Mollusc World

Issue 33

November 2013

Scalariform *Cepaea nemoralis*

A molluscan hotspot on Jersey

The Conchological Society of Great Britain and Ireland

Helping to understand, identify, record and conserve molluscs

From the Hon. Editor

Early issues of the predecessor of this magazine *The Conchologists' Newsletter*, were edited with great dedication for 28 years by the late Peter Negus (photo of Peter below, from Celia Pain, taken in 2009). On the front cover of the first issue from January 1961 the first Hon. Editor, M.Goodchild, laid out the original aims of the publication as envisaged by the Conchological Society's Council at the time which were 'to help new members and beginners to conchology, to put members in touch with each other and to circulate notes and observations of interest and value'. In a commentary to mark the 100th issue of the Newsletter in March 1987 Peter Negus wrote: 'I believe the continued success of the Conchologists' Newsletter depends on involvement of as many members as possible. There is a tendancy for many people to be merely spectators of their chosen sport or sphere of interest. But if we all remain on the side–line there will be nothing left to watch!' Both of these quotes basically remain true for this magazine today, despite us living in a 'time–poor' age with ever expanding means of 'instant' communication. If you have not thought about submitting something for the magazine before, however short, please think about it and get in touch. There are other ways you could become more involved with the running of the Society; two of these, which would not involve too much time, are outlined on the next page.

New Member's List
It is our intention to send out a revised member's list next year. Please can all members ensure that they send any changes/additions (e.g. to address, e mail or listed interests) that they would like to be included in this list to Carolyn Postgate at Circa (for contact details see page 31)

Peter Topley

Mollusc World

This magazine is intended as a medium for communication between Conchological Society members (and subscribers) on all aspects of molluscs. We include articles, field meeting reports, research news, results from the mapping schemes and identification aids. We welcome all contributions in whatever form they arrive (see page 30 for further details).

Contents

ISSN 1740-1070

All photographs and drawings featured in articles are by the author unless otherwise indicated.
No representation is made about the accuracy of information included in any articles, which solely constitute the authors' personal views on the subjects covered, and are not necessarily those of the Hon. Editor or the Conchological Society.

Many thanks go to Vicki Harley for help with copyediting.

Printed by The Lion Press, 19 Market Square, Sandy, Bedfordshire, SG19 1EH.

Conchological Society Council needs a little help

Your council works very hard behind the scenes to bring you a full programme of events, deliver *Mollusc World* and the *Journal* to you, and provide a national voice and expertise on Molluscs. What can you do to help?

We have two small voluntary posts, neither of which will take large amounts of your time:–

Membership Liaison Officer. All our membership and subscriptions administration is dealt with by Circa, but our Membership Liaison Officer provides the human face for enquiries for prospective, new and existing members. This is not an onerous task, but provides an important interface between the Conchological Society and our members. Further information can be provided by Caren Topley (membership@conchsoc.org), who we congratulate on her new head teacher position.

Sales Officer. Our back numbers of the *Journal* and *Mollusc World* are available for sale. Sporadic sales are administered by the Hon. Treasurer, but the Sales Officer maintains the back numbers (space required is about one bookcase, see right), sends out issues as sold, and claims postage etc. back from the Society. These are currently stored by me, however I am fully engaged helping to run the Society.

If you are interested in helping us please contact the current officer or Rosemary Hill (Hon. General Secretary).

Mike Allen, Hon. President

Membership update

The following members have joined the Conchological Society recently and have not previously been included in either this column of Mollusc World or in the latest edition of the Members' Guide (February 2011). **Please note that to be included here members must sign a data protection consent form.** If you have not been included and now wish to be please contact Carolyn Postgate at CIRCA subscriptions (details on page 30).

The codes in italics after the member's address indicate the member's interests:
A – Applied Conchology (shell artefacts, shell money cooking, decorations etc), **B** – Conchological books, **C** – Conservation
D – Diving, **E** – Ecology and Pollution, **F** – Fossils
G – General Malacology including genetics and physiology
Mb – British Marine, **Mf** – Foreign Marine
Nb – British Non-marine, **Nf** – Foreign Non-marine
P – Photography, **W** – Conchological poetry and prose
Z – Captive breeding of molluscs

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Conchological Society Book Sale 2014

Another book sale will be held this winter. It includes a good range of books, with more on tropical shells than usual. The catalogue will be posted on the website by the end of November; bids must be received by midnight on 28 February 2014.

The rules of the sale are available on the website; in particular, preference will be given to bids from members – non-members may bid, but their bids will only be considered in the absence of bids from members.

If you do not have web access and would like paper copies of the catalogue, bid form and rules, please send a stamped addressed envelope (A4 envelope, large letter rate stamp) to Bas Payne, The Mill House, Clifford Bridge, Drewsteignton, Exeter EX6 6QE.

Bas Payne

Bracklesham Bay, West Sussex: Field meeting

June Chatfield

A field meeting of the Conchological Society was held on 23rd June 2013 at Bracklesham Bay, West Sussex, to investigate the current molluscs as well as collecting Tertiary fossils that occur here on the beach sand at low tide. Seven attended on a rather cold windy day with gusts up to 31 mph and wind surfing was much in evidence on the shore – so much for summer (figure 1)! However, the wild weather and rough sea worked in our favour in eroding fossil shells from the underlying clays in the sublittoral zone, although the strong onshore wind delayed exposure of the beach sand in spite of the potentially good low tide predicted. As late morning coincided with high tide, the group walked from the car park for Bracklesham Bay along the top of the shore towards East Wittering with the afternoon spent looking at the beach towards Earnley for marine shells and fossils. The top of the shore below the stretches of promenade consists of a steeply shelving flint slope with flat areas of fine sand exposed below and a series of wooden groynes on the top half of the shore constructed to contain the drift of shingle. With limited molluscs on the promenade and winds keeping the tide in, after looking at the numerous shells of common cuttlefish (*Sepia officinalis)* washed up bleached on the top strand (figure 2), we diverted our interest to ingeniously individualistic beach houses constructed from old railway carriages in various configurations and one from an old tram, whilst walking briskly to keep warm.

figure 1: Collecting shells and fossils at Bracklesham Bay.

figure 2: The shore at Bracklesham Bay on the receding tide with beached internal shells of the common cuttlefish (*Sepia officinalis*).

Non-marine molluscs

The largely shingle terrain did not prove to be a good habitat for snails, although the common garden snail (*Cornu aspersum*) was found alive attached to bases of walls and beach huts from SZ78–97–, SZ79–96– and SZ80–96–. Also living at the base of a wall in a sheltered area by beach houses SZ790970 was Draparnaud's glass snail (*Oxychilus draparnaudi*) and in a grass and maritime herb strip, attached to a flint pebble was a single live specimen of the wrinkled snail (*Candidula intersecta*) at SZ788971.

Marine molluscs

On the top strand line near the car park were over 50 shells of the common cuttlefish (*Sepia officinalis*), the largest cuttlefish species and part of the usual summer mass mortality. In all 21 species of seashells were found, rather less than the total on the field meeting at Titchfield, Hampshire, in May 2012 (Chatfield 2012) as the intertidal zone has less habitat potential for molluscs. In the stretch of beach from the Bracklesham car park towards Earnley (SZ805963–SZ810958), Tertiary fossil shells were more numerous than modern ones. Some shells were common to both Titchfield and Bracklesham but the speciality of this beach is the consistent presence of Pandora shells (*Pandora inaequivalvis = albida*).

Living molluscs were only found on the upper shore wooden breakwaters with edible mussels (*Mytilius edulis*) being the most abundant (figure 3) but in brown seaweed were flat winkles (*Littorina obtusata*) and edible winkles (*L. littorea*). Pieces of consolidated mudstone had large circular holes up to 1 cm across, indicating the presence of populations of boring bivalves offshore where these mudstones outcrop (figure 10); shells of several species of piddock were found as single valves on the beach sands (figure 4).

figure 3: A band of edible mussels (*Mytilus edulis*) with white barnacles attached to their shells colonising a wooden breakwater.

figure 4: Members of the group on the sands exposed at low tide.

The results of the field meeting and those of some previous visits are given in Table 1. These show some consistency of shells washed up on the beach made from May to September. The richest section for modern shells is that below the promenade of the Witterings but the onshore wind did not reveal the lower sands of the beach during the Conch. Soc. field meeting and this would have accounted for additional species found on my previous visits that did include collecting in the northwest parts of the shoreline. All visits produced common saddle oysters (*Anomia ephippium*), American slipper limpets (*Crepidula fornicata),* netted dog-whelks (*Hinia reticulata),* Pandora shell, (*P. inaequivalvis*), grooved razor (*Solen marginatus*) and pullet carpet shell (*Venerupis senegalensis*). Those shells originating from muddy substrata, possibly at the mouth of Chichester harbour, were edible cockle (*Cerastoderma edule*), lagoon cockle (*C. glaucum*), peppery furrow shell *(Scrobicularia plana*) and grooved razor (*Solen marginatus*). As Bone (2009) describes a Holocene mudbed with subfossils of *S. plana* one has to keep an open mind over the age of beach shells of this species. *S. plana* populations in the Channel also suffered severely during the 1962–3 winter and I remember many dead ones on the shores at Pegwell Bay, Kent in the following years.

Another group of species are the bivalves that bore in soft rock such as the consolidated mud or mudstones of the Tertiary that outcrop on this shore and sometimes pieces of mudstone with circular holes made by these boring bivalves are found on the shore. They include the piddocks (*Pholas dactylus, Barnea candida* and *Zirfaea crispata*) that live just off shore together with the false piddock in the Venus family (*Petricola pholadiformis*), distinguished by normal hinge teeth of cardinals and laterals instead of the single protruding tooth of the true piddocks. *P. pholadiformis* is an American species introduced to the Thames estuary accidentally in the late nineteenth century with imported oysters and like its compatriot the slipper limpet has extended along the Channel coast (Chambers 2009). All these have white shells with spikes that act like file teeth when the shell is rotated during boring.

Bracklesham Bay lists

Scientific name	English name	23.6.13 Conch Soc	26.5.10*	24.9.11	3.9.12
Acanthocardia echinata	Prickly cockle			C	
Aequipecten opercularis	Queen scallop		C		
Anomia ephippium	Common saddle oyster	C	C	C	C
Barnea candida	White piddock	C		C	C
Buccinum undatum	Edible whelk	C	C		
Cerastoderma edule	Edible cockle		C	C	C
Cerastoderma glaucum	Lagoon cockle			B	
Chlamys varia	Variegated scallop	C		C	C
Crepidula fornicata	American slipper limpet	A	C	A	A
Dentalium	Tusk shell			C	
Donax vittatus	Banded wedge shell	C	C	C	C
Ensis ensis	Razor shell			C	
Fabulina fabula	Bean-like tellin			C	
Gibbula cineraria	Grey top shell	C		A	
Hinia reticulata	Netted dog whelk	C	C	C	C
Littorina littorea	Edible winkle	B			
Littorina obtusata	Flat winkle	A			
Macoma balthica	Baltic tellin	C			
Mactra stultorum	Rayed trough shell		C	C	
Mytilus edulis	Edible mussel	A & B		A	
Nucula	Nut shell	C		C	C
Ocenebra erinacea	Sting winkle	C			
Ostrea edulis	Flat oyster	C		C	C
Pandora inaequivalvis = albida	Pandora shell	C	C	C	C
Petricola pholadiformis	False or American piddock		C	C	C
Pholas dactylus	Common piddock	C	C	C	
Ruditapes phillipinarum	Pacific carpet shell			C	
Scrobicularia plana	Peppery furrow shell			C	
Sepia officinalis	Common cuttlefish	C			
Solen marginatus	Grooved razor	B	B	B	B
Spisula elliptica	Trough shell		C	C	
Trivia monacha	Spotted European cowry		C		
Venerupis decussata	Cross-cut carpet shell		C		
Venerupis senegalensis	Pullet carpet shell	C	C	B	C
Zirfaea crispata	Oval piddock	C		C	

table 1: Marine molluscs from the beach at Bracklesham Bay, West Sussex. 23.6.2013: Field meeting of CSGBI (SZ805963 to SZ810958); 26.5.2010: J. Chatfield below Marine Drive, West Wittering (SZ785972); 24.9.2011: Course from Earnley Concourse, West Wittering to Earnley (SZ785972 to SZ810958); 3.9.2012: J. Chatfield at East Wittering (SZ805963 to SZ810958). Key: A = live record; B = fresh shell and bivalve pair; C = shell, sometimes worn. * see figure 10.

Pandora inaequivalvis

This was the most unusual shell found and from table 1 showing results of some previous visits to Bracklesham Bay, it can be seen that this is consistently found as a beach shell on this shore but only as single valves. It is a very local species restricted to the western and southern shores with Jersey and Guernsey on the Channel Islands given as the place where it is most common (Chambers 2009). Step (1901) in *Shell Life* also gives Weymouth and Poole as places to find it and both authors mention the behaviour of squirting from the siphons when live animals are disturbed from the sands at very low tides. It would be interesting to know where the living population is located that provides the consistent supply of Pandora shells on the sands at Bracklesham Bay. Saunders (2008) confirms its limited distribution and refers to not having found more than four shells in a day but he has seen them alive:

> *Pandora* shells may lie on the surface of the sand with the curved side down. Living specimens lie a little off shore where I have found them while wading or snorkelling.

