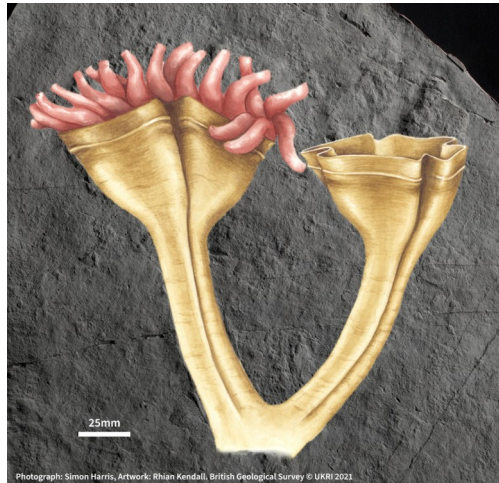


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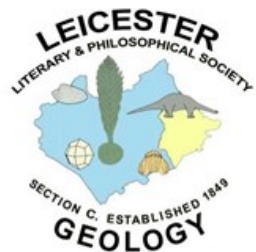
Newsletter of the

Geology Section

Of the Leicester Literary and Philosophical Society



November 2022



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Cover image: Artist impression of *Auroralumina attenboroughii* from publication by Dr Francis Dunn. BGS © UKRI 2022

Editor's notes

The programme of winter lectures has started again with joint meetings with the Warwickshire Geology Conservation Group. Our lectures continue in the Edwards Lecture at the University of Leicester at 1930. Both Groups are trying to offer Zoom as an alternative and the Section plans to continue with this for the next few sessions. The numbers attending in person and on Zoom will be monitored for take up. Details will be in the reminder emails from Gavin. Meeting attendances are lower than a couple of years ago so please circulate the forthcoming ones among friends and colleagues.

For our first talk the speaker, Dr Francis Dunn, gave her lecture to the University and the Zoom audiences via Zoom herself from Oxford. The subject of her lecture was the new fossil from the Ediacaran of Charnwood Forest, subsequently named *Auroralumina attenboroughii*. An image is on the front cover, courtesy of BGS.

Thank you to the contributors to this edition: new ones are always welcome to bdh2o@hotmail.co.uk.

With best wishes for Christmas and the New Year.

Some Fossils in a Northamptonshire Gravel

Diana Milne (aided and abetted by Roy Clements)

A recent consignment of local gravel at my house in Northamptonshire has provided interesting fieldwork without going anywhere. It was quarried and supplied from the nearby valley of the River Nene. Gravel stones are constrained by the size requested, but they are a brightly coloured mixture of varied shapes and sizes (Fig. 1).



Fig. 1: The washed and graded gravel, as supplied.

Bear in mind the complicated history of rocks that end up as gravel; they have been shifted wholesale by ice movements, meltwaters, and successive river systems. For examples local to our part of the Midlands, there are indeed many clasts of densely oxidised ironstone (Fig.2).

They include warm brown shades familiar in the local Northampton Sand but also pale limestones and harder flints. There are also abundant, well-rounded brown pebbles, suggesting a contribution from other older, worn sandstones.



Fig. 2: A selection of ironstone clasts from the gravel.

But my gravel also contains fossils, to the delight of children, who quickly recognise shells. Bivalves are easy to spot in the gravel. Most common are the curved shells of what I take to be varieties of *Gryphaea* ('Devil's Toenail'). Here they are of course broken and worn, but interestingly, several different types are represented. Some show both valves, but others are infilled with yellow sand. As are also shown in Fig. 3, there are a few examples of small, ribbed shells.



Fig. 3: A selection of *Gryphaea* fragments from the gravel, with two other, unidentified, ribbed bivalves.



Fig. 4: A small selection of fragments of belemnite rostra from the gravel.

However, tucked in amongst the stones of the gravel are relics of something completely different (Fig. 4). They consist of variably smashed, elongate fragments, having roughly cylindrical aspect, and being 2-4 cm long and just over 1 cm diameter. They are clearly crystalline, probably calcareous, and with an apparently radial structure seen at the end, but successively layered within the cylinder. Some cylinders are very slightly tapered. Rarely, there is a broken hollow at one end with some other material in it. Other examples show a tapered V-shaped groove towards one end.

