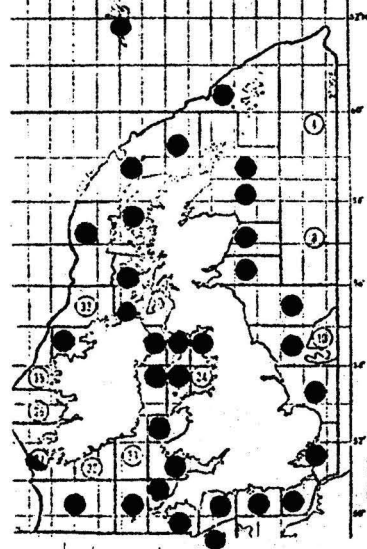
201 *Callochiton ahati*



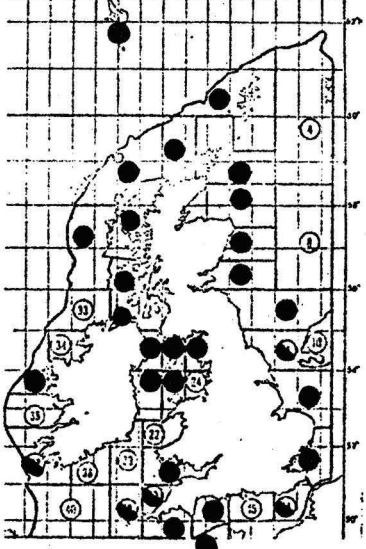
301 *Hanleya hanleyi*



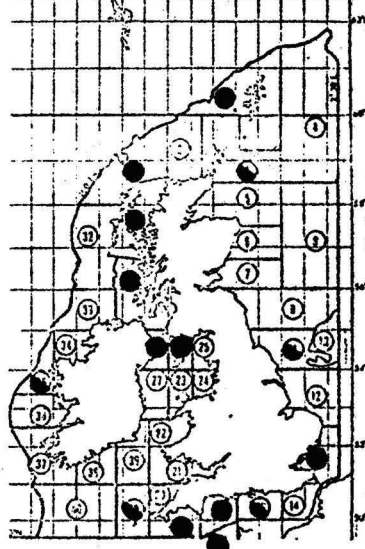
401 *Ischnochiton albus*



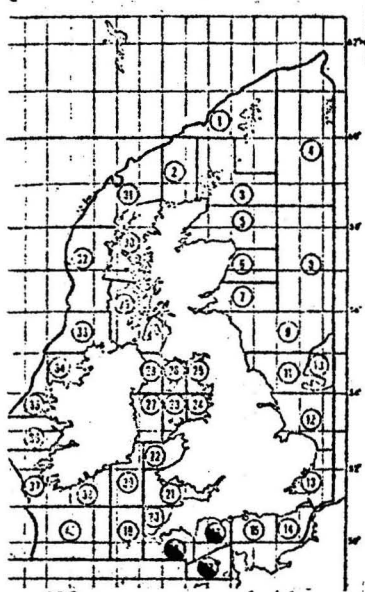
501 *Lepidochitona cine*



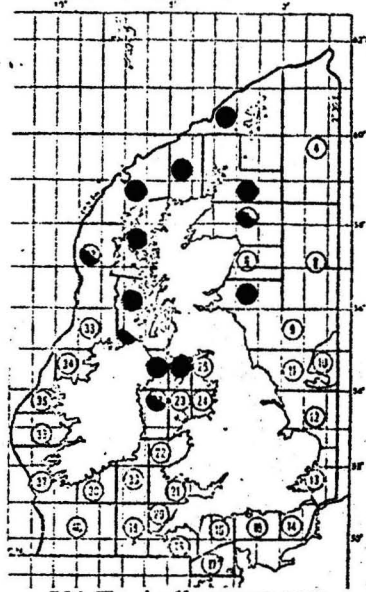
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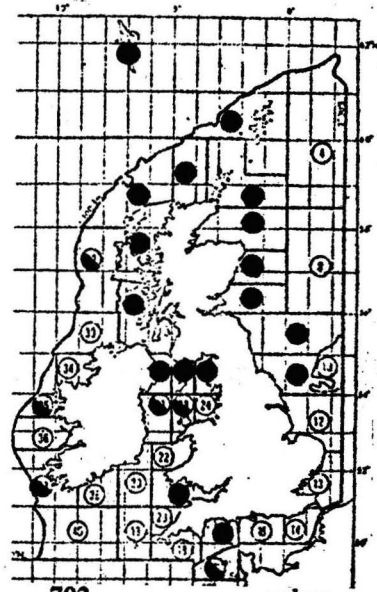
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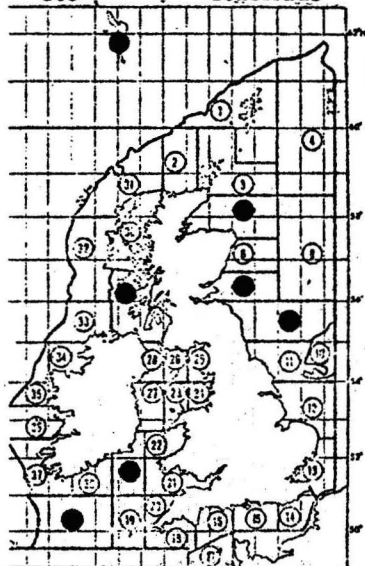
603 *scabridus*



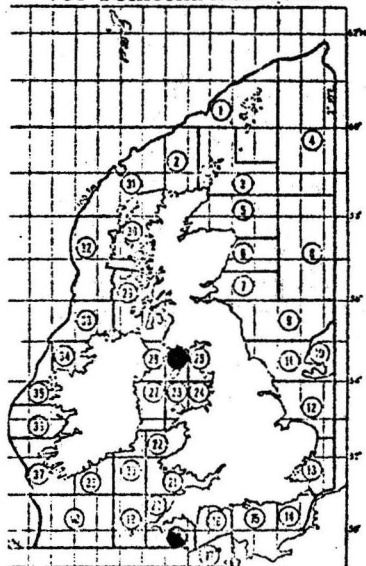
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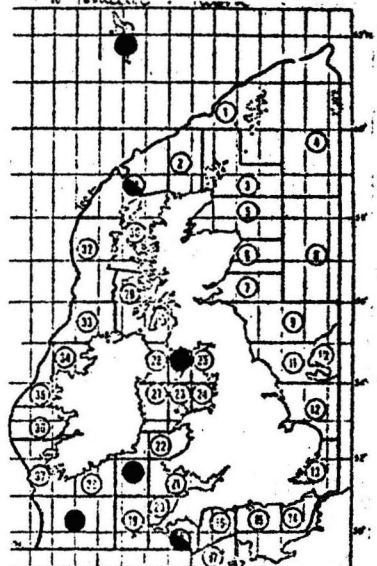
702 *rubra*



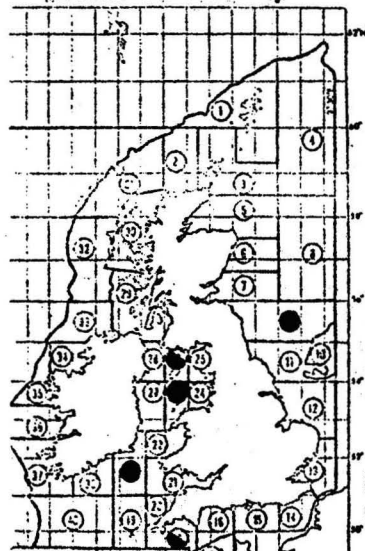
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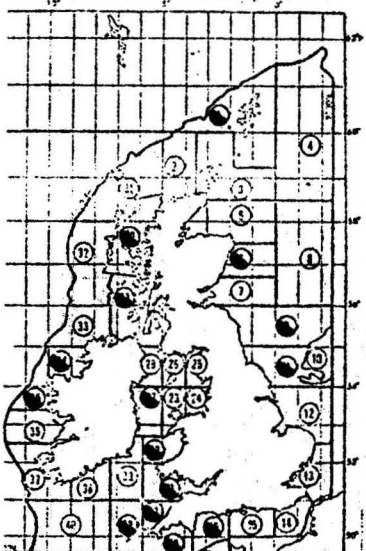
201 *Nematomeni banyul*



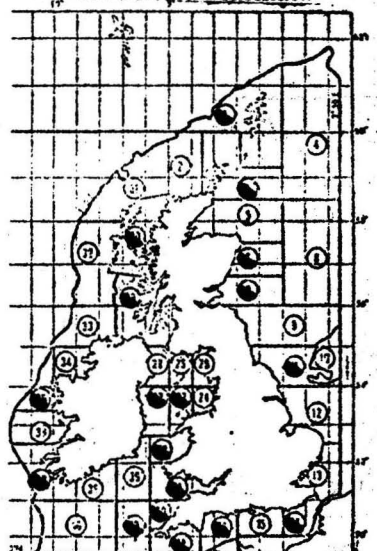
301 *Neomepia carinata*



401 *Proncomeni aglaop*



101 *Aclis ascaris*



102 *minor*

A CARIBBEAN LAND SHELL IN LANCASHIRE

I was interested to read Dr. Verdcourt's note on the above subject in the latest issue of the Conchologists' Newsletter, No. 71, December 1979, and I think I can cast some light on the matter.

Some years ago, I think about 1965, my young great-nephew brought me some shells he had found on bunches of bananas being unloaded from a ship from the West Indies at Preston Docks on the river Ribble in Lancashire. Some of them were still alive and adhering strongly to the bunches of bananas, so it can be imagined how widely they could have been distributed over the countryside during the journey by van or lorry to the wholesalers or retailers; but I doubt whether they would survive the climate of England or the food available. The shells, however, are a different matter and could turn up anywhere.

In the case of Dr. Verdcourt's shell, it was probably thrown overboard with other rubbish or washed down the river from the dock; Ainsdale beach being on the south side of the Ribble estuary. The shells I got from my nephew were tentatively identified as:-

Pleurodonte orbiculata (Fér.) Probably from Dominica

Pleurodonte dentiens (Fér.) " " "

Pleurodonte badia (Fér.)

Pleurodonte josephinae (Fér.)

Amphibulima patula (Brug.)

Amphibulima rubescens (Desh.)

Plekocheilus auris sileni Born.

Auris (eudolichotis) glabra Gmelin

G. A. S. Barnacle

A CURIOUS EXTINCT RETINELLA (FAMILY ZONITIDAE) FROM THE

PLIO-PLEISTOCENE OF EUROPE

In 1976 I described a new species of Retinella (R. skertchlyi) from a Pleistocene interglacial deposit at Icklingham in Suffolk (J. Conch. 29: 47). Its unusual and highly distinctive spiral microsculpture showed it to be related to the subgenus Lyrodiscus, living at the present time only in the Canary Islands. This discovery was totally unexpected. But it is now becoming apparent that closely related (possibly identical) species were widespread in Europe in the late Pliocene and early Pleistocene. Attention was drawn to one of these occurrences by Münzing and Ohmert in 1974 (Jh. geol. Landesamt Baden-Württemberg 16: 71), who obtained shells from a Lower Pleistocene interglacial deposit at Hßrlis in S. Swabia. No name is suggested, but their excellent photographs clearly demonstrate the close relationship of their fossil with the British species. Similar shells have also been recognised from Pliocene or early Pleistocene deposits in southern France (Drôme, Côte-d'Or), in the lower Rhine valley in Germany, and in the Netherlands. References to these discoveries have recently been summarised by Münzing (Ber. Naturf. Ges. Freiburg i. Br. 68 (1978): 103).