It is a distinctive shell, usually about 2 cm long, white and pearly with a characteristic shape and umbones towards one end, so equilateral. The valves are different with the left valve being flat and the right being concave such that a beginner might think they belong to different species when not seeing complete articulated valves (figure 5). Called *Pandora albida* (Röding) in Tebble (1966) and other books at that time, the name now reverts to the Linnean name of *P. inaequivalvis* (Linnaeus) given in the checklist of Smith and Heppell (1991). Chambers (2009) also gives the etymology of the scientific name: *Pandora* = mystical woman, no doubt from the pearly nature of the shell giving it an ethereal look when in water and *inaequivalvis* is obvious, with valves different.

figure 5: Single valves of *Pandora inaequavalvis* from Bracklesham. (photo: Peter Topley)

Fossil molluscs

Several different strata outcrop on this shore and one becomes aware of the different bands from the fossils washed out and stranded as one walks from Bracklesham Bay east towards Selsey progressing from the Wittering Formation to the Earnley Formation, deposits laid down 46–49 million years ago and classically referred to as 'Bracklesham Beds'. The actual rock exposures are usually covered over by beach sand so *in situ* fossils are only found occasionally when conditions are right, and not often on a field meeting booked many months ahead. However for the beginner it is a beach where I have always been able to find fossils even if many of them are broken. There is a limited range of common fossil species, mostly mollusc shells and these are recognised by their uniform beige colour and opaqueness of the shell from millions of years buried in muddy deposit. The largest, most obvious and numerous was the false cockle *Venericor planicosta* that has radial ribs and a massive hinge plate showing teeth – ideal teaching material (figures 6 and 7). There appears to be another small false cockle, *Venericardia* sp. There are various fossil oysters of which a distinctive small one is *Cubiostrea plicata* with radial ribs on the lower valve, found on this and previous visits. Also numerous are tower shells *Turritella* spp. with *T. conoidea* having deep angular sutures (figure 8) and *T. sulcifera* that looks remarkably like our modern British tower shell. Fossils of another shelled organism, but not a mollusc, were from a protozoan or foraminiferan *Nummulites laevigata* that are flat discs thickening towards the centre of the same size as a one penny coin (c. 1cm) and these are easy to find once you have your eye in and know what to look for (figure 9). There was no shortage of fossils and I suspect that the rough sea and strong winds was disturbing the fossil-rich beds and bringing the fossils to our feet as we went across the sands. There are two booklets available introducing the fossils from this beach and giving the background geology and strata. *Fossils from Bracklesham to Selsey* (Bone and Bone 1985) was brought out to coincide with a temporary display of fossils at Chichester Museum in 1985 and has subsequently been revised in a new form: *Fossil Hunting at Bracklesham & Selsey* (Bone 2009). Both books give geological sketch maps of the shore showing where the various beds outcrop as well as hints on collecting and the common fossils found. The fossils of this shore have been studied in detail by Curry *et. al.* (1977).

figure 6: Heavy fossil shells of the false cockle *Venericor planicosta* from Bracklesham. Note the large hinge plate. (photo: Peter Topley)

The fossils are indicative of a warmer climate and false cockles (Carditaceae) are not part of the modern British fauna. They are typically found below the tides in shallow seas. Continental drift has moved land masses around and so

Britain was at 40° latitude, instead of 51° at present, hence the warm sea fauna. Tower shells (*Turritella*) are indicative of sublittoral environments and the modern species *Turritella communis* is found alive in such offshore conditions.

figure 7: *Venericor planicosta* fossil on the shore near Earnley.

figure 8: Elongate fossil shells of the tower shell (*Turritella conoidea*) deposited on the beach sand.

figure 9: Flat discs of a group of *Nummulites laevigata* in substrate from Bracklesham. (photo: Peter Topley)

The presence of oysters also suggests a fairly stable sublittoral habitat as they live attached to a hard surface. Being comparatively young fossils, the molluscs still retained their original shell, although thickened and minerally enriched during deposition.

On the day of our visit the beach was busy with wind-surfers and some families braving the cold and wind on a beach walk. They were looking for shark's teeth that are known to occur here but are a less predictable harvest than the fossil shells. There have been various geology field visits to this beach that have been fairly unproductive and the guide book quotes from Frederick Dixon. The founding father of Bracklesham fossils, who wrote in 1850:

> I have been greatly disappointed on more occasions than one in not being able to procure any specimens.....owing to sand sometimes two or three feet in thickness, or the tide not leaving the shore sufficiently exposed [that onshore wind again!] ; so that a stranger might conclude that there were no fossils to be procured at Bracklesham. (Dixon 1850)

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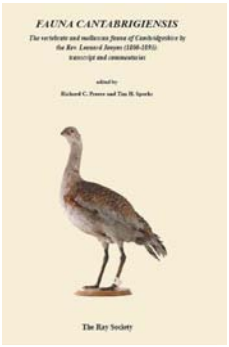
figure 10: A selection of seashells from the beach at West Wittering including a piece of mudstone bored by bivalves such as piddocks.

Book Review: *Fauna Cantabrigiensis*. The vertebrate and molluscan fauna of Cambridgeshire by the Rev. Leonard Jenyns (1800 – 1893): transcript and commentaries.



Richard C. Preece and Tim H. Sparks (editors). Including specialist contributions from: Henry Arnold (mammals, reptiles & amphibians), Toby Carter (fish), Tony Turk (birds), Richard Preece (Mollusca), Phil Croxton & Lizzy Carroll (transcriptions of Jenyns notebook).

The Ray Society. 2012. 226pp, black & white & muted colour images and photographs, ISBN 978–0–903874–44–1

£65.00 – reduced price of £35.00 (members of scientific societies including Conchological Society); £25.00 (Ray Society members).

Few people have heard of the Rev. Leonard Jenyns, but his work deserves to be better known; this publication fulfils that task. Jenyns was a leading English naturalist in the middle of the 19th century who produced a large body of work, mostly associated with Cambridgeshire. He was also a key player in influencing events that led to a revolution in biological science! Born into privileged circumstances, Jenyns' interest in natural history flourished during his schooling at Eton and also when studying religion at Cambridge University. Whilst at the university and then as a vicar of Swaffham Bulbeck, near Cambridge, Jenyns developed friendships with many influential naturalists including John Henslow and Charles Darwin. In 1831, such was Jenyns' reputation, that he was invited to join HMS Beagle as expedition naturalist. He declined the offer but, together with Henslow, proposed Darwin for the role; the rest, as they say, is history! Throughout his time in Cambridgeshire, Jenyns collected a wide range of biological specimens and also kept detailed natural history records. In 1849 he left the county, eventually locating to Bath. In the early years after this move Jenyns compiled a series of hand written notebooks detailing work undertaken in Cambridgeshire, mostly between 1820 and 1849; in 1869 these were sent to Cambridge to be deposited in the University Museum (also the location of many Jenyns specimens). One of these notebooks, *Fauna Cantabrigiensis,* covered vertebrates and molluscs and is the focus of this new book.

The publication essentially comprises three components. The first of these gives a Jenyns biography and bibliography. During a 67 year period Jenyns is credited with 74 publications covering an extraordinarily wide range of topics, with works on birds, mammals, fish, insects, molluscs, botany and meteorology. One of Jenyns' most demanding pieces of work and one which he undertook with rigorous efficiency, involved producing an account of the fish collected by Darwin; this was published in The Zoology of the Voyage of HMS Beagle. Surprisingly, despite his obvious interest in the group, Jenyns only published three works devoted to molluscs.

The second component, the core of the book, is taken up with Jenyns' original text, reproduced exactly as it was written and helpfully in a distinctive font. This deals with mammals, birds, reptiles/amphibians, fish and molluscs, each considered as a separate chapter with its own bibliography. Updated taxonomy and modern commentaries appearing in a different font, usefully interlace with the original text. The largest section, that dealing with birds is, due to the availability of other literature contemporary with Jenyns' notes, the section most fully enhanced by additional comment and explanation. Jenyns notes on Mollusca are especially useful as detailed and reliable invertebrate records (associated with his museum specimens) from before 1850 are scarce. Although molluscs form only a small proportion of his wide natural history interests, he nevertheless achieved impressive results, certainly not shying away from a challenge. Thus, one of his particular passions lay in the study of *Pisidium,* even today a difficult group to work on with the benefit of modern microscopes. In 1832 Jenyns published a monograph dealing with British *Pisidium* and *'Cyclas'* (now *Sphaerium* & *Musculium)*. In this work he included most species now living in Cambridgeshire as well as describing two new to science; *P. nitidum* and *P. pulchellum*. Plates from this paper, which are reproduced in *Fauna Cantabrigiensis,* show remarkably accurate illustrations of *Pisdium* specimens. These display minute details such as the umbonal projections of *P. henslowanum*, and differences in the bodies of the live animals even including, for some, variation in the form of their siphons. It is remarkable that Jenyns was able to see such a range of small and subtle details using the relatively primitive optical equipment available 180 years ago. Jenyns also displayed exceptional field skills. Thus some of his species accounts, reproduced in this second section of the book, reveal how he had the patience and skill to make detailed observations of molluscan microhabitat preferences. He noted for example that what maybe *Gyraulus laevis* was only found crawling upon water weed whereas, by contrast, *G. albus*, was typically present on the mud at the bottom of ponds and ditches.

The book's third component deals with summary discussions and conclusions, firstly looking at Cambridgeshire in terms of changing county boundaries (interpreting these liberally to include areas around Peterborough and Huntingdon), landscape, geology, drainage, land use and climate. The last sections then cover taxonomic and faunal changes that have occurred in the county, mostly since the mid-19th century. In many ways this chapter, which summarises Cambridgeshire before, during and after the life of Jenyns, could have stood alone as a separate publication.

The book is given a 'period' feel with a selection of figures including examples of specimens collected by Jenyns. These include shells, jars of pickled animals and stuffed birds. The numerous taxidermy specimens are a reminder of how biological recording has changed since the 19th century; before binoculars and digital imaging there were few ways to closely examine birds and mammals other than to shoot them!

Cambridgeshire is a low lying county once supporting extensive wetlands and meres. Jenyns observations come from the final period of extensive fen drainage, a process started well before his life. It is, therefore, not surprising that his work reflects declines of aquatic and especially wetland species. Additionally his records allow observations of other environmental changes associated with farming and woodland management that have occurred in the county since 1849. During the time of Jenyns' life and beyond, other areas of the country also experienced wetland drainage, water quality deterioration, river channel

engineering, woodland changes, agricultural intensification, the loss of species due to game management as well as increases of some existing species and the arrival of others. Therefore, although the book has a broad relevance for Cambridgeshire, it can also be seen to represent a microcosm of much of lowland England.

This book, although perhaps not immediately visually inviting or an especially 'light' read, is nevertheless absorbing and a detailed, valuable academic resource; definitely a volume packed with information to study carefully over time. It is extremely well researched and provides insights, not only into the life of an extraordinary naturalist, but also at faunal and environmental changes that, in the last 150 years, have affected both Cambridgeshire and much of Britain. It is only possible to make sense of the present distribution and abundance of the UK's wildlife by studying the past; this book helps us to do just that.

Martin Willing

Spermodea lamellata found in Wyre Forest, Worcestershire

Rosemary Hill

On a visit to the Wyre Forest on 15th June 2013, a sample of rush litter was taken from a hanging bog surrounded by oak trees in order to look for very small molluscs (figure 1). The other species found on the drier areas at the site where trees had been removed to conserve the bog included *Goniodiscus rotundatus* in a log pile, *Nesovitrea hammonis*, *Arion ater* agg, *Cepaea nemoralis*, *Oxychilus alliarius* , *Zonitoides excavatus* and *Columella aspera.*

figure 1: Hanging bog habitat, Wyre Forest.

Nothing exceptional was expected in the leaf litter, but when the dry sample was sieved some weeks later, six further species came to light. These were *Oxychilus cellarius,* a common woodland species, *Euconulus alderi* and *Carychium minimum*, common species of marshy areas, *Punctum pygmaeum* which is found in both deciduous woods and marshy areas, and two species which are considered indicators of ancient semi-natural woodland. These are *Leiostyla anglica* (figure 2) which is already known from Wyre, but usually only found as single specimens and generally not alive. In this sample one adult and three juveniles were found alive. This species is local in its occurrence with a bias towards western and northern parts of Great Britain.

figure 2: *Leiostyla anglica* (length 2.8 mm) showing the characteristic pattern of teeth in the mouth.

The big surprise was to find eight juvenile or subadult *Spermodea lamellata,* which has not been recorded before (figures 3 and 4). There is only one other record in the same 100km square, this being in central North Wales. This is a new Vice–County record for Worcestershire. There are no recent records in the 100 km squares east of the 100 km square which includes the Wyre Forest and only one recent record in the 100 km square below, this being in Southern Wales. The bulk of records for this species, apart from four in relict sites approximately on or below a line from the Thames estuary to the Bristol Channel, are in Coastal West Wales or north of Leeds. This indicates that the find in Wyre is very special, emphasising the quality and ancient origin of the site. *S. lamellata* is known to be intolerant of disturbance and is a declining species in Great Britain, with a clear preference for wetter areas. It took some time to make sense of the find in Wyre until reading the information in Dr Michael Kerney's 1999 atlas which gives boggy ground overhung by trees as a habitat. The important factor is probably the permanent wetness and it would be interesting to see if the species is distributed across the whole boggy area or whether it is a fringe species found only under the trees, but reliant on the availability of permanent wetness. In other parts of its range this species is found in very deep leaf litter, which would be likely to remain consistently damp in areas of the species' range with higher rainfall.

figures 3 and 4 : Two views of *Spermodea lamellata* (diameter 1.6 mm) showing the projecting lamellae characteristic of the species.

Acknowledgement

I am very grateful to Ron Boyce who imaged these tiny snails.

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Russian roulette with snails and parasites

Janet Ridout Sharpe and June Chatfield

Sarah Lucas (Letter, *Mollusc World* 32: 28) is quite right to be concerned that giant African land snails (*Achatina* spp.) might transmit diseases to humans. Fortunately the risk from laboratory-bred or pet shop snails in this country is negligible, and the simple precaution of washing the hands thoroughly or the use of antibiotic wipes after handling (not just *Achatina* but any snails or slugs) is probably sufficient to prevent the transmission of bacteria. There is no reason why children (and adults) should not continue to enjoy handling snails.

However, Sarah specifically mentions meningitis and here she is referring to something rather more sinister than a bacterial stomach upset. The tropical rat lungworm (*Angiostrongylus cantonensis*) can infect humans and cause meningitis which can be fatal. The preferred intermediate host of this parasite is *Achatina fulica* (figure 1).

figure 1: Captive bred adult *Achatina fulica*.

