BATH GEOLOGICAL SOCIETY

2022 was the third year affected by the COVID-19 pandemic. The Society began physically after September 2021 indoor meeting, although paused again in early 2022 due to the Omicron scare. This document records the 9 Newsletters which we produced to engage with members throughout 2022.

January 2022

- Invite to attend SWGA January Zoom lecture - Saturday 22nd January 2022 @11am
- February AGM & Zoom Lecture – Mud Volcanoes - Thursday 3nd February 2022 7:00pm
- Invite to attend Bristol Naturalists' Society Field Meeting - February 10 February @1pm
- The Devils Corkscrew, an unusual trace fossil from Nebraska – by Graham Hickman
- Membership Renewals – by Polly Sternbauer

February 2022

- Field Trip Invite to attend Bristol Naturalists' Society Thursday 10 February @1pm
- Field Trip - Behind the Scenes @ Bristol NHM Geology Store - Friday 18 February
- Field Trip – Toor Hill and Wookie Hole – Saturday 5 March @ 10am
- March Zoom Lecture – Geology and war - Thursday 3nd March 2022 @7:00pm
- Article Exploring Sally's Rift – by Maurice Tucker
- Membership Renewals – by Polly Sternbauer

March 2022

- Field Trip - Behind the Scenes @ Bristol NHM Geology Store - Thursday 10 March 11am
- 50th anniversary Lecture – Jon Blundy - Thursday 7th April 2022 @7:30pm
- Field Trip – Coombe Hay Circular Walk – Maurice Tucker – Saturday 9th April 10:30am
- Article; Land-slipped Block at Lilstock Bay – by David Hall

April 2022

- 50th anniversary lecture – John Blundy - Thursday 7th April 2022 @7:30pm
- Field Trip – Coombe Hay Circular Walk – Maurice Tucker – Saturday 9th April
- Field Trip – Lilstock Bay – David Hall - Sunday 29th May 2022
- Article; "Continuing to keep occupied" – temporary exposures in the Silurian rocks of the Tortworth Inlier by Charles Hiscock

May 2022

- May Lecture – Jon Robson - Thursday 5th May 2022 @7:30pm
- Field Trip – Lilstock Bay – David Hall - Sunday 29th May 2022 @10am
- Photos – A few photos from our 50th Anniversary lecture and field trip
- Advert – Etches Collection Children's fossil competition

June 2022

- July Lecture – Graham Hickman – Thursday 7th June 2022 @7:30pm
- Field Trip to the Forest of Dean led by Dave Green – Saturday 2nd July 2022
- Field Trip to Pen Hill, near Wells, led by Dr Doug Robinson – Saturday 16th July 2022
- Invitation from WGCC to join their Mendips weekend field trip – July 29-31st 2022

August 2022

- Obituary - ‘Jacoba Sheriff Remembered
- September Lecture – Alyson Hallet – Thursday 1st September 2022 @7:30pm
- Field Trip to the Forest of Dean led by Dave Green – Saturday 11th September 2022
- Field Trip to Pen Hill, near Wells, led by Dr Doug Robinson – Saturday 8th October 2022
- International Geodiversity Day – 6th October 2022

September 2022

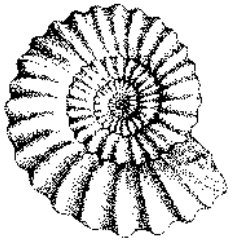
- October Lecture – Dr Haydon Bailey – Thursday 6th October 2022 @7:30pm
- Field Trip to the Forest of Dean led by Dave Green – Saturday 11th September 2022
- Field Trip to Pen Hill, near Wells, led by Dr Doug Robinson – Saturday 8th October 2022
- International Geodiversity Day – 6th October 2022

November 2022

- Zoom Lecture – Dr. David Buchs - Thursday November 3rd 2022
- Pen Hill Field Trip Report- Bob Mustow

http://www.bathgeolsoc.org.uk

Bath Geological Society Newsletter January 2022



Happy New Year and best wishes for the year ahead. We hope you enjoyed reading the BGS Journal emailed to you on Christmas day. Many thanks to our Journal Editor Mell Freeman for compiling this bumper issue and also to the many members who took the time to write articles. Given the large number of daily cases of the new Omicron variant of COVID-19 and the uncertainties ahead the Bath Geological Society has decided to return to Zoom only lectures for 1Q 2022. We are hoping to return to physical meeting is April 2022, but will be reviewing the situation closely.

The December lecture was given by **Professor John Marshall** from the School of Ocean and Earth Science, National Oceanography Centre, University of Southampton. He gave a fascinating talk about the extinction event at the Devonian Carboniferous boundary. This was our fourth physical meeting at BRLSI during 2021 and was successfully live streamed on Zoom. Feedback received from those listening remotely has been good so we think we are mastering the complexities of hybrid meeting.

Also, in December we held a **Zoom X-mas Social** with a short photo quiz followed by two interesting presentations by David Hall and Jonathan Slack. The theme being the 'Geology of kitchen worktops' it was particularly light hearted as David sought to find cakes and puddings which resembled the texture and colour of different rocks used for kitchen worktops.

On **January 22nd 2022** at 11am we have been invited by the South Wales Geologists' Association to join their Zoom lecture given by **Dr Kevin Privett** about the Geological influences on the development of the city of Bath. Email **programme@swga.org.uk** to register.

On **February 3rd 2022** we will hold our 52nd **AGM at 7pm** over Zoom. Followed by the lecture at 7:30pm by **Professor Richard Swarbrick**. Richard's lecture is about mud volcanoes as a surface expression of subterranean forces. Members will receive the Zoom invite by email.

The committee has been busy putting together the program for 2022. We have an exciting line up of speakers and some field trips in the planning. We trust that you will be continuing to support the Bath Geological Society with your membership in 2022 prompt payment of subscriptions fees are much appreciated.

Graham Hickman

chairman@bathgeolsoc.org.uk

In this issue:

BGS members have been invited to join SWGA Zoom lecture:

…Kevin Privett's lecture about Bath - I thought might be of special interest to the Bath Geological Society so please feel free to pass the information on to them as well and anybody else that you think might be interested. Best wishes, Stephen Howe

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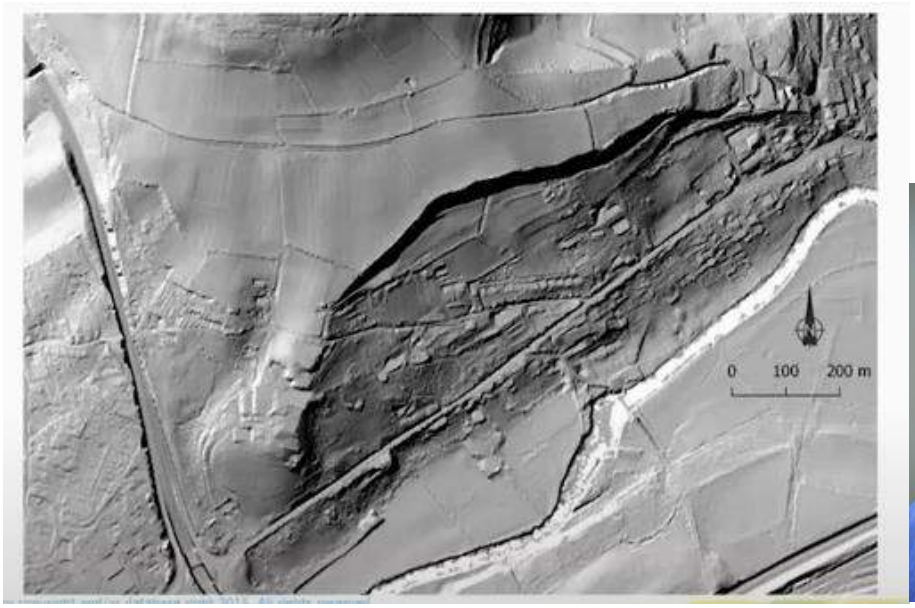
Geologists' Association - South Wales Group

January 22nd 2020 @ 11am

Zoom Lecture:
Geological influences on the development of the city of Bath by Dr Kevin Privett



Dr Kevin Privett is an engineering and environmental geologist in 2018 he was awarded the Glossop Medal by the Engineering Geology Group of the Geological Society of London for his life-long contribution to the application of engineering geology to civil engineering.

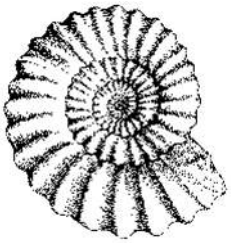
His talk will focus on the Geological influences on the development of the city of Bath, in particular the landslide risks and A46 Swainswick by-pass.

To receive the Zoom codes please email to Register:

programme@swga.org.uk

Once registered Zoom codes will be sent the week before the lecture.

Bath Geological Society 52nd AGM & lecture
Thursday February 3rd 2022
AGM @ 7:00pm followed by the lecture @7:30pm



Title: Mud volcanoes as a surface expression of subterranean forces

Speaker: Professor Richard Swarbrick, University of Durham

Mud volcanoes occur at the earth's surface in many parts of the world, but especially in areas where sediments are deposited rapidly, such as modern deltas. The talk will explain the common features of mud volcanoes (found in the rock record and at the present day) and how they can inform us about deep, high-pressure reservoirs and associated supplies of mud capable of fracturing rocks, with fracture propagation rates of more than 1.0 km a day! What would trigger such an event? Sometimes human intervention accidentally creates suitable conditions for such explosive action, illustrated by review of the LUSI mud volcano, Java, Indonesia which erupted in a paddy field in 2006 and continues to flow today.

This will be a Zoom lecture

Lectures are **free to members**. We will email the joining instructions and the Zoom meeting info to members.

£5 donation is requested from non-members and visitors via Eventbrite.

Get Tickets https://www.eventbrite.co.uk/e/mud-volcanoes-as-a-surface-expression-of-subterranean-forces-tickets-238326700577

BGS members have been invited to join BNS field meeting:

Bristol Naturalists' Society

Date: Thursday February 10th 2022, 1:00-4:00pm

Field Meeting: Geology of Saltford

Leader: Simon Carpenter (07901090676)

Meet for a 1pm start outside the Crown Public House (on the A4 at Saltford). There is no need to book in advance. Just turn up.

A ramble following quiet lanes and footpaths around Saltford to explore its fascinating geology based on a new walking trail guide produced by Simon and other BNS members.

This is not a long walk and should take between 2 – 3 hours. Some of the footpaths can be very muddy, so please wear appropriate footwear and dress warmly as there will be a few stops during the walk.

Attendees will receive a copy of the new guide as well as having the opportunity to handle a number of interesting 'Saltford' fossils found by Simon. Getting there: Saltford is on a main bus route between Bristol and Bath, with the X39 bus providing a regular service.

The walk leaflet can be downloaded here:

https://www.saltfordenvironmentgroup.org.uk/history/historyresources/Walk-Saltford-Geological-with-simon-carpenter-2021.pdf

The Devils Corkscrew, an unusual trace fossil from Nebraska

by Graham Hickman

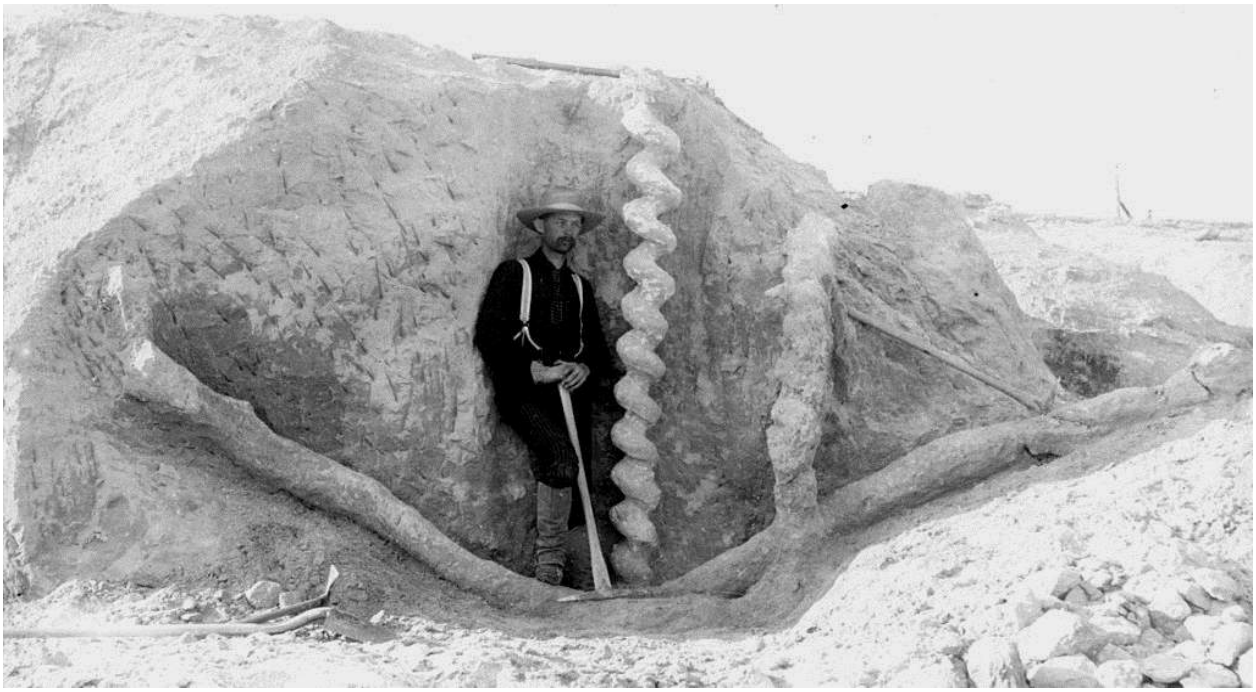
On a trip to the USA (back when international travel was the norm) I encountered a very large and unusual trace fossil in the shape of a giant cork screw (pictured below) the features are approximately 2-3m long.

Trace fossils, also called ‘’ichnofossils’’ from the Greek ichnos, are the impressions and tracks left in the sediments from biological activity. They range from impressive dinosaur foot prints, to small borings on fossil wood to feeding burrows or scratch marks. In fact, if your local high street has some natural flag stones the chances are you can find some ichnofossils on the way to the shops.

