

CHARNIA



Hen Cloud from the main Roaches ridge

**The newsletter of the Geology Section
(C) of the Leicester Literary &
Philosophical Society**

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Editorial, May 2012

There's no argument, I think, that all of us in the geological world want to advance the cause of geology in society, and specifically to get our share of recognition in any national or local schemes which concern the environment and/or push forward the case for the natural sciences. It's a case of getting our voice heard. But sometimes I wonder just how this is going to be achieved through the miasma of committees, organisations, government departments, think tanks, white papers, etc etc, all of whom or which are producing screeds of paper, thousands of words, and proposals and counter-proposals apparently ceaselessly. These earnest and doubtless well-meant initiatives arrive full of proud words, only to be trumped shortly afterwards by some refutation or amendment from somewhere else. And nothing seems to happen. At least that's how it all seems to me, in my less-than-stellar position as a non-playing corresponding member of the Leicestershire and Rutland Wildlife Trust Geology sub-committee (or are we something else these days?). These rather gloomy thoughts were precipitated by a recent rush of e-mails amongst sub-committee members regarding a whole bunch of acronyms currently doing the rounds. We have the NFBC, the NPPF, RIGS, UKGAP, NE, DEFRA, CPRE – this is just a selection of the acronyms in circulation, there are many more. No-one refers to themselves or their works by their full names, thus interested but out of the loop onlookers have no idea what's going on or who's doing it. I know that this practice isn't confined to the environment sector, its all been picked up originally from central government. Motives are almost entirely praiseworthy and important, and sometimes something directly applicable to geology does get done, but I wish that the motives, proposals and intentions of this plethora of organisations and initiatives were clearer and worked faster.

I know there are much better informed folks than I out there, so please feel free to write to me at Charnia with your thoughts, and I'll put them out in a future issue.

We're off and running again with another summer programme, and the first trip to The Roaches was a resounding success. There's an excellent series of outings to come, and all we need are more members to come out with the regulars to enjoy them. Most trips are fairly gentle and don't involve a lot of exertion, so come and see England and its wonderful geology!

Andrew Swift

Summer Programme

Please note that all field excursions are subject to change in the event of unforeseen circumstances.

Closely supervised children may be welcome at events marked with an *.

Please contact the field secretary if you wish to bring children.

All trips are confirmed and on a Saturday unless indicated.

May 5th Building stones of Warwickshire. Baddesley Clinton manor house plus churches. Meet 10.30 am at B. Clinton. Leader Maurice Rogers *

Friday June 1st – Sunday June 3rd St Davids, Pembrokeshire. Leader Charlie Bendall (Aberystwyth University)

June 24th Mountsorrel Quarry (geology). Leader Frank Ince. To be confirmed.

July 7th Bantycok (gypsum) Quarry, Newark. Late Triassic Mercia Mudstone and Penarth Grps. Leader Andrew Swift

August 11th British Geological Survey, Keyworth. Charnwood fossil material. Leader Phil Wilby *

September 8th Volcanics of Derbyshire. Leader Mike Allen.

October 13th Mountsorrel Quarry (works). To be confirmed

Excursion to The Roaches, Staffordshire, April 14th 2012

April, as we all recall with a shudder, was a cold, wet month and the forecast for April 14th was very poor again. So as we set out from Leicester for the first field excursion of the 2012 summer programme, hopes were not high for a decent day. But we were in for a pleasant surprise, as from nowhere, the sun reappeared and a beautiful crisp, bright morning materialised. It really made the Spring surroundings and the lovely Peak District hills sparkle. The Roaches are a great surprise for anyone who hasn't seen them before, looking quite out of place in the generally smooth, lush hills that dominate the high country hereabouts. The steep, rocky heights bristle like jagged teeth along

the ridgelines, trying very hard to look more like the volcanic parts of the Lake District or the granite tors of Dartmoor than Staffordshire. For fell walkers who like a bit of hard rock beneath their feet and steep paths to negotiate, this is a splendid area. The topography, of course, is influenced directly by the geology and the rock here is especially tough Namurian sandstone, or Millstone Grit as everyone still likes to call it. There are many old workings dotted around where millstones were previously fabricated.

Leader Albert Benghiat is a keen walker and originally mapped out a lengthy traverse of the hills, perhaps forgetting that some of us (not me of course) were perhaps not quite up to 8 miles of tough fell walking. However, the amended length of 4 to 5 miles was just right and the nine strong party enjoyed a grand high level walk while learning about and admiring the fine geology and wonderful views. The rock is a hard, often cross-bedded, rhythmic sandstone, of variable grain size, and represents the deposits of huge deltas and riverine systems that built out into the old Lower Carboniferous basins as the earlier seas retreated. After lunch taken on the hills, we moved on by car to an area in the centre of the Goyt Syncline near Blackbank to examine the early Westphalian ('Coal Measures') beds exposed in the sides of a stream in the core of the fold. Great fun was had here trying to find scarce organic remains, but we did come up with a few plant or tree fragments.