The earliest available name for these forms appears to be Helix jourdani Michaud 1862, originally described from Upper Pliocene deposits at Hauterive (Drôme). Meijer (Scripta Geologica 34 (1976): 12) has suggested that Zonites elephantinum Bourguignat 1869, from Pleistocene deposits near Paris, may also be related. Schlickum and Strauch (Arch. Moll. 106 (1975): 39) have created a new subgenus (Riedeliella) for the reception of Helix jourdani, though its separation from Lyrodiscus seems scarcely to be warranted on the available evidence.

Further study is needed to show whether skertchlyi is indeed a junior synonym of jourdani. The precise age of the Icklingham deposit also remains to be established: though believed to be Hoxnian (Holstein), the evidence for this dating is not quite secure.

M. P. Kerney

GENERAL NOTES

OYSTER SHELLS: A CHEAP SOURCE OF LAND DRAINAGE?

Miss M.E. Philbrick who provided me with some information relating to Cornish conchologists, as a result of which she saw a copy of the Newsletter containing the relevant article, has kindly sent the following interesting comment on the consumption of oysters pre-1914 (See note by Marjorie Fogan in Conch. Newsletter No. 68:124).

"My mother and father lived in Cheshire before the 1914-18 war and regularly, in season, had 100 oysters (which I believe came from the Helford River) sent to them each Friday for home consumption. They were not rich so oysters must have been cheap. I can imagine that larger and better-off families might have had vast quantities of shells and been only too pleased to get rid of them to form drains."

Stella M. Turk

THE POWELL-COTTON MUSEUM, BIRCHINGTON, KENT

This museum, founded by Major P.H.G. Powell-Cotton at the end of the 19th century, specialises in two areas, wild game and ethnography. It is in the very extensive displays of ethnographic material that some mollusc shells are to be found. These exhibits include a wide range of cultures from Africa to the Pacific islands. Although there are some intact shells, most of them have been cut up or carved to serve as arm bands, ear ornaments, necklaces, belts, spoons and fish hooks. Although most of the shells used in this way are marine species, some land snails also feature in the museum displays. Members of the Society who are interested in the use of shells by foreign cultures, would find much of interest in this museum. The Powell-Cotton Museum is situated in Quex Park, about $\frac{1}{2}$ mile from Birchington, near Margate.

The Powell-Cotton Museum is open to the public on Thursday afternoons throughout the year. From Easter Bank Holiday weekend to the end of September it is open on Sundays, Wednesdays, Thursdays and Bank Holidays. From 17 July to 7 September it is open daily except for Mondays and Saturdays. The opening hours are in the afternoon from 2.30 to 6.00. There is a small admission charge.

June Chatfield

PLEURODISCUS BALMEI (POTIEZ & MICHAUD 1838) LIVING IN THE OPEN IN KENT

Pleurodiscus balmei is, according to Cameron & Kerney's Field Guide to the Land Snails of Britain and North-West Europe (London 1979) (p.206) only known in Britain as a greenhouse alien. As it is a Mediterranean species this is understandable and I was therefore astonished to find a colony living in the open air at Canterbury, Kent, on 13 December 1979. The snails were under stones about a ruined building (of flints) known locally as "the chapel", and I picked up half a dozen living specimens in a few minutes. The building stands upon a bit of waste ground at the edge of orchards at Bokesbourne, Canterbury with no greenhouse near. The specimens have been deposited in the Merseyside County Museums.

Nora F. McMillan, Merseyside County Museums, Liverpool

PLEURODONTE (CAPRINUS) ORBICULATA (FER.) - SOME NOTES ON ITS OCCURRENCE IN
BRITAIN

I was interested in the note by Dr. B. Verdcourt on p.187 of the December issue of the Conchologists' Newsletter, and his reference to the finding of Pleurodonte (Caprinus) orbiculata (Fer.) amongst debris at high-water mark at Ainsdale in Lancashire. His speculation that the specimen must have been imported in crates from the West Indies can be supported by two further reports of this species having been found in Great Britain.

The first specimen was brought to me many years ago after having been found live in a box of bananas opened in the central market in Leeds. More recently, however, a second specimen was shown to me by Dr. & Mrs. L. Lloyd-Evans who retrieved one which was found crawling over a bunch of bananas amongst mixed fruit and vegetables on a counter display at the Fine Fare Supermarket in Huddersfield. The specimen (Fidel) was collected on Monday the 13th. August 1979 and at present is still alive and very active in the care of Mrs. L. Lloyd-Evans of New Mill, near Huddersfield.

A. Norris, Leeds City Museum

IDENTIFYING LAND SNAILS AND SLUGS

A field course to be held at Juniper Hall, near Box Hill, Surrey from 14 to 18 April 1980. Tutor: Dr. June Chatfield.

This course on the identification of land molluscs is suited for both beginners and those with some prior knowledge. Juniper Hall is on calcareous soil of the North Downs and it supports a rich and varied fauna of land molluscs. Over 50 species are likely to be found. The course will include both field and laboratory work and an appreciation of ecology in addition to identification. For amateurs, teachers, students, museum curators, archaeologists, wardens of nature reserves and members of naturalists' trusts concerned with conservation. Beginners welcome. Further details from: The Warden, Juniper Hall Field Centre, Mickleham, Dorking, Surrey, RH5 6DA

ANNUAL SUBSCRIPTIONS, 1980

Dear Members,

Please let me remind you that the 1980 Annual Subscription was due on 1st January. If you have not yet paid this will you please forward it as soon as possible to avoid the expense of reminders. Ordinary, Institutional and Family Members may deduct the sum of 50p (£1.25) from the amount, if this is paid before 31st. March.

No further publications will be sent to Members while their current Subscriptions remain unpaid, but any which have been withheld will be sent on receipt of arrears. Votes from paid-up Members only will be valid in the election of Officers and Council Members.

Some of you have forgotten that the Subscription has been raised (new rates are shown below) and have paid at the old rate. I shall be very grateful if you will send the additional £2 to me without further reminder.

Please make cheques or postal orders payable to the Society, and send them to me.

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

Ordinary Member	£7	(£17.50)	Family Members	£ 8 (£20.00)
Junior Member	£1.50	(£ 3.75)	Institutional Member	£10 (£25.00)

MRS. STELLA TURK is to receive an honorary Master of Science degree of Exeter University in July. The following extract is from The West Briton & Royal Cornwall Gazette, 27 December 1979:

Mrs. Turk is an amateur natural historian primarily of the fauna and flora of the seashore of Cornwall. An adult education teacher in Cornwall for many years, she has published many articles and reviews over the past 35 years. Many of her unpublished natural history surveys are lodged with the Marine Biological Association, the Botany Department of the British Museum and Exeter University's biological recording unit.

A Scillonian by birth, she went to school in New Zealand when her father, the late Rev. J.T. Phillips, once Vicar of Treleigh, was there for a few years. Her husband, Dr. Frank Turk, retired in 1976 after 44 years' service to adult education in Cornwall. He was reader in natural history and Oriental art at Exeter University and staff tutor (Cornwall) in the University's extra-mural department. Mrs. Turk was created a Bard of the Cornish Gorsedd in 1972.

THE MONTAGU COLLECTION OF MOLLUSCA at the Royal Albert Memorial Museum, Exeter Biology Curators' Group Newsletter, Vol. 4, No. 4, pp.135-137 (Sept. 1979). By Rosemary Brind. Note: Miss Brind has overlooked that No. 4145, Helix caperata is a mixture of caperata and gigaxii; as caperata is now regarded as a synonym of intersecta Poiret, this is of little consequence. A. E. Ellis

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, WC2, at 25p 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 £3.00 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

FATAL SNAILS - It was reported in the 'Guardian' on 27th. November last that Marc Quinquandon died in hospital in Nancy, France aged 27. This champion snail-eater suffered indigestion after consuming 72 snails in 3 minutes during an exhibition performance!

HELP WANTED, PLEASE. Would any kind member be willing to sell, exchange or lend (for no more than a week) a copy of the "Journal of Conchology", Vol.20; 1 (1934)? If so, please send details to: R.M. Dixon, [REDACTED], Rainham, Gillingham, Kent.

SHELL INSURANCE. Contact us for expert advice without obligation. Jaykel Insurance Services and Finance Ltd., 135 Mitcham Road, London, SW17 9PE Tel. 01-767 2430.

MR. FRED G. WAGNER, [REDACTED], Brisbane, Queensland, has a number of tropical marine shells for disposal privately. Particularly Cypraea, Conus, Murex and Voluta. Please write and state your interests and requirements.

DR. J.E. AMORIM RANALI, [REDACTED], Sao Vicente-Sao Paulo, Brazil, would like to correspond with any interested members and collectors. He has almost all the Brazilian shells available.

SPECIMEN SHELLS FOR SALE - from West Country Enterprises, P.O. Box 12, Bude, Cornwall, EX23 8YZ Cypraea valentia (large gem) £800, Cypraea guttata (large gem) £280, Cypraea aurantium (red base gem) £200, Murex loebbeckie £240.

SHELLS FOR SALE - Alexander Keen, [REDACTED], Lenzerheide 7078, Switzerland, has fine specimens of Conus bengalensis, Conus gloriamaris and Cypraea aurantium available. Write with offers.

TROPICAL MARINE SHELLS FOR SALE - Gloriamaris, Papa Ndiaye Mbaye, [REDACTED], [REDACTED], Senegal, W. Africa. Write for list and details.

THE CONCHOLOGISTS' NEWSLETTER

No. 73

ISSN 0573-2336

Newsletter Editor: P.E. Negus,

June 1980

Chelsea Bridge Road,
London, [REDACTED].

Produced by THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

WORKMANS WOOD

Workmans Wood is owned and managed by Mr. John Workman and, by an agreement with the Nature Conservancy Council, is Gloucestershire's first National Nature Reserve. In May 1978 I was given permission by Mr. Workman and the NCC to survey the wood for molluscs, and between June and mid-December I managed to make 9 visits to the reserve which resulted in covering about 30% of the area and all the major habitats.

The wood is at the head and upper part of a north east to south west orientated valley in the Cotswolds north east of Sheepscombe. It is about 2.3Km long and 1.0Km wide, and basically on Inferior Oolite limestone, which is covered by foundered Fullers Earth Clay in places; there is also a strip of Upper Lias Clay by a stream in the valley bottom. Predominantly an ancient beech wood, it has had a long period of management and so presents a variety of woodland types; there are plantations in which larch has been used as a nurse crop, elements of ash woodland, patches of sycamore, decorative conifer stands, small amounts of hazel, relatively open wet strips near streams, and clearings especially along numerous access tracks. Most of the boundaries are fencing and, for the Cotswolds, stone walling is relatively scarce.

