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THE CONCHOLOGISTS' NEWSLETTER

No. 1

Compiled by: M. Goodchild

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INTRODUCTION

It has been felt for some time by members of Council that some means should be provided 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 an endeavour to fulfil these needs, the Council is producing this NEWSLETTER for contributions not intended for permanent record. It is hoped to provide introductory articles suitable for beginners; notes on techniques; articles relating to the history of conchology; reports on current conchological progress; book reviews; reports and notices of the Society's field meetings and of the talks at indoor meetings. Collectors' experiences, such as the one appearing below, can be of much interest, even if written by people who do not consider themselves scientifically minded.

It is also hoped to advertise collectors' requirements in books or specimens and requests for correspondents or exchange material. It may, later, be necessary to charge a small fee for such insertions.

It is intended to circulate the NEWSLETTER without charge to members. Its success and frequency of issue will depend on your support and your written contributions are cordially invited. They should be sent to Mr. M. Goodchild, to whom the Council expresses their grateful thanks for kindly undertaking the compilation of the Newsletter.

The JOURNAL OF CONCHOLOGY will, of course, continue to be the Society's scientific publication. THE CONCHOLOGICAL NEWSLETTER SHOULD NOT BE REGARDED AS A SCIENTIFIC PUBLICATION FOR BIBLIOGRAPHIC PURPOSES.

C. P. CASTELL,
T. E. CROWLEY,

PRESIDENT.
HON. SECRETARY.

Collecting East African Marine Shells

by E. Robson, M.P.S., Ph. C., Nairobi

The best way to tell you about our coast is to take you with me, out to the Reef. There are many inexpensive 'beach-cottage-hotels' available along the coast-line of Kenya where we can wait until the tide begins to uncover the reef. This is only half a mile away, and we could go out by canoe, but the best way is to be independent and to wade and swim out in tennis shoes, an old pair of pyjamas over a swim suit, and a beret or an old waterpolo cap. The equipment needed is a knife, a hooked rod for pulling over lumps of coral, a nylon mesh bag which hangs from a waist belt, a sponge bag for the smaller specimens, and snorkel and goggles for under-water hunting.

Octopus abound but are not large enough to hurt you; your only dangers are sea-urchin spikes and the stone-fish (which is very rare and need not deter you). Sting rays will flee and eels will attack only if provoked. Sharks on the far side of the reef are often curious, but they are also nervous and leave one well alone.

The first shells to be found are the Cassis rufus or helmet shells lying in the pools or on the reef. Under water, each knob on the periphery shines up, reflecting different shades of yellow, red and purple, and this helps you to spot them. As you get your 'eye in', you begin to find specimens of the Lambis genus, first the huge ones and then the smaller kinds. Others which come without much trouble include Strombus aureus, Thais, Clanculus, Gemmica the 'strawberry shell', topshells (Turbinellidae) and several Cones including C. textile, geographus, literatus, betulinus, virgo, and many others only slightly rarer. A fair selection of Olives, Haliotis, Murex, Tun-shells, and

two varieties at least of the beautiful Harp shells are soon found. One soon becomes very choosy and selects only first-class specimens, especially as they all have to be carried several miles along the reef preparatory to a swim to shore.

The cowries you will usually find underneath the coral lumps, which have to be turned over for the purpose. Under red coral you may find Cypraea cribraria cribraria, the other sub-species C. c. teres, and C. chinensis, all of which have scarlet animals. C. stolidus is very rare here, in fact I have found only one to date; C. argus (the pheasant), C. punctata and C. testudinaria (the tortoise), also need a long search. On the other hand you would be ~~un-~~ lucky if on your first day you could not find C. moneta, C. annulus, C. helveola, (the star cowrie), C. lynx, C. carneolus, C. vitellus, and C. tigrinus; less common are C. scurra, C. mauritiana, and C. erronea. We have in all about forty five known cowries, all of which I have found at one time or another. I should mention in this connection that my children are all expert swimmers and we stay in the water for hours at a time - the temperature is usually about 80° F - so that we have everything in our favour for collecting. Naturally, all the specimens are in beautiful condition and make a brilliant display in a collection. Until one has seen perfect specimens in their natural habitat, or has access to an unusually fine museum, it is difficult to appreciate fully what these fine shells can and should look like.

I find that many experts, who know far more about shells than I do, boil or soak their cowries instead of allowing flies to breed maggots in them to rot the flesh. The shell should be left in the shade for a day or two, when the flies will have laid their eggs. The shells should then be put in tins with layers of sand and taped up for two or three weeks. In the tropics this system is easy and perfect, and when the tins are opened (with averted nostrils), and the shells are washed under a garden tap, they will be found perfectly clean. The Cassis, Lambis and similar genera also respond to this treatment, which leaves the brilliant surface in perfect condition, but cones and top-shells are different and you have to be careful to rot them thoroughly.

Lambis panellis and the Tritons are two of the most showy of our shells. The former can grow to ten inches in length, and the Triton, one of the most beautifully coloured and patterned shells in the world, will grow to eighteen inches and more.

The currents and the fresh water springs have a lot to do with the reef life and each mile of coastal reef seems different from the next; a poor reef often lies next to a good one, and the time of month and state of the tides are important in timing your visit. Zanzibar is a good area, but most of the specimens are found in shallow water at low tide; the lovely reefs at Mombasa are the finest of all, and these have furnished most of the shells in my collection.

OYSTER-CATCHERS FEEDING ON PATELLA VULGATA by G. W. Pitchford

Walking along Torquay Road, Torquay, S. Devon in the vicinity of Corbyn Head on the evening of 26th. July 1958, in company with my wife and daughter, I looked over the cliff wall to the Livermead Sands and saw seven Haemotopus ostralegus (Oyster-catchers) running about the low flat topped sandstone rocks below. A little weed and a fair number of Patella vulgata could be seen attached to the sides of the rocks, which were divided by narrow gulleys. The birds were either in pairs or singly, and their antics seemed comical to watch.

The rock nearest to us was occupied by a single Oyster-catcher, the bird would run across the rock waggling its head and making a rather low guttural call like 'Kleep Kleep'. Near the edge of the rock the bird would stop abruptly, turn and run in the opposite direction, then when near the edge of the rock it would again stop abruptly, and with a quick thrust of its beak would knock a limpet into the shallow water. It was quickly retrieved and carried apex downwards and placed on the rock. The bird would then secure the mollusc with its left foot, and proceed to peck the limpet from its shell. The operation of devouring the mollusc was quickly accomplished, when the bird would start its antics again. We saw the birds secure a good number of Patella in this way.

FIELD MEETING HELD NOVEMBER 27th. 1960

Five members attended the excursion to Box Hill, Surrey. They were extremely relieved to find that the water level of the River Mole, after the recent flood, was quite low, and none of the areas in which they wanted to collect were under water.

Field collecting was carried out in the following localities:-

- (1) Along the wooded west bank of the River Mole, just to the north of the stepping stones (51/174515). Molluscs were found in areas of leaf litter and ivy which covered the ground.
- (2) At the foot of the steep chalk escarpment, where the dense Dogwood scrub changes to grassland, and in a deep crater-like depression (51/175516) nearby. In the Dogwood all the snails and slugs were collected from the ground surface, which consisted of a broken layer of chalk chips covered with mosses; adjoining this was an expanse of grassland with a small overgrown ditch, in which Azeca goodalli occurred with other species more characteristic of grassland. At the bottom of the crater there were a large number of logs scattered amongst the leaf litter.
- (3) Our final collecting locality was on the downs at the top of the escarpment, just below Salomon's memorial (51/178514). Here the majority of specimens were taken at the base of the grass stems and in the moss layer.

The table below records the distribution of the molluscan species found on this excursion:- (see next page)

The important features of this table are the high relative abundance of species of slugs (20%) and Zonitidae (21%), and the absence of living specimens of the large helicids, which would have been hibernating. J.F.P.

BRIEF NOTES

1. The attention of Members is drawn to the list of available publications on the back cover of the Journal. The Winckworth List of British Marine Mollusca is now offered at 2s. 6d. and the addendum, reprinted from the Journal, Vol. 23, No. 5, which brings the list up to date, is now available at 2s. 3d. (Less member's discount in each case).
2. Among books recently written by members is 'Orkney Shore' by Robert Rendall, which deals with local nature records and biographical notes on Orkney marine naturalists.
3. Any members interested in the marine mollusca of South Africa would be well advised to consider joining the Conchological Society of South Africa. Details are available from Mr. D. H. Kennelly, 5 Fourie St., Uitenhage, S.A. The Society issues at intervals a most attractive and well-produced circular to members.
4. A certificate of Proficiency in Natural History is available through the University of London. This involves a directed course of private reading at home, attendance at a practical course at a Field Centre and an approved plan of fieldwork. It is designed both for teachers and for anybody interested in the study of living things.

Details are available from the Secretary, Natural History Certificate Course, Department of Extra-Mural Studies, University of London, Senate House, W.C.1.
5. The following gentleman writes that he has for sale a large variety of Australian shells with localities and names; lists will be sent on application. Prof. B. Kaspiew, [REDACTED], Ainslie A.C.T., Australia.
6. One of our members, Miss A. M. Saunders, of [REDACTED], Littlehampton, Sussex is the possessor of a museum of shells and corals, which she opens to the public in aid of handicapped people. The display includes some remarkable specimens, and all members are recommended to pay it a visit when in the locality.
7. English marine and non-marine mollusca are requested by Ing. Giuseppe Caprara, [REDACTED], Milano, Italy, in exchange for Italian specimens.

SPECIES	LOCALITY			SPECIES	LOCALITY		
	1	2	3		1	2	3
<i>Pomatias elegans</i> (Müller)		D		<i>Carychium tridentatum</i> (Risso)		L	
<i>Succinea pfeifferi</i> Rossmässler		D		<i>Azeca goodalli</i> (Ferussac)		L	
<i>Cochlicopa lubricella</i>		D	D	<i>Pupilla muscorum</i> (L.)		D	L
<i>Vallonia costata</i> (Müller)		L	L	<i>Ena obscura</i> (Müller)		D	
<i>Marpessa laminata</i> (Montagu)		D		<i>Clausilia bidentata</i> (Ström)		D	
<i>Ceciliodes acicula</i> (Müller)			D	<i>Arianta arbustorum</i> (L.)		D	
<i>Helix hortensis</i> Müller			D	<i>H. nemoralis</i> L.		D	D
<i>Hygromia striolata</i> (C. Pfeiffer)		L		<i>H. hispida</i> (L.)		L	
<i>Monacha cantiana</i> (Montagu)		D	L	<i>Helicella caperata</i> (Montagu)			L
<i>H. virgata</i> (da Costa)			L	<i>H. itala</i> (L.)			L
<i>Punctum pygmaeum</i> (Draparnaud)		L		<i>Discus rotundatus</i> (Müller)		L	L D
<i>Arion intermedius</i> Normand		L		<i>Arion circumscriptus</i> Johnston		L	
<i>Arion hortensis</i> Ferussac		L		<i>Arion ater</i> (L.)		L	
<i>Euconulus fulvus</i> (Müller)		L		<i>Vitrea cf. contracta</i> (Westerlund)		D	D
<i>Oxychilus cellarius</i> (Müller)		L		<i>O. alliarius</i> (Miller)		L	
<i>O. helveticus</i> (Blum)		L	L	<i>Retinella radiatula</i> (L. Pfeiffer)		L	
<i>R. pura</i> (Alder)		L		<i>R. nitidula</i> (Draparnaud)		L	L
<i>Vitrina pellucida</i> (Müller)		L	L	<i>Milax budapestensis</i> (Hazay)		L	
<i>Limax maximus</i> L.		L		<i>Agriolimax reticulatus</i> (Müller)		L	L L

KEY: L = Living specimens, D = Dead shells

EDITORIAL NOTE: M. Goodchild

This is the first issue of the "C.N." - a sort of specimen copy. Now it is up to you readers. It is hoped to get contributions from people whose names do not normally appear in the "J.C.", but who have news to communicate. Any comments and suggested inclusions are welcomed. Proposed articles include a series on famous collectors, introductions to different genera (exotic and British) and an account of an unusually productive garden, the last by a non-member. The next issue is planned for late summer and is hoped to be twice the size of this issue, so please take up your pens and start writing!

ADVERTISEMENTS

For sale, exchange or wanted in books, shells, etc. Minimum charge 2/- (3 lines), pro rata for larger. Monies to be sent to the Compiler with advertisement details.

1. WANTED! *Journal of Conchology*, Vol. 16, Pts. 2, 4: 18, Pts. 7, 9, 10; 19, Pt. 4; 20, Pt. 7; 21, Pts. 4, 5. For cash or molluscan reprints. S. P. DANCE, British Museum (Natural History), South Kensington, S.W.7.

3. FOR SALE. "Elements of Geology", Lyell, 1865, 15/-; "Our Native Ferns", Lowes (2 vols.) 25/- (both including postage). M. GOODCHILD.

Hérons, Moorhens and Rats feeding on Anodonta anatina (L.)

The River Greet, a tributary of the R. Trent, rises in Belle Eau Park near Bilsthorpe, Notts. About two miles from its source it has been deepened and widened to form the lake within the grounds of Kirklington Hall. The water from the lake passes over a weir into the stream which flows under the main drive, and then under the main A617 Mansfield to Newark road. Anodonta anatina (L.) lives at the lower end of the lake in association with Sphaerium corneum (L.), Potamopyrgus jenkinsi (Smith), Planorbis leucostoma, Millet and Lymnaea peregra (Müll.).

After heavy or prolonged rain the sluice gate by the weir is opened, and the rush of water carries both mud and mussels into the stream, the latter as far as the main road bridge. These Anodonta anatina show a great deal of variation in size and shape.

During the first two weeks of May 1957 I spent a considerable amount of time in the grounds of Kirklington Hall. I was able to make observations and record incidents of herons, moorhens and rats preying on A. anatina. Usually about mid-morning a pair of herons would fly over the lower end of the lake and alight in the stream. They would soon secure a mussel, carry it in their beaks into the adjacent field where the mussel would be firmly clamped to the ground by the foot before being pecked open. Sometimes the herons would take flight and drop the mussels from a height of 20 feet, whether by accident or design I cannot say - but the bird would always make a rather ungainly descent and proceed to feed on the mussel. The moorhens were content to attack and feed on the smaller specimens of mussels living on beds of shingle in very shallow water. These birds attack the mussels very aggressively about the ventral margin, to make an opening large enough to be able to peck at the soft parts of the mollusc.

On the right bank of the stream, I noticed several rat runs, which went towards two yew bushes at the rear of out-buildings of the adjacent farm. Around the rat holes were living and dead mussel shells. From the evidence of dead shells which lay about, the pattern of attack was much the same as that of the moorhens, part of the ventral margin and the posterior portion of the shells had been gnawed away. A few of the mussels had only a small portion of the posterior end gnawed away, but the hole thus made was large enough to see the mollusc within. May be something had disturbed the rat when it was earnestly preparing to make its meal. I have seen the water-vole taking young Anodonta for food, in the River Meden, Thoresby Park (see 'J.C.', Vol. 23, No. 10, p.338).

G. W. Pitchford

Field Meeting at Walton-on-Naze, Essex

A most successful field meeting was held at Walton-on-Naze, Essex, on Sunday 16th. April, attended by 16 members and friends, to collect from the Red Crag deposit of Lower Pleistocene age. Fine weather enabled members to obtain most of the commoner Crag fossils, and some varieties including Scaphella lamberti (Sow.).

Specimens were obtained both from the talus and the cliff face. Mr. P. Cambridge, an authority on the Crag, supplied a detailed account of the section, which was greatly appreciated by all.

During the afternoon a short visit was paid to the salt marshes of Hamford Water, where Hydrobia ventrosa (Mont) was found in considerable numbers.

T. Pain

Voucher Collection

I wish to draw the attention of the Society's members to the Voucher Collection of Land and Fresh water shells. This is far from complete and any members who have duplicates are asked to donate them to the collection. The name, locality and date of taking should be given as far as possible.

The following vice-counties are not represented at all (vice-county numbers as in 1951 Census, 'J.C.', Vol. 23, No. 6 and 7).

England and Wales:	4, 5, 7, 8, 20, 31, 35, 36, 37, 40, 42, 43, 46, 47, 52, 67, 69, 70, 71.
Scotland:	73, 75, 76, 84, 86, 87, 90, 91, 98, 99, 100-103, 105, 106, 109, 110, 112.
Ireland:	113, 122, 123, 125, 126, 128-131, 133, 134, 136- 139, 140N, 140S, 141-145.

F. H. Cozens, Hon. Curator

Collecting Localities in the Cape Province, Union of South Africa

by D. H. Kennelly, Uitenhage,
by D. H. Kennelly, Uitenhage, S. Africa

The part of the Cape Province where the town of Uitenhage is situated is known as the Eastern Province. Uitenhage is 20 miles inland from Port Elizabeth.

Port Elizabeth itself was a noted collecting ground, much frequented by the older generation of collectors of 80 or more years ago. Modern 'improvements', which cover the building of a harbour, with oil storage site, etc., have now completely obliterated the reefs where the old collectors worked.

Today a locality which repays a visit is Cape Receife, some eight miles south of Port Elizabeth. From Cape Receife for about 10 miles westward to a point known as Sea View, the shore is rocky with reefs. Great care is necessary while collecting at low tide, for most of the reef is covered with sea growths making it slippery. A good road close to the shore gives ready access to any chosen point, and the collector will find several species of Patella, Siphonaria, Oxystele, Nerita, etc. obtainable alive. Two species of Ormers, Haliotis midae and H. sanguinea are also found.

On the other side of Port Elizabeth - a few miles north - the Zwartkops River enters Algoa Bay, and the estuary is worth a visit. This locality was visited in December last by a young but very keen collector. He made a most interesting collection, including the finding of live specimens of Nerita plexa and Nerita plicata. These two species were reported from the old collecting ground at Port Elizabeth over sixty years ago, but have never been seen again until their re-discovery in the Zwartkops Estuary.

Forty miles west of Port Elizabeth is the small holiday resort of Jeffreys Bay - a small dent in the far larger expanse of St. Francis Bay. Jeffreys Bay is one of the finest localities for the collector to visit for shells, and is well known to collectors all over South Africa. The writer has some 250 or more species from this locality, and with the advent of the new sport of skin diving, in the near future it may be possible to extend our present knowledge of the Jeffreys Bay molluscan fauna.

First European Malacological Congress

London, 17th. - 22nd. September 1962.

It is hoped that there will be a large gathering of Malacologists at this Congress and that most of them will be accommodated in the Queen Elizabeth College, Campden Hill Road.

There are just a few who would like to attend but find the cost a little too much for them. It would be a great help if accommodation for

them could be found with friends in London.

Whilst those who have asked for this help so far are quite unknown to me personally and I could not sponsor them, I do feel that some members of our Society may like to help. If you are living in or near London and would be willing to help a fellow conchologist from overseas, would you please write and let me know.

To date I have had only two such calls for help and they are both from Holland, one lady and one young man. More may come in and I would like to get a list of accommodation available as soon as possible.

H. E. J. Biggs

When in the Isle of Wight visit:-

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Isle of Wight

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NOTES

1. The Editor of the Journal of Conchology is always pleased to arrange for reviews of suitable books and articles of conchological interest. A copy must be submitted direct to the Editor in each case.
2. Back numbers of the Journal of Conchology are available from the Hon. Secretary as follows: Vol. 24 (except No. 7) and Vol. 23 at 10/- per number; Vols. 21 back to 14 (1913) at 5/- per number; and certain numbers before this date at 5/- each. A member's discount of 25% is allowable in each case. Certain numbers are usually available second-hand at 2/6d. each.
3. The Hon. Secretary would be pleased to hear from anyone who has available for sale a copy of the Journal of Conchology, Vol. 24, No. 7. Ten shillings is offered for copies in good condition.
4. The following have written asking for exchange correspondents; any members interested should write direct.
 - a) Mrs. C. P. Morgan, [REDACTED], Fendalton, Christchurch, New Zealand.
 - b) 23513226 L. Cpl. Lander, W. Survey Directorate, H.Q. Middle East Command (Aden), British Forces Post Office 69.
 - c) M. J. H. Liressidge (interest Cowries), [REDACTED], Abingdon, Hertfordshire.
 - d) Mr. James R. Hood, [REDACTED], N. Chattanooga 5, Tenn., U.S.A. (Pacific and U.S.A. land and marine shells offered; interests worldwide).
 - e) Mr. E. Walton, c/o., G. E. Taylor (Overseas) Ltd., RN/WT Station, Vacoas, Mauritius.
5. Communications for the Conchological News should be double-spaced, to permit editing, and preferably typewritten.

Volutes

The Volutes always seem to me to be surrounded by a slight air of mystery quite lacking from most of the other popular tropical marine families. Perhaps it is because their usual haunts are so far distant from the British Isles and the fact that they are quite unrepresented in the European seas.

A good range of specimens is usually rather harder to obtain than with most other well known types of shell, and the subtlety of their colouring rivals even the finest cowries.

There are about seventy-five species of Volute, now split into many genera, and about as many again are known fossil. They are - and always were - lovers of the warm seas, and the big majority of them now live in the Southern Hemisphere. Fossil relatives may be found in the English rocks, dating from the times when this Island enjoyed a tropical climate.

Most Volutes are deep water dwellers and often live on rocky bottoms where any kind of trawling is impossible; this is one reason for the rarity of some of the species. One or two shallow water genera however, such as Alcithoe, can be found on the Australasian beaches. Volutes inhabit deep water off the South African coasts, where the best places to seek them are often in the stomachs of certain fish; a dozen species inhabit the China Seas, eighteen off New Zealand, four are found in the Caribbean, and half a dozen on the coast of South America, where they extend almost to the cold waters of Cape Horn.

In this family the body of the animal is rather distinctive. The foot is very large, partly hiding the shell, and is used for enveloping the prey before eating it. The mantle, also, is of unusual size, and is reflected over the top of the shell as in the cowries. The shell is thus protected from incrustation and damage throughout the life of the animal and should come to the collector in a perfect glossy condition. Volutes are in fact near relations of the cowries, and when the very young shells of both are compared, it is often difficult to tell them apart. The eyes of the Volute are carried on lobes at the base of the tentacles and some species have a very small and inadequate looking operculum.

The shape of the shell is distinctive, but it is much more easily recognised than described. The columella usually bears four diagonal plaits which enlarge in size towards the aperture. Four similar plaits can be seen in Mitra, the closely allied Mitre shells, but in their case the largest is nearest the spire. The colouring of the Volutes is subtle and invariably beautiful, and it has been said that their palette is more variable than their pencil. Ivories, oranges and browns perhaps predominate, but fine and regular patterns of dots, lines or splashes in brilliant colours are often found. Maculopeplum junonia from the Caribbean is a striking example, with soft black spots scattered evenly over a cream coloured ground. It is rare enough to be much sought after by American collectors, and usually seems to fetch a high price among them.

There are of course, some much rarer species than this and perhaps the most famous in existence is the Courtier Volute, Voluta aulica, which was known for many years only by the unique type specimen. This belonged in the eighteenth century to the celebrated museum of the Duchess of Portland and was described in the catalogue of that collection by Dr. Solander, a Swedish pupil of Linné, who accompanied Captain Cook on his voyage round the World and who was afterwards employed at the British Museum arranging the valuable specimens which were brought back from that voyage. Of the Courtier Volute Dr. Solander wrote: 'No. 4021 Voluta aulica, a beautiful red-clouded species of the Wild Music kind: its country unknown, unique.' After passing through various famous collections, this specimen is now in the British Museum (Natural History), where it was joined by some similar specimens found by Cuming in the Sulu Archipelago. It was of one of these that Broderip wrote, that when considering the novelty and lovely arrangement of colour in this admirable specimen, he felt that a description would convey but a faint idea of one of the most beautiful shells he ever knew. However, he accompanied his notes with a remarkably fine illustration.

Many of the nineteenth century men of science had an attractive way of occasionally becoming lyrical over the subjects of their study, and it seems to me that we can learn something from them in this respect. As regards Volutes, the enthusiasm seems very natural, since for subtlety and beauty, few things in the animal kingdom can match them.

T. E. Crowley

INTRODUCTION TO MOLLUSCAN TAXONOMY

(1) Species and Subspecies

It is hoped that this short series will fill a long felt want for a brief and reasonably simple introduction to taxonomy and to the technical terms used by zoologists in the classification of animals, both recent and fossil, and of the mollusca in particular.

The Species

The species is the most important taxonomy category, an understanding of the nature of species is indispensable for taxonomic work. The species concept of the biologist goes back to J. Ray, who in his 'Historia Plantarum' (1686) used the term species, much as it was used later by Linnaeus and the 19th. Century taxonomists.

A species definition is merely the verbalisation of a species concept. Species concepts are derived from a study of species in nature. A student of any local fauna finds that it is composed of well-defined 'Kinds' of animals and plants. In Great Britain for example there are 7 kinds of water snails of the genus Lymnaea. These are species. The individuals within a local population of such a species are freely interbreeding but are separated by a distinct gap from individuals of all other species. In spite of the morphological similarity of some of these 7 species, each one is separated from every other one by a definite gap. No intermediate has ever been found. They do not interbreed; they are reproductively isolated.

It is this discontinuity between natural populations that impressed the early naturalists, and which remains the corner-stone of the species concept of the modern systematist.

Species therefore may be defined as follows: Species are groups of actually (or potentially) interbreeding natural populations which are reproductively isolated from other such groups.

The Subspecies

The subspecies is the only infraspecific taxonomic category. It may be defined as follows: Subspecies are geographically defined aggregates of local populations which differ taxonomically from other subdivisions of a species.

When the species concept was first developed, the species was first thought to be something stable and uniform, composed of individuals that conform to type. Individuals that did not agree with the type were segregated as 'varieties'. Subsequently it was found that the 'variety' was a composite concept, including both variant individuals and variant populations. The name variety for the latter category was eventually replaced by the term subspecies.

It must be borne in mind however that all taxonomic categories are somewhat heterogeneous and that completely uniform population groups do not exist in sexually reproducing species. Not only the species but the subspecies also is an assemblage of populations, except in the rare case of exceedingly localised relict forms or insular populations, for example the land snail genus Chilinopsis on the island of St. Helena.

To qualify as a subspecies, such an assemblage of populations must be taxonomically different from other subspecies, but what is taxonomically different can be determined only by agreement among taxonomists.

Further reading

- 1) Cain, A. J., 1954, Animal Species and Their Evolution. Hutchinson's University Library.
- 2) Calman, W. T., 1949, The Classification of Animals. Methuen, London.
- 3) Huxley, J. S. (Editor), 1940, The New Systematics. Oxford University Press.

- 4) Schenk, E. T. and McMasters, J. H., 1936, Procedure in Taxonomy, Oxford University Press.

T. Pain

Field Meetings

The following field meetings have been arranged for 1961:-

Sunday June 18th.	Totland and Colwell Bays, Isle of Wight Leaders: Messrs. T. Pain and F. R. Woodward
Sunday July 2nd.	Maidenhead, Berkshire Leader: Mr. S. P. Dance
Sunday August 20th.	Powick, Worcestershire, R. Teme Leader: Mr. F. R. Woodward
Sunday September 17th.	Woodbridge, Suffolk, R. Deben Leaders: Messrs. T. Pain and M. Goodchild
Saturday and Sunday September 31st. and October 1st.	Whitby, Yorkshire and the R. S. Esk Leader: Mr. F. M. de Bartolome

Members wishing to attend any of the above should contact the field meeting secretary not later than two weeks prior to the date of the meeting.

T. Pain
Hon. Secretary, Field Meetings.

████████████████████,
Millbank,
London,
S.W.1.

 Produced by 'The Conchological Society of Great Britain and Ireland'

Snails in a Sussex Garden

A few years ago, I made a careful investigation of the snail fauna of our garden, in West Barnham, Sussex; and I found the results surprisingly interesting. The garden was of about $2\frac{1}{2}$ acres, situated a quarter of a mile north-west of Barnham railway station. I acquired the house in 1945, and I gathered that the neighbourhood had been open meadowland till developed about 50 years ago. Half our acreage consisted of neglected garden and orchard and the rest was still original meadowland, with Sweet Vernal Grass (Anthoxanthum odoratum L.) growing there. Several factors rendered our garden an unpromising terrain in which to find any large snail fauna. It was neither on nor near to the bare chalk beloved by so many species, and the soil was brick-earth with only a small lime content. There was no diversification of terrain, such as ditch, pond, bank or old ruinous wall which might favour extra species, and finally the area was dominated by pine trees, so that the ground beneath was strewn with the needles, the resinous content of which is, I believe, disliked by most snails. Yet, despite these apparently adverse factors, I found a fauna of 22 species (excluding the slugs) in the garden. In this article, I shall use the classification and nomenclature employed by A. E. Ellis, 'British Snails', 1926.

Vertigo pygmaea (Draparnaud) was found at two spots in the meadowland, and collected by shaking moss over paper and searching the residue with a hand lens. Lauria cylindrica (E.M. da Costa) may have been a recent introduction, as I only found it on a newly constructed rockery and on the spot where the rocks had been temporarily stored prior to the work. The rocks, irregular concretions of Eocene Bognor Rock, had come from an old rockery in front of a Georgian terrace in Bognor Regis, where, within reach of the sea spray, it had doubtless existed since Regency times. In deep earth-filled pot-holes in the rocks, I found bleached and crumbling shells of this species.

Vallonia costata (Müller), and V. pulchella (Müller) were both collected by searching under stones, bricks, etc., and by placing all unwanted shells of larger size in a box and shaking it, a trick which often yields the tiny species, which have been hiding inside the larger empty shells. Coecillioides acicula (Müller) was also present in the garden, and I have found it, above ground, by searching the fruiting heads of moss on the rockery stones on bright spring mornings. Cochlicopa lubrica (Müller) was common everywhere in damp spots. Ena obscura (Müller) is possibly another recent introduction, as I have only found it on some heaps of local road grit brought in to improve the soil, though, alternatively, it may be native to the garden and may have congregated on these favourable raised sites. Punctum pygmeum (Müller) occurs commonly amongst moss in the meadowland, with V. pygmaea, and is collected by the same method; its satin-like surface is characteristic.

Goniodiscus rotundatus (Müller), so widely and generally distributed, is uncommon in our garden, but I found a thriving colony under the staging in our conservatory, a brick structure with a concrete floor. Clausilia rugosa Draparnaud was very scarce with us; I have only found it on the heaps of road grit and on a heap of builders rubble from a very different source. This again suggests that both this species and Ena obscura are native to the garden, and have selected the most favourable sites in which to congregate. Helicella caperata (Montagu) was found plentifully in the meadowland, with one example of the variety ornata Pickard. Theba cantiana (Montagu) was common in the more open parts, amongst rough herbage; the punctate ornament of the pink lining of the aperture is a feature I have not seen mentioned.

Trichia hispida (Linne) was one of our most abundant species, occurring in damp spots. I found one example of its variety depressula Dumont & Mortillet. Our commonest species is unquestionably Trichia striolata (C. Pfeiffer), with its varieties alba Moquin-Tandon, rubens Moquin-Tandon and albocinctus Cockerell, sharply keeled around the periphery. Cepaea hortensis (Müller) was fairly frequent, despite the number of Song Thrushes in the garden. To the human collector, the typical banded form outnumbers the unbanded form of the variety lutea Pickard by ten to one, but around the thrushes' anvil stones the yellow shell predominates. Helix aspersa Müller is not common in the garden, though a colony wrought much havoc amongst our Crinums.

Retinella radiatula (Alder) occurs with V. pygmaea and Punctum pygmeum amongst moss in the meadowland, and was obtained by the same method of collecting. Retinella nididula (Draparnaud) was common throughout the garden, mainly in the damp spots. Oxychilus cellarius (Müller) is fairly common under stones in damp places. Judging by the surrounding district, I am fortunate to have my own particular favourite species, Oxychilus lucidus (Draparnaud), in our garden, for it seems scarce in this part of West Sussex. We found it under stones and similar hiding places. This snail evidently falls a frequent victim to mice, judging by the characteristic type of damage noted in dead shells. Vitrea crystallina (Müller) was fairly frequent, in damp spots under stones, and was also obtained from boxes of larger shells, shaken as already described. Vitrina pellucida (Müller) is more common, occurring in similar situations throughout the garden.

E. M. Venables, F.G.S.

Land and Freshwater Snails: Additions to the British List Since 1926

It has been suggested that a list of the non-marine Gastropoda which have been recognised as British since the publication of British Snails, with references to descriptions, would be useful to collectors. This does not include mere changes in nomenclature, most of which are in the last edition of the Census of the distribution of British non-marine Mollusca (J. Conch., 23; 171-244, 1951). Acicula Hartmann replaces Acme, and Viviparus contectus (Millet) replaces V. fasciatus (Müller), returning to the usage of the earlier authors. For slugs, reference should be made to two publications by Dr. H. E. Quick: 1. Linnean Society Synopses of the British Fauna, No. 8. Slugs (Testacellidae, Arionidae, Limacidae), 1949, sold by the Linnean Society, Burlington House, Piccadilly, London, W.1., price 2/6d. net. 2. Bulletin of the British Museum (Natural History), Zoology, vol. 6, No. 3. British Slugs. 1960, price 45/-. The freshwater species are briefly described and illustrated in Freshwater Biological Association Scientific Publication No. 13. A key to the British fresh- and brackish-water Gastropods, by T. T. Macan and R. D. Cooper, 1949, price 2/-, sold by the F.B.A., The Ferry House, Far Sawrey, Ambleside, Westmorland.

The following are the recently added species, exclusive of introduced aliens found chiefly in greenhouses, and species only known as fossil in the British Isles.

Carychium tridentatum (Risso): mentioned as a variety of C. minimum in British Snails. Watson, H., and Verdcourt, B., 1953, The two British species of Carychium, J. Conch. 23: 306-324, pls. 9, 10.

Catinella arenaria (Bouchard-Chantereaux): Quick, H. E., 1933, Anatomy of British Succineae, Proc. Malac. Soc. Lond., 20: 295-318, pl. 23-25.

Cochlicopa lubricella (Stabile): Quick, H. E., 1954, Cochlicopa in the British Isles, Proc. Malac. Soc. Lond., 30: 204-213, pl. 19.

Arion lusitanicus Mabille: Quick, H. E., 1952, Rediscovery of Arion lusitanicus Mabille in Britain. Proc. Malac. Soc. Lond., 29: 93-101.

Arion rufus (L.): mentioned as a variety of A. ater in British Snails, now regarded as a subspecies. Quick, H. E., 1947, Arion ater (L.) and A. rufus (L.) in Britain and their specific differences, J. Conch., 22: 249-261.

Vitrea contracta (Westerlund): Kuiper, J. G. J., 1948, Over het voor komen van Vitrea contracta Westerlund in het Haagse Bos. Basteria, 12: 28-33.

Figured in Taylor, J. W., 1908, Monograph of the land and freshwater Mollusca of the British Isles, 3: 113, fig. 153. Regarded as a variety of V. crystallina in British Snails.

Milax insularis (Lessona and Pollonera): Quick, 1960, 156.

Milax budapestensis (Hazay): Phillips, R. A., and Watson, H., 1930, Milax

gracilis (Leydig) in the British Isles, J. Conch., 19: 65-93, pls. 1, 2.
Agriolimax agrestis (L.), as distinct from A. reticulatus (Müller), and
A. caruanae Pollonera: Quick, 1949 and 1960.
Hygromia cinctella (Draparnaud): Comfort, A., 1950, Hygromia cinctella
(Draparnaud) in England, J. Conch., 23: 99-100.

A. E. Ellis

BRIEF NOTES

1. Dr. J. S. Jackson, of the National Museum of Ireland, Kildare Street, Dublin, is preparing a detailed distribution map of the spotted slug (Geomalacus Maculosus Allman) and would be glad to receive any records. Exact localities and dates are wanted, and any details as to numbers observed, geological formation, vegetation, etc. would be welcome.
2. 60 Members have not yet paid the subscription due on the 1st. January 1961. Will these members please remit to the Treasurer, C. A. Raffray, [REDACTED], Salisbury, Wiltshire, as soon as possible.
3. The need for prompt action to save some of the finest of British nature localities has been realised in the formation of the Gloucestershire Trust for Nature Conservation Ltd., which has its inaugural meeting on September 30th. under the chairmanship of Peter Scott. Ordinary membership costs £1 (under 18, 7/6d.). All details may be had from the Secretary, John F. Pontin, [REDACTED], Woodmancote, Nr. Cheltenham, Gloucestershire.
4. Mr. Biggs and Mr. Heppell would like to examine specimens of Venus striatula (da Costa) and Venus gallina L. from as many British and European localities as possible in order to work out the geographical variation. Specimens should be sent to Mr. Heppell, c/o. Mollusca Section, Department of Zoology, British Museum (Natural History), London, S.W.7, and will be returned if required.
5. Wanted to exchange or purchase recent and tertiary mollusca (especially small ones) from any part of the world. Useless to apply without list of available species. John L. Staadt-Staid, [REDACTED], Rheims, Marne, France.
6. Wanted - shell-association material: shell ornaments, shell bygones, shell money, tools or amulets, freak and unusual shells. Buy or exchange for shells, British or exotic. Mrs. S. M. Turk, [REDACTED] Reskadinnick, Camborne, Cornwall.

Littoral Collecting in the Scilly Isles

Scilly is composed of some three hundred islands and rocks, and lies 28 miles off Land's End in a westerly direction. Only five of the Islands are inhabited and the largest of these, St. Mary's, is no more than nine miles in circumference. These Islands are therefore ideal grounds for the Marine Biologist. For some years I have been fortunate in being able to join in a residential Field Course on these Islands. The number of students varies between 20 and 30 and their ages from 13 to 60; their interests range through Geology, Ornithology, Entomology, Botany, Marine Biology and Conchology; at home they may be housewives, engine-drivers, head-mistresses, professional biologists or senior pupils. All are encouraged to collect and report on specimens for one another whatever their interests. Twice a day they meet to identify and discuss specimens.

The Scillies lie exposed to winds from all quarters. The climate is mild as is witnessed by the sub-tropical gardens on the Isle of Tresco, but the sea is rarely calm and the waves constantly batter the granite shores. Most of the species of the Cornish coast are common to the Scilly Isles. In the Victoria County History of Cornwall (1906) Scilly had some 280 species compared with about 350 in the Cornish records. Many of the species not present in the Scillies (compared with Cornwall) are rarities, but there are some note-worthy absentees.

None of the rock-boring Piddocks occur as they are presumably unable to make niches in the famous Scilly granite which contains much quartz. Dwarfed specimens of the rock-borers Hiatella gallicana (Lamarck) and H. arctica

(Lamarck) occur in small numbers in the hold-fasts of sea weeds, though it may be noted that the inter-tidal brown fucoids are rare on these exposed shores. Two of the commonest species on Cornish rocky shores are absent from Scilly. One is the mussel of which only a few solitary specimens are to be found: they are very incurved forms, probably of the Mediterranean species, Mytilus galloprovincialis Lam., which is commoner than the Common Mussel, Mytilus edulis L., in most parts of Cornwall. The other is the Edible Winkle, Littorina littorea (L.) of which only two specimens have ever been recorded.

The Scillonians eat Thick Top shells, Monodonta lineata (da Costa) which they call Winkles, and which are both abundant and of a great size on most of the shores. Small 'kitchen-middens' of these shells may be seen used as rut-fillings on some of the rough roads of St. Martins. Least Winkles, Littorina neritoides petraea (Mont. 1803), and Rough Winkles, Littorina saxatilis (Olivi), are found wherever there are suitable cracks and crevices, but nowhere are they common -the commonest subspecies of the Rough Winkle are Littorina saxatilis rudis (Maton) and Littorina saxatilis nigrolineata Gray, the latter reaching well over half an inch in length.

Patella depressa Pennant and Patella vulgata L., are equally common, but Patella athletica Bean, typical of exposed shores on S.W. coasts seems to be quite sparsely distributed in these islands. On the south shore of Tean which was notably more sheltered than other shores visited, P. depressa was not found, and P. vulgata was large and plentiful.

Purple Dog Whelks, Nassarius reticulatus (L.) are common, but nowhere abundant, perhaps because mussels, their main food elsewhere, are so rare.

Many of the mollusca which on sheltered shores would be found amongst the sea-weed fronds, seek shelter under the thousands of blocks and boulders, often of enormous size, which are strewn or banked up on most of the shore line. Flat Tops, Gibbula umbilicalis (da Costa) and Grey Tops, G. cineraria (L.) are abundant under many of these boulders. Some years enormous Plumed Sea Slugs, Aeolidia papillosa (L.) are to be found in the Spring, spawning prolifically.

Amongst the smaller shells Cingula semistriata (Mont.), Cingula cingillus (Mont.), Rissoa parva (da Costa) and its variety interrupta are very common. Lasaea rubra (Mont.) is fairly common and last year some specimens of Kellia suborbicularis (Mont.) were found. This year we had our first tentative attempt at dredging and took dozens of Small Spire shells, Rissoa parva (da Costa). These were bright pink with encrustations of the tiny coralline alga, Melobesia sp.: they looked very beautiful as the tiny snails moved along the leaves of the Eel grass on which they were found.

Mrs. S. M. Turk

INTRODUCTION TO MOLLUSCAN TAXONOMY

(2) The Significance of Types

It is very difficult to define or characterise a taxonomic entity solely by means of words. It is obvious that more secure 'standards' are required to tie scientific names firmly to their objectives. These standards are the types.

The modern type concept has developed slowly. The original draft of the International Rules of Zoological Nomenclature (1901) did not include any directives concerning types. Formal rules and recommendations regarding type specimens were adopted at the Paris Congress (1948).

The type of a species is a definite specimen, but the type of a genus is a designated species. It does not matter how many new taxonomic categories and characters are discovered, the verbal definitions may be continuously modified and improved by reference to the types. Whenever types are available, it is an easy matter to check them for newly discovered taxonomic characters.

The original type specimen is the last court of appeal in cases of doubt as to the applicability of a name. If a description and a type specimen seem to apply to different entities, the name should be assigned to the species to which the type specimen belongs, provided it is certain that it is the type selected by the original describer.

Types of subspecies are subject to the same rules as types of species. The type of a species is always simultaneously the type of its nominate subspecies.

Kinds of Type Specimen

The principle kinds of types may be classified and defined as follows:-

I. Primary types.

A. Holotype (or simply type). The single specimen designated or indicated as 'the type' by the original author at the time of publication of the original description.

B. Paratype. A specimen other than the holotype which is before the author at the time of original description and which is designated as such or is clearly indicated as being a specimen upon which the original description was based.

C. Syntype (= cotype). One of several specimens on which an author bases an original description when no single specimen is designated as the holotype.

D. Lectotype. One of a series of syntypes which is selected subsequent to the original description and thenceforth serves as the definite type of the species. In order to be effective, such selection must be made known through publication.

II. Supplementary types.

A. Neotype. A specimen selected as type, subsequent to the original description in cases where the primary types are definitely known to be destroyed.

B. Plesiotype. A specimen on which subsequent descriptions or figures are based.

III. Typical specimens.

A. Topotype. A specimen not of the original type series collected at the type locality.

B. Metatype. A specimen compared by the original author with the type and determined by him to be conspecific with it.

C. Homotype. A specimen compared by another than the author of a species with the type and determined by him to be conspecific with it.

The International Commission at its Paris meeting (1948) officially sanctioned the use of three kinds of types - holotypes, syntypes and lectotypes - as being "available to supplement the characters noted in the original description".

Actually most of this elaborate nomenclature of types is superfluous. As Williams (1940) has stated correctly, "There can be no possible reason for having any other type except a single one for each name". Only holotypes, syntypes, lectotypes and neotypes have nomenclatural significance, but some of the additional terms for types mentioned above have proved useful on zoological grounds.

Further Reading

- 1) Mayr, E., Linsley, E. G., and Usinger, R. L., 1953, Methods and Principles of Systematic Zoology. McGraw-Hill, New York.
- 2) Simpson, G. G., 1940, Types in Modern Taxonomy. Amer. Journ. Sci., 238, 413-431.
- 3) Williams, C. B., 1940, On type specimens. Ann. Ent. Soc. Amer., 33, 621-624.

 Produced by 'The Conchological Society of Great Britain and Ireland'

Biographical Note

Probably few conchologists can pin-point the exact time and place at which they first became interested in their hobby. On the afternoon of 20 May 1919, when a sixteen year old boy at Kingswood, I set out to cycle from Bath to Trowbridge, but never reached there. The reason was not an accident or breakdown (such as frequently happened), but the fact that the road ran close to the Kennet and Avon canal near Claverton. Water always exercising an irresistible attraction, I chained up my bicycle (a superfluous precaution) and inspected the canal. The water was shallow and perfectly clear and full of life: a letter I wrote to my sister records swarms of roach, also newts, tadpoles, water rats, water shrews, water beetles, caddis and dragonfly larvae, "and also a great variety of freshwater shellfish." The dry mud along the banks was also full of empty shells of all sorts; "what surprised me most, however, was the great number of large bivalves, like big mussels." I had never seen anything like these before, the only freshwater shells I had previously collected being two Lymnaea glabra casually picked out of an old tin in a pond at Sennen in Cornwall.

I took away as many shells as I could accommodate and returned later for more. A copy of Rimmer in the school reference library enabled the specimens to be identified. My life-long interest in non-marine Mollusca therefore began at about 3 p.m. on 20 May 1919, where the Bradford-on-Avon road runs by the canal just north of Claverton near Bath. No memorial yet marks the spot.

A. E. Ellis

Mollusca on Liverpool Bomb-sites

Mollusks do not seem to be common on bomb-sites, and the only records known to me are those of Lt.-Col. Bensley (London Nat. for 1951, pp. 83-4). My own rather casual searches on many Liverpool bomb-sites from 1946 onwards only yielded mollusca on two sites which may be worth noting. The first site was quite small, at the corner of Hanover St. and Seel St., near Central Station. There were many plants; eighteen species of flowering plants and two ferns were recognised on my one visit (11.10.1957). No garden escapes were present. Woodlice, centipedes, spiders, and harvestmen (apparently Liobunum sp.) were all fairly frequent, and a small colony of Oxychilus cellarius (Müll.) included both adult and young examples.

The second site was much larger, a much trampled area between Islington and Daulby St.. Only six species of flowering plants were seen (17.10.1961), but there was a large colony of Limax flavus L. under old flagstones and lumps of tarmac, together with two specimens of Milax sowerbii (Fer.). Both are probably relics of the old houses and gardens of the area.

All three species are probably survivors of the blitz and not recent immigrants.

N. F. McMillan

The Strombidae

Though lacking the striking colour ornamentation exhibited by such families as the Volutidae and Cypraeidae, the Strombidae are well worthy of examination for their beautiful and unique architecture. Who has not at some time held and gazed with wonder at the family's most well known member, the Giant (or Queen) Conch of the Carribean? (Strombus gigas). As we examine this wonderful traveller, who has made his way, with the help of man, to such remote spots as the prairies of the Middle West and the parlours of Bermondsey, we see indeed a shell of great beauty.

The Strombs inhabit the Carribean area in great numbers, and there exhibit, as well as their characteristic wing lips, many beautiful colour forms such as the brown and orange-reds of the Fighting Stromb (Strombus pugilis), the genotype of the family, or the orange, chestnut and lilac of the Cockwing Conch (Strombus costatus).

However, we must not think that the West Indian theatre has a monopoly of the Strombs. They are almost world wide in their distribution in tropical and subtropical waters. The Pacific, particularly the East Indian-Australian waters, yield a large number of species. The Partridge Wing Stromb (Strombus canarium) with its brightly painted shell, the Diana's Ear, (Strombus auris-dianae) with its finely sculptured wing, the Silver Lip (Strombus lentiginosus) with its only slightly dilated, but extremely thickened outer lip and beautiful mouth colouring, and the Hunchback Stromb (Strombus gibberulus) with its peculiar distorted appearance, are typical examples from the area.

In the Indo-Pacific we meet another branch of this great family, the Spider or Scorpion Shells. These start life as shells somewhat resembling the typical conus; however, as they grow older the outer lip enlarges and dilates, but instead of the wing-like shape, the shell forms a number of finger-like processes. The Gouty Spider Shell (Lambis chiragra) and the smooth Spider Shell (Lambis lambis) are typical in form and display some of the beautiful colouring met with in this sub-group.

Another small but interesting sub-group are the Beak Shells of the Indo-Pacific and China Seas, typified by Tibia martinii. In these the spire is long and graceful, the outer lip only slightly dilated and shallowly notched, the posterior and anterior canals being well developed.

The Little Auger shells of the same habitat (genotype Terebellum subulatum) are smooth sub-cylindrical with a long narrow aperture and a thin undilated outer lip. In life, however, the animal displays many Strombidian characteristics - good sight, the ability to throw itself by a lunging action, and the usual gargantuan appetite.

What else of this strange family? They may yield pearls as does Strombus gigas, or again as is the case with Strombus gigas, the flesh may be eaten, though one is not usually told that it is a carrion feeder until one has enjoyed a good meal made from its large body. Then again Strombus raninus, in its early life, mimics the poisonous cone shells, thereby, it is thought, keeping many of its foes at a respectful distance. In adult specimens this form is lost and the characteristic wing lip appears.

One cannot close the Strombidae without a few words about two close relations. The Ostrich Foot Shells (Struthiolaria) of New Zealand and Australia have a handsome spire and an almost square mouth, due to outer lip dilation and deformation. Lastly, the Pelican Foot Shells, represented in the British Isles by Aporrhais pes-pellicani, a truly delightful little shell with slender spire and an extremely dilated and thickened outer lip with short finger-like processes, reminiscent of the Spider Shells - an exotic stranger in the midst of our rather sombre molluscan fauna and a fitting specimen with which to close this short survey.

L. S. Atkins

Learning in Nucella lapillus?

Among the best known of our native carnivorous Molluscs is the Common Dog Whelk, Nucella lapillus. It is interesting to speculate what governs a young specimen and how it learns to bore the shells of its victims - remembering that the hole bored must be in an advantageous position to allow the insertion of the radula to cause fatal damage to the bored animal.

Recently I observed a young specimen of Nucella lapillus - about 1 cm. in length - on the shell of a common Acorn Barnacle (Balanus balanoides). On removing the mollusc I noticed the commencement of a bore hole on one of the lateral plates, far down near the outer edge, where, if the line of bore were continued as started, no part of the body of the Barnacle would be met. Apparently the mollusc was not yet perfect in its hunting technique.

L. S. Atkins

(If any reader can throw light on this subject, perhaps they would write a short note - Compiler)

BRIEF NOTES

1. Subscriptions. Will the 13 members who have not paid their subscription for 1961 please do so without further delay. They will perhaps also remit their 1962 subscription at the same time.

Commencing on the 1st. January 1962 receipts for subscriptions, paid by cheque on a British Bank or by a Banker's Order, will not be sent unless a request is received. This is due to the last increase in postage rates. Cheques should be made payable to 'The Conchological Society of Great Britain and Ireland' and not to the Treasurer by name.

2. Will all members sending monies for insertions in the Conchologists' Newsletter please make cheques and postal orders payable to 'The Conchological Society of Great Britain and Ireland' and not to the Compiler or to 'The Conchologists' Newsletter'.

3. WANTED. Taylor (J. W.) Monograph of the L. & F. W. Mollusca of the British Isles, Parts 22, 23 and 24. G. W. Pitchford, [REDACTED], Southwell, Notts.

4. Mr. C. Paul would like to hear from members who have found LIVING examples of British Unionacea under 50 mm. in length, with a view to studying their ecology and early development. Specimens (which will be returned), and information, especially exact locality, type of locality and time of year, should be sent to: Mr. C. Paul, [REDACTED], North Harrow, Middx..

5. WANTED. Volumes of Rossmassler's "Iconographie..." and volumes of Theile "Handbuch..." not in library. Will purchase or exchange. H. E. J. Biggs, [REDACTED], Bromley, Kent.

6. The Journal of Conchology. The Society has decided to make substantial reductions in the prices of past issues of the Journal. For the time being, these reductions will be available to members only; the following new prices are nett.

Volumes 15 (1916) to 23 (1954) inclusive at 2s.6d. per number or £1 per volume.

Volumes 13 (1910) and 14 (1913) are incomplete but certain numbers are available at 2s.6d. each.

No earlier volumes can be supplied.

The Winckworth Marine List is now offered free to members on request; postage in this case 3d. per copy with order.

The price of Volumes 24 is now reduced to 7s.6d. per number; some numbers are not available. This is the general price and members' discount of 25% will operate.

All requests for publications should be made to the Hon. Secretary.

7. Mrs. Thelma Haywood, [REDACTED], Masterton, New Zealand, wishes to obtain shells from the coasts of England and would be glad to hear from anyone who is prepared to exchange with her.

8. By reciprocal arrangement with The South African Conchological Society, any member desiring contacts in South Africa should write to their Secretary: Mrs. L. Kerr, [REDACTED], Kenilworth, Cape Town, South Africa, with details. Their request or requests will be issued in their next circular.
9. Willing to exchange marine recent mollusca (including smaller species) from West and Northern Europe. Identification of shells not necessary. Mr. A. W. Lacourt, [REDACTED], Leiden, Netherlands.
10. An exchange list of North African non-marine shells collected by Dr. Juan Rutllant Bassets, [REDACTED], Melilla, North Africa, has been deposited with the Compiler, and is available on receipt of a stamped addressed envelope.
11. Mr. Michael Long of [REDACTED], Dingle, Co. Kerry, Ireland, would like exchange correspondents and is willing to send specimens from South West Ireland.
12. Mr. Romeo N. Lumawig of [REDACTED], Sampaloc, Manila, Phillipines has a very large selection of Indo-Pacific and non-marine shells to sell and will send lists on request.

The Cardiacea

The Cardiacea consists of two families only, the Cardiidae and the Tridacnidae. According to Theile, the former comprises eleven genera, and is of world-wide distribution. There are well over 200 species, of which ten can be claimed as British. Oddly enough, New Zealand, about the same size as Britain but with nearly five times as many molluscs, has but one member of the Family.

The Common Cockle, Cardium edule Linne, is one of the best known 'shellfish' in this country, and is consumed in large quantities in all parts of the British Isles, as it has been from time immemorial. It is the type species of Cerastoderma, a sub-genus of Cardium, of which Jeffreys writes, "This genus is redolent of the good old times. It carries with it a smack of true conservatism - progressive improvement without innovation. Every sound conchologist must rejoice at seeing the name Cardium preserved, with a few others, and to know that they have survived the extensive and often injudicious changes which systematists have been continually proposing since the death of the much-honoured Swede". Jeffreys may rest content that, after nearly a hundred years, the name Cardium is still with us, although many species once included in that genus now have other generic names, but are still included in the family Cardiidae.

Cockles are almost invariably sand dwellers, though a few species live in sandy mud. They bury themselves in the sand, using a large and powerful foot to do so. When the tide is in they often come to the surface of the sand and, using this foot, are able to propel themselves along in a series of hops, though the size of these hops has probably been exaggerated. In some cases it is more in the nature of a marine 'rock and roll'. In two of our own larger species, Cardium aculeatum and Cardium tuberculatum the foot is very large and bright red in colour, which has given rise to their Devonshire name of 'Red Nose'. Cockles are mainly sea dwellers, though some will live in estuaries. Cardium edule lamarcki will live in brackish water cut off from the sea, and two genera, Didacna and Adacna live in fresh water in the Caspian Sea and the Danube.

Cockles are suspension feeders: that is, they feed on plankton floating in the water. The two short syphons, which are united throughout most of their length, project just above the surface of the sand when the tide is in. Water enters the gill chamber through the lower syphon, is there strained through the meshwork of the gills, and leaves through the upper syphon. An interesting feature is the presence of pigment spots on the mantle and syphons, which may be sensory organs of sight, somewhat similar to the 'eyes' in the Pectinidae. These are not eyes in the true sense of the word. They are merely sensitive to light, and should a shadow pass across, the animal immediately closes its shell.

While some species of Cardium have smooth shells, e.g. the British Cardium (Laevicardium) crassum Gmelin, the majority are more or less strongly ribbed. These radial ribs, with their intervening furrows, continue right to the edge of the shell so that the two valves interlock. Even the smooth forms have a sort of milled edge, making a close fit. An unusual species is Cardium lyratum Sowerby, from Madagascar, in which half the ribs are radial, the other half almost concentric, giving the shell a most strange appearance. This interlocking of the valves is even more greatly emphasised in the Tridacnidae, which contains but two genera, Tridacna, which includes the Giant Clam of Australia, and Hippopus.