(photo: Janet Ridout Sharpe)

Many nematode or roundworm parasites of vertebrates have simple direct life cycles. The worms lay eggs which pass out through the host's gut and these, or the tiny larvae that hatch from them, are accidentally ingested by a new host and another cycle begins. However, a few parasitic nematodes require more than one host species to complete their life cycle: an intermediate invertebrate host in which the larvae continue their development, and a definitive or final vertebrate host in which the larvae mature into adults and reproduce. *A. cantonensis* and related species must spend part of their life cycle in a gastropod mollusc. In addition to the giant East African snail (*A. fulica*), the parasite occurs naturally in a wide range of terrestrial and aquatic gastropods, including the common bush snail (*Bradybaena similaris*), the marsh slug (*Deroceras laeve*), the miniature awlsnail (*Subulina octona*), the Asian ramshorn snail (*Indoplanorbis exustus*) and the apple snail (*Pomacea canaliculata*); experimental infections have been successful in many more species, including marine bivalves such as the Virginia oyster (*Crassostrea virginica*) and quahog (*Mercenaria mercenaria*) (Anderson, 1992).

The geographical distribution of *A. cantonensis* has increased dramatically, especially in Southeast Asia, Australasia and the Pacific islands where it has been spread by the introduction of infected rats and snails. As the parasite spreads it encounters new intermediate hosts to its liking, and a survey in Brazil, where it has recently become well established, has found viable larvae in several species of native gastropods. Land crabs, freshwater prawns and frogs and toads which have eaten infected slugs and snails may serve as paratenic hosts (intermediate hosts in which no development of the parasite occurs and in which parasites can accumulate in high numbers) and carry infective larvae that will only develop further if these hosts in turn are eaten by the definitive host.

The first stage larvae enter the gastropod host either through ingestion with the food or by active penetration of the body surface and then burrow their way into the tissues where they become encapsulated by host cells, usually connective tissue fibres infiltrated with leukocytes (white cells in the haemolymph involved in the immune response to foreign matter, such as parasites and microorganisms). Within these capsules, the larvae continue to develop and moult twice to reach the infective third stage (Malek and Cheng, 1974). These larvae remain dormant until the gastropod is eaten by the definitive host and they are released by the digestion of the capsule. The definitive host in which the larvae mature can be any of several species of rats or bandicoots. Humans become infected by eating raw or undercooked snails. *Achatina* is commonly eaten in the tropics, but in Southeast Asia the large amphibious snail *Pomacea canaliculata* is the primary source of infection. A recent survey of the infective status of these snails was conducted by Chen *et al.* (2012) in southeast China. Of 367 *A. fulica*, 22.62% were infected and positive snails carried an average of 57 larvae each; of 357 *P. canaliculata*, only 3.08% were infected with 1.64 larvae per infected snail. Fortunately, educational activities with children do not involve eating snails, cooked or uncooked!

The infective larvae penetrate the stomach wall of the vertebrate host, enter the hepatic portal system and then the mesenteric lymph nodes, from where they are carried to the heart and lungs; they invade the pulmonary veins, return to the heart and become distributed throughout the body by the arterial circulation. Those that reach the central nervous system (usually the brain) grow in the neural parenchyma and undergo two further moults. These subadults then enter the cerebral vein and are carried back to the pulmonary arteries where they mature and reproduce. The eggs lodge in the lung capillaries where they hatch and the larvae escape into the air passages to be coughed up, swallowed and passed out in the faeces. Low and moderate infections in the rat are mostly asymptomatic; heavy infections cause lung damage and neurological disturbances. In the human host, *A. cantonensis* causes eosinophilic meningitis. Symptoms include drowsiness, headache, vomiting, vertigo and facial paralysis. The parasites cannot mature to lay eggs in humans and most patients recover spontaneously within a few days or weeks as the larvae die and only a few cases are fatal (Anderson, 1992). Parasites and their natural hosts have evolved together leading to some host tolerance, and new hosts such as man and domestic animals are more likely to show adverse effects.

A close relative of this parasite is the dog lungworm, *Angiostrongylus vasorum*, which does occur in Britain but fortunately cannot infect humans. The life cycle is similar to that of *A. cantonensis* except that the larvae mature directly in the pulmonary artery and the neurotropic phase is omitted (figure 2). The definitive hosts are dogs and foxes; the fox is probably the original host and now serves as a reservoir to top up the infection level in the wide range of slugs and snails that serve as intermediate hosts. Originally restricted to the Southwest of the UK, *A. vasorum* has recently become more widespread and the number of reported cases has increased. An article published in the RSPCA magazine

Animal Life (Smith, 2012) shows that 36% of veterinary practices encountered at least one case over the previous year, and the *Veterinary Times* for 2nd September 2013 refers to a survey of 150 practices which between them reported 952 suspected cases in dogs with 81 potential deaths.

This increase has prompted the pharmaceutical company Bayer to issue a public awareness leaflet that is being distributed through veterinary surgeries: *Lungworm – is your dog at risk?* The leaflet gives a good account of the life cycle. Members may have noticed how slugs home in on dog faeces during the evening and by eating the faeces they become infected with larvae. Snails become infected by eating vegetation that has become contaminated with dog faeces. The life cycle is completed when these slugs and snails are eaten by another dog or fox. Wild foxes actively seek out snails to eat and this would have been the natural path of infection in nature. Dogs may also deliberately eat slugs and snails but more probably this would occur accidentally when snails crawl onto dog bones and toys left overnight in the garden. Foxes may also become infected in this way as it appears that urban foxes take such objects to play with when they visit gardens (Wells, 2010; Wortley, 2010).

The adult worms are fairly small, the males measuring 14–18 mm long and the females 18–25 mm with a diameter of 2 mm. Readers of Bayer's leaflet may be alarmed by the photograph of the seemingly enormous adult worm (no scale is given) which apparently shows a large mouth complete with fangs: this is actually the copulatory apparatus of the male worm at its tail end greatly enlarged under the microscope!

In domestic dogs the symptoms of lungworm infection include breathing problems, coughing, lack of energy, bleeding and poor blood clotting as well as fits, spinal pain, weight loss, vomiting, diarrhoea and loss of appetite. Severe cases may be fatal but if the disease is caught early enough it can be cured by medication.

Bayer has funded research at Exeter University into garden snail behaviour to help dog owners better understand the ways in which dogs can encounter snails on a day to day basis. The 'Slime Watch' report hit the news recently when nocturnal time lapse photography of 450 UV-painted and LED-light-carrying *Cornu aspersum* was released on the internet, showing fantastic displays as the snails moved in convoys and piggy backed on each others' slime trails to conserve energy, reaching a top speed of 1 metre per hour!

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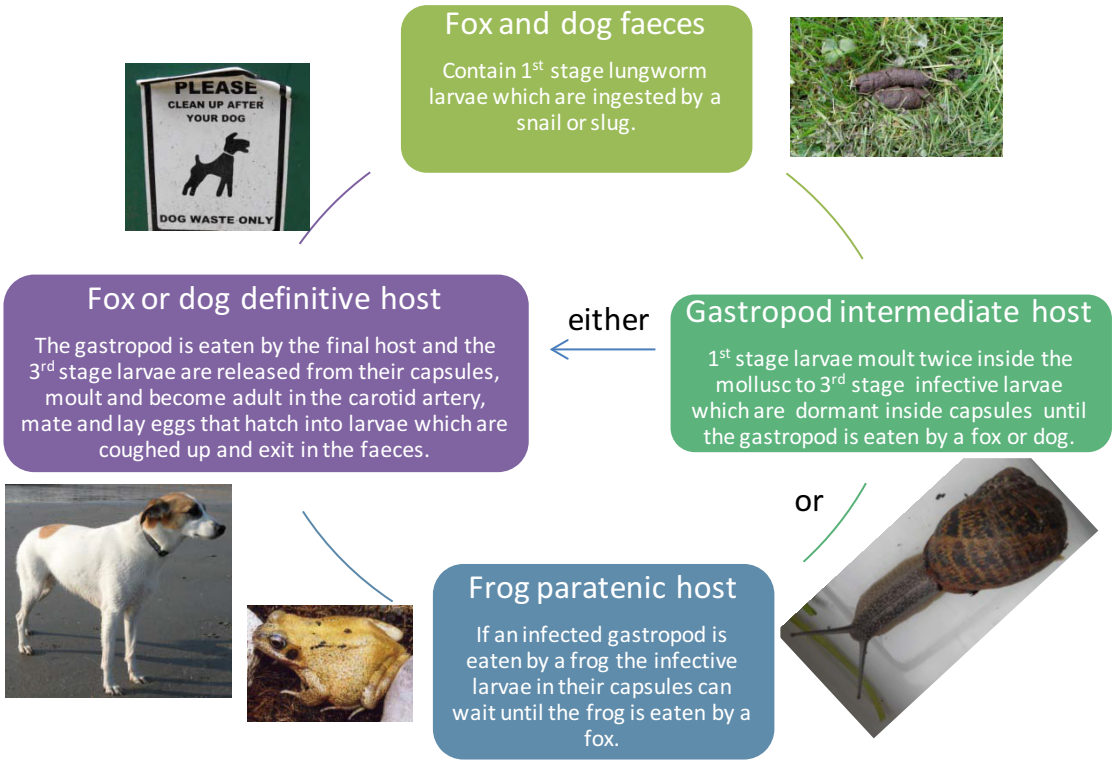

figure 2: Life cycle of the fox and dog lungworm *Angiostrongylus vasorum.* (Rosemary Williams is delighted to have her dog Pepper come to fame in *Mollusc World*!).

New *Ensis* records for the Firth of Forth

Paul Dansey

On a recent visit to Scotland (13–16th August 2013) my wife Rosie and I stayed with friends in East Lothian who are very understanding of the needs of a conchologist. On previous visits in 1994, 2005 and 2009, I collected and recorded razor clams from beaches on the south shore of the Firth of Forth. I find this area is a prolific hunting ground for *Ensis*. This visit gave another opportunity for beach walks and shell collecting in a lovely area of the country (figure 1).

figure 1: Yellow Craig. (photo: Rosie Dansey)

For the first time on 13th August I found *Ensis directus* (Conrad, 1843) in the form of fresh dead shells on the strandline on Seton Sands, Gosford Bay, near Longniddry Links (figures 2 and 3). From the shell growth interruptions, they were 3–5 years old so I assume *E. directus* has been living in Gosford Bay area since at least 2009. It was first recorded at Portobello near Edinburgh in 2000 by Shelagh Smith. I have copies of her personal records of the distribution of the genus *Ensis* which she had kindly forwarded to me previously.

figure 2: *E. directus* (exterior view) (photo: Iain Mactavish)

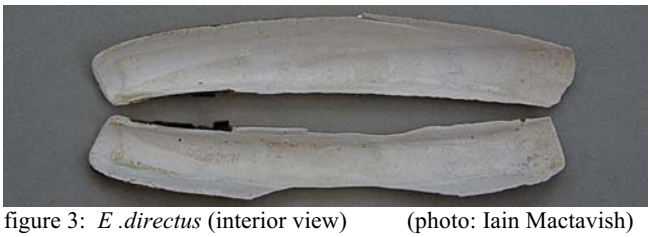

figure 3: *E .directus* (interior view) (photo: Iain Mactavish)

From my own records, those of Shelagh Smith and those of Rudo Von Cosel (2009) when he visited the area in 1987, it is deduced that the Firth of Forth is probably the only area of the British Isles where five species of the razor shell genus *Ensis* are inhabiting the same biotope. It seems the small area of Gosford Bay is a 'hot spot' for these species (figure 4).

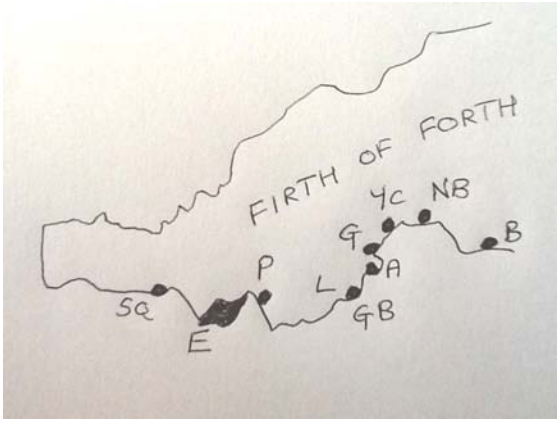

figure 4: The Firth of Forth
Key: A = Aberlady Bay; B = Belhaven Bay; E = Edinburgh; G = Gullane; GB = Gosford Bay; L =Longniddry; NB= North Berwick; P = Portobello; SQ = South Queensferry; YC = Yellow Craig.

On the following three days, I found *E. directus* shells on the strand line of the Longniddry Bents beach (figure 5).

figure 5: Longniddry Bents (photo: Rosie Dansey)

Rudo Von Cosel (2009) has recently revised the species list for razor clam genus *Ensis* found on the eastern Atlantic coasts. For the Western European and Baltic and Mediterranean coasts, he lists only five species: *E. directus*, *Ensis ensis* (Linné,1768), *Ensis magnus* Schumacher, 1817, *Ensis minor* (Chenu, 1843) and *Ensis siliqua* (Linné, 1758). Unlike Van Urk (1964), Cosel does not consider the *Ensis phaxoides* variety of *E. ensis* to be a distinct species. He also considers that *E. magnus* Schumacher, 1817 and *Ensis arcuatus* (Jeffreys, 1865) are not distinguishable as separate species and therefore the older name has priority. I agree with this nomenclature and I have relabelled my own *Ensis* collection to this specification (figures 6 and 7).

Figure 6: *Ensis magnus* (Exterior view) (photo: Iain Mactavish)

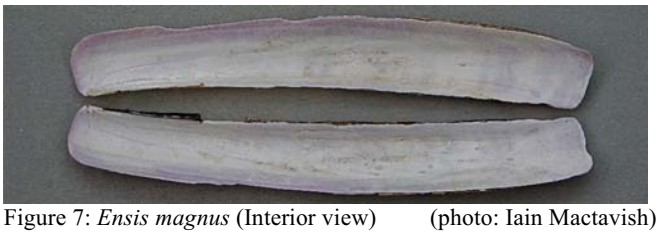

Figure 7: *Ensis magnus* (Interior view) (photo: Iain Mactavish)

The name *Ensis americanus* (Binney, 1870) is no longer accepted for the recent American immigrant so the older name *E. directus* is now commonly used by conchologists worldwide. A recent study (Vierna *et al*., 2013) of the genetics of the genus *Ensis* agrees with Von Cosel for the naming of all these species. In the records presented below I used the name *E. magnus* in place of *E. arcuatus* and *E. directus* in place of *E. americanus* so that the records are all combined in the name suggested by Von Cosel (2009)..