Not surprisingly, as the Cotswolds have long been known for their rich woodland molluscan faunas, Workmans Wood harbours many species - 49 gastropods and 2 species of Pisidium were found living, and three gastropods were recorded as single dead shells only. As a rough guide to frequencies the list below gives the number of 100 metre squares (out of 46 from which recordings were made) in which each species was found:

Land species:

30	<u>Discus rotundatus</u>	7	<u>Ena montana</u>
28	<u>Cochlodina laminata</u>	7	<u>Cepea hortensis</u>
26	<u>Aegopinella pura</u>	6	<u>Punctum pygmaeum</u>
26	<u>Clausilia bidentata</u>	6	<u>Zenobiella subrufescens</u>
26	<u>Trichia striolata</u>	6	<u>Helix aspersa</u>
22	<u>Limax marginatus</u>	5	<u>Helicigona lapicida</u>
21	<u>Aegopinella nitidula</u>	5	<u>Cepaea nemoralis</u>
18	<u>Trichia hispida</u>	4	<u>Succinea putris</u>
17	<u>Carychium tridentatum</u>	4	<u>Milax budapestensis</u>
17	<u>Arion ater</u>	4	<u>Columella edentula</u>
17	<u>Arianta arbustorum</u>	3	<u>Azeca goodalli</u>
17	<u>Vitrea crystallina</u>	3	<u>Phenacolimax major</u>
16	<u>Ena obscura</u>	3	<u>Limax maximus</u>
16	<u>Arion hortensis</u> agg.	3	<u>Deroceras laeve</u>
16	<u>Oxychilus alliarius</u>	2	<u>Acicula fusca</u>
15	<u>Pomatias elegans</u>	2	<u>Carychium minimum</u>
14	<u>Vitrea contracta</u>	2	<u>Oxyloma pfeifferi</u>
14	<u>Arion circumscriptus</u> agg.	2	<u>Nesovitrea hammonis</u>

14	<u>Vitrina pellucida</u>	2	<u>Arion intermedius</u>
11	<u>Cochlicopa lubrica</u>	2	<u>Milax sowerbyi</u>
11	<u>Acanthinula aculeata</u>	1	<u>Vertigo substriata</u>
11	<u>Deroceas reticulatus</u>	1	<u>Lauria cylindracea</u>
10	<u>Oxychilus cellarius</u>	1	<u>Candidula intersecta</u>
10	<u>Arion subfuscus</u>	1	<u>Cernuella virgata</u> (dead)
10	<u>Euconulus fulvus</u>	1	<u>Vallonia excentrica</u> (dead)

Freshwater species:

1	<u>Lymnaea truncatula</u>	1	<u>Pisidium nitidum</u>
1	<u>Lymnaea peregra</u> (dead)	1	<u>Pisidium subtruncatum</u>

Except for Pomatias elegans all species found in more than 7 squares are widely distributed in lowland Britain, and all species found which are uncommon in Britain as a whole are also uncommon within the reserve.

For molluscs the important considerations in Workmans Wood appear to be dampness, ground vegetation, tree cover, and management history. The table shows the type of site in or on which living land molluscs were found (i). Although most species can be found in various places and prefer ground litter, there is a well defined group which ascends deciduous trees; some species do so only to a height of less than one metre, and a third group is restricted so far to permanently damp locations. Outside such groupings are the rupestral Lauria cylindracea and possible introductions and casuals - Helix aspersa, Milax species, and Candidula intersecta.

The data from such an exploratory survey as this does not clearly indicate mollusc density and diversity in different parts of Workmans Wood. However fewest species and individuals were found under conifers and in beech plantations with former or standing larch and most in sheltered, moist and apparently base rich areas.

Footnote: (i) The numbers relate to records (i.e. finds at each spot where recording was carried out); these can be more than one per 100 metre square.

It is also possible to sort out the generally distributed species such as Cochlodina laminata (Map 1) and those which occur in only limited areas like Azeca goodalli and Acicula fusca (Map 2), and Succinea putris (Map 3) all three of which are in the group limited to damp areas (see Table).

One can also glean something of the history of Workmans Wood from the molluscs. A number of species in Workmans Wood are typical of primary woodland in the Cotswolds which has remained uncleared since the post-glacial climatic optimum; these are: Acicula fusca, Azeca goodalli, Ena montana, Phenacolimax major, and Zenobiella subrufescens. Helicigona lapicida which is basically a crevice dweller might also come into this category, while Vertigo substriata which has only so far been found three times in Gloucestershire seems in this area to be associated with undisturbed and ungrazed wet ground near permanent springs and seepages. A few others, Helix aspersa and perhaps the Milax species indicate disturbance. Parts of Workmans Wood are relatively recent plantings over grassland, as sectional names like Ebworth Plantation suggest, but molluscan evidence for their history is more tenuous; the poorer fauna has already been mentioned and a dead shell of Vallonia excentrica turned up once.

Further visits will probably add a few more species; indeed, exploration of previously unvisited areas in May and July 1979 added living Lymnaea peregra and Pisidium personatum in a pond, and Abida secale, in rock rubble by a track, to the fauna. Limax cinereoniger is likely to be present somewhere, but a good deal of searching has so far failed to produce Macrogastra rolpheii which is known to be present in other local woods.

From the conchologists' point of view then Workmans Wood is well worthy of being a National Nature Reserve; it has a rich and varied fauna with nearly all the typical

Cotswold woodland species, and perhaps an unusually large wetland element (for instance the Succineidae) as well.

David Long

Acknowledgements

I would like to thank Mr. John Workman and the Nature Conservancy Council for the written permission which is necessary for carrying out studies in the wood, and for agreement to my summarising the results here. Mr. Michael D'Oyly of the NCC provided invaluable large scale maps. Drs. Michael Kerney and L. Lloyd Evans were kind enough to examine specimens sent for verification.

Table 1

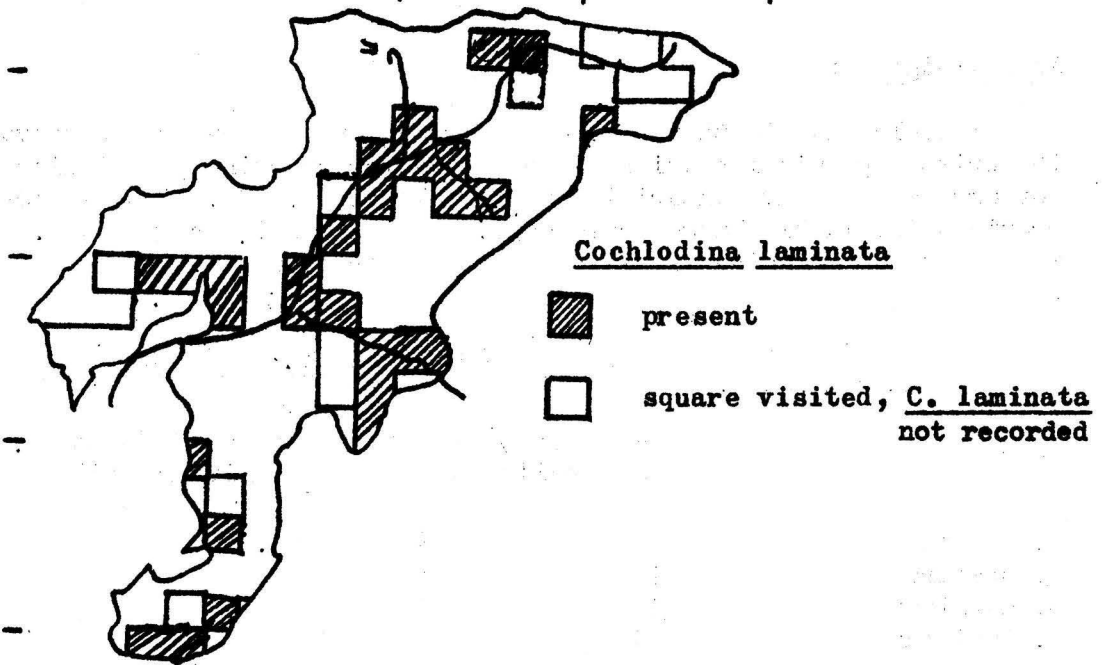
MOLLUSCAN HABITATS IN WORKMANS WOOD

Species	on Trees	Rocks/ Walls	Fallen Wood	under Stones	Leaf Litter	Moss/ Soil	in Tussocks	green Herbs	Wet Ground
<i>E. montana</i>	5		4						
<i>E. obscura</i>	11		1	2		1	4		
<i>L. marginatus</i>	30		4	1					
<i>H. lapicida</i>	3	1		1		1			
<i>C. laminata</i>	23	2	8	2	1		1	1	1
<i>C. bidentata</i>	11	2	6	2	1	2		2	2
<i>A. subfuscus</i>	5		4	1				1	
<i>A. ater</i>	2		3		4		1	4	1
<i>A. hortensis</i>	7*		4	2	7			3	
<i>O. alliarius</i> p	3*	4	4		4	1	1		1
<i>D. rotundatus</i> p	3*		14	3	10	2	2		2
<i>L. cylindracea</i>		1							
<i>P. elegans</i> p		2		3	2	7	1		
<i>V. contracta</i> p		2	1	2	6	2			
<i>O. cellarius</i> p			5		3	4	1		
<i>A. circumscriptus</i>			1		4	1	1		
<i>A. sylvaticus</i>			3		5		3		
<i>L. maximus</i>			2		1				
<i>M. budapestensis</i>					2		2	1	
<i>V. pellucida</i> p		1	1	1	3	1	1	3	2
<i>T. striolata</i> (p)		1	2	3	2	3	3	11	2
<i>A. pura</i> c p	1*	2	2	1	11	4	6	2	5
<i>T. hispida</i>					2	1	1	9	5
<i>D. reticulatus</i>				1	1	1	1	6	2
<i>A. aculeata</i>					9	1	2		2
<i>P. pygmaeum</i> p					3	2			1
<i>C. tridentatum</i> p				1	9		4	2	6
<i>A. nitidula</i> c p			3		4	3	1	2	2
<i>V. crystallina</i> c p				1	10	3	2	2	5
<i>C. lubrica</i>					2			3	6
<i>Cepaea</i> spp (p)	2						2	3	2
<i>E. fulvus</i>			2	1	3			2	5
<i>A. arbustorum</i>							3	17	3
<i>Z. subrufescens</i>								6	2
<i>A. goodalli</i>				1					4
<i>P. major</i>							1		2
<i>A. intermedius</i>					1				1
<i>C. edentula</i>									4
<i>V. substriata</i>									2
<i>A. fusca</i>									2
<i>C. minimum</i>									2