L. W. Stratton

INTRODUCTION TO MOLLUSCAN TAXONOMY

(3) The Genus

The genus is a collective taxonomic unit consisting of a number of similar or related species. It is distinguished from all other higher categories by being recognised in the scientific names of a group of species. Whilst the scientific trivial name signifies singularity and differentiation, the generic name calls attention to the existence of a group of similar or related species - it relieves the memory.

An objective criterion for generic rank does not exist equivalent, let us say, to that of reproductive isolation for a species criterion. It is therefore impossible to give an objective definition of the genus. A convenient definition is as follows: A genus is a systematic category including one species or a group of species of presumably common phylogenetic origin, which is separated from other similar units by a decided gap.

Genera are tied down by type species and although no one species can be 'typical' of a group of species assigned to a genus, the generic type serves as a fixed point for the generic concept. This situation has been likened to a flat piece of rubber nailed to a table at a single point on its surface. The rubber (generic contents) may be stretched in one direction or another by adding or subtracting species, but it always includes the nail (type species). The species which serves as the type of a genus is, in turn, tied to type specimens, so that the genus is firmly anchored. It is only the extent or limits of the genus that are arbitrary. The type system provides another aid in delimiting genera, i.e. all the species in a genus must resemble the type of that genus more closely than they resemble the types of other genera.

Because species are not evenly distinct from one another, but are arranged in smaller or larger groups, the genus becomes a logical taxonomic category as the next highest grouping above that of the species. Taxonomic characters that prove generic distinctions do not exist. Literature would have been spared many unnecessary generic names if Linne's (1737) warning: "The characters do not make the genus, rather it is the genus that give the characters", had more frequently been kept in mind.

The Meaning of the Genus. The genus, as seen by the evolutionist, is a group of species that has descended from a common ancestor. It is a phylogenetic unit. The characters of the genus are thus either the critical characters of the ancestral species or such characters as have been jointly acquired by all the species.

The genus, however, has a deeper significance. Upon closer examination it is usually found that all the species of a genus occupy a more or less well-defined ecological niche. The genus is thus a group of species adapted for a particular mode of life and it is probable that all generic characters are either adapted or correlated with adaptive characters.

It should be remembered that the essential property of a species is reproductive isolation, the essential property of a genus is morphological distinctness usually correlated with the occupation of distinctly different ecological niches.

Further reading. Mayor, E., Linsley, E.G., & Usinger, R. K. Methods and Principles of Systematic Zoology, McGraw-Hill, New York (1953).

T. Pain

Produced by 'The Conchological Society of Great Britain and Ireland'

J. G. Bruguiere 1750-98

In every age there have been men whose contribution to history was less in their personal achievement than in the inspiration which they gave to others. Samuel Johnson was one of these; his writings in all their literary perfection are very little read these days and apart from his Dictionary, his personal achievement is small; but he had a wonderful gift of arousing talent in others and imbibing his friends with an enthusiasm which formed perhaps the main contribution to one of the richest literary eras the world has known.

It seems to me that in some ways a similar influence can be seen in the life of Bruguiere, short though it was and dogged by ill-health. It is only rarely these days that we notice the suffix 'Brug.' - or more probably '(Brug.)' - after the specific name of a shell, and these scanty remains indicate little of the man's contribution to science. Truth to tell, much painstaking work of his has usually been attributed to one or other of his contemporaries.

A scientist's job, having verified his findings, is to impart them to the world so that they may be shared by other scientists. Unfortunately, human nature being what it is, unless this is done in proper form, not only the information but the credit also, may be appropriated by others, and this is what seems often to have happened to this generous individual. It is now almost impossible to trace the whole scope of his work, but we can gather many clues in cases where other zoologists, notably Lamarck, honourably acknowledge the help or inspiration which he gave them. A great deal of Lamarck's best known work is, in fact, based entirely on a solid foundation of Bruguiere's development of the 'Vermes - Testacea' system, Linne's preliminary attempt to sort out what must in those days have seemed the incomprehensible muddle of the invertebrate world.

Bruguiere's work on these lines, fragmentary and incomplete though it is, became of the utmost importance when the direction of further progress became clear. Geoffrey Saint Hilaire said in his 'Fragments Biographiques' that Lamarck's monumental researches into the invertebrates which brought him so much fame, were undertaken only to please and justify his friend Bruguiere. De Blainville also, in his 'Manuel de Malacologie' 1825, freely acknowledged that his work was written on principles laid down by Bruguiere.

Eighteenth century Montpellier was the birthplace of many well-known naturalists, among them d'Argenville, Grateloup, Rondelet and Moquin-Tandon, and it was here that Jean Guillaume Bruguiere was born in 1750. He took his doctor's degree at Montpellier, his principal study at that time being Botany, and embarked soon after, in 1773, with Kerguelen's expedition to the South Indian Seas. This engaged him for seven years, the climate and living conditions on board ship permanently ruining his health.

Back in Paris, Bruguiere proceeded to study the enormous collections of Caloune with the object of sorting out the 'Vermes - Testacea' for the great 'Encyclopaedie Methodique' of Diderot and d'Alembert, one of the first works to be based entirely on the Linnean system. Many famous scientists of the day contributed largely to this work, and it is not easy to sort out the credits. Much study has been put into the problem, notably by Sherborn, and it does appear that Bruguiere's contribution was a large one. Volume X comprised the last part of Latreille's Insects and the 'Histoire Naturelle des Vers', and it seems that Bruguiere wrote Part I by himself and Part 2 in conjunction with Lamarck and Deshayes. He also wrote the article on Conus in Part 3, in which priority of the species was later granted to Hwass. The

two men co-operated in classifying the latter's enormous collection and Bruguiere, who appears to have done all the written work himself, willingly gave all the credit to his colleague.

It must have been during this period that his influence over Lamarck was at its greatest, and his taxonomic work did much to open the way for Cuvier's establishment of the anatomical classification which, together with the Linnean system, is the foundation of all modern zoology.

It is to Bruguiere's advice that we owe the phyla of the Mollusca and Echinodermata, and it was he too, who showed Lamarck the need for separating the families of the Cephalopoda. Indeed, until Bruguiere suggested it, there was no such taxon as 'the family' although Cuvier's 'genera' usually concerned groups of much the size of what we now know to be families.

Lamarck's work on the 'Vermes - Testacea' was interrupted by the French revolution, and Bruguiere's unambitious life of solid support for his scientific friends underwent its last change, when Minister Roland asked him to join a scientific expedition to the Ottoman Empire. He undertook the task, although he must have suspected that its acceptance would probably be equivalent to signing his death warrant. Conditions met with during the course of the expedition were indeed bad, and when he arrived back after six years it was only to die very shortly afterwards at Ancona in 1798, aged 48.

His collections were entrusted to G. A. Olivier, the entomologist of the expedition, and were later put in order by de Ferussac who used them as a basis for his monumental 'Histoire Naturelle des Mollusques' 1819.

Zoology surely owes much to the modest nature and perceptive genius of Bruguiere.

T. E. Crowley

The Journal of Conchology

The medium of the Newsletter enables the Editor of the Journal to give an explanation to members of the delay in issuing the second number of Volume 25. It was intended that this should be published before the end of 1961, but this was not possible, as insufficient material had been received for a full number. All the material then in hand was sent to the printer on 13th. December, and some papers received subsequently were despatched in January. During the first week of February galley-proofs of the 'copy' which had been sent in January were received, but not of that sent in December. Inquiries made by Mr. Raffray revealed that the papers sent in December had never been received by Messrs. Bennett Bros. and could not be traced. It may be relevant that shortly afterwards a postman at Salisbury was charged with the theft of mail-bags.

It was accordingly necessary to request all the authors who were involved in this lamentable affair to supply copies of their papers and illustrations, but further delay in publication was inevitable. No one regrets all this more than the Editor, but such a contretemps could not have been foreseen or prevented.

A. E. Ellis

Field Meeting at West Runton and Overstrand, North Norfolk, March 24th. 1962

Director: Mr. P. Cambridge

Fifteen members and friends (including four members of the Paramoudra Club) assembled at West Runton Station. The object of the meeting was to examine fossiliferous Upper Pleistocene beds in coastal sections. In excellent weather the party descended to the shore at West Runton Gap. The Chalk platform was seen on the shore, with remnants of Weybourne Crag Stone Bed, containing typical shells, including Mya arenaria in the position of growth. Above this much of the section is covered by a shingle beach but the main object of the meeting, the Upper Freshwater Bed (type section of the

Cromerian Interglacial) was well exposed at the base of the cliff. Members were able to see typical fossils - Viviparus, Ancylastrum, Valvata and Unio - but the shells were mostly too fragile to extract without breaking.

The party walked along the foreshore to East Runton Gap, noting excellent sections in the North Sea Drift as they went. The Boulder Clay and sands in these cliffs contain broken shell fragments - mainly Macoma balthica, Mya, Cardium edule and Mytilus. They then proceeded by car and bus, through the red brick Victorian town of Cromer, to descend to the beach again at Overstrand. Here, loose shelly Weybourne Crag was seen, resting on top of one of the massive Chalk erratics which are seen in the Boulder Clay of this part of the coast. Weighing thousands of tons, these huge masses have been moved, complete with their Crag cover, during one of the Ice Ages. The Chalk in these Bluffs is very fossiliferous and attracted the attention of some members who took away a good selection of belemnites, sponges, brachiopods, etc.. Indeed so attractive did this section prove that a last minute sprint was necessary to get back to the bus stop.

Only a few species of recent shells were noticed on this part of the coast. A few 'cuttle fish bones' (Sepia officinalis L), a valve of Mytilus edulis L and many dead Petricola pholadiformis Lmk still in their chalk crypts were seen. The only living species were Littorina saxatilis (Olivi) and L. littorea (L)

P.C.

Field Meeting at Shell Bay, Dorset, April 7th. 1962

Directors: Mrs. T. E. Crowley and Mr. C. P. C. Paul

A party of seven members and friends met at Sandbanks and proceeded by the ferry to Shell Bay. The abundance of shells at Shell Bay is dependent on the interaction of the longshore drift and the strong tidal currents flowing in and out of the narrow entrance to Poole Harbour. Normally the currents deposit shells on the western side of the entrance (i.e. Shell Bay) but on rare occasions they turn up in equal abundance at Sandbanks the other side. The majority of shells are dead and worn but excellent fresh examples can be found on searching and at low tide live material can be collected in the vicinity of the old Quay - a mass of jumbled rocks with a fairly typical rocky shore fauna of gastropods.

Conditions were not ideal on Sunday the 7th. as a strong N.W. wind was blowing sand off the sand dunes onto the shore and covering the shells up as the tide receded. However, several interesting species were found including Velutina velutina - a species which I have never seen from Shell Bay before. Several of the party were in Dorset for the weekend and managed to collect on Saturday as well, on the two days collecting a considerable fauna was recorded and the complete list is being prepared by Mr. T. E. Crowley for the Marine Census. Notable finds included complete (i.e. both valves) examples of Pandora margaritacea, Lutraria lutraria, Laevicardium norvegicum and Gari depressa. Single valves of the first three species are common. The elephant's tusk, Dentalium entalis was found and the visit was marked by the extreme abundance of razor shells, Ensis ensis, Ensis arcuatus and Solen marginatus. Unfortunately the tide did not recede far enough for us to test Mr. Raffray's method of collecting live razor shells with salt. The party dispersed for the journey home at about 4.30 p.m.

C.P.C.P.

Commensual Crabs in Mytilus edulis L

While cleaning out three shells of M. edulis several small crabs were found living inside the shell with the mollusc. One mussel had three individuals living with it; two dirty brown about 3/16 inch in size and one pink 1/2 inch in length. These were all identified as pea crabs, Pinnotheres sp., the difference being sexual, the males being smaller than the females. In J. Sinel (1906) two species are given as British, one usually associated with Ostrea edulis L and the other confined to Pinna fragilis Pennart (= P. marina).

C. A. Raffray

BRIEF NOTES

1. Several issues of a Newsletter issued by the Pacific North-West Shell Club have recently been received from the U.S.A. This Newsletter, which is issued approximately every two months, was first published in January 1961 and much of the material in it is of considerable use by conchologists generally. Articles include short biographies of well-known conchologists, lists of shell publications available, notes on the preservation of chitons, radulae, etc., lists of shell dealers, articles on zoological theory, excellent check-lists and keys of American shells, together with other matter of general interest. Several members already belong to this club.

The Editor is Mr. Thomas C. Rice, [REDACTED], Poulsbo, Washington, U.S.A., and the annual subscription is two dollars.

2. WANTED. Volume V only of Jeffrey's 'British Conchology' (1862-69), either coloured or plain plates. Mr. L. C. Prebble, [REDACTED], [REDACTED], Binstead, Ryde, Isle of Wight.

3. Mr. P. Cambridge is preparing a series of colour transparencies of modern British Mollusca; these will cost about 1/6d. each, and will be available towards the end of the year if there is sufficient interest. Any members wishing to avail themselves of this offer should write to Mr. P. Cambridge, [REDACTED], Feltwell, Thetford, Norfolk, as soon as possible.

A Suggested Method for Extracting the Animals from Small High-Spired Shells

Some difficulty is often experienced in extracting the entire animal from its shell by the usual method employing a pin, and portions of the body left in a transparent or translucent shell spoil its appearance. The following method has been found useful in the cleaning of small snails, especially such species as Limnaea truncatula.

After boiling, and the removal of as much of the animal as possible, the remaining portion is washed out with a strong jet of water produced in the following way. A six to eight inch long piece of soft rubber tubing of suitable bore is attached to a cold water tap which is then allowed to run at moderate force. Two thirds of the lower end of the tube is compressed between finger and thumb, leaving a third of the orifice open to pass a strong jet of water. The shell is held with the long axis exactly in line with the stream of water which, directed into the aperture, washes out all residual soft parts at once, without damaging the shell. This method has been found most useful with small, high spired shells, and works best when the foot has been removed, although it may be employed to extract the whole animal in most cases, if required.

Miss J. Crowley

INTRODUCTION TO MOLLUSCAN TAXONOMY

(4) Taxonomic History

Taxonomy is the science of the classification of all organisms. The term is derived from two Greek words, meaning arrangement and law, and was proposed by de Candolle in 1813. It is built upon the basic studies of morphology, physiology, ecology and genetics.

Since the time of Linnaeus the number of known species of animals has increased enormously. Including sub-species there are probably more than 2 million named forms and new ones are being described at the rate of 10,000 per year. About 80,000 molluscs have been described.

The history of taxonomy goes back certainly to the ancient Greek scholars, notably Hippocrates (460-377 B.C.) and Democritus (465-370 B.C.) who included animals in their studies, however it was Aristotle (384-322 B.C.) who first brought together the knowledge of his time and formulated it into the beginnings of a science. He did not propose a formal classification, but provided the basis for one in his statement that "animals may be characterised according to their way of living, their actions, their habits and their bodily parts". The Aristotelian philosophy - it can scarcely be called a system - sufficed for students of animals for nearly two thousand years. It is only in the works of the immediate predecessors of Linnaeus that we find any attempt at a scientific classification.

Of all the earlier authors, the one that had the greatest influence on Linnaeus was John Ray (1627-1705), who recognised the difference between the genus and the species. The type of taxonomy that is based on the study of local faunas reached its peak in the great Swedish naturalist Linnaeus (1707-1778) whose work so influenced subsequent students that, with much justification he has been called the father of taxonomy. In the 10th. edition of his great work 'Systeme Naturae' (1758) the binominal system of nomenclature was for the first time consistently applied to animals, and this work became the foundation of systematic zoology. In addition to his new system of nomenclature, the work of Linnaeus was characterised by clear-cut species diagnoses and by the adoption of a hierarchy of higher categories: genus, order, class. It dominated taxonomy for the next century and most of the essentials of the Linnaean method are still the components of modern taxonomy.

Evolutionary thought, already widespread in the 18th. century (Buffon, Lamarck and many others), was to play a large part in the development of taxonomy, as a result of the stimulus it gave to biological work and the presentation to the Linnaean Society in 1858 of the joint views of Charles Darwin (1809-1882) and Alfred R. Wallace (1823-1913) on the theory of natural selection in one of the most dramatic episodes in the history of science. The publication of Darwin's 'On the Origin of Species' (1859) led to the search for 'missing links' and 'primitive ancestors', efforts which, although mainly unsuccessful, were not wasted because they resulted in the discovery of many new life forms. Not only were new species and genera discovered daily, but with reasonable frequency even new families or orders, and the result of such exciting discoveries attracted the keenest minds to the field of taxonomy.

The wealth of nature is not however inexhaustible and the period of major new discoveries in the higher animals was over well before the end of the 19th. century. It was followed by the most recent phase in the history of taxonomy, the study of evolution within species. The typological concept of the species was abandoned and replaced by a dynamic, polytypic concept. Interest reverted to the study of variation within populations and the slight differences between adjacent populations. This type of study was commenced in the second half of the 19th. century and amongst malacologists may be mentioned particularly in this connection, Kobelt and Gulick the Sarasim brothers and Crampton, whose biometrical studies in the local geographical variations in the genus Partula (1916) have become classical.

The taxonomic work of the present century is a continuous refinement of the methods and concepts developed in the 19th. Current taxonomy is customarily referred to as the new systematics (Huxley, 1940), but it must not be forgotten that its roots go back to the pioneer work so well done by the great naturalists of the first half of the 19th. century.

Further reading. Huxley, J. S., 1940. The New Systematics. Clarendon Press, Oxford.

Mayr, E., 1942. Systematics and the Origin of Species. Columbia University Press, New York.

Ramsbottom, J., 1938. Linnaeus and the Species Concept. Proc. Linn. Soc., London, 150th. Session.

Raven, C. E., 1942. John Ray, Naturalist. His Life and Works. Cambridge University Press.

Crampton, H. E., 1916. Carnegie Inst. Wash. Pub. 228, and 1932, ibid 410.

T. Pain

Field Meetings

The following field meetings have been arranged for 1962:-

- Sunday July 15th. White Downs, near Dorking, Surrey.
 (For land mollusca of Chalk Downs)
 Depart Victoria 10.18 a.m. - meet Dorking North
 Station 10.54 a.m. Thence by 'bus.
 Leader: Mr. A. W. Jones.
- Sunday August 25th. Amberley Wild Brooks, Sussex.
 (General freshwater fauna)
 Leader: Mr. M. Goodchild.
- Sunday September 16th. River Deben, Woodbridge, Suffolk.
 (For Littorina aestuari)
 Leader: Mr. D. Hepple.
- Sunday October 7th. Butley and Sudbourn Park, near Orford, Suffolk.
 (date subject to (To examine and collect from the Coralline Crag)
 alteration) PARTY LIMITED TO 8.
 Leader: Mr. P. Cambridge.

Members wishing to attend any of the above should contact the field meetings secretary at least one week prior to the date of the meeting to obtain full details of transport. A packed lunch should be brought to all meetings; tea is normally available.

T. Pain
Hon. Secretary, Field Meetings

████████████████████,
Millbank,
London, S.W.1.

Produced by 'The Conchological Society of Great Britain and Ireland'

A LITTLE MORE BIOGRAPHY

In most well organised homes each room has its own day for being cleaned. In my young days it was bedroom day on Wednesday. On a certain Wednesday my younger brother asked permission to dust mother's glove box. (They had those things in Edwardian days). In it he found a shell we later came to know was called the Sunset Shell. After some minutes of admiration he announced his intention of making a collection of shells. Our mother soon acquainted her friends of his intention and I well remember one contribution to our collection, a box of very beautiful Australian shells. I had by this time joined him in partnership.

Then next came our introduction to British land snails when we discovered that they comprised more than the common garden snail. At the end of our road in Enfield (Middlesex) was an area of lanes, fields and orchards known as Cherry Orchard Lane. Alas! no trace remains today for the area is completely covered with houses and roadways. Here we got our first thrill over the varied beauty of Cepaea hortensis and its band forms and colour varieties. We turned to books for information and 'cut our teeth' on Rev. J. G. Wood's primer 'Field and Lane' (still in my library). We soon added to this and most of our birthday and Christmas present money was spent on natural history books. Then the 'Harmsworth Natural History' was published at 7d. per part fortnightly. This was a strain on our slender resources of 3d. per week pocket money.

Shortly after this my brother began to be interested in mechanical things and money was needed for trains. I bought him out, taking over responsibility for Harmsworth Natural History, and paying him his share of the books - I suppose one would call this a 'take-over bid'.

Hours and hours were spent cutting up cigar boxes to make tablets. Having seen this method of exhibition in the collections at the British Museum I thought there was no other. All sorts of devices were used to house the collection. When I secured an old show-case from a jeweller's shop with very scratched glass top I really felt I was on the way to doing things properly. If only I had met someone who could have taught me something about collecting and the care of collections! If only someone had introduced me to the Conchological Society how much time and energy would have been saved! I remember even now and am horrified at myself - I knocked off a spine of a large Murex with a hammer because it would not fit in that jeweller's show case.

I always consider that serious conchology began in 1914 when I took Succinea putris from reeds near the Base Camp at Le Havre and later collected C. hortensis in the front line trenches before Ypres. Later I made a considerable collection of the same species having a great variety of band formulae and colours from Flanders lanes. Then in 1917 the Battalion moved to Italy and a completely different fauna was studied in the mountains of the north, the Asiago Plateau and its foothills. But enough of this - my chief object in writing this short autobiographical note is to say it all began with one sunset shell in 1907.

Rev. H. E. J. Biggs

Grasswood, Yorkshire

One Saturday in May we went to Grasswood in the Pennines; it is limestone scenery there, with large expanses of limestone pavement. It is as flat as pavement on top but there is a network of long cracks wide enough to

catch your feet in, in which Hart's Tongue Fern grows abundantly. These cracks, called grykes, are often very deep. Among them I found many well ground Helix turtoni [H. rotundata, a flat variety - Ed.] and H. rotundata.

Around a tree stump, amongst dead leaves, I made an interesting discovery, 7 specimens (adult) of Clausilia laminata, five of which were a nondescript greybrown but two had pink lower whorls. I made sure, or thought I made sure, that they were dead, but the following day I found that three of the grey-brown ones were alive, and later when identifying one of the pink ones, it picked up its shell and walked off!

In a different place, on the verge near the river, just after rain, I found Helix arbustorum feeding on Lady's Mantle. I noticed when the leaves dried a bit after the rain those snails went down to the roots of the plants; they seem to be a damp-loving species. I also found eight snails, none above $\frac{3}{8}$ inch, feeding on a four-inch thistle - they were H. rotundata, H. arbustorum, H. virgata and what I think was H. caperata.

Caroline Hancock

The compiler is very pleased to welcome the above contribution from Miss Hancock, aged 11, who must be our youngest contributor. M. Goodchild

BRIEF NOTES

1. Mrs. R. P. Ritchie, of [REDACTED], Marblehead, Mass., U.S.A., requests contacts in Great Britain with a view to exchanging U.S.A. marine shells for those from Europe and elsewhere.

2. MARINE CENSUS BULLETIN - CORRECTION.

I am grateful to Mr. N. A. Holme for pointing out an error in the marine census bulletin. The last line on p. 6 should read:-

40. Sole 51°0'N.; 7°15'W.; 49°30'N.; 100fm.

D. Heppell

3. SUBSCRIPTIONS A very considerable number of members have not yet forwarded their membership fee. Will those who have not paid please remit it immediately to save unnecessary work and postage. Last year some members had four form letters besides a personal one. Please do not make this again necessary.
C. A. Raffray, Hon. Treasurer

4. Members are reminded of two Natural History Museums in which shells form the principal display, the directors of which are members of the Society: in both cases the museums are run for charitable objects.

One is that of Mr. L. C. Prebble at [REDACTED], Binstead Hill, Isle of Wight. Mr. Prebble's museum has recently been featured, July 18th. 1962, by the Southern Regional News Service of B.B.C. Television. The other museum is directed by Miss A. M. Saunders, [REDACTED], Littlehampton, Sussex. Members will be very welcome to call at either establishment.

5. Nearly all back numbers of the Journal of Conchology are still available from Vol. 13 onwards at a cost (to members only) of 2/6d. per number or £1 per volume. Volumes 24 and 25 however, cost more. Price details are as follows:

Volume	Cost to Members	Cost to the Public
13 - 23	2/6 per no.	5/- per no.
24 (1954-60)	6/1½ " "	7/6 " "
25 (1961-)	7/6 " "	10/- " "

6. PHILLIPINE ISLANDS Mrs. I. Duncan, [REDACTED], Edinburgh, has for disposal a collection of shells from the Phillipines, made 30 to 40 years ago. There are "at least 150 - 200 shells, some very small and delicate, some large and colourful," in good condition.

7. INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

Notice is given of the proposed use of plenary powers in the following cases, full details of which will be found in the Bulletin of Zoological

Nomenclature, Vol. 19, part 5:

- (1) Suppression of piperita (Cypraea) Gray, 1825 (Gastropoda) Z.N.(S.) 1510.
- (2) Validation of Jovellania Bayle, 1879 (Cephalopoda) Z.N.(S.) 1511.
- (3) Validation of Vanikoro Quoy & Gaimard, 1832 (Gastropoda) Z.N.(S.) 1524.

Anyone who wishes to comment on any of the above cases should do so in writing and in duplicate as soon as possible, and in any case before 10th. March 1963. Each comment should bear the reference number of the case in question. Comment received early enough will be published in the Bulletin of Zoological Nomenclature. Communications should be addressed: The Secretary, International Commission on Zoological Nomenclature, c/o British Museum (Natural History), Cromwell Road, London, S.W.7.

Trochus magus in Isle of Wight

On February 22nd. 1960, I was collecting shells on the east side of Ryde Pier, a beach I often visit, when I found two specimens of Trochus magus - the first I had seen in the Isle of Wight. Following the tide out I found a water-filled depression in the sands running in a N.W. direction full of masses of Crepidula fornicata, with T. magus feeding near them. Three days later I visited the spot again but only C. fornicata was present and a fortnight later the depression had vanished. Since then I have not found T. magus again.

Considerable variation was present amongst the 36 specimens I collected, several being pale brown, two pink and others mottled with various shades of brown and pink. One white specimen was noticeable as the umbilicus was shallower and the animal black.

L. C. Prebble

Field Meeting at Amberley, Sussex, August 26th. 1962

Director: M. Goodchild

Nine members and friends met at Amberley Station and were transported to the Wildbrooks in one squashed load by Dr. Llewellyn Jones!

Amberley Wildbrooks is a stretch of marshy country lying beside the River Arun which is flooded for 6 to 12 weeks every year. Before the days of enclosures it was an impassible swamp but by a system of intersecting dykes and sluices most of it has been drained to give rich water meadows used for fattening stock in summer. Small portions have been left unclear-ed and are almost impenetrable. Many species of freshwater shells were collected, Planorbis, Limnaea, Bythinia tentaculata, Physa fontinalis, Paludetrina jenkinsi being common. Sphaerium corneum was present and several species of Pisidium were found including the beautifully marked P. amnicum and P. pulchellum.

In most of the area land snails and slugs were conspicuously absent, but on very slightly higher ground carrying the main cart track a few species of wet loving shells were found. They included Cochlicopa lubrica s.s., Zonitoides nitidus, Vitrea crystallina s.s., Vallonia pulchella and the slugs Agriolimax reticulatus, A. laevis, Arion fasciatus, A. hortensis and A. subfuscus.

After tea at Houghton Bridge, the party visited Arundel Park in pouring rain. Five dead shells of Abida secale were found but many other chalk loving species were abundant. The meeting was brought to a close by failing light at 7.30 p.m. and members dispersed homewards.

MARINE MOLLUSCA OF CARNAC, BRITTANY

This summer we spent a fortnight's holiday at the small fishing port of La Trinite sur Mer on the south coast of Brittany in the Morbihan region. During the holiday we explored several local beaches which were fairly interesting but the most rewarding for the shell collector proved to be Carnac - a sandy bay just over a mile long, with groups of rocks, mostly exposed only at low tide.

On this beach alone we managed to collect eighty species of mollusca which are listed below for the benefit of anyone visiting that area in the future. All the species not preceded by the letter S (shell only) or the letter V (single valves), were found alive. The nomenclature follows Winkworth's list of British Mollusca with the single exception of Dentalium dentalis Lin., which is a continental species (see Jeffreys Vol. 3 page 196)

Loricata

Tonicella marmorea (Fabricius)	Acanthochitona crinitus (Pennant)
Callochiton achatinus (Brown)	

Gastropoda

Patella vulgata, Linne	Clathrus clathrus (Linne)
Patella depressa, Pennant	(S) Odostomia ?
Gibbula magus (da Costa)	Calyptraea chinensis (Linne)
Gibbula cineraria (Linne)	(S) Aporrhais pespelicani
Gibbula umbilicalis (da Costa)	quadrifidus, da Costa
Gibbula lineata (da Costa)	(S) Natica catena (da Costa)
(S) Tricolia pullus (da Costa)	Trivia monacha monacha (da Costa)
(S) Lacuna pallidula (da Costa)	Trivia monacha arctica (Montagu)
Littorina littorea (Linne)	Nucella lapillus (Linne)
Littorina saxatilis saxatilis (Olivi)	Ocenebra erinacea (Linne)
Littorina saxatilis rudis (Maton)	(S) Buccinum undatum littorale, King?
Littorina saxatilis jugosa (Montagu)	Nassarius reticulatus (Linne)
Littorina littoralis (Linne)	Nassarius incrassatus (Strom)
(S) Alvania beanii (Thorpe)	(S) Nassarius pygmaeus (Lamarck)
Rissoa lilacina, Recluz	Haedropleura septangularis (Montagu)
Turritella communis, Risso	(S) Mangelia coarctata (Forbes)
(S) Cerithiopsis ?	Haminoea hydatis (Linne)

Scaphopoda

(S) Dentalium vulgare (da Costa)	Dentalium dentalis, Linne
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Lamellibranchia

Anomia ephippium, Linne	Paphia aurea (Gmelin)
Mytilus edulis, Linne	Paphia rhomboides (Pennant)
(V) Mytilus galloprovincialis, Lamarck	Paphia pullastra (Montagu)
Modiolus barbatus (Linne)	Paphia decussata (Gmelin)
(S) Modiolus adriaticus ovalis (Sowerby)	Donax vittatus (da Costa)
(V) Musculus discors (Linne)	Tellina squalida, Montagu
Ostrea edulis, Linne	Tellina tenuis, da Costa
Ostrea angulata (Lamarck)	(S) Tellina donacina, Linne
(V) Pecten maximus (Linne)	(V) Gastrana fragilis (Linne)
Chlamys varia varia (Linne)	Gari depressa (Pennant)
Chlamys varia purpurea (Jeffreys)	(S) Solecurtus scopula (Turton)
(S) Chlamys opercularis (Linne)	(S) Ensis ensis (Linne)
Loripes lucinalis (Tukton)	(S) Ensis arcuatus (Jeffreys)
Cardium tuberculatum, Linne	Ensis siliqua (Linne)
Cardium papillosum, Poli	Solen marginatus, Montagu
(S) Cardium exiguum, Gmelin	Spisula solida (Linne)
Cardium edule edule, Linne	(V) Spisula subtruncata (da Costa)
Cardium crassum, Gmelin	(S) Lutraria lutraria (Linne)
(V) Dosinia exoleta (Linne)	(V) Lutraria magna (da Costa)
(S) Dosinia lupinus (Montagu)	(V) Barnea candida (Linne)
(V) Callista chione (Linne)	(V) Pandora margaritacea, Lamarck
Venus verrucosa, Linne	

The most common Gastropod is Gibbula magus which was found in large numbers in fine condition, greatly varying in colour and markings. Anomia ephippium was the commonest lamellibranch.

The bulk of the specimens were collected on our first visit, but as each successive visit yielded more new species I would suggest that the list is most probably not complete. Although we had neither the facilities nor the inclination to collect marine nudibranchs for identification at home I did note in passing a pair of well nourished Tethys punctata at least six

inches long, one or two Archidoris, etc., and have no doubt that the nudibranch devotee would find the rock pools equally interesting.

For those wishing to combine gastronomy with conchology there are many possibilities, molluscan and otherwise. In addition to the well known edible mollusca such as oysters, mussels, cockles, etc. others are eaten. Venus verrucosa is sold in the fish market under the name of 'Praire' and Paphia decussata is sold as 'Palourde'. The dish 'Palourde Farcie' is more than a dish - it is a gastronomic experience that should not be missed. Should any member require further information on this picturesque region I should be very pleased to supply it.

R. Fresco-Corbu

ON THE USE AND MISUSE OF COMMON NAMES

It is considered pedantic in everyday conversation to speak of the Jenny Wren as Troglodytes troglodytes troglodytes yet lacking in scientific exactitude if we call an obscure species of the Acari by a common name, and merely facetious to use such names as the Depressed Limpet and the Warty Venus for some of the more common shells. Nevertheless common names often encourage the beginner to take an interest in a group at a stage when scientific names would be formidable, although their use will be later recognised and employed as the anomalies of common names become apparent to the student and as the growth of enthusiasm and interest encourages the effort of understanding. The professional zoologist generally abhors these haphazard and vague terms, whilst many reputable natural history journals of the more serious kind are diffident about using scientific names which will be meaningless to the average reader. The more well worked a group the more common names are in use, and the stability of these seems to be in direct ratio to the length of time a group has received the attention of generations of naturalists: Butterflies, Birds and Flowers are good examples. Occasionally a common name may have a more ancient lineage than a scientific one. If Haliotis must become a nomen nudum perhaps even the professionals may find themselves talking of Sea Ormers rather than using the 'new' Asinina!

But there is another reason why some of the older common names at least, should be kept in being: they enshrine much useful data for the ethnologist, the philologist and for the student of those studies which the 18th. century was wont to call 'popular antiquities'. A forthcoming posthumous volume by the great Cornish Celtic scholar, the late Morton Nance, will have much material and argument based on popular local names of various marine molluscs, and I myself have noted some interesting changes in local usage. For instance in Scilly where the Edible Winkle is virtually absent, the name Winkle is given to the Thick Top shell, Gibbula lineata (da C.). Since, so it is thought, the Island received cultural influences from the Isle of Man only a few centuries since, it may be significant that a population from a land where the Winkle is abundant would apply the name - at first no doubt nostalgically - to an entirely different but very abundant local species. Likewise, if the line of research pursued by the late Dr. Dexter is at all valid, the changes of species and common name which varied from one population to another but which centred around the 'collecting' of shells for food on Good Friday - a custom known in Cornwall as 'triggering' - may well prove important data to future scholars working the same field.

The value of listing, recording and affording scholarly treatment to the common names has long been the practice of students of mammals, birds and, less widely, of fish: those of molluscs are not without their value too and should not be lost.

Stella M. Turk

STRAND SHELLS AFTER CORNISH GALES

On March 7th. of this year (1962) great damage was caused to harbour walls, roads and buildings on the South Cornish coast by hurricane force south-easterly gales, and on the 11th. March we saw the effect of the tremendous seas on the molluscan fauna at Crinnis beach near St. Austell,

Cornwall. At the top of the beach there was a strand line consisting exclusively of Otter shells, Lutraria lutraria (L.). Many thousands could be counted, and although most were broken, measurements showed that the majority reached the maximum size of 5" x 2". Devoid of all living tissue these shells had been cleaned by various scavengers, and this together with their position on the beach above normal high tide mark suggests that they were churned out of their deep burrows by the turbulent seas at the height of the gale and that they marked the furthest reach of the Spring equinoctial gales some four days previously. Lower on the beach and presumably representing the two foot slackening of the tidal reach, and the abating of the wind, was a more recent strand line, composed of mixed species, most of them still alive. There were numbers of empty Razor shells, Ensis sp., but of the living species, Rayed Trough shells, Mactra corallina (L.) occurred in enormous numbers, Banded Wedge shells, Donax vittatus (da C.) - less numerous - and Thin Tellins, Tellina tenuis da C. in smaller numbers. Some specimens showed feeble response when their gaping shells were touched, but other, selected, specimens lived for many weeks in an aquarium. Besides these burrowing species others such as the Edible Mussel, Mytilus edulis L. and Limpets, Patella sp. which had been torn from the rocks were also present.

Some idea of the relative abundance of the various forms could be gauged from this event and valuable studies could certainly be made on the shell jetsam of a beach after such holocausts or, better still, comparisons made between several beaches. Miss Harvey of Padstow made some similar observations in the same gale period, and recorded one strand line composed entirely of Saddle Oysters, Anomia ephippium.

Barbara D. Stephens and Stella M. Turk

Marine Collecting in New Zealand

These notes concern two of New Zealand's off-shore islands. Stewart Island, in the south, comes within the Forsterian marine province, but Great Barrier Island, which lies some 50 miles from Auckland, is within the Aupourian/cookian zone which is affected by the warm current from East Australia.

Common to both islands are 3 species of Haliotis, (H. iris, H. australis and H. virginea), but the bigger and heavier specimens of the first-named are those prised from rocky ledges - often under dangerous conditions of rough seas - by the Stewart Island fishermen. These shells are used in workshops organised by the Returned Servicemen's Association, where they are made up into dress jewellery and other ornamental objects, and consequently their export from New Zealand is normally prohibited.

Among the less common shells, Astraea heliotropium, although mainly a deep water shell, can be found occasionally cast up and wedged among the rocks on Stewart Island. On the sandy beaches Struthiolaria papulosa gigas and Alcithoe swainsoni (the latter mentioned by A. W. B. Powell as being more common in the south) are both to be found in fair quantity and although not live, in good condition.

The Stewart Island oyster (Ostrea sinuata) must be dredged. The rock oyster of the Auckland region (Saxostrea glomerata) is more accessible, though any temptation to sample those almost on our doorstep on Great Barrier Island had to be resisted, as unauthorised gathering is forbidden. The eastern coastline of that island with its many wide sandy stretches contrasts strongly with the deep-water rocky bays of the western shore. Along the sandy shores a highly coloured line of Chlamys valves often edges high tide mark, and once, after a storm, we found a wide semicircle of Janthina, but we never found the one shell for which we greatly hoped - the Argonaut.

With the occurrence in this northerly zone of warmer water molluscan genera, one may expect to find representatives such as Tonna haurakiensis and Xenophalium pyrum, but to find a good specimen of Xenophora neozelica, as well as Xenophalium labiatum and an (incomplete) Bullinula lineata did much to compensate for other blank collecting days.

On certain smooth rocks in the western bays of the island it is possible to find Acmaea fragilis, though they are difficult to remove without damage to the edges. A shell which seems to occur only in the northern marine provinces is Maurea tigris, one of the more handsome representatives of the Calliostomatidae. Among the smaller species of Trochidae, Cantharidella tessellata of fair size can be found grouped here and there on the rocks of Great Barrier Island.

Produced by 'The Conchological Society of Great Britain and Ireland'

MORE STRAND SHELLS AFTER CORNISH GALES

Although the North Coast of Cornwall was sheltered from the direct force of the severe South Easterly gale of March 7th. 1962, the 70 mile an hour wind combined with Spring tides flooded the lower part of Padstow and left tell-tale strand lines of thousands of shells on the adjacent beaches, as on the South coast. A visit to Harlyn Bay soon afterwards produced a large number of species but of those species which characterised the strand lines in St. Austell Bay during the same period (see 'C.N.' No. 6 pp. 31-32), Otter shells, Lutraria lutraria L., Banded Wedge shells, Donax vittatus (da C.) and Razor shells, Ensis sp. were completely absent and Rayed Trough shells, Mactra corallina (L.) and Thin Tellins, Tellina tenuis da C. only scantily represented. The dominant species was the Common Mussel, Mytilus edulis L. which covers so much of the exposed rock face on the North coast of Cornwall.

Many minute species and juvenile forms of shells were cast ashore and about 36 species were collected. Of the more unusual ones for Marine Census Area 20 were Alvania crassa (Kanmacher), Clathrus clathratulus (Kanmacher), Trochon muricatus (Mont.), Haedropleura septangularis (Mont.) and Chauvetia brunnea (Donovan).

I have often noticed that there is a time lag between an actual gale and the appearance of a strand line, and the dominant species in a strand line may change after a day or two. A friend visiting Harlyn Bay on March 12th. found a strand line of tiny shells of which by far the commonest type were Saddle Oysters (Anomia sp.). Also not all winds bring in shells. For instance a strong North West gale on December 9th. 1962 brought in tons of seaweed, about 4 feet deep along much of the line and apparently from deep water as there were many Red Algae covered with Bryozoa, Sponges, Tunicates and Coelenterates - but no shells. By December 19th. the seaweed had all gone and there was a thin scatter of shells, mixed with Cuttle fish bone. In all I have found some 70 species of shells since I started strand shell spotting in January, 1962.

Enid I. Harvey

NOTES ON THE PHOLADIDAE, WITH A KEY TO THE BRITISH SPECIES

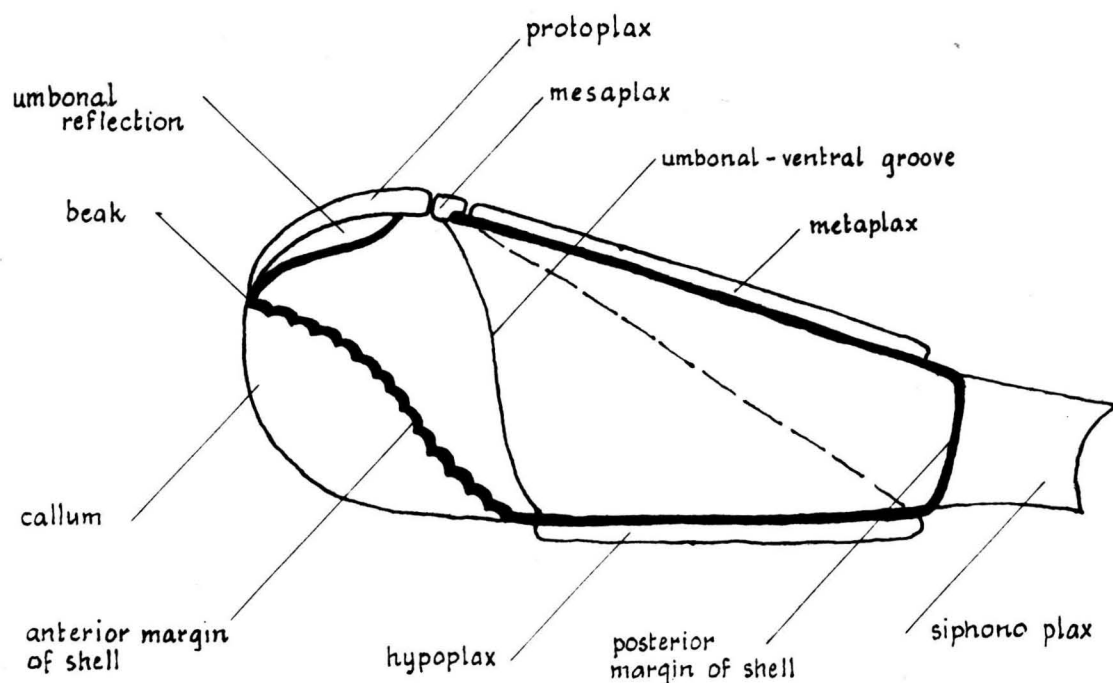
The Pholadidae are a family of marine bivalves adapted for boring. They have neither hinge-teeth nor external ligament, and are characterised by having externally placed anterior adductor muscles, and accessory plates (plaxes) in addition to the normal bivalve shell; for this reason, some early authors classed them with the Multivalves. The family is almost entirely marine, and is closely related to the ship-worms (Family Teredinidae). Like them, they are without hinge-teeth but have a blade-like apophysis, for the attachment of the pedal muscles, projecting inwards from the umbo.

Few Pholads are of economic importance, though Martesia striata, a wood-borer, is more destructive than Teredo in the Philippines, and Xylophaga, another wood-boring genus, occasionally attacks submarine cables. Diplothyra smithii and Penitella conradi are both shell-borers, in oysters and Haliotis respectively, but neither appears to do any harm to the host. A few species have occasionally been used for food, but none is of commercial importance as most are too difficult to remove from their burrows, and are too full of sand to be palatable. Pholas dactylus was used for food by the Romans, and the large Cyrtopleura costata was formerly sold in Cuban markets, one specimen making a meal for two people.

DIAGRAMS TO ILLUSTRATE THE TERMS USED IN DESCRIBING A PHOLAD SHELL

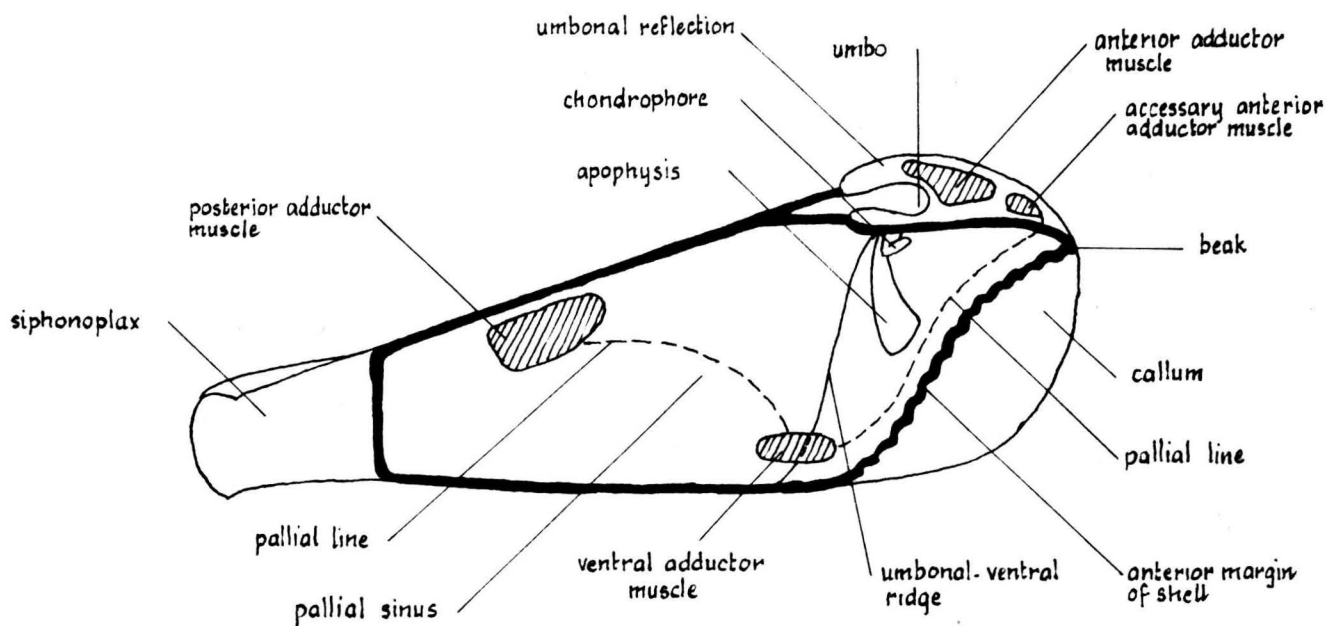
del. D. Heppell. i 1963

(These are composite drawings, and not all the features shown
will be found in any one Genus)



EXTERNAL VIEW OF LEFT VALVE TO SHOW THE ARRANGEMENT OF THE ACCESSORY PLATES

after R.D. Turner, 1954



INTERNAL VIEW OF LEFT VALVE, TO SHOW THE ARRANGEMENT OF THE MUSCLE SCARS, &c

after R.D. Turner, 1954

The family is world-wide in distribution, attaining its maximum development in the East Pacific. The vertical range is mainly less than 250 fm., though a few abyssal species have been recorded. Others are pelagic, being found in floating wood. The genera are locally restricted by their specialised habitat requirements. Martesia and Xylophaga are generally limited to wood, Zirfaea prefers salt marsh peat and stiff mud, Barnea and Pholadidea bore into clays and sandstones, while Pholas may attack gneiss. Stunted specimens (stenomorphs) are produced in overcrowded conditions and in very hard substrates.

At one time there was considerable speculation about the mechanics of the boring process. Some malacologists believed that boring was accomplished by an acid secretion, others that the foot did the boring using embedded siliceous spicules, while many considered that the shell was the tool. The belief that an acid is employed is no longer held, and it is now recognised that the burrow is produced by the shell manipulated by the specially modified adductor muscles and aided by the foot, siphons, mantle, water and accessory sand grains, all of which contribute to the process of abrasion. The shells are of aragonite and mechanically are capable only of boring substrata softer than themselves, though the harder rocks may be bored where they are friable or contain softer elements.

In some genera (e.g. Pholas, Xylophaga) there is no basic change in shell morphology from juvenile to adult; in others, however, (e.g. Martesia, Pholadidea) there are two distinct stages of shell growth. The young shell is beaked and widely gaping anteriorly, while in the adult the anterior gape is closed by a calcareous callum. The young stage (working-, or Zirfaea-stage) continues as long as the animal is actively boring. When excavation is completed, the foot atrophies, the pedal gape is closed by the callum and the various plaxes develop. The resting-stage has then been attained. In the callum-forming Pholads, the animal stores a considerable amount of calcium, enabling the callum to be laid down very rapidly. Thus very few individuals are found with a partial callum, and consequently the young stages have occasionally been described as separate genera. Since the adults with complete callum vary considerably in size, depending on the hardness of the substrate, it was formerly thought that resorption could occur, followed by further active growth with eventual re-formation of the callum. This is not so, for the foot atrophies when the callum is produced and can no longer contribute to the enlargement of the burrow. The muscles used in boring do not atrophy as a slight movement of the valves is maintained to permit a circulation of water within the burrow.

KEY TO BRITISH SPECIES

1. a). Adult shell with callum 2.
b). Adult shell without callum 3.
2. a). With chitinous accessory plates around siphons; usually boring in sandstone or clay; S.W. England and Ireland Pholadidea loscombiana
b). With funnel-shaped pits below umbonal reflexion; usually restricted to drift-wood; rare, in S.W. England Martesia striata
3. a). Shell almost globular, without apophyses; boring in wood 7.
b). Shell elongated; boring in mud, clay or rock 4.
4. a). Shell with umbonal-ventral groove; on all British coasts, but rather local Zirfaea crispata
b). Shell without umbonal-ventral groove 5.
5. a). Umbonal reflexion septate; shell up to 5" or more in length; S. and W. coasts Pholas dactylus
b). Umbonal reflexion simple; shell generally less than 3" long 6.
6. a). Anterior end beaked and gaping Barnea parva
b). Anterior end rounded Barnea candida
7. a). Shell up to 1" in length, with conspicuous furrow from umbo to anterior angle; rare Xylophaga praestans

Acknowledgement: The author, Dr. J. Bowden of Glasgow University, and the publishers, Oliver and Boyd Ltd., are thanked for permission to use the key, based on one due to appear in 'British Bivalvia'.

D. Heppell

BRIEF NOTES

1. Since No. 1 of 'The Conchologists' Newsletter' is out of print and several members have enquired for it, it is being reprinted. Members who require copies should notify M. GOODCHILD as soon as possible enclosing 1/- per copy to cover purchase and postage.
2. Members may be wondering as to the best method for binding their copies of 'The Conchologists' Newsletter'. A foolscap size clutch file is one of the best methods to use. To facilitate this, all future issues (like this one) will be offset to the right hand margin. It is hoped later to issue a special title page and sticky label for the front cover. There will also be an index at the end of Volume 1.
3. Members are reminded that specimens are still required for the Non-marine Vice-County Voucher Collection. If anyone can help with any material will they please contact THE CURATOR, MR. F. H. COZENS, [REDACTED], Petts Wood, Kent. A list of the vice-counties for which any material at all will be especially welcomed is given in 'The Conchologists' Newsletter', No. 2., p. 6.
4. Members may be interested to read the following article 'Use of the Tentacles, Swimming and Buoyancy Control in the Pearly Nautilus' by Dr. Ann Bidder (Dept. of Zoology, Cambridge), in 'Nature', 190 (No. 4853), Nov. 3, 1962, pp. 451-454.
5. The following bookseller has just issued a list of books on Mollusca for sale:- Otto Koetz, Antiquariat, [REDACTED], Koenigstein, Taunus, West Germany. Ask for Liste 78, (Feb. 1963).
6. DR. R. D. TURNER, Museum of Comparative Zoology, Harvard College, Cambridge 38, Mass., U.S.A., would like to obtain material of Petricola and Musculus from Great Britain or any European locality. Other European marine shells are also required - will people please contact Dr. Turner before despatching shells.
7. Members who are in arrears with their subscriptions are reminded that they cannot receive the 'Journal of Conchology' and after this issue 'The Conchologists' Newsletter' as well.
8. Mr. Petitjean, Laboratoire de Biologie Animale, 12 Rue Cuvier, Paris (V^e), France, requests NON-RETURNABLE specimens of Muricacea for X-ray diffraction studies (this involves making slices out of the shells). He is working on the systematics of this group and requires material from Mediterranean, Japanese and Pacific-American areas. Further details of species required, etc., may be obtained from him or Mr. F. R. Woodward, Dept. of Natural History, City Museum and Art Gallery, Birmingham 3.
9. WANTED: J. Conch., Vol. 4, No. 7, Vol. 5, No. 6 to end of volume; Vol. 1, No. 5, 9-15. Part 5 of Alder and Hancock's Monograph British Nudibranchiate Mollusca (Ray. Soc.); S. V. Wood's Crag Mollusca complete or any parts. Mrs. McMillan, [REDACTED], Bromborough, Cheshire.
10. FOR SALE: The Natal Museum, Loop Street, Pietermaritzburg, Natal, South Africa, wishes to sell duplicate books on Molluscs. Among these are copies of Fischer's (1880-1887) Manual de Conchyliologie (binding Loose); Krauss's book (1848) on South African Shells (handsomely bound); Pilbry's paper on Congo land Molluscs (1919); Sowerby's Marine Shells of South Africa (1892, with appendix; 3 copies); and Woodward's Manual (1890, gilt-edged); also Journal of Malacology, Vol. 3 (1894, bound) and a reprint (Sowerby, 1903, Molluscs of South Africa, Mar. Inv. S. Africa, Vol. 2). Interested persons are requested to contact The Curator of Molluscs (Dr. A. C. van

Bruggen) at the above address; exchanges will also be considered.

11. FOR SALE: Two specimens of Cypraea friendi, collected live. One perfect specimen £4; the other (slightly damaged lip) £3. Apply to Mr. R. M. Howlett, [REDACTED], Northwood, Middlesex.

12. Mr. M. J. H. LIVERSIDGE, [REDACTED], Abingdon, Berkshire, would be pleased to hear from any persons who have any Cypraeidae from the coasts of South Africa, no matter what condition. Lists of species found, with exact localities (if possible); also sizes (length and breadth) and any ecological data would be very gratefully received.

13. WANTED: All species of Cardium (English or European) except C. edule for exchange with New Zealand conchologists. Also all species of Venus. Will pay for good shells, or exchange. Mr. L. C. Prebble, [REDACTED], Binstead Hill, Ryde, Isle of Wight.

14. Anyone interested in purchasing Shells from the Gulf of Mexico should write for a list to Mr. Jim Moore, [REDACTED], Palmetto, Florida.

15. Anyone interested in purchasing or selling shells should contact Brookman's, [REDACTED], Ipswich, Queensland, Australia.

16. Members are reminded that Mr. & Mrs. Prebble of [REDACTED], Binstead Hill, Ryde, Isle of Wight, let during the holiday season. Terms: B. and B. £3. 3. Od. weekly (or 12/6d. per night). Sandwiches and evening dinner extra (terms arranged). Conchologists and their families are especially welcomed (Note: Homely fare, no fuss, made very welcome, personally recommended - THE COMPILER).

17. A new journal, MALACOLOGIA has just started publication (Sept. 1962). Subscription price is 5.00 dollars/year (covering one volume of 450 pages) - contact J. B. Burch, Managing Editor, Malacologia, Museum of Zoology, The University of Michigan, Ann Arbor, Michigan, U.S.A.

18. WANTED: Volume 4 of J. W. Taylor's 'Monograph of the Land and Fresh-water Mollusca of the British Isles'. Alternatively will consider purchasing a complete set. Details (price, binding, etc. to M. GOODCHILD, [REDACTED], Redhill, Surrey).

(SEE ALSO P. 40)

Members may be interested to know of the following privately owned

NATURAL HISTORY MUSEUM AT CRASTER

The Natural History Museum is part of a road-house restaurant at [REDACTED], CRASTER, ALNWICK, NORTHUMBERLAND. The museum is set off in a private room and was started after the owner, Mr. C. St. M. DAWSON (one of our members) had visited and collected in Australia and New Zealand and other islands on a world-wide trip in 1958. The accent is on mollusca and corals in illuminated display cases, all accurately named. Some shells are made up for table decorations and as shell jewellery and ornaments for sale as souvenirs.

