

# Buckinghamshire Geology Group

## Newsletter No 36 January 2021



YouTube field trip

Zoom volcanoes



Online fossil identification



Outdoor ammonite displays

#### From the Editor

With last year's pandemic continuing into the New Year we have all got used to on-line meetings, Zoom talks and a YouTube field meeting here and there. But don't forget, we can still leave our homes to explore the great outdoors, even if it is just local and socially distanced. Have a look around and tell us about of any interesting local geological manifestations you come across - a wall-mounted ammonite, a large lump of puddingstone, a building of geological note or something completely different. Whether you are telling a story or asking a question, I will be interested to hear from you for future newsletter content. Similarly, if anything you read in this edition prompts a reaction, whether it be comment or follow-on idea, please let me know. I am keen for articles in one newsletter to prompt content for the next.

Following the last edition's introduction to the *Brief Encounters with Bucks Geology* ongoing newsletter column, we have two articles here – a short piece looking at a largely untold story behind an unusual geological import to Quainton churchyard along with a lengthy 'starter' exploring Buckinghamshire's numerous wall-mounted giant ammonites. Please let me know if you have anything to add on either of these themes or possibly new encounters of your own to report on. I have already received some feedback from the last newsletter which I have added to a growing compendium for inclusion in future editions.

Looking forward, you will see that we have programmed some further Zoom talks for early 2021. We also have a mutual Zoom talk exchange agreement with the Herts Geological Society and so keep an eye on your emails for information on even more fascinating geological lectures to enjoy.

We are also proposing some tentative field meetings later in the spring, Government regulations allowing. The Geologists' Association has put together a best practice document based the experiences of local geology groups running events last year with a view to making future field meetings as safe as possible within the ongoing pandemic.

I hope that your local geology and landscape, whether real or virtual, continues to bring you pleasure.

Mike Palmer

## The Aylesbury Leighton Buzzard Earthquakes

9.45 on the morning of Tuesday 8<sup>th</sup> September, 2020, working from home in Bierton, putting the finishing touches to the Bucks Geology Group's newsletter N° 35. Suddenly the office swivel chair I'm sitting on lives up to its name while the wallmounted radiator behind audibly shakes for two to three seconds. What was that? I used to live by a busy road and so, I am use to the vibration caused by lorries and buses passing by at speed. But I now reside in a quiet cul-de-sac so, not that. A few seconds later, my wife, also working from home, walked into the room and asked the same question, followed by my son coming downstairs with a puzzled look.

Based on a previous experience in Liverpool some 30 years ago, I suggested *earthquake!* This was soon confirmed by my son's quick-fingered smartphone search and an email from another BGS member. Early reports of the magnitude and epicentre varied with locations suggested for all compass points around Aylesbury. As the proverbial dust settled, Leighton Buzzard, and not Aylesbury, was confirmed as the epicentre with a magnitude of 3.5 (out of 10) on the Richter scale being cited. In the coming days, three further tremors were reported from the Bedfordshire town, one on 13<sup>th</sup> September and two more on the 22<sup>nd</sup>, all measuring less than the initial event.

Anecdotal descriptions from nearer the epicentre included "jolting and shaking", "two strong thumps", "a couple of pictures fell off the wall", "objects shaking on the shelves", "a noticeable lurch in the building" and "we thought there was an explosion" [presumably in the distance]. One local resident of the town said that the quake "almost shook me out of bed"



Major global plate boundaries

So why Leighton Buzzard? Why Britain, for that matter? Earthquakes are usually associated with places like California, Chile, Pakistan, Nepal and Japan along with other areas located on or near to the junctions of the Earth's major tectonic plates. As we know all too well from watching the news, movement in these plates can cause major earthquakes registering 6, 7 and 8 upwards on the Richter scale and leading to major destruction and the loss of life ranging from hundreds up to hundreds of thousands. The largest magnitude recorded by this system, to date, was the Valdivia earthquake in southern Chile in 1960, measuring 9.5 with the resulting tsunamis in the Pacific Ocean killing up to 6,000 people.

But movements in the Earth's crust are just not confined just to these dynamic junctions. Smaller movements are taking place in the Earth's crust all of the time, all over the world. In Britain, for example, the crust is still readjusting from the massive weight of ice sheets that covered parts of the country up to 12,000 years ago. Small movements over time lead to a build-up of stress which is eventually released as an earthquake, reverberating through the ancient fault lines that criss-cross Britain. These may then be followed by smaller tremors several days later as the local geology readjusts.