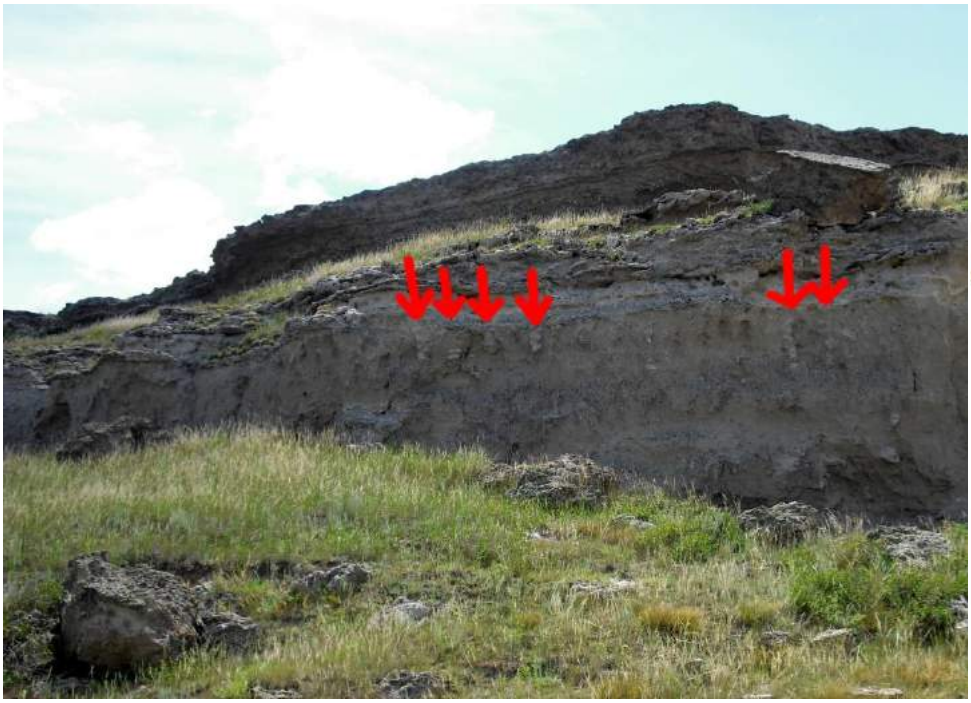
The giant corkscrew ichnofossils are preserved in Miocene sandstones with a high windblown volcanic content. They are protected in what is now the Agate Fossil Beds National Monument, in Nebraska, USA.

They were first described by the palaeontologist Erwin Hinckley Barbour in 1891 who interpreted them as the remains of giant taproots and named them Daemonelix, the ‘’devil’s corkscrew’’.

In 1904 another palaeontologist Olaf Peterson found a fossil rodent skeleton inside a horizontal extension to one of the corkscrew features and offered an alternative hypothesis that they were the burrows of a large rodent.



The photo above (courtesy of Agate Fossil Beds National Monument) is of F.C. Kenyon, a member of Barbour's field party in 1892 shows two freshly excavated adjacent burrows and lateral inclined passageways. The accepted interpretation is that the ichnofossils are the burrows of an ancient beaver-like rodent called Palaeocastor. The spatial distribution of the burrows suggests that they lived in communities, similar to the modern-day prairie dog. It is also interesting to observe that the burrows terminate at a common stratigraphic layer which would have been the ground surface at the time.



Besides the Palaeocaster devil's corkscrew burrows the park has an absolute abundance of large mammal fossils which were recovered from a 2ft bone bed; interpreted to have been a watering hole where the animals died during a severe drought. Their remains were covered and preserved in volcanic ash and mud. Agate occurs in a bed just above the bone bed and this is what gives the Park its name. As with all National Parks collecting is forbidden but there is plenty to see, touch and photograph. Well worth a visit.

References

1. Agate Fossil Beds National Monument website: http://www.nps.gov/agfo/index.htm

2. ND State Geological Survey Palaocastor poster:

https://www.dmr.nd.gov/dmr/sites/www/files/documents/paleontology/pdfs/prehistoric-life-map/Palaeocastor.pdf

3. Barbour (1895) "Is Daemonelix a Burrow? A reply to DR. Theodor Fuchs"

http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1337&context=geosciencefacpub

4. Lugn (1941) The Origin of Daemonelix

http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1366&context=geosciencefacpub

Bath Geological Society Membership - 2022

We hope you have enjoyed the varied programme of lectures over the last year, and the return of field trips, including trips to Deer Leap and Ebbor Gorge; Murhill, Avoncliff and Winsley; the Vale of Wardour, and Thornbury, South Gloucestershire, and to Clevedon last October.

It's now time to consider renewal of your membership for the next calendar year and we are accepting subscriptions from now onwards. Your subscription ensures you can continue to access lectures and attend meetings with no extra charge, access to the members' area of the website which includes the journal, past newsletters and any lecture slides provided to us by the speakers.

As ever, we have an exciting programme of lectures on a wide range of topics to look forward to in the coming year. Full details of these can be found on the website. We also have a field trip planned to visit Tor Hill and Wookey Hole Caves (Saturday 5 March), and we're hopeful of arranging further field trips later in the year.

The membership fees for the full year from January to December 2022 are:

Individual: £30

Family: £45

Student: £15

The easiest way of renewing your membership is via the website at;

https://bathgeolsoc.org.uk/membership.html

If you prefer, you can complete the attached form and hand it to one of the Committee at one of the meetings, or post to the below address.

You can make a bank transfer using the details below.

Account name: Bath Geological Society

Sort code: 40-09-19

Account number: 71262556

Reference: BGS / [Your name]

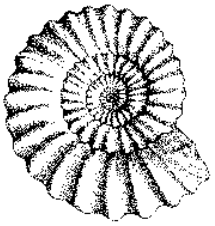
Alternatively, you can post your cheque along with your membership form to the membership secretary: Polly Sternbauer, Flat 4, Somerset House, Moorfields Road, Bath, BA2 2HU, or bring your cheque or cash payment with you to the next meeting at BRLSI.

On behalf of the Committee may I thank you for your support and we look forward to meeting with you again.

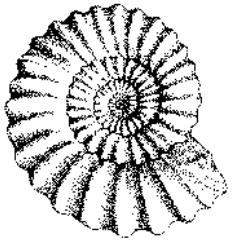
Best wishes,

Polly Sternbauer

membership@bathgeolsoc.org.uk
Bath Geological Society Membership Secretary



Bath Geological Society Newsletter February 2022



In response to our members' concerns about the large number of daily cases of the new Omicron variant of COVID-19, we have returned to virtual 'zoom only' lectures for 1Q 2022. We are hoping to return to physical indoor meetings in April 2022. There are quite a few opportunities to join field trips in February and March, as advertised in this newsletter, and we encourage you to sign up.

In January members were also able to join with the South Wales Geologists' Association to hear a lecture given by **Dr Kevin Privett** about the Geological influences on the development of the city of Bath. This was extremely interesting and received good feedback. It has also prompted ideas for a local field trip to explore some of the features described by Kevin during his talk.

On **February 3rd 2022** we held our 52nd **AGM** over Zoom. This was well attended. Discussions were had among the membership about returning to physical meetings and the mix of hybrid or zoom only meetings. The lack of social interaction over the last few years is a concern, while the benefits of virtual meetings have allowed participation from members who live further afield or unable to attend physical meetings. There are no definitive answers, but it is clear that the use of virtual technology to facilitate meetings has now become common place.

The February lecture was given by **Professor Richard Swarbrick** from University of Durham. He gave a fascinating talk about mud volcanoes as a surface expression of subterranean forces. Richard has recently moved to the Bath area and we are pleased to welcome him as a new member of the Bath Geological Society.

On March 3rd 2022 our monthly lecture will be given by Professor Paul Nathaniel, from Nottingham University. He will be speaking about Geology and war: an exploration of how the ground influences battles. Members will receive the Zoom invite by email.

We thank those members who have paid their subscription fees promptly. This certainly makes the job of the membership secretary easier and ensures you continue to receive newsletters and zoom codes for the lectures. Thank you for continuing to support the Bath Geological Society with your membership in 2022.

Graham Hickman

chairman@bathgeolsoc.org.uk

In this issue:

BGS members have been invited to join BNS field meeting:

Bristol Naturalists' Society

Date: Thursday February 10th 2022, 1:00-4:00pm

Field Meeting: Geology of Saltford

Leader: Simon Carpenter (07901090676)

Meet for a 1pm start outside the Crown Public House (on the A4 at Saltford). There is no need to book in advance. Just turn up.

A ramble following quiet lanes and footpaths around Saltford to explore its fascinating geology based on a new walking trail guide produced by Simon and other BNS members.

This is not a long walk and should take between 2 – 3 hours. Some of the footpaths can be very muddy, so please wear appropriate footwear and dress warmly as there will be several stops during the walk.

Attendees will receive a copy of the new guide, as well as having the opportunity to handle a number of interesting 'Saltford' fossils found by Simon. Getting there: Saltford is on a main bus route between Bristol and Bath, with the X39 bus providing a regular service.

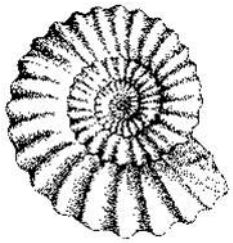
The walk leaflet can be downloaded here:

https://www.saltfordenvironmentgroup.org.uk/history/historyresources/Walk-Saltford-Geological-with-simon-carpenter-2021.pdf

Field Trip: Behind the scenes at Bristol NHM Geology Store

Leader: Deborah Hutchinson (Geology Curator)

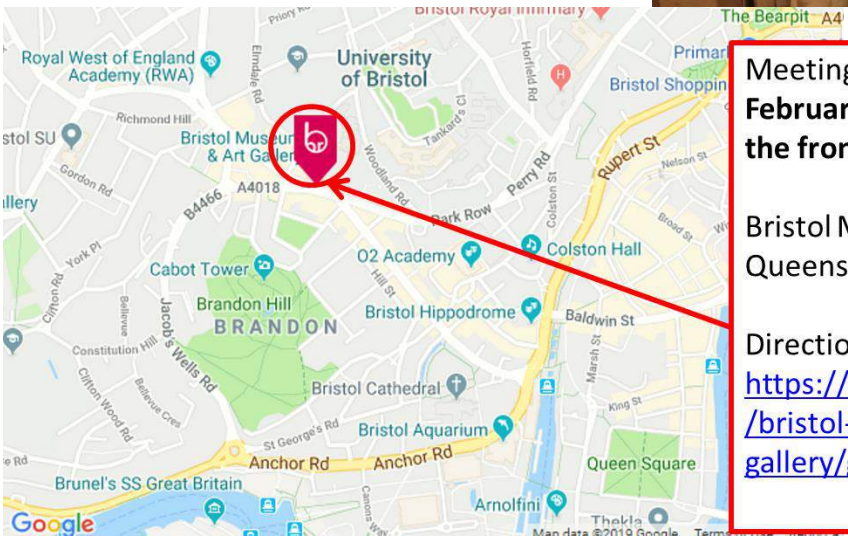
Friday, Feb 18, 2022 @ 11am



Field Trip Description

Tours on average last 45 minutes, 6 people per tour and will run several times if required. Plenty to view in the galleries while waiting and there is a café. Please note: there is no step-free access to the geology store, climbing of stairs is required to enter and leave the geology store. Face masks will need to be worn inside the museum.

To register please email Bob Mustow at field@bathgeolsoc.org.uk



Meeting at **11am on Friday 18th February 2022. By wooden bench in the front hall.**

Bristol Museum and Art Gallery
Queens Rd, Bristol, BS8 1RL

Directions:
https://www.bristolmuseums.org.uk/bristol-museum-and-art-gallery/getting-here/#by-train

Field Trip: Tor Hill & Wookey Hole Caves

Leader Doug Robinson

Saturday, Mar 5, 2022 10am – 4pm

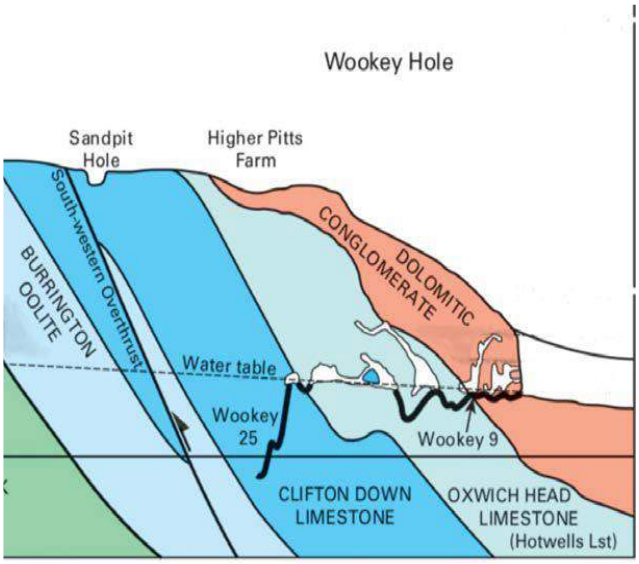
Field Trip Description

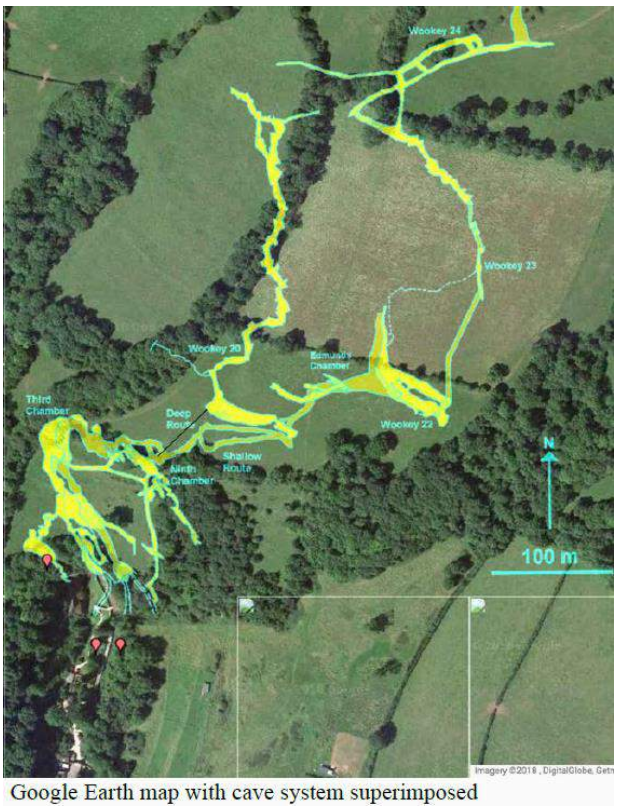
A visit to both Tor Woods (just east of Wells) & Wookey Hole Caves.