The public is admitted free to the museum without obligation to use the restaurant which serves morning coffees, light luncheons, teas and suppers.

[REDACTED] is six miles from the A1 at Alnwick, close to Dunstanburgh Castle and Embleton Bay (at which over 40 species of marine shells have been found).

Buses: United Bus No. 51 four times daily from Alnwick to the coast. In summer, United Bus No. 29 to Craster from Newcastle-on-Tyne.

Members of the Conchological Society are invited to call if in the vicinity and make themselves known to the proprietor, Mr. C. St. M. Dawson.

M. Goodchild

FIELD MEETING AT WHITE DOWNS, SURREY, 15th. July 1962

Director: Mr. A. W. Jones

White Downs is a part of the chalk escarpment facing south midway between Dorking and Shere. The party of about a dozen members and friends first made for a small overgrown chalkpit where such species as Marpessa laminata, Clausilia rolpheii, C. bidentata, Oxychilus cellarius, and O. helveticus were found. On the nearby open ground (part of a firing range now being invaded by scrub containing Helix pomatia locally) members found Helicella caperata, H. itala, H. virgata and Pomatias elegans and on kneeling (or lying) down and attacking the turf with penknives, brought forth Vallonia costata, Vertigo pygmaea, Pupilla muscorum and Caeciliodes acicula. Thence to a beech copse for Helicigona lapicida, Ena obscura, Retinella pura and, for those who took a bundle of leaves home, Punctum pygmaeum, and Acanthinula aculeata.

Off the chalk, a small pond at the foot of the hill yielded only Planorbis albus, hymnaea peregra and Pisidium sp. A marshy copse added Azeca goodalli (one shell), Euconulus fulvus and Arianta arbustorum. Altogether 45 species were noted.

A few enthusiasts paid a flying visit after tea to the well-known 'crater' at Box Hill. Despite failing light 22 species were noted including Azeca goodalli (in abundance), and, by the sharp-eyed, Acme fusca, but the leader had to wait till his Lepidopterist wife at home produced it from the bag of moss that had been hastily taken in despair.

A. W. Jones

FIELD MEETING AT EPPING FOREST, ESSEX

Director: Dr. M. P. Kerney

On 21st. October 1962, the Society visited part of Epping Forest. The soils hereabouts are mostly neutral or acid, developed on a variety of Tertiary and Pleistocene deposits and the district is not therefore a very favourable one for Mollusca. Nevertheless, the fauna of such areas can be of much interest, and must be studied if a balanced picture of snail distributions and ecologies is to be obtained. Much of Epping Forest consists of 'old woodland', largely of oak, beech and hornbeam, although probably no part of it can be regarded as unmodified by man. Two species have been found which are very local in the south of England, probably relicts from former wider distributions: Vertigo substriata (Kew, 'The Dispersal of Shells', 1893, p. 147) and Limax tenellus (Taylor, 'Monograph', Vol. 2, 1906, p. 270). Neither was however refound on this excursion.

The party of about 10 members met at the Wake Arms. Here we were joined by Mr. R. M. Payne of the London Natural History Society, who has a wide knowledge of the natural history of the area and very kindly guided us during the day to suitable habitats. To the north-east of the Wake Arms, there is a small wooded stream valley, in its lower part cut into the London clay. Mollusca were sparse, but the following were found mainly under logs: Discus rotundatus, Arion intermedius, A. subfuscus, A. ater (agg.), Euconulus fulvus, Oxychilus alliarius and Limax maximus.

After lunch the Lower Forest was visited, a triangular detached portion of woodland north of Epping. First, we examined the large pond near the southern apex of the triangle, finding the following: Lymnaea truncatula, Planorbis vortex, P. albus and Acroloxus lacustris.

The woodland contains areas of rather damp neutral oak wood, which yielded the following species: Carychium tridentatum, Cochlicopa lubrica, Helix nemoralis (in a clearing), Discus rotundatus, Arion intermedius, A. circumscriptus, A. subfuscus, A. ater (agg.), Euconulus fulvus, Vitrea crystallina, V. contracta, Oxychilus alliarius, O. helveticus, Retinella radiatula, R. nitidula, Limax maximus and Agriolimax agrestis (agg., probably A. reticulatus). A very small stream in the middle of the woodland yielded, rather unexpectedly, Potamopyrgus jenkinsi.

Near the north end of the triangle in some damp grassland, we found, among other species, Carychium minimum, Cochlicopa lubrica and Agriolimax laevis; and in a roadside verge, Monacha cantiana. The party then returned across the woodland, collecting on the way, and dispersed at Epping.

M. P. Kerney

35 YEARS COLLECTING

It was in 1923 whilst serving with the Royal Sussex in Singapore that first started me on the hunt for shells. One afternoon with nothing much to do, I decided to amble along the shore near our barracks, when, aimlessly kicking over a piece of stone, I noticed a needle shaped shell which I now know was a Terebra. This hunt for shells went on until I was due for discharge, and I had got together quite a nice little collection mostly of worn shells, it is true, but representing many species. Alas, on arriving at Southampton I found I had no kit bag. Whilst unloading the boat my kit found its way into other hands - not only shells but other things of interest went with it. All I had left were two Cowries and two Bullmouth Helmets, but at that time they were just pretty shells to me as I didn't even know they had names. My wife was also collecting very small shells unbeknown to me then.

After discharge, I joined the Prison Service in October 1931 and came to the Isle of Wight, went down to the shore and started collecting English shells.

For the next 25 years I collected any shells I could from junk shops, old collections and in furniture sales. Many had bits of paper tucked in them, but Florida 1928 or Jim or John Mills never meant anything to me or the number on the shell; they were thrown away! One vivid memory I have, a friend gave me a Carrier shell, I saw bits of shell stuck to it, and decided to clean it up, carefully taking off every bit until the shell was clean. I wonder now how many more shells I have ruined through my lack of knowledge.

However, to cut a long story short, a press photographer visited my house in 1957, became very interested, and though he really came to see my daughter, finished up by writing an article and taking photos of the shells. About 10 days after the publication of the paper, a letter arrived from Nottingham from Mr. G. W. Pitchford saying "I have seen your article in the 'Lincolnshire Standard'. Why don't you join the Conchological Society?" Well, that started me off, and since then I have made many contacts; shells now do not get bits knocked off; nor do little pieces of paper get thrown away when they arrive with the shells. As new shells come into my collection they replace old worn ones. Although it may mean years of work, no doubt in time to come I shall be able to say just where each shell comes from; 30 years collecting will need some catching up on, believe me.

So start the right way if you can, it saves time in the end!

L. C. Prebble

FIELD MEETINGS 1963

Sunday April 21st. 1963. Seaview, Isle of Wight, Director Mr. L. C. Prebble, [REDACTED], Binstead Hill, Ryde, Isle of Wight. Meet Ryde Pier entrance 12.30 p.m.; depart London (Waterloo) 9.40 a.m. (Day return to Ryde, I.o.W.). Bus from Ryde to Seaview. Low tide approx. 3.45 p.m. Return from Ryde 8.00 p.m., arrive Waterloo 9.55 p.m. 27 species of marine mollusca have been taken at this locality. (Mrs. Prebble can accomodate 4 members in 1 double and 2 single beds for any members wishing to make a weekend of the trip. Anyone wishing to do so should write at once).

Sunday May 5th. Camber Sands, near Ryde, Sussex. Director Mr. R. Fresco-Corbu. Meet Ryde Station entrance 11.50 a.m. Depart Charing Cross Station 10.10 a.m. Waterloo (High Level) 10.13 a.m.; Ryde 11.48 a.m. (Day return to Ryde). Bus from Ryde to Camber (4 miles). Return

trains from Rye 59 mins. past each hour to Waterloo or Victoria. Low tide at Camber approx. 4.00 p.m.

June. Capons Wood, Wyddial, North Herts (for Ena montana, Clausilia rolphii and other wood land fauna). Director Dr. L. Lloyd-Evans. Date and details to be announced.

Details of further meetings will be announced at a later date.

██████████,
Millbank,
London, S.W.1.

T. Pain

Hon. Sec. Field Meetings

ADDITIONAL BRIEF NOTES

19. Miss M. A. Muirhead, ██████████, Hope Pastures, Kingston 6, Jamaica (one of our latest members) is willing to exchange Jamaican shells for English or world-wide shells (address applicable only after April).

20. The Society holds a large stock of back numbers of the 'Journal of Conchology' (about 10,000 copies in all). The following list shows which are available, of some the stocks are small (*).
EACH VOLUME HAS TWELVE PARTS UNLESS STATED

Vol. 13 *	Parts 1 - 4, 6 - 12	
Vol. 14 *	Parts 2 - 12	
Vol. 15	Parts 1 - 10	{ only 10 parts of this volume issued }
Vol. 16	Parts 1 - 10	{ " " " " " " " }
Vol. 17	Parts 1 - 9	{ " " " " " " " }
Vol. 18	Parts 1 - 12	
Vol. 19	Parts 1 - 11	
Vol. 20	Parts 1 - 12	} Plenty, except for missing parts
Vol. 21	Parts 1 - 11	
Vol. 22	Parts 1 - 12	
Vol. 23	Parts 1 - 12	} Reasonable, except for missing parts
Vol. 24	Parts 1 - 4, 8 - 12	
Vol. 25	Parts up to date	

Prices (including postage and packing)

Vol 25:	10/-	per part
Vol 24:	7/6	" "
Vol 13 to	10/-	" volume

23

Orders to the Hon. Secretary, or the Hon. Treasurer.

21. The Hon. Secretary would be very pleased to hear from any members who have surplus copies of any of the following issues of the 'Journal of Conchology'. The Society will pay 7/6d. for each number received:-

Vol. 12	or before	- any numbers
Vol. 13	No. 5	
Vol. 14	No. 1, 2	
Vol. 24	No. 5, 6, 7	

These are required to fulfil requests from overseas libraries to complete their sets.

September 1963

Redhill,
Surrey.

Produced by 'The Conchological Society of Great Britain and Ireland'

FIELD MEETING AT NORWICH, MARCH 9th. 1963Report by Director: Mr. P. G. Cambridge

Two members travelled up from London for this meeting and were met by two members from Norfolk and one member of the Paramoudra club joined the party. The party proceeded to Bramerton by bus and walked down to the side of the river in miserable weather. However, the weather failed to damp the spirits of members once a shelly bed of Crag was uncovered by the spades!

The stratigraphy of the Norwich Crag of this area was demonstrated in an old excavation made by Dr. Funnell. Next a very fossiliferous bed in an old pit a few hundred yards away was visited. Here good examples of curiously distorted Littorina and Nucella, similar to those described by S. V. Wood and F. W. Harmer, were found. Some of the Littorina are so strongly ribbed and keeled as to be almost unrecognisable. The reasons for the curious burst of monstrosities at this horizon were discussed but without coming to any definite conclusion.

Other fossils are also abundant at Bramerton and the following species were obtained by members:

<u>Macoma calcareo</u>	<u>Littorina littorea</u>
" <u>obliqua</u>	" <u>rudis</u>
<u>Mya arenaria</u>	<u>Nucella lapillus</u>
<u>Hiatella arctica</u>	<u>Neptunea antiqua</u> (one reversed example)
<u>Venus imbricata</u>	<u>Natica</u> sp. juv.
<u>Modiolus</u> sp.	<u>Hydrobia</u> cf. <u>ventrosa</u>
<u>Mytilus edulis</u>	<u>Potamides icenicus</u>
<u>Cardium edule</u>	<u>Calyptraea chinensis</u>
<u>Chlamys opercularis</u>	<u>Fish Vertebrae</u>
<u>Arctica islandica</u>	<u>Borings of Polydora, Cliona, etc.</u>
<u>Spisula subtruncata</u>	

The party then split, the more energetic members walking back to Norwich via the somewhat aromatic Whitlingham marshes. Here Viviparus contectus, V. viviparus, Anodonta cygnaea, A. anatina and A. minima were found on the banks of the ditches draining the marsh which had recently been cleared out by mechanical shovel.

A quick visit was paid to Whitlingham Quarry where good sections of Norwich Crag rest on the top of the Chalk. Here the variability of the deposit was excellently demonstrated; clay, shelly sands and pebble beds alternating while the basal Stone Bed, composed of large fairly unworn flints can be seen at the junction with the Chalk. Some large specimens of Neptunea were seen, Mya arenaria in situ in the position of growth and one of the 'butterfly bones' of Platex came to light, as well as other species similar to those at Bramerton.

The party re-united at the Castle Museum, Norwich, where Mr. R. Markham, the Deputy Curator of Natural History, kindly displayed a series of Bramerton fossils from the Museum collections, including a number of Harmer's figured specimens.

THE STROPHOCHEILIDAE:A NEOTROPICAL FAMILY OF TERRESTRIAL MOLLUSCS

The Strophocheilidae contain some of the largest living terrestrial snails, they are amongst the more conspicuous members of the South American

fauna. Being at the same time peculiar to the New World, they are one of the distinctive elements of the Neotropical Region. To the zoogeographer they are of more than usual interest as representing a S. American branch of the Acavid stock, an ancient, primitive group of pulmonate land snails with a disconnected circumpolar distribution in the Southern Hemisphere. Most authors speculate that the ancestors of the recent superfamily Acavacea originated at some remote geological period (probably before the Mesozoic) on a single fairly continuous Austral continent extending perhaps at one time from the S. Pole to near the Equator. When this hypothetical 'Gondwana Continent' broke up, supposedly from the middle of the Mesozoic onward, it is claimed that the descendants of the primitive Acavacea became isolated in four widely disconnected areas, where further evolution eventually produced a number of distinct Recent groups, now ranked either as families or subfamilies. These areas are Australia, Madagascar and Ceylon, South Africa and South America.

In South America the superfamily seems to have survived well, as it now covers a very wide area and comprises more species than elsewhere, the majority of them being bulimoid (Strophocheilidae), with a few helicoid forms (Macrocyclidae) restricted to Chile. Some authorities believe that the Strophocheilidae are amongst the most primitive of the Recent Acavacea, which might indicate that South America was furthest from the primitive centre of evolution of the superfamily. Moreover, the Strophocheilidae probably arose from the same ancestral stock as the Bulimulidae, a non-acavid family of land snails now dominant in the New World tropics.

The Strophocheilidae are divided into two Genera. Strophocheilus and Gongostomus. In Strophocheilus five subgenera are recognised, Strophocheilus, Speironepion, Megalobulimus, Austroborus and Chiliborus, and in Gongostomus two, Gongostomus and Anthinus.

The family is indigenous in S. America north of 40° Lat. S., including Trinidad. The occurrence of S. (M) oblongus (Müll.) in some of the Antilles proper is due to introduction by man. None have been found north of the Isthmus of Panama. There appear to be four main centres of density of species. The most important of these is in the eastern half of Brazil, from Maranhao to Rio Grande de Sul, the home of all the 4 species of Gongostomus, 2 species of Speironepion and 7 species of Strophocheilus s.s., as well as 10 species of Megalobulimus. A second centre is in the Andean area, from Bolivia to Colombia, which harbors 8 species of Megalobulimus. The subgenera Austroborus (3 species) is peculiar to Uruguay and Northern Argentina, while Chiliborus (4 species) is restricted to Central Chile. Only one species, S. oblongus is more generally distributed and has produced some peculiar races in Southern Brazil and the Uruguay-Argentina area.

The very large species of the subgenera Megalobulimus are exceeded in size only by certain African Achatinidae and are amongst the largest known living terrestrial snails, S. (M) propelairianus (Nyst) from Ecuador attaining a length of 163 mm.

The families Strophocheilidae and Achatinidae seem to replace each other on their respective continents, where they occupy to some extent the same ecological niche. The South African Metachatina and the Central African Burtoa particularly simulate certain species of Megalobulimus, the shells of the two families having become superficially similar through convergence.

All the Strophocheilidae are terrestrial, most of them prefer well-sheltered, damp, deeply shaded places, densely covered with vegetation, such as ravines in virgin forest. They appear to be nocturnal, hiding under humus or in loose soil by day. At times of drought they bury deep down in the ground or crawl into crevices of rocks or in caves, where they aestivate, after closing the aperture with an epiphragm. As a result of the destruction of the forests in certain parts of Brazil, some of the species have become very scarce or possibly even extinct. The species of Chiliborus and Austroborus favour a more xerophytic environment and hide beneath rocks or in loose sand.

Several of the larger species were formerly eaten by the Honative Indians and S. ovatus was still offered for sale in the markets of Rio de Janeiro as late as 1867. This custom seems, however, to have been

discontinued.

The eggs of the big species of Megalobulimus are very striking objects on account of their size, that of S. (M) propelairianus being as large as that of the common pigeon. In Barbados, the white of the egg of S. (M) oblongus has been used as a glue to mend china and glass and is claimed to be superior for this end to any manufactured product.

T. Pain

BRIEF NOTES

1. IMPORTANT: CHANGE OF ADDRESSES

a) The Hon. Secretary,
Mr. T. E. Crowley,
[REDACTED],
Bampton,
Oxfordshire.

b) The Hon. Editor,
Mr. A. E. Ellis,
[REDACTED],
Carshalton,
Surrey.

2. The Compiler regrets the lateness of this number of the Newsletter but hopes to produce another number before the end of the year. Any member who has not received a reply to his/her letter will be answered shortly.

3. More short articles are required for the Newsletter, and the Compiler would like to hear from anyone who would care to contribute to one of the series of geological articles - especially those on the Pleistocene.

4. INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

Notice is given of the possible use by the Commission of its plenary powers in connection with the following cases, full details of which are published in the Bulletin of Zoological Nomenclature, Vol. 20, Part 3:

Z.N.(S.) 1521. Designation of a type species for Pisania Bivona, 1832 (Gastropoda).

Z.N.(S.) 1526. Designation of a type species for Ceratomya Sandberger, 1864 (Bivalvia).

Anyone who wishes to comment on either of the above cases should do so in writing, and in duplicate, before 26th. October. Each comment should bear the reference number of the case in question. Comments received early enough will be published in the Bulletin; they should be addressed to the Secretary, International Commission on Zoological Nomenclature, C/o., British Museum (Natural History), Cromwell Road, London, S.W.7.

5. Miss A. Bauer, 1/15 Mckee Street, Maroubra Bay, Sydney, N.S.W., Australia, writes: "it would be a great thrill and also big help to my collecting if you would kindly publish my invitation to students of conchology and collectors from Great Britain and from all over the world to exchange friendly correspondence and sea shells with me. I could send in exchange for sea shells following items from Australia:

Australian sea shells

Books, Magazines and Newspapers

View Cards

Stamps and First Day Covers

Handicrafts and souvenirs made by Australian

Aborigines."

6. WANTED. 'British Snails' by A. E. Ellis - E. Fogen, [REDACTED], Atherton, Nr. Manchester.

7. FOR SALE. 'The Genera of Recent Mollusca' H. & A. Adams, 1858, 3 vols., £4.10.0 (incl. pkg. and postage). Apply to R. MacDonald, B.Sc., [REDACTED], Cliftonville, Belfast 14, Northern Ireland.

8. FOR SALE OR EXCHANGE. A number of shell books - list from Mrs. N. F. Macmillan, [REDACTED], Bromborough, Cheshire. (A list will be on display at the October meeting - all are on British conchology)

9. The Compiler is indebted to Mr. W. Pettitt for pointing out an error in 'C.N.7' in relation to Brief Note No. 20 (p.40). The relevant lines should read Vol. 17, Parts 1 - 9 (only 9 issued)
 Vols. 19, 20, Parts 1 - 11 (only 11 issued)
 Vols. 15 - 23 (inclusive) can therefore be obtained complete.

GEOLOGY FOR CONCHOLOGISTS

1. Introduction.....M. Goodchild

For the benefit of conchologists having no special knowledge of geology, a series of articles is to be produced to explain the fundamentals of geological knowledge of greatest interest to them. Two sub-sections of the science are important - stratigraphy and palaeontology. Stratigraphy is concerned with the relative order of deposits and palaeontology with the study of fossilised remains of former living organisms.

Perhaps by now, you may be wondering what this has to do with conchology.

Any one moment in time can be regarded as a photograph. A series of them taken in chronological order would constitute a cinematographic film - a complete record of the earth's history. The study of living species of mollusca (conchology) is like the snapshot. To find how they came to be thus (evolution) and why they are found where they are today (distribution) we require knowledge of past 'photographs'. The rocks and their fossils give us these required 'snapshots'. A more correct analogy of geological study is with a cine film taken on a partially fogged negative so that definition is irregular (imperfection of fossilisation) and which has subsequently been badly 'cut' (imperfection of geological record). The elucidation of the order of the strata and recognition of gaps (unconformities) both large and small is the province of the stratigrapher. A sequence of systems (groups of geological beds) has been elucidated which is based mainly on unconformities and is given in the table. The recent science of geochronology has been able to give tentative absolute dates to the ages of the rocks. These are subject to variation as methods improve or a determination is proved false. The relative ages are now well established.

Classification of Sedimentary Rocks

Era	System	Age of base in years
QUATERNARY	Holocene (= Post-glacial) Pleistocene	8,000 B.C. 1 million
CAINOZOIC	Pliocene	11 "
	Miocene	25 "
	Oligocene	40 "
	Eocene	70 "
MESOZOIC	Cretaceous	135 "
	Jurassic	180 "
	Triassic	225 "
PALAEOZOIC	Permian	270 "
	Carboniferous	350 "
	Devonian	400 "
	Silurian	440 "
	Ordovician	500 "
	Cambrian	600 "
PRE - CAMBRIAN		-

The major unconformities between systems are not world-wide but localised (e.g. to Europe west of the Urals) and smaller unconformities

can be present even within systems in localised areas. In another large area, e.g. Australia, no unconformity may be present and rocks may gently grade from one system to another, while beds present here represent unconformities there.

The stratigrapher's task is also made more difficult by mountain building which folds and distorts the rocks. Thus the negatives of our analogy have been torn up and the remnants crumpled up!

After the stratigraphy has been elucidated the palaeontologist can begin to work out the former distributions of species and the effect of changes of climate, etc. on these distributions.

Of course in the history of geological research no branch of geology can be isolated from another as I have tried to do in the preceding paragraphs but both have progressed together.

Conchology, not only has benefited from geology, but has, and still is, proving of great assistance to geology.

The identification of fossils and recognition that they are kindred to particular living species indicates the type of environment they lived in, e.g. on broad lines whether the rock bed is marine, freshwater or land. Land deposits, however, apart from the Quarternary Period rarely contain land shells or any fossils.

An example is the Bembridge limestone of the Isle of Wight which contains myriads of Lymnaea and Planorbis showing the deposit was formed in freshwater, not marine, a great help, as most rocks have been formed under marine conditions. This fact was recognised very early in geological investigations. The freshwater nature of these beds was found in the late 18th. century when geology as a science was first emerging.

In this series of articles each will be devoted to a part of the geological column. In geology it is often more convenient to work back in time, as the older the rocks, the more distortion that has taken place.

The first few articles will be devoted to the Quarternary era. This is one of the more perplexing groups of sediments - it was once said (about 1930) that more papers had been written on this era than on all the others together! This is due to the very fragmentary nature of its deposits and the relatively short time of geological history it represents. It is divided into two systems, the HOLOCENE and PLEISTOCENE, though some regard all the deposits as one system, the Holocene being called the 'Post-glacial'.

GEOLOGY FOR CONCHOLOGISTS

2. The last 15,000 years.....Dr. M. P. Kerney

This article deals with the Post-glacial (or Holocene Period) and the Late-glacial phase of the last glaciation.

Subdivision of the last million years, that is roughly the time which has elapsed since the beginning of the glaciations, is effected mainly on climatic criteria. The Post-glacial Period, in which we are living, is defined as starting when world temperatures first began their steep and maintained rise at the end of the Last Glaciation, round about 8,000 B.C. In northern Europe this climatic improvement allowed birch and pine forests to invade rapidly what had previously been a tundra landscape. But the first evidences of a climatic change already appear rather earlier than this, about 12,000 B.C.: an episode with a transitional (late-glacial) climate can be recognised, given a very distinctive character by the occurrence within it of a well-marked but temporary climatic improvement known as the Allerød Oscillation. The Late-glacial Period thus comprises two rather cold phases (Older and Younger Dryas), separated by a cool-temperate interval (Allerød), which can be regarded as a kind of false dawn to the Post-glacial Period.

The course of climatic change during the Late-glacial and Post-glacial Periods is known in considerable detail from studies of fossil vegetation preserved in the deposits. Investigations were at first confined largely to leaves, seeds and fruits; in more recent years a close study has been made

of the fossil pollen grains abundantly preserved in peaty deposits. The grains are identified, their relative frequency at different levels counted, and hence a clear picture obtained of changing forest compositions. Pollen zones numbered from I to VIII have in this way been established for most of Europe. The changes of vegetation are of course not identical over wide areas, due to differences in latitude, but in spite of this a striking parallelism has been proved in many parts of the world. That the climatic changes which determine the boundaries between most of the pollen zones are synchronous has been shown by the technique of radiocarbon dating, whereby an absolute age can be assigned to samples of suitable organic material up to a maximum age of about 50,000 years.

From about 3,000 B.C. onwards in Europe the dating and correlation of Post-glacial deposits becomes particularly difficult. Climatic changes have been relatively slight; on the other hand human interference for agriculture becomes increasingly important, so that vegetational changes tend to be of local significance rather than of regional.

The Post-glacial history of the land and freshwater Mollusca in Britain appears to be broadly similar to that established for the flowering plants; in other words, as temperatures rise, arctic- and boreal-alpine species disappear, and warmth-loving species move in. By the beginning of the Atlantic Period (zone VIIa), when Britain was cut off from the continental mainland, most of our species were already present. The most important changes since that time have been those produced by man. Woodland and marsh species have become increasingly rare and local, whereas many xerophiles and open country forms have prospered and spread. Also a number of species have been accidentally or deliberately introduced from abroad, to become familiar members of our fauna; notable among these is probably the common garden snail, Helix aspersa, unknown in this country from deposits of pre-historic age.

The appended diagram includes terms in common use for the subdivision of the Late-glacial and Post-glacial Periods, and shows the broad climatic and vegetational changes.

Additional Brief Note.

10. Whilst the compiler does not insist on typewritten material, he would appreciate that proper nouns and latin names be clearly printed to avoid errors arising in the course of printing, as his interpretation of the author's handwriting may differ from that of the latter - avoidance of such errors is the responsibility of the author.

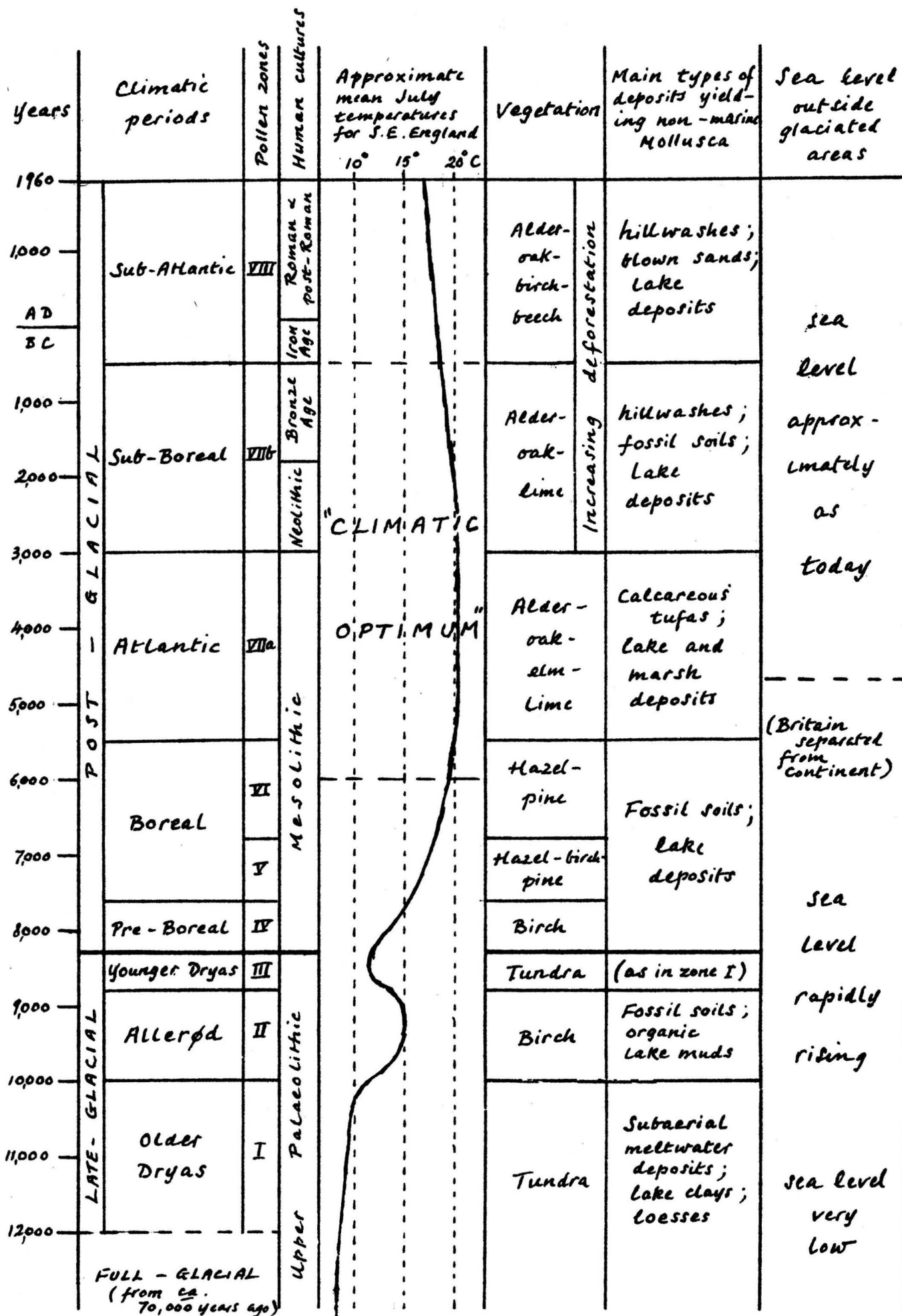


Chart for the Late-glacial and Post-glacial Periods,
applicable mainly to Britain

MORE AUTOBIOGRAPHY

Scene, a sandy shore at a small village in the county Down, Northern Ireland. Time, a hot August day in 1914. Characters, a large man, a small girl, and a minute Yorkshire Terrier dog. All dawdling along the shore, picking up assorted bits and pieces. Then the child found a single purple valve of Chlamys varia and from that day on was a dedicated conchologist. The 6-year-old child was myself, the man my patient father who encouraged my inexplicable taste for conchology. I have the shell still.

N. F. McMillan

SYSTEMATICS SEWN UP

We all know who it was made the very controversial remark that
"That which we call a rose

By any other name would smell as sweet",
and it is possible that the lines were written with a certain amount of personal feeling, since the indications are that Shakespeare had far more trouble naming his plays than writing them; where it is not possible to bestow on the play the name of its principal character, you will note that the titles are uninspired to the point of helplessness.

Beware therefore if, as a lesser mortal than Shakespeare, (I hope I write without overmuch presumption), the duty devolves upon you to name a shell; for the pitfalls are many and almost the whole of the subject of systematics consists of investigating the reasons why scientists should not have named animals and plants as they did. Once a name is in print it may not be ignored but however frivolously conceived, unless it can be proved to run counter to the Rules of Nomenclature, it must be entered permanently upon the synonymy of the creatures to which it is meant to apply. Undoubtedly in the past (and even, regrettably enough in fairly recent times), there have been scientists with a most irresponsible attitude to the naming of shells - and no doubt, of other creatures as well. Species have been described on the evidence of a single beach-worn valve, even on nothing but an operculum, but the main pitfalls and gins which beset our paths are perhaps provided by the zoologists who have siezed upon chance small variations, usually in an inherently variable group, and given them new names. It is not truly possible to give a specific name to a shell, with any honest conviction that the name is correctly applied, unless one has seen such a collection of specimens from various localities that one can be sure of, and can describe or figure, the full range of variation of the newly suggested species. Only if the thing is utterly and obviously different from all known forms may one dare to describe it on the basis of one or two specimens, leaving (rather unhappily) an assessment of the reasonable variability of the species to be assessed by someone when more examples of the thing turn up. Neither a splitter nor a lumper be, but let the shells, in sufficient quantity, speak for themselves.

One conchologist, in reviewing a few melanid snails obtained from Lake Nyasa in the early days, ascribed them to about forty species divided among four genera which he described as new. Most of the shells were just slight variations of the normal forms, and there are certainly not more than six species, all in the genus Melanoides.

One hopes that one day a brave worker will resolve to revise and monograph the family Thiaridae in which these shells occur; when such a star arises on the conchological horizon he will, on the conclusion of his work, deserve some scientific equivalent of the George Cross, for true it is that the conclusions of most of those who have laboured on this (and many another)

family, provide little help to the man who now attempts to put things in order, but rather they have, by the very energy of their over hasty conclusions, made his task so difficult as to be well-nigh hopeless.

Perhaps you believe that your new shell belongs to some genus which has not yet been described; be advised - try and get somebody a long way off, whom you do not know very well, to undertake the work. A great many genera have been described in the animal kingdom - certainly over a million, I imagine - and if your name has been used once before, for whatever kind of creature, then your name is invalid. There are lists of course, but they take a great deal of going through before you can be sure of yourself, remembering always, that there are those who do go through them for the academic pleasure of pointing out scientists' mistakes in such matters. The South American snail subgenus Microborus, as readers of the Journal of Conchology will know, recently had to be renamed Austroborus, as the name was found to have been previously bestowed on a beetle. The well known genus Cerastus has now, by an ingeniously minimal adjustment, to be known as Cerastua, and Sarama Godwin-Austin 1908, preoccupied by a Pyralid, was renamed Rasama by Laidlaw. Examples are commoner than you might think.

What you may do to avoid this trap is to think up a name so horrible in its ingenuity that you may be morally certain that nobody else could ever have used it before. The result however, is unlikely to be euphonious. Kerkophorus, Limicolariopsis, etc., belong to this category, and I think, even Scrobs, while the excruciating Halolimnohelix is certainly unlikely to have been given to anything but a snail with an inferiority complex.

Another fairly safe thing you can do is to invent a name of your own, not derived from Latin nor any other language, and which neither means, nor is intended to mean, anything at all. There is no objection to this. Clanculus, for instance, is an honourable example, and Vanikoro, which is supposed to have been inspired by some native word, and is hence classified as 'barbarous'.

Perhaps it is merely a species which you wish to name, and in certain ways your task this time is easier. You must be quite sure that an identical name has not been given to any other species within the genus, and that your proposal cannot offend any personal, moral or religious susceptibilities; jehoveh for instance, has been rejected. It may strike you at first glance that the names given to shells are in latin - in fact you may have heard some people speak respectfully of the 'latin names'. In actual fact this is not so; many names are horrible mongrels of latin and greek. No objection can be raised to names in other languages such as arabic for instance (asghar Biggs) and others, by employing the names of deserving scientists with unsuitable patronymics, nod haughtily at the latin usage by adding a letter or two at the end to reach agreement in gender with the generic name. As examples I give you macgillivrayi and milne-Edwardsi. Few Romans would recognise such flights of fancy, and when it comes to desmoulinsiana or deslongchampsia, I am uncertain whether to pronounce them in 'latin' or in their native tongue. I cannot recollect anybody naming a species after Tapparone-Canefri, Moquin-Tandon or Della Chiaje.

Such tongue twisters are necessarily frequent, and goodness knows how many people have been put off the study of zoology by them. They engender a suspicious attitude at least in my own obstinately perverse type of mind, which persists in considering even the honest latin name Ena montana more likely to refer to a female American film star than to a snail; I would however, be the first to admit that the reverse would certainly be true of Ena obscura. When confronted with Aoteadrilla wanganuiensis Hutton or Axymene waipipicola (Webster), the mind refuses to function further. I am waiting for a valid species of the genus Helix to turn up in the hope that some young scientist may happily bestow upon it the good latin appendage felix.

Many will no doubt consider all this an egregiously frivolous attitude to the learned science of systematics, but I must repeat that cavalier treatment is by no means rare. It was Iredale for instance, perhaps because he had temporarily run out of names, and wishing to pay tribute to his wife, who named a shell berylsma; another rather stunted little holotype became possessed of the label poorechia. Beware, however; as you probably know, there is an International Commission on Nomenclature which sits on these

things; and although some have expressed their opinion that it does not sit hard enough, it does have its limits. As Mayr points out in the standard work on the subject, names impossible of pronunciation such as Aaages or Zyzzzyra, or which sound identical when pronounced (as cocana and kokana of Kearfott 1907), or which are merely saucy like Polychisme, Peggychisme and Nanichisme (Kirkaldy 1904), are not to be regarded as sufficiently responsible to uphold the reputation of zoology among the sciences. For a similar reason the Commission, taking a deep breath, threw out Cancelloidokyto-dermogammarus (Loveninskyto-dermogammarus) loveni Dybowski 1926. Luckily, these last few examples were not culled from the phylum Mollusca.

Suppose your new Pisidium or what-not is slightly larger or rougher than any known before. You could call it maximus or colossus or spinissimus and the name would probably be valid, but think of the difficulties you bequeath to a successor, possibly not yet born, who finds a larger or more prickly species still, and who has by you been denied the use of any superlatives. Your shell may be the first to come from China perhaps, or Japan, and sinensis or japonicus might be excellent trivial names but for the possibility that a dozen more species may yet be discovered from the same areas, none of them more or less 'japonicus' than yours. Lots of creatures have in fact, been named after New Zealand, for instance, but the latinised forms of this delightful country bring to mind the devil in being legion. They include novaezelandiae, neozelanicus, zelandica, zeelandona, zelandiae, novozelandica, zealandicus, novozealandica and novoseelandica among the molluscs alone.

It may occur to you if you have read this far, that the field for naming shells is not as wide as might have been thought; or alternatively that I am presenting the situation in a mood of disenchantment. How then, you are entitled to ask, can we safely and effectively name our new discoveries? This in fact, I am quite unable to tell you. Perhaps after all it was a good idea of Bourguignat's to name species after his friends' daughters, just because they were beautiful girls; for myself, it may yet come about that I shall have a shell or two to name during the rest of my conchological career, and I have no ideas in store for these, let alone any to throw away on other people. It might be for me, a fine idea to name my next shell munchauseni - at least I should be sure of somebody quickly and automatically relegating it to the synonymy.

T. E. Crowley

SOME ETYMOLOGY

While the meanings of most generic and specific names can be readily ascertained from a Latin dictionary or Greek lexicon, or are based on geographical or personal names, the derivations of some are less obvious. This article is concerned with some of the names of British Recent non-marine Mollusca, native or introduced. Names originating with Leach (or Prideaux MSS.) and some of Gray's are particularly puzzling; several of them seem to be make-up words of no significance. Arianta recalls Ariantus, King of Scythia, and Abida (or Abidah) was a son of Midian (genesis 25:4, 1 Chronicles 1:33); Abydos is a less likely suggestion, and Winckworth ventured "ab Ida," from Ida. It has been conjectured that Azeca is from Azekah, a city of Judah, and Iaminia (Jaminia) might be from Hebrew jamin, right hand. Theba, originally spelt Teba by Leach, seems hardly likely to be from Thebai or Thebes, nor Balaea (Balea) from Hebrew baali, my lord, or Gk. balios, spotted or dappled. Ena has defied all speculation, unless it is the name of a girl friend. Phytia Gray might be from Gk. phytios, productive, or perhaps an anagram or lapsus calami (not unknown for Gray) of Pythia, the Delphic priestess (cf. Helix pythia Muller); that Gray was partial to anagrams is shown by Milax and Malino (probably a misprint for Malix), anagrams of Limax. The suggestion that Assimineia Fleming commemorates the oriental scholar J. S. Assemani is scarcely convincing. Cernuella Schluter is more likely a misprint for Cornuella, diminutive of cornu (cf. Cornu copiae Born), than a derivative of cernuus, nodding or bowing. Carychium Muller may be a diminutive of Doric caryx, whelk or herald, or a combination of Gk. caryon, nut, and chion, snow, i.e. white. The derivation of Galba from Lat. galbus, yellow, is more likely than from galba, which meant either a kind of grub or larva, or a fat belly.

In some cases the derivation seems clear, but the reason for the choice less so. Bithynia was a province of Asia Minor, but why Leach gave the name

to Helix truncatula L., in a book about China, remains a mystery. The introduced Lymnaea catascopium Say derives its specific name from a Greek word meaning "look-out ship," from catascopos, spying or exploring. Menetus means steadfast or patient, and Hippeutis is a horseman or rider. Vallonia, according to Risso, is goddess of the valleys, Zenobia (Zenobiella) was Queen of Palmyra, and Marpessa was daughter of Evenus and wife of Idas. Why a genus of slugs, Arion, should be named after the bard of Lesbos is not apparent. Liberta means a freed woman or manumitted female slave, but why did Westerlund bestow the name on a little hairy snail?

The derivation of most other names is less speculative and usually unequivocal, though some call for a little explanation. Peringia Paladilhe was "dediée à la famille Pering de Londres." The specific name lagotis seems to be compounded of Gk. lagos, hare, and otis, genitive of ous, ear, on the analogy of myosotis, mouse-ear. Planorbis acronicus derives its specific name from Acronius lacus, Bodensee or Lake Constance. Lauria was a compliment to the author's niece, Laura Gray. Cecilioides looks like a hybrid word from Lat. caecilia, blindworm, and Gk. eidōs, form, appropriate to a sightless, subterranean snail. Vertigo genesii Gredler was originally collected above St. Genesie or Jenesien, near Bozen, South Tyrol. Canon J. Goodall (1760-1840), Headmaster, then Provost, of Eton, is commemorated by two specific names. Laciniaria comes from a Low Latin word meaning plaited, from lacinia, a fragment of cloth or lappet, and Retinella is from Gk. retine, gum or resin. Cepaea is from Gk. cepos, garden, so that C. hortensis is a garden snail twice over. Both Pomatias and pomatia stem from Gk. poma, lid, in reference to the operculum of the former and to the winter epiphragm of the "Roman Snail." Hygromia is doubtless a variant of Hygromanes Férussac, from Gk. hygros, moist, and maiomai, seek, or possibly mainomai, be mad. Ponentina is from Portuguese ponente (poente), west, and Monacha, from Gk. monachos, solitary, hence a monk, is an allusion to the Carthusian monastery of La Chartreuse (Helix cartusiana Müller is the type species). The slug Agriolimax caruanae is dedicated to Dr. A. A. Caruana Gatto, secretary to the University of Malta. Pisidium conventus was so named because Clessin described it at a meeting or congress (at Munich); conventus is the genitive of a fourth declension Latin noun, so does not "agree" with the second declension neuter noun Pisidium. Dreissena honours Jean Henri Dreissens (also spelt Driessens and Dreissen) of Maaseik, Limburg (see Internat. Comm. Zool. Nomencl., Opinion 351).

Among introduced aliens, Eobania has been derived from Gk. eos, dawn, and Hungarian banat, a district governed by a viceroy (ban), signifying eastern Rumelia (now S. Bulgaria). Ancomena is from Gk. ancos, bend, and mene, moon, i.e. crescent moon, no doubt suggested by Selenites Fischer. Finally, Seminolina, though distastefully reminiscent of a milk pudding, is actually derived from the Seminole, a tribe of Indians settled in Florida.

A. E. Ellis

SECRETARIAL NOTES

1. Many members will know that the Journal of Conchology Vol. 24 nos. 5, 6 and 7 are out of print. The Society has been able to purchase a few of these scarce numbers and they may now be had from the Hon. Sec. on a first-come first-served basis at 10/- per number.

2. Publications Received.

a. Pacific Northwest Shell News, Vol. III, nos. 5 and 6. Always a lively little publication, this improves with every issue and the enterprise of its Editor, Tom Rice of the Pacific Northwest Shell Club, makes itself obvious throughout: the issues are now being excellently printed by amateurs of the Club; and besides items of Club News and articles in lighter vein, always contain something of real scientific value from this ecologically fascinating part of the world.

b. 'Poirieria' This is the organ of the Conchology section of the Auckland Institute and Museum, New Zealand. Vol. 1 parts 5 and 6 have been received and, as might have been expected, contain some excellent articles by specialists, not only on local shells, but on those from other parts of the world as well. Although a duplicated organ, illustrations are usually included which are quite above the usual standard for this type of work. Individual issues are not named or headlined in any way which seems a pity as it might lead to mis-filing. The Editor too, is retiring and fails to include his (or her) name. Proceedings of the Section, announcements, etc., are appended in a 'Newsletter'.

- c. 'Aquatica' This publication consists of miscellaneous research notes published by the Aquatic Research Institute, recently established at the Port of Stockton, California, U.S.A. Research will be mainly on fish and fisheries mostly in the Asian and Indo-Pacific areas, and a second Journal, 'Aquatic Science', is soon to be issued for longer articles.
- d. 'A Preliminary List of the South African Marine Shells from False Bay to the Pondoland-Natal Border'. This is a duplicated list, excellently set out, with known localities for each species, and bears every indication of accuracy as far as the latest information can provide it. It will be of immense help to anyone who studies or collects South African marine mollusca, and one wishes that such lists were available for many more areas of the world. It has been compiled by D. H. Kennelly, conchologist to the East London Museum, who is of course, one of our members; copies may be had by sending 25 cents (South African) to the East London Museum, South Africa. (Price equivalent to about 2/6d.)

BRIEF NOTES

1. New Species of African Marine Mollusca. Dr. K. H. Barnard, "Deep-sea Mollusca from the region south of Madagascar," Investigational Report No. 44, Department of Commerce and Industries, Republic of South Africa, published in "Commerce & Industry", April 1963, contains descriptions of 23 new species, and the same author's "Deep sea Mollusca from west of Cape Point, South Africa", Ann. S. Afr. Mus. Vol. 46, part 17, has another 21 new species.

2. International Commission on Zoological Nomenclature.

(a) Notice is given of the possible use by the International Commission of its plenary powers in connection with the following cases, full details of which will be found in Bull. Zool. Nomencl. Vol. 20, part 5:

Z.N.(S.) 459. Designation of a type species for Crassispira Swainson, 1840 (Gastropoda).

Z.N.(S.) 1567. Suppression of Conus candidus Born, 1778 (Gastropoda).

Anyone who wishes to comment upon either of the above cases should do so in writing, and in duplicate, before 21st. April 1964, to the Secretary, International Commission on Zoological Nomenclature, c/o. British Museum (Natural History), Cromwell Road, S.W.7.

(b) Notice is given of the possible use by the International Commission of its plenary powers for the suppression of Naiadites elongatus Dawson, 1860 (Bivalvia), as a nomen dubium, reference No. Z.N.(S.) 1604; see Bull. Zool. Nomencl. Vol. 20, part 6. Any comments should be sent in duplicate before 6th. June 1964 to the Secretary, Internat. Comm. on Zool. Nomencl., British Museum (Nat. Hist.), Cromwell Road, S.W.7.

(c) Notice is given of the possible use by the International Commission of its plenary powers in connection with the following cases, full details of which will be found in the Bulletin of Zoological Nomenclature, Vol. 21, part 1:

(1) Suppression of Doris lacinulata Muller, 1776, Doris fasciculata Muller, 1776, and Limax minimus Forskal, 1775; grant of precedence to Cuthonidae Odhner, 1934, over Tergipedidae Bergh, 1889. Z.N.(S.) 1044.

(2) Designation of a type species for Eubranthus Forbes, 1838; suppression of the generic names Ethalion Risso, 1826, Amphorina Quatrefages, 1844, Galvina Alder & Hancock, 1855, and several dubious specific names. Z.N.(S.) 1102.

(3) Suppression of Cavolina Bruguiere, 1791, and emendation to Cavolinia of the generic name Cavolina Abildgaard, 1791. Z.N.(S.) 1103.

(4) Suppression of Cratena Bergh, 1864. Z.N.(S.) 1105.

(5) Suppression of Diaphoreolis Iredale & O'Donoghue, 1923, and Doris pennata Gmelin, 1791. Z.N.(S.) 1106.

All the above are in the class Gastropoda. Anyone who wishes to comment upon any of the above cases should do so in writing and in duplicate before 25th. September 1964; each comment should bear the reference number of the case in question. All communications to be addressed to The Secretary, International Commission on Zoological Nomenclature, C/o., British Museum (Natural History), Cromwell Road, London, S.W.7.

3. An announcement has been received from the American Museum of Natural History of the opening of a new shell exhibition. This is to be known as the Evelyn Miles Keller Memorial Exhibition, and is presumably to be a permanent feature of the Museum.

The collection is stated to consist of more than two hundred examples of shells, displayed so as to show to the best advantage their diversity of shape,

colour and texture, and one gathers that the specimens are almost entirely indo-pacific marine shells. There are in addition, models of the Cephalopoda, and many photographs of the shells are available.

4. Correspondent Wanted.

Mr. E. Dalvean Jnr., [REDACTED], Melbourne, Victoria, Australia, Member of the Malacological Society of Australia, wishes to sell or exchange local shells for European or other areas. Fossils are also of interest.

5. Oldham Natural History Museum is anxious to acquire specimens of British Marine species. Anybody willing to help may obtain lists by writing to L. N. Kidd, Esq., Wernerth Park Study Centre, Frederick Street, Oldham, Lancashire.

6. Please note the Compiler's change of address. The new address is given at the head of this 'Newsletter', and is the same as his permanent address.

7. Wanted. "The Conchologist", Vol. I, also "Journal of Malacology", any volumes or odd parts except Vols. 3, 8, and Vol. 4 parts 2 and 4. Mrs. N. F. McMillan, [REDACTED], Bromborough, Cheshire.

8. Subscriptions There are far too many subscriptions outstanding. Accounts have to be paid and unless all members remit early in the year a lot of unnecessary work and expense is caused. About a quarter of the members had not paid on the 16th. April.

SINISTRORSITY

Sinistral specimens of normally dextrally coiled shells, and dextral abnormalities of sinistral species, have always appealed to collectors on account of their rarity. Abnormally coiled shells, though never frequent, are less rare in some species than in others. Amongst freshwater shells sinistrorsity is most frequent in Lymnaea peregra, the inheritance of which has been studied by Boycott and others. King Lane pond, Leeds, used to be celebrated for sinistral peregra, and there are records from Tooting, Hale Moss, Scarborough, Durham, Woodhall Bridge and York. This abnormality is infrequent amongst freshwater snails: the following records are mainly culled from the Journal of Conchology. Viviparus viviparus: Bardsley, Lancashire (10:148, 18:329), R. Foss, York (22:170), London, Holocene (23:294). V. contectus: Beswick, Lancs. (11:224, 12:68), Kessingland, Suffolk (19:121). Valvata piscinalis: Budworth Mere, Cheshire (11:268), Hunstanton, Norfolk (7:174), Creswell Crags, 2 specimens, and a reference to one from Sunbury (4:145). V. antiqua: Dierden's Pit, Pleistocene, Kennard coll. Bythinella scholtzi (Amnicola taylori): Stockport canal, Reddish (15:283, 16:28). Lymnaea glabra: Scarborough (12:108, 191). L. stagnalis: Kenn Moor, Somerset (9:199), Doncaster (7:40). L. auricularia (13:26). Reversed coiling is also recorded for Physa fontinalis, Barnes Common (5:220) and P. acuta (13:25), and for three species of Planorbis: P. planorbis, Wye, Kent (3:232), P. leucostoma, Tenby (11:235) and Sutton Coldfield (8:377, 384), and P. laevis, Aldeburgh (18:317).

Amongst land snails, sinistrorsity is most frequent amongst some of the larger Helicidae, such as Helix aspersa, H. pomatia, H. nemoralis (especially at Bundoran), H. hortensis and Helicella virgata. In some species it is unknown. The following records, mostly from J. Conch., are of rarer occurrences. Acme fusca: N.W. Donegal (13:151), Bristol (Jeffreys, British Conchology, 1:309), Tramore Strand, Donegal (16:80), Dingle (15:52; Irish Nat. 24:33), Broughton, Lincs. (20:158), Northfleet (24:27); some of these are subfossil. Succinea oblonga: S. Perthshire (7:367). Cochlicopa lubrica, Rugby (17:33). Pyramidula rupestris: A. S. Kennard, Proc. Malac. Soc. 16:110, no locality. Vertigo antivertigo: Southwell, Notts., Holocene (24:232). V. substriata: Shipley Glen, Yorks. (11:200). Pupilla muscorum: Abersoch, Caernarvon (11:11), Weymouth (24:19). Lauria cylindracea: Torquay (12:295), near Hexham (23:259). Ena obscura: Danebury, Hants. (16:100). Helicodonta obvoluta: Ditcham (8:428, 12:13, 16:44). Helicigona lapicida: Linton (Taylor's Monograph, 3:391). Arianta arbustorum: Buxton (5:225), Derbyshire (11:235), Maidwell, Northants. (11:330), Denford, Northants. (14:27), Uxbridge, Holocene (Taylor's Monog. 3:442). Trichia striolata: Haddon, Northants. (11:281), Peterborough (13:14), Chipstead, Surrey (22:94). T. hispida: King's Langley, Herts., Holocene (18:130), Thornton Dale, Pickering (19:141, pl. 4, fig. 1), West Blatchington, Sussex (19:286), Scarborough (Naturalist, Spring 1953), Cambridge, Holocene, and Coldingham near Eyemouth

(Taylor's Monog. 4:33). Monacha cantiana: 13:25 (see also 16:40). Helicella caperata: Stanwick, Northants. (11:170), Woolacombe, Devon (13:20, 16:80), Lewes (13:45), Scarborough (12:249), North Devon (12:288), Frinton-on-sea (14:27), Bassenthwaite Hause (8:158). H.itala: Northants. (13:26), Bundoran (9:265, 22:263), Water Newton, Hunts. (14:102); see Taylor's Monog., 4:132. Cochlicella acuta: Tenby (9:151, 211). Punctum pygmaeum: Barnwell Abbey, Pleistocene (Taylor's Monog. 3:160). Discus rotundatus: Burnham Beeches (12:237), Castleton, Derbyshire (18:329), Chiswick (8:170), Aghaderg, Loughbrickland, Co. Down (6:39); see Taylor's Monog., 1:108. Vitrea crystallina: Copford, Holocene, Kennard coll. Oxychilus draparnaldi: Coulsdon, Surrey (18:320). Retinella radiatula: Broughton, Lincs., Holocene, Kennard coll. R. nitidula: Saxlingham Thorpe, Norfolk (22:271).

Dextral Clausiliidae: Clausilia bidentata: Skipton (13:274, 22:263), Slammanan, Stirling (4:265), Lincolnshire (Arch. Moll. 60:47). C. dubia: Ingleton (22:263). Laciniaria biplicata: Cambridge (22:263).

The above records are only of British non-marine Gastropoda and make no claim to be comprehensive. Sinistral Vallonia pulchella is recorded from Poland (22:263), Oxychilus cellarius from Pennsylvania (7:388, Nautilus, Dec. 1893, 90) and Sweden (24:138), Zonitoides nitidus from France and Vitrea pellucida from Geneva; see Science Gossip, 1897:262.

A. E. Ellis

Produced by 'The Conchological Society of Great Britain and Ireland'

The new compiler, P. E. Negus, offers apologies for the delay in issuing material included in this number. The previous compiler, Michael Goodchild, who so successfully established the Newsletter, was not able to deal with correspondence and material submitted to him owing to ill health.

"PAPERS FOR STUDENTS"

By now you will have received the first four of the above papers. The idea behind this series is to help all those who are at the beginning of their studies of the Mollusca and it is hoped that they will be more widely used than by our own members both junior and senior. Indeed as an aid to students on field courses, to schools working on field projects, etc., they may have considerable value.

They are circulated free of charge to all full members of the Society to date resident in the British Isles. They will be free to all junior members, as and when they join, subject to any further decisions of the Council which may modify the conditions when the cost of the total number of papers issued exceeds the value of the subscription paid in the first year. For further - copies, the prices, including postage, will be as follows:-

No. 1	"Introducing Junior Membership"	Free
No. 2	"Collecting Non-marine Mollusca"	6d.
No. 3	"A Key to Land Snails of Great Britain"	2/-
No. 4	"A Short Glossary of Molluscan Terms"	2/-

Paper No. 4 has been specially difficult to prepare. Most of us will agree with the meaning given to most of the terms. Many will disagree with either the definition or application and use of others. All will have feelings that many terms have been omitted which should have been included, and some will feel that the inclusion of a number of terms is unnecessary. No glossary will be completely acceptable to all; the aim is to make it as widely acceptable as possible.