According to the British Geological Survey, there are between 200 and 300 earthquakes in Britain every year, of which only 20 to 30 are felt by people. And most of these are small, similar too or even weaker than last September's Leighton Buzzard earthquake. However, in 2008, Market Rasen in Lincolnshire experienced a 5.2 earthquake that lasted 10 seconds and was felt in parts of Britain, from Newcastle to Hampshire. Britain's largest officially recorded earthquake was the 1931 Dogger Bank earthquake which occurred 60 miles east of Flamborough Head in the North Sea and was recorded as 6.1. The offshore location of the epicentre limited the impact on land, however, according to records it was the coastal town of Filey that was worst hit with chimneys collapsing and the church spire damaged. Meanwhile in London, according to Wikipedia, Dr Crippen's head fell off at Madame Tussauds waxworks.

Did any other members experience the Leighton Buzzard earthquake on 8<sup>th</sup> September or any of the subsequent tremors? Do you have experience of other earthquakes in Britain?

#### Mike Palmer

#### Jill's work with the MK Parks Trust,

As part of recent work with the MK Parks Trust a short video was produced for YouTube. See <a href="http://www.youtube.com/watch?v=4gP9n75ycr0&t=5s">www.youtube.com/watch?v=4gP9n75ycr0&t=5s</a>



Over the last few years, I have been helping the MK Parks Trust in delivering the geological elements of their active events programme covering nature, arts, conservation and, of course, geology. The Covid-19 pandemic, however, has made a severe dent in what could be achieved in field and so a little video was produced simply using a digital camera at Great Linford. This location is maintained by the Parks Trust and is one of the Bucks Geology Group's Local Geology Sites (LGS). Hopefully, I will be leading a field trip here in 2021 (see events list).

The success of this approach has led both BGG and the MK Parks Trust to realise that there is a huge advantage in making short videos to show off the geology, not only this site, but of other locations as well. The videos can be easily viewed in the comfort of home and the sites featured are open access for all to enjoy in their own time and at their own pace.

The MK Parks Trust has a large number of parks under its management and I will be looking at these and investigating their geological stories to see how the Bucks Geology Group and members may get involved in interpretation work. Milton Keynes is often overlooked by geology groups as exposed rock faces are limited. However, with the aid of short films such as this one, members can follow-up the viewing with an enhanced visit, helping to turn an overlooked corner of Milton Keynes into a true geological gem.

We will let you know about any further videos which may be of interest to you shortly. So, for now – enjoy this one!

**Jill Eyers** 

#### **Brief Encounters with Bucks Geology**

#### Swiss Gneiss in Bucks

In 1994 a gravestone was moved from a graveyard in the town of Visp in Switzerland to the churchyard of the church of the Holy Cross and Saint Mary in Quainton. The memorial commemorates two climbers who fell to their deaths from the East Buttress of the Jagihorn peak in the Bernese Oberland on the 29<sup>th</sup> July 1956. One of the climbers, Thomas Duncan (Tom) Bourdillon, was born in the village of Quainton and the other, his friend and climbing companion, Richard Merriman Viney, born in Aylesbury. Both were in their early 30's when they died.



Tom Bourdillon, by far the most experienced mountaineer of the two, came within an ace, well 301 feet to be exact, of becoming the most famous mountaineer in the world. He was one of the two members of the first, unsuccessful, assault on the summit of Everest, by the 1953 British Mount Everest Expedition, on the 26<sup>th</sup> May 1953. Three days later it was conquered by Edmund Hillary and Tenzing Norgay.

The gravestone is made of 'Verde Andeer' an ortho-gneiss much used for tombstones in Switzerland. The subtle pale green sheen of the rock is due to the presence of two green minerals, chlorite ( dark green ) and the muscovite-like mica phengite ( light green ). When sliced into slabs the cut can be with the grain giving a mottled appearance or against the grain to give a streaky look as here.



The rock is quarried from two areas around Andeer, Bärenloch and Parsagna, which is in the canton of Graubunden in the German-speaking area of Switzerland. This is the only example I know of, of its use in this country.

#### Michael E Howgate

#### An additional note from the County Museum

I was pleased to have received the article above as it links in with an item from the County Museum's social history collection, Tom Bourdillon's experimental oxygen cylinder developed at Stoke Mandeville Hospital in 1952.



*Tom Bourdillon's experimental 'closed air' oxygen cylinder. Copyright Bucks County Museum Trust* 

The Keeper of Social History, Will Philips, explained how "Tom Bourdillon, a Government scientist and mountaineering enthusiast, felt that existing breathing apparatus used by mountaineers was inefficient because it blew oxygen across the climber's mouth to supplement open air. Working in a laboratory at Stoke Mandeville with his father Robert, a medical researcher, Bourdillon designed a new 'closed' air system which clamped a mask over the mouth so that no oxygen escaped. A second cylinder filled with soda lime absorbed the carbon dioxide. After some hasty trials of his innovative design in the mountains of Snowdonia in Wales, Bourdillon was invited to take part in the 1953 Everest expedition. Famously, Edmund Hillary and Tenzing Norgay became the first climbers to reach the mountain's peak. But it was Bourdillon and his climbing partner Charles Evans who actually made the first attempt to reach the summit during this expedition. Using the new closed air system they managed to scale most of the mountain in record time - a remarkable and historic feat in its own right. However, with just 300ft to go until reaching the top – and immortality – the pair were forced to turn back due to breathing difficulties.