Tor Woods is classified a Special Landscape Feature by Mendip Council and we will have the opportunity to examine an exposure which provides insights into the famous Wells springs.

At Wookey Hole we will use a new access tunnel to explore the 20th Chamber of the caves which features what is regarded as the best example of fluting in the UK due to their unusual extent and size. This is a private tour of the caves and the cost will be £14 per person for GROUP OF 15. So far, we have eight people signed up.

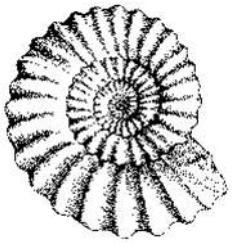
To register please email Bob Mustow at field@bathgeolsoc.org.uk





Google Earth map with cave system superimposed

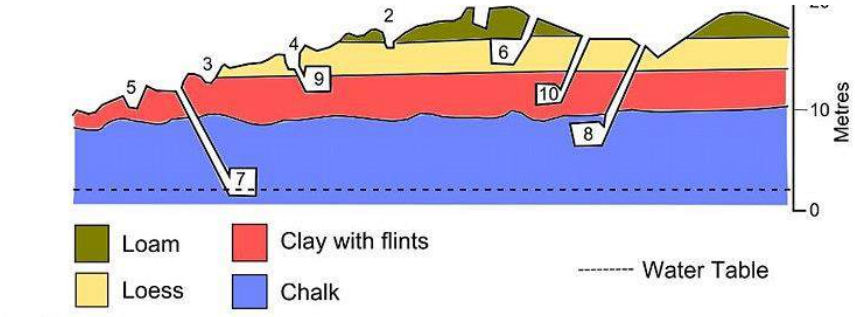
Bath Geological Society lecture



Thursday March 3rd 2022 @7:30pm

Title: Geology and war: an exploration of how the ground influences battles

Speaker: Professor Paul Nathanail, University of Nottingham



Good Positions
2 - Trenches drained by loess
4 - Trenches drained by loess
6 - Dugout roofed by loam & drained by loess
8 - Deep dugout in dry chalk
10 - Deep dugout in clay

Poor Positions
1 - Trench in impermeable loam
3 - Trench floored by impermeable clay
5 - Trench floored by impermeable clay
7 - Dugout in zone of saturated chalk
9 - Dugout roofed by permeable loess & floored by clay

This presentation will demonstrate the relevance of sound geological understanding of the battlefield throughout history - from Hezekaiah and Leonidas, to Waterloo and Isandlwana, the Messines Ridge and Normandy up to more recent examples in the Falklands, Cyprus and Bosnia.

This will be a Zoom lecture

Lectures are **free to members**. We will email the joining instructions and the Zoom meeting info to members.

£5 donation is requested from non-members and visitors via Eventbrite.

Get Tickets

https://www.eventbrite.co.uk/e/geology-and-war-an-exploration-of-how-the-ground-influences-battles-tickets-261179293297

DOWN A RABBIT HOLE: Exploring Sally's Rift – A gull cave near Bathford by Maurice Tucker

Last week I was lucky enough to join a group of cavers from the Gloucestershire Speleological Society to explore Sally's Rift (and was really pleased to emerge into the sunshine 3½ hours later with a beer in the Crown at Bathford!). Apart from the anxiety at the start and the elation of survival at the end, it was really fascinating …. The things one does for one's life's passion – limestone!

Sally's Rift is a gull cave – this is a particular type of cave, quite different from the 'normal' type, formed by karstic dissolution of limestone, such as those in the Mendips and Yorkshire Dales. Gull caves are formed by small movements of the limestone mass along pre-existing fractures, so that the passages are usually long (10s to 100 metres), straight and narrow (around 0.5 metres wide). They are commonly parallel to each other, with cross passages. Sally's Rift, entrance located in the wooded slope above the A 363 Batheaston to Bradford-on-Avon Sally in the Woods Road, is one of the longest gull caves in England (total length of passages is at least 350 m) and is developed in the Great Oolite.

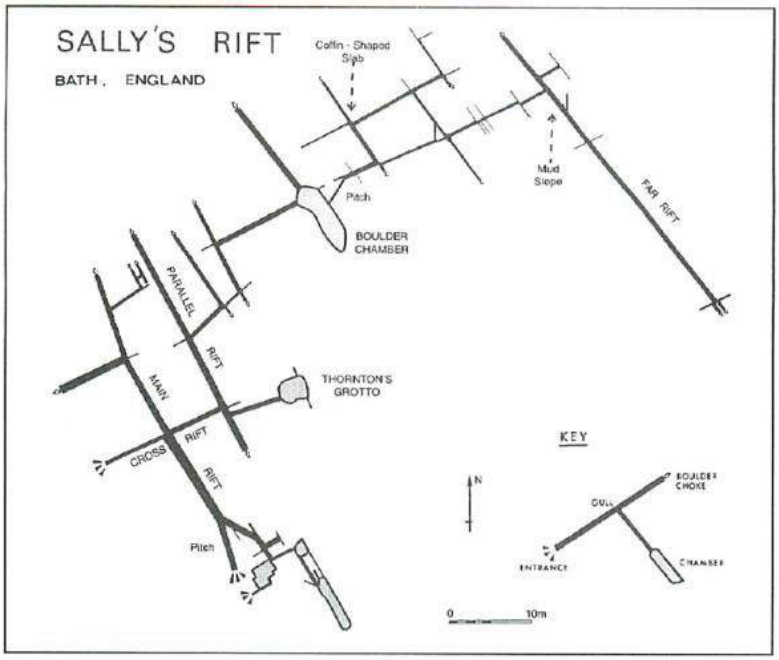


Figure 1. Map of Sally's Rift from Self (1995).

Reference:

Self, C.A. (1995) The relationship between the gull cave Sally's Rift and the development of the River Avon south of Bath. Proceedings of the Bristol University Speleological Society 20, 91-108.

In general, there are few 'normal' caves in the Jurassic oolites, compared to the large number in Carboniferous limestone. This may relate in part to the porous nature of the oolite rocks themselves (porosities around 20%) so that rainwater quickly seeps through, rather than being concentrated along joints and fractures (conduit flow), leading to dissolution and cave formation. Gull caves on the other hand are more common in flat-lying strata and are commonly related to cambering along hillslopes, especially where hard competent limestone lies over softer impermeable strata, like shales or mudrocks. Gull caves are a feature of the Great Oolite around Bath and elsewhere in the Cotswolds and probably relate to glacial-interglacial fluctuations, along with groundwater changes and river downcutting, such that fractures in the oolite open up, especially along slopes where valleys are forming. The two dominant fracture directions in the Great Oolite in this area are 65o (+/-5o) and 150o (+/- 10o), i.e., close to NE-SW and NW-SE (Self 1995, Figure 1), and their opening up has produced a network of passages or a maze cave. Calcite precipitated on the walls in Sally's Rift (flowstone) has been dated as 350,000 years – probably a time when the region was coming out of an ice age (MIS 10, Hoxnian) and it was wetter.

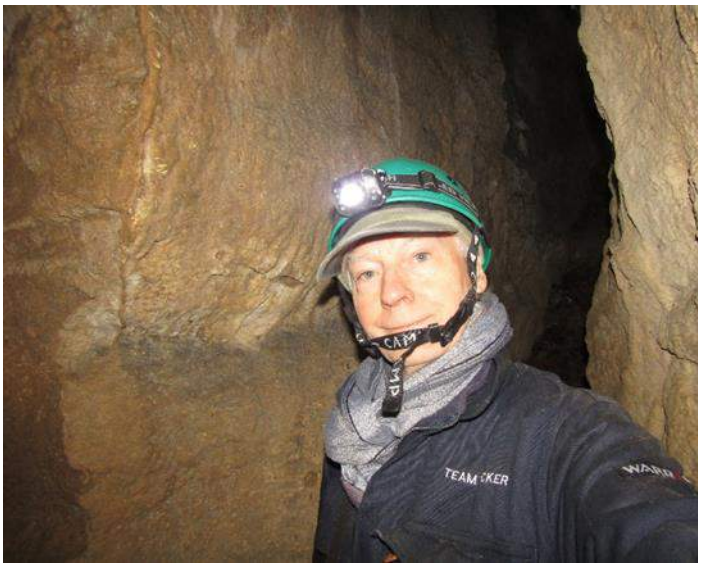


Figure 2 (Right). Long narrow passages with fallen blocks to negotiate.

Figure 3 (above). Well at least I managed to smile!

There are several entrances to Sally's Rift – all equally tricky to access (and to find, it took 20 minutes wandering around the woods!) all are tight squeezes. The one we took involved wriggling in backwards for 5 metres in a space 30 cm high, until a 5 m drop which involved climbing down on a wire ladder 15 cm wide, then another climb / ladder down 7 m to floor level.

Once in the cave, the narrow straight passages can be scrambled along, in some places sideways, as it's rather narrow, along with fallen blocks of limestone to climb over or crawl under (Figure 2). Passages go off into the hillside and meet other long passages parallel to the first, and there are a few slightly larger chambers where one can gather. You cannot be agoraphobic! It is a very dry cave – no mud, but surprisingly some spiders and moths on the walls and a few bats were seen however, extra care was taken not to disturb them. And then getting out? Very tricky, but back the way we came in, climbing up many metres (no ladder this time, few foot-hand holds, pushing against the walls) then having to drag oneself 90 degrees into the really tight 30 cm-high space and inch slowly forwards. That was really difficult – but one could now see daylight – what an inspiration that was.

So, what was there to see for all the effort and adrenalin? The layout of the cave, formed by the limestone fractures, was fascinating. There are also passage walls, notably the NW-SE oriented ones, where the rock has been etched from water flowing down so that the sedimentary structures, cross-bedding, were clearly visible and calcite-filled veins standing out from the face. Gull caves do not usually contain many stalactites / speleothems, but some walls were covered in flowstone, calcite precipitated in rippled patterns, from a much wetter time.

So, an exciting way to spend a Sunday afternoon …… but a couple of nights following, I did wake up in a cold sweat …. what if…? Am I looking forward to the next adventure? Haven't decided! Probably (Figure 3).

There are also several videos on Sally's Rift on U-tube.

Maurice Tucker

Bath Geological Society Membership - 2022

We have an exciting programme of lectures and field trips planned for 2022 this is made possible by the ongoing support of our members.

The membership fees for the full year from January to December 2022 are:

Individual: £30

Family: £45

Student: £15

The easiest way of renewing your membership is via the website at;

https://bathgeolsoc.org.uk/membership.html

If you prefer, you can complete the attached form and hand it to one of the Committee at one of the meetings, or post to the below address.

You can make a bank transfer using the details below.

Account name: Bath Geological Society

Sort code: 40-09-19

Account number: 71262556

Reference: BGS / [Your name]

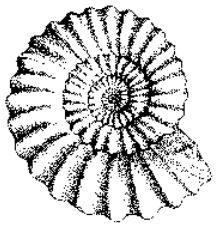
Alternatively, you can post your cheque along with your membership form to the membership secretary: Polly Sternbauer, Flat 4, Somerset House, Moorfields Road, Bath, BA2 2HU, or bring your cheque or cash payment with you to the next meeting at BRLSI.

On behalf of the Committee may I thank you for your support and we look forward to meeting with you again.

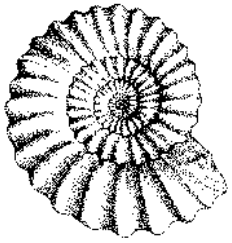
Best wishes,

Polly Sternbauer

membership@bathgeolsoc.org.uk
Bath Geological Society Membership Secretary



Bath Geological Society Newsletter March 2022



February has been a particularly stormy month. On Friday 18th February a Red Weather Warning was issued for SW England and our planned visit to the Bristol Natural History Museum had to be cancelled at short notice. We are pleased however that this has been rescheduled for Thursday 10th March and we encourage you to sign up by contacting Bob Mustow.

The March monthly lecture was given by **Professor Paul Nathaniel**, from Nottingham University. He spoke about Geology and war; an exploration of how the ground influences battles. This was a particularly interesting lecture and was well attended on Zoom.

We are grateful too for **Dr Doug Robinson** who led an excellent field trip to Tor Hill in Wells and Wookey Hole on March 5th. We were treated to excellent weather and some very interesting rocks. The social aspects of these events cannot be underestimating as it provides a great opportunity for members to re-connect after the forced separation resulting from the Covid-19 pandemic.

As the daily cases of COVID-19 continue to fall and the government is removing restrictions, we are planning to return to physical indoor meetings. On **April 7th 2022 Professor Jon Blundy** will be giving our belated 50th Anniversary lecture at BRLSI and we encourage you to attend and spread the word. We are also planning an anniversary field trip **on April 9th 2022 Professor Maurice Tucker** will be leading us on a circular walk around Coombe Hay and Midford.

We thank those members who have paid their subscription fees promptly. This certainly makes the job of the membership secretary easier and ensures you continue to receive newsletters and information for the lectures. Thank you for continuing to support the Bath Geological Society with your membership in 2022.