Therefore if any members of the Society have views on these points please let me know. All replies will be collated and submitted for consideration. For purposes of filing please write your list of additions, subtractions, corrections on a separate sheet.

It is hoped that before the end of the year more papers will be available. No. 5 "The Care of the Collection" is already written; a paper on collecting Marine Mollusca has a writer and so has one on holocene fossil mollusca. The following are projected, "How to Determine your shells" which should cover the availability of literature and public collections. One has also been promised on the interesting work of collecting and studying Crag Mollusca.

We shall appreciate suggestions from our members for the titles (and possibly the writers) of further papers needed. Naturally no guarantee can be given that all suggestions will be adopted.

We shall be glad if you will make these papers as widely known as possible. The Society has agreed to cover the cost of production but we do hope to recover something from the sale of papers.

H. E. J. Biggs

REARING SNAILS FROM THE EGG

There are various reasons why the conchologist tries to rear snails, apart from that of studying their life histories. The genetics of polymorphic species such as *Cepea hortensis* can only be studied by means of breeding

experiments. Young snails often look very different from the adults, so it is of great assistance in field work to be able to recognise them. If a species is scarce, breeding provides a means of obtaining a good cabinet series without endangering a local population, and sometimes interesting varieties may turn up; also, to have 100 or so snails of known age is very convenient if one is investigating their anatomy and development.

THE EGGS. Sometimes snails are found in the act of egg-laying in the field. This is a great time-saver, as they can be placed in an observation nest at once. The eggs are usually laid in a compact mass in a cavity just below the soil surface, and these conditions have to be imitated. A 2-inch-deep glass specimen tube is one quarter filled with the local soil of the same moisture content as that next to the eggs, and lightly pressed down with a finger. The egg mass is then gently rolled into the tube (preferably with a teaspoon, a most useful piece of collecting equipment) and covered with a tuft of damp moss, surface litter, or a little more soil. A number is attached to the tube, corresponding to an entry in the notebook, and thereafter the firmly corked tube should be kept upright and shaded from the sun. The eggs can be inspected daily through the glass. Eggs laid by captive snails in boxes should be treated in the same way.

Snails will usually lay eggs in captivity if one is patient enough. A specimen of Helicella virgata from Tripoli waited 18 months for a mate from the same locality before laying, but usually the wait is only a few weeks or days. Adult or sub-mature specimens are put into jam jars containing an inch or two of damp soil, preferably mixed with crushed chalk, and covered with a perforated lid. Food is most conveniently provided by slices of potato and cabbage, skewered on a stick for easy removal. Rolled oats are unsuitable for use in jars, as they soon decay and are difficult to remove. If the soil dries out too much a little water is poured in and allowed to percolate through the soil, but as this is easily overdone it is wise to set the limit at two teaspoonfuls. Provided the soil is not too deep the eggs can be seen through the bottom, lying on the glass, and can be inspected every day. With luck, the nest will be formed at the side and the whole operation can be watched. It usually takes place at night, and is a lengthy process. The snail must be removed as soon as it has closed the nest. It is unwise to keep more than one species or 2 or 3 individuals in the same jar.

Eggs are best kept in the dark at ordinary room temperature, except those of tropical species, such as the Achatina, whose eggs have just hatched in my greenhouse at day temperatures of 85 Fahrenheit.

HATCHING. Hatching generally takes place in from 15 to 21 days, but some species take longer. The babies eat their eggshells, and this unpromising diet lasts them about 5 days, during which they remain in the nest. Then they dig their way to the surface and are seen crawling about the soil and glass. They should be left where they are for a few days, as they sometimes like to return to the nest to rest. If they are in corked tubes it is advisable to replace the cork with a plug of cotton wool. At this stage they will eat a little finely shredded cabbage dusted with rolled oats.

THE INFANTS. Baby snails are very sensitive, and in captivity have 3 main enemies: dryness, excess wetness, and mould. Of these the wetness is the most dangerous, causing drops of condensation to form, in which the babies are trapped and drowned. Most of my earlier attempts at rearing failed through this cause. The best safeguard is adequate ventilation, but this can lead to an almost equally dangerous drought. It is essential, therefore, to provide conditions of uniform humidity without excess wetness, and for this there is nothing to beat the transparent plastic sandwich box. A convenient size is one 7" x 4½" x 1½" deep. A hole about 1" wide is cut out of the centre of the lid with a hot poker, and the rough edges smoothed with a file; then, by means of a modern glue such as "Bostik", a piece of perforated zinc is fitted over the hole. The perforations are quite wide enough to allow the escape of a baby snail, but they never attempt to get out as they hate walking on the zinc. A thin layer of damp soil is placed on the bottom of the box, sprinkled with crushed chalk, and pressed down. On this is placed a piece of tender cabbage leaf, concave side downwards, and a little powdered rolled oats dusted over the leaf. A box set up like this stays healthy for a month at 60°F.

The next problem is the transference of the baby snails to the box. They are too fragile to handle, but if the uncorked tube is laid in the box they

will all crawl out in a few days and the tube can be removed. If they have hatched in a jar they should be all right for a few weeks if fed carefully, but sooner or later will have to be moved. For this, a squirrel hair paint brush and a teaspoon are used, in the same way as a dustpan and broom. Great care must be exercised! Another method is to replace the top of the jar with a piece of cardboard with a hole in it, and invert another jar containing a few leafy twigs on top. In a few days they will all have crawled up into the leaves, which can be picked off and placed in the rearing box.

Mould is avoided by good ventilation and the removal of any uneaten food every two days, but it is better to avoid over-feeding. Experience is the only guide in this. Sometimes the soil becomes infested with springtails, mites, or small white worms. These are harmless, but indicate dirty conditions, so the babies should be moved to a clean box and the dirty one washed out with hot water.

FOOD. For most snails the best diet is a mixture of rolled oats and fresh green leaves. Lettuce "goes off" too quickly, and cabbage, though excellent, sometimes gives rise to unpleasant smells. The best thing is to give them a mixture of leaves, the most popular being hollyhocks, clover, dahlia, hogweed and enchanter's nightshade. Soft young leaves should be avoided as they tend to shrivel up, enclosing the babies in a fatal grip. An occasional change of diet keeps them feeding well. They love hay in any form, e.g. dead herbaceous stems, grass hay, and leaves of elm, sycamore, etc., collected, washed, and dried as they fall in the autumn. These materials need to be dampened before use, and should be removed when the snails appear to lose interest. Small woodland snails usually eat leafmould, but welcome a tuft of moss or lichen. The average snail tends to be rather omnivorous, appreciating a little animal food in the form of a very small amount of dried shrimp fish food, mixed into the rolled oats.

LIME. It is astonishing how much chalk a snail family can consume in one week. Common chalk from a roadside pit is best, but limestone chippings, old mortar, or crushed oyster shells will do at a pinch. They take it as a powder sprinkled on the food, but prefer it in small lumps the size of peas, scattered on the soil. Without a good supply they cannot make strong shells, a factor of some importance when handling them.

LATER TREATMENT. The babies should be all right in their plastic boxes for a month, by which time they will need larger quarters. A very serviceable vivarium can be constructed from wood. A good size is 1 ft. long x 6" wide, with a glass top sloping down from a 6" back to a 4" front. The ends are better if square, as this allows several to be stacked on top of each other to save space. The slope of the glass throws off condensation, which soaks into the wood. The glass rests on narrow quarter-round beading, and must fit snugly to prevent accidents. Two 1" holes bored in the front to admit air are covered with perforated zinc, tacked to the inside to avoid the formation of hiding-holes from which the inhabitants are difficult to extract. The wood needs to be at least $\frac{1}{4}$ " thick, as it must resist decay without the aid of any paint or preservatives.

A vivarium of this type should be set up in the same way as the plastic boxes, with damp soil, chalk, leaves, etc., but with a greater depth of soil to hold moisture. The snails are transferred to the box with a teaspoon, and examined and fed at least twice a week until they have grown to a size at which they seem better able to take care of themselves; after which they can be neglected for a week at a time if necessary. However, if they are growing very quickly they may need daily attention. Uneaten food must be removed before it decays, for although snails love dead vegetation they are soon upset by mouldy food, and begin to die off.

Wooden boxes dry out more quickly than plastic ones, so an occasional spraying with tap water, (unless heavily chlorinated), is desirable. However, there is much to be learned about this, and one should consider the natural habitat. For instance, all my attempts at rearing Theba pisana failed, until I discovered a clutch of young ones thriving in a bone-dry box in which a number of adults were aestivating, an obvious case of a species having a low optimum humidity. It reminded me of a colony of Helicella itala I once knew, living on heavily grazed turf around rabbit burrows. When myxomatosis destroyed the rabbits the grass grew up tall, and in the more humid conditions the italas all died out.

Whatever snails are kept, it is a good idea to give them a good supply of

leaves, dead or alive, as this, paradoxically, gives them more "space". They do not worry much about the volume of the box, but they do need a large surface to crawl on, which the leaves provide. Also, they help to maintain a moist atmosphere, and it saves having to change the soil too often.

GROWTH. The rate of growth varies with both species and individuals. For example, a young achatina of mine has grown less than one whorl in a year, whereas 40 Helicella obvia have come from the egg to nearly full growth in half that time. As is usual in any population, some individuals grow faster or slower, maturing at different ages, but the very slow ones are mostly "runts" and never make much progress, a few dying each month until about 15 or 20 per cent of the family have perished. Ideally, snails should be kept growing as steadily as possible, as occasional short spurts of growth under artificial conditions lead to lumpy, distorted shells and small ultimate size. To achieve even growth takes practice, but there are some useful hints to be gleaned from their behaviour. Snails, like many animals get "bored", and respond by going to sleep. Even when fresh food and a sprinkle of water are given, they scarcely move. The remedy is to remove them to another box. It can be identical with the one they have just left, but provided they have some fresh soil as well, they will take on a new lease of life.

Boredom, however, should not be confused with aestivation. This seems to be the result of high temperatures, and even if awakened by a cold shower they soon seal themselves up again. Mostly they aestivate on the sides and top of the box, but sometimes they bury themselves in the soil. The best guide as to whether they are truly aestivating is to find out whether their sleep coincides with the dry season in their country of origin; thus I find that Mediterranean snails sleep for 2 to 3 months in our summer, and Kenyan snails sleep in our winter, regardless of the degrees of temperature and humidity. It is best to let them have their own way, perhaps giving them a showerbath once every 2 or 3 weeks until they wake up properly.

No matter how fast the snails grow they do not usually mature until their second season, often at a set time. For example Helicella virgata matures in the autumn, but (as far as my observations show) Eobania vermiculata matures in the spring. They may reach full growth, but the thickening of the peristome seems to be delayed until the appropriate season.

WARNING. When rearing foreign species, always burn the old food and sterilize the soil. You don't want to introduce an alien which may become a pest, like the rabbit in Australia.

M. R. Block

THE BRITISH SPECIES OF CARDIUM

In the introduction to his treatment of the family Cardiidae, Jeffreys (1863, vol. II, p. 265) declares, "the Cockles are easily characterised and cannot be well confounded with any other family" unlike the families with which he has previously dealt that tax "the discriminative powers of the systematist to an extent which makes conchological nature almost faint under the task." On p. 290 (loc. cit.) he emphasises the variability of Cardium edule, no two individuals of which, so he says, can be confused. In these two statements he demonstrates the difficulties of identifying species of Cardium, showing, as they do, immense variation within the framework of a strong family likeness.

There are at present some 200 species of the family Cardiidae in the world, and these are distributed among 11 genera (Stratton, 1962). Winckworth (1932) recognises 10 British species, all of which he places in the genus Cardium, subdivided into 4 subgenera, as in the following list.

Cardium L.1758

S.g. Acanthocardia Gray 1851

aculeatum L.1758

echinatum L.1758

tuberculatum L.1758

S.g. Parvicardium Monterosato 1884

minimum Philippi 1836

(Winckworth refers British specimens to a subspecies C. minimum suedense Reeve 1845, stating that C. minimum sensu strictu is confined to the Mediterranean region. However, he recognises five different ways in which the trinomial may be used judging by its appearance in his list, and the references in his introductory statements (loc. cit. pp. 215-216). (1) for physiological races (2) for polymorphic species (3) for ecological races (4) for clines, and (5) for geographical races, although the generally accepted use for the subspecific category is that for the geographical - and ecological insofar as the two must be sometimes synonymous - race alone (see remarks of Pain 1961, and Mayr, Linsley and Usinger, 1953, pp. 30-32). At least some of Winckworth's "subspecies" are clines, as in mentioning the convenience of distinguishing the British from the Mediterranean representatives of certain species he states that they "would almost undoubtedly prove one continuously varying species through Biscayan, Portuguese and Spanish forms." In these circumstances it is difficult to know without further study in what sense he is using suedense and on what taxonomic characters this "subspecies" is based. Jeffreys (loc. cit. p. 294) considered C. suedense Reeve, C. loveni Thompson and C. suecicum Loven were all synonyms of C. minimum Philippi. Philippi (1836) based his description on a single recent valve and (at least in the matter of size) a number of fossil examples. Reeve (1845 loc. cit.) gives a very brief and generalised description of the Swedish Cockle, C. suedense, stating it is not much unlike the figure of an odd valve discovered by Philippi at Palermo adding that "his description by no means agrees with the northern species under consideration." The only difference to be noted in the actual descriptions is that Reeve's form had fewer ribs (28) as compared with Philippi's specimens which had 30-32: such a range is known to occur in other species of Cardium.

papillosum Poli 1795. A Sarnian species.

ovale Sowerby 1840

scabrum Philippi 1844

exiguum Gmelin 1791

S.g. Cerastoderma Poli 1795

edule edule L. 1758

(This is evidently Winckworth's designation for the typical form of the species)

edule lamarcki Reeve 1845

(C. lamarcki is given specific status by Petersen (1958)
See the following key and appendix)

edule beltica Reeve 1845

(Winckworth equates this with a form found by Mr. Ball in a brackish lake on Great South Arran, Eire ("Ball's variety" in Forbes and Hanley 1853 vol. II, p. 21), separating it from C. lamarcki, although Forbes and Hanley (loc. cit. pp. 18-19) consider it a synonym. As described by Mr. Ball they were evidently juvenile specimens and were found creeping in the algal vegetation, a habit and habitat recorded as typical of young C. lamarcki by Petersen (loc. cit.) who also considers C. beltica the same as C. lamarcki. There seems no other evidence for continuing to recognise it as a taxonomically distinct form.)

S.g. Laevicardium Swainson 1840

crassum Gmelin 1791

Only one of all the above species can be considered abundant in Britain and that is the Common Edible Cockle, Cardium edule edule. C. crassum is

fairly common and the rest of occasional occurrence (Johnston 1899, p. 1).

Key to the shells of British species

Note: Cockles vary greatly in shape within a species, and there is some variation of shape between juvenile and adult stages, the latter usually becoming produced posteriorly with age. Processes on ribs are generally more pointed on posterior, flattened on anterior, and tend to become squamose on ventral margins of maturing shell: they become worn down in both living and dead specimens making determination more difficult. The proportion of rib width to furrow width of which use is made in the diagrams is an unvarying and diagnostic feature in juveniles and adults alike.

- 1 Ribs obvious.....2
 - Ribs faint, 40 - 42 in number, with no processes: inside margin fluted in middle and towards sides. L. 50-75 mm. Cardium crassum Gmelin (all round coasts)
- 2 Adults more than 1" (25 mm.) long.....3
 - Adults less than 1" (25 mm.) long.....7
- 3 Ribs traversed by scales.....4
 - Ribs with spines or tubercles.....5
- 4 Scales on shell centre well-spaced and straight: posterior ribs well developed: ligament long and conspicuous: ribs 24 - 28: inside fluted only towards margins. L. 25 - 50 mm. C. edule L. (all round coasts)
 - Scales on shell centre close-set and rather flexuous: posterior ribs scarcely developed: ligament short and not conspicuous: ribs possibly fewer than in C. edule, the posterior ones being obscured: inside fluted only towards margins. L. 25 - 50 mm. C. lamarcki Reeve + (possibly all round coast: usually in estuaries or brackish lakes: see appendix)
- 5 Ribs crested with tubercles which are not obviously joined at their bases though a low sunken keel may sometimes be present: ribs 21 - 22: coarse flexuous striations in broad furrows between the ribs: shell very heavy and with slight gloss: inside fluted throughout, except in very heavy specimens: colour yellowish with darker concentric zones. L. 50 - 75 mm. C. tuberculatum L. (S.W. England and Ireland)
 - Ribs crested with spines which are very obviously joined at their bases by a fine raised keel.....6
- 6 Fairly coarse flexuous striations between the ribs: ribs 18 - 20: shell rather heavy and with no gloss: cardinal teeth in left valve approx. same size: inside fluted except in region of muscle scars: colour yellowish white: L. 50 - 65 mm. C. echinatum L. (all round coasts)
 - Fine rather even and usually straight striations between the ribs: ribs 20 - 22: shell very light in weight and glossy: posterior cardinal tooth in left valve smaller than anterior one: inside fluted except in region of muscle scars: colour yellowish with reddish tinges. L. 75-100 mm. (S.W. England and Ireland) C. aculeatum L.
- 7 More than 23 ribs.....8
 - Less than 23 ribs with sharp off-centre keel usually crested with some small tubercles, especially on the anterior side: ribs 20 - 22: very strong ridge from umbones to posterior ventral margin: inside fluted only towards margins: yellowish brown and usually with well developed brown periostracum: L. approx. 12 mm. C. exiguum Gmelin + (most parts of coast)
- 8 Processes on all ribs.....9

- Processes absent from central ribs and rather sparse on other ribs:
25 - 26 ribs, the posterior ones with short prickles, the anterior ones
with curved transverse plates: inside fluted well beyond margins:
yellowish white usually variegated posteriorly: L. 7 - 12 mm.
(all round coast) C. ovale Sowerby
- 9 Processes equally developed on posterior and anterior ribs: 28 - 32 ribs
covered with very closely placed minute arched scales, sometimes in
double rows: inside fluted throughout: always milk white: L. 6 - 9 mm.
(rare: mainly West coasts of British Isles) C. minimum Phil.
- Processes more developed on posterior of shell.....10
- 10 Ribs with close-set vaulted scales: 24 - 28 ribs: inside fluted only
near margin: usually milk white: L. 10 - 12 mm. C. scabrum Phil.
(local: most parts of coast)
- Ribs with conical tubercles: 25 - 26 ribs: inside fluted beyond margins:
yellowish: 12 mm. C. papillosum Pöli
(Channel Isles, but odd valves may be found in extreme
S.W. England)

*Petersen (loc. cit.) draws attention to juvenile smooth-shelled forms of
C. exiguum and C. lamarcki which can be confused: they are distinguishable by
the more oblique outline of C. exiguum and its longer thinner ligament.

Comparison of C. lamarcki Reeve with C. edule L.

Reeve (1845) originally described his species from material collected at
Kingsbridge, Devon, as follows:-

"shell transversely ovate, sub-cordate, rather thin, ventricose, posteriorly
obliquely produced; radiately ribbed; ribs 22 or 23 in number, rather broad,
obtuse, indistinct upon the posterior area; transversely striated in a wavy
manner; whitish variegated with blue and rusty brown, umbones livid brown,
interior livid brown, especially towards the posterior side."

Early conchologists considered this an extreme variety of C. edule and
intermediate forms were said to exist between the two species, the shell of
C. lamarcki becoming longer (more produced posteriorly) thinner, (with lighter
shell), more ventricose (the valves more swollen) and with a proportionately
smaller ligament as lower salinity and more sheltered conditions dominated
environment in higher reaches of estuaries.

Winckworth (loc. cit.) lists it as a subspecies of C. edule presumably
considering it an ecological race (see discussion of his treatment of sub-
species under C. minimum above).

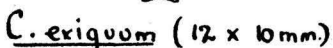
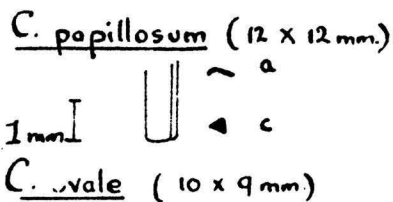
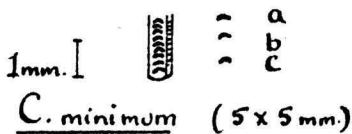
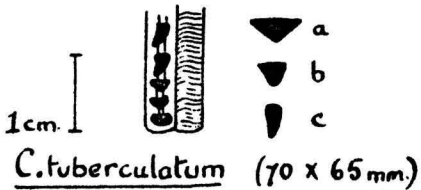
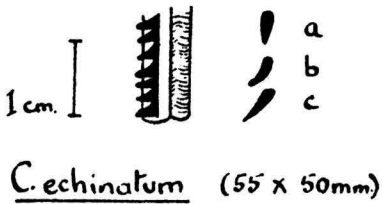
Petersen (loc. cit.) treats it as a full species, separating it by the
length of the ligament which is smaller than in C. edule. Taking the x-axis as
the greatest breadth of the shell (i.e. across the beaks, or umbones) and the
y-axis as the length of the ligament, the two species plotted on a graph may be
separated by the line $x = 3.5y + 2$, e.g. a shell about 10 mm. broad will have
a ligament 2.5 - 3 mm. long in C. edule whereas a specimen of C. lamarcki with
a breadth of 10 mm. will have a ligament only 1 - 2 mm. long. Petersen says
the following characters are more variable but act as an additional guide:-

C. edule L.

C. lamarcki Reeve

- | | |
|---|---|
| 1. Ribs in middle part of shell flat and provided with small scales some distance from one another. | 1a. Ribs in middle part of shell sharp and with small triangular closely placed scales, formed from periostracum. |
| 2. Ribs on posterior of shell fairly well developed and therefore a wavy line around siphon area. | 2a. Ribs on posterior of shell scarcely developed and therefore almost straight lines around siphon area. |
| 3. Periostracum little developed. | 3a. Periostracum thick and covering about 75% of the shell. |
| *4. Colour usually whitish and shape more circular (Petersen). | *4a. Colour usually with livid bands or areas and shape produced posteriorly (Reeve, F. and R. and Jeffreys). |
| 5. Never found climbing in vegetation. | 5a. Often climbing in vegetation or using byssus. |

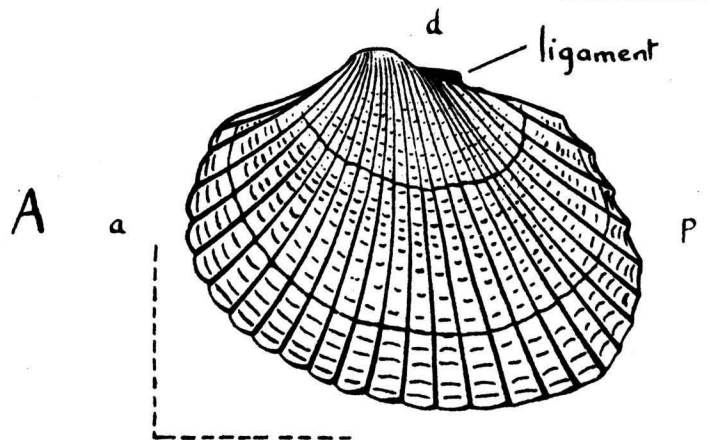
Diagnostic features of the shells of Cardium



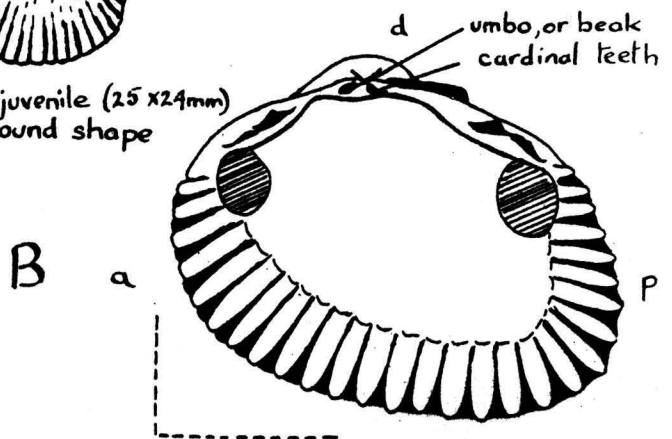
Diagrams of portions of ribs from ventral margins of shell centre showing width of furrows relative to ribs, and processes in certain Cardium species

a, b and c represent typical processes from anterior, middle & posterior of shell respectively.

Size of specimens used for diagrams is given in brackets.



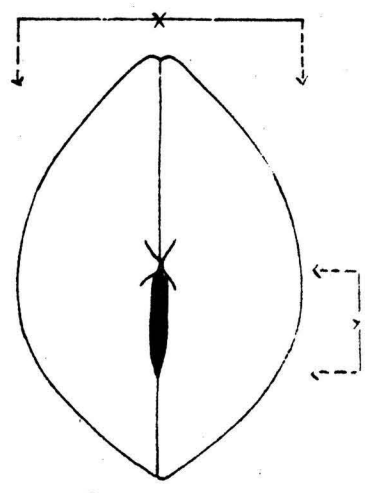
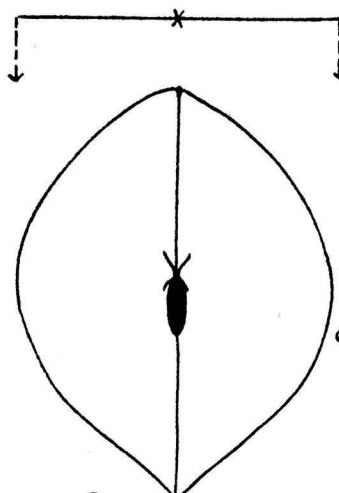
ribs with very narrow separating furrows.



fluting near margin only

C. edule A exterior view of left valve (42 x 35 mm) B interior view of right valve

a = anterior p = posterior d = dorsal v = ventral



Lower two diagrams after Petersen (1958)

6. Not tolerant of salinity below 20 per mille. 6a. Tolerates salinity from approx. 25 to about 5 per mille.

*Colour and shape not considered taxonomic characters by Petersen.

The material on which Petersen's work was based came from localities where the species were intermingled on the same substratum at the mouths of two estuaries on the Kattegat coast of Jutland.

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S. M. Turk

NOTES

Fieldwork Members doing fieldwork are asked to provide live freshwater gastropods for scientific study by Dr. S. Markowski of the London School of Hygiene and Tropical Medicine (see Membership List). A list of the species required is available from Dr. Markowski and a small payment will be made for specimens received.

Requests for Correspondents

1. Mrs. Joan Burnes and other members of the Taru Conchology Club, Crowdy Head, via Harrington, North Coast, New South Wales, Australia wish to exchange shells with conchologists in other parts of the world. They have available a large assortment of rock and trawled marine shells from Australia and New Zealand.
2. Mr. I. T. Guest, [REDACTED], Whangarei, Northland, New Zealand (a member) provides a long list of New Zealand shells and wishes to be put in touch with a correspondent with a view to exchanging them for Northern European shells.

The Journal Members are reminded that back numbers of the Journal are available through the Hon. Sec. The cost is 7/6d. for numbers in Vol. 25, 6/4d. for those in Vol. 24 and 1/- each or 10/- per volume for older issues. These are in print back to Vol. 15 (1915).

FIELD MEETING AT NORBURY PARK, MICKLEHAM, SURREY

9th. May 1964

Leader, A. E. Ellis; 8 members, one visitor and three dogs present. Three or possibly four species were added to the lists already published (J. Conch. 21:325, 23:167), viz. Vitrea contracta (Westerlund), Arianta arbustorum (L.), Cochlicopa lubricella (Stabile) and possibly Vitrina major (Ferussac). The reason for the doubt about the last is that only dead shells were found, so the record cannot be confirmed by dissection. A visit should be made earlier in the year, now that the precise locus is known. V. major was found four miles away in 1957 (J. Conch. 24:235).

Produced by 'The Conchological Society of Great Britain and Ireland'

FOR YOUR ATTENTION - PLEASE

Members are reminded that subscriptions for 1965 are due next January 1st. (except for those who joined - and paid - since last October).

Subscription rates of the Society have not been increased since 1949, in spite of rising costs in all directions, and it has not been an easy matter to retain subscriptions at their present level so long. The time is now approaching when the Council may have to consider the possibility of an increase, but the members themselves can do much to delay this by prompt payment of their dues, since one rather heavy expense concerns the issue of printed reminders by the Hon. Treasurer. These waste a good deal of time and money and should be unnecessary; during the past year, the Hon. Treasurer had to send 63 first, 47 second and 30 third reminder forms, before subscriptions were paid.

It is believed that this Society gives good value for the subscription and all members are urged in the general interest to pay their dues without unreasonable delay.

Hon. Secretary

DAVID LANDSBOROUGH

It all began with asking in a second-hand bookshop if they had any books on seaweeds? They offered "Popular British Seaweeds", 1st. ed. 1847, by the Rev. David Landsborough (1779-1854) with the plates torn out. Even without these, the book proved so engrossing, that I read it all the way home on the 'bus. The very real enthusiasm and something indefinable about the writer's personality, made one long to know more about him. Now three years, and many reference books and letters later - I know a lot more about David Landsborough, and am gathering material for a biography. "Excursions to Arran", 1st. ed. 1847, his best known work, describes dredging off that island, and in the Kyles of Bute with his friends Major Martin, Mr. Smith, his son, Joshua Alder and his sister, and various members of the Landsborough family. In June and July of 1846, they got *Pecten Landsburgii*, Smith (*P. striata*, Müller) the Mottled Scallop, which made him famous in his day. His little work was an early example of a popular book, in the best sense of the word, and would surely spur on any shell hunter to greater efforts if they got a copy. There were few enough conchological works of any kind at that date - it would be five years before Forbes and Hanley published their great work, and two more before Sowerby's "Popular British Conchology". Landsborough lived in a time of transition, between the awakening of interest in Natural History among the public, as opposed to a few lone people, and the beginning of the more scientific times, when it became commoner to specialise. The Ayrshire minister had many pursuits; he also studied algae, mosses, zoophytes, and fossils; he liked butterflies, spiders and moorland plants. His conchological cabinets seem to be lost without trace, and I am trying to collect the shells he had, and hope to get together a party to dredge off Arran next summer. A time machine might be helpful, though, to go back to the year 1854, and take acceptance of the offer of a Mr. Damon in Dorset - "100 British species, fine specimens, and several of each, for £2.12. 6" or 300 ditto for £12.12. 0" which "could be safely transmitted by post" and to go with them "Neat Labels for British shells, complete, 3s. 6d., Postage included."

A. Rutherford

STILL MORE AUTOBIOGRAPHY

Chapter I

In the late 1890's, under the stimulus of an excellent science master at

the Brewers' Company's School at Islington, one of the boys became curator of the school museum. It was a well run affair with everything properly labelled with locality, genus, species, author, etc., and with the trivial names of the specimens respectfully placed after the Latin names. On Saturday afternoons the museum committee took material to the Natural History Museum at South Kensington for identification and of all the zoological miscellanea that filled their satchels the shells were the school curator's favourites. I was he.

Chapter II

Many years and one world war later.

As light relief from a war job I went occasionally to Stevens' Auction Rooms in Hatton Garden, now, alas, long since closed. The sales there were entertainment without the necessity of paying entertainment tax: the queerest things were offered, one of which happened to be a box of Amphidromus shells, a glory of colour and form. I bought it and at that moment the furor conchyliorum was re-kindled in me.

Chapter III

Many more years and another world war later.

I now have in 24 cabinets, large and small, nearly 13,000 species (yes, they are all named) and a shell library of some 600 books and more than 3,000 separates.

A. Blok

THE JOURNAL OF CONCHOLOGY

Certain deficiencies in the last number of The Journal of Conchology (Vol. 25, No. 6), which cause the Editor great concern, call for some explanation. This matter was taken up in a personal interview and in correspondence with Mr. C. M. Bell, the Joint Managing Director of Bennett Bros. of Salisbury, and his reply is quoted after each of the following items.

1. Delay in publication: the "copy" was sent to the printers on 10th. February and the Journal was issued on 11th. July. "The reason for the lateness of the publication was that we had some difficulty with the machine used and we have since disposed of the machine concerned." The dispatch of the Journal was further delayed by the Post Office "go slow", but these two contretemps do not fully explain the lapse of six months.
2. The frame on the cover and the items normally printed on the inside of the cover were omitted. The Hon. Treasurer spotted this before the Journal was sent out and arranged for a loose-leaf insert. "There is no real excuse for the omission of the frame on the cover and the items on pages 2 and 3, but the explanation is that these faults were due to a change in the personnel working on your Journal during staff holidays."
3. The titles of the articles are marred by hair-lines, attention to which was drawn when the proofs were returned. "Regarding the hairlines on the titles, this is entirely due to the fact that the type used is of an old discontinued range, which frankly should have been withdrawn before. This particular difficulty will be eliminated on future occasions, subsequent to our agreement for a slightly different type face for the titles."
4. Some letters in the text are heavily printed, suggesting wrong fount; this blemish did not occur in the proofs. "The heavy printing of certain letters is also inexcusable and, although it can easily be explained, it cannot be excused and I apologise most profoundly." This was really due to the carelessness of the operator, who has been reprimanded.
5. The proof of plate 14 was considered to be unsatisfactory, and a new block was made which met with Mr. Scase's approval. Nevertheless the first block was actually used. "The inclusion of the discarded plate 14 is again easily explained but not easily excused. The basic reason for this was that during the staff holidays, which affect every business at this time of year, both the machine minder and the compositor involved were new to your publication." The revised plate will be issued with the next number of the Journal.

6. One or two misprints or mistakes corrected in the page proofs remain in the final text, e.g. Fisher instead of Fischer on p. 229, and Helix aspersa L. (instead of Müller) on p. 242.

The final paragraph of Mr. Bell's letter: "In order to atone in some measure for our poor performance over your last Journal, I would like to offer you a 15% discount on this issue. I would also like to assure you that I will do my utmost to ensure that you have no further cause for complaint."

A. E. Ellis

Footnote:- "The Journal Vol. 25, No. 6, was issued in July, but there have since been many complaints of non-delivery. Any member, therefore, who has not received a copy should get in touch with the Hon. Secretary."

SNAILS EXTINCT IN ENGLAND BUT LIVING ABROAD

About a score of species of non-marine Gastropoda which formerly occurred in the British Isles are still to be found living on the Continent of Europe or in Asia.

Theodoxus cantianus Kennard & Woodward, M. Pleistocene, which Dr. Kerney informs me is synonymous with T. serratilineiformis Geyer, bears a close resemblance to T. prevostianus (Pfeiffer), inhabiting thermal waters in Austria, Hungary and Croatia.

Valvata antiqua Morris, M. Pleistocene, is regarded as a subspecies of V. piscinalis (Müller) by Ehrmann, who gives its Continental distribution and figures it (1933, pl. 9, fig. 123).

Valvata (Borysthenia) naticina Menke, M. Pleistocene: Germany to S. W. Russia; figured in Ehrmann, 1933, pl. 9, fig. 121. (Borysthenes is the R. Dnieper or Dnepr, Ukraine.)

Acicula (Platyla) polita (Hartmann), U. Pleistocene: France and Denmark to Carpathians and Estonia. See J. Letchworth Nat. Soc. No. 5, p. 4 (1945); Kerney, 1959, 327, figs. 1, 1a. Related to A. subpolita (Gottschick) from U. Miocene (Sarmatian) of Württemberg. A. (Hyalacme) diluviana Hocker occurs in the same deposit near Hitchin as A. polita. (The derivation of Platyla Moquin-Tandon is obscure: if from Gk., it could mean "flat wood", which seems nonsense.)

Paladilhia (Belgrandia) marginata (Michaud), M. & U. Pleistocene: foothills of Pyrenees and Alps, N. Spain, S. France, N. Italy; figured by Sparks, 1957, pl. 3, figs. h-l.

Lithoglyphus fuscus (Pfeiffer), Weybourne Crag: Danube. The closely related or conspecific L. naticoides (Pfeiffer) extends from S. W. Russia to Germany and Latvia, and within recent times has spread to Holland, Belgium and N. France. Figured in Germain, 1931, pl. 18, figs. 514, 515, 517.

(Carychium ovatum Sandberger is synonymous with C. minimum Müller.)

Azeca menkeana (Pfeiffer), M. & U. Pleistocene, is probably a subspecies of A. goodalli (Ferussac). France, Denmark, Germany. See Kerney, 1959, 332, figs. 7, 8.

Columella columella (Benz), U. Pleistocene, is probably a subspecies of C. edentula (Drap.). Arctic-Alpine. Figures: Ehrmann, 1933, pl. 1, fig. 15; Geol. Mag. 94, pl. 7, figs. j-k; Kerney, 1963, pl. 11, figs. f, g.

Vallonia enniensis (Gredler), Cromerian to U. Pleistocene: synonymous with V. costellata (Braun) Sandberger and probably V. tenuilimbata (Sandberger); may be a variety of V. pulchella (Müller). Figures: Sparks, 1953b, 112, figs. e-h; 1957, pl. 3, figs. m-o.

Vallonia tenuilabris (Braun), U. Pleistocene: Siberia and possibly E. Turkistan and N. China. Sparks, 1953b, 112, figs. a-d.

Lauria sempronii (Charpentier), Holocene: S. Europe, Pyrenees to Caucasus, mainly montane. Kerney, 1957, J. Conch. 24:183.

Clausilia parvula (Studer) Ferussac, U. Pleistocene: Central Europe. Figures: Germain, 1931, pl. 13, fig. 370; Ehrmann, 1933, p. 68, fig. 42.

Clausilia pumila Pfeiffer, M. & U. Pleistocene: Central Europe. Ehrmann, 1933, pl. 2, fig. 34.

(Clausilia cruciata Studer was recorded in error (Kerney, 1959, 333))

Clausilia (Plicaphora) ventricosa (Draparnaud), M. & U. Pleistocene: Central Europe. Figures: Germain, 1931, pl. 13, figs. 393, 394; Ehrmann, 1933, pl. 2, fig. 35.

Laminifera (Neniatlanta) pauli (Mabille), M. Pleistocene: Pyrenees. Kerney, 1959, figs. 10, 11; Germain, 1931, pl. 13, figs. 389, 390.

Graciliaria (Ruthenica) filograna (Rossmässler), M. Pleistocene: Central and E. Europe. Kerney, 1959, fig. 6.

(Lindholmiola lens (Ferussac): the record from the Waltonian Crag (Geol. Mag. (3) 1:262) is too improbable to be accepted.)

(Hygromia (Zenobiella) rubiginosa (Schmidt): the record from the Norwich Crag (Proc. Malac. Soc. Lond. 3:191) is probably based on incorrect determination.)

Hygromia (Monachoides) incarnata (Muller), Waltonian Crag: Central Europe. Germain, 1931, pl. 5, figs. 118, 119.

Helicella (Xeroplexa) geyeri (Soos), Norwich Crag and U. Pleistocene: Germany, Switzerland, Belgium and probably E. France. Sparks, 1953a; Kerney, 1963, pl. 12, figs. d-f.

Helicella (Helicopsis) striata (Muller), U. Pleistocene and Holocene: Central Europe. Sparks, 1953a.

Discus ruderratus (Ferussac), Cromerian to Holocene: Central Europe, Norway to Spain, N. Italy and Transcaucasia; N. Asia to Kamchatka and Japan. Taylor's Monograph 3, fig. 250.

Nesovitrea (Perpolita) petronella (L. Pfeiffer), Early Holocene: Central Europe, north to Norway and Finland; Siberia, Manchuria. Figure: Arch. Moll. 89:220.

Vitrina (Semilimax) semilimax (Ferussac), Cromerian to U. Pleistocene: Alpine and Central Europe, S.W. to Pyrenees. Kerney, 1959, 334.

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Acknowledgment

Dr. M. P. Kerney has kindly read this article and made some additions and emendations.

A. E. Ellis

FIELD MEETING AT LEITH HILL SATURDAY 20th. JUNE 1964

Director: D. G. Pickrell

Leith Hill consists of an escarpment of the Hythe Sandstone which dips gently to the north, the soil being neutral to acid.

A small party and one fly-eating dog assembled at Dorking North station and proceeded by 'bus to Abinger. In the woods between Abinger and Friday Street the following species were found in a pile of logs: Discus rotundatus, Arion intermedius, A. subfuscus, A. circumscriptus, A. hortensis and A. ater (agg.) - jumped on by previously mentioned fly-eating dog - Euconulus fulvus, Oxychilus alliarius, a small Limax maximus and many Limax tenellus*** also Clausilia bidentata under a gate post.

The party then moved on to the lower pond at Friday Street finding Planorbis albus, Pisidium nitidum and one P. obtusale. In a small stream between upper and lower ponds was Ancylus fluviatilis. By the stream in the garden of a derelict house were found Agriolimax reticulosa, Cochlicopa lubrica, Hygromia hispida, Cepea hortensis, Limax maximus, Helix aspersa.

After lunch, in the vicinity of the upper pond Oxychilus cellarius, O. alliarius, Retinella nitidula and Hygromia striolata were found. In the upper pond itself Lymnaea peregra, Planorbis corneus, Planorbis albus, Spharium corneus were collected.

The ponds at Wotton Park were visited but were found to be far too acid for any mollusca.

The party walked to the top of Leith Hill for tea, after which we descended to Coldharbour visiting an old chert quarry where Arion intermedius was obtained. At Coldharbour on a rubbish tip Discus rotundatus, Vitrina pallusida and also Limax cinereo-niger*** were found. The party then returned by 'bus to Dorking.

Altogether 29 species were noted.

***Proc. Malac. Soc., Vol. 22, p.2.

FIELD MEETING AT ALBURY, SURREY

Director: June Chatfield

On 26th. July, 1964, a few members of the Society visited Albury, near Guildford to record land and freshwater mollusca in the National Grid square 51/04. Several different habitats were visited, and at the end of the day a list of about forty species was obtained.

The Silent Pool is a large pool at the bottom of the steep scarp slope of the North Downs, and it is supplied by a spring from the edge of the chalk. The water was clear and there was generally little aquatic vegetation, although green filamentous algae and Lemna trisulca (Ivy-leaved duckweed) were abundant in some areas at the surface film. The molluscan fauna of the pool was disappointing, Lymnaea peregra was the only aquatic living species found, although dead shells of Valvata cristata and Pisidium milium occurred in the bottom mud.

Terrestrial molluscs were found under logs, in leaf litter, at the base of trees and on banks in mixed woodland surrounding the Silent Pool and extending almost to the top of the steep scarp slope of the chalk. Species found were:- Pomatias elegans, Carychium tridentatum, Cochlicopa lubrica, Acanthinula aculeata (in leaf litter on the edge of the Silent Pool), Ena obscura, Marpessa laminata, Clausilia bidentata, Cepea hortensis, C. nemoralis, Helix aspersa, H. pomatia, Hygromia striolata, H. hispida (on the bank of the Silent Pool), Monacha cantiana (on a grassy bank near a field), Punctum pygmaeum (in leaf litter at the edge of the Silent Pool), Discus rotundatus, Arion intermedius, Arion ater agg., Arion rufus, Vitrea contracta, Oxychilus draparnaldi, O. cellarius, O. alliarius, O. helveticus, Retinella radiatula, R. pura, R. nitidula, Vitrina pellucida, Limax maximus, L. cinereoniger, Lehmannia marginatus, Agriolimax agrestis agg., A. reticulatus.

New pine wood plantations were seen near the top of the scarp slope, but the molluscs of these woods were not investigated. The recent plantation of pine woods in place of beech and oak woods in Surrey may well reduce the molluscan fauna in considerable areas.

A grassy bank alongside shrubby ground on the slope of the chalk was investigated. The molluscan fauna of this bank was surprisingly small; Cochlicopa lubricella was the only species to be at all frequent, although a few other species were recorded.

Later in the afternoon, after tea, the party visited Newlands Corner and investigated some chalk grassland. This yielded:- Cochlicopa lubricella, Pupilla muscorum, Vallonia excentrica, Hygromia hispida, Helicella caperata and H. virgata.

On a stony pathway surrounded by nettles on the edge of the chalk near Weston Wood, many broken shells were seen, these representing the site of a bird's anvil. The species broken were:- Cepaea hortensis, Arianta arbustorum and Monacha cantiana, in order of abundance.

The day's collecting came to an end with the investigation of an old Gault clay pit at Weston Wood. This pit is gradually being filled with sand from the Albury Sand Pit. It contains two ponds, a small one on the sand which yielded no molluscs, and a larger one on the Gault which yielded many specimens of Lymnaea peregra, but no other species of mollusc. A few interesting fossils were found in the Gault clay. There were three types of ammonite:- Mortoniceras inflatum, Beudanticeras beudanti and a possible Hysteroceas sp.. Other fossils were internal casts of gastropods (indetermined) and fragments of Serpulid worm casts.

The excursion was both a pleasant and successful one. However, due to the hot dry weather, many species were not found, and thus there is plenty of opportunity for further field work at Albury.

NOTE: Arion rufus was determined on dissection of the genitalia.

POSTING LIVING MOLLUSCA

Live-stock are classified in the Post Office Guide in the same category as filth, indecent or obscene communications, prints, photographs, books or other articles, as "prohibited articles," with the following exceptions:

Live bees, leeches and silkworms must be enclosed in boxes so constructed as to avoid all risk of injury to officers of the Post Office, or damage to other packets.

Certain parasites and destroyers of noxious insects intended for the control of such insects are admissible if similarly packed, but only when sent by letter post between officially recognised institutions.

Certain other harmless living creatures such as mealworms, earthworms, ragworms, lugworms, caterpillars, maggots and so on may be sent by letter post, but only with the prior permission of the Postal Services Department (H.M.B.), Headquarters Building, General Post Office, St. Martin's-le-Grand, London, E.C.1, and in packing approved by that Department.

Presumably Mollusca would rank as "so on." At the risk of incurring a charge of incitement to commit a felony or misdemeanour, one ventures to recommend that a blind eye be turned on these tiresome regulations. Provided the snails are securely restrained, so that they cannot bite the postman, and the packet is not provocatively labelled "Live Stock," detection is improbable. Furthermore, to an undiscerning official a contracted living snail would barely be distinguishable from a dead shell, and even slugs exhibit little evidence of animation. So we may now proceed to consider the best methods of insuring the comfort of our specimens in transit.

The larger land snails are best sent in cardboard boxes and kept dry; they will seal the mouth of the shell with an epiphragm and survive for quite a long time. For those of medium size, match-boxes are convenient. Minute kinds should be sent in specimen-tubes, perhaps with a little moss. Succinea, Vitrina and Zonitidae should be sent in tins or tubes with damp moss, filter-paper, or clean blotting paper, but excessive moisture must be avoided. Slugs should be sent in tins, such as tobacco tins, with a piece of lettuce or cabbage leaf. Mycophagous slugs may be provided with a piece of mushroom or toadstool, which would not have time to putrefy on a short journey.

Freshwater Mollusca should be packed in tins or tubes with a little damp

pondweed, such as Elodea, but should not be in water. Unionidae can be put in polythene bags and packed in crumpled newspaper or wood shavings. I have no experience of sending marine Mollusca by post, but presumably they will travel well if packed in moist seaweed.

Avoid over-crowding and excessive dampness. There is no real need to supply food, and it is not necessary to pierce air holes in the container, in fact this should not be done. It is inadvisable to post living Mollusca during very hot weather. Make sure, of course, that the packet is securely fastened, e.g. with celotape, and correctly addressed. These hints apply to inland postage only. Overseas mail, even sample post, is liable to be inspected, so the contents should at any rate appear to be lifeless, unless all the regulations have been scrupulously complied with.

A. E. Ellis

GENERAL NOTES

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

Notice is given of the possible use by the International Commission of its plenary powers in connection with the designation of type species for Purpura Bruguiere, 1789, and Muricanthus Swainson, 1840, and the validation of Ocenebra Gray, 1847, and Thaisidae Suter, 1913 (all Gastropoda), reference number Z.N.(S.) 1653. Particulars will be found in Bulletin of Zoological Nomenclature, vol. 21, part 3. Any comments should be sent in duplicate before 7th. February 1965 to the Secretary of the International Commission, c/o. British Museum (Natural History), Cromwell Road, S.W.7.

REQUEST

Unfortunately the Natal Museum's reference library has a few gaps in its otherwise complete series of the Proceedings of the Malacological Society of London. All missing parts are now out of print, so that the Museum wishes to appeal to readers of this Newsletter to help in completing this series. The following parts and volumes are required:

Proc. Malac. Soc. Lond.

Vol. 28, parts 1, 4, 5, 6, 1949/51;

Vol. 30, all parts, 1953/54;

Vol. 31, parts 1 (Aug. 1954), 2 (Dec. 1954), 3-4 (June 1955);

Vol. 32, parts 1-2 (Aug. 1956), 3 (Dec. 1956), 4 (March 1957),
5 (Aug. 1957);

Vol. 34, part 1 (April 1960).

Offers of any or all of these parts and volumes will be welcomed by the Curator of Molluscs, Natal Museum, Loop Street, Pietermaritzburg, Natal, South Africa. The Museum is prepared to pay reasonable prices for copies in fair condition.

CATALOGUES RECEIVED A very complete list of Pacific gastropoda with prices from Mr. P. W. Clover, U.S. NavComSta., c/o P.O., San Antonio, Zambales, Luzon, Phillipine Isles.

Dr. K. H. Barnard, of the South African Museum, has described a further 22 new species of marine Mollusca, which were obtained off the coast of Natal by the s.s. Pieter Faure between Dec. 1900 and April 1901, in Ann. Natal Mus. 16:9-29.

WANTED

J. Conchology, vol. 5, any parts except nos. 1-5 or pp.221-224, 289-304.

FOR SALE OR EXCHANGE Complete copy of Ashford's The Darts of British Helicidae. (J. Conch. vol. 4, 1883-1885).

Also J. Conch. vol. 1, pp.249-250.

Mrs. McMillan, [REDACTED], Bromborough, Cheshire.

NUMBERING OF NEWSLETTERS

In response to queries from members who wish to bind their copies of the Newsletter, the compiler suggests that 10 numbers be regarded as forming 1

volume, although issues will continue to be numbered consecutively and references such as "Vol. 1, No. 4" will not be used in order to avoid any possible confusion with references to the Journal.

Dr. H. E. Quick, whose health at present prevents him from coming to meetings, would welcome visits from other members when they are in the district. His address is [REDACTED], Reading.

ADVERTISEMENT

Have a different Easter holiday! Sea-dredging, Island of Arran, Sannox, possibly Lamlash. Pay your own expenses, stay small hotel, or bring tent. Write to Alison Rutherford, [REDACTED], Helensburgh, Dunbartonshire.

EXCHANGE

Senor Cesar Fabregas Tejero, of [REDACTED], (Lanzarote), Canary Islands, Spain, wishes to exchange tropical marine gastropoda with other collectors.

CORYNDON MUSEUM, NAIROBI

Transference of Spirit Material: Since conditions in East Africa at present are not favourable for the curation of spirit material and I have returned to England, it was considered advisable to transfer all spirit material of African Mollusca formerly housed in Nairobi to the British Museum (Natural History). This material had never been formally registered as part of the Coryndon Museum collections. This note is considered necessary because several type specimens amongst the material transferred were originally cited in the literature as being in Nairobi. The 'dry' collection of shells is still housed in the Coryndon Museum, and consists of the Museum's original collection, together with specimens which I accumulated during some 15 years in East Africa.

B. Verdcourt

THE VIVIPARIDAE

This large and varied family of freshwater gastropoda is by virtue of its having two species (*V. viviparus* (L.) and *V. contectus* (Millet)) living in English rivers, well known to British collectors. The Viviparidae enjoy an almost world-wide distribution, being found on all the continents except S. America and Antarctica. It is divided into two subfamilies. Viviparinae, inhabiting Europe, Asia Minor, northern Asia and N. America, and Bellamyinae in Africa, tropical Asia and Australia. They differ in the male sexual gland, which is interwoven with the digestive gland in the Viviparinae, but free from it in the Bellamyinae. Furthermore the embryonic whorls of the shell are banded in the former, but not in the latter.

The only common major factor in their distribution is through water channels and some have been introduced by man, e.g. Bellamya malleata (Reeve) a large Japanese species, into the Western United States. Low temperature may play an important part in their distribution as it exists at present, but beyond the fact that they do not occur in the Polar regions, there is apparently no definite observation on the influences of this factor.

As the name suggests, the family is viviparous and according to some authors ovo-viviparous. The sexes are separate. They are operculate, having a horny or semi-calcareous operculum. Respiration is entirely aquatic and is performed by means of a ctenidium. Food consists of aquatic plants, algae, etc. They occasionally become carnivorous. In many countries where they occur, these snails are used as food by man and domestic animals.

Distribution: Europe. In Europe these snails do not extend their range beyond lat. 50°N. in Scandinavia and this appears to be their northern limit also in Russia. In Asia Minor they extend to about 30°E. Only one species is found south of the Apennines and none are known from the Iberian Peninsular. Bourguignat divided the European species into 7 sub-groups and no less than 50 species! Kobelt however recognised only two main types, V. viviparus and V. contectus.

America. None are known living either in Central or South America. One

small isolated species, V. Germondiana (Orb), occurs in Cuba.

In North America there are besides Viviparus s.s. four endemic genera, Tulotoma Haldeman, Campeloma Rafinesque, and Lioplax Troschel. The two common European species have been introduced into the eastern states and two Japanese species into the western seaboard.

Asia. None are found in the greater part of Asia Minor, Arabia, Afghanistan, Tibet, the whole of central Asia, Mongolia, the greater part of China, and with the exception of the Amur Basin, the whole of Asiatic Russia.

In India, the Bellamya bengalensis group is common and widely distributed, whilst the Chinese species B. chinensis and the Japanese, B. malleata and B. japonica are among the largest forms known. A small smooth unbanded species B. javanica is typical of the Bellamya found throughout the Philippines and the Greater Sunda Islands, although Lake Lanas on the Philippine island of Mindaneo has a number of peculiar endemic species.

Australia. Known only from Northern Territory, Queensland and parts of eastern Australia. A very unusual form (B. fragilis Preston) with a strongly keeled and paper-thin shell, has been described from New Guinea, living 8000' up in the Central Arfak Mountains.

Africa. Bellamya is widely distributed in tropical Africa. The typical form is B. unicolor (Olivier) which is found fossil in deposits of Miocene age and is now found living in all the great lakes and major river systems. In Lake Tanganyika the large and striking genus Neothauma is common and another species N. ecclesi has recently been discovered in Lake Nyasa. Numerous subspecies of B. unicolor have been described from Lake Victoria. Lake Minerva has a very distinct species, perhaps allied to Neothauma.

Fossil Viviparidae. Many fossil species, attributed to this family have been described, especially from rocks of Caenozoic age. The earliest fossil records are from Jurassic strata of the Inferior Oolite (Bajocien). The record of a supposed form of Viviparus (V. carbonarius Garwood) from the Carboniferous of Yorkshire is undoubtedly based on incorrect identification. It is also now considered most unlikely that the Jurassic species (V. scoticus Tate) was correctly referred to this family. From the Cretaceous onwards, however, there is no doubt that members of this family became definitely separated from the ancestral marine and estuarine forms and took to a freshwater life.

The first extensive occurrence of Viviparidae, and one which can without any doubt be assigned to the family, is that of the Purbeckian forms of Upper Jurassic age and those found in the Wealden strata of Lower Cretaceous age, in south west England. Three species form the main constituents of the famous Purbeck Marbles.

During the Tertiary many species were living in most parts of the world. In Britain, the Bembridge Beds of Oligocene age, in the Isle of Wight contain several species of which V. lentus (Solander) is typical. This species is also found in the Woolwich Beds of Lower Eocene age.