#### Mike Palmer, with thanks to Will Phillips

**Brief Encounters with Bucks Geology** 

*Wall-mounted ammonites in Buckinghamshire – a fading heritage* 



Hartwell House perimeter wall

Anyone travelling in or out of Aylesbury on the A418 past Hartwell House will be aware of the numerous large ammonites that adorn its perimeter wall.

W.R. (Bill) Mead in his book, *Aylesbury, a* personal memoir from the 1920s, describes how, in his childhood 'the wall stirred the imagination because of the curiously fossilised stones [bowel stones] and ammonites that were set in it. It was told that ammonites were sometimes called snake stones – from their shape like a curled-up snake. As children we had our own name for them. We christened them "whirligig stone".

These *whirligigs* are commonly ascribed to *Titanites giganteus*, a giant ammonite from the 144 million year old warm, shallowing seas in which the Portland sands and limestones of mid-

Bucks were laid down. Their more recent encore, beside the A418, has lasted for a mere 165 years but are sadly showing their age on closer inspection.

Hartwell, however, isn't the only place that you can find these reincarnated Jurassic giants on open display in Bucks. Through personal explorations, along with tip-offs from others, the number of locations I am aware of has steadily grown. And just when you think you have seen them all, another one pops up. But just how many are there? In an attempt to hasten towards the answer, I am listing what I currently know in this provisional gazetteer. If you know of any that I have missed, please let me know. Or why not go on an ammonite hunt to see what others can be discovered.

I hope, however, that this survey is more than just a list as there are many more questions to be answered.

Firstly, are all these wall-mounted ammonites attributable to *Titanites giganteus* or are other species involved?

And just how big did these titans get? The largest example in the County Museum's collection is 47cm across (with an outer whorl 14cm thick). It was collected from the former Manor House Hospital Site (now the Whiteleaf Centre), Aylesbury in 1971.



Bucks county Museum specimen, from the former Manor House Hospital site, Aylesbury, 1971, 47cm wide

BGG committee member, Mick Oates goes one better with a 65cm wide specimen collected in the grounds of Stone House, Stone in the mid-1960s. Mick remembers that it was so big that it took three people to lift it into the wheelbarrow which then proceeded to collapse under the weight.



Massive Titanites (65cm wide) from the grounds of Stone House, mid 1960s

What is the largest ammonite to be found embedded in a Buckinghamshire wall? And, perhaps of more interest, what are the most commonly encountered sizes?

How far and wide are these public displays of ammonites distributed in Bucks? Do they mirror the distribution of the underlying Portland Limestone from which they are derived? Some Portlandian areas, e.g. Stone and Hartwell, are festooned with them, while others such as Aylesbury and Haddenham, not.

Perhaps we should be looking for a correlation with locations of 'the numerous stone and sand pits that were once a conspicuous feature of the Vale of Aylesbury' to quote Jon Radley, from one of his many articles on Buckinghamshire's Portlandian exposures.

How far have *Titanites* specimens travelled beyond their original source? At least three occurrences, at Little Kimble, Padbury and especially Buckingham are beyond their underlying parent rock. What stories lie behind these journeys?

Moving beyond the county boundaries, how widely is this practice encountered elsewhere in Britain? We know that Buckinghamshire (Warren Farm, near Stewkley) represents the most northerly extent of the Portland Limestone in Britain, but as its name suggests, it extends south west of Bucks down to the Dorset coast. Are examples known from these areas? Furthermore, high quality Portland Stone from Dorset has been used to construct buildings over a much wider area, including in our major cities. Can *Titanites* fossils be found lurking within any of the grand, urban buildings? By casting the net further afield can we put our own displays in a more measured regional or national context?

As a brief aside, are other fossils used for decoration in walls and buildings in other parts of Britain?

Moving from the geographical to the chronological, how long has this practice been taking place? What is the oldest datable example in Bucks? Walls at Hartwell and Bishopstone proclaim mid-19<sup>th</sup> Century dates. Ammonite Cottage in Oving is dated at c1800 while Dinton Castle, according to Pevsner, was built in 1769. Was there a hey day? To what extent is the practice continued today?