Graham Hickman

chairman@bathgeolsoc.org.uk

In this issue:

Field Trip: Behind the scenes at Bristol NHM Geology Store

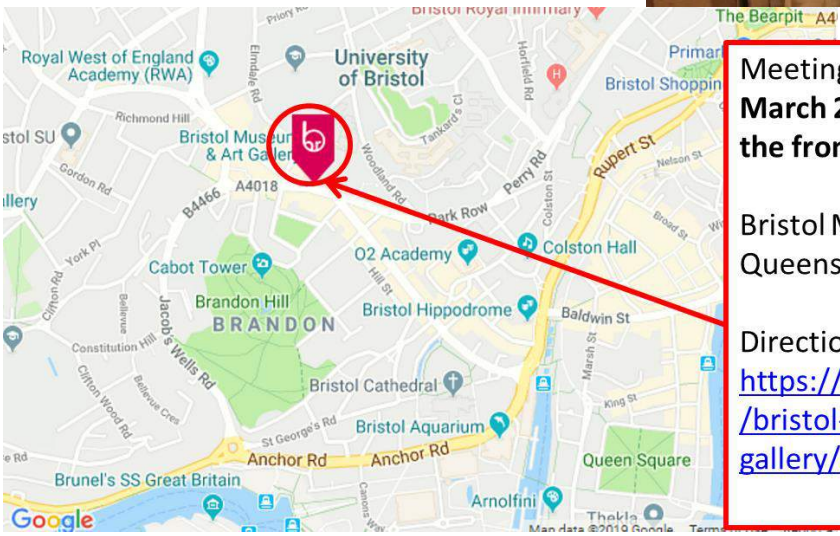
Leader: Deborah Hutchinson (Geology Curator)

Thursday, March 10, 2022 @ 11am (Rescheduled date)

Field Trip Description

Tours on average last 45 minutes, 6 people per tour and will run several times if required. Plenty to view in the galleries while waiting and there is a café. Please note: there is no step-free access to the geology store, climbing of stairs is required to enter and leave the geology store. Face masks will need to be worn inside the museum.

To register please email Bob Mustow at field@bathgeolsoc.org.uk

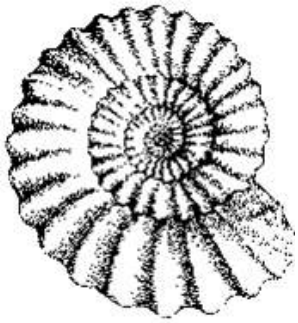


Meeting at **11am on Thursday 10th March 2022. By wooden bench in the front hall.**

Bristol Museum and Art Gallery
Queens Rd, Bristol, BS8 1RL

Directions:
https://www.bristolmuseums.org.uk/bristol-museum-and-art-gallery/getting-here/#by-train

Bath Geological Society 50th Anniversary lecture
Thursday April 7th 2022 @7:30pm



Title: Mining Magmas for Metals and Energy – a novel strategy for achieving Net Zero

Speaker: Professor Jon Blundy, University of Oxford

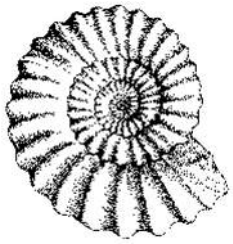
The 50th Anniversary Lecture given by Professor Jon Blundy, Royal Society Research Professor, Department of Earth Sciences, University of Oxford.

The transition to Net Zero will place unprecedented demand on natural resources requiring some new thinking about where to find them and how to extract them. In this talk I will explore the potential for magmatic systems, such as those beneath volcanoes, to provide accessible sources of both geothermal power and a diversity of metals including many that are essential for the energy transition. I will draw upon new research in volcanology, igneous petrology, economic geology and high-pressure and temperature experiments.

This lecture heralds the start of our long-awaited celebrations. Please join us at this prodigious event and enjoy celebratory drinks afterwards.
Location: Bath Royal Literary and Scientific Institution, 16-18 Queen Square, Bath BA1 2HN
Lectures are **free to members**. £5 donation is requested from non-members and visitors

The Bath Geological Society would like to thank the Geologists' Association for the provision of a GA Regional Meetings Grant in support of our 50th Anniversary event.

50th Anniversary Field Trip: Coombe Hay circular Walk



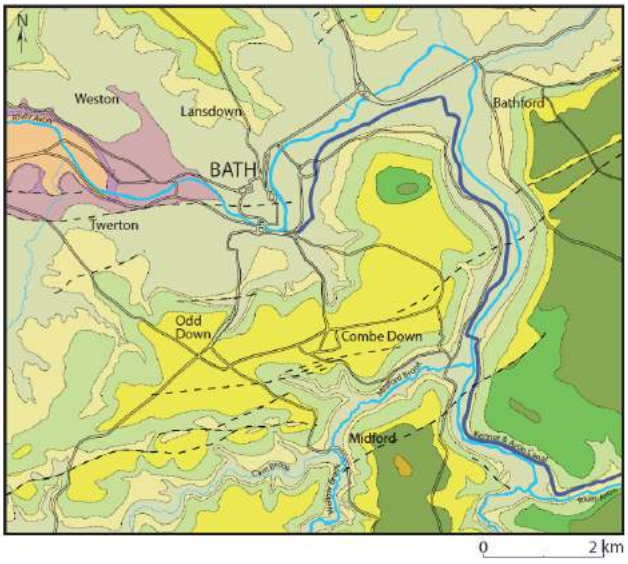
Leader: Professor Maurice Tucker

Saturday April 9th, 2022 @ 10:30am-4:30pm

Field Trip Description

This trip will be a guided 5-mile circular walk from Odd Down to Combe Hay to Midford to Tucking Mill to Horsecombe Vale via Southstoke and back to Odd Down.

It is a walk-through pleasant landscape with pretty views and some outcrops of the Middle Jurassic: Bridport/Midford Sands and the Inferior Oolite around Midford.



There will be lots of history related to the geology;

- We will pass old Fuller's Earth workings, near the P&R
- Great Oolite mines and quarries
- Sections of the Somerset Coal Canal (SCC) with its old locks (finished 1805)
- Route of the Limpley Stoke to Camerton railway which replaced the canal in the 1882, and the Bath to Bournemouth railway (Somerset & Dorset line, 1862-1966), all providing insights into the industrial heritage of the area.
- We will also be in the area where William Smith conducted some of his early surveys for the route of the SCC after which he produced his first map: the Geology of 5 miles around Bath (1799) and realised the significance of fossils in biostratigraphy.
- We will also see the house where Smith lived in Tucking Mill.

The walk will be on footpaths, tracks and minor roads (care needed); there may be some mud if recent rain. There are some hills and slopes. The William Smith Trail, produced by the Combe Down Heritage Society with input from the Bath Geological Soc (2016), covers part of this walk.

To register please email Bob Mustow at field@bathgeolsoc.org.uk

Land-slipped Block at Lilstock Bay – by David Hall

Although landslips are very common on this stretch of coastline (Lilstock Bay, West Somerset Coast, near Hinkley Point) the interest of this particular block is that it preserves the complete type section of the Lilstock Formation. It spans the Triassic to Jurassic boundary and in particular the end Triassic biotic crisis (extinction).

It is not advisable to linger too long looking at the adjacent cliff exposures due to the unstable and overhanging ledges of the Blue Lias. The potential drop is 15 to 20m! However, the detached block provides a safe opportunity to examine this transitional section in detail and also serves as a good calibration point for the surrounding outcrops. **Fig 1:** Detached block of Lilstock Formation at Lilstock Bay

Figure 1. shows a detached segment of the cliff at Lilstock Bay that has slipped a short distance down to beach level. Key to the formation names: WF : Westbury Formation, LF : Lilstock Formation, BL : Blue Lias Formation.

Location and Context:

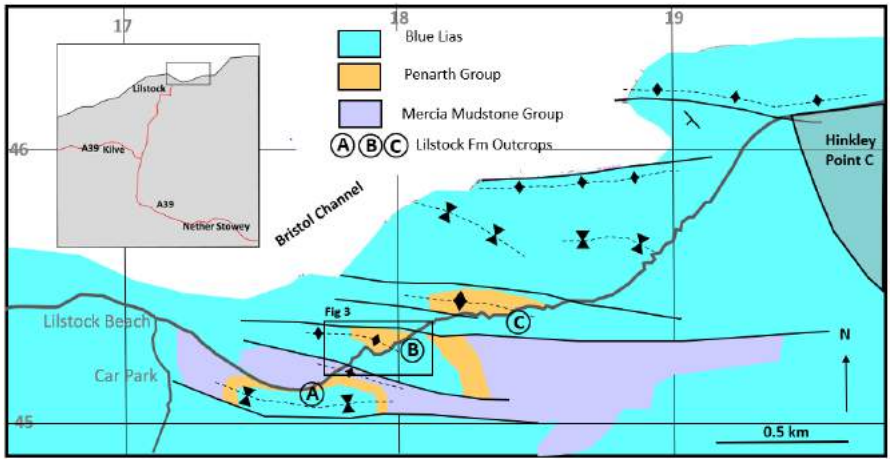


Fig 2: Location and simplified geological map (after Glenn et al 2005). The best outcrops of the Lilstock Formations are found at B (cliff plus foreshore).

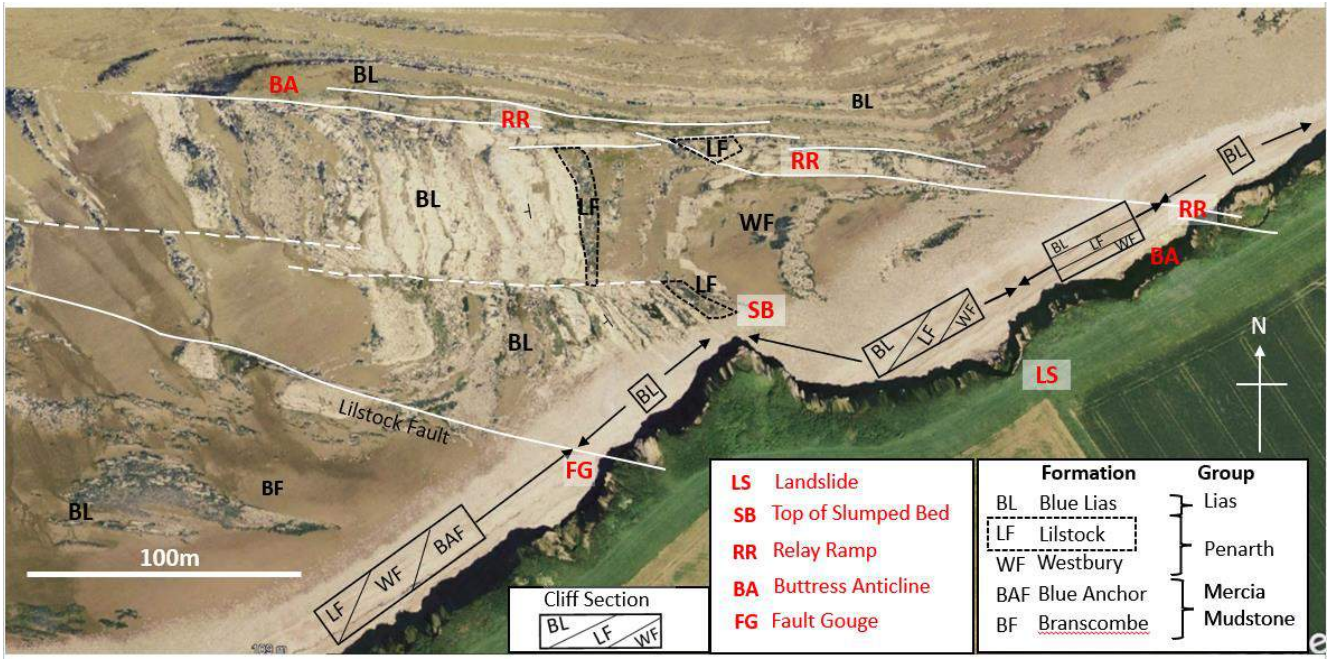


Fig 3: Satellite view of area B. The detached block is located in the landslide at LS. An extensive bedding plane outcrop of slump folds in Cotham siltstones (probable seismite) is at SB. The fault / fold structure is also of significant interest including fault segments linked by fractured relay ramps (RR), buttress anticlines (BA) and a text-book example of a fault gouge at FG where the Blue Anchor Fm (hanging wall) is faulted against Lias.

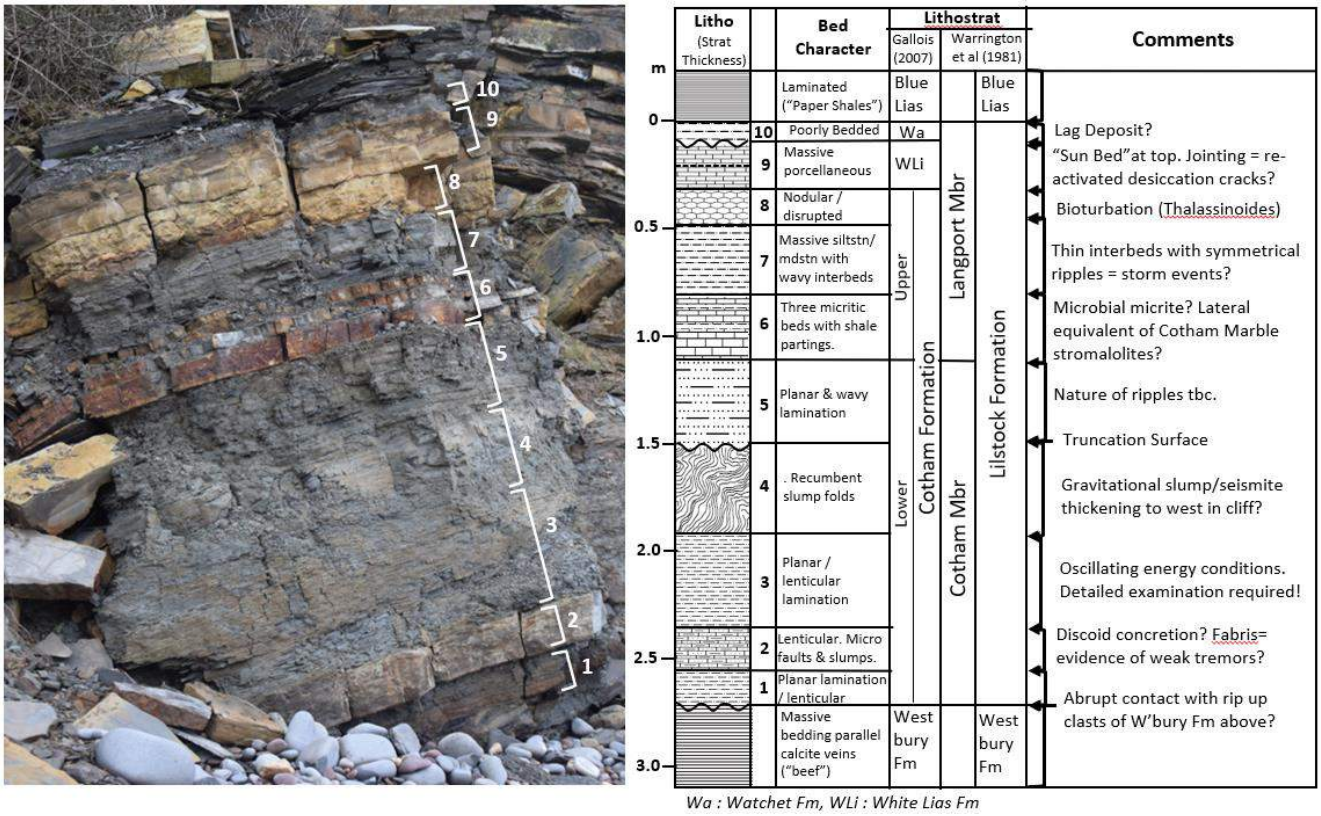


Fig 4: Stratigraphic summary of detached block. The comments shown above are just for starters. There is a lot more to say about the relative influence of tectonism and environmental factors (e.g., sea level and climatic variations), the possibility of bolide (extra-terrestrial) impacts and the relationship with outcrops both locally (around the Severn Estuary) and further afield (UK and globally). This is beyond the scope of this short note. However, for those who are interested, the December 2021 issue of the PGA (Vol 132) provides some good papers on the equivalent Triassic-

Jurassic boundary sequence in Northern Ireland plus the nature of the soft sediment deformation within the Cotham Member (Northern Ireland and West Somerset Coast).