After thanking Albert for an excellent day, most people headed east and aimed for home, but three of us took up Albert and Jill's kind invitation to come back for a drink with them at their fine house in Alstonefield, where we watched the Grand National horse race and organised an impromptu sweepstake. We also admired Albert's home museum of local geology, which he leaves open for all comers. See the centre spread for photos.

Andrew Swift

Let's do a Roger Mason

I am up in the Highlands in 1967, starting my PhD on the Dalradian metamorphic rocks around Loch Creran by hammering away at pebbly black slates in the Benderloch railway cutting. I am young – not quite as young as Roger, but with that naive yearning for new discoveries – when I notice that the pebbles are not all quartz: there are softer ones which fizz with acid. I step back -- but not into the path of a train, as the great Highland geologist Charles Clough had done: this Connel to Ballachulish line has been closed by Dr Beeching a year ago -- I step back to consider the presence of calcareous

pebbles in deep water sediments. I think it is odd, but then, as the rocks are all slumped with 'turbidity' flows, perhaps rapid erosion and deposition can explain it. 'Get a section made,' I note.

Switch to the Liverpool Geology Department, peering down the microscope at the calcareous pebble shown here as Figure 1, and especially the detailed area on Figure 2. The pebble is obviously carbonate, but what are the patterns of the dark carbonaceous material in those unrecrystallised sectors? Clearly organic; but the configurations look more than that. There are U- and V-shaped calcareous walls enclosing what appear to be internal body parts. At first sight, all my fellow students and staff think they are looking at an animal! Sections through more pebbles show circular or elliptical walls around cells, or zooids, about 0.4 mm across, building a picture of an eroded reef animal whose form and dimensions are very similar to a bryozoan (Figure 3).

In the same horizon, I find other organic remains in exotic slump blocks of 'oolitic' limestone. These include stromatolitic oolites, called *oncolites* in the Russian literature, and fragments of cystic filaments called *catagraphs*. These are given Russian generic names. Furthermore, there are some very interesting, 0.1 mm wide, spar-filled tubes interpreted as traces of boring algae. Though essentially a hard rock geologist, like Roger, I find such a discovery rather exciting and worthy of publication: to the dismay of my supervisor, Dr Nicolas Rast, who wants me to apply myself solely to the structure and stratigraphy to solve the great stratigraphic riddle of the Dalradian.

So I write it up: first as a detailed appendix for my PhD thesis in 1970, naming the bryozoan-like fossil *Beregonia*, after the local hill fort, and then for publication whilst in the Kalahari (Litherland 1975). The fossils come from the Easdale Slates of the Dalradian Supergroup which is poorly dated: I suggest a Cambrian age -- in which there are known to be animals (trilobites etc.), if not bryozoan – whilst suspecting the age to be older.

Switch to 1995: I return from 25 years of overseas geology, and, out of curiosity, I consult summaries of early life in the UK and worldwide but find no reference to my fossils. As the years go by their age is changing from Cambrian to Precambrian, confirmed by a minimum age of 600 Ma for the older granites and associated Tayvallich Lavas which lie well above the Easdale Slates. So I then ask myself if my *Beregonia* is in fact the earliest animal on Earth: with its hard shell and internal body parts, it makes a better candidate than the Australian soft sponge fragments reported from around



Saturday Seminar 2012: some of the audience



Roaches Excursion 14.4.12: The Roaches from the Upper Hulme road



Saturday Seminar 2012: Randy Parrish begins his talk on Arthur Holmes



Roaches Excursion 14.4.12: The Roaches party



Roaches Excursion 14.4.12: cross-bedding in the Namurian gritstone



Roaches Excursion 14.4.12: Westphalian ('Coal Measures') near Blackbank



Saturday Seminar 2012: Jane Evans tells us about her use of isotopes in dating



Saturday Seminar 2012: session chairman Roger Latham introduces Jan Zalasiewicz

620 Ma. Furthermore, could my organic collection be an early ‘Burgess Shale’?

So I republish the material with the new ages (Litherland, 2011), which is now on line, in an attempt to establish myself as a Roger Mason, albeit microscopically! and hoping to generate sufficient interest for fresh field investigations.

Oh, by the way, Bryozoa did not start till late Cambrian, around 500 Ma. Is it a problem, then, that a bryozoan-like animal existed at 620 Ma? No, not all -- as Roger Mason showed -- you just go out and find it!