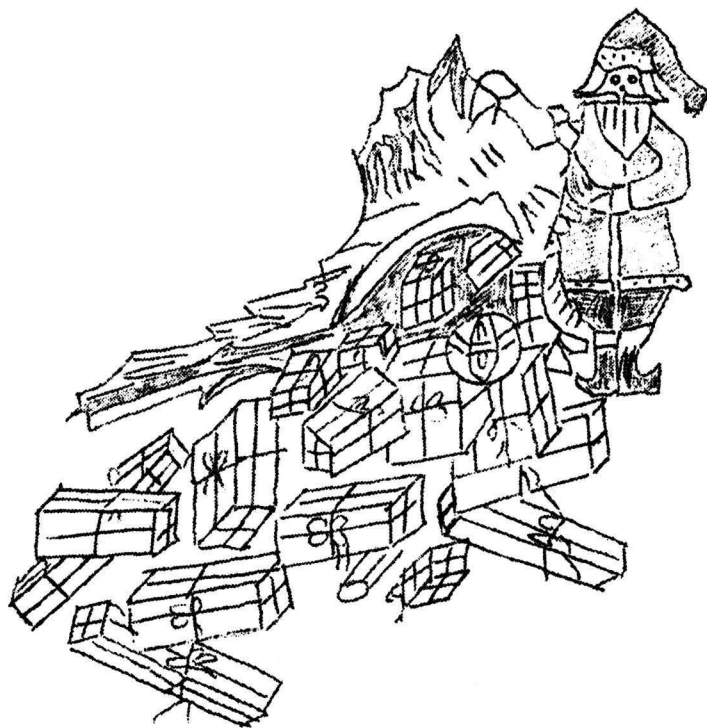
The magnificent series of Viviparus found in the Pliocene of Slavonia have attracted attention from early times and the literature on them is very extensive. They have been frequently referred to in studies on evolution. The highly sculptured and otherwise specialised species of the Pliocene lakes of Eastern Europe had been produced under very favourable lacustrine conditions and were not able to adapt themselves to the changing conditions, and all perished without leaving any descendants whatsoever. The less specialised smooth-shelled species persisted and spread over the entire area, giving rise to such species as V. diluvianus (Kunth) found in Pleistocene deposits in Britain and still living on the continent, and V. medius (Woodward), and finally to V. viviparus (L) and V. contectus (Millet). Widely distributed over this area today.

Elsewhere fossil Viviparidae are found in countries where the family is still living, the exception being South America, where the discovery of a true Viviparus in Upper Cretaceous deposits in Brazil and another from beds of Tertiary age in Chile, suffice to prove that the family was represented there at least until the Early Tertiaries. The causes which lead to its extinction are uncertain, as other freshwater molluscs like the Ampullariidae still live there. Possibly the flooding over the area in which the family flourished by

the sea was responsible for its disappearance.

T. Pain D. Beatty

CHRISTMAS GREETINGS TO ALL READERS



Produced by 'The Conchological Society of Great Britain and Ireland'

JUNIOR MEMBERSHIP

The following were elected to the Junior Membership of the Society on the dates given:-

14th. November 1964

<u>MASTERS</u>	Philip John	[REDACTED], Porth, Rhondda, Glamorgan.
<u>JOHNSON</u>	Ian R.	[REDACTED], Goldsitheny, Penzance, Cornwall.
<u>SMARTT</u>	John T.	[REDACTED], Phibsboro, Dublin 7, Eire.
<u>HANCOCK</u>	Caroline	[REDACTED], New Earswick, York.
<u>WILKINSON</u>	Rosemary J.	[REDACTED], Epsom, Surrey.
<u>WHITFIELD</u>	Garry Edward	[REDACTED], Warrington, Lancashire.
<u>WARD</u>	Penelope Ann	[REDACTED], Crosshills, nr. Keighley, Yorkshire.
<u>O'CONNELL</u>	Michael Anthony	[REDACTED], Islington, London, N.1.

12th. December 1964

<u>TOWNSEND</u>	Christopher M.	[REDACTED], Freshfield, nr. Liverpool.
<u>THISTLETON</u>	Brian M.	[REDACTED], Carisbrooke, Isle of Wight.

16th. January 1965

<u>TAYLOR</u>	Patrick J.	[REDACTED], Tremorvah, Truro, Cornwall.
<u>JOSEPH</u>	Steven Falcon	[REDACTED], London, W.1.

MOLLUSCA IN THE MUSEUM

Part I

The majority of our Natural History Museums tend to ignore the invertebrate phylum Mollusca completely from their collections, presumably due to the absence of relevant literature dealing with the collection, preservation, maintenance and storage, of the members of this phylum. It is hoped that the following notes will remedy this deficiency.

The first and major problem concerning the curator will be that of his policy for the Mollusca collection as a whole, this being influenced to a considerable extent by the general policy of the museum concerned, thus if collections of birds, etc., are of a local nature then the Mollusca collections will likewise tend to be restricted to this field, whilst in other museums the policy may be British or even world-wide. However, it should be borne in mind that the policy may also be influenced by collections already present in the museum these often forming a basis for zoogeographical units.

If one of the functions of the museum is the loan of material for study by schools a small collection of large exotic shells proves ideal for still subjects for art colleges. Similarly the diverse shapes and sculpture are extremely suitable for loans to schools for the blind.

Once the departmental policy has been settled, we are faced with the problem of forming the collection, our chief source of material being the result of active collecting or exchange.

The chief requirements for personal collecting are a knowledge of the habits of the Mollusca required, coupled with perseverance and a certain element of luck. The apparatus required varies with the animals' habitats

thus a hammer and chisel prove useful for marine collecting whilst most fresh-water species may be obtained by the use of a garden rake and a fine mesh screen, preferably of copper as this withstands rusting. Plastic bags prove essential whilst glass containers should be avoided due to the risk of accident. Small species are best obtained simply by taking home a sample of the shell sand, river gravel, or for land snails, dead leaves, these being sifted later at leisure.

When collecting shells of shell-bearing species it is preferable to obtain live samples and then remove the animal thus obtaining as perfect an example as possible, if however, one comes across a dead shell of a species unrepresented in the collection from a particular locality then it should be retained.

The method of treatment required for preserving the material obtained by personal field work will depend largely upon the intentions behind forming the collections, also, different techniques are required for the different classes of Mollusca concerned, for this reason it is best to deal with each class separately.

Gastropoda

Terrestrial and freshwater forms are best killed by drowning in a bottle filled with cold, boiled water, the animal being left in this for about a period of twelve hours, alternatively the snails or slugs can be placed in a shallow container containing a mixture of water and propylene phenoxetol which acts as a narcotising agent. The age-old method of plunging the animal into boiling water should be ignored since about 95% of animals killed in this way contract violently making it difficult to examine the anatomical details which are of major importance in classification.

In the case of marine species the animals may be narcotised using propylene phenoxetol as described above, this normally resulting in the animals remaining extended. The technique consists of placing the animal in seawater and, upon it becoming fully extended, slowly adding propylene phenoxetol which forms as a globule on the bottom of the container, and then leaving overnight. The propylene phenoxetol should not exceed 1% of the volume of water.

In the case of nudibranchs it is normally recommended to narcotise using crystals of menthol sprinkled on the surface but this method is far from reliable usually taking twenty-four hours or more to take effect, by which time the cerata and rhinophores have usually broken off rendering the specimen almost useless. The best method I have encountered so far is that of Carlos J. Risso Dominguez, this being as follows:-

After collecting living nudibranchs from the rock pools exposed at extreme low tide place them in a jar containing 30 - 100 cc. of sea water and leave for two or three hours until they are moving about quite normally. Add one or two drops of 20% Nicotine solution per 30 cc. of sea water and leave for about 10 minutes by the end of which the slugs should have become narcotised, if not, add further 20% nicotine solution. The extended slugs are then left in the nicotine solution for about 15 minutes after falling to the bottom of the container unless the mouth and pharynx become extruded in which case the animals are removed immediately and placed in fresh water. Wash thoroughly in running water to wash away all traces of seawater and nicotine solution for about two hours and then fix in 2% formalin for about a day, then rinse thoroughly in running water for three to four hours and transfer to propylene phenoxetol solution. If possible avoid moving the animals from the original container until completely fixed because of the liability of damaging the cerata especially in Eolids. The major disadvantage of this method is the risk of using nicotine solution.

The preservation of the resultant material depends upon the purposes to which the collections are subject, thus if it is intended for scientific study then the animals as well as their shells should be preserved, on the other hand, if it is intended simply for a reference collection then shells together with the lingual ribbon, jaws and love darts will be quite adequate for comparative purposes.

In the former case the animal should be fixed in alcohol or 10% formalin solution for a period of 4 to 24 hours and then washed in running water for 6

to 12 hours, at the same time making sure to remove any excess mucus. The material is then stored in a 1% solution of propylene phenoxetol in 10% glycerol.

This method of preservation proves extremely efficient and has the added advantage that dissection proves the material to be superior to living material for examining the relative position of the internal organs which are normally distorted upon the death of the animal.

If the specimen is required for reference only then the animal should be removed from the shell, this being achieved by means of a bent pin, if however apical portions of the animal remain in the spire these can be removed by soaking the shell in water for two or three days.

The soft remains, upon removal from the shell, should be placed in preservative until a time when the radula and jaw can be extracted using the method described in Wagstaffe and Fiddler.

The surface of the shell should be left in its natural state since in many forms the periostracum affords a taxonomic feature. If the animal possesses an operculum this should be removed and all traces of flesh removed, then rubbed over with oil or butter to prevent cracking, and allowed to dry. When the shell is ready for storage the operculum should be attached to a plug of glass wool with a little gum and inserted in its natural position. The majority of the literature advocates the use of cotton wool for this purpose but this should be avoided due to the risk of calcining.

In the case of species of the land snail genus *Helix* the animal is equipped with a love dart and this should be removed and fixed to a card or glass slide using the same process as that for the extraction of the radula and jaw.

In the case of shell-less forms such as slugs these can be prepared for the reference collection using the technique employed for the preservation of lepidopteran larvae, that is, by squeezing out the internal organs, etc., and then blowing up the skin to its natural shape and allowing to dry.

Amphineura and Scaphopoda

These may be killed and preserved as for gastropods but in the case of *Amphineura* upon the removal of the animal the shell should be placed between two glass slides and allowed to dry, otherwise the individual plates become curled due to the contraction of the girdle on drying. The radula and jaws should also be extracted and made into permanent microscopic slides as for gastropods.

Lamellibranchs

It is stated that bivalves may be killed by plunging into boiling water but this causes considerable contraction of the animal coupled with a marked depreciation in the value of the shell which tends to crack upon drying. By far the best method is by drowning in cold boiled water or by narcotisation using propylene phenoxetol as for gastropods.

When killed, wash in fresh water to remove all excess mucus and also the contents of the mantle cavity. These should be retained and examined for the presence of symbionts or parasites such as hydracharines. The animals are then preserved in 1% propylene phenoxetol as for gastropods.

In the case of shells for reference the animal is removed and the shell valves separated, not being bound together as stated in the text books, this being due to the fact that the shell valves show little external morphological variation the identification being based on a combination of the external sculpture together with the internal features of the hinge plate complex and the muscle scars. In the case of small bivalves such as *Pisidium*, etc., the valves may be separated by warming the shell in a weak 5% solution of Sodium or Potassium hydroxide until the ligament breaks down resulting in the separation of the valves. These should then be removed and washed thoroughly and then allowed to dry over a radiator.

Cephalopoda

These are best killed by injecting chloroform into the mantle cavity by means of a hypodermic syringe having first partially narcotised the animal with propylene phenoxetol. Next inject a 5% formaldehyde solution into the body cavity and then set out the animal on a glass plate in the position required. Immerse in a tank containing 10% formaldehyde or formaldehyde propylene phenoxetol solution for about 24 hours or longer depending on the size of the animal concerned. Remove and wash thoroughly for two or three days in running water and then store in 1% propylene phenoxetol solution, this having the advantage of retaining the pigmentation pattern to a certain extent. If the animal is required for a dry collection then the internal pen or cuttle-bone should be removed and fastened on to a bristol board together with the beaks and radula, and accompanied by a photograph of the entire animal.

Now that the material has been prepared for the collection the problem of labelling arises and this has been dealt with in numerous ways but the best method is that used by Continental and American collectors who allocate a number to the shell or series of shells of a particular species, this number being written in Indian ink on the shell itself. This method admittedly renders the shell relatively unattractive for display but at least means that the relevant data can be correlated with the correct shell. A small label bearing the appropriate number and the name of the species, date of collection, locality, together with any notes about the habitat should be placed in the box with the specimen whilst a chronologically numbered ledger recording further details about parasites, anatomical features, references to any publications relating to the specimen, etc., should also be kept.

In the case of large shells, particularly bivalves, the appropriate details can be written on the shell itself, similarly if any specimens are figured or type material, this should be indicated on the shell in Indian ink. To many people this would seem rather cumbersome but it has the advantage that if a type or figured specimen should be mislaid or stolen, and the number obliterated, it is still possible to identify the authenticity of the specimen by using an ultra-violet lamp which brings up the outline of the original number or label on the shell.

In the case of wet spirit material labels should be written in Indian ink on good paper, the whole label being sealed in a polythene coating and fastened to the animal by means of copper wire or thread. In the case of large cephalopods a system involving the use of numbered metal discs is often employed, these being fastened to the arms of the animal or simply pinned into the visceral mass.

Part II of this article will appear in the next issue of the Newsletter -
No. 13.

F. R. Woodward

GENERAL NOTES

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

Notice is given of the possible use by the International Commission of its plenary powers in connection with a proposal to suppress Tellina gari Linnaeus, 1758 (Bivalvia), reference number Z.N.(S.) 1461, details of which are published in Bulletin of Zoological Nomenclature, Vol. 21, part 5 (Nov. 1964). Any comments on the above must be sent in duplicate before 26th. May 1965 to the Secretary, International Commission on Zoological Nomenclature, c/o British Museum (Natural History), Cromwell Road, London, S.W.7.

PROCEEDINGS OF THE FIRST EUROPEAN MALACOLOGICAL CONGRESS (Published by the Conchological Society of Great Britain and Ireland and the Malacological Society of London)

This publication, consisting of all papers read at the Congress held in London in September 1962, contains viii + 266 pages, including 32 plates. Price £2 or 6 dollars. Orders should be sent to Mr. J. F. Peake, Department of Zoology, British Museum (Natural History), Cromwell Road, London, S.W.7., England.

WANTED

Journal of Conchology, 1905, Vol.II, No. 5. The undermentioned would be willing to pay a reasonable price for a copy.

Mr. J. F. Ogle-Skan, [REDACTED], Didsbury 20, Manchester.

FOR SALE (or exchange for volumes not in my library)

Proc. Malac. Soc. Lond., Vol. 10, 11, 13, 14, 15 and 16 (unbound), Vol. 15 (bound). Also large stock of separate parts available for sale or exchange. Rev. H. E. J. Biggs, [REDACTED], Bromley, Kent.

PUBLICATIONS RECEIVED

Conchology Section, Auckland Institute and Museum: 'Proceedings of the Reunion held at the Museum, October 23-25, 1963'.

This account of the proceedings held to celebrate the attainment of its first third-of-a-century, is full of interest. It commences with a verbatim report of the opening speeches and the address given to Dr. A. W. B. Powell, who received warm and well merited tributes as the founder and for long the doyen of the Club. The publication also contains an account of shelling conditions in Western Samoa by R. A. Cumber and two scientific essays of outstanding interest: 'Molluscs and Niches in Intertidal Ecology' by John Morton and 'Deep Water Mollusca of New Zealand' by R. K. Dell.

SHELL LIST received from:- Jean-Felix Pierret, [REDACTED], Brussels 15, Belgium. (Priced list with the compiler).

EXCHANGES

Preston M. Blanton, [REDACTED], Folly Beach, South Carolina, U.S.A. - I have some very interesting specimens of Busycon carica eliceans Kiener which I collected here and with operculum. Dr. R. Tucker Abbott identified these as intergrades of carica and eliceans. They vary from the almost smooth form of carica to the typical swollen form of eliceans with the wide canal. These latter are very heavy and massive shells.

There are many other specimens to be found here and I will send a list and description of exactly the specimens I have on hand to offer to anyone interested. It would not be necessary to send me a list as I need anything from outside the United States.

Mr. R. W. Armes (member) wishes to correspond with other members with a view to exchanging tropical marine shells. Mr. Armes has spent some years in the East and has a good stock of duplicates; his main interests are in Cypraea, Conus and Voluta.

Mr. P. A. Galea of 68/5 St. Francis Street, Floriano, Malta, wishes to exchange marine shells with a collector in Great Britain. He is particularly interested in the Cypraeidae, Muricidae and Conidae. Lists available.

INFORMATION WANTED

Publications sent to the last recorded address of one of our members have been returned 'Not Known'; he is Mr. P. A. Maddison, [REDACTED], Clapham Common, London, S.W.4.

The Hon. Secretary would be most grateful if anyone could give information as to the present address of this member.

REQUEST FOR SHELLS

Mr. Stanley Atkin, Curator of the Borough Museum, Central Park, Dartford, wishes to put on display a representative selection of British non-marine shells, and has written asking if any members can let him have well labelled specimens surplus to their requirements, so that this exhibit can be built up. As members will know, the number of museums with good British molluscan collections is extraordinarily small, and for this reason it is hoped that many people will be able to help Mr. Atkin in this instance. Please send anything you can spare direct to Mr. Atkin.

SHELL COLLECTING AT BARRICANE BEACH

When one reads Guide Books for the North Devon coast, this is the sort of reference one finds about Barricane Beach: "Noted for its tropical shells...", or, "Famous for the beautiful tropical shells brought there by the Gulf Stream...". No wonder I longed to go there and pick up with my own hands the sort of shells I had only seen in books. It was therefore with real excitement that I hurried down the steep slope to Barricane Beach this summer (1964). The Beach is a small cove amongst extensive rocks, and is covered with shell sand, although at low tide it widens out into a broad sandy area. As I sifted through the shell sand I was most disappointed! It was most difficult to find anything other than broken pieces of shells, but after a patient search I did find a few Trivia monacha, Hima incrassatus and Ocenebra erinacea, as well as some tiny Patella. There was hardly anything else and what there was, was damaged or broken.

Even after the Spring Tide there was hardly any improvement, and I spent most of my time at Woolacombe in the next cove to Barricane Beach. This one is Gin Cove and I found during a fortnight's stay, well over 40 varieties of shells, although some were pretty rare. Undamaged ones were difficult to find, but still I finished up with a great many small Patella (some in bright oranges) and Ocenebra, also many varieties of Pecten and Chlamys distorta. Anomia were found in beautiful dark purple shades and also some in a blue-green, which I had never encountered before. Also Hima incrassatus abounded, some in a deep rose shade, and Mytilus edulis encrusted the rocks, although none of them seemed to grow very large. In fact the smallness of all shells encountered was very noticeable.

Another noticeable thing was the absence of some common shells, such as cockles, Auger shells, Carpet shells, also Donax and Tellina. A few Dentalium entalis were found, also Barbatia lactea and Navicula tetragona Brit., Nucula nucleus, Emarginula reticulata and quite a few Diodora apertura. Very rarely did I find Calliostoma zizyphinum unbroken, and then again they were rather small specimens. There were many Macra corallina about, as they seem to be all along that stretch of the coast.

Woolacombe sands themselves were pretty bare of shells, though at the southern end of the sands, which is called Putsborough, it was interesting to find almost the same shells as at Gin Cove, although in far fewer numbers. The various Pecten shells, however, were much easier to find, and also were less likely to be damaged, and in particular Similipecten similis was found in profusion and in beautiful reds and oranges. Looking back over my stay at Woolacombe, I must admit that I returned with many thousands of shells, but as they were mostly small this was the result of really hard work, and I still have to be convinced that even one of them came from the Tropics via the Gulf Stream!

H. Nash

FIELD MEETING, NEAR HYTHE, KENT

Director: June Chatfield

On 24th. October 1964 a party visited the Hythe area to collect and record non-marine mollusca (N.G. 61/1--3--). The country to the west of Hythe consists of low hills which are the Hythe Beds of the Lower Greensand. Below the Hythe escarpment is the alluvium of Romney Marsh, through which the Royal Military Canal runs.

During the day various habitats were investigated. These included:-
1. A shady roadside bank near Sandling station, 2. A grassy bank in an open field, 3. A stone wall, 4. A mixed wood on a steep slope with few logs and little undergrowth, 5. Royal Military Canal, 6. A small ditch at the side of the canal, the surface film being covered with duckweed (Lemna minor).

The chart below lists the species from Hythe. Results of field work by J. Chatfield in September 1964 are also incorporated. The localities are as shown above, with the addition of No. 7: Grassy bank at Saltwood, 27.9.1964.

One feature of the day's collecting was the very small number of slugs to be found. It would be interesting to know the reason for this, whether it is

SPECIES	LOCALITIES (see text)						
	1	2	3	4	5	6	7
<u>Valvata piscinalis</u>					x		
<u>Pomatias elegans</u>							x
<u>Potamopyrgus jenkinsi</u>					x		
<u>Bithynia leachi</u>					x		
<u>Carychium tridentatum</u>	x						
<u>Lymnaea peregra</u>					x	x	
<u>Planorbis planorbis</u>					x	x	
<u>P. leucostoma</u>						x	
<u>P. albus</u>					x		
<u>P. crista</u>					x		
<u>Segmentina complanata</u>					x		
<u>Cochlicopa lubrica</u>	x			x			
<u>Lauria cylindracea</u>			x				
<u>Vallonia costata</u>							x
<u>V. excentrica</u>							x
<u>Clausilia bidentata</u>	x						
<u>C. rolphi</u>	x						
<u>Helix hortensis</u>	x						x
<u>H. nemoralis</u>	x						x
<u>H. aspersa</u>	x						x
<u>Monacha cantiana</u>	x						x
<u>Helicella caperata</u>							x
<u>Discus rotundatus</u>			x				
<u>Arion intermedius</u>		x					
<u>A. circumscriptus</u>			x				
<u>A. hortensis</u>			x				
<u>A. ater</u> agg.		x					
<u>Vitrea contracta</u>	x						
<u>Oxychilus alliarius</u>	x						
<u>Retinella pura</u>			x				
<u>R. nitidula</u>	x	x	x				x
<u>Vitrina pellucida</u>			x				
<u>Agriolimax agrestis</u> agg.		x					
<u>A. reticulatus</u>		x					
<u>Anodonta anatina</u>					x		
<u>Sphaerium corneum</u>						x	
<u>S. lacustre</u>						x	
<u>Pisidium personatum</u>						x	
<u>P. obtusale</u>						x	

a universal feature for 1964, and whether this could be correlated with weather conditions during the year.

A few fossils were collected from the Hythe Beds and identified by D. G. Pickrell. They were: Exogyra latissima, Thetironia minor, Pterotrignia sp.? (Bivalves) and Deshayesites deshayesi (Ammonite). Although Hythe is not an outstanding locality for molluscs, a list of 35 species of non-marine molluscs and some fossils were obtained as a result of the field meeting.

NOTE: An annotated list of molluscs of the Folkestone area is published in: WALTON, J.W. (1925), 'Folkestone and the country around', Folkestone Natural History and General Sciences Society.

THE CONCHOLOGISTS' NEWSLETTER

No. 13

Compiled by: P. E. Negus,
[REDACTED],
Chelsea Bridge Road,
London, S.W.1.

June 1965

Produced by 'The Conchological Society of Great Britain and Ireland'

JUNIOR MEMBERSHIP

The following were elected to the Junior Membership of the Society on the dates given:-

20th. February 1965

SALES Michael Paul [REDACTED], Holbeach Hurn, Spalding, Lincolnshire.

13th. March 1965

SKENE Alastair [REDACTED], Stromness, Orkney.

10th. April 1965

WILLING Martin J. [REDACTED], Ewell, Surrey.

15th. May 1965

NUGENT Nicholas G. O. [REDACTED], Shortlands, Kent.

TRANSPORTING LIVING MARINE MOLLUSCA

In Newsletter No. 11 Mr. A. E. Ellis gives some valuable advice on the posting of live molluscs. All that he writes from experience of packing and posting non-marine species is applicable to marine ones: e.g. over-crowding should be avoided, there is no need to supply food, nor to leave air holes BUT packing in seaweed as he suggests is not advisable. Most if not all marine algae decay quickly, especially in warm conditions, and even if the living animals are not asphyxiated their chances of arrival in good condition will be greatly lessened. Most kinds can be placed in polythene bags, tested first to check they do not seep (the heavier gauges are usually more reliable) with no more than a moistening of sea-water, the bag or bags then being packed in a leak proof tin; the bags are best fastened with elastic bands, twisted tightly. Limpets, which are difficult to keep in well-aerated aquaria, will survive with this treatment for up to two weeks. Small delicate-shelled species or sea-slugs that are liable to be crushed can be placed in polythene or glass tubes half-filled with sea-water and suitably packed to lessen likelihood of breakage; if each tube is placed in an outer polythene bag, specimens and glass will not be scattered should an accident occur. Freshly oxygenated sea-water should always be used rather than stale or stagnant water, and as much air space as possible be left in the bags or tubes.

Stella M. Turk

TAXONOMY OF PHYSA

Dr. Joshua L. Baily, Jr. (P.O. Box 1891, La Jolla, California 92038, U.S.A.) is compiling an index to all the names which have ever been applied to Mollusca on the Pacific coast of America, which so far runs to 35 volumes of MS, each about the size of a telephone directory. At present he is working on the genus Physa, of which so many more nominal species have been named than actually exist in nature that a drastic wholesale reduction is needed. Dr. Baily writes as follows: "Some years ago Dr. Frank Collins Baker, of the University of Illinois, decided that the American Physae were generically distinct from those of Europe, basing the distinction on the pallial digitations. He believed that the American Physae had pallial digitations

only on the columellar lobe, and this lobe alone was reflexed over the shell. So far as the American Physae which I have examined are concerned, he was right. But he also stated that the European Physa fontinalis, which I have not examined, had digitations on both lobes, and that both lobes were reflexed over the shell. But Mr. William J. Clench, of Harvard University, who has also examined both European and American Physae, tells me that the European Physae also have only one lobe reflexed over the shell and that it alone has digitations, and that Dr. Baker's conflicting conclusions were due to faulty observations. So the first question I would like to ask you is, does the left lobe of the mantle in Physa fontinalis have digitations as well as the right lobe?"

Another question asked by Dr. Baily: "Some time ago, Dr. Charles P. Winsor, also at Harvard, called my attention to the fact that the eggs of the American Physae have a double vitelline membrane, unlike that of Lymnaea, in which the vitelline membrane is single. But Mandahl-Barth, in his work on the freshwater Mollusca of Denmark, shows an illustration of the egg of a Physa in which there is only one vitelline membrane....So my second question is, is the vitelline membrane of Physa fontinalis single as in Lymnaea, or double as in the American Physae?"

With regard to the first query, Jeffreys, Reeve and Moquin-Tandon all figure Physa fontinalis with mantle digitations on both sides, whereas Taylor's figure shows digitations only on the right side, although in the text he states that they are especially developed on the left side. Anyone who can answer either or both of Dr. Baily's questions from personal observations is asked to communicate with him.

(from A. E. Ellis)

NOTES ON ARGOBUCCINUM (EUGYRINA) GEMMIFERA (EUTHYME)

This species is well known in South Africa, with an extensive distribution from False Bay to Delagoa Bay.

Owing to this lengthy range, examples of gemmafera are found which vary in build from heavy shells with large nodules, to lighter ones with smaller and more numerous nodules. Both types may be taken at the same place, e.g. Jeffreys Bay.

It is therefore not surprising to find when studying the literature, that this shell has had other generic and specific names applied to it in past years.

The shell is brown in colour, and has varices with darker marks at approximately every half whorl. There are 8 to 10 dark brown marks on the outer lip and the aperture is white inside.

Nodules on the body whorl vary in number from 12/14 on the heavier examples, to 20/22 on the shells of lighter build.

The latter were placed as Var. lepta by Paul Bartsch, but with a number of shells it was found they all graded together.

The periostracum is yellowish green, moderately thick and close, and of a velvety consistence.

A large number of specimens are held in the East London Museum collection, which have been taken at many different localities on the Ciskei and Transkei coasts, the largest measuring 100 x 60 mm., and live specimens have been taken at Bonza Bay, Queensberry Bay, Haga Haga and Kei Mouth.

These localities are placed on record in addition to the places recorded by the South African Museum, i.e. False Bay, Natal coast and Delagoa Bay.

The habitat of gemmafera appears to be well below low tide mark, and live shells are found on reefs between tide marks only after very rough weather.

SYNONYMY

<i>Ranella leucostoma</i> , Lamarck, Var.	Marine Shells of South Africa, G. B. Sowerby, 1892
<i>Eugyrina gemmifera</i> , Euthyme.)	U.S. National Museum, Bull. 91
<i>Eugyrina gemmifera leptota</i> , Bartsch.)	P. Bartsch, 1915
<i>Eugyrina gemmifera</i> , Euthyme, 1889)	Marine Shells of Port Alfred.
<i>Eugyrina gemmifera poecilostoma</i> , Martens, 1904)	W. H. Turton, 1932
<i>Eugyrina gemmifera leptota</i> , Bartsch, 1915)	

ACKNOWLEDGMENTS

The writer expresses his thanks to the Chairman and Board of Trustees of the East London Museum, for permission to undertake this work and to the Director, Miss M. Courtenay-Latimer, for her encouragement.

REFERENCES

- Barnard, K. H., 1963, Ann. S. African Museum, 47, Contributions
Gastropoda.
Bartsch, Paul, 1915, U.S. Nat. Museum Bull. 91, South African Shells.
Sowerby, G. B., 1892, Marine Shells of South Africa, London.
Turton, W. H., 1932, Marine Shells of Port Alfred, London.

D. H. Kennelly
East London Museum

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

Notice is given of the possible use by the International Commission of its plenary powers in connection with the following cases. Any comments should be sent to The Secretary, International Commission on Zoological Nomenclature, c/o. British Museum (Natural History), Cromwell Road, London, S.W.7, in duplicate and citing the reference number.

1. Validation of the probable vernacular usage of "tergipes" in a generic sense by Cuvier, 1805; suppression of Tergipes dicquemari Risso, 1818, and Tergipes brochi Risso, 1818 (Gastropoda). Z.N.(S.)1044.
2. Grant of precedence to Eolis farrani Alder & Hancock, 1844, over Amphorina alberti Quatrefages, 1944 (Gastropoda). Z.N.(S.)1102.
3. Suppression of Kalydon Hutton, 1884, Murex mancinella Linnaeus, 1758, Triplex foliatus Perry, 1810, Fusus duodecimus Gray, 1843, and Murex hippocastanum Linnaeus, 1758; designation of type-species for Mancinella Link, 1807, Polyplex Perry, 1810, and Thalessa H. & A. Adams, 1853 (Gastropoda). Z.N.(S.)1623.
4. Either (a) removal from the Official List of Specific Names and suppression for the purposes of the Law of Priority of Mytilus anatinus Linnaeus, 1758, or (b) designation of a neotype for Mytilus anatinus Linnaeus, 1758 (Bivalvia). Z.N.(S.)1643.
5. Designation of a lectotype for Turritella kanieriensis Harris, 1897 (Gastropoda). Z.N.(S.)1659.

Particulars of the above will be found in Bull. Zool. Nomencl. vol. 21, part 6 (31 Dec. 1964), and any comments should reach the Secretary before 30 June 1965.

6. Suppression of the generic name Pelta Quatrefages, 1844, or suppression of the family name Runcinidae Gray, 1857 (Gastropoda). Z.N.(S.)580.
7. Suppression of the generic names Acanthochila Mörch, 1868, and Echinochila Mörch, 1869 (Gastropoda). Z.N.(S.)582.
8. Designation of a type species for Limacia Müller, 1781 (Gastropoda). Z.N.(S.)1665.

Particulars of items 6 - 8 will be found in Bull. Zool. Nomencl. vol. 22, part 1 (5 April 1965), and comments should reach the Secretary before 5 October 1965.

GENERAL NOTES

Gem. Zeemuseum Miramar Met Natuurhist. Afdeling, Frederiksoord, Gem. Vledder (Dr.), Holland.

This Museum, which contains a very large collection of shells, has now been moved from its original home at Oosterbeek to the above address in the Province of Drenthe. The new building has been provided by the Municipality but Jeanne A. W. Warners (a member of the Society) remains the owner for her lifetime and is the Curator of the Museum.

The transfer of the Marine and Natural History Collections was carried out by the Curator herself! It is hoped to hold an official opening ceremony during June.

For Northern Conchologists.

Since the headquarters of the Conchological Society are located in London it has proved rather difficult for northern workers to maintain contact. It was therefore felt that it might be useful for conchologists in the North of England to meet from time to time to co-ordinate field-work and an informal meeting was held in Atherton at the home of Mr. and Mrs. J. Fogan on 6th. February 1965. Considerable interest was shown and future meetings have been arranged to be held at Bolton Museum by kind permission of the Director, Mr. Vincent Smith.

About a dozen conchologists from various parts of Lancashire, Cheshire and Yorkshire are interested, and joint field-work is planned in making a survey of the present molluscan fauna of as many canals as possible.

Anyone who would care to take part in this survey and can get to Bolton is invited to contact:-

Mrs. Fogan, [REDACTED], Atherton, Manchester.
(telephone: Atherton 3074).

N. F. McMillan

EXCHANGES

A letter received from Monsieur Scaff-Boust announces that as a result of voyages by himself and his friends, he has for sale a good selection of shells from the Canaries, Cape Verd, the Marquesas, Tahiti, Tuamotu and New Caledonia; other localities will follow. Anyone interested should write for lists to: [REDACTED], Jemeppe sur Meuse, Belgium.

Lola Elford, [REDACTED], Gig Harbor, Washington 98335, U.S.A., wishes to exchange shells - will send list on request - all specimens collected live and fully named.

Eustace A. Tucker, [REDACTED], South West, Western Australia, wishes to exchange marine shells - all in good condition and correctly named. A few fossil shells also.

INFORMATION WANTED

Information as to the present location of the collection (mostly British Marine Mollusca) of the late James Simpson of Aberdeen. He was a member of the Conchological Society from 1905 until at least 1938.

- Mrs. N. F. McMillan, [REDACTED], Bromborough, Cheshire.

WANTED

Mr. Ernest Dearing requires a copy of 'British Snails' by A. E. Ellis, 1926. [REDACTED], Burnley, Lancashire.

FOR SALE

Mrs. R. M. Giovanelli (Member) has for sale a wide variety of tropical sea shells in fine condition, all sizes priced individually, although the smaller shells can often be had by the pound. Shell work of various kinds is also manufactured and sold. The stock can be seen at [REDACTED], Onchan, Isle of Man, but any item can be sent through the post and comprehensive lists are available from Mrs. Giovanelli.

Collection of 4,500 shells, boxed, named, card index cabinet, for sale, including 190 Genera, 1930 Species - mainly 22 Ampularia, 20 Achatina, 25 Buccinum, 110 Bulimus, 10 Callista, 15 Cardium, 32 Cassis, 25 Chione, 10 Circe, 190 Conus, 96 Cypraea, 12 Dolium, 16 Donax, 14 Dosinia, 10 Fasciolaria, 17 Fusus, 15 Haliotis, 6 Harpa, 30 Melania, 110 Mitra, 75 Murex, 43 Nassa, 37 Natica, 28 Nerita, 41 Oliva, 7 Ovula, 40 Patella, 52 Pecten, 12 Pectunculus, 21 Pleurotoma, 6 Potamides, 11 Pteroceras, 42 Purpura, 11 Pyrula, 23 Ranella, 15 Ricinula, 5 Rostellaria, 11 Solarium, 18 Spondylus, 51 Stromus, 34 Tapes, 38 Tellina, 40 Terebra, 8 Tridacna, 43 Triton, 29 Trochus, 9 Turbinella, 32 Turbo, 21 Turritella, 30 Unio, 38 Voluta; enquiries for all or any to:- N. Leech, 2 West Park Drive, Blackpool.

PUBLICATIONS RECEIVED

The Conchology Section, Auckland Institute and Museum (Hon. Corresponding Sec. Mrs. N. Gardner, [REDACTED], Birkenhead, New Zealand) send the Minutes of the last A.G.M. with the Officers' reports and Membership List. It is encouraging to hear that the Society, with 252 members, has almost doubled its size in the last two years and that even so there have been no crises to worry the Officers. This is a claim which may arouse some envy in other parts. Wisely, the President says that prosperity depends on keeping out of the news! It is awe-inspiring to hear that with one exception, all members of the Council have been regular in attendance at meetings.

Any member wishing to borrow these publications (the Membership List includes the special interests of each collector) should apply to the Hon. Sec. Conch. Soc. of G.B. & Ireland.

MOLLUSCA IN THE MUSEUM

Part II

Having adequately labelled the material it will need to be classified and stored in the collections. The classification adopted depending to some extent upon the departmental collection policy but will fall into one of the following:-

a) Geographical basis

A non-systematic classification based upon the presence or absence of particular species in a given area, i.e. zoogeographic. This system proves suitable for museums dealing with their own local area but is impracticable for those dealing with zoogeographic or world wide collections since many species have considerable overlap thus resulting in the repetition of a species throughout the collections. This problem is made more difficult as a result of the introduction of alien species to countries all over the world as a result of the activities of man.

b) Economic or medical importance

A classification of this type has many drawbacks, the chief one being that our knowledge of molluscan Rosts for tropical diseases is rather haphazard, thus species believed to be of medical importance suddenly become relegated or vice versa. This type of classification is of little use in the general museum but proves ideal in medical museums in which the chief function will be as a basis for comparison of a limited number of species.

c) Colour and ornamentation

This type of classification is entirely haphazard and of no scientific

value whatsoever but would prove useful in museums having collections catering primarily for art students or the blind schools.

d) Systematic Classification

This system is based on the relative relationships of the various groups but a classification on this system which uses anatomical details as its main basis produces considerable difficulties since the anatomical structure of only about 5% of recent species is known whilst fossil forms obviously afford few anatomical details. Another disadvantage lies in the fact that some species have no external shell hence if placed in their systematic position would result in spirit material and dry shells being sprinkled at random throughout the collections. It proves necessary, therefore, to modify the system to the best of one's ability.

The best and most comprehensive work dealing with the classification of the mollusca as a whole is that of Thiele which has just been reissued as a Photostat by A. Ashers and Co. Ltd., of Amsterdam, Holland. Even this however has its limitations since it was first published about thirty years ago, thus is considerably out-of-date.

In the case of British Mollusca the relevant census of the Conchological Society of Great Britain and Ireland provide a sound and up-to-date basis for classifying British species.

Labelling. The problem of storage of Mollusca depends upon whether the collections are dry or spirit material; in the case of the former the shells being relatively strong may be stored in cabinets having varying sizes of drawers suitable for the various sizes of shells concerned. The best method encountered dealing with this problem is that of J. Q. Burch of America, who has designed a system of wall cabinets having interchangeable drawers, thus if the systematic position of a particular genus or species becomes altered it simply means rearranging the drawers to suit the revised classification. Also if a genus having large shells is placed next to one having small shells then the problem is overcome by missing a drawer or drawers to give the required depth. The wood used for making these cabinets should be pine or any white wood, oak should be avoided due to calcining. Small species are stored in small tubes or phials and larger forms in plastic boxes, these being similar to those available from Alfred Stanley and Sons Ltd., of Walsall. In the case of very large species these are simply enclosed in polythene bags.

In the case of microscopic forms it would be advisable to make permanent dry-cell microscopic mounts, the slides being kept in slide cabinets together with the collections of radulae, jaws and love darts. If minute shells are to be displayed in plastic or glass topped boxes then they should be mounted on glass wool and not cotton wool due to the risk of calcining which is discussed later.

In the case of spirit material this is normally kept in glass containers in cupboards, small nudibranchs and slugs being kept in individual tubes as in the case of Annelids and Arachnids.

The storage of cephalopods proves a considerable problem but is overcome for average sized specimens of up to about five feet by utilising large asbestos or fibreglass tanks fitted with wooden or perspex lids, into which a series of numbered hooks have been fixed. The cephalopod is placed in a perforated polythene bag which is attached to a numbered hook by means of a polythene chain, and then immersed in the propylene phenoxetol solution contained in the tank. The number given to the hook is the same as the one attributed to the specimen thus if a particular individual of a species is required it can be readily found simply by following the polythene chain to the specimen.

The general maintenance of the spirit collection is simply a matter of topping up at regular intervals, but in the case of dry shells is not quite as straight forward as would appear since shells become damaged by the action of mites and damp, thus the drawers of the cabinet should be kept perfectly dry, this being achieved by the use of silica gel. If insect pests are found to be present then it is best to remove the shells before fumigating the drawers as the chemicals may react with the shells.

Many shells, especially bivalves, tend to crack on being exposed to a prolonged dry atmosphere but this may be prevented to some extent by simply rubbing an oil soaked rag over the surface of the shells about once every twelve months.

Many collectors believe that an accumulation of dust over the shells in a drawer has a protective value but the only advantage this has is that it helps to keep direct light off the shell surface thus preventing loss of colour, this being achieved just as readily by storing in drawers or cupboards.

Once the colour has faded it is extremely difficult to bring it back, the only remedy recommended is simply to wash the shell thoroughly in warm soap suds, rinse in clear water, and then dry thoroughly, finally rubbing the surface with a soft cloth or chamois which has had a few drops of light machine oil placed on it. Some books recommend the use of polishing powder but this should not be used for scientific collections but may be justified in the case of large showy shells used for display purposes only.

Upon keeping shells in storage for a period of years it often happens that specimens become coated with a white powdery deposit associated with loss of colour and decomposition of the shell, this phenomenon being referred to as calcining. It will also be noted that the shells affected are chiefly marine species and that the infection is haphazard, thus shells in the same box may or may not be affected.

The incrustation cannot be brushed off but is found to be soluble in water which, upon chemical analysis, proves to be calcium acetate. The treatment for calcined shells is therefore to soak them thoroughly in warm soapy water to remove the calcium acetate and then allow to dry.

Once dry bring back as much colour as possible by rubbing in oil. The process responsible for calcining is as follows:-

Wood cabinets made of oak emit traces of acetic acid vapour which has difficulty to escape from close fitting drawers. Due to relevant temperature changes throughout the year, some of the moisture present in the atmosphere trapped in the drawer tends to condense during cooler weather, taking some of the acetic acid vapours into solution. Marine shells, especially those which have not been soaked thoroughly, tend to retain traces of sodium chloride, which, being hygroscopic, also tends to absorb acetic acid vapours thus giving rise to areas of high acidity on the shell surface which, being chiefly composed of calcium carbonate, reacts chemically forming the white calcium acetate incrustation.

Calcining may be prevented by thoroughly washing and drying all shells prior to storage, avoiding the use of oak cabinets and also periodic opening of the drawers to enable any acid fumes to escape. Further prevention can be taken in the form of rubbing the shells with oil as for bringing back colour. In the past people tended to varnish their shells for this purpose but this practice together with glueing specimens to tablets should be discouraged since on drying the varnish or glue shrinks and cracks often resulting in damage to the shell itself.

There is also evidence that calcining can be produced as the result of bacterial action upon cotton wool with the production of traces of volatile acids which will similarly attack the calcium carbonate of the shells, and for this reason it is best to use glass wool if specimens should need special packing or storage.

It has also been claimed by H. K. Barnard that small shells should not be placed in corked glass tubes since, due to temperature changes, volatile vapours exuded from cork and glass (?) react with the shell to form butyric acid crystals. Here again the tubes may be stoppered with a plug of glass wool.

If a shell in the collection is broken and it is necessary to repair it the best medium to use for sticking the parts together is Durofix or clear Bostik, both of these having the advantage that they may be removed if necessary using acetone.

After a period of two or three years the local area will have yielded the

majority of its species thus if comparable material from other areas is required the problem arises as to how this may be achieved. In order to obtain British examples the best way is to write to the Secretary of the Conchological Society of Great Britain and Ireland explaining your requirements and asking for help from members of the Society. To obtain foreign material contact the local Museums or Universities in the area in which you are interested and explain your requirements asking to be put in contact with any local collectors who may be interested in exchanging material for British shells from your area.

F. R. Woodward

FIELD MEETING

The field meeting held at Folkestone on the 28th. March 1965 had the dual purpose of obtaining records for the marine census at East Wear Bay and collecting fossils from the Gault at the Warren.

Five of the members present investigated the beach in the morning with disappointing results. The beach - a mixture of rocks and sand - showed a surprising lack of bivalves. Apart from clusters of smallish mussels on the rocks only one dead shell of *Ensis ensis* was found. There were no traces even of broken bivalves amongst the beach debris.

The Gastropods consisted of the more common rock-dwelling species with *Littorina littoralis* predominating. These showed good colour variations and many of the shells were particularly large.

The list of species found is appended below:-

GASTROPODA

Patella vulgata A.
Crepidula fornicata B.
Gibbula cineraria B.
Buccinum undatum B.
Nassarius reticulatus B.
Nucella lapillus A.
Littorina littorea A.
Littorina littoralis A.
Littorina saxatilis rudis A.
Littorina saxatilis saxatilis A.

LAMELLIBRANCHIA

Ensis ensis One shell only.
Mytilus edulis A.

R. Fresco-Corbu

FIELD MEETING

Norbury Park, Mickleham, Surrey, 3rd. April 1965. Leader, A. E. Ellis; 10 members and friends present. The principal objective was living *Vitrina major*, but although, as last year, shells suspected of belonging to this species were picked up, the only living *Vitrina*, which were collected and dissected by Dr. Lloyd Evans, proved to be *V. pellucida*. The following is a complete list of the Mollusca hitherto recorded from this favoured locality; those of which only dead shells have been found are indicated by an asterisk.

Pomatias elegans
Acicula fusca
Carychium tridentatum
Azeca goodalli
Cochlicopa lubrica
C. lubricella

Monacha cantiana
*Helicella itala**
Punctum pygmaeum
Discus rotundatus
Arion intermedius
A. circumscriptus

Pupilla muscorum
Acanthinula aculeata
Vallonia excentrica
Ena obscura
Marpessa laminata
Clausilia bidentata
C. rolphi
Cecilioides acicula
Testacella scutulum
*Helicodonta obvoluta**
*Helicigona lapicida**
Arianta arbustorum
Helix hortensis
H. nemoralis
H. aspersa
H. pomatia
Hygromia striolata
H. hispida

Arion hortensis
A. ater
Euconulus fulvus
Vitrea crystallina agg.
V. contracta
Oxychilus cellarius
O. alliarius
O. helveticus
Retinella radiatula
R. pura
R. nitidula
Vitrina pellucida
V. major (?)*
Milax budapestensis
Limax maximus
L. marginatus
Agriolimax reticulatus

SUBSCRIPTION

We are all only too familiar with the depressing way everything gradually becomes more expensive, and the Council wishes to assure you that they have waged a long and losing battle over the last twenty years against any rise in subscription; the last increase was in 1946.

As we hope you agree, both the quantity and quality of the services available to members have steadily improved, but there have been rapid rises in expenditure also. The annual cost of publications - including the cost of the newly-established Newsletter - sent annually to each member, now stands at £1.13. 0 - and this sum will inevitably increase; costs of notices, postages and stationery have also gone up. It must therefore be evident to all that the time has come when an increase in subscription must be faced. The Council has no alternative but to recommend a substantial increase to ensure that the standard of publications will continue to be maintained, and that there should be no further increase in the foreseeable future.

You are invited therefore, to a Special General Meeting of the Society, to be held at the British Museum (Natural History) on October 16th. 1965 (before the Ordinary Meeting on that date), for the purpose of authorising, if thought fit, the increase to £2 and £40 respectively, of the subscriptions for Ordinary and Life membership.

Produced by 'The Conchological Society of Great Britain and Ireland'

JUNIOR MEMBERSHIP

The following junior was elected to the Junior Membership of the Society on the date given:-

15th. May 1965

GRANT Jesse, [REDACTED], Headington, Oxford.

LYMNAEA TRUNCATULA L. AND ITS COMPANIONS

Lymnaea truncatula is a small and harmless looking member of the British fauna, but it may carry a formidable enemy to sheep and cattle in the shape of *Fasciola hepatica* L., the common liver fluke. The flukes are parasitic animals of the phylum Platyhelminthes, class Trematoda and the group which includes *Fasciola* are small leaf-like hermaphrodite creatures about 30 mm. by 13 mm. in size armed with an oral and a ventral sucker. The common liver fluke has a world-wide distribution and costs farmers many thousands of pounds in dead and unthrifty animals and condemned livers. In common with the vast majority of flukes it needs a second host in the shape of a snail and many species serve this purpose, but in Britain and probably in Europe, *F. hepatica* can only complete its life cycle through *L. truncatula*.

The adult liver fluke lives in the bile ducts of ruminants and other animals and its operculate eggs pass out with the animal's dung. The most favourable habitat for the eggs lies between permanent water and well drained land, conditions which also suit *L. truncatula*. If the dung falls on moist ground the eggs that become free of dung develop into the first larval stage, the ciliated miracidium. When development is complete exposure to light activates an enzyme which dissolves the substance binding the operculum to the eggshell from within. Also a small viscous cushion inside the shell suddenly expands to twice its size and within a second or two the operculum flies open as if hinged releasing the miracidium which swims rapidly away in search of a snail. (Rowan 1956, 1957).

If no snail is found within twenty-four hours the larval fluke will die but if one is handy the miracidium makes quick dives at it in a very excited manner and eventually attaches itself, burrowing in with the help of enzymes secreted from its anterior end. If burrowing occurs in the tough tissues of the snail's foot, the miracidium will probably die, but if the attack is made on the softer parts of the snail's body, the larva penetrates successfully leaving its ciliated coat behind.

However, the invader does not always get everything its own way. Within the mantle cavity of many snails there lives a small oligochaete worm *Chaetogasta limnaei* which is very partial to miracidia and catches them as they swim into the mantle cavity to settle on the snail. Up to fifteen miracidia have been found in the gut of one worm. (Khalil 1961).

The larvae which have penetrated successfully are now in the second or sporocyst stage, which breeds parthenogenetically, each producing about eight rediae. If conditions are not very favourable the redia will also reproduce, the next stage being daughter rediae, each of which will produce a number of cercariae which have long tails for swimming. The cercariae emerge from the snail about three weeks after the miracidia entered it and swim for a piece of herbage on which to settle down, lose their tails and encyst into metacercariae. This stage is then infective to the final host in which they reach the liver by penetrating the intestinal wall and creeping over the internal organs. At this

stage the flukes may enter the blood stream by mistake and end up in the unborn young of a pregnant animal. (Enigk and Düwel, 1959, Hay 1960).

The young flukes wander in the liver tissue making tracts about six liver cells wide and finally enter the bile ducts to mature, passing eggs about three months after infection of the host. Mice can be experimentally infected with liver fluke and it has been observed that, when the flukes are damaged by prior irradiation with X-rays and moving slowly, the white blood cells which normally move in to clear up the liver cell debris in the wake of the migrating fluke, can catch up with the fluke itself and destroy it. (Dawes, 1963).

Three factors are critical for the development of fluke larvae on the pastures. The eggs must become separated from dung, they must be surrounded by water and they must have a temperature of between 9.5°C and 30°C. (Rowcliffe and Ollerenshaw, 1960). Also a large fluctuation of temperature will kill them. The climatic factors make forecasting of outbreaks of fascioliasis possible by a study of the weather. This has been done in Anglesey, one of the foci of the disease in Britain. Development is restricted in winter by temperature and in summer by moisture and, in Britain, occurs in the period between May and October. Rainfall must exceed evaporation for three months and the best conditions are when rain falls as showers rather than as occasional storms. The optimum temperature is 15°C to 20°C. An outbreak may follow about three months after these conditions, i.e. October to Spring after a Summer infection and July to October or November from infections which over-wintered in the snails. If May and June are dry the over-wintered snails will die without infecting the pasture, but if May and June are wet a Summer infection of stock may follow. (Ollerenshaw, 1958 a, and b. Ollerenshaw and Rolands, 1959, Ollerenshaw and Edwards, 1963).

There are three climatic areas in England; in the south-east and south, three wet months between May and October are rare: the hilly districts of the Midlands and North have a wetter climate but the snails are limited by mineral-poor and acid soils. The third pattern is found in the lowlands of the west country and Wales, where the soil is suitable for the snail and more rain falls; most fluke epidemics are located in these districts. (Ollerenshaw, 1958 a.).

In many cases the infection in the snails dies out during the winter and exposed eggs are killed by temperatures of -5°C to -7°C, but eggs protected by snow can survive even the Russian winter on the pastures. (Vasileva, 1960).

Another unpleasant aspect of liver fluke infection is the activation by the young migrating flukes of the spores of the bacterium Clostridium oedematiens type B. which cause black disease. This disease is particularly prevalent in Australia, where it causes considerable loss of stock, but it is also found in Scotland. (Jamieson, 1949).

Liver fluke can infect man on rare occasions, particularly in France, as well as several other hosts besides the normal ruminant hosts. Infection of man is usually by eating wild watercress gathered in infected streams. Commercially grown watercress is quite safe as the growers are well aware of the danger and carefully exclude all snails from their cress beds. Another method of entry for the fluke occurs when savage tribes eat raw livers from sacrificed animals. The adult flukes contained in infected livers are capable of attaching to the pharynx during swallowing and cause a condition known as halzoun, or pharyngeal fascioliasis. (Watson and Kerim, 1956).

Finally, the fluke is gifted by nature with one more advantage. Its normal life span is about nine months but it can live for eleven years! (Durbin, 1952).

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J. Crowley

MYTILUS EDULIS L. LIVING ON EDIBLE CRAB (CANCER PAGURUS L.)

During the recent Crab fishing season at Aldeburgh, Suffolk, on 23rd. April 1965 one of the fishermen brought up a very old crab from rough ground about $1\frac{1}{2}$ miles east of the town which carried a large example of Mytilus edulis L. It was attached by a very strong byssus at the base of the left chela and against the carapace. The shell appears to be about three years old.

The crab was rejected by the fisherman as too old and damaged for sale. Unfortunately I did not accept it and preserve it.

Sir J. Arthur Thomson in "Biology for Everyman", Vol. 1, p. 209 (1934) writes "Very large crabs are sometimes captured carrying growth of epizoic animals, such as acorn-shells, which look as if they have lived there for over three years". The present writer would be glad of any records our members may have of mollusca living on the Edible Crab.

H. E. J. Biggs

FOSSIL MOLLUSCS ASSOCIATED WITH CORALS

During recent collecting from the Sharp's Hill Beds, Great Oolite (Jurassic) in the Cotswolds I have been interested to observe many instances of bivalved molluscs in close association with the various corals which occur in these Beds. Firstly, many of the corals such as Isastraea limitata (Lamouroux) have used a valve of a species of Ostrea (oyster) as a base on which the colony could grow and spread. I have obtained specimens showing the beginning of the coral colony on the edge of the shell and then those where the shell has finally been completely enveloped by the coral. Sometimes the branching compound coral, Thamnasteria lyelli (Edwards & Haime) used an inverted valve of Ostrea (that is the concave/convex valve) as a 'mount' on which to anchor.

Then there are numerous instances of the molluscs using the corals as their hosts. Often they attached themselves to the surface of colonies of Isastraea limitata, sometimes single individuals, occasionally in groups and usually in hollows and shallow parts of the coral surface. In the case of the branching Thamnasteria lyelli, the oysters sometimes chose to settle in the forks of the branches, creating an attractive effect with the crinkly,

translucent shell perched between two branches of the coral.

Of course the molluscs were not alone in this association, for one frequently finds serpulids (marine worm tubes) and rhynchonellid brachiopods crowding in with the oysters, mussels and other bivalves. However, it is interesting to note that, of the molluscs, ammonites are not usually found in association with the corals.

P. E. Negus

GENERAL NOTES

FOR SALE: 50 Spondylus, 100 Cypraea, 100 Conus, 100 Volutas, all different.

F. Mayer (Eaton), [REDACTED], London, W.1.

A copy of 'The Scallop' issued by Shell (Petroleum) - apply,

Mrs. H. Jones, [REDACTED], Ramsgate, Kent.

SHELLS REQUIRED: Madame R. Lievens, [REDACTED], St. Amandsberg, Belgium, has six children who are very interested in natural history and are greatly encouraged by their mother to collect specimens and generally develop their interests as a means of education. She would much appreciate some help in obtaining shells to start her family on shell collecting. If any member has a few 'spares' or unwanted items, please be kind enough to send them to Madame Lievens - you never know, you may be starting a budding conchologist on the right road. Although this lady offers to pay for some shells, it is obvious from her letter that she has not got much money and with six children this is hardly surprising.

Mr. Ted Phillips, of the [REDACTED], Santa Barbara, California 93103, U.S.A., is interested in purchasing European sea shells on a wholesale basis. Specimens sent would need to be in first rate condition, named and with localities; all species are required although there is a special request for Isocardia cor. Any interested member should correspond direct: fair prices will be offered.

ANNOUNCEMENTS: THE QUEKETT MICROSCOPICAL CLUB LONDON

From the Secretary: Mrs. E. M. Barron
[REDACTED], Chorleywood, Rickmansworth, Herts.