A couple of details

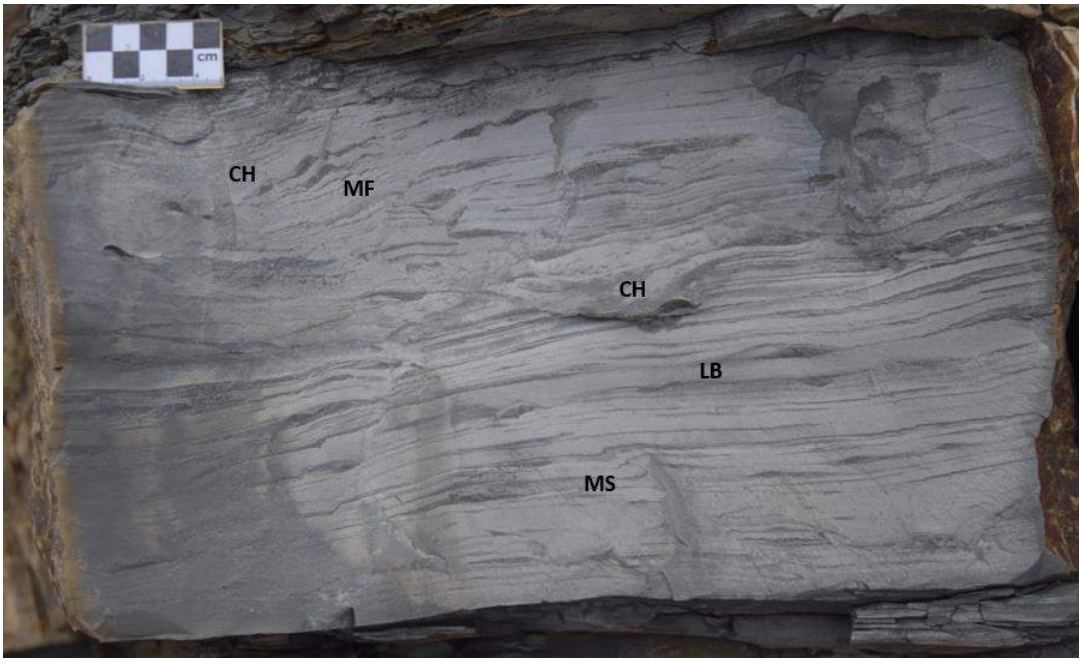


Fig 5. Unit 2: Close up of broken surface. MF : micro-faults, CH : channelling, LB : lenticular Bedding, MS : micro-slumps

Fig 6: Unit 4. Close up showing recumbent slump fold. Smaller scale slumps and other fluidised features can also be seen.

If we can arrange a date when the tides are favourable David Hall has offered to lead a field trip here for the Bath Geological Society.

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On behalf of the Committee may I thank you for your support and we look forward to meeting with you again.

Best wishes,

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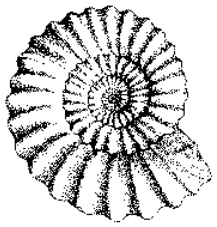
membership@bathgeolsoc.org.uk
Bath Geological Society Membership Secretary



Bath Geological Society Newsletter April 2022

The return of some sunshine during March has been a pleasant change. The rescheduled visit to the **Bristol Natural History Museum** went ahead as planned on Thursday 10th March and those who were able to attend reported that it was a very informative and enjoyable event.

In 2020 the Bath Geological Society was preparing to celebrate our 50th Anniversary when the Covid-19 pandemic brought the whole country to a standstill. Now two years on, with the benefit of vaccinations, the government restrictions have been lifted and life is returning to normal. Although cases are high, the Omicron BA.2 variant seems to be resulting in milder symptoms and we are learning to live with the virus. As such we are planning a return to physical indoor meetings.

On **April 7th 2022 Professor Jon Blundy** will be giving our belated 50th Anniversary lecture at BRLSI and we encourage you to attend in person. We are also planning an anniversary field trip **on April 9th 2022 Professor Maurice Tucker** will be leading us on a circular walk around Coombe Hay and Midford. Further details are given in this newsletter.

A short history of the Bath Geological Society can be found on our website at; https://bathgeolsoc.org.uk/about/history.html

David Hall has kindly agreed to lead a **field trip to Lilstock Bay on Sunday 29th May 2022**. This follows on nicely from his article in the March Newsletter. Further details are given in this newsletter.

Charles Hiscock has also provided a follow-on article recording the temporary exposures in the Silurian rocks of the Tortworth Inlier.

Graham Hickman

chairman@bathgeolsoc.org.uk

In this issue:

Bath Geological Society 50th Anniversary lecture
Thursday April 7th 2022 @7:30pm

Title: Mining Magmas for Metals and Energy – a novel strategy for achieving Net Zero

Speaker: Professor Jon Blundy, University of Oxford

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Leader: Professor Maurice Tucker

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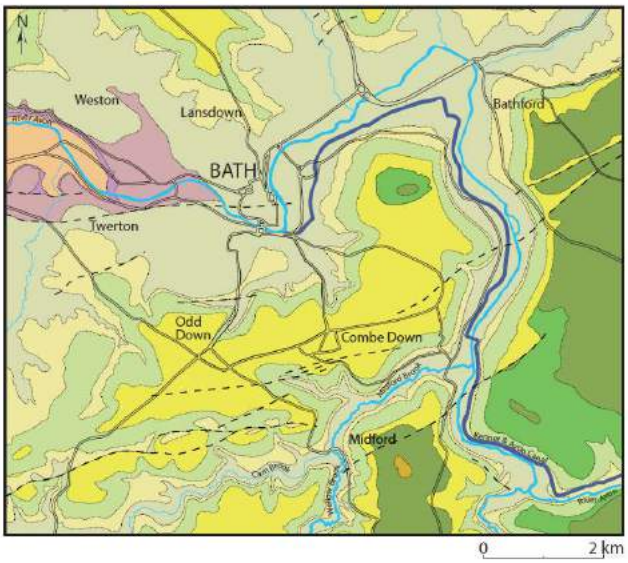

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The walk will be on footpaths, tracks and minor roads (care needed); there may be some mud if recent rain. There are some hills and slopes. The William Smith Trail, produced by the Combe Down Heritage Society with input from the Bath Geological Soc (2016), covers part of this walk.

Meeting location Will be provided on registration. Members: Free Visitors: £3.

To register please email Bob Mustow at field@bathgeolsoc.org.uk

Bath Geological Society Field Trip: Lilstock Bay

Leader: David Hall

Sunday 29th May, 2022 @ 10:30am-4:00pm

Field Trip Description

The day will be spent looking at the cliff and foreshore sections to the east of the beach access at Lilstock Bay. The trip will examine the Triassic-Jurassic transition sequence between the Penarth Group (Westbury and Lilstock Formations) and the Blue Lias. This will provide the opportunity to discuss the causes of end Triassic extinction / biotic crisis. We will also look at the fault and fractures exposed in both cliff and foreshore including relay ramps which provide an appreciation of how faults propagate and link-up. A classic example of a fault gouge will also be examined.

Other subjects of interest include coastal geomorphology and the fossils (ammonites!). The remains of the old port near the beach access will also be visited.

Satellite view (Google Earth captured 06-2006) showing fault structure

Practical and HSE: Low tide on 29th May is about mid-day so most of the walking will be on the foreshore platform which is relatively easy, although some clambering over the rocky ledges, which form mico-cuestas, will be required. Walking over rounded cobbles of the upper shore face storm beach will also be necessary, especially later in the afternoon, due to the rising tide. It should be possible to avoid thick Severn Estuary mud. There are no facilities on the beach. Please bring a packed lunch.

Parts of the cliff face are especially hazardous due to overhanging ledges of Blue Lias paper shales and limestones. Extreme care should be taken and hard hats are mandatory. Stout boots with ankle support are advised.

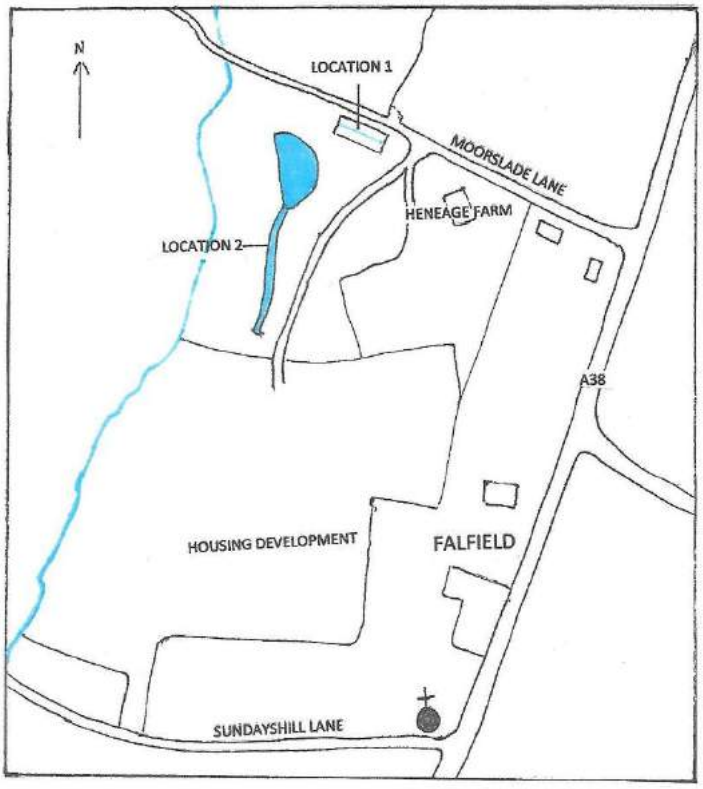
Meeting location Will be provided on registration. Members: Free Visitors: £3.

To register please email Bob Mustow at field@bathgeolsoc.org.uk

“Continuing to keep occupied” – temporary exposures in the Silurian rocks of the Tortworth Inlier

By Charles Hiscock

In the Society Newsletter for April 2020, I wrote an article entitled “Keeping Occupied” in which I described the early stages of a new housing development at Falfield. At that time the only work that had been done was the widening of Moorslade Lane from the A38 to the access point of the development which yielded two fossils from the Tortworth and Damery Beds, which I described in my article. This article records details of two temporary exposures, location 1 in the Llandovery Tortworth Beds and location 2 in the Wenlock Brinkmarsh Beds of the Silurian rocks of the Tortworth Inlier (Fig. 1a).



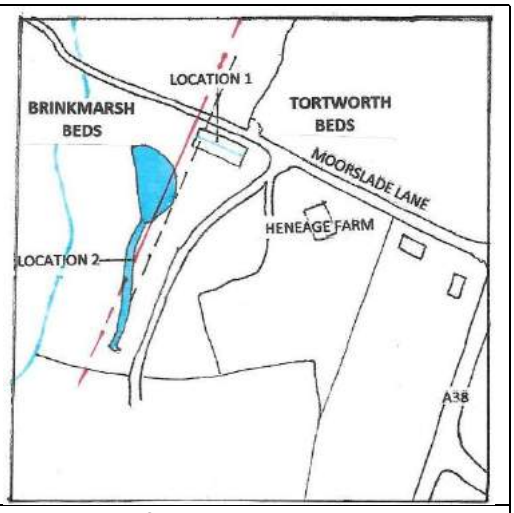


Figure 1a left – showing locations 1 and 2

Figure 1b above – Map showing showing positions of the Pycnactis Band. (red line) And the junction (black line) between the Brinkmarsh and Toutworth Beds west of Heneage Farm, Falfield

Rocks in the southern half of the Tortworth Inlier to the west of the A38 have been rarely exposed. Reed and Reynolds (1908) described fossils from the Brinkmarsh Beds while Pocock (1937) recorded vertical strata in the same formation just west of Falfield.

In 1972 M L K Curtis, onetime Curator of Geology at Bristol Museum, documented the rocks of the Tortworth Inlier and named the formations, these names still used by the British Geological Survey. Of relevance to this article, he described the rocks in Brinkmarsh Quarry, in the very south of the Inlier, where the lowest limestone is exposed and overlain by a reddish mudstone which he called the Pycnactis Band due to the abundance of the rugose coral Pycnactis mitratis. Curtis also established that the Tortworth Beds pass conformably into the Brinkmarsh Beds. The nature of the two formations at the boundary is very similar so the base of the Brinkmarsh Beds was placed at the bottom of the lowest limestone or the highly crinoidal limestone bed.