***Ensis* Records for the Firth of Forth**

PD = Paul Dansey; SS = Shelagh Smith; VC = Rudo Von Cosel; VU = R. M. Van Urk

Location	*Ensis directus*	*Ensis ensis*	*Ensis magnus*	*Ensis minor*	*Ensis siliqua*
South Queensferry					PD 2009
Portobello	SS 2000 PD 2005 PD 2009		SS 2000 SS 2002		SS 2000 SS 2002 PD 2005 PD 2009
Longniddry, Gosford Bay	 PD 2013	 VC 1987	 VC 1987 PD 2005	SS 1969 VC 1987 PD 2005 PD 2013	SS 1969 SS 1977 VC 1987 PD 2005 PD 2013
Aberlady Bay		 SS 1971 VC 1987 PD 1994 SS 1998 PD 2005	 SS 1977 PD 2005	VU 1964 VC 1987 PD 1994 PD 2005	VU 1964 SS 1976/'77 VC 1987 PD 1994 PD 2005
Gullane Bay		 VC 1987	SS 1977 VC 1987 PD 1994 SS 2001 PD 2005 PD 2013	SS 1976 VC 1987 PD 1994 PD 2005 PD 2013	SS 1976/'77 VC 1987 PD 1994 PD 2005 PD 2013
Yellow Craig		SS 1976	SS 1976 PD 2005	SS 1977 PD 2013	SS 1972/'76 PD 1994 PD 2005 PD 2013
North Berwick		VC 1987	 SS 2003	VC 1987 PD 2013	VC 1987 PD 2013
Belhaven Bay		SS 1975/'77 SS 1980	 SS 1991		SS 1973/'76/'77 SS 1991 PD 2005

Amongst the five species of genus *Ensis* to be found on beaches of the British Isles, *E. directus* and *E. magnus* are the most likely to be difficult to distinguish so I provide the following characteristic differences.

1. *E. directus* is broader (length to breadth ratio 6:1) than the slenderer *E. magnus* (length to breadth ratio 8:1).

2. The anterior adductor scar of *E. directus* is scarcely longer than the ligament, whereas in *E. magnus* it is at least one-third longer than the ligament.

3. The foot retractor scar of *E. directus* is opposite to the ligament insertion. In *E. magnus* the foot retractor scar is posterior to the ligament insertion.

4. The posterior adductor scar of *E. directus* is less than its own length from the pallial sinus or even joined to the pallial sinus. The posterior adductor scar of *E. magnus* is at its own length or more from the pallial sinus.

5. The shape of the pallial sinus of *E. directus* is broad, very distinctively, sinuous, like an S or a W on its side. The pallial sinus of *E. magnus* is narrow and like a V or U on their side.

To help in distinguishing *E. directus* from the other species of genus *Ensis* I present the following key which I have adapted from that given in a recent article by Rudo Von Cosel (2009) and updates my previous key (Dansey, 1998) and distinctions I made between *E. minor* and *E. siliqua* (Dansey, 2010).

Key to genus *Ensis* found around the beaches of the British Isles; after Von Cosel (2009)

1a. Shells 70–120 mm long, slender and markedly curved, edges parallel, anterior margin rounded, anterior adductor scar one and half as long as the ligament, posterior adductor at its own length or one and half its length from the pallial sinus, pallias sinus short, narrow and more or less V-shaped…… *E. ensis*

1b. Shells 140–230 mm long, slender to rather broad, straight to curved, anterior margin rounded or obliquely truncated……2

2a. Shells more or less curved to (occasionally) almost straight, narrow to rather broad, 140 to 195 mm long……..3

2b. Shells straight to (occasionally) very slightly curved, moderately narrow, 130–230 mm long……4

3a. Shells narrow (l/h ratio 6.5–8), rather thick, with narrow and rounded pallial sinus with its innermost point more or less in the middle. Anterior adductor scar distinctly longer than ligament……..*E. magnus*

3b. Shells rather broad (l/h ratio 5.5–6.5), rather thin, with broad, squarish oblique pallial sinus, with its innermost point at the dorsal corner, anterior adductor scar only slightly longer than ligament……*E. directus*

4a. Shells thin to moderately thick, straight; cross-section of posterior gape narrow, with parallel contours of the middle part of right valve and left valve; anterior margin obliquely truncated, with pallial line running (almost) parallel and close to it; periostracum without dark violet colouration on the postero-dorsal section……..……*E. minor*

4b. Shells thick and heavy, straight or very slightly curved; cross–section of posterior gaping evenly convex; anterior margin rounded, with pallial line vertical or slightly inclined, in greater distance to the margin; periostracum with a dark violet colouration on the postero–dorsal section, often not entirely coinciding with the vertical growth lines— *E. siliqua*

E. directus continues to spread around the coast of Europe and conchologists visiting estuarine ports may assist in monitoring its spread.

I wish to give many thanks to Robin and Hazel who not only gave us hospitality but found themselves searching for razor shells on our beach walks. Finally I thank Iain Mactavish and Rosie for the photographs to accompany this article.

Figure 8: Lone conchologist Gullane Beach. (photo: Rosie Dansey)

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A new site for *Cochlicella barbara* in South Wales

Richard Facey, James Vafidis and Nick Sharp

During routine monitoring of the Hayes Point to Bendrick Rock Site of Special Scientific Interest (SSSI), a site designated for its geological interest, the shells of what appeared to be *Cochlicella barbara* were found. This identification was confirmed by Dr Ben Rowson (Curator, Terrestrial Mollusca, National Museum Wales).

The nearest confirmed site for *C. barbara* to this in South Wales is Kenfig Burrows National Nature Reserve, which is over 35 km from Hayes Point. Both *C. acuta* and *C. barbara* can be found at Kenfig, and although known from Barry Island and docks (Ben Rowson pers. com.), *C. acuta* was not found at Hayes Point.

At Hayes Point, specimens were found along a 100 m stretch of mudstone cliff, centred approximately at ST135671. *C. barbara* was only encountered within clumps of vegetation on the cliff face (figure 1), with no individuals being found in the more densely vegetated areas toward the top of the cliff and sheltered areas (foreground of figure 1). Judging by the number of empty shells and live animals found (figure 2), the colony is well established and thriving.

figure 1: Mudstone cliff at Hayes Point. (photo: James Vafidis)

figure 2: *C. barbara* at Hayes Point (photo: James Vafidis)

National Trust children's snail races

Peter Topley

During the summer of 2013 the National Trust promoted a series of activities for children at their properties entitled '50 things to do before you're 11¾'. Many of these were related to natural history, such as: 'hunt for bugs', 'discover what's in a pond' and 'track wild animals'. Suggested locations for these activities were posted at the properties and activities were either organised, or 'DIY'.

When my daughter and I visited Tyntesfield House near Bristol in September, we noticed a sign near the chapel (figure 1), suggesting it was a suitable place to set up a snail race! In a list I obtained later of 24 properties in Devon, organised snail races were listed as taking place at East Soar, Lydford Gorge, Teign Valley and Wembury. The National Trust issued a scrapbook to go with the activities (Anon., 2013) giving useful advice as well as space where children could record their experiences. Under activity 17, 'Set up a snail race', the booklet suggests that you need 'a) some snails, b) a circle of chalk to mark your finish line and c) team colours for your snails (using stickers)'. Children were advised to remember that 'snails are slow movers so it's best not to make the track too long! Keep them cool and wet so they have the best chance of winning and always remember to put them back where you found them.' The scrapbook has a space for writing the name of the snail that came first and to 'draw a picture of its spiralled shape and markings'.

Unfortunately we didn't witness any snail races at Tyntesfield. I would be very interested to hear from any children, including Junior members, who may have participated in these activities. If you did a drawing, please send it in to *Mollusc World*!

figure 1: 'Snail race' sign next to the chapel of Tyntesfield House near Bristol.

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Anon. (2013) *50 things to do before you're 11¾: my adventure scrapbook*. National Trust.

Discovery of a molluscan hotspot on Jersey

Paul Chambers/Marine Biology Section of La Société Jersiaise

Around the year 1900 the conchologist James Thomas Marshall came to the Channel Island of Jersey to gather shells for his collection. He particularly wanted to get to a remote area of seashore on the southeast coast known for its bivalves and where, on big tides, it is possible to walk for over 3 km directly out from the coast. On reaching the low water mark Marshall recalled that:

> On looking back on Jersey the stranger is at first appalled at the apparent disappearance of the island and at the utter chaos of rocks which surround him. But it is safe enough while the tides are receding; it is when the tides return that the danger is great, as the incoming rush of waters gradually cuts off rock after rock with surprising suddenness. This dangerous coast frequently claims its victims from among seaweed cutters, conger hunters, and ormer gatherers. (Marshall, 1901)

The patch of coast that Marshall visited, known locally as 'Seymour' after a prominent sea fort, is rich in marine life, including beds of *Zostera marina*, and he was rewarded with many fine shell specimens. Two decades earlier the French marine biologist René Kohler had visited the same spot concluding that there were 'numerous shallow pools, offering a rich *Zostera* vegetation [seagrass] surrounded by rocks that are carpeted in a thick growth of seaweeds and which host small natural holes that bristle with interesting animals. it is also a very good place for researching molluscs' (Ansted and Latham, 1895).

Kohler believed Seymour to be 'the richest seashore area on the whole island'. The local biologist Joseph Sinel, writing at about the same time as Kohler, was just as effusive: 'In many respects this littoral area bears much analogy to the coral lagoons and pools of the Southern Seas' (Ansted and Latham, 1895).

It was in recognition of its biodiversity that Jersey's entire south–east coast was awarded RAMSAR status in 2000. However, being a RAMSAR site does not afford any formal protection to either species or habitats and in recent years Jersey's coastline (which currently has no marine protected areas) has seen a marked increase in anthropomorphic activity including the establishment of permanent aquaculture structures and boat moorings and such things as netting, vehicular use and a variety of watersports pursuits. As other easily accessible areas of Jersey's seashore have become over–utilised, so attention has started to turn towards hitherto ignored regions such as Seymour, placing the area under threat of over–exploitation.

Some years ago La Société Jersiaise (an amateur society for the study of local culture and natural history) expressed concern that Seymour was an unusually diverse area in need of protection from development but, with a total absence of any formal scientific studies, it was a difficult case to prove. Faced with this, the Société decided to put the principles of citizen science into action and, between 2011 and 2013, members of its Marine Biology Section undertook our own study of the remote area that James Marshall had visited over a century earlier. Our objective was to try and document the habitats found there and to attempt to quantify aspects of its marine life.

As Marshall outlined, Seymour is isolated and undertaking fieldwork there is far from straightforward. Our area of interest is large (170 hectares) and only fully accessible on a handful of tides per year. All our fieldwork was therefore undertaken during the large equinox spring tides in March and April when up to 30 of us would make the 45-minute trudge down to the lower shore and then work frantically for two to three hours before the incoming sea forced a hasty retreat. It was, as many remarked, simultaneously the most rewarding and exhausting fieldwork they had experienced.

A majority of our volunteers have no formal training in marine biology and so our methodology was purposefully simple. Along pre-determined transects (see figure 1), small teams (at least one of whom could identify local species) would stop at regular intervals to dig a $1m^2$ area of sediment to a depth of approximately 30 cm (figure 2). Burrowing animals larger than one centimetre were sorted, identified, counted and released again (although some annelids were taken for later identification). Basic field information was recorded including GPS position, sediment classification, depth of anoxia and associated flora and fauna. Periodically smaller sediment samples were taken for laboratory grain-size analyses and for sieving out the smaller (<1 cm) infauna. Care was taken to minimise disturbance to the local environment and within areas of seagrass (*Zostera marina*) holes were dug in clear patches between the plants.

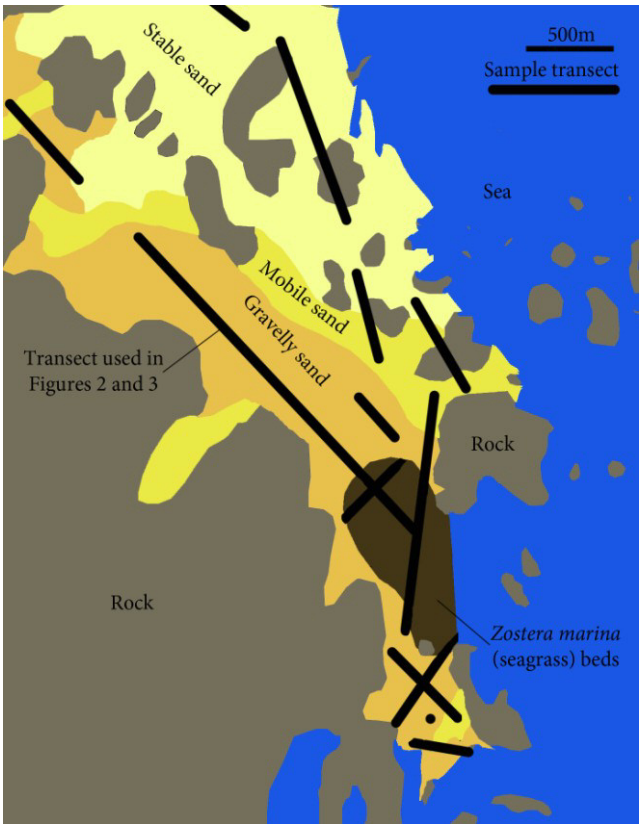

figure 1: The general location and habitats of the Seymour area with the sample transects superimposed.

figure 2: Tray containing specimens taken from a 1m^2 hole during one of our surveys. (photo: Kevin Mcilwee)

Over three years we managed to dig 72 holes using this method from which we identified 1,823 large animal specimens belonging to 88 species. The most commonly encountered animals were molluscs, annelids and crustaceans but we also found sipunculids, echinoderms, nemerteans, fish and anemones. The commonest mollusc species we encountered are displayed in table 1; as might be expected, burrowing bivalves dominated the count with the 'palourde rose' (the local name for *Tapes rhomboides*) topping the poll.