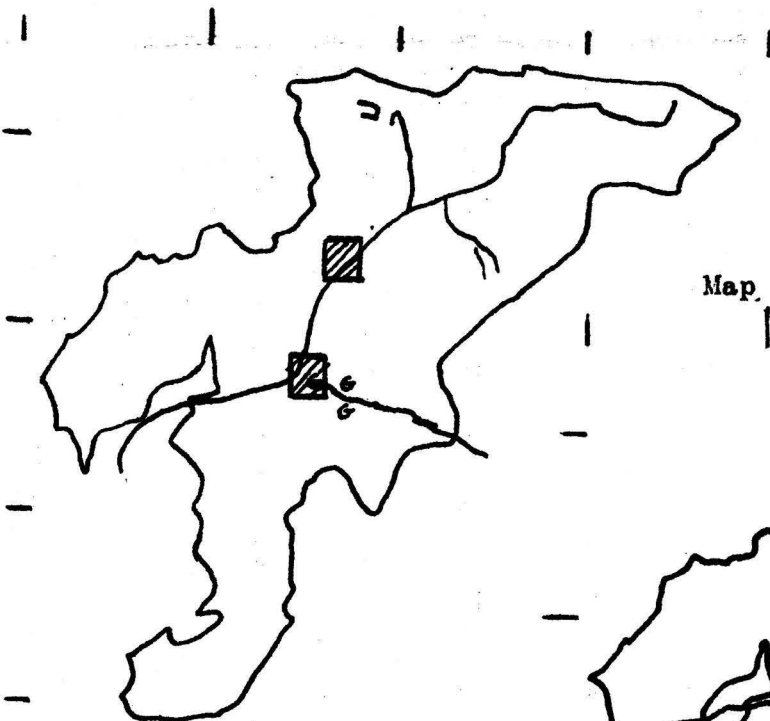
WORKMANS WOOD NATIONAL NATURE RESERVE

Map 1

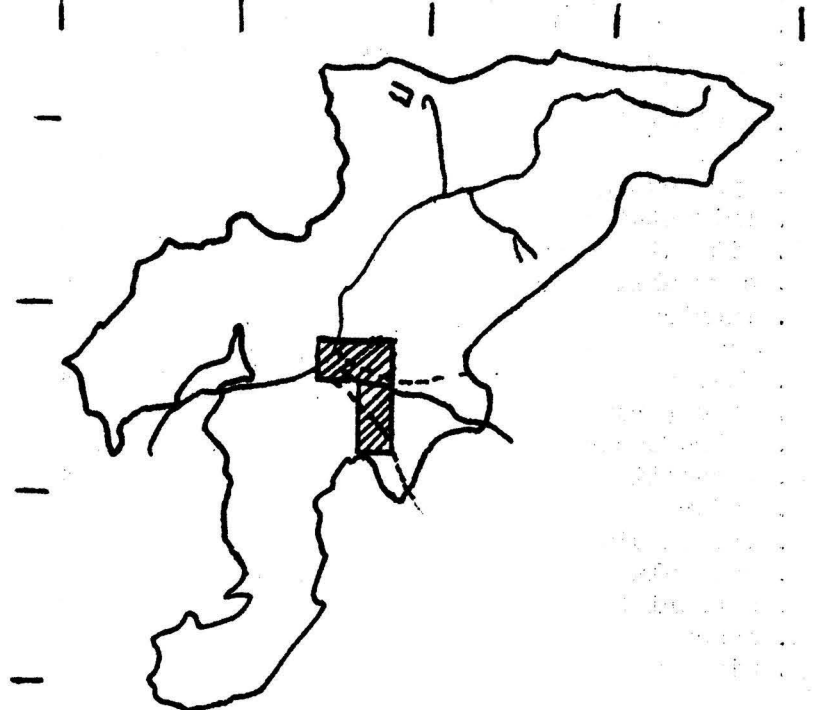
|- 500m - -|



Map 2 Acicula fusca, Azeca goodalli (G)



Map 3 Succinea putris



S. putris
O. pfeifferi
N. hammonis
D. laeve

4
3
2
3

c = under conifers; p = in plantations; () = dead shell; * = lower 1.0m only.

Candidula intersecta was found in a plantation; Helix aspersa was living in grass, dead in leaf litter

CLEANING BRITISH NON-MARINE MOLLUSCA

In all the text-books on British non-marine Mollusca I possess it is stated that to preserve the shell, the mollusc should be killed by immersion in boiling water. How long the immersion should be is not made clear. Recently, whilst going through back numbers of "The Conchologists' Newsletter", I came across a note sent in by A.E. Ellis, taken from a leaflet by Arthur G. Stubbs, "Hints on cleaning the smaller transparent species of British Land Mollusca". The time given for each species is, I think, far too long immersed in the boiling water.

With the junior members in mind, I have taken the following times for immersion in boiling water at random from my notebooks dating back to 1949. These times were made using a pocket watch with a large red seconds hand.

Land Snails

Euconulus fulvus, should be crawling when dipped straight in and out of the boiling water. Ashfordia granulata, one and a half seconds. Cochlicopa lubrica, C. lubricella, Ena obscura, and Vitrina pellucida, one and a half to two seconds. Phytia myosotis and Abida secale, two seconds. Discus rotundatus, Zonitoides excavatus, Z. nitidus, two to three seconds. Oxyloma pfeifferi three seconds. Trichia hispida and Oxychilus cellarius, three to four seconds. Candidula gigaxii, C. intersecta and Oxychilus helveticus four to five seconds. Oxychilus draparnaudi, five to seven seconds. Hygromia cinctella, six seconds. Hygromia limbata, seven seconds. Ceruella virgata and Helicella itala six to seven seconds. Trichia striolata, five to eight seconds. Helicigona lapicida twelve seconds. Monacha cantiana fifteen seconds, juvenile specimens eight to ten seconds. Pomatias elegans fifteen to seventeen seconds. Arianta arbustorum, Cepaea hortensis and C. nemoralis one to one and a half minutes.

Freshwater Snails

Gyraulus albus, G. laevis and Hippeutis complanatus, one second. Physa fontinalis, two seconds. Bythynia leachii, Valvata (Cincinna) piscinalis and Planorbis carinatus two to three seconds. Theodoxus fluviatilis and Bythynia tentaculata, three seconds. Lymnaea (Galba) palustris, ten to fifteen seconds. Lymnaea (Lymnaea) stagnalis, twenty seconds.

There is often a difference in size and thickness of shells from different localities. The highest figure given is the maximum time the shells can be immersed in boiling water. If operculate snails are left too long the operculum becomes detached from the animal. I always try to keep the operculum and shell together; there is a slight difference in shape, making it difficult to sort out detached opercula to fit the aperture of the shells. The animal should come out of the shell without breaking. Insert the needle into the foot-sole and mantle of the animal and start to draw it from the shell with a steady even pull, keeping the body of the snail towards the outer lip of the aperture. Elongated species, like Cochlicopa, Ena and Cochlicella, after the needle has been inserted into the foot-sole, can be extracted by circular motion using the forefinger and thumb of the left hand to twist the shell from the body of the snail.

Small species like Vertigo, Columella, etc., I leave in small aluminium boxes for quite some time, the animal recedes towards the apical whorls. They are then put into a fine mesh tea-strainer and dipped into boiling water for about one second. After which they are tipped onto a piece of absorbent cloth and gently rolled with the finger tips, then I put them in between the plain, not coloured, pages of an old Radio Times and place them on the hearth to dry overnight.

All my cleaning tackle is kept in a roll-up holdall. This consists of various sizes of toothbrushes, with hard and soft bristles. Four needles mounted in wooden handles, the largest two needles have a slight bend in them. These are used for extracting the animal from the larger species like the Helicidae; also marine gastropods. Another is a thin straight needle, used for such species as Ashfordia, Discus, Euconulus, Oxychilus etc. The fourth needle was heated and bent, so that should the animal break in the shell, it can usually be reached and the remaining part removed. There are several other gadgets I have thought up which can be useful, especially for cleaning up badly cleaned shells from overseas.

My wife gave me an enamel saucepan and a shallow enamel dish; this is used for the smaller species. I have three different sizes of metal strainers, which are also used for marine molluscs. The modern quartz watch with a traditional face and a large seconds hand marks each second exactly.

When dealing with bivalve molluscs I always clean the shells before killing them. A small soft toothbrush is used for Pisidium and Sphaerium. After removing the animal, some shells can have the valves left open by pressing gently onto a piece of paper and leaving to dry. Others can be closed and wrapped in small squares of tissue paper, which is rolled and the ends of the paper twisted up. When the shells are dry it is a simple matter to untwist the paper and free them. Larger bivalves are better brought to the boil, thus avoiding the sudden contraction of the adductor muscles, which often happens when the shells are plunged into boiling water. In my early days of cleaning shells, I lost some beautiful specimens in this way, both marine and non-marine. Indeed, the best Mya arenaria I have ever taken came from the River Duddon estuary at Roanhead, Cumbria, September 1950; they were cracked right through both valves whilst being cleaned. All the marine bivalves I now take are placed in clean tap water in a bowl or bucket overnight. By morning they are nearly all gaping and dead. It is a simple matter to put them in the largest strainer and immerse them in boiling water for a short time to soften the adductor muscles and so speed up the cleaning process. After the animal has been removed, the valves, whether marine or non-marine, can be closed with the fingers and thumb of the left hand, then a piece of folded paper is wrapped round the shell and secured with a rubber band.

Reference:

Ellis, A.E., 1968 Cleaning Snails, Conchologists' Newsletter (26), 57-58.

G. W. Pitchford

NEWPORT SANDS, DYFED

Much of the shore-line along the northern part of Pembrokeshire is rocky and there are relatively few extensive areas of sand, but Newport Sands, near the small town of Newport, is a fairly extensive sandy beach. The beach material consists of grey sand and gravel which is derived from the Silurian slates and shales which form cliffs on the northern edge of the sands. The strand-line at Newport Sands is fairly rich in shells and shelly pockets yield some interesting finds in the smaller species. The Striped Venus, Venus striatula is the most common species on the sands. In addition to the sands and the strand-line, marine molluscs also occur living on rocks at the northern part of this beach. Following the estuary of the Afon Nyfer up

to small areas of salt-marsh, some of the brackish-water species may be found.

A single short visit to Newport Sands in July 1978 yielded the following list of species.

The Sands and Strand-line (Nat. grid ref. 22/05-40)

Gastropods:

Bittium reticulatum C, Buccinum undatum C, Emarginula reticulata B, Gibbula cineraria B, Lora turricula C, Mangelia nebula C, Nassarius incrassatus B, Natica catena B, Ocenebra erinacea C, Patina pellucida B, Philbertia gracilis C, Trivia arctica B, T. monacha B, Turritella communis B, Philine scabra C.

Bivalves:

Abra alba C, Arctica islandica C, Cerastoderma edule C, Chlamys distorta C, C. opercularis C, C. varia C, Corbula gibba C, Donax vittatus C, Dosinia lupinus A, Ensis ensis B, E. siliqua B, Gari fervensis C, Glycymeris glycymeris C, Laevicardium crassum C, Macoma balthica C, Mactra corallina C, Monia patelliformis C, Musculus discors C, Mytilus edulis B, Ostrea edulis C, Spisula elliptica C, Tellina fabula B, T. tenuis B, Thracia phaseolinus C, Venus striatula A.