The succession in the Inlier is –

Silurian	Ludlow Series	not exposed in the southern area	
	Wenlock Series	Brinkmarsh Beds	
	Llandovery Series	Tortworth Beds	
		Upper Trap	
		Damery Beds	
		Lower Trap	
	Unconformity		
Ordovician	Tremadoc Series	Micklewood Beds	{not exposed in the
		Breadstone Shales	{area of study

The temporary exposures are the result of development of a new housing estate. This started with the construction of an access road across a gently sloping field at the bottom of which a small stream and a footpath run in a north/south direction. The field was landscaped with the excavation of a flood relief ditch (location 1) on the northern boundary and a drainage channel (location 2) across the lowest part of the field (Figure 1a).

Photo 1- location 1 Moorslade Lane.

Location 1 is about 3 metres deep and parallel to Moorslade Lane with exposed loose rock on both banks. On the northern bank was a sequence of vertical red to purple friable structureless mudstones alternating with thin bands of hard fine greenish parallel bedded sandstone typical of the topmost Tortworth Beds (Photo 1). The bedding was clearly exposed and had a slight fold in the top half to the west, albeit somewhat disturbed by the excavation of the ditch. In spite of careful searching, no fossils were found in either rock types except a few sedimentary traces on the greenish sandstone. Two thicker vertical beds of brick red sandy crinoidal limestone, 8 metres and 13 metres from the western culvert stood out in contrast to the pale green bedding. The first bed showed a thin veneer of fine greenish sandstone on top of the crinoidal limestone with a well-preserved example of the rugose coral Palaeocyclus porpita. This is of particular interest as the coral has previously only been found in the bottom bed of the Tortworth Beds immediately on the basaltic Upper Trap.

Location 2 is a shallow channel, about 100 metres long, roughly parallel to the road carrying water from a pumping station through several culverts ending with an ornamental pond. Rocks had been exposed on both banks of the channel which is cut into brick red coloured mudstone. On the east bank between 0 and 3 metres north and south of the central culvert were abundant pieces of highly crinoidal limestone (photo 2).

Photo 2 - crinoidal limestone

Photo 3 - loose crinoid ossicles

On the surface of the mudstone the winter freeze/thaw process had released large numbers of loose crinoid ossicles (photo 3). Binocular microscope examination (X10) of the washed material showed abundant ossicles from 6mm diameter down to <1mm.

Photo 4 - rugose coral *Pycnactis mitratis*

Photo 5 - tabulate coral *Coenites juniperinus*

Among the loose blocks on the bank were found large numbers of the small rugose coral *Pycnactis mitratis* (photo 4), the marker fossil of the Pycnactis Band as named by Curtis (1972) and a single rugose coral *Tryplasma loveni*. Also, on the east bank were blocks of dark red reef-like masses of the tabulate coral *Coenites juniperinus* (photo 5) with one small block showing a trilobite pygidium. In the loose brash abundant small brachiopods were collected including *Atrypa reticularis*, *Howellella anglicans, Microphaeridiorynchus nucula*, one poor specimen of the brachial (lower) valve of *Resserella whitfieldensis*, a single internal mould of gastropod *Poleumita sp* and internal moulds of the gastropod *Cyclonema sp*. A distinct difference between the Pycnactis Band in Brinkmarsh Quarry where *R. whitfieldensis* is abundant and Location 2 where it is almost completely absent. All these forms have been recorded, both by Curtis (1955 and 1972) and the author from the Pycnactis Band overlying the lowest limestone in Brinkmarsh Quarry in the south of the Inlier.

Mapping the boundary of the Tortworth and Brinkmarsh Beds

About 2 metres north of the centre culvert two short exposures of the vertically bedded basal crinoidal limestone were recorded the alignment of which is north-north-east passing approximately 4 metres west of the west culvert of Location 1. On the east side of the access road, loose rock fragments of the fine hard reddish sandstone of Tortworth Beds exhibit surfaces showing sedimentary features and occasional trace fossils. The absence of Brinkmarsh Beds material east of the road confirms that the boundary between the two formations lies between the channel and the access road.

The excavation of the two locations has provided an insight into the Llandovery Tortworth Beds and Wenlock Brinkmarsh Beds in an area where exposures have been rare or non-existent. Although the British Geological Survey records no Brinkmarsh Beds south of Moorslade Lane, Curtis records the beds continuing south to just beyond Sundayshill Lane and placed the boundary between the two formations about 300 metres west of the A38, where it is overstepped by Mercia Mudstone Group. The base of the Brinkmarsh Beds is placed at the bottom of the first limestone or the crinoidal limestone bed. In the south of the inlier, the lowest limestone is exposed in the south face of Brinkmarsh Quarry overlain by the Pynactis Band containing the abundant rugose coral *P. mitratis*. The presence of this coral in the drainage channel at Location 2 in close proximity to reef-like masses of *Coenites juniperinus* and highly crinoidal limestone confirms that the boundary between the Tortworth and Brinkmarsh Beds follows the east bank of the channel, north-north-east across the ornamental pond (where no exposure exists) to the west end of Location 1. Fig.1b shows the route of the Pycnactis Band in red and the junction of the Brinkmarsh and Tortworth Beds in black. No fossils have been found in Location 1 therefore the conclusion is drawn that the boundary between the formations can be placed just west of the drain excavation where it is not seen on the surface.

Conclusion

The findings of this study have confirmed the mapping made by Curtis (1972) who showed that -

a) the boundary between the Tortworth Beds and the Brinkmarsh Beds lies approximately 300 west of the A38 but is not seen on the surface,

b) the Brinkmarsh Beds extend south towards Sundayshill Lane while the British Geological Survey does not record them south of Moorslade Lane. The study also confirms the outcrop of vertical bedding reported by Pocock (1937) in an area where exposures have been rare.

In March 2022 both locations were covered with top soil, obscuring most of the rock outcrops and it is anticipated that vegetation will quickly grow to complete the process. It is most fortunate that the restrictions imposed during the Covid pandemic allowed time to carry out many visits to the localities to record the geology before it became obscured by soil and vegetation.

Charles Hiscock

Bath Geological Society Membership - 2022

We have an exciting programme of lectures and field trips planned for 2022 this is made possible by the ongoing support of our members.

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Family: £45

Student: £15

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Sort code: 40-09-19

Account number: 71262556

Reference: BGS / [Your name]

Alternatively, you can post your cheque along with your membership form to the membership secretary: Polly Sternbauer, Flat 4, Somerset House, Moorfields Road, Bath, BA2 2HU, or bring your cheque or cash payment with you to the next meeting at BRLSI.

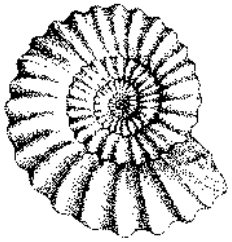
On behalf of the Committee may I thank you for your support and we look forward to meeting with you again.

Best wishes,

Polly Sternbauer

membership@bathgeolsoc.org.uk
Bath Geological Society Membership Secretary

Bath Geological Society Newsletter May 2022



During April the Society was able to celebrate our long awaited 50th Anniversary. The 50th Anniversary was planned to take place during 2020 but then the Covid-19 pandemic has disrupted our lives. The celebrations took the form of a lecture given by Professor Jon Blundy and a field trip given by Professor Maurice Tucker. Both events were well attended and from the feedback received participants enjoyed the occasion.

The 50th Anniversary lecture given on **April 7th 2022** by **Professor Jon Blundy** described the possibility of mining for rare metals in magmatic systems, such as those beneath active volcanoes. There are huge technical challenges to overcome, but Jon was able to show the concentrations of rare metals are as good as most ore deposits and in a low carbon future abundant geothermal power may be used in the metals refining processing.

On Saturday **April 9th 2022 Professor Maurice Tucker** led the 50th Anniversary field trip on a circular walk around Combe Hay and Midford. Maurice described the history of the Fuller's Earth Mining in the area. We were also able to walk the route of part of the Sommerset Coal Canal, see the abandoned Combe Hay locks, William Smith's house and occasional outcrops of Inferior Oolite, Bath Stone and Midford Sand.

Our next lecture will be on **Thursday May 5th 2022. By Dr Jon Robson**. This will be held at BRLSI, Queen Square, Bath and we encourage those who can attend in person to do so. However, for the convenience of those who find it difficult to attend we are providing a Zoom link to this hybrid lecture. The Society continues to experiment with this concept and the committee welcomes your feedback.

David Hall has kindly agreed to lead a **field trip to Lilstock Bay on Sunday 29th May 2022**. This follows on nicely from his article in the March Newsletter. Further details are given in this newsletter.

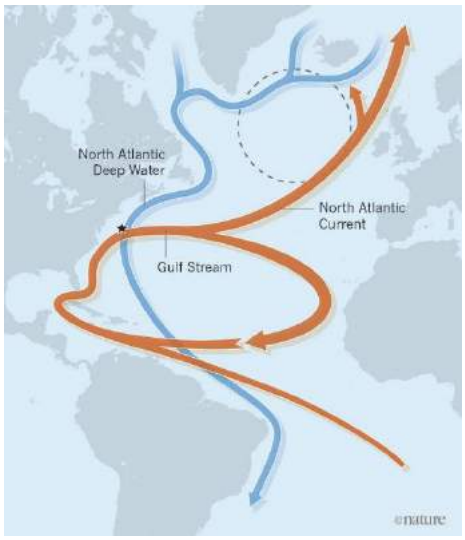
Graham Hickman

chairman@bathgeolsoc.org.uk

In this issue:

Bath Geological Society lecture
Thursday May 5th 2022 @7:30pm

Title: The day after tomorrow –
is the Gulf Stream set to shut down?
Speaker: Dr Jon Robson, Reading University



Lecture Description: A common popularisation of extreme climate change is that the Gulf Stream, a fast-flowing ocean current in the North Atlantic, will 'shutdown' with radical implications for the UK's weather and climate. But how likely is this scenario, and is it even possible? Here I will review the science, including evidence from the geological record, and the possible implications.

We encourage those who can attend the lecture in person at Bath BRLSI, Queen Square to do so. However, for the convenience of those who find it difficult to attend we are providing a Zoom link to this hybrid lecture.

Topic: The day after tomorrow – is the Gulf Stream set to shut-down? Speaker Dr. Jon Robson, University of Reading
Time: May 5, 2022 07:15 PM London
Join Zoom Meeting

https://us02web.zoom.us/j/89739903278?pwd=dG5YZzVIVzJYUDJlSGc0bmQ1WVQzUT0

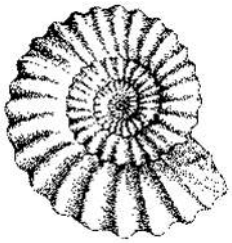
Meeting ID: 897 3990 3278
Passcode: 714430
PLEASE DON'T FORWARD THESE DETAILS. Non-members must register by emailing Anne Hunt on programme@bathgeolsoc.org.uk

A £5 donation requested from non-members and visitors

Bath Geological Society Field Trip: Lilstock Bay

Leader: David Hall

Sunday 29th May, 2022 @ 10:30am-4:00pm



Field Trip Description

The day will be spent looking at the cliff and foreshore sections to the east of the beach access at Lilstock Bay. The trip will examine the Triassic-Jurassic transition sequence between the Penarth Group (Westbury and Lilstock Formations) and the Blue Lias. This will provide the opportunity to discuss the causes of end Triassic extinction / biotic crisis. We will also look at the fault and fractures exposed in both cliff and foreshore including relay ramps which provide an appreciation of how faults propagate and link-up. A classic example of a fault gouge will also be examined.

Other subjects of interest include coastal geomorphology and the fossils (ammonites!). The remains of the old port near the beach access will also be visited.

Satellite view (Google Earth captured 06-2006) showing fault structure

Practical and HSE: Low tide on 29th May is about mid-day so most of the walking will be on the foreshore platform which is relatively easy, although some clambering over the rocky ledges, which form mico-cuestas, will be required. Walking over rounded cobbles of the upper shore face storm beach will also be necessary, especially later in the afternoon, due to the rising tide. It should be possible to avoid thick Severn Estuary mud. There are no facilities on the beach. Please bring a packed lunch.

Parts of the cliff face are especially hazardous due to overhanging ledges of Blue Lias paper shales and limestones. Extreme care should be taken and hard hats are mandatory. Stout boots with ankle support are advised.

Meeting location Will be provided on registration. Members: Free Visitors: £3.

To register please email Bob Mustow at field@bathgeolsoc.org.uk

50th Anniversary Celebrations

Some photos of the celebration, thanks to Charles Hiscock, John Nelson, Steve Hannath and Bob Mustow. We are hoping to add more to our website to record the events more fully.

Advert:

The Etches Collection - The Inaugural Children's Fossil Competition 2022

The Etches Collection – Museum of Jurassic Marine Life, located on the Jurassic Coast World Heritage Site in Dorset and our proud sponsors PetroStrat have launched the Inaugural Children's Fossil Competition. For the next 4 months children between the ages of 5-16, who live in the UK will have the opportunity to enter one of their fossils into the competition and get the chance to have it on display at our museum for an entire year. Every child that enters the competition will receive a personal annual pass to the museum that is valid for an entire year and will also get an e-certificate. The 6 winners will have their fossil on display alongside the Fossil's at The Etches Collection for an entire year.

https://www.theetchescollection.org/fossilcomp

Here is a little bit more about the competition:

- This competition is for children to earn the chance to display their fossil finds alongside the collection on display at The Etches Collection – Museum of Jurassic Marine Life.
- The competition has two age ranges 5-10 and 11-16. There are 6 winners in total, 3 from each age range.
- Every child who enters the competition will receive a personal annual pass to the museum. (Valid from September 1st 2022 - September 1st 2023.)
- The competition will be open to all UK residents between 5 and 16 years old. (Must have parent/guardian permission to enter)
- The competition window is open from Monday, March 28th, 2022 until Friday, August 5th, 2022, where the children will have time to submit their entry form along with a written paper, presentation or video explaining where the fossil was discovered, what it is and why they believe it should be on display at the museum. No fossils are to be submitted at this stage in the process.
- We wholeheartedly encourage families to lend their support to a child's entry into the competition, especially in relation to the technical/digital support, such as email and creating viewable files.