Species name	**Total count**
Tapes rhomboides	186
Ensis magnus (arcuatus)	85
Glycymeris glycymeris	76
Hinia reticulata	57
Venerupis senegalensis	22
Venus verrucosa	20
Clausinella fasciata	19
Crepidula fornicata	15
Spisula solida	15
Lutraria angustior	13
Macra glauca	10
Solen marginatus	10
Ensis ensis	8

table 1: The most abundant mollusc species encountered during the survey.

Our data has yet to be fully analysed but a basic statistical exploration has revealed a couple of possible trends that we hope to explore further in the near future and which offer an insight into the ecological characteristics and status of this site.

The first trend we have observed is an apparent inverse correlation between the occurrence of large burrowing worms (such as *Nephtys* spp. and *Nereis* spp.) and the burrowing molluscs. The greatest diversity and abundance of worms occurs within the middle and upper lower shore areas while the molluscs are largely restricted to the lower shore. This is illustrated in Figures 3 and 4 which show changes in abundance and diversity of worms (annelids) and molluscs along a single transect of 1 km which began at the mid–tide level (6 m above Chart Datum) and finished 0.2 m above Chart Datum (see also Figure 1).

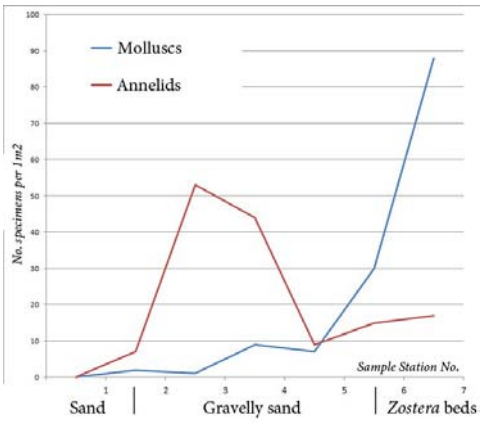

figure 3: The abundance of molluscs and annelids along a single transect (see figure 1)

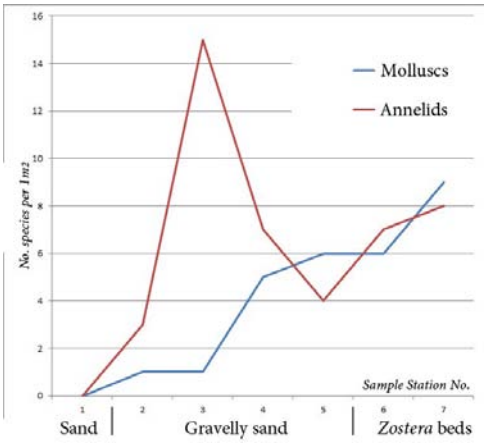

figure 4: The diversity of molluscs and annelids along a single transect (see figure 1).

A second even more obvious trend concerns the pattern of molluscan abundance across the study area. Figure 5 suggests that not only does the abundance of molluscs increase markedly towards the low water mark but that the highest concentrations of all are focused within a tight area to the southeast of the site. Here we found mollusc densities of up to 88 specimens (from 13 species) per 1 m^2.(e.g. figure 6). In fact, this area was not just good for molluscs but for burrowing marine life in general with our most diverse hole containing 139 animals from 25 different species.

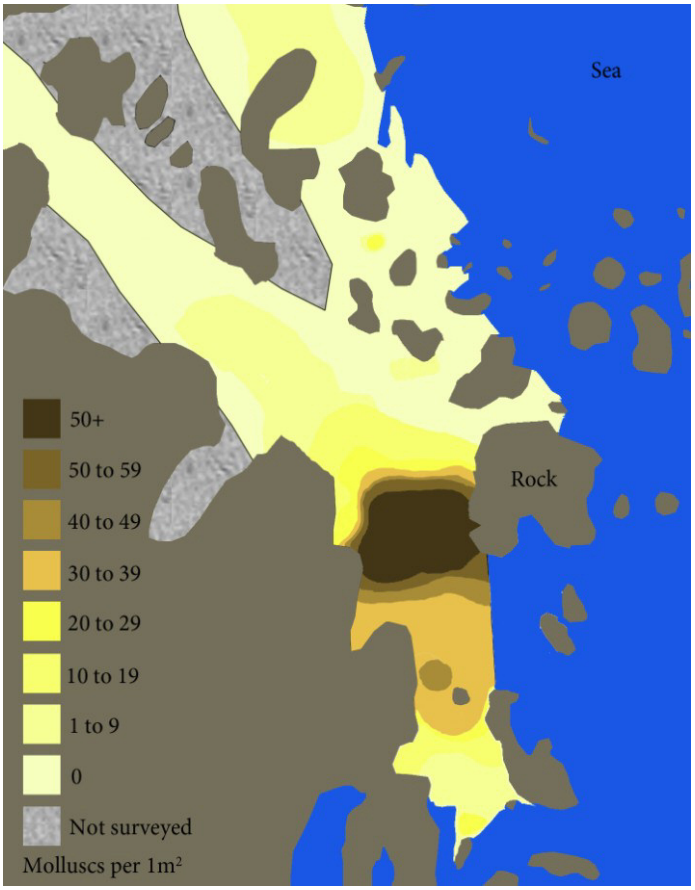

figure 5: Map showing the pattern of molluscan abundance across the study area.

It is probably not a coincidence that these high diversity and abundance areas all coincide with *Zostera marina* beds. This may help to highlight the importance of seagrass as a habitat for burrowing organisms and, according to our data, especially molluscs and crustaceans. Outside of the seagrass beds we found other areas of potential ecological importance including small beds of *Mactra glauca*, a species that is rare in the UK and not widespread even on Jersey (figure 7), and an extensive lower shore sandy habitat containing high densities of worms and razorfish. This latter habitat seems to be heavily frequented by seabirds and could be important avian feeding areas.

The biological productivity observed at Seymour far exceeds anything we have encountered elsewhere on the island. The nearest comparable area of seashore we have been able to find is in Chausey, about 30 km south of Jersey, but we would be keen to learn of any similar areas elsewhere in Britain and Europe (our e-mail is marinebiology@societe–jersiaise.org).

As previously stated, Jersey has no marine protected areas and Seymour, despite part of a RAMSAR site, is being eyed-up as a suitable location for future aquaculture development. It is our hope that the data we have gathered can be used to draw the Jersey's government's attention to

the ecological importance and fragility of this unique area of seashore so that appropriate steps may be taken to keep it in the same condition as it has been since at least the times of Marshall, Kohler and Sinel.


figure 6: A dog cockle, *Glycymeris glycymeris*, and warty venuses, *Venus verrucosa* -what we respectively call a 'suchette' and a 'praire' locally. If you look carefully, there is sipunculid and a couple of slipper limpets hiding in the picture as well.
(photo: Paul Chambers)


figure 7: *Mactra glauca* (length: 9–10 cm). (photo:Paul Chambers)

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Seagull absence devastates oyster farm

The *Daily Telegraph* of 3rd July featured the news that the closure of a landfill site near a Loch Fyne oyster farm meant that tens of thousands of seagulls, whose phosphate and nitrate rich droppings had encouraged the growth of algae on which the oysters feed, had departed for Barrow, leaving the farm with an estimated £1000 bill per week, to pay for nutrients once provided free by the gulls!

Thanks to Kevin Brown for spotting this item. Ed.

The Field Studies Council celebrates its 70th anniversary

June Chatfield

The foundations of the Field Studies Council (FSC) were laid in the last few years of World War II when Francis Butler, a school inspector, was thinking ahead to happier times and was aware of the need to include fieldwork in the school curriculum. A network of residential centres was set up in the post–war years and continues to expand. The organisation is now inviting past students and tutors to send in their recollections of time spent at Centres: visit www.field–studies–council.org/70 for more details.

Juniper Hall in Mickleham, Surrey, a historic house leased from the National Trust, was one of the first of the FSC field centres. The present Head of Centre, Dr Clive Bromhall, set up a weekend Festival of Natural History over 8–9th June 2013 inviting the public in, especially families, to see what happens and with a range of stalls of societies etc. related to natural history. Three of us from the Conch. Soc. (June Chatfield, Caroline Levitt and Simon Terry) manned a stall demonstrating molluscs alive as well as displays of specimens and photographs. After being in abeyance for some years, the traditional Juniper Hall snail course is returning in April 2014 (see below for further details).

Simon Terry by the Conch. Soc. table at the Festival of Natural History, Juniper Hall, with some Roman snails (*Helix pomatia)*. He holds a licence to handle this legally protected species.

Land Snail identification course Juniper Hall, Surrey

Friday 25th – Sunday 27th April 2014 Tutor: June Chatfield

Box Hill on the chalk of the North Downs in Surrey is a classic site for land snails with a good range of species in abundance. As well as the grounds of Juniper Hall Field Centre we will explore the chalk grassland and woodland of Happy Valley, the spur of Box Hill and an alluvial field by the River Mole. Sorting of leaf litter will also be included as this yields the smallest snails that are easy to overlook in the field. Beginners welcome.

Course fee: Residential £240 (single room) £220 (shared twin room), Non–residential, £180 (this includes evening meals, packed lunch and afternoon tea and cake).

For further details visit the centre website www.field-studies-council.org/Juniper Hall , Tel: 0845 4583507
email: enquiries.jh@field-studies-council.org
Juniper Hall Field Centre, Mickleham, Dorking, Surrey RH5 6DA. You can also contact the tutor on 01420 82214.

Juniper Hall Field Centre, Surrey.

The laboratory at Juniper Hall.

(photos: June Chatfield)

Theba pisana on Alderney, Channel Islands

John Glasgow

The quotation below is from 'Notes on the Fauna of Alderney' by R.B. Freeman, Alderney Society, 1980:

> *Living even nearer to the sea, on plants of the shingle which may be washed by the top of the highest tides, is the White snail* Euparyphe pisana*. This is one of the great rarities of the island and should be left strictly alone.*

How things change...

figure 1: A mass gathering of *Theba pisana* on Alderney.

figure 2: More *Theba pisana* on the Platte Saline shore of Alderney with the Victorian Fort Tourgis on the skyline.

Observations on a scalariform *Cepaea nemoralis*

Rosemary Hill

Strangely enough, I have kept water snails and slugs in captivity many times, but before this year I had never kept land snails. After all, there are plenty in the garden and I must have seen every behaviour that there is to see, mustn't I? However, all this was about to change when I looked at my emails on 21st May and found one from Denise Ledger entitled 'Unusual snail' with a picture attached. I have had many such emails before and it is not very often that the snail is unusual to me, only that the snail had not previously been noticed by the sender. This one was different. I opened the email and nearly fell off my chair with surprise. I had seen scalariform shells in books, but never encountered the live animal. I had a good idea that it was a *Cepaea,* but I sent the picture on to Adrian Norris who I was sure would want to see it anyway. He confirmed it was *Cepaea* but it took a clearer photo of the lip to prove it was *C. nemoralis.* Adrian also kindly sent a scan of a photograph of a *C. nemoralis* of the same form which he located in an article in the *Journal of Conchology* Vol. 10 plate11 (1902) by Robert Welch. This helped to confirm that this form of shell is very rare indeed.

The snail was found in a garden centre in Beckenham, South London by Denise who works there. She likes snails, and no chemical controls are used in the garden centre but any snails found are collected up and deposited in the adjacent railway cutting, to avoid them being stood on. When leaving a small storage shed carrying a heavy box of stock, she only narrowly managed to miss standing on the snail which was on the path at the doorway. Having removed it from harm, she asked a colleague to photograph it and then tracked down the Conchological Society via the web. Adrian had advised that usually scalariform shell growth arose in individuals who had survived damage to the mantle very early in their lives, but the question still remains as to whether the differences might be the result of a genetic difference and might be passed to future generations. To find this out would require the snail to mate successfully and then lay eggs. Understandably the Garden Centre did not want to retain responsibility for the snail for a protracted period and suggested I came and collected it. At this stage I asked where the Garden Centre was, hoping it was not going to prove to be a long way from where I live.

So at the end of May, the worse for a sprained ankle, I journeyed to London by train, took the tube and headed out on another train to Eden Park Nurseries at Beckenham, wondering how far I would have to walk. Fortunately the garden centre was adjacent to the station and as I limped up from the platform, I noticed that the soil was calcareous and there were other *C. nemoralis* around, but all of normal form. I wandered into the garden centre and had a look round but spotted no snails. I made myself known to Denise who produced the snail, complete with companion, living in a plastic traditional sweet jar drilled with air holes, with compost, bark chippings, strips of wood and lettuce. I was advised that a friend's children had named the snail Curly, which was very appropriate. Curly was bigger than I had anticipated, undoubtedly because of the lime-rich soil (see figure 1 and front cover). I was shown the shed where Curly had been found, which had loose soil and strips of decayed wood at the base. My supposition is that Curly lived in the loose soil under the wood and reached adult size undetected because of being active mainly at night.

figure 1: 'Curly', the scalariform *C. nemoralis*.

A discussion ensued with the garden centre staff who were anxious to be reassured that Curly would be looked after properly and not sold on eBay because of the unusual shell. They assured me they would be keep checking Ebay! I then headed for home, anxiously looking into a plastic bag containing the sweet jar to see how Curly reacted to the motion and vibration of the trains. Instead of hiding in the soil, Curly climbed around the sweet jar and held onto the plastic. This proved to be the usual response to travel, of which Curly has had a lot to put up with, since I don't have a sedentary lifestyle. My chief concern about keeping Curly would be the problems created by high temperatures in summer, which have usually proved fatal for any slugs I have kept. Consequently I have learnt to release these before the hot weather arises. However this approach would not work if I was going to give other Conchological Society members the chance to see Curly and also attempt any breeding. The coolest spot in my flat tends to be the bathroom, so this is where Curly is most of the time. I rapidly discovered that a scalariform shell shape causes its possessor many disadvantages compared with a conventional shell shape for *C. nemoralis.* The shell is very top-heavy and very often swings over the body in response to the least imbalance. If Curly chooses to walk up a strip of wood, then this often topples as well when the shell's centre of gravity suddenly changes. In some respects it is easier for Curly to get a good grip on the plastic, either above, or under the layer of compost on the bottom of the sweet jar. Consequently the shell is often covered with debris and when shown, a good shower from a garden sprayer is required first. Compared with the companion snail which was nicknamed Stripey for obvious reasons, Curly appears to move around less, but there was nothing that Curly could not do given the motivation. For instance, rather than cross some loose soil to access a morsel of food, Curly will stretch out the front part of her body excessively from a strip of wood to reach the food instead. As a result I was careful to ensure that any new food was presented directly to Curly, but it soon became apparent that she would use the plastic surface to navigate to a new food item if required.