The Rocky Shore and Cliffs (Nat. grid ref. 22/05-40-)

Gastropods:

Littorina littoralis agg. A, L. littorea A, L. neritoides A, L. saxatilis agg. A, Nucella lapillus A, Patella vulgata A.

Bivalves:

Mytilus edulis A.

Saltings on the Afon Nyfer (Nat. grid ref. 22/06-39-)

Gastropods:

Ovatella myosotis (= Phytia myosotis) A, amongst fine-leaved salt-marsh turf.
Hydrobia ulvae A, on mud flats.

The names and sequential order of the species follows the Conchological Society field card to the Marine Mollusca. The letters following each record are:- A - live records; B - freshly dead shell, or in the case of bivalves with both valves still attached; C - beach-worn shell or one valve only of a bivalve.

Members on holiday in this area might like to add to the list of records for Newport Sands. The sorting of shell-sand would be a useful exercise for recording the smaller species.

June Chatfield

YORKSHIRE CONCHOLOGICAL SOCIETY REPORT: 1974 TO 1979

At the end of 1973 I published a report in the Newsletter (Norris 1974), on the finds and activities of The Yorkshire Conchological Society. As a new decade has now begun, I thought it would be opportune to report on the activities of the Society up to the end of the 1970's. The Society meets indoors four times a year and nine times on average in the field, five of which are in conjunction with The Yorkshire

Naturalists' Union. As well as these meetings, most members of the Society also undertake some field work each year within as well as outside the county. As a result of this field work a number of interesting finds have been made, some of which have been published in *The Naturalist*. This publication, however, is not always available to all our members, and therefore I have summarised the most important records below.

It was also a great honour to The Yorkshire Conchological Society to be able to submit for election as President of The Yorkshire Naturalists' Union one of our most honoured members, Dr. L. Lloyd-Evans, who was subsequently elected as President in 1974.

Perhaps the most important finds with regard to the land and freshwater Mollusca have been made by Dr. Barry Colville and Dr. Brian Coles. These finds have been just outside the county boundaries, but it is hoped that they may possibly turn up in Yorkshire in the near future. The first of these, Vertigo geyeri lindholm and Catinella arenaria, were found in a marsh near Sunbiggin Tarn, Orton, Cumbria (Coles, B and Colville, B, 1979). The second discovery was Vertigo genesii (Gredler) found alive in a small marshy area in Upper Teesdale (Coles and Colville, in preparation). This species had previously only been known in Britain as part of the fossil record.

The list of specific finds and publications below includes material extracted from *The Naturalist* by people other than members of The Yorkshire Conchological Society. It was felt, however, that some of these records were important, and as such should be included.

Truncatellina cylindrica (Ferussac):

In September 1975 Dr. L. Lloyd-Evans located a single dead specimen of this rare British mollusc, at the top edge of an old Magnesian Limestone quarry in Went Vale near Pontefract, NGR. (SE(44)501176). An intensive search as a result of this find by members of the Society was able to confirm a small living colony. The re-discovery of this snail in Yorkshire is of special interest, as it was the first find since the 1890's. This locality is one of the very few places in Britain where this species is known to occur alive.

Succinea (Succinella) oblonga Draparnaud:

Whilst examining material collected from the banks of the River Ouse at Asselby Island, near Goole in April 1977, Dr. Brian Coles of York located a single live specimen of this species amongst a number of specimens of Oxyloma pfeifferi (Rossmassler). Dr. Lloyd-Evans was able to dissect the specimen and confirm the identification. The only previous records of oblonga in Yorkshire, four unlocalised specimens in the British Museum (Natural History) and one published record in the J. Conch. 2: 244, had previously been considered as of fossil origin.

Boettgerilla pallens Simroth:

In 1979 Dr. Barry Colville reported that he had located several adult specimens of this species in his garden in West Park, Leeds. The slugs or their eggs must have been introduced by accident into his garden from the original locality at The Abbey, Windermere, but there is little doubt that this species is now resident in his and other gardens in the area.

Bythinella scholtzi (Schmidt):

A report on the Invertebrate Fauna of the Pocklington Canal, (Lawton, Blumenthal and Fisher, 1974) included this rare gastropod as one of the freshwater molluscs located in the canal during a survey carried out by the Department of Biology at the University of York. Unfortunately the material was destroyed in a departmental fire

before I was able to examine and confirm this record for the Yorkshire list. A thorough examination of the canal was carried out for further examples but none could be obtained. This record, therefore, must be considered as doubtful at least until further material can be obtained.

List of Publications in The Naturalist

- | | | | |
|------|---------|--|---|
| 1974 | 18 | Attachment of Bivalve Molluscs to Corixid Bugs. | G. Fryer |
| | 19-24 | A Survey of The Invertebrates of the Pocklington Canal. | J.H. Lawton, V.J. Blumenthal & A.Fisher |
| | 25-32 | The Occurrence of some Invertebrate Animals in the Littoral Zone of some lowland lakes in Cheshire and Shropshire. | J.O. Young & J.H. Harris |
| | 37-38 | Report of The Conchological Section - Marine Survey. | A. Norris |
| | 26-27 | Annual Report for 1973 (paginated separately to Naturalist) Conchology. | A. Norris |
| | 146 | Y.N.U. Report of Excursions - Lowthorpe and Harphana VC61 June 8th. Conchology. | A. Norris |
| | 148 | Y.N.U. Report of Excursions - Stape near Pickering VC62 June 22nd. Conchology. | A. Norris |
| | 150 | Y.N.U. Report of Excursions - Boroughbridge VC64 June 29-30th. Conchology. | A. Norris |
| | 152 | Y.N.U. Report of Excursions - West Scafton, Coverdale VC65 July 20th. Conchology. | Dr. & Mrs. L. Lloyd-Evans |
| 1975 | 1-12 | The Biogeography of Snails in Yorkshire. | L. Lloyd-Evans |
| | 148 | Y.N.U. Report of Excursions - Leavening and Acklam VC61 May 24-26th. Conchology. | A. Norris |
| 1976 | 18 | Kathleen M. Morehouse 1912-1975 | E. Deering |
| | 19-25 | The <u>Sphaeriidae</u> Fauna of the Huddersfield Canal. | J.R. Watkin & M.J. Murphy |
| | 25-27 | <u>Truncatellina cylindrica</u> (Ferussac) in Yorkshire | A. Norris |
| | 145-146 | Y.N.U. Report of Excursions - Arkengarthdale and Reeth VC65 July 17-18th. Conchology. | A. Norris |
| 1977 | 32-33 | Report of The Conchological Section for 1975-6. | A. Norris |
| | 137-139 | The Gastropod Fauna of the Huddersfield Narrow Canal | M.J. Murphy, M.Haigh
I. Thorburn & J.R. Watkin |
| 1978 | 23 | Additional Notes on <u>Truncatellina</u> in Yorkshire. | A. Norris |
| | 29-30 | Notes on the Occurrence of <u>Succinea</u> (<u>Succinella</u>) <u>oblonga</u> Draparnaud, 1801, in Yorkshire. | A. Norris |
| | 151-153 | The Gastropod Fauna of the Huddersfield Broad Canal. | M.J. Murphy |

Additional References:

Coles, B and Colville, B, 1979. Catinella arenaria (Bouchard-Chantereux) and Vertigo geyeri lindholm, from a base-rich fen in north-west England, J. Conch. 30: 99-100.

A. Norris, Leeds City Museum, January 1980

A FURTHER NOTE ON ZONITOIDES ARBOREUS AND ORCHIDS

I have read with interest the note by Verdcourt (1979: 167) on Zonitoides arboreus feeding on the root-tips of orchids. It is indeed true that this minute Zonitoid land snail of North American origin stands in bad repute among the amateur and professional orchid growers. As a matter of fact if somebody is complaining about damage to orchids carried out by gastropods in the letters-to-the-editor columns in such well-known journals as "The Orchid Review" (England) or "American Orchid Society Bulletin" (U.S.A.) then in 7 out of 10 cases we are dealing with Zonitoides arboreus.

Damage to orchids is not confined to the root-tips but may also occur among the leaves and still worse, the flowers.

In its native North America, this Zonitoides is a major pest on all varieties of orchids grown in greenhouses in the states of New York, New Jersey and Ohio. They feed there upon both the leaves and the blossoms (Karlin & Naegele, 1960: 13). In Europe it is known as a major pest of orchids at least in Belgium (Moenis, 1977: 58) and in Asia it has recently been reported as causing economic damage to the flowers in an orchid greenhouse in Yarkona, Israel (Moran & Katzir, 1979: 591). In the latter country Zonitoides arboreus is a very common species in most greenhouses and nurseries (Mienis, 1977: 30, and pers. observ.).

However, damage to orchids caused by Z. arboreus probably occurs elsewhere also. Noteworthy is the fact that Dundee (1970: 104) reported for example the interception in New Orleans of this species on orchids imported from the Philippines!

Since Zonitoides arboreus is now known from greenhouses and nurseries on all continents, we may expect an increase of reported cases of damage by this little snail.

By the way, another gastropod reported as a serious pest of orchids is the slug Lehmannia valentiana, which has also turned into a cosmopolitan greenhouse species like Zonitoides arboreus.

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Henk K. Mienis

MARINE MOLLUSCA OF WEST SCOTLAND

During 1976 we started an experimental project to map the marine Mollusca of East Scotland, using the grid based on 6' of latitude by 12' of longitude (McKay & Smith, 1977), which has now been published as a check list and atlas (McKay & Smith, 1979). Having proved that manual processing of large amounts of data to produce maps was practical, we have begun a similar project for the marine Mollusca of West Scotland, and plan to accomplish this in five years. The area covered, shown in Fig. 1, extends from 58°30'N to 55°00'W and from the mainland westwards to 09°24'W.

We have compiled from our own records, some records from friends, a few from the Marine Census of the Conchological Society of Great Britain and Ireland, and data we have so far found in the literature, the beginnings of the atlas. In Fig. 1 we indicate the localities in which we consider that the recording effort to date (chiefly littoral) while not at the standard obtained for the East of Scotland may, of necessity for a more remote region, have to be regarded as adequate for a provisional atlas. It is evident that much of the coastal area is fairly well covered with the main exceptions being the Inner Hebrides especially Skye and Mull and the coast of Strathclyde. The recording situation in Ireland is not at present known, except that we personally have very few records. With the exceptions of two rectangles in the North Minch, two in the Sound of Jura and in some sea lochs, our information for offshore is very limited. Although the immediate sublittoral fauna is rich we have few diving records except for the Summer Isles and near Oban.