What about the future? You will see from the photographs accompanying the provisional gazetteer that some fossils are in better condition than others. I am also aware that some are missing, possibly stolen. What, if anything, can be done to help preserve this fading heritage. As a local geology group, what advice would we give to people coming into possession of ammonitebedecked properties?

And finally, if we are to promote this local palaeontological heritage, it would be productive to assemble a more detailed picture of this long extinct animal based on what is known about its stratigraphy, palaeoecology, taxonomy and basic biology.

I hope that we can start answering some of these questions in future newsletter.

#### Mike Palmer

**Brief Encounters with Bucks Geology** 

#### A Provisional Gazetteer of wallmounted ammonites in Buckinghamshire

Please note that in order to reduce the length of this this initial alphabetical listing I haven't expanded on Buckinghamshire's two prime *Titanites* locations – Hartwell House and Dinton Castle. It is planned to produce separate articles on both of these sites in future editions of the newsletter.

We are also hoping to run a joint field meeting with the Amateur Geological Society to Hartwell House later this year (if not, the following year) which will allow for further exploration of this historic location.

Please remember that Dinton Castle is now a private residence and can no longer be visited without showing full respect to the privacy of those living there. The same must also be said of other homes included in this gazetteer.

And finally, if you decide to head out for a closer look at any of these ammonites, please note that many of them are located on busy roads with fast moving traffic so please exercise due caution.

#### **Bishopstone crossroads**

Just under half a mile south of Hartwell House on the southern corner of the Bishopstone Crossroads is a high wall of Portland Stone, stretching in two directions along Ford Road and Bishopstone Road. Displayed within the structure are numerous ammonites along with bowel stones and puddingstones. An initial review in late 2020 suggests 19 to 20 ammonites are present, ranging in size from15cm to 38cm in horizontal width (the majority being between 23 and 33cm).



As with the examples at Hartwell House, closer inspection reveals a high degree of weathering with some appearing very friable and others barely recognisable. At least two specimens appear to be missing, presumably stolen (thought to be pre-1974 according to the current owners). This said, the collection represents a prime example of this practice with a high ammonite count and some impressive surviving specimens.



One of many fading ammonites at Bishopstone Crossroads

Also included on the Bishopstone Road wall are two sets of initials and dates, written large in sarsen blocks surrounded by flint, reading

J + P + H 1862 and W + W 1862

Who do the letters refer to?



The date presumably indicates the year of construction. If so, this places the wall's age at nine years younger than that the earliest date emblazoned on the perimeter wall of nearby Hartwell House. It also means that these ammonites have now been exposed to the elements for 158 years, providing a visual marker for the rate of *Titanites* weathering.

#### Buckingham

At the junction of Castle Street and Bristle Hill is a tailor's shop displaying, amongst other things, an impressively large (42cm wide) ammonite. It is clearly not of local origin, with the underlying limestones here, predating the Portlandian by at least 22 million years.



Bespoke Tailor, formerly a butchers' shop, Buckingham

According to BGG committee member, Mick Oates, the ammonite came from Rowsham as a result of a family connection between a farm worker there and the family who ran the butchers that preceded the tailors in Buckingham. The ammonite was, apparently obstructing the farm machinery and so, was removed, before heading north. The date is currently unknown but thought to be 20<sup>th</sup> Century.

#### Cuddington

Two sizeable ammonites can be found in the front and side walls of a house opposite the Crown public house. One, high over the front door is estimated to be in the region of 40cm wide, if not, wider. The second, of similar size but far more weathered and less complete, is located high up on the gable end of the building.





Ammonites are further celebrated in the form of a large plasterwork relief on the side of a house further west on The Green.

#### **Dinton Castle**

Numerous ammonites feature on this, now, private residence. We hope to provide a review of the geological interest of this building in a future newsletter.



Dinton Folly, John Piper, 1983

#### Haddenham

The underlying Portland limestone on the western side of Haddenham was very much in evidence when, some years ago, I was asked to look at some fossils during construction work at Haddenham Business Park. Numerous *Protocardia* bivalves were being used as paper weights in the site manager's portacabin while, a small pile of *Titanites* fragments resided just outside. With this memory in mind, I am surprised that my later search for wall-mounted ammonites in this large village only yielded one Haddenham example, thanks to a tip-off. A partial imprint of the inner whorls of an ammonite can be seen on the semi-revealed front of a house in South End.



Haddenham South End (photo - Julia Carey)

As in Cuddington, a house in Townside displays a large plasterwork relief of a large ammonite.

#### Hartwell – Bugle Horn Pub

A large ammonite can be spied hiding behind the black paintwork of the Bugle Horn pub's wallpainted name adorning the front of the building.