As children are always interested in fossils, I showed my schoolboy grandson (Cameron Charles) some of these finds. To my surprise, he said: 'I think they're belemnites'. These fragments were very different from my recollection of those elegantly smooth belemnites often found in Mesozoic clays. I asked him what he thought a belemnite looked like. He quickly tore off the corner from a used piece of paper and drew his idea of a belemnite. It was not a picture of the long black pointed fossil I was expecting, but a reconstruction of a live creature with tentacles. I found my little book from 1974, 'The Succession of Life through Geological time' (by Kenneth P. Oakley and Helen M. Muir-Wood) indeed showing a drawing similar to his (Fig. 5). It seems some years ago his family had enjoyed a visit to Lyme Regis cliffs in Dorset with a geologist guide, who perhaps had shown a life-drawing of a belemnite they were finding in the Lias clay. A copy of 'Fossils of the Oxford Clay' (edited by David M. Martill and John D. Hudson) does have photographs of relics of belemnites that have more than the hard rostrum that is so commonly preserved.

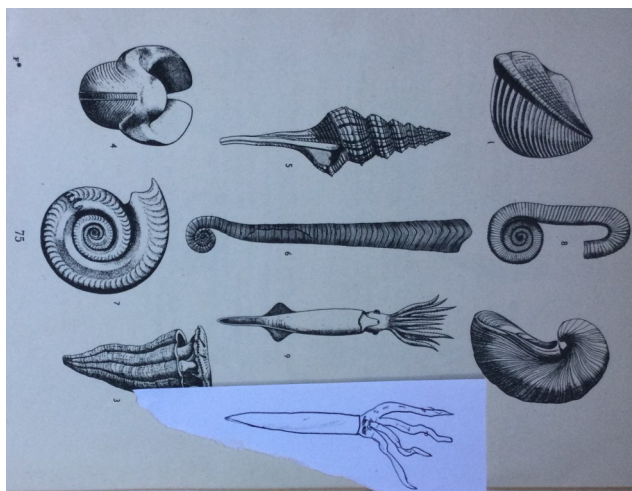


Fig. 5: Cameron Charles' drawing of a belemnite compared to that of Oakley and Muir-Wood (1974). Oakley and Muir-Wood's drawing of a complete *Gryphaea* is also shown. (Diagram rotated 90 degrees: ed).

All the fossils in my gravel are very much damaged, by the successive processes that formed the gravel. They are varieties familiar in the Mesozoic of Northamptonshire, and are evidently of mixed origin. But no ammonites.

Field trip to Wales

Lyn Hancock

In 2021 a group of geologists who all graduated in 1971 from the University of Wales, Swansea met for a reunion. Walking East towards Thee Cliff Bay, Gower we noticed en echelon veins in the Carboniferous Limestone. These are parallel oriented structural features in rocks that result from shear forces. They form a series of stepped overlapping lenses in the rock. They originate as stress fractures running parallel to the to the major stress orientation in the shear zone. They begin to rotate in the shear zone and stand out because of the subsequent mineralisation infill.



A little farther on we noticed stylolites. These are irregular seams or wavy lines formed when mineral material has been removed by pressure dissolution which decreases the total volume of rock.

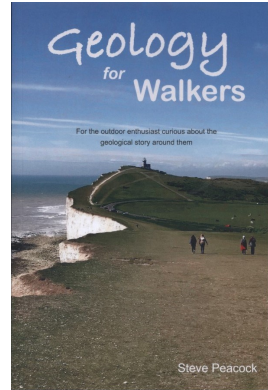


Geology for Walkers

Steve Peacock - Self published 2021. £16.50

Book review from Brian Waters

Steve Peacock is a geologist but he has not written a textbook, but what he describes as “a walker’s companion”. Despite that the first third of the book is devoted to basic concepts. This describes the evolution of the earth in quite a chatty way bringing in all the basic terminology about geological periods, rock formation, etc.



This is followed by a short Part on geological maps of the UK and then another Part on plate tectonics. This latter is the only part of the book which inevitably has to look outside the UK for examples.

Part 4, the longest section, brings the previous parts together as the “UK’s geological story and where to walk it”. This is broken down into 3 stages : Archaean to Silurian, Devonian to Triassic and Jurassic to today, with chapters in each section looking at the intervening periods.

The final Part shows how to integrate the geology with your walks by using examples from the 32 UK national trails and 7 geoparks. This is achieved via a master geological map with the trails marked and the map linked to earlier chapters for explanation. The author also commends the BGS app iGeology to help with navigation and identification.

There are clear, colourful, explanatory diagrams and maps throughout, complimented with plenty of photographs from around the UK.

This might sound a bit complicated but it’s not! If you know your geology you can jump to the end. Alternatively, if your geological knowledge is limited and staying that way, you can start at the end of the book, decide where you want to go and then read up on the relevant sections for the walk.

I enjoyed this book. I found the more technical explanations clear and at the right level for a non-geologist. I hope to make more use of it on my next foray.