Bath Geological Society Membership - 2022

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Sort code: 40-09-19

Account number: 71262556

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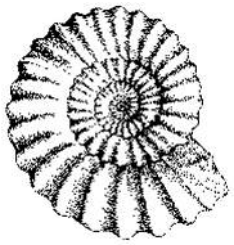
On behalf of the Committee may I thank you for your support and we look forward to meeting with you again.

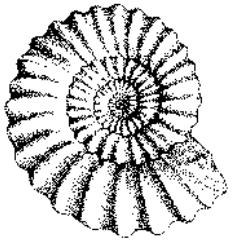
Best wishes,



Polly Sternbauer

membership@bathgeolsoc.org.uk
Bath Geological Society Membership Secretary

Bath Geological Society Newsletter June 2022



During May the Society held a lecture by **Dr Jon Robson** (5/5/2022) and held a field trip to Lilstock Bay led by **David Hall** (29/5/2022). Both events were attended and of excellent geological interest. We are grateful to both for their preparations and sharing their geological knowledge with us.

In early June **Professor Peter Worsley** (1/6/2022) gave a lecture at BRLSI, Queen Square, Bath. This again was a hybrid lecture with around 20 people attending in person and a further 17 listening remotely on Zoom.

The next lecture will be on **July 7th 2022,** given by myself, it will be held at BRLSI in Bath and will explore the geology around Bilston. In particular the Bilston Stone Quarry which my ancestors owned and worked for four generations. I will attempt to combine my genealogical and geological research.

We continue to encourage those who can attend lectures in person to do so. However, for the convenience of those who find it difficult to attend we are providing a Zoom link. The Society continues to experiment with this concept and the committee welcomes your feedback.

We are also pleased to announce advanced notice of two **field trips** which are planned for July. The first will be held on **2nd July 2022 to the Forest of Dean led by Dave Green**. The second will be held on **16th July 2022 to Pen Hill, near Wells, led by Dr Doug Robinson**. For further details see the information in this newsletter and to register please email Bob Mustow at field@bathgeolsoc.org.uk

We have also been offered a limited number of places on a field trip to the Mendips organised by the Warwickshire Geological Conservation Group (WGCG). Details below. Interested parties will need to contact warwickshiregcg@gmail.com the deadline is July 4th 2022.

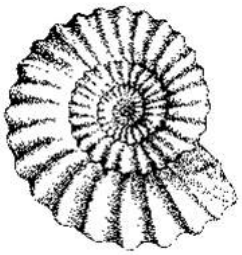
Finally, Mell has requested that everyone send her their articles for the 2022 Journal. Last year we had a bumper issue as Covid-19 lockdowns inspired more people stuck at home to write articles. As we are getting out more and things are returning to normal it takes more effort, but we are now out looking at more geology, be it in field trips, holidays or just general interest, if you see something inspiring write about it and please send your articles to Mell. journal@bathgeolsoc.org.uk

Graham Hickman

chairman@bathgeolsoc.org.uk

In this issue:

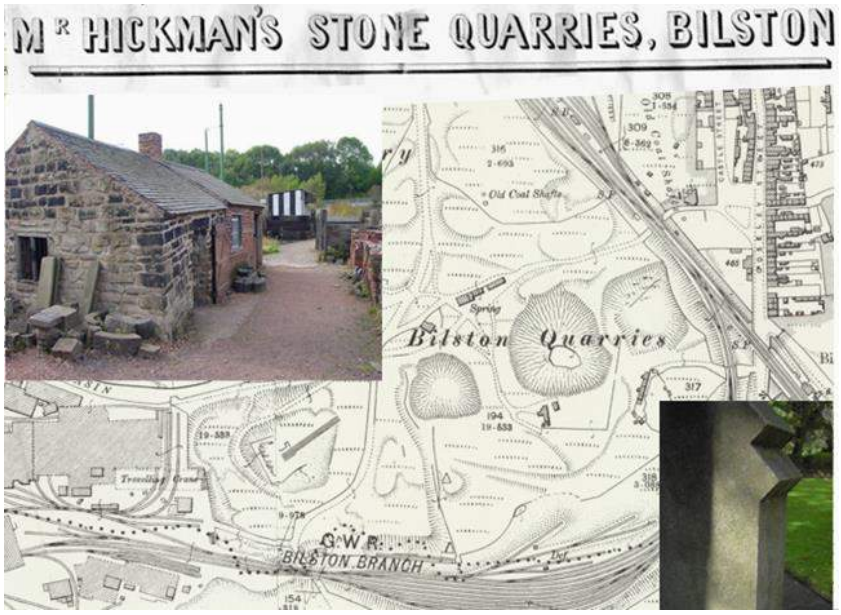
Bath Geological Society lecture
Thursday July 7th 2022 @7:30pm



Title: Bilston Stone Quarries – digging up the past
- Geology and Genealogy.

Where: BRLSI, Queen Square. Bath

Speaker: Graham Hickman, Bath Geological Society



As a small boy my father often told me about a sandstone quarry in Bilston that my great grandfather had owned. It was not until recently, however, that I managed to research the subject more fully. The quarry known as the "Bilston Stone Quarries" had been worked from the late 17th century. It came into my family's ownership in about 1830 and was operated by Job Hickman (1783 – 1855). He was the first of a line of my ancestors who worked the quarry for the next 4 generations.

Combining my genealogical and geological research - this talk will explore the geology where my ancestors dug a living for themselves alongside the historical documents and evidence they left behind.

We encourage those who can attend the lecture in person at Bath BRLSI, Queen Square to do so. However, for the convenience of those who find it difficult to attend we are providing a Zoom link to this hybrid lecture.

To join Zoom Meeting click on link below:
Time: July 7, 2022 07:15 PM London
https://us02web.zoom.us/j/84109500159?pwd=RXhub2V2RkFUU3ZxQitISHpoZ3c2QT09

Meeting ID: 841 0950 0159
Passcode: 592541

PLEASE DON'T FORWARD THESE DETAILS. Non-members must register by emailing Anne Hunt on programme@bathgeolsoc.org.uk

A £5 donation requested from non-members and visitors

Bath Geological Society
Saturday July 2nd 2022
Field Trip: Forest of Dean
Leader: Dave Green

This Field Trip will be to the Eastern part of the Forest of Dean. Later in the year Dave Green will led a second trip to examine the Central and Western parts of the Forest of Dean. This trip will visit the following locations;

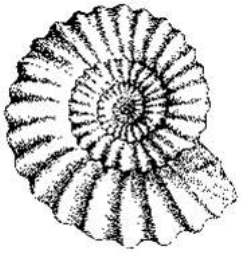
- Flaxley and Mugglewort Wood - where we will see Silurian rocks.
- Upper Soudley – Carboniferous and Devonian
- Lydney Shore – Devonian (structures in the Old Red Sandstone)

The scenery of the Forest of Dean is closely related to the underlying geology. In contrast much of the drainage seems entirely unrelated to the underlying geology and structure. In particular, the famous incised (actually "entrenched") meanders of the river Wye were initiated into alluvial deposits near sea level. Their size suggests huge discharge; probably glacial meltwaters followed by down-cutting began as uplift started.

Meeting location Will be provided on registration. Members: Free Visitors: £3.

To register please email Bob Mustow at field@bathgeolsoc.org.uk

Bath Geological Society
Saturday July 16th 2022
Field Trip: Pen Hill, near Wells
Leader: Dr Doug Robinson



This Field Trip will be a walk around the southern slopes of Pen Hill, near Wells, covering a distance of about 4.5km with overall elevation gain of ~ 130 m. Walk along public footpaths and ~ 100m along narrow road, with no footpath. We will see rocks are from four geological periods; Devonian, Carboniferous, Triassic and Jurassic.

There is an old quarry in a private garden with outcrops of the Clifton Down Limestone showing a bed with an erosive base and another with a probable stromatolite/algal mat. We will also see a narrow gulley showing the red Mercian mudstone and overlain by a thin green mudstone layer (probably the Blue Anchor) before passing into the Triassic White Lias. Further on there is another quarry this time in the Blue Lias sequence. There are not many places in the Mendips to see this transition of rocks from four geological periods.

Meeting location Will be provided on registration. Members: Free Visitors: £3.

To register please email Bob Mustow at field@bathgeolsoc.org.uk

Advert:

WGCG have organised a weekend field trip to the Mendips. They currently have 6 places available which they are offering to members of the Bath Geological Society.

WGCG

Hidden wonders in the landscape of Warwickshire

Warwickshire Geological Conservation Group

Mendips Field Trip – Weekend Field Trip

Friday July 29 @ 8:00 am – Sun. July 31 @ 5:00 pm

Leader: Dr Martin Whiteley.

https://www.wgcg.co.uk/event/mendips-field-trip/

The cost of 60 pounds will include field notes, lunch and 2 days of mini bus travel (17-seater) around the study area.

Full payment needs to be made by 4th July 2022.

For further details please contact: warwickshiregcg@gmail.com

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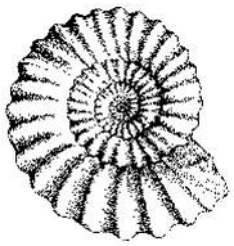
On behalf of the Committee may I thank you for your support and we look forward to meeting with you again.

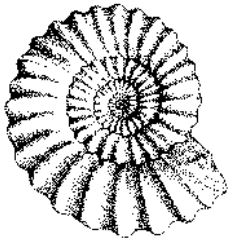
Best wishes,



Polly Sternbauer

membership@bathgeolsoc.org.uk
Bath Geological Society Membership Secretary

Bath Geological Society Newsletter August 2022



During July the Society held a lecture at BLSI and the first of two field trips to the Forest of Dean.

The field trip led by **Dave Green** was enjoyed by those who attended. The second trip to the Forest of Dean on **September 11th** will be to the Western and Central parts. We are grateful to **Dave Green** for running these field trips for us.

The July lecture was well attended and I (**Graham Hickman**) hope you enjoyed learning about the Bilston Stone Quarry which my ancestors owned and worked for four generations. This again was a hybrid lecture with around 23 people attending in person and a further 15 listening remotely on Zoom. The Society continues to experiment with this concept of hybrid lectures and the committee welcomes your feedback.

Due to the heat warning in July the field trip to Penn Hill, near Wells, was postponed into August but will now take place on **Saturday 6th October**. For further details see the information in this newsletter and to register please email Bob Mustow at field@bathgeolsoc.org.uk

The next lecture will be on **September 1st 2022,** given by **Alyson Hallet.** She will be talking about Geology and Poetry. Alyson lives in Bath and is a prize-winning poet and author. Among her many accomplishments is the poem etched into the pavement in Milson Street which I'm sure many of you will have seen. This lecture will take place in BRSLI, Queen Square, Bath. We continue to encourage those who can attend lectures in person to do so. However, for the convenience of those who find it difficult to attend we are providing a Zoom link.

Finally, Mell has requested that everyone send her their articles for the 2022 Journal. Last year we had a bumper issue as Covid-19 lockdowns inspired more people stuck at home to write articles. As we are getting out more and things are returning to normal it takes more effort, if you see something inspiring to write about it, please do, and send your articles to Mell. journal@bathgeolsoc.org.uk

Graham Hickman

chairman@bathgeolsoc.org.uk

In this issue:

Jacoba Sheriff remembered.

It is with great sadness that we have learned of the passing of one of our long-time members Jacoba Sheriff. Her funeral took place at the West Wiltshire Crematorium, Semington on Wednesday 27th July.

Elizabeth Devon and Mellisa Freemen have written the following shortly pieces honouring and remembering Jacoba.

I knew Jacoba and her daughters since we moved to Middlehill in 1978. However, I did not know her well until she joined the evening geology course, I was running at Stonar School in the summer of 1998. She was a very enthusiastic participant and, after the course, she joined the Bath Geological Society and, from then on, we travelled to meetings and field trips together.

Jacoba often accompanied me on my 'recce' outings for the field trips I was running for various groups and I always enjoyed her calm, cheerful and interesting company. She often told me about her involvement with the Miniature Needlework Society. In fact, one of the last communications, I had with her was receipt of a copy of their March 22 Newsletter which featured The Jonesonian Museum in Tasmania, an amazing 1/12th scale museum crammed full of miniature specimens of all sorts including, rocks, minerals and fossils. We also shared an interest in gardening and for the last few years, since we moved to Northumberland, we exchanged photos of our gardens at various times of the year. She had a great love of nature and landscape; she saw beauty everywhere and I shall miss her.
Elizabeth Devon

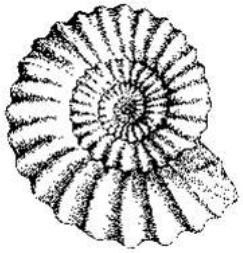
I gave Jacoba a lift to our Bath Geological Society meetings for many years. Those of us in the car would often put the world to rights, we had many laughs and always a post lecture discussion on the way home. Jacoba became sick with cancer several of years ago, she was treated and recovered, but recently she was given the news that it was back. Her optimism and spirit were shining through right up until the end. She leaves behind 3 daughters Abi, Ali & Fran of whom she was immensely proud. One of her daughters shared a lovely story; she named her two cats Pally & Tolly after her love for palaeontology.
Mellisa Freeman

Donations in memory of Jacoba can be made via the funeral director's website:

https://ajbfunerals.co.uk/notice/jacoba-sherriff/

Collections go to Little Bridge House (Children's Hospice South West) and Dorothy House Hospice Care, Winsley.

Bath Geological Society lecture
Thursday September 1st 2022
@7:30pm



Title: A conversation: Geology and Poetry.
Where: BRLSI, Queen Square. Bath
Speaker: Alyson Hallet, prize-winning poet and Hawthornden Fellow

Alyson Hallet - Milsom street, Bath

I'll be talking about poetry and geology. How does a poet become involved with stones and rocks? What can poetry and geology say to each other? What is the potential in collaborations between scientists and poets?

I'll be reading poetry, telling stories, asking questions. The talk will be an exploration and evocation of a life that has been shaped and influenced by words and stones and the relationships between them.