I took Curly to Mike Allen's Open House meeting where she/he stole everyone's attention.

Curly and Stripey did not seem at all aware of each other, but it was usual for them not to share an item of food. This might be coincidence, since I had always put in two pieces

of any sort of food. Lettuce and spring greens were favourites, but Chinese leaf, savoy cabbage and carrot were ignored, possibly because they were not what the snails were used to. Subsequently when they had had time to learn that pieces of vegetable matter into the sweet jar were usually edible, they accepted carrot, Chinese leaves and slices of apple. Cucumber is Curly's favourite, especially in hot weather. It is also clear that any food not recently seen attracts more attention. A piece of cuttlebone provides calcium.

One day while I was away at a meeting, a friend reported that he had seen some strange behaviour which he had not been able to photograph through the plastic. Curly was spotted suspended from the top of the sweet bottle from only a small part of the foot, with the entire front half of the body along the length of the shell, which was hanging down. Curly was observed to be washing the shell, even as far as the excessive distance of the protoconch! I was annoyed to have missed this, but saw it for myself a week or so later. Curly was also more regularly climbing up to the top of the plastic and 'hanging around' which led me to wonder if something was wrong. Then one day I decided to take the sweet jar outside for a clean and to supply new food. I took the old food out but when I returned with the new food, I found the snails in close proximity, touching each other's tentacles. Then they began to lunge at each other, as if tasting each other's slime. Then they began to circle round each other, in first one direction, and then the other, inspecting each other. Just as I began to anticipate that mating might occur, Stripey reared up, took one look at the shape of Curly's shell and bit Curly's tentacle. Curly recoiled in shock and slid away, only turning to make sure she was not being followed. Thereafter the bit tentacle was not extended to the full length and had a kink in it. Did Stripey decide that Curly was not the same species and decide not to mate or am I reading too much into what I saw? Given the damage to Curly I made a rapid decision to remove Stripey for good.

After a couple of weeks when Curly's tentacle had recovered, I decided that some renewed effort to encourage breeding was worthwhile. *C. nemoralis* in my garden in Birmingham grow to a smaller size as this is not a limy area, so I sought a mate from the garden, judged to be only just adult size, which I named Stripey II. Again the two snails showed little or no interest in each other, until warmer more humid weather occurred and shell cleaning and climbing up and 'hanging around' featured in their behaviour. At last I witnessed similar behaviour to what I had seen before, culminating in a brief attempt at mating. About a quarter of an hour later, the two snails had got their act together and mating had definitely occurred. I did not see any love darts. Given the possibility that eggs might be laid, I sought out some plastic jam jars and fine holes were drilled in the lids. A week before I was due to travel to Northern Ireland for the marine field meeting, Stripey and Curly both developed an excessive interest in bulldozing the compost at the bottom of the sweet jar. Stripey was the first to lay eggs, in a neat batch over a couple of days. Curly promptly began bulldozing the eggs and for a short time I wondered if she was eating them but there was no obvious reduction in the number present. I removed them to their own container of damp compost with not much confidence that they would hatch. They day before travelling to Ireland, Curly produce a set of eggs which were also segregated. That made three containers to add to the luggage.

To my astonishment, after about two weeks Stripey's eggs began to hatch – the eggs were sprouting tentacles and moving up to the lid. They were smaller than the air holes I had introduced but the sharp edges of the holes deterred them from escaping. Tiny pieces of cuttlebone, carrot and cucumber were studiously ignored as the juveniles climbed up to the lid and sat immobile. John Llewellyn-Jones advised that the only food they would consider was 'Little Gem' lettuce, which turned out to be correct. Even so, it appeared that only some of them were eating. By now, Curly's eggs were also hatching. I estimate that Stripey laid 90 eggs and Curly 60 eggs but Curly's eggs were larger and developed more rapidly than Stripey's. All the eggs hatched. Concerned that Stripey's offspring were overcrowded, I released some to the garden and there is now less difference in the size of the offspring, but in both cases there is a range of size of individuals. The biggest individuals are the ones most frequently found on the food or the cuttlebone, and they are now of a size to accept slivers of carrot and cucumber. And the answer to the original question? The juveniles all coil normally, from both parents (figure 2).

figure 2: One of Curly's offspring with conventional coiling.

However, nothing happens in isolation. Strangely enough, I had been contacted again via email by Chris Hoskyns on 13th July who wrote: 'I have a snail in my garden that hangs out with snails like in your [website] images of *Cornu aspersum*, except that the new guy has a stretched helix; see photos attached.' Having never seen anything like this before in all the years I have intercepted Conchological Society enquiries, two come along in the same year. Chris has kindly kept his snail, Kerlie, successfully bred, and produced offspring, which, just like Curly's, are conventional in appearance (figures 3 and 4). So I am left wondering how it is that some gastropods have shells that coil in a flat plane while others coil in a vertical plane, and how does this difference evolve?

I would like to thank Denise Ledger for alerting the Society to Curly, her colleagues at Eden Park nurseries for their interest and assistance, Adrian Norris for information, Chris Hoskyns for looking after and breeding Kerlie and his careful observations, and Ron Boyce for photographic processing.

figure 3 (left): 'Kerlie' – a scalariform *Cornu aspersum*.
(photo: Chris Hoskyns)

figure 4: One of Kerlie's offspring with conventional coiling.
(photo: Chris Hoskyns)

Book Review: **HOW VERY, VERY NICE!** By Leon Hills, Langford Press, 2012 (www.Myweebooks)

ISBN 978-1-904078-52-4 Hardback £6.00, Paperback 978-1-904078-51-7 £4.00

This is a children's book for young readers and a first step in recognising animals and learning about food chains in the world of nature led by a personable frog. I became aware of it when the author, a wildlife illustrator, had an exhibition of his work in summer 2013 at Haslemere Educational Museum and one section featured artwork for his two children's books. This book, presented as double page spreads of a picture and text on the facing page, starts off with a thin frog in his habitat in search of sustenance. Each following picture shows the frog with two invertebrates and the text gives their distinguishing features of snail and slug, bee and wasp, caterpillar and grub, etc. in a pleasant informative way as conversations between the animals. Each creature introduces itself, impresses the frog with the comment 'How very nice' and the last line 'And then he ate them!' Through the book the frog steadily increases in plumpness with a progressively fuller stomach. Towards the end he meets a toad and the two animals recognise that they are alike but also different. Progressing to the penultimate page a snake slides in, the frog and toad introduce themselves with their distinguishing features and the last page shows the satisfied snake with two large lumps in its body and the comment 'How very, very nice!'

This book is striking and stylish with brightly coloured illustrations that will appeal to children but with touches of realism and observation so that children will recognise the real animals when they seen them in the garden. The snail, for example, duly has two pairs of tentacles and the eyes correctly placed at the ends of the long tentacles whilst the slug is obviously an arionid with its foot-fringe and the open breathing pore towards the front of the mantle. However the designers have been at work and reversed the image giving us a sinistral snail with the shell coiled the wrong way and the single breathing hole of the slug on the left instead of the right side of the body. The artwork is delightful, skilfully showing real understanding of the plants and animals depicted and full of humour. There is also a further touch in looking for the tiny creatures hidden in each picture that will encourage children to look for longer at the pictures after they have followed the story. As it is dedicated to the author's daughter Madeline, it has clearly been child-tested in the making. As well as first school use, it is recommended as a present from grandparents wanting to encourage their grandchildren into natural history but there is the chance that the grandparent may want to keep it! Visit the author's website www.myweebooks.co.uk for more information and also www.facebook.com/leonhillsartist.

June Chatfield

The author Leon Hills and his daughter Madeline at Haslemere Museum exhibition (left) and book cover.

"Who are you?" asked the frog.

"I am a snail," said the snail. "I have a shell."

"And I am a slug," said the slug. "I do not have a shell."

"How nice," said the frog.

And then he ate them!

A blister pearl in a Baltic tellin

Peter Topley

The current 'Pearls' exhibition at the Victoria and Albert Museum in London (ends 19th January 2014) and Paul Dansey's previous article about a blister pearl in a razor shell (*Ensis siliqua)* (Dansey, 2012) has prompted me to include this note about a similar find. In April 2013 I visited Blue Anchor Bay in north Somerset. The shore here reveals an expanse of soft mud at low tide. The Baltic tellin (*Macoma balthica*) is an abundant species in this environment. After taking home a sample of the many hundreds of shells of this species lying on the mud, one fresh dead specimen had a blister pearl in the left valve, near the posterior adductor muscle scar and above the pallial line (figure 1). I had not seen such a formation in a tellin, although blister pearls occur in many other molluscs apart from the perhaps 'classic' species' of pearl oyster (*Pinctada spp.*), freshwater mussels and abalones (*Haliotis* spp.). The 'Pearls' exhibition also gives examples of pearls found in tropical gastropod species such as the trapezium horse conch (*Pleuroploca trapezium*), imperial volute (*Cymbiola imperialis*) and emperor helmet (*Cassis madagascariensis*) (Chadour–Sampson, 2013). The pink conch (*Aliger gigas*) is also known to secrete large pink pearls which are highly valued. Even the free swimming shelled cephalopod *Nautilus* produces a yellowish pearl on rare occasions. Pearls have also been noted with varying rarity in other bivalves, for example from the very large giant clam *(Tridacna gigas)*, the Quahog (*Mercenaria mercenaria)* through to smaller bivalves such as mussels (*Mytilus spp.)* and wedge shells (*Donax* spp.) where they are often associated with parasitic trematode infections (Kunz and Stevenson, 2001).

In this case (the 'pearl' measures c. 2 x 1.5mm) part of what may be the irritant, around which the mollusc has secreted the aragonite and conchiolin pearl, can be seen at higher magnification (fig.2).

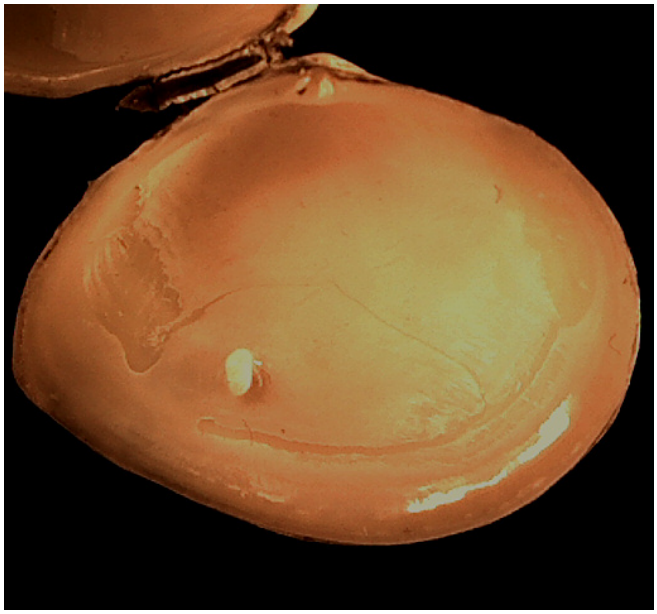

figure 1: Valve of *Macoma balthica* (length 22mm) showing attached blister pearl (high contrast image).

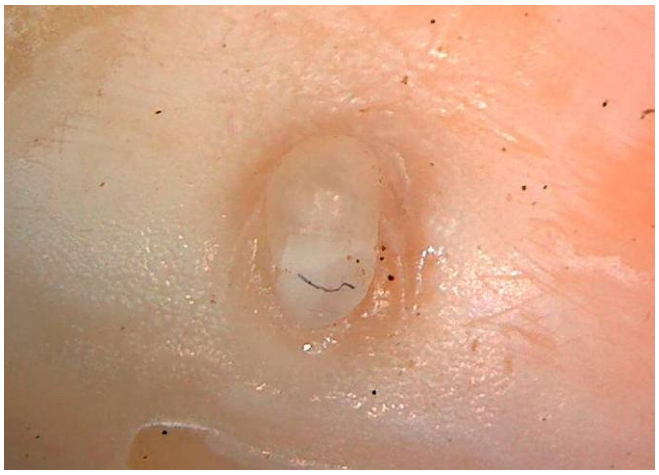

figure 2: detail of pearl formation, with threadlike inclusion.

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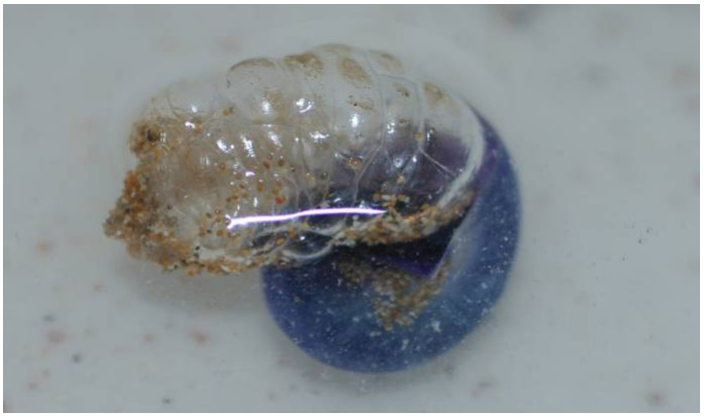
Violet sea snail stranding in Northern Cyprus.

from Alan Outen

Alan Outen led a Naturetrek tour to Northern Cyprus earlier this year and reported as follows:-

> The weather was very windy at night and at Malibu Beach we were finding large numbers of *Janthina*, presumably *J. janthina*, washed up on the beach still with their bubble rafts. A couple of images below [are] of the several that I took floating in the wash basin!



(photos: Alan Outen)

‘On the spot’ questionnaire: Bas Payne

Where do you live? In a deep valley on the east side of Dartmoor, in Devon.