Centenary Celebrations

This year The Quekett Microscopical Club celebrates the centenary of its foundation on 7th. July 1865. The title of the Club commemorates the name of John Thomas Quekett, Professor of Histology and Conservator of the Hunterian Museum at the Royal College of Surgeons of England. A prominent microscopist in his day, a founder member of the Microscopical Society of London (now the Royal Microscopical Society), Fellow of The Royal Society and of The Linnean Society of London, and author of the 'Practical Treatise on the Microscope', Quekett died in 1861 at the tragically early age of forty-six, greatly respected by all who knew him. There were at the time several suggestions current for commemorating his name in some permanent way. As events have proved, no more appropriate memorial to him could have come of this desire than the association of his name with this Club, which has met twice-monthly for the last hundred years, and today enjoys a world-wide membership. Appropriately, the Club's President in this centenary year is Professor George J. Cunningham, M.B.E., who occupies the Chair of Pathology at the Royal College of Surgeons.

The principal event to mark this occasion will be a two-day celebration meeting and exhibition of microscopy, which will be open to visitors. This will be held at the Central Halls, Westminster, S.W.1. on 8th. and 9th. October. The theme of the meeting will be two-fold. First to illustrate the founding and history of the Club, and secondly to present a survey of present-day microscopy and microscopical equipment in science and industry, in addition to its recreational aspects. Demonstrations of films, slides, and micro-projection will also be staged throughout the two days.

It has been announced by the Council for Nature that a second Nature Week is to be held from 23rd. to 30th. April 1966. During the first National Nature Week in May 1963 almost 400,000 people took part in events all over the country. The response to the idea of a second 'Week' has been very enthusiastic so far, and the Council's target for 1966 is a million people participating in the 'Week'. They have issued a leaflet giving the names and addresses of expert advisers on Nature Trails and this can be obtained from the Council, price 6d.

A large number of societies, institutions, clubs, etc., will be involved in many different events up and down the land. The Wild Life Exhibition will be held in Alexandra Palace, London, and the theme will be 'Living with Nature'.

Full details of all activities and events appear in 'Habitat' published each month by the Council for Nature, 41 Queen's Gate, London, S.W.7.

PUBLICATIONS

FOSSILS: A Little Guide in Colour - published by Paul Hamlyn, London, price 5/- An attractive and well-produced paperback, very good value, includes illustrations and descriptions of many fossil molluscs.

KINGFISHER: A journal containing news and comment about wildlife conservation from home and abroad, will appear 9 times a year, at intervals of about 5 or 6 weeks, price 15/- for 9 issues, Kingfisher, 1 Bedford Court, Bedford Street, London, W.C.2.

CHARLES DARWIN & HIS WORLD; published by Thames & Hudson Ltd., 30 Bloomsbury Street, London, W.C.1., in their Pictorial Biographies Series. Price 25/-, by Julian Huxley and H. B. D. Kettlewell.

CONE SHELLS OF THE WORLD; by J. A. Marsh & O. H. Rippingale, price £ 5. 3. 0. Nearly 500 species represented in the 22 colour plates. Claimed to be the first work on the 'Cones' for over 80 years.

QUEENSLAND AND GREAT BARRIER REEF SHELLS; by D. F. McMichael & O. H. Rippingale price £6. Dr. McMichael is Curator of Shells at the Australian Museum in Sydney. 29 colour plates.

This and the previous volume are published by The Jacaranda Press Pty. Ltd., 73 Elizabeth Street, Brisbane, Australia.

INFORMATION WANTED: Mr. A. A. Hicks, Pwlllywrach, Cowbridge, Glamorgan, is interested in collecting 'dead' shells on beaches and would like to know of any well-known shell beaches and what can be expected there. Also what type of beach is most suitable for shell collecting. Any correspondents please?

REPORT OF FIELD MEETING HELD MAY 1st. AT GUIDE BRIDGE, LANCASHIRE

A field meeting was held on May 1st. to study the molluscan fauna of some canals in north-west England, especially the complex of canals around Manchester. Seven members of the Conchological Society and three visitors met at Guide Bridge Railway Station, to the east of Manchester, and the refinding of Bythinella scholtzi (A. Schmidt) (- Amnicola taylori) was the special objective. It is pleasant to record that it was found by Mrs. Fogan to whose enthusiasm the meeting was due.

First the Ashton Canal eastward from Guide Bridge Railway Station to Tudor Bridge (about $\frac{2}{3}$ of a mile) was examined, and the following spp. were taken; Bithynia tentaculata (L.), apparently scarce; Lymnaea peregra (Müller), not very common; L. stagnalis (L.), frequent, of all sizes; Physa fontinalis (L.), fairly frequent, with extraordinarily thin shells; Planorbis planorbis (L.), very common; P. vortex (L.), a few; P. albus Müller, 2 or 3; Segmentina complanata (L.), one (coll. Mr. Edwards); Acroloxus lacustris (L.), a few; Succinea pfeifferi Rossmässler (one, coll. Dr. Millott); Sphaerium corneum (L.), fairly frequent, both adults and infants; Pisidium sp.

Curiously, none of the characteristic 'canal' species (Physa heterostropha Say, Menetus dilatatus (Gould), and Sphaerium transversum Say), obtained by Dr. Jackson in this part of the Ashton Canal in 1917 was refound despite careful search.

A strip of very grimy waste ground beside the canal yielded Discus rotundatus (Müller), a few; Oxychilus alliarius (Miller), one; Retinella nitidula (Drap.), a shell (coll. Mr. Ogle-Skan), Zonitoides nitidus (Müller), four, and Milax budapestensis (Hazay), two (confirmed by Mr. Ellis).

Next, part of the Peak Forest Canal was searched, from Tudor Bridge (where it joined the Ashton Canal) to John Hall's Brickyard in Dukinfield. This canal appeared extremely foul, with an iridescent scum on the water and an attenuated flora, yet the following Mollusca were taken; Bythinella scholtzi (A. Schmidt), about a dozen were obtained in a moss Fontinalis sp. on the canal-side and one or two also on the grass, Glyceria maxima; Bithynia tentaculata (L.), Lymnaea peregra (Müller), Planorbis corneus (L.) and Sphaerium corneum (L.).

Of the above localities, the Ashton Canal is in Lancashire, the Peak Forest Canal in Cheshire.

It is planned to investigate more of the canals in N.W. England and anyone who would like to join us would be welcome.

N. F. McMillan

FIELD MEETING AT PEGWELL BAY, KENT

Director: June Chatfield

The field meeting to Pegwell Bay on 16th. May 1965 was attended by thirteen members and friends and film cameras, the object of which was to collect marine mollusca from the strand line, the sandy flats and the Spartina (Cord Grass) salt-marsh. The damp and cold weather with a strong onshore wind kept the tide in for much of the time and a good survey of the sandy flats was not possible, nevertheless an interesting list of marine molluscs was obtained.

The following dead shells were represented on the strand line:-

Emarginula reticulata Forbes and Hanley, Diodora apertura (Montagu),
Patella vulgata Linné, Calliostoma zizyphinum (Lamarck),
Gibbula cineraria (Linné), Cantharidus montagui (W. Wood),
Littorina littorea (Linné), L. saxatilis (Olivi), L. littoralis (Linné),
Rissoa parva (da Costa), Rissoa sp., Crepidula fornicata (Linné),
Natica catena (da Costa), Trivia monacha monacha (da Costa),
T. monacha arctica (Montagu), Nucella lapillus (Linné),
Ocenebra erinacea (Linné), Neptunea antiqua (Linné),
Buccinum undatum Linné, Nassarius reticulatus (Linné),
N. incrassatus (Ström), Nucula nucleus (Linné), Mytilus edulis Linné,
Chlamys varia (Linné), Cardium edule Linné, C. echinatum Linné,
Venerupis pullastra (Montagu), Tellina tenuis da Costa,
Macoma balthica (Linné), Scrobicularia plana (da Costa).

The shells on the strand line represent several different populations which have been brought to the shore with the incoming tide. The species in the above list includes species typical of sandy or muddy shores, e.g. Cardium edule, Macoma balthica and Natica catena and also molluscs typical of rocky shores or rocky bottoms in the sublittoral zone below the low tide, e.g. Patella vulgata, Gibbula cineraria, Littorina spp., and Mytilus edulis. Some of the species are very well represented on the strand line and this would suggest the presence of populations of these species in the vicinity. However, on account of local currents and east-west drift of shingle one must be

cautious in interpreting strand line data.

Due to the weather and tide the sandy flats could not be fully investigated, but it was noted that Cardium edule and Macoma balthica occurred.

The Spartina salt-marsh at the top of the shore west of Pegwell Bay was also investigated and the salient feature was the abundance of the small prosobranch Hydrobia ulvae (Pennant) (Length of 4-5 mm.). This species of mollusc is the primary host of several different larval flukes. Shells of the mud-dwelling bivalve Scrobicularia plana were present, but unfortunately no live specimens were taken.

Summarising the results of the day, the shore at Pegwell Bay is essentially a muddy sand with a molluscan fauna consisting largely of bivalves. At the top of the shore the muddy Spartina salt-marsh harbours few species of molluscs, but Hydrobia ulvae is to be found in vast numbers. The Spartina is colonising new areas of sand and mud deposition follows colonisation, thus the habitat is not static and a survey of the mollusca of this area at various times in the future may well show a change from a sandy fauna to a muddy fauna. Some dredging would be very useful to study the fauna offshore.

Towards the end of the day a short visit was made to some habitats near Deal. An essentially fresh water ditch yielded only Potamopyrgus jenkinsi Smith, and the thick mud of some brackish creeks proved completely barren. An area of established hind dunes proved of interest botanically, an outstanding feature being the local Green-winged orchid, Orchis morio. A few land snails were also collected on the dunes.

I must thank some of the members for sending their lists of species and also Dr. Llewellyn Jones who kindly transported the larger part of the party from Pegwell Bay to Deal and Dover by car.

J. E. Chatfield

NOTE: The names of the molluscs essentially follow Winckworth, but with a few modifications.

WINCKWORTH, R. (1932) The British Marine Mollusca. J. Conch. 19, (7), 211-252.

STOP PRESS

ADDITIONS TO LIST OF SPECIES TAKEN AT THE GUIDE BRIDGE

FIELD MEETING ON 1st. MAY 1965

The following species of Pisidia have been determined by Mr. A. W. Stelfox:

Pisidium milium Held

P. subtruncatum Malm

P. hibernicum Westerlund

P. nitidum Jenyns

P. pulchellum Jenyns

Produced by 'The Conchological Society of Great Britain and Ireland'

THE 10 KILOMETRE SQUARE MAPPING SCHEME FOR BRITISH

NON-MARINE MOLLUSCA

Response from members is still not as good as might be hoped. Over the past three years information has been received from about 50 people, of whom 33 are members of the Society. A further 13 members have promised help. To all these my best thanks are due. The task of collecting records from each of the 3,500 or so 10 kilometre squares in the British Isles, so as to make possible the eventual production of detailed distribution maps, is clearly formidable, but certainly within our capabilities within, say, the next five years. In case some members should be holding back through lack of confidence in their ability to identify Mollusca, it should be emphasized that records of the very commonest and most distinctive species, such as Helix aspersa or Lymnaea peregra, are needed quite as much as those of the rarer; even short lists of a few names would be most welcome. An excellent handbook of the British species has recently been published (Janus, 'The Young Specialist looks at Molluscs', Burke & Co., price 7/6 in paper covers). Furthermore, I am always glad to identify specimens if sent to me at the address given below, adequately localized, and packed in a manner that will ensure their safe delivery (see Conchologists' Newsletter No. 11 (1964), p. 68). If you think that you can help in any way, even with a list of snails from a single wood or pond, please let me know. Those areas for which records are particularly scanty are shown in the map recently published in the Journal (25:307).

Notes on recording.

In order to facilitate recording, the Society has had printed a 6" x 4" record card, available free to members, which carries in abbreviated form the complete list of known British species (see illustration). In nearly all cases the names are those given in the most recently published Census (J. Conch. 22 (1951): 171) and follow the same taxonomic order. Five aggregate species are also included for convenience during field work (Carychium minimum agg., Cochlicopa lubrica agg., Arion ater agg., Vitrea crystallina agg., Agriolimax agrestis agg.), but obviously it is desirable that the actual specimens found should afterwards be examined critically and assigned to their correct segregates and the card altered accordingly. To mark a species as present, cross firmly through the latin name in pencil leaving the number untouched (see illustration).

The cards can be used in one of two ways. First, if an area is being fairly thoroughly worked, a card can be compiled giving all the species found by a recorder within the limits of a particular 10 kilometre square during current field work or in any year back to 1950. Such a composite card should carry only the 10 km. square grid reference (4 figures, e.g.

5 2 6 - - 8 - -) but no habitat or altitude indication. As a check on the grid reference, give the approximate area (e.g., in this case, 'Square east of Littleport'). Give the year, or inclusive years, of collecting (e.g. '1962-65'), and the name of the vice-county.

Secondly, if considered worth-while for permanent record, separate cards can be used in localities of different habitat type within the square; the cards can be given a more detailed grid reference (e.g. 5 2 6 5 - 8 5 - , or 5 2 6 5 2 8 5 7), locality, date, and in addition information on habitat and altitude. Brief data on plant associates would be particularly useful.

It may be found helpful to retain duplicates of certain cards sent in so that only increments to the lists need later be forwarded.

GRID ref. -58-5925	LOCALITY <i>by Shippea Hill Station.</i>	DATE <i>6.1964</i>
	HABITAT <i>fen drains and adjoining grassy banks</i>	V.C. <i>Cambridge</i>
		ALT. <i>< 10 ft.</i>
		RECORDER <i>M. P. K.</i>

Conchological Society of Gr. Britain and Ireland

1 Theod	fu	60 Verti	sub	121 Arion	lus
2 Vivip	viv	61	pyg	122	ate
3		62	ben	123	ate
4 Valva	cri	63	men	124	Eucon
5	mnc	64	hil	125	cry
6		65	alp	126	cry
7 Pomat	pic	66	mus	127	Orych
8 Aciua	fus	67	ant	128	da
9 Hydro	uiv	68	Lauri	129	
10		69	sec	130	
11 Pseud	con	70	Abida	131	Rein
12	ten	71	Acant	132	pur
13 Bythi	sch	72	lan	133	hel
14		73	sec	134	exc
15		74	pus	135	nit
16 Assin	gra	75	exc	136	nit
17	min	76	Ena	137	nit
18	arg	77	Marpe	138	pyg
19 Phyt	myo	78	Clau	139	Max
20	tu	79	Clau	140	Max
21	pla	80	tol	141	Max
22		81	tol	142	Max
23		82	Lacin	143	Max
24		83	Bala	144	Max
25		84	Cecil	145	Max
26		85	Testa	146	Max
27	Aplex	86	man	147	Lehma
28	hyp	87	fru	148	Lehma
29	spn	88	fru	149	Lehma
30	Plan	89	Helic	150	Lehma
31	Menet	90	Helic	151	Lehma
32	Plan	91	Helic	152	Lehma
33		92	Helic	153	Lehma
34		93	Helic	154	Lehma
35		94	Helic	155	Lehma
36		95	Helic	156	Lehma
37		96	Helic	157	Lehma
38		97	Hygro	158	Lehma
39		98	Hygro	159	Lehma
40		99	Hygro	160	Lehma
41		100	Hygro	161	Lehma
42	Segne	101	Monac	162	Lehma
43	Acrol	102	Monac	163	Lehma
44	Acrol	103	Monac	164	Lehma
45	Ancyl	104	Monac	165	Lehma
46	Catin	105	Monac	166	Lehma
47	Suci	106	Monac	167	Lehma
48		107	Helic	168	Lehma
49		108	Helic	169	Lehma
50		109	Helic	170	Lehma
51	Azeca	110	Helic	171	Lehma
52	Cocli	111	Helic	172	Lehma
53	lub	112	Helic	173	Lehma
54	Pyram	113	Helic	174	Lehma
55	Colum	114	Helic	175	Lehma
56	Trunc	115	Helic	176	Lehma
57		116	Helic	177	Lehma
58	Verti	117	Helic	178	Lehma
59		118	Helic	179	Lehma
		119	Helic	180	Lehma
		120	Helic	181	Lehma

One of the objects of the mapping scheme is to try and discover to what extent certain species have been humanly introduced or dispersed in different parts of Britain. It would therefore be of great value if recorders would mark on their cards those species which in their opinion show signs of having been accidentally introduced by man in a particular area, prefixing them with a 'G' (for 'garden'). Introduction may be suspected if the species in question seems only to occur in association with human settlements, recent or abandoned, rubbish tips, etc.

The National Grid.

The National Grid is shown on all modern (post-1945) Ordnance maps, which also carry an explanation of its working. The most important point to remember is that the easterly components of the reference (eastings) must always be given before the northerly components (northings) (remember that 'E' comes alphabetically before 'N'). Four figures suffice to define any 10 kilometre square in Britain, e.g. Shippea Hill station (Cambridgeshire) lies about the middle of square 52/68. The first two figures refer to the 100 kilometre square, the second two to the 10 kilometre square within it (it should be noted that on the more recent maps the first pair of figures is also given as letters (in this particular case TL), but it is asked that figures only be used on the cards). A locality can be defined within a 1 kilometre square by using six figures (e.g. 52/6585), or even within a square of 100 metres by using eight figures (e.g. 52/652857).

Very convenient maps on a scale of five miles to the inch showing the grid of 10 kilometre squares are contained in the Automobile Association's 'Roadbook of England and Wales' and 'Roadbook of Scotland', obtainable post-free at 25/- and 17/6 respectively from the headquarters of the Association at Fanum House, Leicester Square, London, W.C.2.

The National Grid unfortunately does not cover Ireland. However, the Botanical Society in connexion with their own mapping scheme have projected the grid westwards to cover that country, and sets of half-inch maps have been prepared on which the lines of the grid have been laid down in manuscript and a numbering agreed upon. One such set is in the possession of the Conchological Society's Recorder. Fresh field-work in Ireland is badly needed. Anyone proposing to collect there should write to me, enclosing their own maps (inch or half-inch) of that part which they are visiting, and I can then mark on the grid for their use in the field
(Please see next page (98) for Recorder's address)

M. P. Kerney

M. P. Kerney, Hon. Recorder for non-marine Mollusca, Department of Geology, Imperial College, Prince Consort Road, London, S.W.7.

(Please note that I shall be away from England from 1st. December 1965 until 1st. April 1966).

LAND OPERCULATES OF THE NEW WORLD

Although operculate land snails play a very minor role in the British fauna, the reverse is the case in the New World, where especially in the Larger West Indian islands they abound. In Jamaica there may be some 450 species of land snails of which about 55% are terrestrial operculates; this proportion of species is roughly similar in Cuba and Hispaniola, but nowhere else in the world are land operculate species so numerous.

The distribution of these calciphil snails is confined to areas where limestones form the surface features and where there is a moderate to heavy rainfall. The dry intervening country with little rain and xerophytic vegetation forms as great a barrier to their dispersal as the open sea. This is particularly noticeable in Western Cuba. In Pinar del Rio Province, the Organ Mountains, because they are broken up into isolated blocks and by the even greater cutting up of the lateral folds to the north and south, show splendidly in their faunas the effects of isolation and inbreeding, resulting in an almost endless array of races, each confined to a limestone cliff varying in size from a few yards to miles in extent.

On the mainland similar conditions were met with by the writer in British Guiana and Venezuela, where small isolated limestone hills would produce a surprising variety of mollusca, mostly operculates, while the intervening areas of grassland were entirely barren in this respect.

By far the greater number of American land operculates were included in the family Cyclostomidae, which contained both Old and New World forms. The American species have since been removed into a separate family the Annulariidae, founded upon a constant and essential difference in the radula.

This family, the Annulariidae, has further been divided into sub-families, genera and sub-genera, which are based mainly upon modifications of the opercular characters; the presence or absence of punctures or slits within or on the edge of the aperture and, where present, the nature of various devices for enabling the animal to obtain air when the aperture is sealed by the operculum.

The breathing devices found in the Annulariidae are very ingenious. They range from a mere notch in the peripheral callus near the posterior angle of the aperture leaving a slender opening when the operculum is withdrawn, to a puncture in the parietal wall, which may or may not be provided with a projecting tube (siphon) on the outside. Some have a puncture in the parietal wall connected with the outer surface of the peristome by a slit. In some the puncture communicates directly with the hollow axis of the shell. Where the umbilicus is sealed by the parietal callus, the animal breathes through the perforation in the plug at the truncated apex. Apex breathing when the operculum is closed reaches its highest development in Rhythidopoma, in which the siphon bends down through the solute portion of the last turn, over the base of the preceding turn into the umbilicus which is completely plugged and breathing is effected through the axial puncture at the truncated apex.

The operculum which also shows a wide range of variation consists of a basal chondroid plate upon which are calcareous ribs and lamellae, the modifications of which have been used in sub-dividing the family into a series of sub-families and genera.

The shell in the Annulariidae varies in shape from depressed helicoid to elongate conic and is often strongly sculptured and brightly coloured. The vast majority of species are of small size, ranging from 10mm. to 40mm. in length. The genus Annularia includes the very curious sub-genus Blaesospira from Cuba, in which the shell consists of an openly coiled tube with two rows of strongly elevated, thin, hollow spines between the apex and the umbilicus.

The geographical range of the Annulariidae extends from the Bahamas and Lower Florida on the north, throughout the Greater and Lesser Antilles, and on the mainland from Mexico to Bolivia. By far the greatest development is centred in the Greater Antilles.

The remaining New World operculates belong to the family Cyclophoridae, which is even more strongly represented in the Oriental Region. Its distribution in the Americas is similar to that of the Annulariidae, from Mexico over South America and throughout the West Indian islands. The American Cyclophoridae are divided into a number of sub-families of which the most important are the Megalomastominae and Aperostominae.

The former are elongate-conic or elongate turreted shells, with a horny operculum. In Cuba this sub-family is represented by the genus Farcimen, where it is widely distributed. The shells vary in shape from ovate to elongate-conic. All members of the genus Farcimen are mulch-dwellers; they find their optimum habitat where dead leaves and vegetable detritus becomes mixed with sand or soil at the base of stone walls or dead trees. Here there is usually sufficient moisture to furnish suitable conditions for the development of fungi upon whose mycelial threads they seem largely to subsist. It is only during rain that they may occasionally be seen climbing a few feet above the level they usually occupy.

This type of habitat does not consequently restrict them in the way that the calciphilous Annulariidae are restricted and the various species are often found over a considerable area. They are equally at home in both the mountains and the plains.

On the mainland the curious genus Tomocyclus occurs in Guatemala. The shells have a circular aperture and an elongated, turreted spire, the apex is always decollate, but the shell may still consist of as many as 8 whorls. These snails frequent rocks and stone walls, where they can sometimes be found above ground after or during rain. The beautiful Tomocyclus gealei Crosse & Fischer, with a shell some 40 mm. in length, was observed crawling beneath a ledge some 4 feet above the ground near Puerto Barrios in 1938.

In the sub-family Aperostominae the shells are of helicoid or depressed helicoid shape, the genus Aperostoma containing some of the largest land operculates known. Aperostoma giganteum (Reeve) attains a maximum diameter of some 60 mm. The distribution of the genus Aperostoma extends from Mexico to Brazil and throughout the West Indies. Like Farcimen, Aperostoma lives amongst dead leaves and the roots of plants and the majority of species are found on the South American mainland.

Somewhat smaller species, belonging to such genera as Ptychocochlis and Poteria occur commonly in Jamaica, inhabiting the tree-clad limestone hills. In spite of their common occurrence a visit to even a well established locality during dry weather would certainly prove fruitless and even a dead shell would be hard to find. During or shortly after rain, however, the snails will be very much in evidence and many hundreds can usually be observed in a few square yards. There is perhaps nowhere in the world where so many different species of land mollusca can be collected in a small area as is possible on the limestone hills of Cuba and Jamaica, and, in the latter island, the writer has personally collected in a few hours some 140 different species, 70% of them land operculates, in less than a square mile in Corn Puss Gap in the mountains of the John Crow range. However, it is unlikely that a field meeting to this promising locality will be possible!

T. Pain

FIELD MEETING TO EXAMINE THE GAULT CLAY OF FOLKESTONE

28th. MARCH 1965

DIRECTOR: D. G. PICKRELL

The Gault Clay of Folkestone consists of about 200 ft. of grey sandy marine clay which was deposited about 120 million years ago in Albian times in a shallow sea, opening into an ocean to the north and covering an area

between Lincolnshire and South Devon (and possibly further north).

The most interesting and varied group of animals which inhabited this sea was the ammonites, a group of extinct Cephalopods possessing a many-chambered coiled shell not unlike the modern Nautilus. These shells have been preserved by calcite replacement or as casts of iron pyrites or calcium phosphate.

During the time the clays were being laid down the ammonites evolved and, in doing so, altered their shell morphology which has made it possible to divide the clay into a number of zones by the particular assemblage of ammonites within them.

Ammonite zones and subzones of the Gault modified from Spath (1943)

<u>Stage</u>	<u>Zone</u>	<u>Subzone</u>
UPPER ALBIAN (UPPER GAULT)	(Mortoniceras inflatum	(Callihoplites auritus (Hysterocheras varicosum (Hysterocheras orbigny
MIDDLE ALBIAN (LOWER GAULT)	((Euhoplites (lautus (((Hoplites (dentatus (	(Dipoloceras cristatum (Anahoplites daviesi (Euhoplites lautus and E. nitidus (Mojssisovicsia subdelaruei (Dimorphoplites niobe (Anahoplites intermedius (Hoplites dentatus and H. spathi (Hoplites (Isohoplites) eodentatus
LOWER ALBIAN (LOWER GREENSAND)	(Douvillieiceras mammillatum	Douvillieiceras mouile

A party of about 10 members and friends, after a morning of not very profitable marine mollusca collecting in East Wear Bay, had lunch and then started to collect from the slumped clay and foreshore working their way towards Copt Point.

The weather was somewhat cool and the clay was not in the best condition for collecting, being rather too wet and sticky, however some interesting finds were made. These were:-

Part of the ammonite Douvillieiceras mammillatum (Schloth) from the junction bed between the Gault and the underlying Lower Greensand, although the specimen found was not in situ the zone was pointed out to members.

In the Lower Greensand were noted the shells of the large fossil oyster Exogyra latissima (Lamarck) - none were collected due to the hardness of the surrounding sandstone.

Other interesting finds were two ammonites of the genus Dipoloceras, one being Dipoloceras cristatum (Deluc) collected by the director from the cristatum zone and the other Dipoloceras pseudaeon Spath collected by Dr. Llewellyn Jones.

Several solitary corals and crinoid columnals were found indicating the shallowness of the Albian sea. Some vertebrae and teeth of fish were found, also many bivalves and a few gastropods and in the Dentatus zone a large piece of fossil wood with Serpula sp. upon it.

The party returned to Folkestone by walking back to East Cliff where tea was obtained.

List of other fossils found:

Zone ammonites:- Hoplites dentatus (J. Sowerby), Euhoplites lautus (J.S.),
Hysterocheras orbigny, H. varicosum (J. de C. Sowerby),
Other Cephalopods:- Anahoplites planus (Mantell), Beudanticeras beudanti
(Brongniart), Dimorphoplites biplicatus (Mantell),
Hamites maximus J.S., H. intermedius J.S.,

Neohibolites minimus (Miller), Mortoniceras sp.,
Euhoplites sp.,
 Bivalvia:- Exogyra latissima (Lamarck), Inoceramus concentricus
 Parkinson, I. sulcatus P., Nucula pectinata J.S.,
 Gastropoda:- Anchura carinata (Mantell), Gyrodontes genti (J.S.),
Nummocalcar fittoni (Roemer), Eutrochus sp.,
 Scaphopoda:- Dentalium decussatum J.S.,
 Anthozoa:- Trochocyathus harveyanus Edwards and Haime,
 Pisces:- Lamna appendiculata Agassiz,
 Echinoderma:- Isocrinus sp., Hemiaster sp.

FIELD MEETING TO EXAMINE THE MOLLUSCA OF THE RIVER CRAY

13th. JUNE 1965

DIRECTOR: D. G. PICKRELL

The object of the field meeting was to examine the fauna of the River Cray and to obtain Anodonta cygnaea (L.) and Anodonta cygnaea var. zellensis Gmelin*.

About seven members and friends with a film camera met at Bexley Station. The main party then proceeded on foot to the River Cray near Woollett Hall Farm working their way up river to North Cray finding Lymnaea peregra (Müller), Lymnaea stagnalis (L.) and Planorbis corneus (L.). In the undergrowth on the banks of the river were found Vallonia excentrica Sterki, Hygromia hispida (L.), Retinella nitidula (Draparnaud), Agriolimax agrestis agg. and Arion ater agg.

At North Cray Bridge the main party was met by the film unit who filmed the activities of members on the southern side of the bridge. From this locality were obtained Lymnaea palustris (Müller), Planorbis planorbis (L.), Sphaerium lacustre (Müller), and Pisidium milium Held, as well as Lymnaea peregra (Müller), L. stagnalis (L.) and Planorbis corneus (L.).

The party then made their way to Ruxley Gravel Pits (near the Sidcup bypass). In the first lake the owners were dredging out the weed. Members were thus able to collect from the dredged material many Anodonta cygnaea var. zellensis Gmelin and a few A. cygnaea (L.)

In the second lake many Sphaerium corneum (L.) were noted.

Lunch was taken on some waste ground near the first pond. On this ground were found Monacha cantiana (Montagu), Helicella virgata (da Costa), Helicella caperata (Montagu), and Agriolimax reticulatus agg.

The party then moved to some marshy ground beyond the main lakes from which were obtained Planorbis vortex (L.), Physa fontinalis (L.), Planorbis albus Müller, and Sphaerium corneum (L.). In the surrounding vegetation were found Cochlicopa lubrica (Müller), and Succinea pfeifferi Rossmässler.

Thanks are due to Mr. Frank J. Holroyde of Kent Naturalists' Trust for permission to visit Ruxley Gravel Pits.

*ELLIS A. E. 1962 British Freshwater Bivalve Molluscs.
 Linn. Soc. Lond. Pages 19 & 21.

FIELD MEETING - 19th. JUNE 1965

Five members and three visitors met at Droylsden station on Saturday 19th. June, and proceeded to the branch of the Ashton Canal near the station. Only a short length of this disused branch remains, and it is very much choked with vegetation. Mollusca were fairly plentiful, and the following species were taken:

<u>Viviparus contectus</u> Millet	<u>Bithynia tentaculata</u> (L.)
<u>Lymnaea stagnalis</u> (L.)	<u>L. peregra</u> (Müller)

<u>Physa fontinalis</u> (L.)	<u>Planorbarius corneus</u> (L.)
<u>Planorbis carinatus</u> Müller	<u>P. vortex</u> (L.)
<u>P. albus</u> Müller	<u>Segmentina complanata</u> (L.)
<u>Acroloxus lacustris</u> (L.)	<u>Sphaerium corneum</u> (L.)
<u>S. lacustre</u> (Müller)	<u>Pisidium</u> sp. (To be determined by Mr. Stelfox)

A pond near the canal produced only:

Lymnaea stagnalis (L.) juvenile Sphaerium lacustre (Müller)

The following were found on a patch of waste ground near the station:

Arion circumscriptus Johnson Agriolimax agrestis agg.

The party then went by car to Fairfield, and investigated the main Ashton Canal above Fairfield Locks, where the following species were found:

<u>Bithynia tentaculata</u> (L.)	<u>Lymnaea stagnalis</u> (L.)
<u>L. peregra</u> (Müller)	<u>Physa fontinalis</u> (L.)
<u>Planorbarius corneus</u> (L.)	<u>Planorbis planorbis</u> (L.)
<u>P. vortex</u> (L.)	<u>P. albus</u> Müller
<u>Sphaerium corneum</u> (L.)	<u>Pisidium</u> sp. (To be determined by Mr. Stelfox)

Marjorie Fogan

FIELD MEETING TO THE RIVER MEDEN, THORESBY PARK, NOTTS.

26th. JUNE 1965

Fifteen members and friends met under the leadership of Mr. G. W. Pitchford, but we were disappointed not to have seen any members from Yorks. or the North West. The purpose of the meeting was to investigate the conditions in the river which produce bivalves of great size, Unio pictorum in particular, which occurs here larger than anywhere else in the world. (See Pitchford, J. Conch., 23, 338 and 401). The river is a small one, not more than 2' 0" deep in most places, and representative collections of the rich bivalve and gastropod fauna were easily obtained, the largest U. pictorum found measuring 146 mm. in length. It seems likely that the exceptional size of these animals results from a rich algal fauna bred in the ornamental lakes from which the river flows, but Mr. Pitchford reports that these lakes are known to be rapidly silting up as a result of nearby colliery workings, and if this goes on much longer the locality will probably cease to be unusual. It is a continuous source of regret to the Natural historian to note how interesting localities, unless specially and artificially preserved, rapidly become eliminated by neglect or deliberate interference.

FIELD MEETING - 3rd. JULY 1965

Five members and two visitors met at Atherton on Saturday July 3rd., and went by car to Radcliffe. The Bolton and Bury Canal has been disused for many years and only two sections of it now remain, one of which lies between Bolton and Radcliffe and is blocked off forming a dead end at Radcliffe. Starting from the dead end the party moved along the towpath in the direction of Bolton. The canal is dirty and a good deal overgrown, but mollusca were plentiful and the following species were obtained:

<u>Valvata cristata</u> Müller	<u>Bithynia tentaculata</u> (L.)
<u>Lymnaea stagnalis</u> (L.)	<u>L. peregra</u> (Müller)
<u>Physa fontinalis</u> (L.)	<u>Planorbarius corneus</u> (L.)
<u>Planorbis carinatus</u> Müller	<u>P. vortex</u> (L.)

P. albus Müller

Sphaerium corneum (L.)

S. lacustre (Müller)

Anodonta cygnea (L.)

A. anatina (L.) dead shells only

Marjorie Fogan

REPORT OF FIELD MEETING HELD AUGUST 21st. AT GORTON NEAR MANCHESTER

A small group of three members and one visitor met on the afternoon of August 21st. to further their study of molluscan fauna of the canals around Manchester. It had been their intention to visit the Reddish branch of the Manchester-Ashton canal, but as most of this was recently filled in, only the northern portion in the districts of Gorton and Openshaw was available for examination. The filled-in portion was found to extend as far as the aqueduct over the railway close to the Gorton and Openshaw Station and it was at this point that the party commenced their search, working northwards towards the junction with the Manchester-Ashton canal.

The following aquatic spp. were taken:-

Bithynia tentaculata (L.)

Physa fontinalis (L.)

Lymnaea stagnalis (L.)

L. peregra (Müller)

Planorbarius corneus (L.)

Planorbis planorbis (L.)

P. vortex (L.)

P. contortus (L.)

Sphaerium corneum (L.)

S. lacustre (Müller)

All the above spp. were fairly frequent in the whole length of the canal examined but no land spp. were taken on the canal banks or the towpath. Like most others in this area, the canal has not been used for very many years, and the water is very shallow, in many places being overgrown with Glyceria maxima (Hartm.) Holmb., but in the water many interesting plants were noticed, among them being Lemna gibba L., Sagittaria sagittifolia L., Luronium natans (L.) Rafn., Alisma plantago-aquatica L., Potamogeton natans L., P. alpinus Balb., P. crispus L., and Ceratophyllum demersum L.

It is perhaps the great amount of this vegetation and diversity of leaf shape which provides suitable habitats for the variety of aquatic spp. found in these canals.

W. F. Edwards

A CONCHOLOGISTS' SHORE DIRECTORY

The marine Recorder is frequently asked by Members for details of good collecting localities in various parts of the country. At present such information is difficult if not impossible to provide. Many Members, however, have considerable experience of good collecting localities either near their homes or visited at holiday times. If this information could be pooled, and a county by county card index kept by the marine Recorder, the benefits to shell-collecting Members will be obvious. It is hoped that all Members who are able to make a contribution to such a directory will do so, as its usefulness will depend entirely on its comprehensiveness. The information on each locality will be classified as follows, and it will be a great help to the Recorder if Members providing the information will follow the same scheme:-

1. Name of locality. County and nearest town.
2. Nature of locality, e.g. rock pools, estuary, sandy bay, etc.
3. Name and distance of nearest railway station.
4. Details of transport available from nearest station, if any.

5. Special features of interest. Some information should be given of what the collector may expect as some are only interested in live-collected specimens, others in shell sand, etc. Details of any species of limited distribution which may be locally common may also be given.
6. Limitations, e.g. "no transport on Sundays", "low spring tides only", "permission required in advance from.....".

In view of the general co-operation anticipated in this venture, I trust Members will understand if instead of acknowledging each contribution individually I take this opportunity to thank everyone in advance who will help the Recorder in establishing this new service to all Members.

David Heppell
Marine Recorder

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

Notice is given of the possible use by the International Commission of its plenary powers in connection with the following cases, details of which will be found in Bull. Zool. Nomencl. vol. 22, part 3.

- (1) Validation of the generic name Amblema Rafinesque, 1820 (Bivalvia), reference number Z.N.(S.) 1699.
- (2) Suppression of the specific names Voluta pertusa Linnaeus, 1758, V. morio Linnaeus, 1767, V. ruffina Linnaeus, 1767, and Bulla conoidea Linnaeus, 1767 (Gastropoda). Z.N.(S.) 1700.
- (3) Suppression of the generic name Trichogonia Rossmassler, 1835 (Bivalvia). Z.N.(S.) 1702.

Comments on any of the above, in duplicate and bearing the reference number, should reach the Secretary of the International Commission on Zoological Nomenclature, c/o. the British Museum (Natural History), Cromwell Road, London, S.W.7, before 13th. February 1966.

FOR SALE

Books on British Molluscs:- Charles Thorpe, British Marine Conchology (1844) col. pls. 30/-. J. E. Gray, Turton's Manual of the Land and Fresh-water shells of the British Islands (1857) col. pls. 35/- F. M. Duncan, British Shells (1943) col. pls. 4/-. R. Rimmer, Shells of the British Isles, Land and Fresh-water (1907) 5/-. W. Clark, A history of the British Marine Testaceous Mollusca (1855) 17/6d. T. Brown, Illustrations of the Land and Fresh Water Conchology of Great Britain and Ireland (1845) col. pls. 35/-. C. Kingsley, Glaucus (1899 ed.) col. pls. 7/6d.

Books on Foreign Molluscs:- D. Dupuy, Histoire naturelle des mollusques terrestres et d'eau douce qui vivent en France (1847-52). Author's presentation copy to W. Kobelt. £5.10. Od. A. Locard, Catalogue General des Mollusques vivants de France (non-marine) (1882) no illustrations £1. A. Schmidt, Die kritischen Gruppen der Europäischen Clausilien (1857) 12 excellent pls. 30/-. H. C. Küster, Die Gattungen Pupa, Megaspira, Balea und Tornatellina. From 2nd ed. Martini & Chemnitz Systematisches Conchylien-Cabinet. Band I, Abteilung 15 (1852). In 2 parts, col. pls. £3.15. Od. Torre, Bartsch & Morrison, The Cyclophorid Operculate land mollusks of America (1942) 7/6d. T. Brown, The Elements of Conchology (1816) 17/6d. Mary Roberts, The conchologist's companion (1834) 9/-. Write to:- Mr. S. P. Dance, British Museum (Natural History), Cromwell Road, S.W.7.

NOTE

Messrs. E. W. Classey Ltd. (353 Hanworth Road, Hampton, Middlesex), well known as dealers in entomological works, have recently extended their range to include other branches of natural history, including conchology.

CHRISTMAS 1965

The compiler sends the Season's Greetings and Good Wishes to every reader.

Produced by 'The Conchological Society of Great Britain and Ireland'

JUNIOR MEMBERSHIP

The following were elected to the Junior Membership of the Society on the dates given:-

13th. November 1965

HOWELL Alison, [REDACTED], Edgbaston, Birmingham 15.
PREECE Richard, [REDACTED], Cowes, Isle of Wight.
KELLY Stephanie, [REDACTED], Wramplingham, Wymondham, Norfolk.
KAY Angela, [REDACTED], Sherfield English, Romsey, Hampshire.

11th. December 1965

BATY Richard, [REDACTED], Biddenham, Bedfordshire.

SMALL MARINE AQUARIA

Marine aquaria have a reputation for being difficult to manage, owing to various factors such as the high oxygen requirements of the animals, their intolerance of variations in salinity, and the extreme rapidity with which they decompose after death. However, provided one is not too ambitious, a variety of marine organisms can be kept alive and more or less healthy for periods of up to two years with very little trouble, at a capital outlay of a few shillings, if the following principles are rigorously adhered to.

1. The aquarium must be as broad and shallow as possible so that the maximum surface is exposed to the air in relation to the volume of water. Provided the water has a maximum depth of $2\frac{1}{2}$ inches, oxygen can diffuse in it fast enough to keep all but the most fastidious animals alive. There must be no contact between sea water and metals of any kind, so metal-framed aquaria are definitely excluded. All-glass or all-plastic aquaria are the only safe things to use. A transparent plastic cake-box with a close-fitting lid is ideal, and is relatively cheap. Whatever kind of vessel is used, an airtight cover is essential. Any water lost by evaporation condenses on the lid and drops back. In this way the salinity remains practically unaltered for months.

2. The water is most cheaply obtained by filling a plastic jerry-can or other large non-metallic vessel from the sea. A screw-top is essential and preferable to a cork which is absorbent and may contain residues of fruit-juice, detergent, or whatever was in the container at first. Whether a new or second-hand jerry-can is used it should first be scalded out several times with boiling water. If one is not fortunate enough to possess a car, certain luggage problems present themselves (It is amazing how heavy one gallon of water is!). British Rail will take a plastic can of seawater as it is, but glass bottles must be protected by some kind of crate. I strongly advise sending the water home some days in advance, as it is very embarrassing to arrive home with a jar of animals gasping for a drink, and find that there is nothing to put them in for a couple of days.

Sea water should be collected as far from the shore as possible to avoid the suspended dirt churned up by the waves. This is easily arranged by taking a boat trip, or dangling a bucket on a rope from the end of the pier. To be on the safe side it should be filtered through a wad of clean cotton wool in a plastic funnel before it goes into the aquarium.

3. The furniture of the aquarium should consist of a one inch layer of fine very well washed sand, and one or two smooth rocks reaching nearly to the top

of the water. Fine sand is better than gravel, which tends to collect small bits of dead weed, etc. which decays and fouls the water. Any rubbish lies on the top of the sand and can easily be picked out. Stones collected on the sea-shore are preferable to flints from the garden, as they have small natural growths of weed on them. When selecting these stones it is imperative to avoid ones with acorn barnacles, sponges, and brown weeds attached to them, as these organisms die almost at once and pollute the water. Hard chalk pebbles are excellent provided any broken surfaces are first washed free of loose dust. The sand used should be sea-sand, but bird sand is a good substitute if very thoroughly washed. The slightest trace of dust in it makes clouds in the water which take a long time to settle.

You will, of course, want some seaweeds. Only the green weeds will survive in aquaria, and they must be attached to small stones. Choose little stones with a very meagre growth on them - it is amazing how much weed there is on them when it is fluffed up in the aquarium. After a time minute green and brown growths appear on their own, and these should be left as far as possible as they are adapted to tank conditions and will thrive there. Don't overdo the decorations, and above all avoid leaving cracks and crannies where things can die and decompose unnoticed, and poison everything else.

4. The position in which the aquarium is kept is of some importance. Sea temperatures are remarkably stable, and only a few very tough creatures can stand the sharp fluctuations in temperature in rock pools. Even there they only have to put up with the conditions for a few hours until the tide returns to bring things back to normal. There are no tides coming to the rescue in a plastic cake-box! Direct sunshine must be avoided at all costs. A north-facing window in a cellar is the ideal position. Failing that, any other north window. East is not quite so good, West is bad, and South means death. If the tank has to get the sun, then shading of some kind must be provided. On the other hand darkness or very dim light is equally fatal, as the plants will not grow. In such a tiny volume of water plant life does the very important job not only of supplying oxygen, but removing the soluble nitrogenous excretory compounds of the animals. Intense winter cold may be fatal. 50°F is perhaps the ideal temperature.

5. The choice of animals for the aquarium is almost unlimited, and depends entirely on the desires of the aquarium keeper. However some creatures just will not live in a small unaerated aquarium for more than a day or two. The most outstanding of these are limpets, barnacles, nudibranchs, all the most attractive sea anemones, polyzoa, sponges, ascidians, sea urchins, and those animals of the "splash zone" which are almost never covered by the tide, e.g. *Littorina saxatilis*. On the other hand some creatures seem to be virtually indestructible, among which are to be included the common beadlet anemone, baby mussels, the various top-shells, *Rissoa* spp., baby lug-worms (useful scavengers these), the big-clawed porcellan crabs, and toughest of all, the common green shore-crab. The latter is a sure-fire winner if it can have a tank to itself. It will eat almost anything, even bread, or starve happily for a fortnight, and soon becomes so tame as to follow its owner's finger round the tank. One caught when it is pea-sized and fed regularly will cast a series of skins and outgrow its space in a season. It is, however, a greedy, blood-thirsty, treacherous and exceedingly dirty pirate in whose company nothing will survive for long, not even another crab.

A third list given here, of animals which will survive for about a week, possibly longer, but are well worth a short trial as they include some of the most fascinating creatures on the shore: *Littorina littorea*, *L. obtusata*, chitons, starfish, *Venus* and *Tellina*, *Lacuna*, prawns and hermit crabs. With these it seems to be the food which is at fault, although why the common periwinkle, (first on the list), is unhappy in a tank I cannot make out.

The little screw-shrimps (*Gammarus* spp.), which look very much like the freshwater shrimp, are often introduced with weeds. They live very well and breed in a most gratifying manner, but should be kept in check as they can strip a tank of every shred of green. When this happened in my cake-box aquarium I kept the culture alive on finely shredded lettuce and breadcrumbs.

6. The number of animals per tank must be very strictly limited to an absolute minimum. For a 12-inch diameter tank a good community would be: One medium sized beadlet anemone, one edible mussel about $\frac{1}{2}$ inch long, two small top-shells, and a prawn. Even these may be too much in hot weather.

7. Maintenance If possible the aquarium should be inspected daily, and any dead animals removed at once. In sea water decomposition is unbelievably rapid, so that what with the bacteria competing for oxygen and the foul gases given off from the corpse, a sparkling lively community can become a stinking black mess within 24 hours. It is therefore a good thing to have a supply of fresh sea water at hand ready for a complete change. The initial supply of water should be double what is required for the aquarium, and the excess can remain in the original container in a cool place. Don't throw away the foul water. Filter it carefully and store it separately. An occasional shake to aerate it, followed by a brief uncorking to let out the smell, and the precious liquid will be ready to use again in a few months.

Increase in salinity due to evaporation is a bugbear which is easily overcome by marking the water level on the tank by means of a strip of elastoplast or indelible ink, and keeping it topped up with distilled or rain-water. Little and often is safer than sudden big dilutions at long intervals. If water is to be put into store, make up the level first. If the aquarium has a good airtight lid, then topping-up may be needed only 2 or 3 times a year.

Finally, feeding. A good deal of judgment is needed in this. Marine life is very nutritious, land and freshwater life much less. Consequently one finds that small rock pool fishes grow very thin when fed on earthworms and daphnia, so that there must be a certain amount of fishmonger's mussels and fish scraps for them. Sea anemones eat very little, and thrive on a small section of earthworm or a tiny scrap of fish once a fortnight. Whatever food is used, it should be removed within an hour if not eaten. The uncarnivorous inhabitants just have to look after themselves - another reason for having some green sea-weeds in the aquarium.

It only remains for me to urge all those members who are interested in the living inhabitants of the shells they collect to take the plunge into this highly specialised but fascinating branch of aquarium keeping. The layout in cash is very small, but the rewards can be tremendous if you are successful. A small aquarium such as I have described will remain healthy for a year, and struggle on for two years with luck, but in these days when most families take an annual seaside holiday it should generally be possible to start afresh each year. If anyone wants advice about keeping sea animals I will do my best to oblige, but I am by no stretch of the imagination an expert in this field and can only offer you the benefit of my very limited experience. My address is: 12 Willow Road, Tadley, Basingstoke, Hants.

M. R. BLOCK

VOLVA VOLVA, (LINN), IN SOUTH AFRICAN WATERS

The distribution of this species has long been quoted as East Indies to Japan, but Barnard (1963), reports living specimens taken off the Natal Coast, and as far south as Cape Morgan, (Morgan Bay, one mile south of the Great Kei River).

Due to careful collecting by members of the Conchological Society of Southern Africa, the East London Museum has been able to record a fresh dead example from Xora Mouth, Transkei Coast, and this bridges the gap between the Natal Coast and Cape Morgan.

Later discoveries have now been recorded of fresh dead specimens from Gonubie and Bonza Bay. The last mentioned locality being only five miles north of East London.

From this evidence it may well be concluded that the range of Volva volva extends much further south than hitherto known.

Efforts are now being made to locate living examples at the new localities, to prove the increased range.

Reference:- Barnard, K. H., Contributions to South African Marine Mollusca. Annals South African Museum, Vol. XLVII, Part 1, Feb. 1963.

D. H. KENNELLY
Conchologist,
East London Museum

ASSOCIATION OF THE AMPHIPOD HYALE PERIERI (LUCAS)

WITH NUCELLA LAPILLUS L.

An association between a species of amphipod (Crustacea) and Nucella lapillus L. was noted in a rock pool on an exposed headland at Godrevy near Camborne, Cornwall (National Grid SW (10) 5843) on 21.4.1965. The amphipods were noticed emerging from a couple of specimens of Nucella when these were lifted from the pool, so one specimen of the whelk was brought away for further examination. When this was placed in a jar of sea water, five amphipods emerged from its mantle cavity which they re-entered at fairly frequent intervals, occasionally wriggling up the siphon canal. Apparently they caused no inconvenience or irritation to the mollusc and were themselves unharmed even when inside the pallial cavity with the operculum tightly withdrawn. Although they moved freely through the water, they spent a lot of time resting or moving over the outer surface of the shell. Specimens submitted to Mr. G. M. Spooner of the Plymouth Laboratory, Marine Biological Association were kindly confirmed by him to be the talitrid amphipod Hyale perieri (Lucas), known to associate with Patella in exposed rock pools. All were immature. Mr. Spooner writes (in litt. 19.5.65) "The species is rather characteristic of exposed rocky shores and I have observed it in several parts of the North Cornwall coast, Lizard peninsula, etc., intertidally in exposed situations: it is also on the Eddystone Rock. Whereas we are familiar with the habitat of the immature, particularly the smaller sizes, seeking shelter under the mantle of limpets, I know of no record of their associating with other gastropods. It is an interesting observation, though perhaps not wholly unexpected. One would like to know more about the life history of this species."

It would indeed be interesting to know if there is a food or reproductive link in the life history, or whether this species of Hyale makes use of such molluscs as Patella and Nucella purely for the shelter they afford. In France the habitat is given as tufts of algae and empty barnacle shells (Perrier, R., Editor, 1929, Crustacea and Arachnida Faune de la France, vol. 2 p. 180) so shelter is obviously of considerable importance. As Hyale perieri is evidently confined to exposed rocky shores and is a south European species, reaching its northernmost limit in Britain on our south-west coasts, its restricted ecological and geographical ranges must somewhat limit further observations: it is obviously worth further study, and it suggests how ectoparasitic relationships may develop from casual scavenging or shelter requirements.

Acknowledgments are made to Master Andrew Pearson for drawing my attention to these amphipods, and to Mr. G. M. Spooner for confirming the identification and his helpful comments.

STELLA M. TURK

CORNISH LOCALITIES FOR ARION LUSITANICUS MABILIE

As anticipated, Arion lusitanicus, which was found in the Isles of Scilly in June 1963 and near Camborne in September 1963 (S.M.T.), has proved to be widespread, and in some places abundant, in Cornwall. The following is a list of its known stations in the county to December 1965.

St. Mary's, Scilly; Tregavarah Downs, Penzance; near Relubbas, St. Erth; Reskadinnick, Camborne (all S.M.T.); St. Just-in-Penwith; Penzance (Penlee Gardens and back of Leskinnick Terrace); between Treen and Gurnard's Head (all A.E.E.); Lelant (Miss P. J. White); Ponsonooth, Truro (Mrs. B. E. R. Hall); Truro (Mrs. E. F. Brown); Lower Treneague, Wadebridge (Miss D. Stewart); Stoptide, Rock, vice-county 2 (Miss E. I. Harvey); Garden, Quethiock, Liskeard, vice-county 2 (Mrs. C. Yelland). The St. Erth locality is a riverbank and at Treen the slugs were found in a pasture field, but the other localities are in or close to gardens or arable fields. A. lusitanicus is also now known from the adjacent county of Devon (Alphington) and from a garden at Salisbury (J. A. Carman); it should be searched for in Somerset and Dorset to link up the Devon and Wiltshire stations.

STELLA M. TURK & A. E. ELLIS

GIGANTIC SERPENT REALLY A GASTROPOD!

In the Zoological Section of the Hunterian Museum of Glasgow University is a specimen from the Gran Chaco region of South America described in 1926 by

John Graham Kerr, then Regius Professor of Zoology in the University, as the poison-fang of an opisthoglyphous snake. The fang, $6\frac{1}{2}$ cm. long and curved like the claw of a tiger, has a deep groove on its outer face terminating at the point of the fang which is blunted by slight breakage and abrasion. Two narrow, parallel, chocolate-coloured stripes run along the apical two-thirds of its length. Kerr named his specimen Bothrodon pridii after its discoverer, Andrew Pride. He considered that its strongly curved hook-like form indicated that it was used "not for striking, but for the effective retention of the struggling prey while the poison passed into the wound and did its work".

As can be imagined, the publication of the description and figure of Bothrodon stimulated the imagination of herpetologists. The fang is approximately nine times larger than that of a six-foot boomslang and, as the poison-conducting teeth of the rear-fanged snakes are short in proportion to the body-length, Bothrodon would have reached hitherto quite unheard of dimensions. Such a comparison would indicate a poisonous snake nearly sixty feet long, or twice the size of the largest pythons existing today. As the specimen was obtained from the silt-like deposit of Pleistocene or later age which covers the region of the Gran Chaco, Ditmars suggests that it probably fed on those kinds of small mammals which still inhabit that district today, mainly peccaries and various rodents, "if such a monster would deign to note the latter", and he goes on to imagine the awesome picture it must have presented if it were quick and savage like the boomslang. As it was the first poisonous monster to come to scientific attention, "the thought it inspires rather dulls the conjectural image of that dinosaurian star, Tyranosaurus, whose races passed away ages before this mammoth Bothrodon prowled the soil".

Such fantasies were eventually dispelled, however, when Quenstedt deduced, from an examination of a coloured cast of the Bothrodon fang sent by Professor Kerr to the Palaeontological Museum of Berlin University, that the specimen was in reality one of the finger-like processes from around the aperture of the Recent Indo-Pacific gastropod Lambis (Harpago) chiragra. Not only the shape but also the colour - the bright-red inner lip and the two dark-brown longitudinal stripes on the outside of the shell fragment - confirmed the correct identification. As the locality "Gran Chaco" cannot be doubted, the discovery can only be explained in terms of a human introduction. So Bothrodon pridii, born a "serpent of gigantic dimensions" is finally laid to rest as a most unexpected synonym of the scorpion-shell Lambis chiragra.

References

- DITMARS, R. L., 1931. Snakes of the World. New York: The Macmillan Company. pp. 94-95.
- KERR, J. G., 1926. Bothrodon pridii, an extinct serpent of gigantic dimensions. Proc. R. Soc. Edinb. 46: 314-315.
- QUENSTEDT, W., 1939 in KUHN, O., Squamata: Lacertilia et Ophidia in QUENSTEDT, W. (Ed.), Fossilium Catalogus 1: Animalia (pars 86): footnote to p. 25 of Ophidia.

DAVID HEPPELL

A NOTE ON THE ARK SHELLS

The Arcidae form a family about which very little seems to be known, and literature is conspicuously lacking. There are three British Ark shells of which one, A. pectunculoides, is found only by dredging deep waters off the Orkney and Shetland coasts.

During a recent visit to Orkney we were able to examine the shell fauna on the magnificent rocky piece of coast known as the Brough of Birsay, where a great number of species can often be obtained. One very striking aspect of the molluscan fauna of that spot was its almost exact correspondence with that at a place at the other end of the kingdom - Shell Bay, Herm, in the Channel Islands. Even the extremely young, brick-red Capulus hungaricus is sometimes to be had at both places, although the adult is never found. As the topography of the coast-line at the two places is as different as could be, the reason for the similarity of their shells has yet to be explained.