The age of this inclusion is pointed towards by a footnote reference in *Aedes Hartwellianae (or Notices of the Manor and Mansion of Hartwell)* by Captain W.H. Smyth, published in 1851 noting how, *'The sign or cognizance of the Bugle Inn, near the park* [of the Hartwell House estate], *is a huge ammonite let into the house-wall'*. This means that it has been there at least 169 years, and probably longer.

It has to be said, that compared with other wallmounted ammonites of a similar or slightly lesser age, the covering of paint has helped preserve the form of the ammonite from weathering.



Three more large ammonites can be found in the brick and sarsen constructed pub car park wall.



Bugle Horn pub car park

By making use of Google street view's previous drive-by options, we can see that this wall has been largely rebuilt in the last ten years. It also appears that there has been some change in the ammonite personnel with at least two new fossils making appearance. Jill Eyers, in a site description following a visit in late 1998 (as part of a *Bucks Regionally Important Geological & Geomorphological Sites* survey) notes 'there are *large Portlandian ammonites embedded in the wall, but several of these show an encrusting fauna of oysters and other bivalves and serpulids.*' The encrusting additional fossil fauna doesn't seem to be in evidence on the current line-up.

In the current wall, the ammonite furthest away from the pub, surrounded by flint, measures 44cms across and appears similar to other local examples. The other two are slightly smaller with one, surrounded by sarsen blocks, measuring 38cm across and the other, surrounded by bricks, measuring 33cm across.



On first sight, both appear to exhibit excellent preservation. But all is not as it seems. Commenting on photographs, BGG committee member, Mick Oates notes '*These ammonites are not what they purport to be. The inner whorls of two of the ammonites have been carved. This part of a large Titanites is rarely preserved. These two examples are not local, and resemble common Lower Cretaceous ammonites, available from fossil dealers, originating from Agadir, on the Atlantic coast of Morocco. But they look good'.* 



Close-up of the sarsen-surrounded ammonite at the Bugle Horn car park showing the carved inner whorls.

Finally, a former pub sign, c. 2000, made an illustrative link between the pub's name and its

prehistoric lodgers. It has since been changed to one depicting a more conventional horn.



Former pub sign. Photo taken 2000 - 2002?

#### Hartwell – Hartwell House Perimeter Wall

The rich and varied geological content of Hartwell's perimeter wall will form part of a future BGG field meeting and newsletter article.



A short section of the perimeter wall at Hartwell House

#### Little Kimble

In Rock Around Bucks (2007), BGG committee member, Jill Eyers' describes how 'The wall around the [Little Kimble] church is built from local sarsen stone (the sandy Denner Hill type) topped by flint blocks... A nice decorative touch is the large ammonite laid into the wall near the gate'.



Jill goes on to note that *This is a small Titanites giganteus, other examples that come from the Portland Limestone around the Stone area of Bucks are much larger!* Based on the initial findings of this survey, it is certainly not at the larger end of the spectrum, measuring in at 26cm across.

A second ammonite, framed between two rectangular sarsen blocks, can be found further along the wall towards the A4010 Aylesbury Road, measuring 28cm across.



#### **Nether Winchendon**

Thanks to a discovery by BGG committee member, Julia Carey, I visited the small village of Nether Winchendon to view the large ammonite residing to the left of the gate of St Nicholas' church.

This specimen is more impressive than it may first appear. It is just a fragment of the original fossil but still measures 41cm across with what might be assumed to be the outer whorl being 17cm. With some informed judgement, the full size of this giant may be realised at 50 cm or more across.



Nether Winchendon church ammonite

Look closer and you will also see another stalwart Portlandian fossil amidst the inner whorls, the bivalve, *Protocardia dissimilis*.



Note Protocardia bivalve fossil in the inner whorls of the Nether Winchenden ammonite

#### North Marston

A comparatively modern house in North Marston is also home to at least four large ammonites. Situated just beyond a northerly extent of Portland limestone in nearby Oving, it will be interesting to discover the story behind these ammonite placements.

#### Oving

The recent and ongoing renovation of the appropriately named Ammonite Cottage caught the eyes of two BGG members, one travelling by bus and the other by bicycle. Judging from the google street view record, the work seems to have brought back into view a number of large ammonites preserved behind the whitewash.



Ammonite Cottage, Oving, Google street view July 2011



Ammonite Cottage, Oving, 2020 (Photo Mike Farley)

At least six ammonite and ammonite fragments are now visible.



The building is dated as c. 1800 and formerly described both as 'kennels' and a 'small squatter cottage'. In 1982, the property was grade 2 listed 1985 by Historic England.

#### Padbury

In Station Road we find the handiwork of BGG member, Mick Oates at his former home. Closer inspection reveals that the ammonite is actually composed from eight individual fragments, each collected from Prebendal House, Aylesbury during building and archaeological work in 1985.