What do you do for a living? I retired last year. I worked as an archaeological scientist, first doing research in countries like Greece and Turkey, studying animal bones from archaeological excavations to find out more about past environmental conditions and the history of animal domestication and early farming, and then, more recently, working for English Heritage, advising on the use of science to find out more about the past (e.g. geophysical surveys, dating, study of human remains from burials, reconstructing past technology), and to preserve the past (by conserving sites, buildings and objects).

What areas of conchology particularly interest you? I’m particularly interested in marine molluscs, and especially in what lives where and why, and how this changes. Until recently I mainly looked at British and European shells; but after a daughter settled in Australia, have started also to look at shells out there, finding the similarities and differences fascinating. I find small shells particularly fascinating – many more species, and much less well-known, and enjoy sorting shell sand!

How did your interest in molluscs begin? I have always enjoyed walking along beaches looking for shells, fascinated by their beauty, intricacy and diversity. My grandmother, who was a keen and knowledgeable amateur naturalist and botanist, encouraged this, as did biology teachers at school, especially Percy Chapman at Charterhouse, whose marine biology field courses on Tresco [Isles of Scilly] were enormously interesting and enjoyable.

When and how did you become a member of the Conchological Society? I became a member in 1991, mainly because I could go on the Society’s dredging trips.

In what ways have you been involved in the Society and its activities? Until recently I have been less active than I wanted because of other commitments; for the past five years I have been more active, and have served as a member of Council, as President (2009-2012) and now as Programme Secretary.

Do you have a memorable ‘conchological moment’? My most memorable single experience was going onto a beach at Christmas time in eastern Cyprus in the early 1970’s, and finding it covered with hundreds of recently stranded *Janthina*. [see also previous page. Ed.]

If you were marooned on a desert island and could take only one book with you what would it be and why? It would have to be a very large blank notebook (plus a pencil, and, hopefully, a lens and a binocular microscope).

If your house was burning down what shell (or shell-related item) would you rescue first? A box of shells collected from Lord Howe Island: this is an unfinished project, and the shells are fascinating and would be very hard (and expensive!) to replace …

Where is your favourite location for mollusc/shell hunting? The beaches around Sydney are wonderful – very diverse, a very wide range of species, and usually warm; my grandchildren often come with me, and there’s often a good café nearby for ice-creams, coffee and even a beer.

Do you draw any particular inspiration from historical figures in natural history and why? Charles Darwin, because of his very varied research interests, and his genius for simple long term experiments.

Can you give us an interesting mollusc related fact? After collecting recently on a shore in Skye, I realised that the weed washing samples I had collected were so rich that they suggested that there were something like a billion individuals of *Lacuna* on that one beach.

What words of advice would you give to a budding conchologist? Go on as many field trips as you can; keep on looking and thinking about what’s going on as well as collecting; don’t ignore the smaller molluscs; buy a binocular microscope and a digital camera; keep a field diary with lots of notes; process what you have collected before you forget the day; be careful about labels; and enjoy everything.

Anything else you would like to add? Never be afraid to ask other people.

Photos: above left, Bas ready for shore work and (above) retrieving sediment from a rock crevice, Teignmouth, Devon August 2012.

(photos: Peter Topley)

From Aa to Zyzzyxdonta – Taxonomy can be fun!!

Brian Goodwin

You betcha, by golly!! But before we get on to the fun bit, some introductory remarks are in order – as my dear mother was wont to say, 'no pudding unless you eat your greens'.

It seems likely that humans have classified things ever since we evolved as a species (good to eat/poisonous, etc.) and we no doubt invented appropriate names as soon as we developed language. Certainly the Bible would have us believe that Adam was not only the first man, but also the first taxonomist (which thereby replaces prostitution as the 'oldest profession'):

> And out of the ground the Lord God formed every beast of the field and every fowl of the air and brought them unto Adam to see what he would name them, and whatsoever Adam called every living creature, that was the name thereof. (Genesis 2:19).

Clearly, Adam, and those he 'begat', didn't do a very good job of things for the science of taxonomy (only named as such in 1813 by Candolle, in his *Théorie élémentaire de la botanique*) all went 'pear shaped' in the seventeenth and eighteenth centuries when gentlemen scholars began travelling widely and compiling their descriptions of the natural world and its inhabitants. At the time there were no consistently applied rules, apart from the use of Latin, and so each 'type' of organism was given a wordy description by which (it was hoped) it could be recognized by others. As more and more similar, but different, 'types' were found, these 'polynomials' were expanded, word-by-word and line-by-line. This resulted in such extended epithets as:

> *Acaciae quodammodo accedens, Myrobalano chebulo Veslingii similis arbor Americana spinosa, foliis ceratoniae in pediculo geminatis, siliqua bivalvi compressa corniculata seu cochlearum vel arietinorum cornuum in modum incurvata, sive Unguis cati.*

All of which translates into the equally unwieldy:

> A spiny American tree, in some ways resembling Acacia, similar to Vesling's Myrobalanus chebulae, with Ceratonia leaves in pairs on the pedicle, a silique with two valves, which is compressed, and horn-shaped or curved like the horns of snail shells or rams' horns, or like a cat's claws." – quoted from Yoon (2009).

Shakespeare's Juliet may well have been right that 'a rose by any other name would smell as sweet' but clearly organisms needed *some* sort of name and it required a genius to sort out the mess. Fortunately, the ingenious and egocentric Carl Linnaeus (figure 1) came along with his catalogues of all living things (his *Systema Naturae* was first published in 1735), together with his adoption of shorter 'trivial names' (binomials) for all organisms, and the rest as they say is history. For anyone wishing to delve into these matters in greater detail I can recommend the works by Blunt, Owen and Yoon (see References at the end).

The rest of this article is devoted to some examples of (mainly) molluscan binomials that are interesting and/or amusing, or even downright risqué. Most of them are taken from a fascinating Internet site by Mark Isaak called 'Curiosities of Biological Nomenclature' and accessed via http://www.curioustaxonomy.net.

figure 1: Statue of Carl Linnaeus in the Oxford University Museum of Natural History.

I must start with a familiar one, and the one that initially stimulated my interest. Way back in 1970, as an honours marine biology student, I attended a field course at Millport on the Isle of Cumbrae where Professor Norman Millot was deliberating on the taxonomy of bivalves, and told us the story of *Abra cadabra* Eames & Wilkins 1957. Regrettably, those meddling malacological folk have subsequently transferred the beast to the genus *Theora*, which has rather ruined the magical joke. Another 'joke' can be found in the name of the flat winkle *Littorina fabalis* Turton 1825 (previously *L. mariae*) that was named after William Bean of Scarborough, fabalis being Latin for 'of beans'.

Many binomials are descriptive (e.g. *Discus rotundatus*), but there are also plenty named after people. Often this might be the original collector or an eminent scientist (e.g. *Bursa lamarckii*), but there are cases where those honoured may be:

- **Mythical** – e.g. *Argonauta argo* L. 1758, the paper nautilus was named after Jason's ship and its crew (see figure 2).
- **Musical** – e.g. *Anomphalus jaggerius* Plas, 1972 and *Amaurotoma zappa* Plas, 1972 – both fossil gastropods named after now rather elderly rock stars.
- **Artistic** – e.g. *Elysia manriquei* Ortea & Moro, 2009 – a sea slug from Lanzarote named in honour of Cesar Manrique 'for the architecture and colorful designs of its body'. Manrique, an artist and architect, was also from Lanzarote.
- **Fictional** – there is a long list of taxa named after J.R.R. Tolkien characters, including the following two molluscs: *Frodospira* Wagner 1999 – a small genus of Silurian gastropods named after a certain hobbit, and *Smeagol* Climo, 1980 – a Recent gastropod in the family Smeagolidae, Smeagol being another name for Gollum.
- **Sporting** – e.g., *Bufonaria borisbeckeri* Parth, 1996 (see figure 3). Manfred Parth, no doubt a German tennis fan, wrote: 'Ich widme die neue Art Boris Becker, dem meines Erachtens größten deutschen Einzelsportler aller Zeiten.' This roughly translates to 'I dedicate the new species to Boris Becker, in my view the greatest German sportsman of all time'.

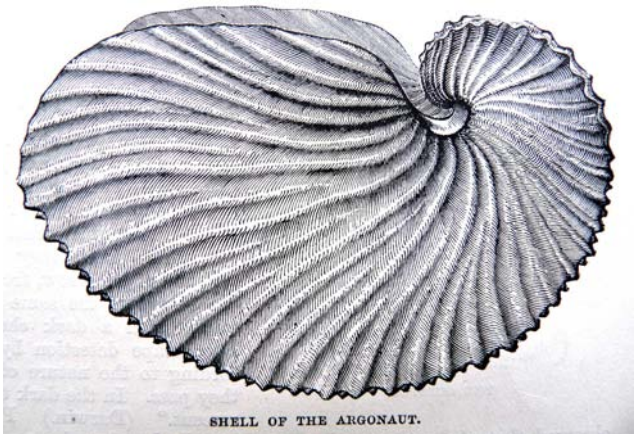


figure 2: The Argonaut, from *Concise Natural History* (Wright, 1870).


figure 3: *Bufonaria borisbeckeri* – dedicated to 'the greatest German sportsman of all time.'

Perhaps the most bizarre in this category is *Crikey steveirwini* Stanisic, 2009 – a land snail named in honour of the late 'Crocodile Hunter' Steve Irwin and his famous catch phrase.

Going back to the title of this article, we have *Aa* Baker, 1940, a genus of zonitid snails from Pacific Islands, and the first taxa in any alphabetical list. Immediately following it there is *Aaadonta* Solem 1976, and bringing up the rear alphabetically *Zyzzyxdonta* Solem, 1976, both endodontoid snails, the latter with characters the extreme opposite of *Aaadonta*! Alan Solem also discovered another new species of endodontoid snail from Mba Island, Fiji. This one he christened *Ba humbugi*.

Other plays on words include a bivalve genus called *Hunkydora* Fleming, 1948 – originally a subgenus of *Myadora*, and *Ittibittium* Houbrick, 1993, a genus of gastropods that are smaller than their relatives in the genus *Bittium*.

Those of a sensitive nature had better skip the next few paragraphs, for they concern sexual allusion and ribaldry. Sex, of course is an important element of biology and one of Linnaeus's greatest contributions to taxonomy was the introduction of his 'sexual system' to the classification of plants – i.e. using the number of male and female sexual parts as a basis for grouping. This amused some of his contemporaries but plenty of others were scandalized. William T. Stearn, in an Appendix in Blunt (2001), records the reaction of the Rev. Samuel Goodenough:

> To tell you that nothing could equal the gross prurience of Linnaeus's mind is perfectly needless.A literal translation of the first principles of Linnaean botany is enough to shock female modesty. It is possible that many virtuous students might not be able to make out the similitude of *Clitoria*.

As well as *Clitoria*, a genus of plants in the pea family, Linnaeus also gave us some suggestive molluscs:

- *Cypraecassis testiculus* (L. 1758) – with paired spots around the edge of the shell – see figure 4;
- *Distorsio anus* (L.1758) – see figure 5;
- *Crepidula fornicata* (L. 1758); and,
- *Verpa penis* (L. 1758) – the watering-pot shell, see figure 6; while Lamarck joined in with the closely related;
- *Brechites vaginiferus* (Lamarck, 1818).


figure 4: *Cypraecassis testiculus* – with paired spots around the edge of the shell.


figure 5: *Distorsio anus* – no graphic explanation required!


figure 5: The strange bivalve *Verpa penis* – or possibly *Verpa philippinensis*, the taxonomy is rather 'fluid' and identification difficult.

Perhaps my favourite in this category is *Ariolimax dolichophallus* Mead, 1943 the slender banana slug, and since 'dolicho' means long, the derivation is easy to guess. What's more interesting though about this critter is that it is the mascot of the University of California, Santa Cruz. 'Sammy the Slug' (bespectacled and reading Plato!), features on T–shirts etc., one of which was worn by John Travolta in the final scenes of the film Pulp Fiction (see also

http://news.ucsc.edu/2011/09/banana–slugs–pop–culture–moments.html).

And then there's the rude-sounding *Fartulum* Carpenter, 1857, a tiny caecid gastropod that is said to be 'rather like a turd' in shape and colour. Not being a Latin scholar, I am grateful to the Internet (see http://coo.fieldofscience.com/2009/ 05/stop–giggling–taxon–of–week–fartulum.html) for the explanation that:

> The name *fartulum* is in fact Latin for 'little sausage'. *Fartum*, 'sausage', is the neuter perfect passive participle of *farcire* 'to stuff', so it means a stuffed thing, i.e. a sausage. *Fartulum* is the diminutive of *fartum*, formed in the usual way. Nothing to do with either of the Latin words for fart. (They had two: *pedere* for noisy farts, *vissire* for silent ones.)' – So now you know!

Moving away from ribaldry, the last two examples I want to share are interesting 'translations'. The first, *Vampyroteuthis infernalis* Chun, 1903 – literally 'vampire squid from hell', is a wonderful deep-sea cephalopod that shares similarities with both squid and octopuses. It is the only known surviving member of its order, and what the popular press might call a 'living fossil' (see figure 7). An informative Wikipedia article can be found at: http://en.wikipedia.org/wiki/Vampire_squid, and there are also some excellent moving pictures on YouTube. The second – a personal favourite – is not a mollusc but an Asian antelope whose common name is nilgai or blue bull. This has the scientific epithet *Boselaphus tragocamelus* (Pallas, 1766) that translates to 'ox–deer goat–camel'. Clearly Pallas was hedging his bets on this one!

To conclude, I go back to my opening words, 'You betcha, by golly!!' – or should I say, *Eubetia bigaulae* Brown, 1999 (a moth). *Heerz lukenatcha*!

figure 5: The 'vampire squid from hell' – a model in the Great North Museum: Hancock in Newcastle upon Tyne.

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Author's Footnote

Since I wrote the above article I have discovered that Peter Dance has published a paper on a similar theme that is available on the Internet at http://www.zoologischemededelingen.nl/83/nr03/a07. Needless to say, Peter's work is more erudite and comprehensive, and there is some overlap, but I hope my version has some new elements and sufficient merit to justify publication here.