Arca lactea is one shell which is common at Herm but does not occur anywhere in the Orkneys; A. tetragona however, can be found in fair numbers at both places. It lives well below the tide range, and as the shells separate as soon as the animal dies, only single valves are found on the beach. As

Rendall notes in his 'Mollusca Orcadensia', the valves are much abraded and usually found in the shell drift.

An inspection of the specimens taken at Birsay established that the abrasion, often very pronounced, occurs only on the central panel of the shell's surface, between the umbones (where it commences), and the ventral margin, where it is often severe enough to reduce the edge to the sharpness of a knife-edge, and to remove at least half the thickness of the valve over its central portion. As the anterior and posterior surfaces are always completely untouched, this abrasion must occur in life. A re-examination of the material gathered at Herm showed that the same thing occurs there but to a much less marked extent, and it must thus be due to some habit indulged in by the particular species. Edward Step in 'Shell Life' attempts an explanation of this point, saying that the species loves to spend its life in the crevices of rocks or attached by its byssus to the empty shells of other bivalves. He claims that the habit of grubbing in crannies and among rubbish results in most of its ornamentation getting rubbed off.

Such a life as that he describes would of course, have the same effect in the case of the human species, but would always tend to produce a generally knocked-about looking specimen, whereas the wear on A. tetragona has more the appearance of resulting from some small rubbing movement persistently taking place over a long period. If these molluscs were all able to anchor themselves in crannies of just the correct width, and were to open their valves and rock themselves longitudinally in some way, the flattened facets might result, but this could not happen in the case of those living in decontrolled bivalve shells.

We have examined material dredged by Rendall in twelve fathoms from North of Galt Ness, Shapinsay; the specimens possess a quite shaggy epidermis of a dirty brown colour, slightly worn to a dirty white on the umbones, and developed to a most striking comb-like beard on the postero-ventral keel. The specimens have almost certainly not lived in crannies.

Jeffreys says that the species can be found at low water mark in Bantry Bay, closely wedged in the chinks of slate rocks, the shape being distorted and the surface scraped in consequence of the confined position. The abrasion, he says, is perhaps caused by the uneasiness of the animal through its continual endeavours to extricate itself or change its position. Thus, although Step considers that they lead a fine Bohemian life, Jeffreys thinks that they spend most of their time feeling miserable. Certainly it would seem a foolish provision of Nature to let the thing get into a small cranny and then make it uncomfortable for life. Perhaps the animal's movements do something to improve the flow of water to the gills.

The fact that Rendall and others have been able sometimes to take this species in the dredge seems to suggest that some of them do indeed live attached to other shells, but others, snug in their reputed crannies, must be almost unobtainable, so that practically nothing is actually known of their habits, grubby or otherwise. No other British mollusc that I know of, not even Pholas, abrades itself in this way. The tropical arks seem to show abrasion only on the extreme points of the umbones, together with a certain amount of polish over the central portions of the shells. It would be interesting to know more about the life of A. tetragona.

T. E. CROWLEY
J. CROWLEY

ARCHACHATINA MARGINATA OVUM (PFEIFFER) FOUND ALIVE IN THE LONDON AREA

In September 1965, Mr. P. Taylor of the Royal Botanic Gardens, Kew gave me an adult living specimen of Archachatina marginata ovum (Pfeiffer) measuring about 120 mm. in length, which had been collected by Mr. P. W. Cribb near the Hanworth Crematorium (One inch O.S. Sheet 160 5121/1732).

A year ago another larger specimen was found on a school playing field a few hundred yards away from the crematorium, but I have not seen this. It appeared obvious from the nearness of Hanworth to London Airport that the molluscs had been introduced by air from West Africa and I am indebted to Mr. T. E. Crowley for drawing my attention to a photograph and caption in "The Sunday Telegraph" for the 8th. March 1964 describing a specimen found at London Airport. Unfortunately the caption contents obviously refer to

Achatina fulica Bowdich, although the photograph clearly shows an Archachatina with a typically blunt shell. According to Mr. Crowley, the snails are smuggled into this country in open baskets for sale in a W. London market to West Africans living here. A few obviously drop by the wayside, but it is impossible for the species to overwinter here outside, so no danger is involved of the beasts becoming a pest.

B. VERDCOURT

ANNOUNCEMENTS

YORKSHIRE BRANCH, CONCHOLOGICAL SOCIETY OF G.B. & I.

Meetings for 1966

Indoors - Leeds City Museum - at 2.30 p.m.

March 19th. Mr. A. Norris - A discussion
November 5th. Annual General Meeting - Presidential Address by Mr. J. Armitage

Field Meetings

April 16th. Stamford Bridge - 11 a.m. for aquatic habitats
May 21st. Skipton main car park at 10 a.m. for Dent at 11.30 a.m.
September 3rd. Blubberhouses - 11 a.m. for aquatic and limestone habitats
October 1st. Thorne - 11 a.m. Leader Mr. Norris - for aquatic habitats
Y.N.U. Meetings
28-29 May - Thorntondale VC62
12 June - Goole VC63
25 June - Bolton-by-Bowland VC64
9 July - Thornton Rust VC65
23-24 July - Patrington VC61

THE ROYAL MICROSCOPICAL SOCIETY - Royal Charter Centenary Year

The Role of the Microscope in Scientific Investigation - International Conference - London - 18th.-22nd. July 1966, inclusive.

Further information available from the General Secretary of the Society, Tavistock House South, Tavistock Square, London, W.C.1.

PUBLICATIONS RECEIVED

POIRIERIA Vol. 2, Part 6 (Sept. 1965) (Conchology Section, Auckland Institute and Museum, New Zealand)

The issue contains, as always, items of very general interest and others of a specialist character dealing with local beaches, sometimes in a way inclined to arouse the envy of marine shell collectors in Great Britain.

Contents include an article on the collection of land shells in Rarotonga, Cook Group, by L. Price. The collection was commissioned by the Chicago Natural History Museum and one wishes that more British provincial (or even national) museums were in a position to effect collecting of the kind. Other articles of general interest include one on the snail-killing flies (Sciomyzidae) by L. W. Stratton and one on Urogonimus mageostomus, a parasite which infests the tentacles of Succinea, by J. E. Rosenbaum.

Circular No. 69, The Conchological Society of South Africa.

Besides the usual Meeting Notes and short reports from the various widely scattered sections of the Society, there is a most useful article on certain of the species of South African Cowrie from W. O. Cernohorsky's 'Catalogue of Living Cypraeidae', extracted by D. H. Kennelly; an article on the rare Conus clytospira, new discoveries, by G. de Gersigny; Notes on Some Rare Species of Shells (mostly Cones and Cowries), and a marine list for Nthlonyana, Transkei, by D. H. Kennelly.

The Circular also includes a review of the recent 'Preliminary List of South African Marine Shells recorded from the Natal and Zululand Coast' by B. L. Cock of which a copy is to hand by courtesy of Mr. P. Elston. This is one of a series of most useful things of the kind which have been coming from

the South African Society in recent years. Nothing encourages collecting and observing as well as an annotated check-list, and the fact that they are usually incomplete when first issued is no detraction; in fact it can well act as a stimulus. Few collectors do not feel a little pride at finding something which is not 'in the Book'! Accordingly, Dr. A. C. van Bruggen, in the foreword, hopes that it will rapidly become out of date!

T.E.C.

"A List of Marine Mollusca taken alive on the 'Wild Coast'". By D.H.Kennelly, Conchologist, East London Museum, September 1965.

The List is obtainable from the Director, East London Museum, price 20 cents (South African) per copy. A copy is with the Compiler.

LISTS RECEIVED

Hano, 1598 Third Avenue, New York 10028 Priced lists of tropical marine shells and books available.

Richard E. Petit, [REDACTED], Ocean Drive Beach, South Carolina 29582, U.S.A. Priced lists of Cones, Cowries and Harps. Books available.

ADVERTISEMENTS

WANTED: Helicella material from anywhere outside the British Isles; preferably alive, failing that, preserved in alcohol. I can pay a few pence each plus postage, or may be able to exchange some specimens. Please write discussing details before sending anything. M. R. Block, [REDACTED], Tadley, Basingstoke, Hampshire.

WANTED: Copies of the following issues of The National Geographic Magazine - Please contact Miss J. Sawyer, [REDACTED], London, N.W.2. (GLA 3045). August 1935, August 1936, June 1940, July 1949, March 1956, January 1959, October 1959.

FOR SALE: Cypraea pulchra. Perfect condition from Arabian Sea, 1965. Full locality data. £4. Read, [REDACTED], Coulsdon, Surrey. Tel. Downland 52730.

Mr. Melville S. Lewis, Glengarry, 6 Job's Well Road, Johnstown, Carmarthen, wishes to buy a copy of Vol. 12, No. 4 of the Journal. Also desires information on any articles, etc. concerning the hibernation of Helix aspersa.

Indian Ocean Cypraeas, and cones, and a quantity of Cardium costatum (Senegal) are on sale at Eaton's Shell Shop, Manette Street, London, W.1.

CORRESPONDENTS WANTED: Carlos F. Reichard, [REDACTED] Aguadilla, P.R. 00603, U.S.A. wishes to obtain European shells in exchange for those of other countries. As he is a paraplegic he cannot collect himself, but has a wide range of correspondents in various countries and hence many specimens available for exchange.

NOTE: Last July my husband and I went a little out of our way to visit the Shell Museum of Miss Saunders, at [REDACTED], Littlehampton, Sussex, which is, in fact mentioned in the very first Newsletter. After a little difficulty we found it, only to discover that Miss Saunders had died the year before, the house had been inherited by a nephew who had removed the shells and was letting it to holidaymakers. This information may save someone an unnecessary journey.

MRS. H. NASH

IMPORTANT NOTICE

Field Meetings Circulation List 1966

The present Field Meetings circulation list will be suspended and members wishing to be included in the new list for 1966 must inform the Field Meetings Organiser verbally or in writing. Names will NOT be automatically transferred to the new list.

[REDACTED],
Millbank, London, S.W.1.

T. Pain,
Field Meetings Organiser.

Produced by 'The Conchological Society of Great Britain and Ireland'

DISTRIBUTION OF THE ACAVIDAE

It is generally believed that millions of years ago a great southern continent stretched westward from S. Africa as far as the Andes and eastward through Madagascar and Southern India to the Australian region. The climate of this continent was very cold towards the end of the Carboniferous period; but later it became warmer, and the snails that dwelt there flourished exceedingly, several new families being evolved; and one of these families seems to have been the Acavidae.

Now it is not difficult to form some idea as to what the first members of the Acavidae were like; for it is reasonable to suppose that they would possess any primitive characters that are still retained by some of their descendants, as well as such other features as are found in all modern members of the family, or at least in all the more archaic genera. We may suppose, therefore, that the eggs of these snails would be larger than usual and that the animals themselves would be above the average size. The shell would have a pointed spire and laterally compressed whorls; that is to say, both the shell and its aperture would be higher than broad. This is the form of shell found in the most primitive Euthyneura, such as the Actaeonidae, the Chilinidae, and the Auriculidae, as well as in many of the more ancient families of the Stylommatophora, and it is still retained by several members of the Acavidae.

Such we may suppose to have been the main characters of the earliest members of the Acavidae. It will be seen that they were more primitive than many modern snails, but probably at the beginning of the Mesozoic era they were both larger and more highly organised than most other families then living. As the family increased and spread far and wide through the ancient southern continent, individuals increased in numbers and competition between them would become more severe. This would lead to evolution of higher types; unfavourable varieties would be eliminated; progressive mutations would alone survive. Thus the eggs grew larger, the adult also became larger and broader, the whorls very much wider, and the apex more and more obtuse, until the form of the shell became globular and finally depressed. The lip also became more expanded.

Until about the middle of the Mesozoic era the distribution of the family was probably continuous. And then came the sea. First in one region and then in another, partly by denudation but chiefly by subsidence, that ancient continent gradually disappeared beneath the encroaching waves. The region extending from the south of India to Madagascar was cut off from Australia on the one hand and from South Africa on the other, and, later, Africa was separated from Brazil. Thus the old home of the Acavidae was divided into four large islands. Henceforth each of the divisions of the family would develop independently, their separation accentuating their differences, until the Acavidae were divided into four subfamilies, each inhabiting a different area.

The subfamily inhabiting the most westerly region, which included Brazil and the adjacent parts of South America, would be on the whole the most primitive as it was farthest from the centre of evolution.

But although these snails retain many primitive characters, they have undergone a considerable development under the favourable climatic conditions of Brazil. Many of the forms attain a great size and have very big eggs. A large number of species have arisen, and they have spread over the greater part of S. America, mainly east of the Andes. To this subfamily Pilsbry has given the name of Strophocheilinae.

The subfamily which inhabits Australia and some of the neighbouring islands contains far fewer species; but so diverse are these that they are assigned to at least twice as many genera as the South American forms.

The south of Australia is nearly as far from the centre of evolution as is Brazil, and, with the exception of Anoglypta launcestonensis, all the species from this region are more or less Bulimiform. Further north, however, we find the greatly depressed genus Pedinogyra in Queensland and New South Wales; while in the most northerly species Hedleyella, instead of the spire having been flattened, the entire shell has become reduced, so that it can no longer contain the animal.

Charles Hedley, to whom we owe most of our knowledge of these snails, was the first to demonstrate that the Australian genera Hedleyella, Caryodes, Anoglypta and Pedinogyra, were related to one another, notwithstanding their striking external differences. The Australian region has long been cut off from the other three areas in which the Acavidae are found and it contains a separate branch of the family. This subfamily was named by Connolly and Watson, the Caryodinae.

The region extending from the south of Madagascar to the south western part of the peninsula of India remained a single large island, or a closely connected chain of islands, long after it was separated from the Australian region on the east and South Africa on the west; and it was probably not until Tertiary times that a series of faults, accompanied by subsidence, sent the greater part of that land beneath the Indian Ocean. The genera Acavus found in Ceylon, Stylodonta in the Seychelles, and Helicophanta and Ampelita in Madagascar, must therefore be regarded as the surviving remnants of a group which formerly also inhabited the intervening areas.

This group is that which lies nearest to the original centre of evolution of the family, and accordingly it includes the most highly organised members of the Acavidae. As in the Caryodinae, the most primitive forms are found in the south of the region amongst the Madagascan species. Some of these have Bulimiform shells, while in the genus Ampelita the egg is only moderately large; but in all the genera of this subfamily, excepting Ampelita, the embryo attains a relatively enormous size before it is hatched or born (for Stylodonta is viviparous), and most of the Madagascan species, and all those from Ceylon and the Seychelles, have Heliciform or depressed shells. Some species of the genus Acavus have acquired arboreal habits, and in these the spire is rather high, but in the two species which are not arboreal the spire is nearly flat. The shell is often highly coloured, and the lip, unlike that in the Caryodinae, is usually broadly expanded. This subfamily was named the Acavinae by Pilsbry, although he originally included under this title the Australian genera also.

As the land on which this subfamily arose extended as far as Southern India, one might perhaps have expected to find some members of the group in the peninsula. Possibly they may have once existed there; but, if so, they were probably unable to survive the competition of the more highly organised snails, belonging to the Helicidae, Zonitidae, and other families which abound there.

We have now seen what happened to three of the four subfamilies into which the Acavidae became divided, when their original home broke up into four large islands. Only the African division remains to be dealt with.

The descendants of this branch of the family are now living in the west of Cape Province and in the neighbouring part of South-West Africa. As might be expected these snails are much more primitive than the Acavinae, being further from the centre of evolution. Nor is it surprising to find that they have greater affinities with the Strophocheilinae than with the Acavinae, for recent researches have shown that the connection between Africa and Brazil probably remained long after the formation of the Mozambique Channel, although it is possible that Madagascar was re-united with Africa for a short period during Tertiary times, after the transatlantic connection had broken down.

As a whole, however, the South African subfamily is probably not quite so primitive as the Strophocheilinae, though here again we find that the southern genus Trigonephrus retains more primitive characters than Dorcasia, which is found further north. The shell in this genus is depressed, with a widely

expanded lip and has quite lost that resemblance to the Bulimiform members of the family which can still be traced in many of the species of Trigonephrus.

The climate of the Cape is much more like that of Europe than that of Brazil and the South African Acavidae differ from the Strophocheilinae in that they have a strong resemblance in their external features to the true Helices of Europe. Indeed Trigonephrus globulus was once regarded as a variety of Helix pomatia and species of both Dorcasia and Trigonephrus were placed in the genus Helix. Not until 1905 was it discovered that these South African snails belonged to the Acavidae, and this is one of the many important discoveries which we owe to the wide researches of the late Dr. H. A. Pilsbry. This South African subfamily of the Acavidae was named the Dorcasinae by Connolly and Watson.

It is perhaps surprising that this ancient family of land snails has been able to survive at all, especially in view of heavy competition it has had to face through the ages. This may be due however to the care which they bestow upon their young: some have very big eggs like Acavus, others are viviparous like Stylodonta, but, in both cases, the young grow to a very large size before they make their appearance in the world.

T. Pain

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

Notice is given of the possible use by the International Commission of its plenary powers in connection with the following applications, particulars of which are published in the Bulletin of Zoological Nomenclature, vol.22, parts 5/6, 31 Jan.1966.

Suppression of the following specific names of Conus, all of Gmelin, 1791: americanus, guineensis, surinamensis, medusa, coffeae, costatus, niveus, oculatus. Case number, 1719.

Either, declaration of Voluta mitra L., 1758, as a junior objective synonym of V.episcopalis L., 1758, or suppression of V.mitra. Case number, 1728.

Validation of Praeradiolites Douville, 1902 (Bivalvia). Case number, 1729.

Any comments should be sent in duplicate, citing the case number, to The Secretary, International Commission on Zoological Nomenclature, c/o British Museum (Natural History), Cromwell Road, London, S.W.7.

PUBLICATIONS RECEIVED

'Poireiria' Vol. 3, Part 1.

Published by the Conchology Section of the Auckland Institute and Museum, this number contains a most useful article by M. C. Miller on the feeding mechanisms and gut structure of Sea-slugs, well illustrated; a description of the Marine Circulation Room, established for biological research at Auckland University; a reprint of a short article by J. Rosenbaum on molluscs as intermediate hosts of human parasites; and a number of collecting notes and reviews.

T. E. Crowley

FIELD MEETING, WORDEN PARK

Five members and two friends met at Preston Station on 2nd. October 1965, and went by car to Worden Park. This is a large park of 150 acres containing a small nature reserve, and is the property of the Leyland U.D.C. who very kindly gave permission for the expedition and provided a very helpful guide.

A number of sites were examined and the following species taken:

Wood in bird sanctuary

Cochlicopa lubrica (Muller)
Arion circumscriptus, Johnston

Pond A

Lymnaea peregra (Muller) one only.
(This pond was much swollen due to heavy rainfall, and the water level was excessively high).

Pond B

Lymnaea peregra
Planorbis albus, Muller
P. crista (L.)
Pisidium milium, Held
P. subtruncatum, Malm

Under logs in parkland

Oxychilus alliarius (Miller)
Agriolimax agrestis agg.
Eggs of *Arion ater*

Cow pocks near stream

Lymnaea truncatula (Muller)
Pisidium casertanum, Poli
P. personatum, Malm
P. subtruncatum

Among dead leaves in wood

Oxychilus alliarius
Arion circumscriptus

All *Pisidia* were determined by Mr. Stelfox.

Eleanor Fogan

ADDITIONS TO LISTS OF SPECIES FROM PREVIOUS FIELD MEETING,

19th. JUNE 1965

Ashton Canal, near Droylsden Station:

Pisidium milium Held
P. subtruncatum Malm
P. hibernicum Westerlund
P. nitidum Jenyns

Canal near Fairfield Locks:

P. milium

All *Pisidia* determined by Mr. Stelfox.

FIELD MEETING, 23rd. OCTOBER 1965

Six members and one visitor met at Beeston Castle Station on this date with a view to examining the mollusca of the Shropshire Union Canal. The visit was timed to conform to the schedule of stoppages issued by the canal authorities, which showed that the part of the canal in the vicinity of the nearby Beeston Iron Lock was due for repair work, involving partial drainage. On a previous occasion when this had been carried out, one of us (J.O'N.M.) had obtained a rich haul of shells (over 20 species) from the exposed mud and it was hoped that this would be repeated. Unfortunately, through staff illness the repair work had had to be postponed so that no drainage had occurred.

As a result both the number of species and the number of specimens obtained (by scoop) was less than expected, particularly as regards the large bivalves. Whilst in the district some attention was paid to the fauna of the hedgerow bordering the towpath and a few land species were recorded.

The complete list for the day was as follows:-

Canal

Viviparus viviparus (L.)
Potamopyrgus jenkinsi (Smith)
Bythinia tentaculata (L.)
Lymnaea palustris (Müller)
Lymnaea auricularia (L.)
Lymnaea peregra (Müller)
Physa fontinalis (L.)
Planorbis vortex (L.)
Planorbis leucostoma Millet
Planorbis albus Müller
Planorbis contortus (L.)
Unio pictorum (L.)
Anodonta anatina (L.)
Sphaerium rivicola (Lam.)
Pisidium amnicum (Müller)
Pisidium sp.
Dreissena polymorpha Pallas

Arion subfuscus, juveniles
A. circumscriptus, all very young.

Towpath

Cochlicopa lubrica (Müller)
Vallonia costata (Müller)
Helix nemoralis L.
Hygromia hispida (L.)
Punctum pygmaeum (Draparnaud)
Arion intermedius Normand
Oxychilus alliarius (Miller)
Retinella nitidula (Draparnaud)
Vittrina pellucida (Müller)
Agriolimax agrestis agg.
 (both plain cream-coloured specimens
 and vividly-blotched ones were
 taken).

J. O'N. Millott

FIELD MEETING TO CLEEVE HILL, CHELTENHAM, GLOUCESTERSHIRE

HELD ON SUNDAY MARCH 13th. 1966

Director: T. Pain

The Inferior Oolite in the neighbourhood of Cheltenham attains the great thickness of about 300 ft. and constitutes the summit of the Cotswolds over a considerable area. These culminate in Cleeve Cloud (1,070 ft.) where the Inferior Oolite is exposed in a series of disused quarries. Two of the subdivisions into which these beds are divided, the Pea Grit and the Oolite Marl, are particularly fossiliferous, and from these numerous fossil mollusca and brachiopods were obtained.

A party of 12 members and friends visited several of these quarries and enjoyed the benefit of fine weather, and good collecting. Bivalves of the genera, *Trigonia*, *Pholadomya* and *Pleuromya* were common, together with the Brachiopod *Zeilleria witchelli* (S. Buckman). A small specimen of the large Gastropod *Bourguetia striata* (Sow) proved an interesting find.

Ammonites, so common in the Inferior Oolite of the Dorset coast, are however extremely rare in the Cotswolds and the discovery of one (*Witchellia* sp.) by M. Willing, in the Upper Pea Grit, was the crowning success to a generally successful and enjoyable day.

FIELD MEETING

BOX HILL, SURREY, 2nd. APRIL 1966: Km. squares TQ17/50 & 51

Seven members present. The area investigated lies on both sides of the river Mole where it flows close to the S.W. corner of Box Hill, near the stepping stones, and includes some ground which has only recently become accessible to the public - or conchologists. Most attention was paid to the rather marshy plain, which is sometimes flooded, between the river and the foot of the hill (TQ175510). Specimens of *Acicula fusca* (Montagu) were collected in the well known chalk-pit near the base of the escarpment, and numerous other woodland and paludal species were found, of which the most

interesting were some slugs of the Arion circumscriptus group. There were two distinct forms of these: one with yellow sides, found chiefly amongst long grass and under fallen branches and driftwood, the other slightly smaller and without any yellow tint, which occurred on the wooded slopes but not in marshy places. The former resembles fig. 14 on plate 24, vol. 2 (1907) of Taylor's Monograph, and the latter fig. 12 on the same plate. Living examples of both kinds were sent to Intendent Henrik W. Walden, Naturhistoriska Museet, Goteborg, Sweden, who replied as follows (6.iv.1966): "The specimens with yellow tint represent very typically Arion fasciatus Nilsson, a taxonomically and nomenclatorially unequivocal species. The other, distinctly bluish grey and white-sided specimen belongs to a species which, with regard to a number of subtle but distinct and constant differences, is clearly distinguished from the former, but regrettably is not yet a nomenclatorially unambiguous species. Most probably it was included in Johnston's Arion circumscriptus which, however, seems to have been based on aggregate material. Judging from data in literature, and my own very modest experience from Britain, it seems to be the prevalent form in your country, together with A. fasciatus. However, Lohmander (1937) delimited the name circumscriptus s.s. for a darker, somewhat smaller 'variety', which is the prevalent form in large areas in eastern Europe, but so far as I know very rare in your country. For the common British form Lohmander proposed the name silvaticus. Though this name will perhaps not stand the final nomenclatorial examination, it has the advantage of being fixed to an unequivocally described form and therefore I prefer to use it provisionally. Later research has made it evident that this form is actually specifically distinct from the easterly circumscriptus in sensu Lohmander." Walden goes on to say that as a result of a very large amount of anatomical and general morphological data, field observations, etc., which he has accumulated, he thinks one must not hesitate any longer to regard the three forms as specifically distinct, although it "still remains to work out all these data in a stringent way and present the results in a convincing form, with unmistakeable examination data." He promises when time permits to write a determination guide for the Arion circumscriptus group for the Journal of Conchology, and in the meantime is willing to receive samples for identification. In the light of these comments, data on the distribution and ecology of the 'circumscriptus complex' will eventually need to be revised.

A. E. Ellis

GENERAL NOTES

Journal Back Numbers

Members are reminded that many back-numbers of the Journal are still available; present prices to members, which are half of those to the public, are 3/9 per number for Vols. 13 to 24 and 10/- each for numbers in Vol. 25. Stock includes the following:

Vol. 13 nos. 1-4 and 12; Vol. 14, nos. 5-12; Vol. 15 nos. 2-10; Vol. 16 complete in 10 numbers; Vol. 17 in nine; Vol. 18 in 12; Vol. 19 in 11; Vol. 20 in 12; Vol. 21 in 11; Vol. 22 in 12; Vol. 23 nos. 1-5 and 8-12 (nos. 6-7, non-marine Census, reprinting); Vol. 24 nos. 1-4 and 7-12; and Vol. 25 nos. 1, 3-6 and 8.

The Keeper of Biology, City of Leicester Museums & Art Gallery, has informed us that his department recently acquired the collection of British land, freshwater and marine molluscs made by the late Arthur Smith of York. It consists of some three thousand sets, from all over the British Isles but with a preponderance of Yorkshire material. The collection will be amalgamated with others to form a British reference collection, but will not lose its identity in this process and is always available for study by anyone with a genuine interest.

Request for exchange correspondents

Frank Bernard, Fisheries Research Board of Canada, Biological Station, Nanaimo, British Columbia, Canada.

To quote from his letter: "I have a fairly large mollusc collection, as I have the run of a ship now and again that is capable of dredging down to 2000 fathoms. I am now branching out to exotic fauna and am looking for somebody to exchange with in England."

ADVERTISEMENTS

LAND & FRESHWATER SHELLS, Britain & Ireland, mostly mounted on cardboard, late 19th. century. Nearly all labelled. £4 post free (very difficult to pack), or £3 buyer collects; could bring them to Glasgow. Catalogue on request. Would exchange for Clyde shells I can't get, or a copy of "Excursions to Arran, Ailsa Craig, and the Two Cumbraes", D. Landsborough, 1852 (Not the 1847 edition or the 1875 by father and son). If anyone has any books on the early Clyde dredgers, Alder, Landsborough and Smith, I would very much like to hear about them.

Alison Rutherford, [REDACTED], Helensburgh, Dunbartonshire.

Needed to complete a run, the following parts of the Journal of Conchology: Vol. 13, nos. 8, 10 and 11; Vol. 14, nos. 3 and 4.

Reasonable price paid.

I. M. Evans, City of Leicester Museums & Art Gallery, New Walk, Leicester.

MARINE CENSUS RECORDING

A Marine Census Subcommittee was appointed by the Conchological Society in 1961. The members of this Subcommittee, Mrs. N. F. McMillan, Mr. L. W. Stratton and Mr. D. Heppell expressed dissatisfaction at the quality and quantity of the records of marine molluscs. They found: (1) there was a decrease in record submissions; (2) a lack of evidence whether records were based on living animals or only dead shells; (3) that many records had been unchecked personally by the Recorders or Referees; (4) vagueness of certain of the boundaries used by Winckworth (1921).

Various means of stimulating interest and of ensuring a more rigorous method of recording were suggested and a new British Marine Census Area (1961) was mapped; this has 40 precisely defined Census Areas as compared with the 20 used by Winckworth.

*HEPPELL, D., 1962 'A Census of the distribution of the British marine Mollusca' 7 pp., circulated in duplicated form by the Conchological Society in 1962.

HEPPELL, D., 1964. The British Marine Census Areas. J.Conch. 25:299-303 with map.

WINCKWORTH, R., 1921. Scheme for the division of the British Marine Area into Census Areas. J.Conch. 21:152-155.

Production of a Census. No marine Census of British molluscs has ever been produced and the present Recorder feels that production of a tentative duplicated list of Census records as soon as possible is essential. The speed and efficiency with which this can be done depends on the enthusiasm of members: the Census is entirely a co-operative venture and insofar as nothing can be circulated until there is a nucleus of reliable records and that members cannot help to the best advantage until they know what is recorded from where, and which areas and species are most in need of investigation, there is a tendency to stalemate. To overcome this members are asked to submit all records of all live molluscs (not forgetting the very small species and nudibranchs) or shells from any Area at any time. The accompanying form has been designed to include basic data and to ensure some uniformity of recording. Mr. Stratton has suggested the Society should work towards the eventual production of an Atlas of British marine molluscs, a stimulating goal.

Authentication of specimens. Specimens checked by the Recorder or Referees have a special status value, indicated by a status symbol. This in no way reflects on the ability of those who submit records, but it does ensure a uniformity and focuses responsibility. The Recorder would like each 'new' species for any Census Area to be treated like a new Vice-county record for the non-marine Census: this system of personal verification and centralisation has resulted in knowledge of the distribution and ecology of our land and freshwater molluscs unparalleled in any other country, and has paved the way for the 10 km. square recording. To save time and money it is suggested that the Marine Recorder will indicate which specimens on the submitted lists would be most usefully 'authenticated' and which would be desirable for inclusion in the Voucher Collections to be housed at the British Museum, if the collector is willing to part with them. (As a rule only A material will be accepted for the Voucher Collections).

Identification of specimens. The Recorder will be pleased to give whatever assistance is practicable to help build up regional collections, private and public.

Preservation of specimens. Notes on this are given by Heppell (1962) and Woodward, F.R. 1965 'Mollusca in the museum'. Conchologists Newsletter 12 & 13. Another excellent method for relaxing molluscs is to place them when active and extended in the deep freeze compartment of the 'fridge in a covered container: when the liquid is frozen solid, remove container, add a suitable quantity of formalin or industrial spirit to iced surface and allow to melt slowly.

*If any members can dispense with their copies of these Census notes, the Recorder would be pleased to receive them for eventual re-circulation among new members wishing to help with marine survey work.

Packing. To avoid sending excess liquid through the post, use cotton wool soaked in the preservative, place each specimen or group of specimens in polythene bags with appropriate labels and put in tin. Nudibranchs and small gastropods such as pyramidellids which are more easily identified from examination of the living specimens should be sent alive if possible: they travel well if placed in polythene or glass tubes half-filled with sea-water and, in very hot weather, a cooling system can be arranged by placing the tubes inside a larger container with a small amount of water. Screw top aluminium tins are very useful for packing any wet specimens, and polystyrene boxes for dry specimens: such tins and boxes are often available from chemists and doctors.

Postage. The Recorder wishes to keep postage refunds by the Society as low as possible: funds must be conserved for the growing publication programme. Please therefore enclose postage when specimens are to be returned.

Specimens sent to the British Museum (Natural History) by the Recorder for inclusion in the Voucher Collections must be labelled with similar data to that on the Recording Form, each batch of any one species from any one Area having its own label. This is a time-consuming task, and one with which help would be welcomed. Labels should be written on non-pulpy paper (i.e. typing paper) preferably with fixed Indian ink, but dark lead pencil will serve.

To ensure that anyone sending records and/or specimens will receive prompt reports, a form of acknowledgement with space for relevant comment is being designed. This will not only keep helpers in immediate touch but will guarantee the maximum available time of the Recorder being devoted to the production of the Society's Marine Census by lessening lengthy correspondence commitments.

Stella M. Turk

PROTOTYPE RECORDING FORM FOR MARINE MOLLUSCS
with selection of records

1	2	3	4	5	6	7	8	9
Winckworth no.	Identification	Locality	Census area	Nat. Grid ref.	Habitat and micro-habitat	Shore zone or depth	Collected by	Estimation of numbers, behaviour and any other obs. R = specimens submitted to Recorder V = specimens submitted for Voucher Collection
			Census category	Date			Identified by	
							(Checked by)	
Lo8	<u>Callochiton achatinus</u> (Brown)	Castle Beach Falmouth, Cornwall	18 A	10/8131 26.3.1963	Rocky shore		Bristol Univ. (SMT: D.H.)	Four specimens RV
G71	<u>Rissoa parva</u> (da Costa)	Torcross, S. Devon	16 A	20/84 11.10.1965	Rocks. On algae (Plocamium etc.)		M.R. Block S.M.T.	Abundant: mostly var. <u>interrupta</u> R
G185	<u>Simnia patula</u> (Penn.)	Off Black Head, Lizard, Cornwall	18 A	10/71 May & June '64	In vicinity of <u>Eunicella vernicosa</u>	15-30 fms.	B. Bolitho S.M.T.(D.H.)	Usually present in small numbers in RV
G294	<u>Onchidoris fusca</u> (Muller)	Fowey, Cornwall	18 A	20/12/50 27.1.1963	Under stone	Shallow water ELWS	G. Way S.M.T.(D.H.)	Enormous numbers, forming a mat and spawning. Temp. just above freezing RV
L79	<u>Montacuta ferruginosa</u> (Mont.)	St. Anthony-in-Meneage, Cornwall	18 A	10/785255 16.9.1962	On spines of <u>Echinocardium caudatum</u> , burrowing in sand	ELWS	B.D.Stephens B.D.S.(S.M.T.)	The echinoderms were numerous and most had a few specimens on them. RV
L145a	<u>Lutraria angustior</u> Philippi	Alderney Point Channel Isles	40 B	3s9/82 8.8.1963	Strand line		G.H. Pitchford G.H.P.(N.A. Holme)	Several dead shells

To make copies of this form, rule lines as above and simply number the columns. It is suggested that collectors make a carbon copy, for their own retention, of any records they submit. Please endeavour to keep records from any one Census Area separate from one another; if there are only a few records from any one Area, the Recording Form can be cut accordingly. Where there is more data than will fit in spaces provided, number entry and continue on back of Form; please avoid including such relevant information in a letter where it is not so easily filed for reference. The more detail the better, but it is not always possible to complete all the columns. However, please be sure to complete second half of column 4 - indicating A, B or C (A = alive; B = dead shells; C = very worn or sub-fossil shells). If in doubt, do NOT record as A.

THE CONCHOLOGISTS' NEWSLETTER

No. 18

Compiled by: P. E. Negus,
[REDACTED],
Chelsea Bridge Road,
London, S.W.1.

September 1966

Produced by 'The Conchological Society of Great Britain and Ireland'

JUNIOR MEMBERSHIP

New Junior Members elected 21st. May 1966:-

HARD, Robin Launcelot, [REDACTED], Wraxall, nr. Bristol.

WALKER, Mark A., [REDACTED], Melton Park, Newcastle-upon-Tyne.

THE 10 KILOMETRE SQUARE MAPPING SCHEME FOR BRITISH
NON-MARINE MOLLUSCA

Once again, may I make a plea to members for greatly increased help with the Society's mapping scheme for land and freshwater Mollusca? I have as yet adequate lists of species for only a very small proportion of the 3,500 or so 10 kilometre National Grid squares in the British Isles. If you can provide me with modern (post-1950) local lists in any form, from any part of the British Isles, PLEASE let me have them. I should be particularly glad to hear from members willing to work consistent blocks of adjacent squares expressly for the purpose of the scheme. Areas which are still very sparsely covered are East Anglia, the Midlands, Central Wales, the Scottish Highlands, and most of Ireland. Further details of the scheme will be found in a recent issue of the Newsletter (No. 15, December 1965).

M. P. Kerney,
Department of Geology,
Imperial College,
Prince Consort Road,
London, S.W.7.

A SOUTH AFRICAN BIOGRAPHICAL NOTE

My interest in shells commenced in 1902. I was then a twelve year old schoolboy living in Grahamstown.

One very wet Saturday, as I could not go out to play with my friends, I was amusing myself with some shells collected at Port Alfred, mementos of a couple of visits to that holiday resort.

My father came into the room, and, seeing the shells, asked if I knew they all had names. Very surprised, I replied in the negative. Father then assured me of this fact, and added that if I went to the Albany Museum I would be able to ascertain the scientific names of my shells.

My curiosity was roused, and the school being closed over the week-end, I spent many Saturday mornings browsing over the exhibited shells in the Museum, gradually identifying my own specimens.

It was not very long before my regular Saturday visits were noted by a member of the Museum staff, a Miss Daly. This young lady came to me one morning, to ascertain the reason for my regular visits. I remember being rather scared at the time, but was soon reassured by Miss Daly telling me that I was welcome, and should I require any information I was to apply to a member of the staff, who would assist.

It was not long after this that I completed the identification of my Port Alfred shells, a total of about 30 different species, and that was the start of

my interest in a fascinating hobby which has continued to the present time.

D. H. Kennelly
East London,
South Africa.

FIELD MEETING TO NORTH END OF BARNES BRIDGE, LONDON, W.4. 17th. APRIL 1966

Leader - B. Verdcourt

Owing to the cold weather there was a poor attendance, but the four members who did turn up (T. Pain, D. Pickrell, M. Block and myself) were ample for the task in hand and a larger party might have been an embarrassment. At first progress was slow and only about a hundred Lacynaria biplicata were found before lunch. Attention was only paid to the small plot of nettle patches with scattered elder bushes, but after lunch a much larger number of specimens was found on the river side of the retaining wall bordering the path leading to the boat house. By pulling the nettles and other plants away from the wall, where they formed a sort of ledge, hundreds of specimens were found adhering to the wall. Undoubtedly the water level at high tide must come close to the habitat and at certain times must wet it, if not cover it. It is possible that the lime content of the wall is a factor and the fact that it faces S.E. might be significant. Some 850 specimens were collected altogether, all within a few square yards. About one third of these were taken to Eton College Bird Sanctuary and released in a nettle patch also subjected to swamping in parts. Two lots were taken by Messrs. Block and Pickrell for experimental breeding. The remainder are at present in the leader's garden in an extensive nettle patch, awaiting replies from various kind folk who offered suitable areas for colonisation.

Bearing in mind the size of the population there were remarkably few dead shells, and if the development at Barnes is delayed, it is hoped that the population will have regained its original numbers and a further operation can be carried out. It does not seem beyond the bounds of possibility that the species might persist despite building developments. During the day we were visited by BBC TV, ITV and The Times photographer.

FIELD MEETING TO PEAK FOREST CANAL, CHESHIRE, 14th. MAY 1966

Leader - Wm. F. Edwards

Four members and one visitor met at Marple Station, Cheshire, on Saturday afternoon, May 14th., and proceeded to the nearest point of the Peak Forest Canal, which passes under the main road about 100 yards from the station. The northern section was examined first, and on reaching the towpath, work was commenced immediately, the following species being taken at the foot of a stone wall:-

Cochlicopa sp. (to be det.); Carychium sp. (to be det.);
Lauria cylindracea (da Costa), frequent; Helix nemoralis L., shell;
Hygromia striolata (C. Pfeiffer), one (M. Fogan), rare in Cheshire;
H. hispida (L), several; Discus rotundatus (Muller);
Arion circumscriptus Johnston; A. hortensis Ferussac;
A. ater (L), s.l. juv.; Oxychilus cellarius (Muller);
O. alliarius (Miller); Zonitoides nitidus (Muller);
Vitрина pellucida (Muller), shell; Agriolimax agrestis (L.), agg.

The canal at this point consists of several locks, and these and the short stretches in between were found to be singularly lacking in specimens, in what is usually a rich hunting ground. It is quite probable that the water had recently been drained for cleaning purposes, indeed one lock was empty of water that afternoon. Most of the species taken were shells obtained from mud found dumped by the side of the canal. The list of species was as follows:-

Viviparus viviparus (L.), shell; Bithynia tentaculata (L.), shells;

Lymnaea stagnalis (L.), alive; L. peregra (Muller), rather large specs. with curious flanged lips, living but scarce;

Planorbarius corneus (L.) shell; Planorbis carinatus Muller, shell;

Ancylus fluviatilis Muller, one large spec. living, (W. F. Edwards)

Sphaerium corneum (L.) shell; Anodonta sp. shell.

The party then retraced their steps and headed towards the junction of the Peak Forest and the Macclesfield canals which is in that vicinity. On the other side of the main road, the bank of the canal yielded the following slugs:-

Arion hortensis, A. circumscriptus, Agriolimax reticulatus (Muller), the heavily blotched "garden" form, and also O. cellarius.

That portion of the Peak Forest canal above the junction, and the Macclesfield canal, are still navigable, and carried quite a lot of private-boat traffic. A short length of the Peak Forest Canal was examined first and yielded:

Bithynia tentaculata (L.), Lymnaea peregra, L. auricularia, L. stagnalis,

Pl. corneus, Pl. carinatus, Pl. vortex, Viviparus viviparus,

Acroloxus lacustris (L.), Sph. corneum, all these alive.

The Macclesfield canal was then examined for about $\frac{1}{2}$ mile beyond the junction and the following species were obtained:-

Viviparus viviparus, Bithynia tentaculata, Lymnaea auricularia, L. peregra,

Planorbarius corneus, Planorbis carinatus, P. vortex, Acroloxus lacustris,

Physa fontinalis (L.), Sphaerium corneum, S. lacustre.

PUBLICATIONS RECEIVED

Circular No. 72 (March 1966) of the Conchological Society of Southern Africa.

In addition to a great deal of material of local interest, this number contains some notes on Volutocorbis lutosa by P. Elston, a debate on Cypraea leucodon by E. T. Hayward and E. Dee, and a short note on Marginella capensis by P. Elston.

D. H. Kennelly contributes some important information to supplement that provided in Marsh and Rippingale's "Cone Shells of the World", including synonymous names and extended locality data.

Circular No. 73 (April 1966) of the Conchological Society of Southern Africa.

Reports of meetings held by the various groups of the Society seem to stress poor attendance and a good deal of trouble caused by heavy rain and high gales which might almost lead one to suppose that the meetings had been held in an English Summer. The circular contains a report of an underwater expedition at Porto Amelia, Mozambique, an article on the derivation of some latin names, and a note on Afrivoluta pringlei by D. H. Kennelly. (c.f. Barnard, J. Conch. 25, 5)

Circular No. 74 (May 1966) of the Conchological Society of Southern Africa lists a number of extensions to the range of local marine shells recently recorded by members; evidently there is quite a lot still to be discovered about the ecology of some of the species concerned.

D. H. Kennelly contributes an article concerning Patella and Haliotis analysing the various possible causes of mortality of young shells; further observations would be welcomed. Another article by the same writer deals with the interaction of molluscs on echinoderms and the methods of attack employed. There are no records of starfish attacking Patella or Haliotis in the absence of more attractive food but the reasons for this (if any) are unknown.

T.E.C.

RENFREWSHIRE NATURAL HISTORY SURVEY

The Museum, High Street, Paisley, Renfrewshire, is undertaking a re-survey of the natural history of the county in collaboration with the Paisley Naturalist's Society in order to bring the county records up to date. These records have not been revised for 50 years. The Museum, will, therefore, be grateful if members will advise them of any molluscan records for the county of Renfrewshire which they may have.

COMPILER'S REQUEST

The Compiler will be grateful for any contributions for future issues of the Newsletter. Articles of about 2 or 3 pages in length are particularly required, but shorter notes and news items will also be welcomed.

IN THE EBB

Even upon the margin of the deep
Life spills her myriad forms before our gaze
In tiny treasures - bright anemonies,
Worms, star-fish, crabs, and little fish that leap
Across the pools. Look how storm waves heap
A fringe of shell along these sandy bays,
And how on golden bladderweed that sways
With rhythmic motion periwinkles creep.

I step from stone to stone, and as I peer
Far into depths of pools inhabited
By swarming ocean creatures, I can hear
Echoes around me of the Voice that said,
Go, have dominion over great and small,
And name all living things that swim or crawl.

Robert Rendall

(From 'Shore Poems', with acknowledgements to the Author)

EXCHANGES

Mr. Ken Fuller, [REDACTED], Nairobi, would like to exchange shells with any member interested. He is in the Comet Fleet with East African Airways and often 'nightstops' London, staying at the Skyways Hotel opposite the Airport. Any correspondents please?

SECRETARY'S NOTES

It is hoped to circulate an up-to-date Membership List with this Newsletter. Certain points have arisen concerning this, and members are asked to make the following amendments to their lists:

CLEEVELY, R.J., No. ●, not No. ●
WHITE, Miss A.R.

CONWAY, M.E., Add 'Mrs'
FRYER, J.D.R. appears incorrectly as
'PRIOR, J.D.R.'

In the supplemental list, HARD, R.L. and WALKER, M.A. are Junior Members.

SUBSCRIPTIONS. The Hon. Treasurer reports with concern that nearly a hundred subscriptions for the current year have not yet been received. Individual reminders, having regard to the Society's financial position, are expensive and should be unnecessary. Please send your subscription to the Treasurer at an early date if you have not done so.

T.E.C.

THE
CONCHOLOGISTS' NEWSLETTER

No. 19

December 1966

Compiled by: P. E. Negus,
[REDACTED],
Chelsea Bridge Road,
London, S.W.1.

Produced by 'The Conchological Society of Great Britain and Ireland'

SECRETARIAL THOUGHTS

In reviewing the Society and its work, it is perhaps true to say that the kind of enthusiasm which leads someone to study a slightly unusual subject such as shells will in most cases lead him to join the society principally dealing with that subject. The more popular your choice of study, the less likely you are to join the relevant society. You can get most of the information you need to maintain an enthusiasm for British Birds, for instance, or Rose Growing, by buying or borrowing a selection of the torrent of books which pours continually from the World's presses, and by talking to your neighbours, who are quite possibly interested in the same subjects. This does not, of course, prevent the national associations dealing with these matters from being very large and powerful, but whereas National Rose Societies, with about a hundred thousand members, may well represent only about ten percent of those seriously interested in the subject, I believe that our own Society, with under four hundred members, probably covers at least ninety percent of British Conchologists - and even then it must be remembered that a third of our membership lives abroad, scattered over the World, and representing practically every nation there is.

Apart from catering for those already interested, any society to remain vigorous must try to create interest, in other words to make 'converts', and this process works in various ways, either through existing individual members or through publicity of one kind or another. Almost every popular article or radio talk on shells, most of them by a member, will bring in a trickle of letters of enquiry; and no doubt some of those who read this may remember their own introduction to the subject as having resulted from an impulse of the kind. Once a preliminary interest has been aroused sufficiently for a letter of enquiry to be written, it is up to the Secretary to sustain it, and to encourage the feeling that the new-found study will be at least as interesting as first impressions suggested. My own powers in this direction are somewhat limited, and in any case one comes to a realisation that not all enquirers are potential (or even desirable) members. Correspondence includes a surprising number of letters from people who wish to know the best way to stick shells on boxes with the object of making money. At one time, when I tried to give helpful answers, I almost decided to get out a leaflet on the subject so as to save time on individual answers, but since I discovered the said answers never once resulted in a note of thanks, I thought it better to devote my flagging energies for our own members.

Aside from sticking shells on boxes, the Society really includes people, both professional and amateur, with an extraordinarily wide range of interests. Rose growers no doubt, understand each other perfectly, but how much is there in common between the specialist in snail-borne tropical diseases and the connoisseur of Japanese shell-carving? Is the man who monographs mesozoic ammonites or he who dissects Patagonian freshwater bivalves well understood by someone else whose principal delight is skin diving for shells, or collecting old illustrated books on the mollusca? The answers are apparently yes, since the Society claims all such types, and many more, as members. The Society itself started with a strictly scientific outlook, and as time went on, this tended to develop into a predominantly professional outlook which has served its 'image' well. Its primary aim is, and must continue to be, scientific, and its reputation continues to depend largely on the quality of the Journal, which prints papers from amateur and professional alike, underlining the point that only in this country is any considerable amount of amateur research done on the mollusca. At the same time the Society is proud to number among its members many people who have no scientific aspirations whatever, but who have joined because of the fascination they feel for the shapes and colours and textures of the odd world of shells - the same fascination which drew who knows how many top-ranking scientists to study the self-same subject.

The Society then, brings together people of the most diverse and specialised

interests possible to imagine, and mixes the professional's love of his work with the amateur's enthusiasm for his chosen hobby. A common interest or a common aim effectively draws people together, and the atmosphere at a typical meeting is proof enough that there must be something in common between most of the members. The point is, that the more you study a facet of a subject the more you need to know about the surrounding facets, and this is where a Society such as ours can really help. Within our scope we represent the other man's - or woman's - point of view.

Meetings - both indoors and out - seem popular these days, and attendance at them has risen more rapidly than the increase in membership. Meetings can provide good value, too, for members living in England, but what about those abroad? It might reasonably be thought that to them we are no more than a publishing society, providing them with a journal. A considerable number of libraries and institutions do indeed subscribe to have the Journal sent to them, but we like to think that our distant members are entitled to more than this, which is one primary reason for launching the Newsletter, and for circulating to all members the extraordinarily useful student papers. Many members however, look on the Society as something more, and do not hesitate to write (at least I hope they don't), if they need information or wish to be put in touch with a specialist. The extent to which this happens may be gauged by the size of my correspondence; I note that apart from formal orders, receipts, etc., this amounted to 344 letters received and 388 written during the first half of 1966. Although much of this is on the Society's business and Council matters, quite a large proportion of it is concerned with members at home or abroad requesting information on some aspect of our subject, offering comments on the literature they receive, or just reporting progress on their own activities. Some of the people who keep in touch in this way, I suppose I shall never meet, and I confess it is occasionally an effort of will to get down to serious letter writing in the evening after a day's work; nevertheless I treasure the correspondence as I feel it has made me some real friends, and I would here like to thank the people who write to me from afar off now and then, and provide a pleasant side to a task which is sometimes exacting, and which has involved me (with the Council of course) in two lawsuits and a lot of contract arrangements of the dullest kind. With the extension of the Society's activities, the work of the Council continuously increases and at times tends to bear rather heavily on some of its voluntary officers. Council meetings sometimes overrun, and people anxious to start the ordinary meeting have occasionally been kept waiting and have wondered what on earth the Council can find to talk about. The only explanation one can give, with an apology to the impatient members, is embodied in the (very terse) annual report, with the assurance that the business which has to be dealt with seems to increase steadily in spite of everybody hoping that things will reach equilibrium. Council has even had to start holding summer meetings, which has never occurred before, and it is supposedly evidence of a thriving and growing organisation that so many things arise to demand attention. One day no doubt, things will simmer down and let us turn our attention more to the shells themselves.

I suppose I should finish, in sending cordial good wishes to all members, by saying that these notes do not necessarily represent anyone's views but mine.

T. E. Crowley

BACK-ISSUES OF THE JOURNAL

Will all members please note that Volume 23, nos. 6 - 7 (the British Non-marine Census number) has now been reprinted by The Johnson Reprint Co. and is available at £ 1. 1. 6d. The same price is now payable for Vol. 25, no. 7, also reprinted. A reduction of 20% is made to members of the Society and orders claiming this reduction should be made through the Hon. Sec.

Back issues of the Journal, Vol. 24 and earlier, are now being handled by the same company and cost 7/6d. per number, with a reduction to members of 10%. Numbers in Vol. 25 (except 2 and 7) cost £1 each to the public and 10/- to members. Orders should be made through the Hon. Sec.

The Johnson Reprint Co. are reprinting some of the very early volumes of the Journal and will probably continue to do so if the demand justifies it. Details are available from the Company at:- Berkeley Square House, London, W.1.

I am sorry the position is so complex, but it seems unavoidable at the present stage. Will members likely to need back issues please make a note of the arrangements.

T.E.C.

SHELL COLLECTING IN THE LIMESTONE CAVES OF BORNEO

In Sabah (North Borneo), limestone occurs in isolated outcrops, some forming hills and cliffs, others embedded in the mountain ranges. These outcrops are often widely separated and tend to develop individual species especially in the Families of tiny limestone-dwellers which include *Opisthostoma* and *Hydrocena*.

Most of the caves are difficult of access and some of them are estimated to house as many as a million of the small swifts whose nests, made from inspissated saliva, have for centuries been exported to China for the preparation of that expensive delicacy "Birds' Nest Soup". These caves are communally owned by native groups occupying nearby villages. The collection and sale of the nests is strictly controlled and visitors are not allowed during the collecting seasons when the men must climb frail bamboo ladders and poles to reach the cave domes, sometimes several hundred feet high, from which the nests must be dislodged.

In most of these caves, as many bats as birds make their homes and at dusk the foraging bats and returning swifts fill the air for the "rush-hour" of their two-way traffic. Their accumulated droppings form rich deposits of guano, many feet thick, below the nesting-places and give off a very powerful stench. Guano is collected from some of the caves, such as those at Niah, in Sarawak where the sacks have only to be carried for about two-and-a-half miles over a track of logs laid over trestles through swamp-jungle to the river. But in most cases the caves are too remote to make guano-collecting a practicable occupation so it just goes on piling up.

The first caves I was able to visit were the well-known group at Gomantong on the East Coast of Sabah some twenty miles to the south of Sandakan. Gomantong is an isolated hill of limestone about half-a-mile long and 700 ft. high, with a sheer cliff-face, riddled from bottom to top with a vast complex of passages and caves. To reach it one must first make a ten-mile crossing of the Bay from Sandakan. This can be done in an hour or so by speedboat if the weather is favourable but is a rather chancy procedure because Sandakan Bay is like a small inland sea, a hundred square miles of water with an outlet less than a mile wide. The tide race, plus a tropical storm which can arrive unheralded from a clear blue sky, may make the return journey hazardous if not impossible. So it is desirable to take a sturdy launch if one wishes to be sure of returning on the same day.

The landing place is a couple of miles up a small river and from there, until recently, one had to continue on foot for some eight miles to the Caves. This part of the trip is now much easier in dry weather as an earth road has been constructed and the Native Chief of the District has acquired a Land Rover which may be available provided the battery is not flat. The earth road winds through timber workings and virgin forest, crossed and re-crossed by the tracks of elephant who seem to like to congregate on the road-trace during the cool hours of the night. I was never early enough to catch a glimpse of them though their footprints might still hold water not yet dried out by the sun.

At the end of the track is the wooden shack which is the warehouse and temporary sleeping quarters of the nest collectors, raised on piles and thatched with palm leaf. It is not advisable to sit anywhere except on the ladder-steps because the whole place is hopping with the fleas which inhabit the nests and are inevitably carried in with them.

Behind rises the sheer face of the cliff, silvery limestone gleaming through its veil of forest trees and creepers. The largest cave is at the bottom, only half-a-mile along a damp and narrow path where leeches lie in wait, as I discovered to my cost the first time I went through and had to pull off no less than twenty-seven of them (all but one before they had got a good hold!).

This cave is Simud Hitam, which means "Black Mouth" and higher up is a series of caves called Simud Puteh "White Mouth". The names are believed to refer to the different types of swifts which nest exclusively in one or the other. Among the

stones and rubble on the sloping floor of Simud Hitam, wherever chimneys or vents let in some daylight, were many landshells, particularly species of *Pterocyclus* and *Alycaeus* which appeared in large numbers, but it was on the path up to Simud Puteh that I first saw a live *Opisthostoma mirabilis*, that truly fabulous tiny mollusc whose shell must surely be the most fantastically elaborated of all. I had sat down on one of the rocks which form this steep and slippery track, to catch my breath for a moment, and there he was, clinging to the moist underside of a boulder right beside me. Compared with the physical pleasures of marine collecting, this chasing of land shells is certainly "doing it the hard way"; but from that very moment, I was resigned. *Opisthostoma hailei* was also found at Gomantong, but dead specimens only; live ones we found later, in quite another district.