Station Road, Padbury (Photo Val Atkins)

#### Quainton village store

Four large, fine ammonite specimens can be found embedded in the front of the Quainton village store, seemingly protected from the ravages of time by the protective layers of white paint. It would be interesting to know how old the host building is?





Close-up of the lowest of the four Quainton ammonites

#### Stone

The area around the village of Stone, to the west of Aylesbury and including Hartwell, Dinton and Bishopstone crossroads, can confidently lay claim to by far the highest concentration of wallmounted *Titanites* fossils in Buckinghamshire. Anecdotal evidence suggests local quarries and field finds as sources for these. But where were the quarries? BGG committee member Jill Eyers remembers a local farmer in Stone in the early 1990s bringing out a wheelbarrow full of *Titanites* fossils for anyone to take away. This is also the area for Mick Oates' wheelbarrow-breaking specimen from nearby Stone House.

Wall-mounted *Titanites* fossils are currently known from three locations in Stone village.

#### Village pond wall

The outer side of a wall partially encircling the village pond houses at least two ammonites (one measuring 25cm across) with a third appearing to be missing. Others may lurk behind the ivy.





Stone village pond and wall

#### A418 wall

Four ammonites, measuring up to 33cm across can be found in the Portland Stone wall on the north side of the A418 running east from Eythrope Road. All are in a friable, fragile state comparable to those in the perimeter wall of Hartwell House and Bishopstone Crossroads, suggesting a comparable age. The ageing wall now contains relatively new-build houses. What was the wall originally built for?



Wall with ammonites, A418, Stone



#### Church wall

An ammonite fragment, measuring 20cm across can be found in St John the Baptist's church perimeter wall. As with the village pond walls, further examples may be hidden behind the encroaching ivy.





Stone Church, with close-up of ammonite fragment in perimeter wall

#### Weedon

A refreshingly recent example can be found in a brick wall on the Aston Abbots Road heading east out of Weedon, measuring 31cm across. According to the local history group, the ammonite was found while digging the foundations for the wall a few years ago.



Weedon ammonite (photo Mike Farley)



Weedon ammonite (photo Mike Palmer)

#### Whitchurch

Whitchurch is near the northern most extent of the Portland Limestone in Britain. Several ammonites and ammonite fragments can be found in fossiliferous Portland Limestone walls of the village.

Perhaps most notable example is a large fragment, 42cm across, in the whitewashed wall of a thatched cottage near the roundabout to the north of the village. The 16cm wide outer whorl suggests a potentially impressive full size comparable to that of the Nether Winchendon ammonite.





Sizeable ammonite fragment in Whitchurch

In the wall to the right, either side of the gate are two more, much smaller ammonites in bespoke niches, with a further, larger example (29cm across) to the right, higher up in the wall.

On the opposite side of the A413, a lengthy Portland Stone wall follows the line of Church Headland Way away from the main road. Here can be found a 38cm wide half whorl. It is hard to say whether this is the outer or an inner whorl.





Church Headland Way and large half whorl ammonite fragment

In the parallel lanes of Church Lane and White Horse Lane, to the east of the main road, a further ammonite fragment and impression can be found. Finally, to the west of the village, on the Oving Road, the faint remains of an impression of the inner whorls of another ammonite can be made out on the front of Bolbec House, similar to that described in Haddenham. This building was home to the artist, Rex Whistler, from 1933 to 1937.



Bolbec House, Whitchurch

Do you have further information about any of the examples mentioned here? Can you add any more locations to this list?

#### **Mike Palmer**

#### **The Geologists' Association Festival of Geology,** Saturday 7<sup>th</sup> November

As an affiliate of the Geologists' Association, one of the perks is being able to take part with our own Buckinghamshire-oriented display at the Festival of Geology, held annually at University College, London on the first Saturday of November. Or at least we would have if 2020 was a normal year. But on 4th November 2020, the event was organised, for the first time ever, as a virtual Festival of Geology. In some ways this made it more inclusive, using the meetings software "Zoom" as a medium through which participants could attend from anywhere in the globe with internet. Anyone logging in from 10.30am would have found a cornucopia of geological information and entertainment, all organised around a multitude of separate virtual rooms, some of which were like normal web pages, whereas others were actually manned for live questions and information.

The GA itself hosted several different pages, highlighting its many interesting facets, from publications, educational aids, virtual field trips, a massive photographic archive and the Curry Fund, which provides financial support to worthy geological causes. Break-out rooms were manned for general GA enquiries, Geoconservation issues, 'Schoolrocks', student representatives and a live fossil identification service with your own BGG members, Mick Oates and Graham Hickman fielding enquiries from as far away as Australia.