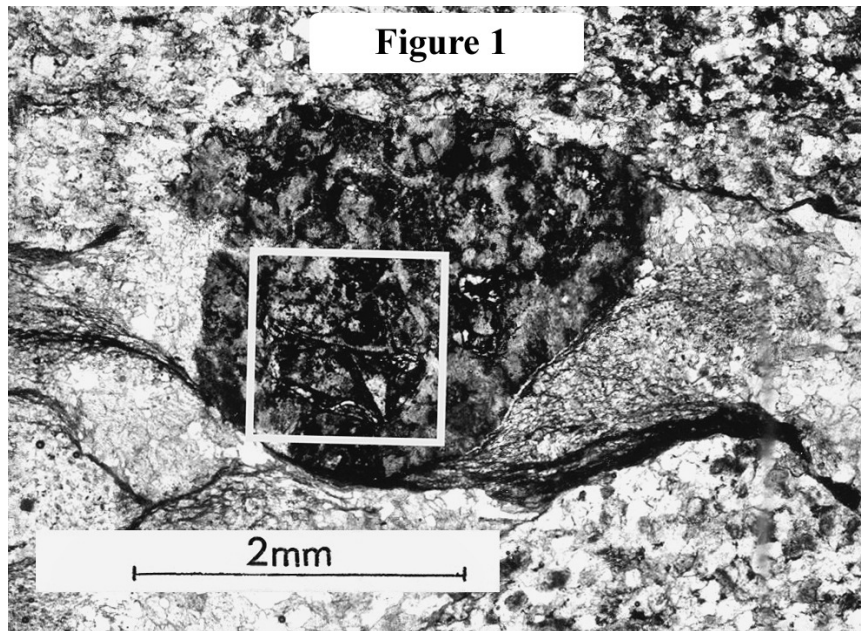
References

Litherland, M. 1975. Organic remains and traces from the Dalradian of Benderloch, Argyll. *Scottish Journal of Geology*, **11**, 47 – 50.

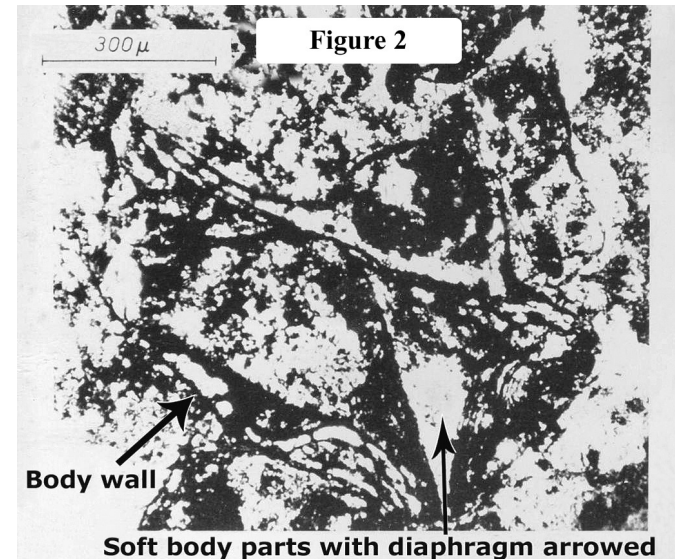
Litherland, M. 2011. Is the earliest animal Scottish? *Edinburgh Geologist*, **49**, 17 – 21.

Martin Litherland

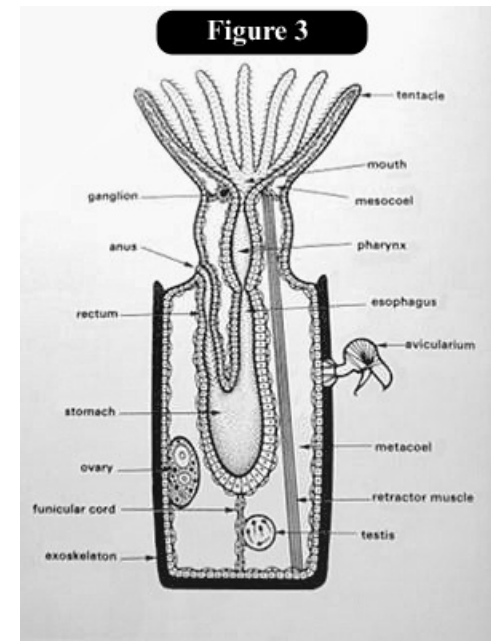
PLATES



The Dalradian slaty cleavage is refracted around a calcareous pebble of *Beregonia*, in which microscopic, reef-like, organic structures are seen in the unrecrystallised sectors.