We would very much appreciate help with this project and therefore ask that anyone who has or knows of information of samples from the study area should contact us as soon as possible. We will gladly suggest localities to people planning to visit the region. All data made available will be treated in confidence and will only be published on the basis of the 6' x 12' rectangles, except perhaps for records of rare species quoted individually in the text. All contributors will be acknowledged. Samples sent to us will be analysed and returned if required. We will investigate any material taken offshore and littoral specimens particularly if live-caught or of historical importance. From experience we find that shellsand from the strandline takes up research time often out of all proportion to its usefulness and therefore we would prefer material from this source to be at least partly presorted by the sender. We regret that we cannot undertake detailed separation of sample material but we will on request return named examples of species found in the samples together with complete qualitative species lists. In order to produce a work of as high standard as possible we would prefer that identifications are checked by us personally or by an authority on the group(s) concerned. We would appreciate donation of material supporting records for this project, which would be lodged in the Royal Scottish Museum as part of its voucher collection.

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" " 1979. Marine Mollusca of East Scotland. Royal Scottish Museum, Edinburgh.

David W. McKay, [REDACTED], Inverurie, Aberdeenshire

Shelagh M. Smith, Royal Scottish Museum, Chambers Street, Edinburgh

(Area Representatives for Sea Areas 29, 30, 31 and 32)

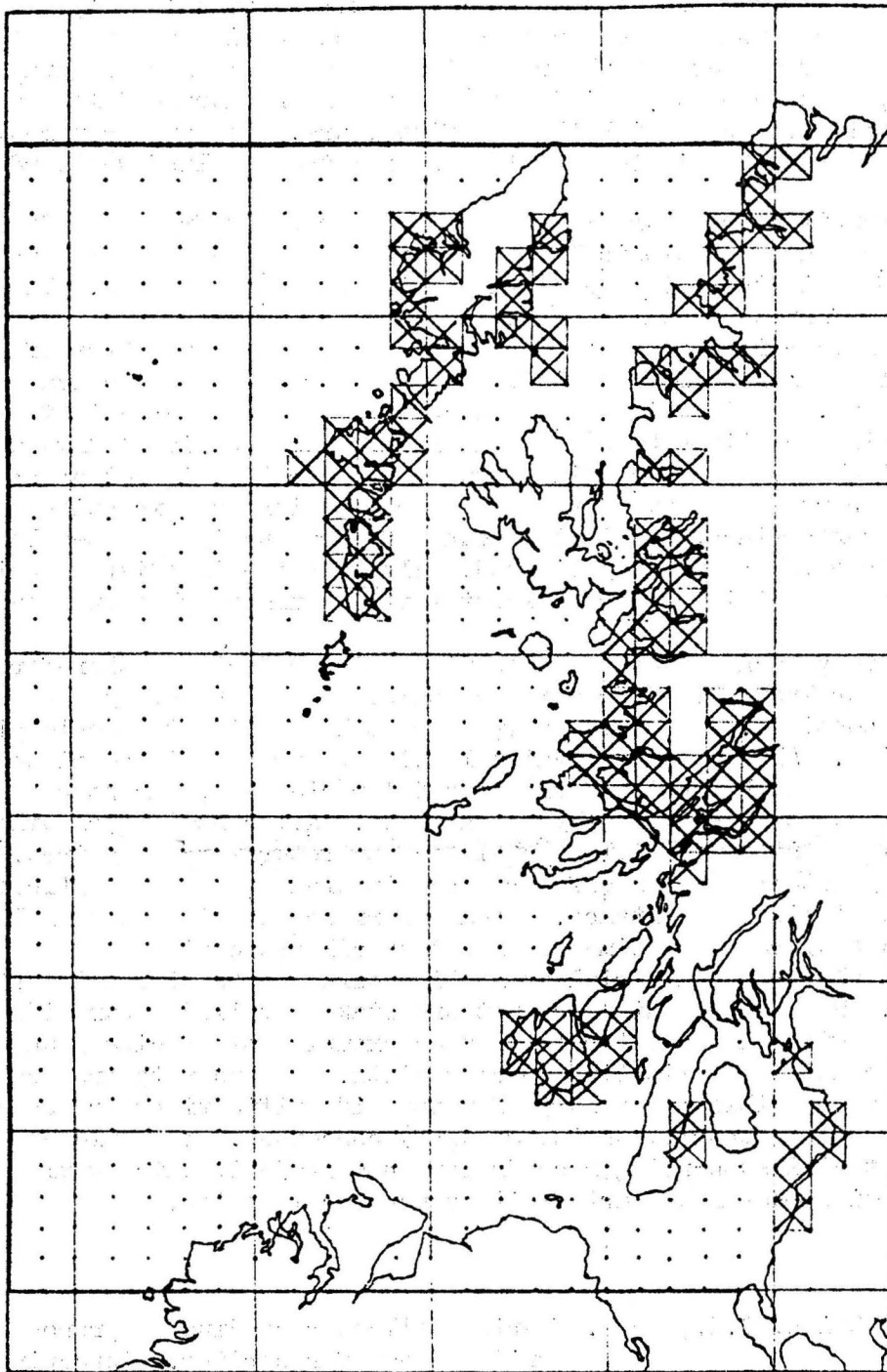


Fig 1. Map showing area covered by project on the marine Mollusca of West Scotland.
Rectangles crossed out are moderately well worked.

"Exotic Seashells" by Dr. June Chatfield, published by Focal Point Filmstrips Ltd., 1979, price £5.

This collection of 20 colour slides is intended as "a simple introduction to the range of variation in shape, sculpture, colour and pattern as shown in seashells from various tropical seas". The slides are accompanied by a little booklet containing a brief explanatory text focussing on some of the features illustrated by the slides. Occasional mention is made of habitat, food, feeding and other habits. Sometimes recurring or unique physical peculiarities like the siphonal canal or the row of holes in Haliotis are commented on.

From a teaching point of view it is felt that the seven, or at least five, main classes of molluscs ought to have been represented by one slide each. The division into shape, sculpture, colour and pattern does not appear a very sound preparation of a scientific would-be collector and is somewhat misleading for a beginner (for whom this selection is meant).

The quality of many of the slides, alas, leaves much to be desired and will not please the biologist, because of lack of detail, nor is the artist likely to be inspired (as hoped by the author) for the same reason. But then authors are for ever at the mercy of their publishers.

"Exotic Seashells" is produced in the form of a folder containing one large plastic sheet with 20 pockets for the slides and one large pocket for the booklet. This arrangement could be the beginning of a useful collection of personal slides and notes if the publisher could be persuaded to sell us additional empty slide pockets. It could thus become a handy and most useful "reference book" for lecturers and teachers; however, the pockets would have to be made big enough to take plastic frames which are essential for repeated and frequent showing. It is a novel attempt at rousing interest in the subject of molluscs with many possibilities.

F. M. J. Pinn

Vocabularium nominum animalium Europae septem linguis redactum (Septemlingual Dictionary of the names of European animals) by L. Gozmány. Akadémiai Kiadó, Budapest, 1979. 2 vols. Vol. 1 44 + 1172 pp; vol. 2 1016 pp. £125. Available from Collet's Bookshop.

In Conch. Newsletter No. 47:351-352 (Dec. 1973), Mrs. Marjorie Fogan wrote of the herculean task that Dr. L. Gozmány was undertaking in the compilation of this vast Dictionary, listing the common names of some 20,000 animals in six languages with cross-references to the Latin names (the seventh language in the title). Six years later after amassing the names in German, English, French, Hungarian, Russian and Spanish, the work has appeared. Apart from various aspects of usefulness, it is a tour-de-force of codification. Following 44 pages of introductions (in the plural, as the introductory material is written in each of the six languages), the first volume lists in numbered alphabetical order, the genera and higher taxa; amongst the qualifications for inclusion, an animal or group must have a colloquial name in at least two of the languages and be at present a native inhabitant of Europe. If a European animal is known by a different European name outside the continent, such a word is also included. Following each name there is a neat formula indicating phylum (by Roman numerals), class (by first three letters of name in capitals), order (by first three letters of name in lower case) and family (by Arabic numerals). Thus Patina pellucida is listed as XIV-GASdio-4, quickly checked in the Appendix as Mollusca:Gastropoda:Diotocardia:Patellidae. Main synonyms are given under the specific name, and cross-referenced in alphabetical sequence in the list itself. The following are the English entries for Helix aspersa and Patella vulgata:

Common limpet; common rock limpet; (US) common tent shell; *brennygen; brennyk;

lempot; (Scotland) horse-limpet; marmaid; marmadin; meermaid; (Shetland) leepit; (Man) flitter.

Common snail; (US) brown garden snail; o speckled snail; garden snail; large garden snail; common garden snail; brown snail; (US) European garden snail; *Jane Jakes; Jean Jakes; Jan Jeak; Ida Jig; Tom-dodge.

The first of the names are those which Dr. Gozmány finds to be most commonly used; those following the open circle (a square in his text) are those less often used, or employed in applied zoology; those following an asterisk are "colloquial, familiar, dialect, and eventually, slang names."

In Vol. 2 the common names appear in alphabetical sequence in each of the six language sections. They are cross-referenced to the entries in the first volume by the use of the number that precedes each taxon unless it is a synonym.

Three members of the Conchological Society helped with the names of the Mollusca - Mrs. Marjorie Fogan, Dr. Shelagh Smith and the writer of this review - so there is good coverage. However as Dr. Gozmány is already collecting material for a second edition, and as he is keen to include ever more names, providing, as before, that they have been published and are not just spoken, there is certainly scope for more of us to help him. As he says, the Dictionary "Might be considered a pioneer work: a result of the collecting of names of animals for several decades (closed at the end of 1975). In want of space, no literature references can be given (more than ten thousand sources have been used!). Every relevant remark aiming at, or any contribution adding to, the improvement of the Dictionary will be welcome (Akadémiai Kiado, H-1054 Budapest, Alkotmány utca 21)." It would indeed have been helpful to have had the author, if not the date, after each species, but Dr. Gozmány decided to include these "only in cases of confused taxa or designations".

One can be sure that no mollusc will have the number of names that Mr. H.G. Hurrell, the Devon naturalist, has recently compiled for a single species: the woodlouse, Porcellio scaber has no fewer than 150 vernacular names in English. I have not yet thumbed through the thousand or so pages of vol. 1 to see which mollusc species in the most popular on name criteria, but I suspect it to be Littorina littorea:

common wrinkle; common periwinkle; (US) shore periwinkle; o periwinkle; edible periwinkle; edible wrinkle; *winkle; noman; dubs; wrinkle; pin-patches; whelk; gwean; corvin; (Scotland) black buckie; whilk; buckie; buckie prins; deep sea buckie; gill-stoup; kidney buckie; kitcheners; mullag; roaring buckie; sillar sawnies; water stoup; (Ireland) Willick; Willock; horse-winkle; shellimidy; forragy.

The cultural worth of the Dictionary? In a letter dated 9th. January 1980, Dr. Gozmány writes that there is scope for amusing oneself, or serious research into etymology, linguistics, comparative folk-lore, superstitions or popular beliefs "And this is exactly why I loved to compile it and wish to go on for as long as I live."