Two further points have arisen as a result of my rereading of some Stephen Jay Gould. Firstly, the essay 'Bully for Brontosaurus', in his eponymous 1991 collection, is an informative and engaging look at zoological nomenclature – well worth reading, and incidentally will tell you what Catherine the Great, Attila the Hun and Bozo the Clown have in common! Secondly, in the essay 'Sex and size' from *The Flamingo's Smile* (1985), I learned that my interpretation of the name of *Crepidula fornicata* was not so straightforwardly related to sex as I had supposed. Linnaeus derived the name from fornix, which means arch in Latin; to reflect the shell's smoothly domed contours. However, there is apparently a connection between the arched brickwork in underground buildings, where the prostitutes of Rome lived, from which evolved the verb fornicari, to frequent brothels.

British Shell Collectors' Club

Saturday 27th April 2014
Shell Convention

Is for beginners to experts and is an opportunity to meet others interested in shells and to seek advice from experienced collectors.
Includes members exhibits, dealers tables, exchange tables, Identification clinics and a grand auction of shells and shell related material for Club funds.

Saturday 25th October 2014
Shell Show

Another opportunity to meet other members and to seek advice from experienced collectors. Members are encouraged to create display tables for the prize competitions for categories such as One Species, British Marine, Caribbean or in specialities such as shell art or shell postage stamps. Displays can feature marine, land and freshwater species. Five major prizes are awarded.

Both events are held at Theydon Bois Community Centre, Coppice Row, Theydon Bois, CM16 7ER and are open from 9am to 5pm, admission free.

For further information about the club and other events see: www.britishshellclub.org.uk/

William Swainson commemorated by Google*

Peter Topley

figure 1: 'Google doodle' from 8th October 2013 commemorating William Swainson and including two of his shell illustrations.

On 8th October this year my son Sam e–mailed me, wondering whether I had seen that day's featured 'Google Doodle' on the search engine front page, as it included pictures of shells. On going to the page, I found that it commemorated a conchologist! In fact it was the celebration of the '224th birthday' of William Swainson (1789-1855), noted on the web page as 'a British ornithologist, famous for his colourful depictions of flowers and birds who was credited with triggering the Victorians' fascination with orchids.' More details were given in an online article by the Independant (Anderson, 2013). Two of the illustrations that were incorporated into the design depicted shells (figure 1), and rightly so, for Swainson was the author of 'Exotic Conchology', renowned for its beautiful hand coloured lithographs of exotic shells.

William Swainson was born in London and began a lifelong passion for natural history, including shells and birds, and was encouraged in his youth by the natural history dealer George Humphrey. His work for the Army, made necessary to support his widowed father and family, took him to the Mediterranean where he was able to collect specimens and he later joined a collecting expedition to Brazil. On his return he spent some time arranging the collections at the museum of the Liverpool Royal Institution. In the 20th century Swainson's connection with Liverpool interested the late Nora McMillan, a fine naturalist and past president of this Society, and a curator and historian at the City of Liverpool Museums, who researched and wrote about Swainson and his publications.

William married and later settled near St Albans in Hertfordshire. Deciding to make scientific authorship his profession, he became a prolific contributor to natural history publications and began issuing his own zoological publications which included several projects that were never completed (McMillan, 1970), unlike his *Zoological Illustrations* (1821-22) and the (now extremely rare) early editions of *Exotic Conchology* (from 1821). A later edition of the latter publication was produced in 1841 by the 22 year old Sylvanus Hanley and this edition was reprinted in a reproduction published for the Delaware Museum of Natural History which includes a biography of the author by Nora McMillan (McMillan, 1968). The book has 48 exquisite hand–coloured lithographs of shells, many of which were from the valuable collection of W.J. Broderip (Dance, 1986) and some were described for the first time. Plate 3, an illustration of the South American volute *Voluta angulata* (now *Zidona dufresnei* (Donovan, 1823), (Robin, 2008)) was included by Google in their web 'doodle'. The second shell included is a Brazilian land snail, possibly *Cochlorina aurisleporis*, from another publication.

After his wife's death Swainson remarried and emigrated to New Zealand in 1840 where he took up farming and was also involved in surveying timber trees in Australia. Although he left behind the natural history community of this country and a life not free of controversy, partly to do with his espousal of an eccentric classification system called the Quinarian or 'the circular system of affinities' (Barber, 1980), he left a legacy of wonderful illustrations and he pioneered the use of lithography to produce them (Allen, 1994).

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The Association for Environmental Archaeology (AEA) and the Conchological Society of Great Britain and Ireland

Joint Conference on

Molluscs in Archaeology

Saturday *26th April 2014*
Neil Chalmers Seminar Room, Natural History Museum, London

The subject of Molluscs in Archaeology has not been dealt with collectively for probably three or four decades. Next year's one day Spring Conference will be dedicated to *Molluscs in Archaeology*. It is proposed that the conference will include speakers talking on all aspects of molluscs. Possible topics could include the following:

Marine molluscs; Middens – composition – food waste or bait waste;
Isotopes; Trade; Jewellery; Dyes;
Palaeoecology – long landscape/site histories – the chalklands, sand dunes etc; Experimental ecology; Ecology; Species studies;
Regional perspectives; Period perspectives;
Theoretical frameworks; Interpretational frameworks;
Future research directions

It is also proposed to publish a book on Molluscs in Archaeology with Oxbow, covering aspects of Method, Theory and Interpretation, Diet and Economy, Landscape and Seascape.

Please contact Mike Allen with offers of lectures, and for any further information.

Mike Allen president@conchsoc.org

Novel use of cuttlefish shells for the culture of ferns

June Chatfield

When returning from a marine excursion where cuttlefish shells occur, I have good reason to collect a supply. Philip Harris, a member of the South London Botanical Institute, has for some years been successfully growing ferns from spores, such that his wall rues (*Asplenium ruta-muraria*) brought through from spores are now mature and producing spores themselves. Ferns that grow on walls tend to establish in moist pockets of crumbling mortar and this is alkaline, in contrast to the ecology of many ferns in lane banks that are on acid rocks or soil. Having placed a mature frond of fern with mature spores on damp compost contained in a sealed container, small green translucent plates of tissue, the fern prothallus, develops and this looks much like a thalloid liverwort or hornwort but the fern is heart–shaped and has the sex organs (archegonia and antheridia) on the lower surface rather than on top as in mosses – a further adaptation to life on land in the ferns and their allies. Male gametes from the antheridia swim in a film of moisture to fertilise female gametes that remain *in situ* in the archegonium. Following fertilisation a tiny fern plant starts to grow and emerges through the groove in the heart-shaped prothallus. When it is large enough Philip then plants it in the soft material of a wet cuttlefish shell as a substitute for a mortared wall, he then places this in a jar with water below to maintain humidity. In this way wall-rue has been successfully brought through its life cycle.

Wall rue fern cultured by Philip Harris on cuttlefish.

About the Conchological Society

The Conchological Society of Great Britain and Ireland is one of the oldest societies devoted to the study of molluscs. It was founded in 1876 and has around 300 members worldwide. Members receive two publications: Journal of Conchology which specialises in Molluscan Biogeography, Taxonomy and Conservation and Mollusc World, our magazine for members. New members are always welcome to attend field meetings and indoor meetings before joining.

Some useful Contacts *(see web site for additional contact details)*

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Sebastian Payne *(See page 32)*

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How to become a member

Subscriptions are payable in January each year, and run for the period 1st January to 31st December.

Ordinary membership £33; Family/Joint membership £35; Student membership £15;
Under 18 (receiving Mollusc World only) £5; Institutional subscriptions £47.
In view of the high cost of overseas postage, members living in Europe will be asked to pay an additional postage charge of £8, and members living in the Rest of the World an additional postage charge of £17. See website for further details.

Payments in sterling only, to Carolyn Postgate (contact details above). For UK residents we suggest payment by standing order, and if a UK tax payer, please sign a short statement indicating that you wish the subscription to be treated as Gift Aid. Another simple and secure way of paying for both UK and overseas members is by credit card online via PayPal from http://www.conchsoc.org/join. Overseas members may also pay using Western Union, but a named person has to be nominated, so please use the Hon Treasurer's name, Nick Light.

How to submit articles to Mollusc World

Copy (via e mail, typed or handwritten) should be sent to the Hon. Magazine Editor (contact details above). If sending copy using e-mail please include a subject line "Mollusc World submission". When emailing several large file attachments, such as photos, please divide your submission up into separate emails referencing the original article to ensure receipt. Electronic submission is preferred in Microsoft Word. Images and Artwork may be digitised, but we recommend that a digital image size 200Kb- 1.5Mb (JPEG preferred) be sent with your submission. For line art we recommend that you send hard copy, all originals will be treated with care and returned by post. Authors should note that issues of the magazine may be posted retrospectively on the Conchological Society's web site. The general copy deadline for the March 2014 issue is 7th February 2014; inclusion in that issue is dependant upon space available but contributions are always welcome at any time.

Advertisements in Mollusc World

We are pleased to invite advertisements, provided they are in line with the Conchological Society's charitable objectives and responsibilities. Advertisements of shells for sale from commercial shell dealers will generally not be accepted. Please contact the Hon. Editor of Mollusc World for further details.

Conchological Society of Great Britain and Ireland

Diary of Meetings

Please check the website (www.conchsoc.org) for further details and any updates.

Saturday 30th November 2013: WORKSHOP MEETING
10:00 – 17:00: by kind invitation of Judith Nelson at Hilbre House, Pembroke Road, Woking, Surrey GU22 7ED. The annual Woking workshop offers members the opportunity to receive tuition on identifying difficult groups. Those who wish to come should ring Judith (01483 761210) in advance for more details and to reserve a place. A fee of £5 will be charged to cover expenses. Please note that Hilbre House is a non-smoking property.

Saturday 14th Dec 2013: INDOOR MEETING: A Christmas miscellany
14:00 – 17:30: Angela Marmont Centre, Natural History Museum.
Following on the success of last January's meeting, we have decided to have another meeting made up of a series of short presentations (5-20 minutes) by members: these can be anything mollusc–related, with or without exhibits. This will be followed by a glass of Christmas wine (free!); and then by supper at a nearby restaurant (pay your share …). If you would like to make a presentation, or want a place at the restaurant, please get in touch with the Hon Meetings Secretary (contact details below). (Council members please note that there will be a Council meeting before this meeting.)

Saturday Jan 11th 2014: INDOOR MEETING: Demonstrations, exhibits, discussion meeting and lecture
Guest speaker: John Whicher - ***New observations on some Mollusca from the Jurassic of Dorset.***
11:00 – 17:00: Angela Marmont Centre, Natural History Museum.
The lecture will start shortly after 14:00. (Council members please note that there will be no Council meeting.)

Saturday 15th Feb 2014: INDOOR MEETING: Lecture and exhibits
Guest speaker: Dr Ben Rowson - ***The slugs of Britain and Ireland: a new guide to species and a screening of the fauna.***
14:00 – 17:00: Angela Marmont Centre, Natural History Museum.
The lecture will start shortly after 14:00. (Council members please note that there will be a Council meeting before this meeting.)

Saturday 5th April 2014: ANNUAL GENERAL MEETING AND PRESIDENTIAL ADDRESS
Speaker: The President, Dr Mike Allen - ***Snails help paint pictures of the Stonehenge landscape and land-use.***
14:00 – 17:30: Angela Marmont Centre, Natural History Museum.
The lecture will start shortly after 14:00. (Council members please note that there will be a Council meeting before this meeting.)

[Yorkshire Conchological Society, Saturday 5th April 2014: FIELD MEETING (non–marine) New Junction Canal VC63. Meet in car park by canal bridge on Top Lane. SE 621126]

Saturday 26th April 2014: CONFERENCE (see page 30) Joint meeting with the Association for Environmental Archaeology.

[Yorkshire Conchological Society, Saturday 10th May 2014: FIELD MEETING (non–marine) Leeds and Liverpool canal, East Marton. Meet by village green SD908509. Joint with YNU FWB Section]

Please note the following dates in later 2014 for your diary:

Saturday 6th and Sunday 7th September 2014: WORKSHOP (marine): Scarborough, North Yorkshire. (joint with Yorkshire Naturalists' Union and Seasearch)
A two-day course on the ecology, life cycle and identification of nudibranchs by Jim Anderson (www.nudibranch.org). Cost £70 per person which includes course materials. The course is a mixture of theory and practical sessions and will include a visit to a local shore on Sunday morning. Organiser: Paula Lightfoot (01904 449675, p.lightfoot@btinternet.com)

Monday 8th to Saturday 13th September 2014: FIELD MEETING (marine and non-marine) Yorkshire. (joint with Yorkshire Naturalists' Union and Seasearch)
A week of intertidal recording on a range of rocky and sediment shores along the Yorkshire coast, based in Scarborough where laboratory facilities will be available at the University of Hull's Scarborough campus. If sea conditions permit, there will be diving and dredging to provide further specimens for everyone to study. Visits to terrestrial and freshwater sites will also be arranged. Organisers: David Lindley, Adrian Norris and Paula Lightfoot. Enquiries to Paula Lightfoot (01904 449675, p.lightfoot@btinternet.com)

Saturday 11th October 2014: INDOOR MEETING (and Council meeting).
Saturday 8th November 2014: REGIONAL MEETING.
Saturday 6th December 2014: INDOOR MEETING (and Council meeting).

Indoor meetings at the Natural History Museum take place in the Angela Marmont Centre for UK Biodiversity, Darwin Building. From the main entrance hall, turn left at the tail of the *Diplodocus*, go past the dinosaur exhibition, then down the stairs, and then turn left. The door of the Centre will be locked; please ring the bell and someone will come to open it. ***Please bring plenty of exhibits and demonstration material.*** If you intend to attend a **field meeting,** please remember to inform the leader beforehand, and if, on the day, you are held up in traffic or your public transport is delayed, please try to contact the meeting leader if possible.

We are always happy to receive any suggestions for speakers for indoor meetings, or offers to lead field meetings, and also any suggestions about Society participation in the meetings of local and other societies. Programme Secretary: *Bas Payne, The Mill House, Clifford Bridge, Drewsteignton, Exeter EX6 6QE; 01647 24515,* programme@conchsoc.org