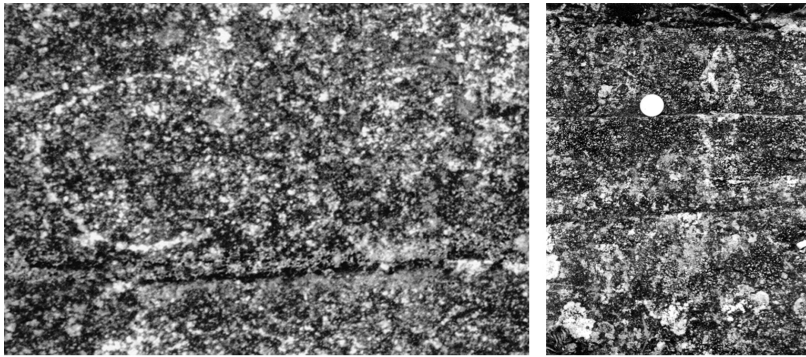
Details of the enclosed sector of the first figure show clear V-shaped and discernible U-shaped body walls enclosing ‘zooids’ containing preserved ‘body parts’ e.g. diaphragm.



A typical ‘modern’ bryozoa is the same size as *Beregonia* and shows similar internal body parts, such as a diaphragm (retractor muscle). Look at the testes and ovaries. Can we see them in the previous figure near the diaphragm?

New possible fossils from the Precambrian (Ediacaran) of Charnwood Forest, Leicestershire

During the search for more Precambrian fossils in the Summer of 2011 and researching photographs from previous years, two new localities of potential interest, where problematical forms are present, were studied. The first is a bedding plane (10m x 2m in size) in the middle of Bradgate Park and dipping at 36° S. It shows a range of unusual faint traces with very little relief, which are like shadow fossils, they appear at a number of localities, particularly in the Bradgate Formation and in stratigraphically much lower beds at Ives Head.



Locality 1

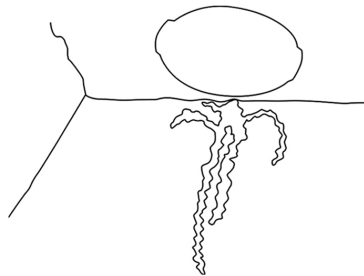
1. Single-ringed disc (40mm wide) with no stem

2. Spear-like form



Locality 2

The Outwoods car park specimen



Locality 1.1 shows a single-ringed disc (40mm wide) with no stem. There are also whitish twig-like branches up to 100mm in length which can show bifurcation and some appear to be hollow. From time to time they are cut by

thin quartz veins, indicating they pre-date the mineralisation. On the same bedding plane as the single-ringed disc is a spear-like form (Locality 1.2), which shows some similarities to *Charnia*, but there is no disc attached at the base and no relief. Because of the faint shadowy nature of them, they are easily obscured by lichens and mosses etc., the state of weathering of the bedding plane and poor light. They appear best when taken with a film camera using a filter and not a digital camera.

The second locality of interest is a large rock in a low stone wall around an oak tree in The Outwoods car park. All the rocks making up this wall (approx 500mm high) consist of greyish-green banded slates which were probably taken from outcrops in The Outwoods, one of which is the well-known bedding plane containing *Cyclomedusa davidi*, near where the loose block of *Pseudovendia charnwoodensis* was also found in 1978. On this block in the car park there appears to be a pale pinkish-white hollow stem with irregular sides of a longitudinal section of a structure curving to the right at the bottom and bearing possible side branches at the top.

The problematical forms described in this report show features which have not been described from Charnwood Forest and are not like the structures of other fossils seen from the Precambrian here. There is a great potential for further research of these 'shadow' forms, particularly using thin sections and laser techniques.

Helen Boynton

The 2012 – 13 Winter Programme – a sneak preview

Having access to the Chairman allows your editor the privilege of seeing the confirmed talks for 2012-13, and here is advance notice of some terrific topics to stimulate your interest. Before Christmas we have talks on the provenance of the Stonehenge stones, the March 2011 Japanese earthquake and tsunami, an introduction to shale gas (yes, fracking and all!), a Parent Body lecture on Tetrapods by Professor Jenny Clack who was recently on TV, the detection of sedimentary cycles and a Burgess Shale-type deposit in Australia. Sound good, don't they?

As you'd expect, Joanne still has a few spaces to fill in 2013, but one she has booked for February 20th is intriguingly entitled, 'Darwin's lost fossils found', which should be a cracker. We're still at a very early stage with the Saturday Seminar, but if we run with the suggested theme, it'll be one not to miss!

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