Festival of Geology Zoom fossil identification service courtesy of Mick Oates and Graham Hickman

Four live lectures were delivered, with opportunities for the audience to pose questions of the speakers afterwards. A live tabletop practical demonstration of earthquakes and associated building design was on offer as well as how to analyse Jurassic dinosaur footprints based on examples on the Yorkshire coast. Both attracted lively audience participation.



Thirty one separate local society stalls were available to explore, with the BGG hosting a presentation called 'The best of Bucks Geology' and encouraging visitors to visit our website.

Similar stalls were available from eight museums and twenty two specialist geological traders, showcasing what they had to offer anyone interested.

The Festival usually arranges a small number of guided geological walks scheduled for the following day, but this year instead, fifteen virtual tours were available, varying from several building stones tours to a comprehensive series of trips explaining the geology around Flamborough Head and a celebratory virtual excursion to the Black Country UNESCO Global Geopark, so designated in July this year.

Finally, for young participants, Rockwatch (the junior arm of the Geologists' Association) produced a challenge for youngsters to answer a host of questions for which answers could be found all around the Festival website — successfully answering these earned an exclusive Rockwatch Challenge Badge.

As well as all the static pages, recordings of most of the live events were retained online until the end of December, allowing visitors to go back to a favourite or missed item or spend as long as desired on any of the different geological delights on offer. Although a few problems were encountered accessing the live talks, most agreed that for a first-time event, it was a resounding success and we should be proud to have contributed to it.

#### **Mick Oates**

## Volcanoes – the what, where and how? Saturday 21<sup>st</sup> November

This inaugural internet talk of the BGG was presented via the Zoom platform by Jill Eyers on the 21<sup>st</sup> November. The presentation went without a hitch, with thirty attendees and included a Q & A session at its conclusion.

Volcanoes get onto the news all the time. Spectacular things, dangerous and fascinating. The devastation caused by, and the lives lost during an eruption are obvious – But what is a volcano and why are they found only in some parts of the world? The talk used the examples: Cotopaxi, Vesuvius, Iceland and included some British ones too! A volcano is simply a place where magma finds its way to the surface of the Earth. Jill defined three types: stratocone, shield and fissure.

Jill then described where volcanoes form, which is at plate boundaries. The Earth is composed of 13 plates which move relative to each other, each one moves in a different direction and at a different speed – a very complex system.



Earths tectonic plates

Some of the types of tectonic zone were then introduced: subduction, divergent and hot spot. Divergent ocean ridges can be thought of as crust factories with the ocean floor plate boundary the production line. The subduction zone trenches are the destructive dustbins where crust is consumed. Nearly all our volcanoes are found along ridges and next to trenches – at the plate boundaries. But there are some volcanoes within the ocean plates; tiny isolated volcanoes or a small chain – these are located over and formed by 'hot spots' in the crust.

The characteristics of each of the volcano types were then described starting with the stratocone. The strathcone image below is Mt Cotopaxi, Ecuadorian Andes. 19,812 feet high. Made up from layers of ash, pumice and andesite lava. The magma produced is 'sticky', does not flow far and along with the erupted ash and pumice forms a very steep cone. These are explosive volcanoes of the subduction zone trench system. Cotopaxi violently erupted in 2015.



Stratocone

Jill then posed the question "Currently which is most dangerous volcano in the world?". The surprising answer is Vesuvius. Another good example of a stratocone volcano with more than 3 million people living around it. Studying past eruptions shows it erupts on an average of every 44 to 48 years. It last erupted in 1944.... It now shows signs of magma movement – ground elevation, increased heat flow, gasses, earth tremors.

Vesuvius erupted in AD79, providing the ash and pumice that covered Pompeii. This type of eruption is named Plinian after Pliny the Elder who described it while watching the eruption.



Plinian eruption

A further Plinian eruption collapsed and caused the pyroclastic flow that destroyed Herculaneum. Pyroclastic flows are even more dangerous than a Plinian eruption if you are in their path, they can travel at 100's of mph with a temperature of 1000 degrees C! A flow like this might come directly from an explosive blast through the volcano side (like Mt St Helen's) or by Plinian collapse.



Pyroclastic flow

Shield volcanoes in contrast are very low profile.



Shield

These are mostly composed of basalt, which is a low viscosity, runny lava. These volcanoes are very different to the stratocones. They erupt mostly as gentle flows but can form fire fountains if the magma contains any water. The fire fountains result in spatter cones and bombs landing nearby.



Pahoehoe lava

Fissure eruptions occur where the ground is being pulled apart. They occur in places such as the East African rift and are the form of volcano along the entire ridge system in every ocean. Without doubt they are the biggest chain of volcanoes we have on Earth.





Cinder cones along a rift

Rifts of the geological past can be seen all over the world. Here is one from the Isle of Eigg, Scotland.