The next cave, first visited in 1963, was a much smaller one only a few miles by road from Lahad Datu on Darvel Bay (also on the East Coast of Sabah). It is entered by a sort of "hole in the ground" only a few yards from the roadside and is particularly interesting because it has been recently "re-discovered" while secondary jungle was being cleared for the planting of oil-palm. I say re-discovered because the relics of ancient "boat burials" prove that it was known to the local people of long ago. Here we were able to spend more time and there were more eyes for the search, for my husband was there, also our two children who were out from school in England for their summer holiday with us and not at all pleased to be dragged away from the marvellous islands and reefs and the Pearl-Culture station on the Bohaydulong lagoon, where we had been staying.

Collecting such tiny shells (1-3 mm.) alive is not an easy task. The light is dim and often flickering with the movement of leaves; the rocks are damp and slippery and one has to cling to the ledges and crevices while holding both a collecting vial and a Chinese paintbrush, which we have found to be much the best implement for dislodging the delicate creatures without damage. (The Chinese brush, set in a bamboo holder, is very finely pointed and flexible, yet much firmer than the "western" type).

Most *Opisthostoma* species, and all the *Hydrocena* species we have found were living on the rock faces in places where there was some shade, some daylight, moisture seeping down consistently and small moss-like plants and lichens growing. At the Lahad Datu Cave we found *Opisthostoma crespigny*, *Hydrocena williamsi* and a new species *H. scalinella* (van Benthem Jutting 1965, *Journal of Conchology* 26:39-41).

Mid '64 we moved to the Interior Residency, to Keningau, and although it was frustrating not to be allowed, due to "Confrontation", to visit caves near the Indonesian border, it was possible to make two expeditions to a limestone outcrop which is embedded in the Crocker Range mountains to the west of Keningau Plain.

From Keningau there is an earth road to the North which goes for fourteen miles as straight as a die across the Plain... the only straight road I know of anywhere in this mountainous land. At the ninth mile one takes a rough track to the west and can drive by truck or Jeep to the foothills of the mountains. At the end of the track a narrow footpath winds steeply upward through the forest, skirting the shoulders of the ridges. Local men bound up and down like chamoix but I am content to negotiate the steepest bits on all fours, thankful that, on a forest track, there is always something to cling onto ... a root, a branch, a jutting piece of rock ... and that sheer drops on either hand are mercifully screened by the thickness of the vegetation. After some two-and-a-half miles of this, one quite suddenly rounds a huge sandstone boulder and plunges straight into a deep gorge of limestone. The caves are only a short way down and as we stopped right there, we never did discover just how far the limestone extends.

In these caves we found *Opisthostoma hailei* Solem, the first live-collected specimens I believe. It was interesting to note that this species, unlike the other *Opisthostoma* does not appear to live on the rock faces, but were found on damp leaves, twigs and debris in the crevices of the rocks. Among the debris were also many tiny *Diplomatina gomantonensis*. On the rock was another new species of *Hydrocena*, *H. saulae* (van Benthem Jutting 1965, *Journal of Conchology* 26: 39-41).

In June of this year, while working in the Sarawak Museum, I was able to make a short trip to a range of limestone hills and visit a cave at Janbusan near Bau some twenty miles from Kuching. Several members of the Museum staff accompanied me and in less than two hours we collected twenty-five species including

Opisthostoma everetti, O. austeni, O. busauense and a species of Hydrocena which is not yet identified. We were lucky to be able to visit this area which is near the Indonesian border and has been restricted until recently.

Below I append a list of some of the species found in the areas described. For these identifications I am mainly indebted to Mrs. W. S. S. van Benthem Jutting, to whom my most grateful thanks.

<i>Alycaeus congener</i> (Smith) B.	<i>Alycaeus fultoni</i> (Mollf.) G.
<i>Alycaeus fultoni</i> var. <i>degenerens</i> (Fulton) G.K.	
<i>Alycaeus globosus</i> (Ads.) B.	<i>Alycaeus</i> cf. <i>rechilansis</i> (Austen) L.
<i>Amphidromus martensi</i> (Bttgr.) G.L.	<i>Bradybaena similis</i> (Ferussac) L.
<i>Chamalycaeus everetti</i> (God. Aust.) G.	<i>Chloritis kinabalensis</i> (Kobelt) L.
<i>Coneuplecta microconus</i> (Mouss) G.K.B.	<i>Cyclophorus</i> cf. <i>metcalf</i> (Issel) G.
<i>Cyclophorus perdix borneensis</i> (Metc.) B.	<i>Diplomatina gomantonensis</i> (Smith) K.
<i>Dyakia hugonis</i> (Pfr.) L.	<i>Dyakia regalis</i> (Benson) B.
<i>Eurybasis alexis</i> (Smith) K.	<i>Eurybasis whiteheadi</i> (Smith) G.L.
<i>Gastroptychia adversa</i> (H & A Adams) B.	<i>Helicarion rugosus</i> (Fulton) K.
<i>Helicina martensi</i> (Issel) G.	<i>Hemiplecta densa</i> (Ads.) B.
<i>Hemiplecta humphreysiana</i> (Lea) G.	<i>Hemiplecta schumacheriana</i> (Pfr.) G.K.L.
<i>Huttonella bicolor</i> (Hutton) K.	<i>Hydrocena saulae</i> (van Benthem Jutting) K.
<i>Hydrocena scalinella</i> (van Benthem Jutting) L.	
<i>Hydrocena williamsi</i> (God. Aust.) L.	<i>Lagocheilus barbatum</i> (Pfr.) B.
<i>Lagocheilus conicus</i> (Smith) K.	<i>Lagocheilus jucundus</i> (Smith) L.
<i>Lagocheilus keppeli</i> (God. Aust.) G.	<i>Lamellaxis clavulinus</i> (Pot. & Mich.)
<i>Lamellaxis gracilis</i> (Hutton) B.	<i>Landouris</i> cf. <i>winteriana</i> (Pfr.) G.
<i>Leptopoma nitidum</i> (Sow.) G.L.	<i>Leptopoma sericatum</i> (Pfr.) L.
<i>Leptopoma signatum</i> (Pfr.) L.	<i>Leptopoma</i> cf. <i>undatum</i> (Met.) G.L.
<i>Liardetia angulata</i> (Issel) G.	<i>Liardetia busauensis</i> (Smith) K.
<i>Liardetia indifferens</i> (Bttgr.) G.	<i>Liardetia moluensis</i> (Smith) K.
<i>Microcystina gratilla</i> (van Ben. Jutt.) K.	
<i>Opisthoporus biciliatus</i> (Mouss.) B.	<i>Opisthoporus iris</i> (Aust.) L.K.B.
<i>Opisthoporus rostellatus</i> (Pfr.) B.	<i>Opisthostoma austeni</i> (Smith) B.
<i>Opisthostoma busauense</i> (Smith) B.	<i>Opisthostoma crespigny</i> (Ads.) L.
<i>Opisthostoma everetti</i> (Smith) B.	<i>Opisthostoma hailei</i> (Solem) K.
<i>Opisthostoma mirabilis</i> (Smith) G.	<i>Paludromus latens</i> (Ads.) L.
<i>Philalanka carinigera</i> (Tap. Can.) G.K.	<i>Pupina</i> cf. <i>artata</i> (Benson) G.L.
<i>Pupisoma orcula</i> (Benson) K.	<i>Pterocyclus brevis</i> (Mont.) G.
<i>Pterocyclus latilabrum</i> (Smith) G.L.K.	<i>Rhinocolchis nasuta</i> (Met.) B.
<i>Subulina octona</i> (Brug.) G.L.	<i>Sulfurina martensi</i> (Issel) K.
<i>Trochomorpha bicolor</i> (Mts.) L.	<i>Trochomorpha crassicarinata</i> (Fulton) G.L.
<i>Trochomorpha frogatti</i> (Iredale) K.B.	<i>Trochomorpha planorbis</i> (Less.) G.L.
<i>Xestina belangeri</i> (Desh.) L.K.	

Capital letters following names indicate the localities:

G - Gomantong (Sabah); L - Lahad Datu (Sabah); K - Keningau (Sabah);
B - Bau (Sarawak).

MARY SAUL

VENUS (MERCENARIA) MERCENARIA L. AT BUTLEY CREEK, SUFFOLK

Whilst collecting molluscs near the oyster tank at Gedgrave on Butley Creek in the middle of July this year I came across several dead shells of Venus mercenaria L. at low water and collected 5 examples. An hour later in Orford, I noticed a bowl containing live shells in the fishmonger's shop. I assumed that they lived in the tidal waters locally.

However, on enquiry, I found that Mr. Richard Pinney, who owned the shop and oyster beds, was supplied with live mercenaria L. by a dealer in the Isle of Wight. These he kept in his oyster tank near Gedgrave till required at the shop. I asked him if he was trying to establish a breeding colony, he said he was not. Even so there is always the possibility that the species may do so of its own accord.

Mr. Pinney imports oyster spat from Portugal for his oyster beds (which I was not able to visit) so there is also the possibility of species not native to British waters turning up in this area. Conchologists collecting hereabouts should keep an eye open for introduced species as well as checking on mercenaria to see if it has succeeded in colonising the locality.

H. E. J. Biggs

FIELD MEETING TO WARRINGTON, LANCASHIRE, 7th. MAY 1966

Leader:- G. Whitfield

Mr. Gary Whitfield, a junior member of the Society, led an excursion in search of Lymnaea glabra (Müller) which he had recently taken. Three members met him at the gate of Warrington cemetery, and were conducted to a field behind the cemetery. Here the following species were found:

<u>Discus rotundatus</u> (Müller)	<u>Arion intermedius</u> Normand
<u>A. subfuscus</u> (Draparnaud)	<u>Oxychilus cellarius</u> (Müller)
<u>O. alliarius</u> (Miller)	<u>Retinella radiatula</u> (Alder)
<u>Agriolimax reticulatus</u> (Müller)	

Following the path through the field a stagnant ditch was reached, in which L. glabra was found in considerable numbers. It was pleasing to see this species in such a flourishing state; with the exception of the leader none of the party had previously seen it living, although some had sought it for many years. It was accompanied by L. palustris (Müller) and Planorbis leucostoma Millet.

Further across the field was a flowing stream, and in it were taken:

<u>Physa</u> sp.	<u>Lymnaea peregra</u> (Müller)
<u>Sphaerium lacustre</u> (Müller)	<u>Pisidium subtruncatum</u> Malm (determined by Mr. A. W. Stelfox)

FIELD MEETING TO PENDLETON, LANCASHIRE, 21st. MAY 1966

Leader:- Marjorie Fogan

Four members, one junior member and one friend met at Pendleton Station, and after some difficulty succeeded in obtaining access to the towpath of the Manchester, Bolton and Bury canal. This canal is disused and is now divided into two widely separated lengths. The Radcliffe portion was examined on 3rd. July 1965. The Pendleton section is cleaner than the other and is in fair condition despite a certain amount of tipping of rubbish.

The canal was first examined near Pendleton Station (O.S. 3389) and the following species were taken:

<u>Valvata piscinalis</u> (Müller) dead shells only	
<u>Bithynia tentaculata</u> (L.)	<u>Lymnaea stagnalis</u> (L.)
<u>L. auricularia</u> (L.)	<u>L. peregra</u> (Müller)
<u>Planorbis corneus</u> (L.)	<u>Planorbis carinatus</u> Müller

<u>P. vortex</u> (L.)	<u>P. albus</u> Muller
<u>Anodonta anatina</u> (L.) dead shells only	<u>Sphaerium corneum</u> (L.)
<u>S. transversum</u> (Say) dead shells only	<u>S. lacustre</u> (Muller)
<u>Pisidium henslowanum</u> (Sheppard) determined by Mr. A. W. Stelfox	

It was disappointing that S. transversum could not be found living, as I had taken it here in 1965.

The party then proceeded in the direction of Agecroft (O.S. 3480) where the following species were obtained:

<u>B. tentaculata</u>	<u>L. stagnalis</u>
<u>L. auricularia</u>	<u>L. peregra</u>
<u>P. carinatus</u>	<u>P. vortex</u>
<u>P. albus</u>	<u>Planorbis crista</u> (L.)
<u>Segmentina complanata</u> (L.)	<u>S. corneum</u>
<u>S. lacustre</u>	<u>P. henslowanum</u>

FIELD MEETING TO EARLESTOWN, NEAR NEWTON-LE-WILLOWS,
LANCASHIRE, 23rd. JULY 1966

Leader:- J. H. Cooper-Poole

Five members met on 23rd. July to continue the study of the molluscan fauna of the canals in the Manchester area. A stretch of about a mile of the St. Helens canal westwards from the swing bridge and lock at Grid Ref. 566948 was examined as well as a stretch of a few hundred yards to the east of that point. This canal is disused and badly overgrown.

The following species were taken:-

<u>Potamopyrgus jenkinsi</u> (E. A. Smith) (living, scarce)	
<u>Bithynia tentaculata</u> (L.)	<u>Lymnaea peregra</u> (Muller) frequent
<u>L. stagnalis</u> (L.) large, frequent	<u>L. auricularia</u> (L.) one or two
<u>Planorbis carniatus</u> Muller	<u>P. vortex</u> (L.)
<u>P. albus</u> Muller three	<u>Sphaerium corneum</u> (L.) fairly plentiful
<u>S. lacustre</u> (Muller) one	<u>Pisidium</u> sp.

The waste ground beside the canal yielded:-

<u>Retinella radiatula</u> (Alder)	<u>Arion circumscriptus</u>
<u>A. hortensis</u> Ferussac	<u>A. ater</u> agg.
<u>Agriolimax reticulatus</u> Muller	

FIELD MEETING TO SHROPSHIRE UNION CANAL, NR. CHESTER,
20th. AUGUST 1966

Leader:- J. O'N. Millott

Five members, one junior member and one visitor met in Chester and proceeded to the bridge where the A41 Chester - Birkenhead Road crosses the Wirral section of the Shropshire Union Canal, south of Backford. Examinations were made of the molluscan fauna of the canal and of the grass verges and hedgerows bordering the canal for some distance both to the east and west of the bridge. In contrast to some sections of the Shropshire Union Canal at the present time aquatic mollusca were plentiful. It was noted that there appeared to be a scarcity of Pisidium spp.; one dead valve only was found. The following species were obtained:-

East of Bridge (O.S. 3347)

Canal

Viviparus viviparus (L.)
Valvata piscinalis (Muller)
Bithynia tentaculata (L.)
Bithynia leachi (Sheppard)
Lymnaea stagnalis (L.)
Lymnaea auricularia (L.)
Lymnaea peregra (Muller)
Physa fontinalis (L.)
Physa heterostropha Say

Planorbarius corneus (L.)
Planorbis carinatus Muller
Planorbis albus Muller
Ancylus fluviatilis Muller
Succinea pfeifferi Rossmässler
Anodonta anatina (L.)
Sphaerium rivicola (Lamarck)
Sphaerium corneum (L.)

Grass verge and hedgerow

Cochlicopa sp.
Hygromia hispida (L.)
Discus rotundatus (Muller)

Arion ater agg.
Arion hortensis Ferussac
Agriolimax reticulatus Muller
Oxychilus alliarius (Miller)

West of Bridge (O.S. 3337)

Canal

Viviparus viviparus (L.)
Valvata piscinalis (Muller)
Bithynia tentaculata (L.)
Bithynia leachi (Sheppard)
Lymnaea stagnalis (L.)
Lymnaea peregra (Muller)
Physa fontinalis (L.)

Physa heterostropha Say
Planorbarius corneus (L.)
Planorbis vortex (L.)
Planorbis albus Muller
Ancylus fluviatilis Muller
Sphaerium corneum (L.)

Grass verge and hedgerow

Cochlicopa sp.
Helix nemoralis L.
Helix aspersa Muller
Hygromia hispida (L.)

Discus rotundatus (Muller)
Arion ater agg.
Retinella nitidula (Draparnaud)
Agriolimax laevis (Muller)

ANNOUNCEMENTS & NOTES

"COMMUNICATION IN THE BIOLOGICAL SCIENCES"

With the support of the Biology Group of Aslib and the Biological Council, the Institute of Biology is arranging a conference on "Communication in the Biological Sciences" on 14th. and 15th. December 1966. The aim is to enable librarians, editors and research biologists to discuss the problems of information exchange and to express views which can help those responsible for the provision of various services. A programme is obtainable from the Institute of Biology, 41 Queen's Gate, London, S.W.7.

EXCHANGES WANTED Mrs. Lorna Harmer of [REDACTED], Croydon Park, South Australia is keen to make contact with members who would like to exchange shells. She has many interesting and attractive specimens to offer, fully labelled and mostly 'live' shells. List sent on request. Any correspondents please?

WANTED Mr. C. H. Williamson of [REDACTED], Polperro, Cornwall, writes - "I wish to obtain one thousand full grown specimens of LEPAS ANATIFERA (only the shell-bearing section) for which, of course, I am prepared to pay. Failing that could any

member advise me of any place in the world to which I may write and obtain a supply of Lepas, for I feel sure that in some areas the Lepas must be as common as our own native mussel."

CHANGE OF ADDRESS Mr. John Q. Burch writes that his address is now -
[REDACTED], Seal Beach, California 90740, U.S.A.

FOR SALE A Beck Microscope, late 19th. Century, many objectives, modest price asked. Anyone interested please write to Rev. H. E. J. Biggs, [REDACTED], Bromley, Kent.

THE COMPILER wishes to thank members who have sent in reports, notes and various other items. Please accept this as a general acknowledgement - it will save the Society's postage bill!

PAPERS FOR STUDENTS

No. 1.	"Introducing Junior Membership" (H. E. J. Biggs)	3 pages	Free
No. 2.	"Collecting Non-Marine Mollusca" (L. W. Stratton)	3 "	6d.
No. 3.	"Key to Land Shells of Great Britain" (A. E. Ellis)	9 "	2/-
No. 4.	"A Short Glossary of Molluscan Terms" (T. Pain)	9 "	2/-
No. 5.	"Preparation of the Radula" (D. Claughner)	8 " (Illus.)	2/-
No. 6.	"Post-Pliocene Fossil Mollusca (Land and Freshwater)" (P. Cambridge)	8 "	2/-
No. 7.	"Literature on British Molluscs" (S. M. Turk)	14 "	2/6d.

Whilst supplies last, these papers can be obtained from Rev. H. E. J. Biggs (Editor), [REDACTED], Bromley, Kent. The prices include postage. Cheques or Postal Orders should accompany order and be made in favour of the Society; to save time and expense to the Society, the receipt of the paper or papers ordered should be considered as acknowledgement of the payment.

A DISPLAY OF LAND AND FRESHWATER SHELLS OF THE ISLE OF WIGHT

by B. M. Thistleton (Junior Member)

For the past five or six years, during the month of August, the Isle of Wight Natural History and Archaeological Society have put on an exhibition at Brook, Isle of Wight. The exhibition is called "Local Look" and the displays are designed to show some of the natural history of the Island. This year I was asked by the society to put on display a collection of Isle of Wight land and freshwater shells.

The display consisted of three large panels (2'6" by 4'0"), hinged together to form a small bay, on which the shells, mounted in transparent plastic boxes, were stuck. The shells were arranged in the habitats in which they are found on the Island. It was stressed in the introduction that many species are of course found in more than one habitat, and that in the display each species was placed in the one in which it most typically occurs in the Island.

The following is a list of the species in the categories in which they were placed:-

LAND MOLLUSCS

1. CALCIFUGES (SPECIES THAT DO NOT LIKE CHALK)

Zonitoides excavatus (Alder)

2. CALCICOLES (SPECIES THAT NEED CHALK)

A. Downland Species

Helicella virgata (da Costa)
Cochlicella acuta (Müller)
Abida secale (Draparnaud)

Helicella caperata (Montagu)
Pupilla muscorum (Linne)

B. Species of Woods and Hedges

Helix aspersa Müller
Cepaea hortensis (Müller)
Hygromia striolata (C. Pfeiffer)
Helicigona lapicida (Linne)
Ena obscura (Müller)
Vallonia pulchella (Müller)
Lauria cylindracea (da Costa)
Carychium tridentatum (Risso)

Cepaea nemoralis (Linne)
Monacha cantiana (Montagu)
Hygromia hispida (Linne)
Marpessa laminata (Montagu)
Acanthinula aculeata (Müller)
Vallonia costata (Müller)
Pyramidula rupestris (Draparnaud)
Pomatias elegans (Müller)

3. SPECIES INDIFFERENT TO CHALK

A. Species of Woods and Hedges

Arianta arbustorum (Linne)
Discus rotundatus (Müller)
Oxychilus alliarius (Miller)
Euconulus fulvus (Müller)
Cochlicopa lubrica (Müller)

Vitrina pellucida (Müller)
Oxychilus cellarius (Müller)
Retinella nitidula (Draparnaud)
Clausilia bidentata (Strom)
Cochlicopa minima (Siemaschko)

B. Water Loving Species (Hygrophiles)

Zonitoides nitidus (Müller)

FRESHWATER MOLLUSCS

1. SPECIES FOUND IN PONDS AND RIVERS

Potamopyrgus jenkinsi (E. A. Smith)
Lymnaea truncatula (Müller)
Planorbis albus Müller
Pisidium casertanum (Poli)

Lymnaea peregra (Müller)
Planorbis carinatus (Müller)
Sphaerium corneum (Linne)

2. SPECIES FOUND IN PONDS ONLY

Lymnaea stagnalis (Linne)
Planorbarius corneus (Linne)
Planorbis leucostoma Millet

Lymnaea palustris (Müller)
Planorbis crista (Linne)
Acroloxus lacustris (Linne)

3. SPECIES FOUND IN RIVERS ONLY

Valvata piscinalis (Müller)
Lymnaea auricularia (Linne)
Anodonta anatina (Linne)

Physa fontinalis (Linne)
Ancylus fluviatilis Müller
Pisidium amnicum (Müller)

References: BOYCOTT, A.E., 1934. The habitats of land Mollusca in Britain.
Journal of Ecology, 22 (1):1-38.
BOYCOTT, A.E., 1936. The habitats of freshwater Mollusca in Britain.
Journal of Animal Ecology, 5 (1):116-186.

CHRISTMAS 1966

The Compiler sends cordial Greetings and Good Wishes to every reader.

No. 20

Compiled by: P. E. Negus,
[REDACTED],
Chelsea Bridge Road,
London, S.W.1.

March 1967

Produced by 'The Conchological Society of Great Britain and Ireland'

10 KILOMETRE SQUARE MAPPING SCHEME FOR NON-MARINE MOLLUSCA

The last year has seen a most encouraging increase in the number of people actively working on the mapping scheme. A map showing the present state of recording is included with this Newsletter. New editions of this map will in future appear regularly in the Newsletter, so as to avoid unnecessary duplication of work and draw attention to the blanks. More helpers are still needed. I will gladly send further information on request, including lists of species already known from particular squares.

Some hints on covering a 10 kilometre square

As the scheme progresses it is becoming apparent that certain species tend to be under-recorded, and that unless special efforts are made to overcome this tendency a distorted idea of their distribution in Britain may result. For example, Punctum pygmaeum is in reality a very common and widespread species, which probably lives in more 10 kilometre squares than, for example, does Helix aspersa, H. nemoralis or Discus rotundatus. But owing to its minute size, and the difficulty of detecting it by eye in the field, it is very frequently overlooked. The notes below draw attention to certain categories of molluscs which, for one reason or another, tend to be under-recorded.

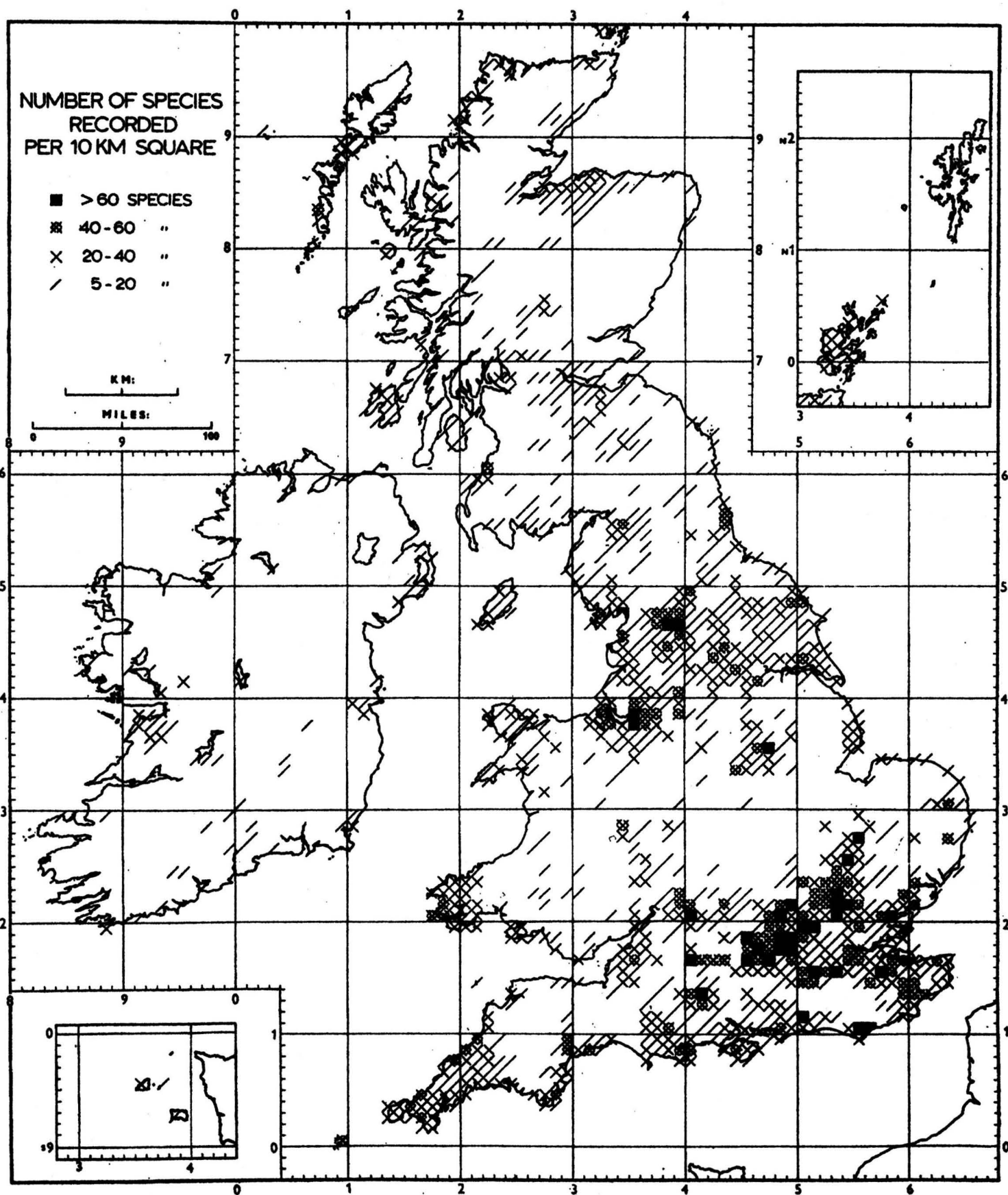
1. Species overlooked due to their small size: This category includes many woodland snails, such as Punctum, Acanthinula, Acicula and Vertigo. The most efficient way to find these is to use a sieve, in which leaves, twigs and moss can be shaken, and the fine material which falls through can be taken away for more careful examination at home. I have found that a mesh of about 2.0 to 2.5 mm. square is the most useful in practice. Many collectors use a 'sieve-bag', such as is illustrated by Janus (Molluscs, Burke & Co., London, 1965, p.35) and which can easily be made up for a few shillings. The use of some such tool is almost indispensable for finding minute land snails, enabling them to be recovered often in quite astonishing numbers. Of course, if the leaf-litter is too damp the method will not work in the field, and bags of litter must be taken away for sieving at home.

Curiously enough, Carychium seems to be spotted easily enough by most collectors, probably because of its conspicuous whiteness in contrast to the brown colour of most of the other minute species.

Among the freshwater species, the small Planorbis crista tends to be missed.

2. Difficulties of identification: This applies particularly to the segregates of Carychium, Cochlicopa, Vallonia and Vitrea, which are not adequately described in British manuals and with which many conchologists are therefore unfamiliar. Pisidium is similarly often ignored, and here the smallness of most of the species presents an additional difficulty. I should be very glad to identify any such material sent to me. In the case of Pisidium, the shells may be prepared for examination by heating for a few minutes in a 3% to 5% solution of caustic potash (or caustic soda), which destroys the soft parts and ligament. The shells should afterwards be washed in clean water. Do not heat too long or too vigorously, otherwise the periostracum will also be destroyed and even the shell itself may be attacked. An alternative method of preparation, gentler but equally effective, is first to kill the animals in boiling water, and then allow them to rot in a little water in a tube for two or three weeks. The shells should be well-washed in clean water and dried on a sheet of blotting paper.

3. Overlooked habitats: (a) I find that marshy places tend to be poorly investigated - for reasons which are perhaps obvious! Old clothes and Wellingtons are of course desirable. It is marsh habitats which are most in



Map showing the number of species of land and freshwater Mollusca recorded to January 1967 for each 10 kilometre square of the British National Grid (post-1950 records only)

danger of being destroyed at the present time, and it would be a pity if their faunas were neglected (Carychium minimum, Succinea spp., Vertigo spp., Vallonia pulchella, Zonitoides nitidus, Agriolimax laevis, etc.). A good idea of the faunas of such places may sometimes be gained by taking away bags of flood-refuse for examination at home. An entomologist's sweep-net can also be useful for sweeping through beds of rushes for Vertigo.

(b) The tree-living and rock-living species Balea perversa and Limax (Lehmanna) marginatus are often missed. The latter is admittedly often hard to find in southern and eastern England, having the knack of insinuating itself deep in crevices and only coming forth to feed at night, or in still, humid weather. The same applies to Helicigona lapicida, though dead shells can usually be picked up in its habitats.

(c) The garden and rubbish-tip habitat is often ignored (Milax spp., Limax flavus, Oxychilus draparnaldi, etc.).

(d) In 10 kilometre squares along the coast the brackish-water species are sometimes forgotten (Phytia myosotis, Hydrobia spp., etc.).

Untraced Records

The original localities on which are based the vice-comital records for about fifty of our more local British species have now been extracted from the Society's Census notebooks and incorporated in the mapping scheme. However, there remain a few records published in the 1951 Census (J. Conch. 23: 171-244) for which I have been unable to account. Most are given as 'unconfirmed'. I should be most grateful to anyone who may be able to tell me their source, perhaps in publications unknown to me (underlined records are given as 'confirmed' in the 1951 Census, the remainder as 'unconfirmed'):

Viviparus viviparus, 28, 60; Acicula fusca, 1 (Jeffreys (British Conchology, 1 (1862): 308) merely says 'the extremity of Cornwall'), 25, 46, H23 (132), H32 (117); Lymnaea glutinosa, 1, 25, 26, 37, 70; Segmentina nitida, 25, 36; Truncatellina cylindrica, 16, H38 (115), H39 (114); Vertigo pusilla, 3; Vertigo moulinsiana, 32; Vertigo angustior, 26; Clausilia rolphe, 4, 18; Laciniaria biplicata, 12; Helicella gigaxi, 39, 45, 81; Cochlicella acuta, 72, H32 (117), H37 (116); Milax budapestensis, 11.

M. P. Kerney,
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London, S.W.7.

CONKERS AND CONCHOLOGY

The view of Carshalton Park from our front windows includes some venerable Spanish chestnut trees (Castanea sativa) and also an avenue of horse chestnut trees (Aesculus hippocastanum) flanking one of the numerous sources of the river Wandle. In October schoolboys expend much time and energy in hurling sticks up into the horse chestnut trees to dislodge the prickly capsules containing the polished mahogany "nuts" (strictly seeds) in order to obtain ammunition for the time-honoured game of "conkers." Once the proud proprietor of a "ninety niner," it is now, alas, well over half a century since I participated in this ancient pastime, the name of which was assumed to be a corruption of the verb conquer. This facile etymology would seem, however, to be erroneous. Before the introduction into England in the early 17th. Century of horse chestnut trees, native in Macedonia and Albania (not Asia, as the French marron d'Inde implies), conkers used to be played with snail shells (not always vacant), so the derivation is presumably from concha. The original meaning of this word in Greek was a mussel or other bivalve shell, but in its latinised form the meaning was broadened to include gastropods such as whelks, murex and snails, in which sense it became anglicised as conche or conch. Accordingly conkers and conchology share a common ancestor. For the history of the word conchology see "Shell Collecting" by S. P. Dance, p. 270. The President might fittingly commemorate this affinity by challenging all comers to a conker contest at the October meeting of the Conchological Society.

If one may be permitted a relevant digression: the name horse chestnut is a translation of the Turkish atkestanesi, compounded of at=horse and kestane,

from Gk. kastanea, kastanos or kastanon (Lat. castanea) =chestnut tree, said by Pierandrea Mattioli (1557) to be so called because the "nuts" were used as a cure for broken wind in horses. One speculates as to how they were administered, as horses (and pigs) refuse them, though they are eaten by deer and cattle; conkers no longer find a place in the equine pharmacopoeia. Hippocastanum, first used by Tournefort, has of course the same significance. Aesculus in the Georgics is a kind of oak: botanical names are not infrequently applied in a different sense from classical usage.

A. E. Ellis

SOME COLLECTING EXPERIENCES IN BRITISH GUIANA

"The malacologist who visits the tropics for the first time expects to be overloaded with material, but if he must restrict his researches to the lowlands he is usually quite disappointed. In the moist forests there are but few large and showy forms, the remainder being never numerous in individuals and quite well hidden. In the open savanna country the rank and dense grass renders researches still more tedious in the wet season, while during drought most species are aestivating deep in the ground or in crevices of rocks or trees. Ecological conditions are evidently quite uniform in the tropical lowlands over large areas; furthermore, certain factors, such as the extensive flooding of the forest near the banks of the rivers and the scarcity of lime in the soil, are decidedly adverse to terrestrial snail life. The mountains however are malacologically much richer, especially where they are covered with dense forests; not only are the rocks more varied, but altitude produces a series of life zones, while the exposure of the slopes further modifies environmental conditions." Thus wrote Dr. J. C. Bequaert in 1925, after his return from a collecting trip to N. E. Brazil and it was also the experience of the writer during the course of the 1938 Expedition to Mt. Rorima in British Guiana (now, of course, Guyana).

In common with R. H. Schomburgk, a German Botanist employed by the British Government, who travelled in Guiana from 1835 to 1839 and who was probably the first traveller to collect mollusca there systematically, subsequent visitors have landed at Georgetown, the capital, a city built on the mud-banks of the estuary of the Demerara River. Not a very likely place for snails one would think, but in point of fact, more species can be found within the city boundaries in a few hours, than can be discovered in the vast rain forest beyond it, in as many days. Both land and freshwater mollusca occur there in most unexpected and unlikely places. The garden of an hotel near the city centre produced Pomacea (Effusa) glauca, in the basin of a fountain, in considerable numbers, and a visit to this spot after dark found the snails engaged in depositing clusters of green eggs, about the size of a small pea, on the stems of plants just above the level of the water. In crevices of the surrounding walls and beneath stones where they were aestivating a number of land shells occurred in fair abundance, these included Subulina octona, Opeas gracile, Bulinulus tenuissimus, and a species of Succinea. A foul and evil-smelling canal a few hundred yards away contained a vast population of Pomacea doiloides, the principle food of the snail-hawk or everglade Kite, Rostrhamus sociabilis. I have many times watched this bird extract the mollusc from the shell, which it secures in the claws of one foot. The hawk then perches on one foot and with the other quietly holds the snail in such a manner that it can emerge from the shell. The bird makes no attempt whatever to extract it by force, but watches for the voluntary extension of the animal beyond the aperture of the shell. With that propitious moment comes the next step in the drama. Quick as a flash the hawk's bill pierces the snail apparently behind the operculum. It happens so rapidly that one is not able to follow the operation clearly. As a step further the snail, now spiked upon the beak, is instantly pushed up to the middle of the upper bill. Then begins a second wait. Gradually the mollusc's muscles relax. A few minutes later the snail-hawk vigorously shakes its head and before even the light, empty shell has reached the ground Rostrhamus has swallowed its victim, operculum and all. A thousand or more empty shells have been collected below the habitual perching trees of these birds; these shells are not usually in the least damaged, but the corneous operculum is always missing.

A visit to the Botanical Gardens in the evening or early morning would nearly always produce examples of the large snail Strophocheilus oblongus, a

species confined to the cultivated coastal region and never found in the forest. It may well have originally been introduced by man. Food markets are always worth a visit in any South American town, and that at Georgetown was no exception. A freshwater mussel, Prisodon latialata was offered for sale there as a remedy for eye sores; the pearly inside of the shell being scraped off and mixed with water.

By far the greater part of the interior of British Guiana is covered by a vast forest of the moist tropical evergreen type, through which those who wish to reach the far interior must travel for many days, by water or on foot, since roads are non-existent. The chief characteristics of this forest are the extreme density and endless variety of the woody vegetation; some of the trees such as the Mora, attaining a considerable size, their height often exceeding 35m. and occasionally reaching 50m. Below the canopy of higher trees numerous bushes and young trees fill all available space, while the soil itself is covered with marantaceous reeds, ferns and low herbaceous plants. Grasses are altogether absent. Many of the herbaceous plants have, in search of light, left the soil to live as epiphytes along the bole and in the crowns of the trees. These trees, including the great buttress roots which many of them possess, are the home of several very beautiful 'tree snails' of the family Orthalacidae, such as Orthalicus sultana and Corona perversa which the writer found in this type of habitat in the valley of the Mazaruni River living 4 or 5 feet above ground level. The best collecting for small land mollusca was done in the drier parts of the forest, by scratching the superficial layer of humus and earth. Numerous examples of such small forms as Opeas, Leptinaria, and Subulina could usually be obtained in this manner. In this connection it is necessary to remember that, notwithstanding the luxuriance of the vegetation, there is but little decaying vegetable matter on the soil of the rain forest in British Guiana, considerably less so than in temperate forests. The combined efforts of termites and fungi, together with the rapid decay by fermentation due to moisture and heat, seem to quickly dispose of dead leaves, branches and tree-trunks.

Limestone ridges often rising as considerable hills, form drier areas on which native villages are frequently situated. These are undoubtedly the best collecting grounds for mollusca anywhere in the area. Banana plantations and rubbish dumps always proved worth examining. In the former large numbers of living examples of a small land operculate, Aperostoma dunoonensis were found among the decaying leaf-sheaths or banana trunks, and several brightly coloured species of Drymaeus attached to the underside of the leaves. The rubbish dump at such a village, in spite of the stench, produced eight species of snails and a Veronicella, the latter in large numbers.

Aquatic mollusca, in view of the existence of many large rivers and extensive swamps, are few in species, although often very numerous in individuals. Swampy areas of forest, subject to periodic inundation is the home of a giant marsh snail Pomaca urceus urceus, the huge globular shells of which often attain as much as 125mm. in length and 115mm. in maximum diameter. During the dry season the presence of this snail can only be detected by the occurrence of dead and bleached shells on the surface of the ground; living examples being obtained only by digging to a depth of 8" or more. They are eaten by the Indians in times of scarcity, but are tough and tasteless.

Small clear forest streams in favourable situations often contain various Melanids of the genera Doryssa and Pachychilus as well as Pomacea glauca orinoccensis, a large and very beautifully banded race of P. glauca, confined to the rain forest area. Freshwater mussels are very restricted in distribution, being confined to sand-bars below the numerous falls which are a feature of all the rivers. Below the Pakatuk Falls on the Potaro River, the writer collected Prisodon latialata, Paxyodon complanatus and Anodontites ensiformis, the flat elongated shell of the latter species always occurring in narrow gaps between the rocks.

Planorbidae and Lymnaeidae although abundant in the open savanna country of N.W. British Guiana and Venezuela apparently avoid the rain forest belt and a careful search failed to reveal any trace of either.

The collector of land mollusca in Britain may obtain some satisfaction from the thought that hundreds of square miles of luxuriant tropical rain forest would produce far fewer species in many weeks' collecting, than he could expect to find in an average chalk woodland in S.E. England in a few hours.

T. Pain

Within the last three months, members of the Conchological Society of Southern Africa, collected a number of specimens of this species, which were of a beautiful glistening mauve colour.

These shells were obtained at three localities - Haga-Haga, Gonubie, and Bonza Bay, between East London and the Great Kei River.

Available literature consulted contains no mention of this mauve colour, and the writer found two writers - Joyce Allan and Dr. K. H. Barnard - only, who refer to the colour of the shell as being brown, or in some cases slightly reddish brown.

As C. capensis was described over a century ago, it seems strange that no collector, or collectors, in past years have mentioned finding any specimen with the mauve colour; e.g. Turton, who collected extensively at Port Alfred.

It has been noted that at the localities where the mauve shells were found, others were collected with the usual brown colour.

Shells of the mauve colour fade with remarkable rapidity, and the writer was shown specimens, which had been kept in the dark of a cabinet for six or more weeks, already fading and assuming the brown tint.

From this it may be assumed that the mauve colour is the colour of the shell during the life of the animal.

After death it may well be that a mauve coloured shell exposed to the sunlight for a day or so, would rapidly assume the recorded brown colour.

This may account for the fact that no other collector has so far found a mauve coloured specimen, or specimens - at least the writer has not been able to find any record thereof.

References:- Allan Joyce, 1956. Cowry Shells of World Seas.
Barnard Dr. K.H., 1963 Annals S. Af. Museum,
cont. S. Af. Mollusca, Vol. XLVII Part 3.
Kennelly D.H., 1964. Marine Shells of S. Africa.
Turton W.H., 1932. Marine Shells of Port Alfred.

D. H. Kennelly,
East London Museum
12 Oct. 1966.

A GIANT HELICELLA ITALA (L.) AND A RACE OF GIANT HELIX NEMORALIS L.

IN THE BURREN, CO. CLARE, EIRE

When collecting on the limestone pavements of the Burren (Co. Clare, west Ireland) in June 1966 I took a single enormous Helicella itala (L.). Unfortunately it was an empty shell, but it measured no less than 26mm. in diameter. Mr. Stelfox, to whom I showed my find, suggested that as the lip was not properly completed the animal may have over-wintered as snails very rarely do. Only the one shell was taken, and all the other specimens of H. itala obtained in the same locality (and elsewhere in the Burren) were of normal size; there does not appear to be a giant race of itala as there is of Helix nemoralis in the same place.

The exact locality was the bare limestone slope inland of the coast road where it drops down from Ballinalackan to Poulsallagh. The giant nemoralis (many 26mm. in diameter) I found abundantly on short turf among the limestone pavements between the coast road and the sea at Poulsallagh.

The limestone pavement where my giant itala was found also yielded numerous normal-sized examples of the same species, and (under a prostrate Crataegus) a number of living Clausilia bidentata (Ström) with single shells of Oxychilus cellarius (Müller), Lauria cylindracea (da Costa), and Euconulus fulvus (Müller).

Taylor (Monograph pt. 24, p.127, 1921) gives 25mm. as the diameter of H. itala var. major Moquin-Tandon to which variety my giant shell seems referable.

For giant nemoralis Taylor (Monograph vol. 3, p.296, 1910) quotes var. major Ferussac with a diameter of 32mm. (French localities, especially the Pyrenees) and var. lucifuga Ziegler with a diameter of 35mm. (Upper Italy).

Nora F. McMillan

A CHESHIRE LOCALITY FOR ANODONTA COMPLANATA ROSSMASSLER

There are not many localities for this freshwater mussel and therefore it may be worth drawing attention to its occurrence in the Shropshire Union Canal near Beeston, Cheshire. At Wharton's Lock, near Beeston, on June 30th. 1966 I found several dead examples in material cleaned out of the canal and I am sure it lives therein, but had no means of finding out at that time and the canal just there has not been emptied lately.

N. F. McMillan

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

Notice is given of the possible use of plenary powers by the International Commission in connection with the following names:

Suppression of Voluta mitra episcopalis Linnaeus, 1758 (Gastropoda):
case number 1728.

Validation of Tectarius Valenciennes, 1832 (Gastropoda):
case number 1754.

Suppression of Hippella Moerch, 1861 (Pelecypoda): case number 1861.

Particulars of the above applications are published in Bull. zool. Nomencl. vol. 23, part 4, Oct. 1966. Comments should be sent in duplicate, citing case number, to the Secretary, International Commission on Zoological Nomenclature, c/o. British Museum (Natural History), Cromwell Road, London, S.W.7.

FIELD MEETING - TO PLUMLEY NATURE RESERVE, CHESHIRE, APRIL 30th. 1966

By invitation a small but energetic party of 5 members (including one enthusiastic Junior) met at Plumley Railway Station and proceeded to Plumley Nature Reserve. This Cheshire Reserve, 4 miles E. of Northwich, is of interest as it is a 60-acre artificial landscape, once the site of large chemical works. When the works were demolished the site lay derelict for many years until now the varied pools and ditches, banks and a large lime-tip, are adequately covered with plants and trees, and shelter a surprisingly large fauna.

A total of 22 species was obtained, the most interesting being Retinella radiatula which was fairly frequent on a mossy bank. The lime-tip yielded only Helicella caperata and Helix nemoralis.

The complete list of species is as follows:

<u>Lymnaea truncatula</u> (Müller)	<u>L. peregra</u> (Müller)
<u>Planorbis albus</u> Müller	<u>P. crista</u> (L.)
<u>Segmentina complanata</u> (L.)	<u>Acroloxus lacustris</u> (L.)
<u>Cochlicopa lubrica</u> (Müller), s.s.	<u>Helix nemoralis</u> L.
<u>Helicella caperata</u> (Montagu)	<u>Arion circumscriptus</u> Johnston
<u>A. hortensis</u> Ferussac	<u>Euconulus fulvus</u> (Müller)
<u>Vitrea crystallina</u> (Müller)	<u>Oxychilus cellarius</u> (Müller)
<u>V. contracta</u> (Westerlund), a dead and bleached shell.	
<u>O. alliarius</u> (Miller)	<u>Retinella radiatula</u> (Alder)
<u>R. nitidula</u> (Drap.)	<u>Limax maximus</u> L.

Agriolimax reticulatus (Müller) Both the blotched and reticulated "garden" form and also the plain cream-coloured form were taken.
A. laevis (Müller) Pisidium milium Held (det. A. W. Stelfox)

Mr. Booth and Mr. Scott, the two Wardens of the Reserve, kindly showed us round and were most helpful in every way.

Nora F. McMillan

EXCHANGES, SALES, ETC.

Mrs. Wolf, [REDACTED], Johnsonville, Wellington, New Zealand, wishes to exchange New Zealand shells for British.

Mr. Laszlo Pinter, [REDACTED], Hungary, wishes to exchange non-marine recent mollusca. He specialises in the Clausiliidae.

Mr. John Eppert, [REDACTED], Baja California Sur, Mexico, proposes exchanging marine shells in lots of 25; he has many unusual examples from Mexico.

Sr. Carlos Altimira Aleu, [REDACTED], Barcelona, Spain, sends a printed list of land and freshwater gastropods and wishes to exchange for similar.

Mr. Stephen R. Shadlow, [REDACTED], Mermaid Beach, Gold Coast, Queensland, Australia, sends a duplicated list of deep dredged shells from the Australian coast, with prices.

Mr. John S. Rathbone, [REDACTED], Maitland, S.A., Australia, can supply Australian shells, including Cypraea ziola thersites.

Flt. Lt. P. A. Hall, Air Traffic Control, R.A.F. Changi, c/o G.P.O. Singapore, Singapore and Malayan shells offered in exchange for Cypraeas in particular.

Mrs. Helen Peters, [REDACTED], Deurne, Antwerp, Belgium, requires specimens of Chiton marmoreus Fabr. She would exchange fine Acanthochitona discrepans from France (alcohol-processed or dry live-collected) or other live-collected shells; a list can be sent to any member interested.

James P. Conlin, [REDACTED], South, Fort Worth, Texas 76105, U.S.A., wishes to purchase Tertiary Gastropods, particularly Barton Beds, London Clay, etc. (also Cretaceous echinoids).

Mr. W. K. Witsiepe, [REDACTED], Wilmington, Delaware 19808, U.S.A., has collection of Delaware Cretaceous and Maryland and Virginia Eocene and Miocene fossils (incl. teeth). His main interest is Cretaceous oysters. Any offers?

Information Wanted: I should be very glad to know the whereabouts of any well labelled non-marine shells from old collections from St. Helena Island. Any member able to help please contact T. E. Crowley, [REDACTED], Bampton, Oxfordshire.

PUBLICATIONS RECEIVED

Circular No. 75 (June 1966) - Conchological Society of Southern Africa.

A short note describes a ceremony held in the Marine Gallery of the East London Museum on 14th. May 1966 to unveil a plaque dedicating a seashell display case to D. H. Kennelly in appreciation of all he has done for the Museum. The Editor of the Circular, Mrs. Kerr, notes that of 74 circulars issued, Mr. Kennelly had contributed interesting and valuable articles to no fewer than 72. Notes from his indefatigable pen appear in No. 75 also, one giving a useful synonymy of the Harpidae and one listing a number of record sizes for South African gastropods. There is a useful note on Cones by J. A. Marsh, largely supplementing the information in his 'Cone Shells of the World'.

Circular No. 77 (August 1966) - contains some detailed notes on recent unusual finds in Natal waters, further notes on the Harpidae, and a discussion on the nomenclature of Haliotis spadicea Donovan 1808, more usually known as H. sanguinea Hanley 1841, by D. H. Kennelly.

The September issue, Circular 78, contains the Society's Annual Report; it now comprises 166 ordinary and 25 student members, and the Conchological Society of G.B. & I. may read with a degree of regret and envy the Librarian's Report. Percy Elston contributes a list of the largest specimens of South African species in his possession with the hope that records will be available from other sources. A further note on Haliotis spadicea Don. (Syn. H. sanguinea Hanley) comes from D. H. Kennelly, also the results of experimentally boiling live specimens for considerable periods.

Circular No. 79 (October 1966) - this issue contains a note on Hydatina velum Gmelin, and an article by D. H. Kennelly on the Marine Shells of Luanda, Angola, a somewhat neglected coast, with definitive list of those collected and identified up to the present.

Circular No. 80 (November 1966) of the Conchological Society of Southern Africa describes the opening of the Kei Mouth Shell Museum, founded on the collection of Mrs. Hazel Jefferies. The shells are fully documented and the exhibition is designed as a basis for future scientific study.

Notes contributed by D. H. Kennelly include observations on Cypraea capensis Gray, shells from Marion Island, and some further observations on Cypraea amphithales Melville. The Cowries certainly maintain their charm.

'Poirieria' Vol. 3, Part 2 (March 1966)

Though duplicated, this publication is accompanied by very passable illustrations. Articles include one on Iredalina, the Golden Volute of New Zealand, one on Phenacharopa - a small land snail (dimensions not given), and one on the periostracal processes of local land shells, all by N. W. Gardner. N. Douglas writes on Preserving Sea Stars, C. A. Fleming on "The Origins of the New Zealand Molluscan Fauna", and D. G. Forsyth on 'Shells and Primitive Cultures', which packs a great deal of interesting fact into a small article.

Poirieria (Auckland, New Zealand)

The issue (Vol. 3, No. 3) for June 1966 contains several interesting detailed accounts of collecting activities, and an endearing feature of the publication is the balance it is able to keep between marine and nonmarine subjects. L. Price relates an unusual field trip to Fiji, Samoa, Tonga and the Cook Islands in company with Dr. Alan Solem, to investigate the land-snail fauna; N. Gardner evaluates the reserves in North New Zealand and draws attention to the rapid changes in snail populations to be observed there. B. Elliott records the discovery of a rare subfossil, Schizoglossa major, and B. Dudley contributes an accurate and lucid account of the working of the tides, a subject on which most people are sufficiently vague. A very interesting note on edible snails is reprinted from the 'Australian Newsletter'; it appears that Helix pomatia in Paris is frequently dressed for the table in shells of H. leucorum imported for the purpose annually to the tune of fifty millions; this is necessary because the original shells are often broken when the snails are extracted. At least seven species of Helix are eaten in France, imported from European countries, Asia and Africa; even Syria, whose trade with France in this respect is small, exports about 136 live tons per annum. Some of the species concerned have almost certainly established themselves in France; a twelve ton load of live snails from Turkey was recently condemned at the frontier and tipped into a nearby wood at Verrieres-de-Joux. The locals later had a wonderful time collecting thousands of edible snails which had arisen from the dead.

'Catalog of Dealers' Prices for Marine Shells', 1st. Ed., 1965.

This is a comprehensive and comparatively inexpensive aid to the conchological financier. One infers that it has been compiled from the price lists of a number of American shell-dealing firms, though how complete a survey has been made is not clear. Cypraea aurantia for instance, at \$ 75 is fairly widely divergent from prices quoted in van Nostrand's 'Catalog'. Shells are listed alphabetically in genera, and the list is confined to those species for which prices have been noted in the dealers' lists. In accordance with popular

American taste, the resulting catalogue largely comprises marine tropical shells, although some freshwater species were noted. Thus, although there is no mention of Planorbis or Lymnaea, we find a variety of Neritina and Hydrobia (s.l.). The British species of Hydrobia incidentally, are priced at fifty cents each, a figure which tends to arouse interest in the prices quoted for European shells generally. Dreissena polymorpha goes (or does it?) for 75 cents, so does Mastra stultorum; Mya truncata, perhaps because it is listed from Alaska, at a dollar each. One wonders why Ocenebra erinacea should cost \$ 1, while Nassarius reticulatus can be had for no more than five cents a time, and the conclusion is inevitable that in many cases the pricing of shells is haphazard although it seems that, on the whole, large shells are apt to cost more than small, even though the latter are of rarer species. Murex ramosus costs anything between 20 cents and five dollars.

It would have been very nice to have the opportunity of supplying the World market in Helcion pellucida at 50 cents each, or any of the British Littorinas at a similar figure, or even allow a 50% discount to the dealer on the figure; but perhaps shell finances don't work that way.

American collectors seem little, if at all, interested in taxonomy, and many of the names by which their shells are generally known are out of date and synonymous ('Ampullaria'). Most dealers send accurate locality data with their shells, although the localities quoted in the catalogue are of use only as a kind of reminder, being either necessarily vague ('Australia'), or representative of the stock of a single dealer ('Puget Sound').

The work is quite comprehensive enough to serve as a very good check list for the general collector of marine shells, and the duplicated production is excellently laid out and free from printing errors. Many dealers' advertisements are included.

Obtainable from Thomas C. Rice, [REDACTED], Poulsbo, Washington, U.S.A., price \$ 2.50.

T.E.C.

Publication of an important Report.

DANCE, S.P., January 1967, Report on the Linnaean shell collection. Proc. Linn. Soc., vol. 178, part 1, pp. 1-24, pl. 1-10.

CORRECTIONS

Page 1, paragraph 5: for Conchological read Conchologists'.

Page 5, 5th. line from foot: for Cambridge read Cambridge

Page 7, Notes, 4c: for Liressidge read Liversidge

Page 8, line 12: for Australasion read Australasian

Page 11, paragraph 3: for Coecillioides read Ceciloides

Page 12, paragraph 3: the price of Linn. Soc. Synopsis No. 8 is now 7/6.

Page 18, line 2: for carniverous read carnivorous

Page 23, line 20: for soxatilis read saxatilis; line 8 from foot: for Commensual read Commensal; last line: for Pennart read Pennant

Page 25, line 4: for beginings read beginnings

Page 25, line 18: for Systeme read Systema

Page 25, line 28: for Linnaean read Linnean

Page 29, line 36: for Bythinia read Bithynia

Page 38, paragraph 2: for hymnaea read Lymnaea; last line: for Potamapyrgus read Potamopyrgus

Page 41, paragraph 4: for cygnaea read cygnea

Page 48, line 32: for siezed read seized

Page 51, line 1: for truncatula read tentaculata; line 7: Arion was also a mythical monstrous horse.

Page 55, last line: for Cepea read Cepaea

Page 67, paragraph 3: for fluviatalis read fluviatilis; for reticulosa read reticulata; for Cepea read Cepaea; paragraph 4: for strialata read striolata; for Spharium corneus read Sphaerium corneum; paragraph 6: for pallusida read pellucida; for cinero-niger read cinereoniger

Page 84, 7th. line from foot: for Rosts read hosts

Page 101, in 4 places: for cygnaea read cygnea

Page 117, line 9: for Bythinia read Bithynia; line 23: for polmorpha read polymorpha

Page 123, line 10: for Lacinaria read Laciniaria

Page 132, line 27: for carniatus read carinatus

Page 133, line 10: for Spaerium read Sphaerium

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