We encourage those who can attend the lecture in person at Bath BRLSI, Queen Square to do so. However, for the convenience of those who find it difficult to attend we are providing a Zoom link to this hybrid lecture.

To join Zoom Meeting click on link below: Topic: Alyson Hallet, geology and poetry
Time: Sep 1, 2022 07:15 PM London

Join Zoom Meeting
https://us02web.zoom.us/j/83299633328?pwd=aE56OVYrbjV1bjZyUE9TZDhFMFVoUT09

Meeting ID: 832 9963 3328
Passcode: 386363

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A £5 donation requested from non-members and visitors

Bath Geological Society
Sunday September 11th 2022
Field Trip: Forest of Dean Part 2
Leader: Dave Green

This Field Trip will be to the Western and central part of the Forest of Dean.
This trip will visit the following locations;

- New Fancy (Upper Coal Measures – Supra Pennant)
- Mallards Pike to Howbeech Slade (Lower Carboniferous, Upper Coal Measures)
- St Briavels (Upper ORS to Lower Carboniferous, Wye valley)

The scenery of the Forest of Dean is closely related to the underlying geology. In contrast much of the drainage seems entirely unrelated to the underlying geology and structure. In particular, the famous incised (actually "entrenched") meanders of the river Wye were initiated into alluvial deposits near sea level. Their size suggests huge discharge; probably glacial meltwaters followed by down-cutting began as uplift started.

Meeting location Will be provided on registration. Members: Free Visitors: £3.

To register please email Bob Mustow at field@bathgeolsoc.org.uk

Bath Geological Society

Rescheduled:

Saturday October 8th 2022

Field Trip: Pen Hill, near Wells

Leader: Dr Doug Robinson

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Meeting location Will be provided on registration. Members: Free Visitors: £3.

To register please email Bob Mustow at field@bathgeolsoc.org.uk

International Geodiversity Day – 6th October 2022

We have heard a lot about biodiversity and its importance in the natural world. But biodiversity is often strongly linked to the habitats that are created from the natural processes, landforms and soils that underlie and determine the character of our landscape and environment. This is what we mean by geodiversity – the variety of rocks, fossils, minerals and natural processes which contribute to make our landscapes and environment.

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The Geologists' Association is also encouraging Local and Affiliated Groups to hold events during the week of October 1st-9th and to register them as part of this celebration, thus bringing more focus and publicity to this celebration.

Bath Geological Society Membership - 2022

We have an exciting programme of lectures and field trips planned for 2022 this is made possible by the ongoing support of our members.

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Individual: £30

Family: £45

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If you prefer, you can complete the attached form and hand it to one of the Committee at one of the meetings, or post to the below address.

You can make a bank transfer using the details below.

Account name: Bath Geological Society

Sort code: 40-09-19

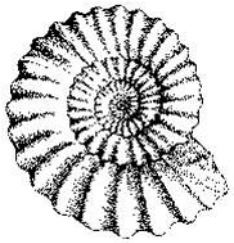
Account number: 71262556

Reference: BGS / [Your name]

Alternatively, you can post your cheque along with your membership form to the membership secretary: Polly Sternbauer, Flat 4, Somerset House, Moorfields Road, Bath, BA2 2HU, or bring your cheque or cash payment with you to the next meeting at BRLSI.

On behalf of the Committee may I thank you for your support and we look forward to meeting with you again.

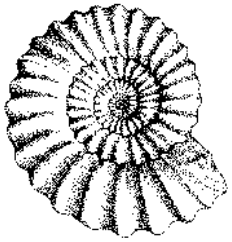
Best wishes,



Polly Sternbauer

membership@bathgeolsoc.org.uk
Bath Geological Society Membership Secretary

Bath Geological Society Newsletter September 2022



The September lecture was given by **Alyson Hallet.** She spoke about Geology and Poetry and what they can say to one another. Alyson lives in Bath and is a prize-winning poet and author. This was a thought-provoking meeting with Alyson reading the geology related poems that she had written.

The second trip to the Forest of Dean will be on **September 11th** - to the Western and Central parts. We are grateful to **Dave Green** for running this field trip for us. For further details see the information in this newsletter and to register please email Bob Mustow at field@bathgeolsoc.org.uk

During August we had planned to hold a field meeting to Penn Hill, near Wells, however, this was postponed due to the heat warning. This will now take place on **Saturday 8th October**. For further details see the information in this newsletter and to register please email Bob Mustow at field@bathgeolsoc.org.uk

On **October 6th 2022 Dr Haydon Bailey** will be speaking on **the 'real' value of microfossils**. Haydon gave us a lecture over Zoom during 2021 on the forensic value of microfossils with particular reference to the Soham murder case. This will be a great opportunity to meet him in person, the lecture will take place in BRSLI, Queen Square, Bath. We continue to encourage those who can attend lectures in person to do so. However, for the convenience of those who find it difficult to attend we are providing a Zoom link.

We are very grateful to **Polly Sternbauer**, our Membership Secretary, who has faithfully welcomed everyone at the door to our lecture meetings and who works behind the scenes to ensure membership fees are collected and cards issued. Polly will be passing the baton onto **Katie Munday** in October. Our Society runs on the good will and efforts of those who volunteer; please make time to thank both Polly and Katie when you see them next.

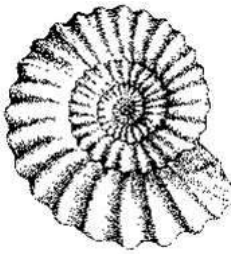
Finally, Mell has requested that everyone send her their articles for the 2022 Journal. **The deadline will be November 1st 2022.** Last year we had a bumper issue as Covid-19 lockdowns inspired more people stuck at home to write articles. As we are getting out more and things are returning to normal it takes more effort, if you see something inspiring to write about it, please do, and send your articles to Mell. journal@bathgeolsoc.org.uk

Graham Hickman

chairman@bathgeolsoc.org.uk

In this issue:

Bath Geological Society lecture



Thursday 6th October 2022 @7:30pm

Title: The 'real' value of microfossils
(International Geodiversity Day Lecture).

Where: BRLSI, Queen Square. Bath
and on Zoom

Speaker: Dr Haydon Bailey Consultant Micropalaeontologist
& Honorary Lecturer, University of Birmingham

Lecture Description:

Micropalaeontology or the study of microfossils may initially seem an esoteric subject for a desk bound academic; but if your thinking is along these lines then you couldn't be further from the truth. These microscopic sized fossils can be integral to major engineering projects, can result in helicopter flights to oil rigs around the world and also to detailed forensic studies as part of serious criminal investigations or simple art restoration. The information they provide can act as a proxy for past climate change and consequently as an indicator of the changes which may await us in the future.

Microfossils are abundant and diverse in many everyday rock types found worldwide or simply out in the UK countryside; they are attractive, sometimes structurally complex, but rarely dull and boring. Because they're not the size of a Diplodocus they're very easy to carry home in your pocket, but they can still have impact – there would be no pyramids without microfossils. In industry they are used every day to assist in the enhanced recovery of oil and gas, they were used to define the foundations of the Thames Barrier and to steer the tunnelling machines which cut the Channel Tunnel. How can you put a value on these? Closer to home, they're present in pharmaceuticals, in your breakfast cereals and in your supper drinks. Definite food for thought!

Lectures are **free to members**. We will email the joining instructions and the Zoom meeting info to members. £5 donation is requested from non-members and visitors via Eventbrite.

Get Tickets

https://www.eventbrite.co.uk/e/the-real-value-of-microfossils-international-geodiversity-day-lecture-tickets-413994527777

Bath Geological Society
Sunday September 11th 2022
Field Trip: Forest of Dean Part 2
Leader: Dave Green

This Field Trip will be to the Western and central part of the Forest of Dean. This trip will visit the following locations;

- New Fancy (Upper Coal Measures – Supra Pennant)
- Mallards Pike to Howbeech Slade (Lower Carboniferous, Upper Coal Measures)
- St Briavels (Upper ORS to Lower Carboniferous, Wye valley)

The scenery of the Forest of Dean is closely related to the underlying geology. In contrast much of the drainage seems entirely unrelated to the underlying geology and structure. In particular, the famous incised (actually "entrenched") meanders of the river Wye were initiated into alluvial deposits near sea level. Their size suggests huge discharge; probably glacial meltwaters followed by down-cutting began as uplift started.

Meeting location Will be provided on registration. Members: Free Visitors: £3.

To register please email Bob Mustow at field@bathgeolsoc.org.uk

Bath Geological Society

Rescheduled:

Saturday October 8th 2022

Field Trip: Pen Hill, near Wells

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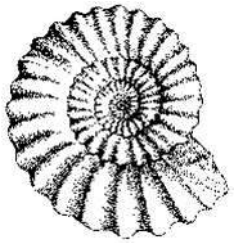
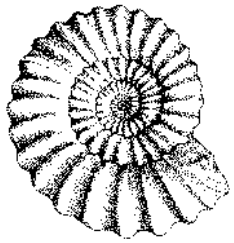


Polly Sternbauer

membership@bathgeolsoc.org.uk
Bath Geological Society Membership Secretary

Bath Geological Society Newsletter November 2022



The October lecture was given by Dr Haydon Bailey, this talk was entitled “The real value of microfossils” in his talk Haydon told us about the many ways that microfossils are use. Such as in better targeting while drilling for oil to engineering projects such as the channel tunnel and Thames barrier. He made the estimate that in 2005, £ 2.89 billion of value was added by the use of microfossils. Yet in 2020 Birmingham university suspended the last remaining Masters course in micro-palaeontology, Haydon made the case that as we transition to a low carbon economy we still need micro-palaeontologist.

On Saturday October 8th Dr Doug Robinson led a geological walk around Pen Hill nears Wells. This trip had been postponed twice before due to the extreme weather. Bob Mustow has written a short report which can be found in this newsletter.

The Society has been holding hybrid lectures since April 2022. Lectures have been delivered in person at BRLSI in Bath but also via zoom to those who have been unable to attend in person. As winter approaches we have decided to return to ‘**Zoom only lectures’**. This is unfortunate but we expect the number of people attending in person to fall as the weather deteriorates along with the ongoing uncertain around COVID. We plan to resume in person/hybrid lectures in the Spring.

On Thursday November 3rd 2022 we will hold a **Zoom only lecture:** Dr David Buchs from the University of Cardiff will speak to us about the Formation of the Isthmus Panama: Volcanic or Tectonic? The zoom details will be sent out by email to our members.

It’s not too late to write an article for this year’s Journal. We are still looking for articles for this year’s edition so if you have news or articles to share, any geological photographs or even a book review then we would love to hear from you. Please contact Mellisa Freeman.

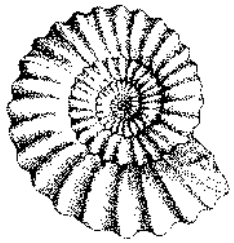
We hope you enjoy reading the Newsletters which advertise some of our upcoming events.

Graham Hickman

chairman@bathgeolsoc.org.uk

In this issue;

Bath Geological Society
Zoom only lecture
November 3rd 2022@7:30pm



Topic: Formation of the Isthmus Panama: Volcanic or Tectonic?. Speaker: Dr. David Buchs, University of Cardiff.

Time: Nov 3, 2022 07:15 PM London

Join Zoom Meeting

https://us02web.zoom.us/j/85655962333?pwd=TWMyVnIvcGxWYkpyOGw1RU0wKzZuUT09

Meeting ID: 856 5596 2333
Passcode: 339944

PLEASE DON'T FORWARD THESE DETAILS. Non-members must register by emailing Anne Hunt on programme@bathgeolsoc.org.uk

Talks are free for Bath Geological Society members.
A £5 donation requested from non-members and visitors

On Thursday November 3rd you will be able to join the waiting room from 7:15pm. We will ensure that everyone is admitted for the lecture before 7:30pm. Please show your FULL Name on Zoom as this helps us identify those attending the lecture. During the lecture, your audio will be on mute. This avoids unnecessary back ground noise, interference and distractions for the speaker. There will be a short Q&A session after the lecture. Please raise your hand to ask a question and your audio will be turned on. We aim to close the meeting by 9:00pm.

Abstract
The formation of the Isthmus of Panama about 3 million years ago is one of the most significant geological events in recent Earth's history, which is believed to have triggered migration of terrestrial organisms between the Americas, modified interoceanic currents, and led to establishment of current climate system. However, the geological history of Panama remains poorly understood due to logistic limitations to study rock sequences in the tropical environment. The formation of the Isthmus is often associated with the collision of the Panama volcanic arc with South America. Yet, Panama is a land of volcanoes, with a long history of volcanic activity that reflects important tectonic changes in the area over the past hundred million years. This webinar will present our most recent knowledge about this volcanic evolution. We will discuss how volcanism - not only tectonics - could have contributed to the emergence of the area by helping shape the modern landscape of the Isthmus.

Dr David Buchs is a Senior Lecturer in geology at the University of Cardiff, UK, and a Research Associate at the Smithsonian Tropical Research Institute in Panama. David studies ancient volcanic systems and is notably interested in the formation and erosion of oceanic islands such as those that grew to form the Isthmus of Panama. David leads the Geological Research on the Isthmus of Panama (GRIP), which is a project aimed at exploring and studying the geological evolution of the region. (https://panamageology.wordpress.com).

Pen Hill Field Trip Report – 8th October 2022

The field trip to Pen Hill finally took place on October 8th, having been postponed twice due to the weather being too good, we would have been toasted! Nine of us approached the hill from the outskirts of Wells, the first locality being a Carboniferous Clifton Down limestone quarry which is now someone's garden to which we had access due to the kindness of the owner. There we saw thin strata of stromatolite mats, the top layer of which had been exposed leaving a knobbly (domal) surface (see photo), and areas of coral. Further up, the quarry merged into the Triassic White Lias.

Doug then took us up a track but fought his way up the ditch along the side, the reason being to find the transition from brown Mercia mudstone, through a thin green mudstone layer into the Triassic White Lias. Further up there was a small quarry in the Blue Lias.

On the way down we inspected a small outcrop of Dolomitic Conglomerate on our way to The Combe, a pretty valley which is privately owned and not open all the year round.

A very interesting trip in fine weather.
Bob Mustow