The practical use of the work? Personally I have already found it invaluable for checking on the names of animals used in home Ministry horticultural and agricultural publications when such terms as Black Army, Brassy Willow Beetle and Narcissus Eelworm may be used to the exclusion of scientific names.

Its price? To see and handle it, is to realize that it could not have been sold at a lower price, particularly when one knows that it took twenty typists a year to complete the manuscript for printing. If it is beyond the price of most of us, let us be sure that our county library or group library has a copy for reference.

Stella M. Turk
30.1.1980

Living seashells: molluscs of the English Channel and Atlantic coasts by P. Bouchet, F. Danrigal and C. Huygens, 1980, translated and edited by B. E. Picton. Pool, Blandford Press. 144pp. Price: £4.95.

When I first picked up this little book I thought "how superb, what wonderful pictures, this is just what is needed to inspire amateur naturalists to take an interest in molluscs", but sadly the book is marred by poor translation and editing and bad arrangement. The back cover states that "the molluscs are shown living in their actual environments" however it is clear that most of the shots were taken in an aquarium, but this does not detract from their quality. The book sets out to be an "invaluable guide and should prove to be a standard identification work for the marine biologist, beachcomber and tourist". It is not very likely to become a standard identification work because it only deals with 200 of the 800 species in the area which the book covers. The pictures of living specimens, although very beautiful are not suitable for identification and the eleven plates at the back which are intended for identification are not good enough.

The arrangement of the book might be quite a good one for the beginner but not for marine biologists or mollusc fanciers. After a short introduction and a map showing summer surface isotherms, which has no follow-up in the text, the first part of the book consists of a description of each habitat and some of the molluscs to be found there. Examples: "fauna of the seaweeds and zostera beds", "estuaries" and "sandy beaches". Each section is accompanied by a very nice photograph of the habitat. There is also a section on oyster and mussel farming, discussing history, methods of production and introductions of food and pest species. This first part of the book is the only one with text, it is my impression that it has been awkwardly translated from the French. Some technical words are not explained where they occur nor is there a glossary, so a non-biologist would be lost. The text is broken up by rather irritating headings like "living inside the mountains" on page 84 and "eight arms, five hundred suckers" on page 47. The text is thoroughly French orientated - many of the French common names have been left in. It is quite interesting to know that whelks are known as "bulot" in France, but for the English reader it would be more appropriate to know that it is known as a "buckie". French localities and conditions are quoted extensively. One of the good things in this book is that M. Bouchet does give conservation a plug by asking readers to put rocks back the right way up and by explaining why saltmarshes should be saved from pollution and reclamation.

The second part of the book is entitled "the species", it is again arranged by habitat and contains some very beautiful photographs of the live animals. The captions in this section give much useful and interesting information on habitat and habits but often don't give the size, which I would have thought was important. Eggs play a prominent part in this section, which is most interesting as eggs may be the only indication that a species is present, especially nudibranchs.

There are an appreciable number of species mentioned in this book which do not occur on the north side of the English Channel, this is not always clearly indicated. There are also differences in habitats of species which occur in the north and south of the area due to the distribution of algae, sponges and other host animals and plants, for instance you would think that Tricolia pullas only lived on sublittoral "maerl" in the Bay of Lannion, but it does live on small red algae in the lower littoral and sub-littoral zones in the United Kingdom. I am rather doubtful about the identity of the bivalves referred to as Abra alba at the top of page 88, they look like Abra tenuis to me.

The third major part of the book does not have a caption but consists of eleven plates of shells only, which are clearly intended for identification, but they are really not good enough in most cases, for instance, it is not possible to tell the difference between Cardium aculeatum and C. paucicostatum on plate 8. Plate 5, of small molluscs, has come out quite well though. The "bibliography" of eight books contains four published by Blandford including the "Encyclopedia of shells" and "Seashells of the world", neither seem quite appropriate here.

The only reason for buying this book is for the beautiful colour photographs of living molluscs. I found the arrangement annoying, information on one species may be in three places, much is repeated. Also the arrangement makes it very difficult to compare illustrations of closely related species in order to decide which one you have in your hand, all of which adds up to making it virtually impossible to identify molluscs of the west coasts and English Channel to species.

Celia Pain

THE FRESHWATER MOLLUSCS OF CYPRUS: A CALL FOR COLLABORATION

Although records of land snails living on Cyprus are numerous, but scattered over a large number of short papers, hardly anything seems to be known concerning the freshwater molluscs of Cyprus. Yet they are not completely unknown.

Theodoxus (Neritaea) anatolicus (Récluz, 1841) has been reported from Cyprus as early as 1865 by Unger & Kotschy (1865: 594, as Neritina nilotica). Additional records were published by Demetropoulos & Hadjichristophorou (1976: 76, as Theodoxus fluviatilis) and Mienis (1978: 114). So far it has been encountered at three different localities: Kythraea, Fontana Amorosa and Aphrodite's Bath.

Melanopsis praemorsa buccinoidea (Olivier, 1801) is even longer known from Cyprus. Mousson (1854: 42) reported it as Melanopsis ferussaci in 1854 from the aquaduct of Larnaca. Later on it has been recorded by several other authors from other localities and it seems to be fairly well distributed over the whole island.

Potamopyrgus jenkinsi (Smith, 1889) has recently been reported by Demetropoulos & Hadjichristophorou (1976: 76) from brackish coastal and estuarine lagoons at Klapsides, Famagusta Bay and in the Merras gravel pits, Episkopi Bay. The identification of this material needs verification.

Galba truncatula (Müller, 1774) was reported by Nägele (1910: 152) as rather commonly distributed on Cyprus. According to the material present in the collection of the Hebrew University of Jerusalem this statement seems to be correct.

Radix peregra (Müller, 1774) was recorded as Lymnaea (Radix) cypria "Monterosato" (apparently a manuscript name) by Coen (1945: 17). Coen's material originated from Larnaca. The record of Lymnaea auricularia from archaeological deposits near Salamis by Demetropoulos (1970: 300) belongs most probably also to this species.

Besides these five species, mentioned in the literature, we have seen Cyprian material of Physa acuta (Draparnaud, 1801), Ancylus fluviatilis Muller, 1774 and three, still unidentified species of, respectively, the genera Bithynia, "Pseudamnicola" and "Hydrobia". This means that at least 10 species of freshwater molluscs are living on Cyprus: all gastropods! Not a single bivalve has been reported so far from the freshwater springs and streams of Cyprus.

Since it is possible that freshwater material from Cyprus is present in collections in Great Britain, we would appreciate it very much if we could receive any such material on loan. It might yield additional species or at least additional locality records! We thank you in advance for your collaboration.

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Henk K. Mienis

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SEARCHING THROUGH SHELL-SAND AT KINMELL BAY NEAR RHYL, N. WALES

(Map Reference 23/98-80-)

My major method of finding shells is to pick shells off the tube gathered by the conchologist Lanice conchilega (Pallas). But unfortunately here Lanice had decided to take to itself small pebbles and sand-grains so an extensive search for shells revealed nothing. Luckily though I had taken a large bag home for further study of shell-sand which was present in odd patches on the foreshore. A long Sunday afternoon leaning over my microscope revealed to me 28 species, a few hitherto unrecorded for this marine census area and completely new to me.

The list of the more unusual species found includes -

<u>Rissoa parva</u> (Da Costa) Both smooth and ribbed forms	C
<u>Acanthocardia echinata</u> (L.)	C
<u>Odostomia scalaris</u> Macgillivray	C
<u>O. scalaris</u> Macgillivray var <u>alba</u> Jeffreys	C
<u>O. unidentata</u> (Mont.)	C
<u>O. turrita</u> Hanley	C
<u>Thracia phaseolina</u> (Lamarck)	C
<u>Acmaea virginea</u> (Müller)	C
<u>Velutina velutina</u> (Müller)	C
<u>Chrysallida obtusa</u> (Brown)	C
<u>Retusa alba</u> (Kammacher)	C
<u>Modiolus phaseolinus</u> (Philippi)	B
<u>Montacuta ferruginosa</u> (Mont.)	C
<u>Mysella bidentata</u> (Mont.)	B
<u>Potamopyrgus jenkinsi</u> (Smith)	C

J. K. Yates

GENERAL NOTES

'FINE DISSECTION' by T. Gascoigne, B.Sc., Ph.D.

Dr. Gascoigne has very generously given a copy of the above booklet to every Member of the Conchological Society, and Council has thanked him warmly on behalf of all Members.

Additional copies may be obtained at a cost of £1 (inclusive of postage and packing) from Dr. Gascoigne, [REDACTED], Peckham, London, [REDACTED]. Cheques to be made payable to T. Gascoigne.

Will all members please bring this booklet to the attention of Universities, Schools, Libraries, etc. and also to anyone with whom they correspond overseas. In this way we will be helping Dr. Gascoigne to cover his costs of publication.

Although the booklet deals specifically with the dissection of ascoglossan molluscs, its principles apply to the dissection of all small and delicate invertebrates, and should be of great value to a far wider range of people than just conchologists.

Beryl Rands

CHANGE OF ADDRESS

Will all Members who are about to move house (or have moved already) please send me their change of address immediately. The new list of members has to be ready to go to press by the end of June and it involves an enormous amount of work to get it ready in time.

Beryl Rands, [REDACTED], Luton, Bedfordshire, [REDACTED]

SHELLS WANTED

The Council has given its blessing to a scheme to make up named sets of common British sea shells and sell them to raise some money for the Society. Eleanor Fogan and I are going to assemble the sets, but we shall need help getting hold of the shells. We shall need up to 50 of each species, collected dead, but in a reasonable condition. Please will you help? Write or ring and let us know what you could reasonably collect before August 1st. The sort of species that we are going to need help with are: Acmaea spp, Patella aspera, Tricolia pullas, Gibbula magus, G. umbilicalis, Monodonta lineata, Natica spp, Ocenebra erinacea, Turritella communis, Cardium lamarki, Lutraria lutraria, Ensis spp, Dosinia spp, Mya arenaria, Spisula spp, Venus spp and small cuttlebones. Make us an offer we can't refuse!

Eleanor Fogan, [REDACTED], Greenwich, London, [REDACTED]. [REDACTED] evenings

only

Celia Pain, [REDACTED], Millbank, London, [REDACTED]. [REDACTED] evenings only

PORCUPINE FIELD MEETING IN THE CHANNEL ISLES

A residential marine biological field meeting is being organised by Roger Brehaut from 22 to 29th. September 1980 on Guernsey. The cost, including transport there, would be between £100 and £150 for the week. There will be excursions to Herm and Sark. Send S.A.E. for details and a booking form to Mr. R. N. Brehaut, [REDACTED], St. Peter Port, Guernsey, Channel Isles.

T. Pain

CUTTLEFISH SURVEY - INFORMATION REQUESTED

Alan Restell of the Underwater Conservation Society, South-East Branch, is collecting information on the common cuttlefish, Sepia officinalis. Members are asked to look out for Sepia on their collecting trips, and (as well as sending in records to the area recorder) let Alan know where and when you saw them, how many and whether you saw eggs, adult animals or cuttlebones only. He is especially interested in observations of behaviour. Past records from Marine Census Area Recorders would be very welcome. Please send your information to Alan R. Restell, [REDACTED], Burgess Hill, West Sussex, [REDACTED].