Visiting family

Brian Waters

Our elder son lives with his family in Dusseldorf and earlier this year we made a visit. I had only recently realised how close their home was to the site associated with Neanderthal man so a trip was a must.

There is a large unprepossessing museum building in the village of Mettmann which is in the Neanderthal valley, where the discovery was made. Inside, the exhibition is laid out on a rising spiral over four floors.



The exhibition starts with an explanation of the discovery of bones by two quarry workers which were subsequently recognised as a new humanoid species. The name was derived from the valley but earlier discoveries elsewhere were also subsequently recognised as neanderthal. The initial displays focus on this discovery but then the exhibition embarks on a chronological description of the evolution of man over several million years. This includes original and cast specimens of skulls and other bones as well as other artifacts. The visitor is given an audio device to plug in at multiple locations to get descriptions (in English) complemented with videos and life size models of the various species. Related displays show the development of tools, communication, myth and religion, environment, agriculture etc. until finally arriving in the modern era. The interpretation panels are in German and English.

It took the morning to explore the museum. It is aimed at all ages with something for children but plenty for the more specialist. There is another exhibition hall which does not have fixed exhibits: on our visit it was about cats—from sabre tooth tigers to modern lions, etc.

We did not have time to walk up the valley from the museum. The original site has been quarried away but there is still plenty to see with explanatory boards along the route. Saved for another visit!

Web site [Home - ENG \(neanderthal.de\)](http://neanderthal.de)

Leicester Literary and Philosophical Society, Section C (Geology)

Winter programme 2022—2023

Abstracts 2022

Tuesday 20th September: Dinosaurs: New Visions of a Lost World. Professor Michael J Benton OBE FRS FRSE (School of Earth Sciences, University of Bristol). (WGCG).

We are delighted to have award-winning Professor Mike Benton present a talk based on his new book about the latest and most exciting, and colourful, discoveries about dinosaur appearance and evolution. Now available on YouTube: https://youtu.be/EVM4_yXbc8Q

Wednesday 28th September: A new fossil from the Ediacaran of Charnwood Forest confirms the antiquity of animal life . Dr Frances Dunn (Oxford University Museum of Natural History).

The rise of the animals was a profound transition in the History of Life that changed the planet irreversibly. However, the origin of animals remains one of the most controversial episodes in the evolution of life on Earth. Most animal groups appear in the fossil record during a major evolutionary radiation between ~520 and 550 million years ago known as the Cambrian Explosion, when the blueprints for the animal phyla (arthropods, vertebrates, jellyfish and others) were laid down and, remarkably, have changed little in the half a billion years since. My research is focused on the interval of time just before the Cambrian Explosion – the Ediacaran Period. While fossil representatives of the living animal phyla diversify in the Cambrian Period, the timing and nature of their earliest antecedents remains controversial. Fossil assemblages from the late Ediacaran Period, such as those in Leicestershire, preserve the remains of fossil organisms with long-extinct bodyplans that have perplexed palaeontologists for decades. In this talk I will introduce you to the Ediacaran fossils of Charnwood Forest, including the strange frond-like rangeomorphs which once defied classification but that I will argue are the most ancient animals in the known fossil record, before discussing a new fossil discovery that suggests the ancient members of groups which have survived to the present day lived and died hidden amongst the fronds.

Future programme

See comments in editor's notes about access to the lectures.

2022

Wednesday 26th October: The history of the BGS collections. Dr Michael Howe (Head of National Geological Repository, British Geological Survey).

Thursday 17th November: The Moine Thrust Controversy. Peter Gutteridge. (WGCG)

Wednesday 23rd November: Geology and Geoheritage of Malta. Dr Laura McLennan (University of Derby).

2023

Wednesday 11th January: Title tbc on new fossil finds in the Middle Jurassic of the Cotswolds hills of England. Dr Tim Ewin (Natural History Museum).

Thursday 19th January: Title tbc Astronomical Cycles and Climate Jim Riding (WGCG).

Wednesday 8th February: Title tbc on the Circular Economy and Material Supply. Dr Phil Bird (University of Leicester).

Thursday 16th February: The Birmingham Erratics Project. Zoe Jackson. (WGCG)

Thursday 16th March: The Voyage of the Beagle and its geological significance. Peter Worsley. (WGCG)

Wednesday 8th March: Title tbc on Metamorphics. Speaker tbc (Open University).

Monday 3rd April: Joint Meeting with the Parent Body. Title to be confirmed. Professor Lynne Frostick, CBE.

Thursday 20th April: HS2 through the Chilterns Chalk. Haydon Bailey. (WGCG)

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