Celia Pain

THE CONIDAE

The Dutch Malacological Society have informed us that they have started to issue a series of papers in their journal "Basteria" - Alphabetical revision of the (sub) species in recent Conidae. Specimen copies have been received and these are well produced and illustrated in both line and halftone. This series is likely to continue for a number of years.

BASTERIA can be ordered from the treasurer of the Dutch Malacological Society, Dr. A. S. H. Breure, Rijksmuseum van Natuurlijke Historie, Postbox 9517, 2300 RA Leiden, The Netherlands. Subscription price for one volume, in two issues per year (with over one hundred pages, illustrated), is 42.50 Dutch Guilders.

REQUEST FOR ASSISTANCE

One of the members of the staff of the Rijksmuseum van Natuurlijke Historie at Leiden, The Netherlands, has performed an extensive study on Rissoa membranacea (J. Adams, 1800). For the sake of a stable nomenclature it is desirable that a neotype of the species be designated, which preferably should be chosen among material from the type-locality, the Wash. None of the collections examined, however, contains material from that locality. Therefore, we would be very pleased if someone could give us on loan a number of shells with undamaged tops from the Wash, together with the consent to deposit the neotype in a museum of his/her choice. Offers please at your earliest convenience to: Edmund Gittenberger, Curator Dept. Mollusca, R.M.N.H., P.O. Box 9517, 2300 RA Leiden, The Netherlands.

THE COUNCIL OF THE ZOOLOGICAL SOCIETY OF LONDON has nominated Mrs. Stella Turk for the Stamford Raffles Award for 1979. The award is made to an amateur zoologist for distinguished contributions to zoology.

(from A. E. Ellis)

"THE SINKING ARK", by Norman Myers, Pergamon Press, 1979. Recommended reading.

"In the wake of broad-scale disruption of USA wetlands, as many as 40-50 per cent of molluscs are either endangered or extinct. Of 2000 inland snails, 400 may be threatened. (One snail used to range from Iowa to southern Ontario, but now survives only under the spray of the Chitterango Falls in Madison County, New York.)" P. 37.

"Hardly any attention has been given to the millions of invertebrate animal species." P. 57.

SEEK

Invertebrate, shell-bound, spreads out its kind
Across the earth on land, in lakes, and sea,
Survives the depredations of mankind,
Derives its strength from time and liberty.

Meek mollusc militates against the might
Of more sophisticated members, lent
By evolution to perform the rite
Of living in and through the long descent.

Rich treasure rests for us to measure still
In shell and occupier, scattered, taut
With much potential wealth. Can we fulfil
The need to care, protect creation sought?

Can we replenish damage done and keep
From doing more, --- wake from fitful sleep?

Betty M. Smith

SALE CATALOGUES

Old sale catalogues of natural history material, especially shells, are fascinating things to dip into, and recently I have been looking at some of mine. I think the following are all listed in Chalmers-Hunt's book Natural History Auctions 1700-1972. A Register of Sales in the British Isles (1976) but my copies are all well annotated and therefore perhaps of rather more interest. They came to me from Robert Standen and J. W. Jackson. There are naturally copies of the catalogue of the collection of Robert Cairns (1854-1912) with buyers' names and prices throughout. A catalogue of the Carl Bulow collection (1913) is also carefully priced and many buyers' names added. The Barclay catalogue is priced throughout but only purchases by Melvill and J. H. Ponsonby are marked. The Ponsonby collection was eventually acquired by Tomlin on behalf of Bryant Walker, and of course the Melvill shells went to Tomlin and finally the enormous Tomlin collection was given to the National Museum of Wales.

Nora F. McMillan

THE IDENTITY OF ZINGIS MICROCANCELLATA PRESTON MS

As is well known H. B. Preston distributed some hundreds of specimens to various museums and private collectors bearing manuscript names which were never published. Many are indeed new species; others are attached to poor specimens belonging to genera whose taxonomy would need a wizard to disentangle but a few can be identified with some certainty. I have examined the shell preserved at the British Museum (Natural History) under the above name several times during the past quarter of a century and feel convinced that it is a specimen of Trachycystis (Psichion) ariel (Preston, 1910) (= Phortion ariel Preston = Trachycystis ambigua Connolly).

It was collected to the north of Mt. Kenya which fits in well with its known distribution.

B. Verdcourt

EXCHANGES WANTED

Mrs. Carol Mair of [REDACTED], Portsoy, Banffshire, Scotland, has live collected shells from Western Samoa which she would like to exchange with members of the Society. Please write if interested. Also she would be grateful for help in naming some Mitra shells.

Mr. Alex Arthur, [REDACTED], Twickenham, Middlesex, England, wants Cymatium, Bursa, Colubraria, Argobuccinum, etc., even common, to buy/exchange. Has worldwide material available, please write.

A Junior member, John R. Lloyd, Junior House, King William College, Castletown, Isle of Man, would like to obtain a milk conch - Strombus costatus - please write stating what you would like in exchange.

Some conchological magazines are available to Junior members, free of charge, on receipt of a large stamped and addressed envelope. Richard Preece, Dept. of Geology, Imperial College, Prince Consort Road, London, S.W.7.

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 25p 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.

SHELLS FOR SALE. Mrs. E. Manders, [REDACTED], Bishops Lydeard, Somerset, [REDACTED] ([REDACTED]) has fine specimens of Harpa costata, Lambis violacea, L. digitata, Cypraea mappa, etc.. Please write or phone.

THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND. At the Annual General Meeting on the 15th. March last the following Officers and Members of Council were elected:-

<u>Officers:</u>	President	J. F. M. de Bartolome
	Hon. Secretary	Mrs. E. B. Rands
	Hon. Treasurer	Mrs. M. Fogan
	Hon. Newsletter Editor	P. E. Negus
	Hon. Editor	C. R. C. Paul.
	Hon. Non-marine Recorder	M. P. Kerney
	Hon. Marine Recorder	D. R. Seaward
	Hon. Officer in charge of Juniors	R. Preece

Council Members: The following have already served for:-

<u>1 year</u>	<u>2 years</u>	<u>Newly elected</u>
B. Coles	T. Gascoigne	J. D. R. Fryer
D. C. Long	A. P. H. Oliver	C. P. Palmer
A. Norris	A. G. H. Osborn	
	A. Rundle	

MARINE CENSUS AFFAIRS

The distribution maps reproduced in the last issue of the Newsletter have already been of use to Dr. A. M. Jones of Dundee University who is working on Aplacophora, Polyplacophora and Scaphopoda.

NCC and BRC have agreed to publish jointly with the Conchological Society, distribution maps of all the species on a similar basis. I have plotted about half of these and NCC is completing the remainder. BRC should publish the "interim atlas" by the end of this year.

Norman Hammond, area representative for Solway, writes ".... we might have members in the Conch. Soc. who are not able to get out into the field, and who would welcome the opportunity to sort out gravel, dredgings, etc." Any offers? D. R. Seaward, Marine Recorder, [REDACTED], Yeovil, Somerset, [REDACTED]

THE OCCURRENCE OF TRUNCATELLINA CYLINDRICA IN AN UNCHARACTERISTIC HABITAT

MARC3 is a title which covers a number of rescue excavations which took place along the line of the proposed M3 motorway extension from London to Winchester. About 15 of these sites were sampled for snail analysis. The results will be published in the form of monographs (Archaeological reports by Peter Fasham, MARC3 Archaeological director.).

I am particularly concerned here with one site, R6 or Burntwood Farm (SU 5113 3411). This consisted of an area excavation which revealed a group of pits (Neolithic to Early Bronze Age) and a rural Roman road (hollow way) and its associated ditches and land boundaries. One pit (feature 104), probably Neolithic, produced a column of 12 samples (the top 2 of which were from the material of an overlying early Iron Age negative lynchet) from a depth of 1 metre. Methods of extraction, analysis, etc., can be found in Evans 1972.

A histogram of the results was constructed (using the faunal groupings set out in Evans 1972) and 3 faunal zones were found to exist. The bottom zone, and therefore the earliest, is best described as a time when the area around the pit was becoming shaded, implying some forest clearance immediately prior to its excavation in the Neolithic. However, the predominant species in Zone 1 were shade-loving

types, e.g. Carychium tridentatum (40%), Discus rotundatus (15%), Vitrea spp. (5%), with respectable representations of Ena obscura, Cochlodina laminata, Oxychilus cellarius, Aegopinella spp., Acanthinula aculeata and Clausilia bidentata. In all about 70% of the fauna were 'woodland' species, in a sample (no. 113) which contained 952 snails. The open-country species present (Vallonia excentrica, V. costata, Pupilla muscorum and Helicella itala) formed only 15% of the fauna.

Truncatellina cylindrica occurs in the bottom 4 samples and again in the 7th. from bottom sample (the latter being a single shell which could be accounted for by earthworm movement or bird droppings). In sample 111 (the bottom sample) 3% of the fauna was T. cylindrica, in 112 1.6% of 502 snails, 113 1% of 952 snails and in 114 0.4% of 729 snails, i.e. 8, 9, and 3 shells respectively in samples 112, 113 and 114. It was felt that these were too many to be explained by outside agencies and it is suggested that T. cylindrica had colonised the area during the clearance phase prior to the digging of the pit. It does, however, seem odd that it should have survived the ever increasing shade of the regenerating woodland (in the next faunal zone, Zone 2, open-country species were negligible in occurrence and a rich woodland fauna was established indicating that secondary growth was complete and the forest had returned to its former state).

The fauna from the bottom of the pit was by no means characteristic of an open, dry habitat of grassland or any other dry environment, being made up of such moisture-requiring elements as Carychium tridentatum (up to 40%), and it would appear that a clearing was made in the forest rather than the forest was cleared. T. cylindrica was therefore living in shaded, moist conditions (possibly made more moist in the area of the pit by the moisture retentive properties of the pit itself), and these conditions were increasingly becoming more hostile to those which are considered typical to this species. Two descriptions of this typical habitat are: 'Very dry calcareous grassy places, characteristically among Sedum or Artemisia; screes, among rocks, occasionally sand dunes' Kerney and Cameron 1979, and '....an inhabitant of dry exposed places on hillsides and arid ground' Ellis 1969.

The fauna from the particularly rich samples provided by pit 104 leave me in little doubt that here T. cylindrica was living in a habitat which at best could be described as a forest clearing or open woodland with a degree of moisture totally uncharacteristic of the usual environment favoured by this xerophile species.

Carol Mason, B.Sc.

REFERENCES

- Ellis, A.E., 1969 "British Snails", Clarendon, Oxford.
- Evans, J.G., 1972 "Land Snails in Archaeology", Seminar Press.
- Kerney, M.P. and Cameron, R.A.D., 1979 "A Field Guide to the Land Snails of Britain and North West Europe", Collins.