Plateau lava on Eigg

Layers of lava form the stepped edge of the skyline. The west coast Scotland was once the site of a massive line of fissure eruptions – the 'fissure' was the beginning of the Atlantic Ocean at this point. 60 Ma. Features such as the Giants Causeway and Fingal's Cave are huge ponding areas of these basalt rift lavas. Each of the Scottish islands themselves is an individual volcano!

The last part of the talk gave several examples of volcanic activity in the form of heat, rather than the eruption of magma itself – travertine deposits and geysers were two examples. The last slide contained a Health and Safety notice – beware of volcanoes, they are very dangerous places, but they do make some of the very best holiday locations!

(Adapted from Jill's presentation)

Fissure

#### Fossils and how to become one Wednesday 25<sup>th</sup> November

With our first virtual AGM done and swiftly dusted, we moved on to the post meeting Zoom presentation (part of the new normal). Jill described how, at a beginner's workshop on fossils, her opening question was *"But what is a fossil"* to which a tentative reply came *"something turned to stone"*. Jill noted that while this does cover a fair number of fossils, there is so much more to it.

Are the human forms preserved as hollow moulds in Pompeii following the Vesuvius eruption of AD72 fossils? Their forms have certainly been preserved in stone but don't meet the 10,000 years old or more age criteria.



Preserved human forms, Pompeii

Another question. Do fossils have to be made of stone? An image of a 42,000 year old baby mammoth body, recovered from the Siberian permafrost, suggested not. Here, not only were actual bones, teeth, skin and hair preserved but also flesh and stomach contents

An insect trapped in the oozing resin of a prehistoric conifer provided another example – a fragile body sealed away from the outside world for millions of years as the encasing resin hardened to amber.



Insect in amber

A more conventional fossil, an ammonite, was exhibited, particularly notable for its outer layer of mother of pearl. The iridescent surface had not been turned to stone, rather it was part of the original shell, again surviving for millions of years. Jill noted how, in more porous sediments, the original shells are often dissolved. Fine sediments such as clays, however, can form protective seal for the would-be fossil. This rang true for me based on two *Thracia* bivalve specimens in the Museum's collection (see below).



Thracia sp bivalve fossil from the Kimmeridge Clay still retaining some of its original shell



Thracia sp bivalve from the Portland Limestone showing the complete loss of all original shell

Rather than stone, some fossils may be *turned to mineral.* Images of a sea urchin made from flint and an ammonite preserved in iron pyrites were shown. Another showed a cross-section of an ammonite in which the open outer chamber had been preserved by sediment (stone) along with one of the inner chambers (presumably ruptured by a predator's fatal bite). The remaining inner chambers, however, where seen to be occupied by crystals of calcite.



Cross section of an ammonite showing varying infill be sediments in some chambers and calcite crystals in others

Silicification is another form of mineral preservation. Jill showed an image of a prehistoric 'log jam' of silicified tree trunks in Arizona National Park. Jill explained how, over 200 million years ago, the logs were washed into an ancient river system, where they became quickly buried by sediments, cutting off the oxygen supply and thus slowing their decay by centuries. During this time the cellulose of the wood was, cell by cell, replaced by silica.



Silicified tree trunks in Arizona National Park

Many fossils, however, do look like *things turned to stone*. A buried bivalve or gastropod may have the form of its outer surface preserved as an imprint in the surrounding stone, forming an external mould. Its internal cavity may also be filled by rock-forming sediments to create an internal mould. In the absence of an internal mould, the space may be filled with sediment to form a cast, providing a positive image of the external mould - and looking, to all intents and purposes, like a seashell turned to stone. Casts and external moulds reveal the outer shape of the animals. These can look completely very different to the internal moulds. Some fossils are only known by their internal moulds with no record of what their outer ornamentation may have looked like.

Looking at moulds and casts of a different kind Jill showed several images of dinosaur footprints from Ardley Fields Quarry, Oxfordshire. Here, the living animal has left behind numerous imprints of its existence long before its death. These are trace fossils and dinosaur footprints are the top examples.



Dinosaur footprint, Ardley Fields Quarry, Oxfordshire

However, many other trace fossils are known. The animal responsible for producing *Cruziana* trace fossils was a mystery until an example turned up with a fossil trilobite at the end – the final footsteps of a 500 million year animal preserved in stone!



Cruziana trace fossils

Other trace fossils still remain a mystery as Jill's image of *Chondrites* - a series of small branching burrows, illustrated (below)



Chondrites fossilised burrows

Having reviewed the diverse forms of fossil preservation, Jill moved on to look at what makes a good fossil. An important point to remember here is that not everything that dies becomes a fossil. This only occurs where the plant or animal remains can survive long enough to be preserved. Swift burial by accumulating sediments keeps the scavengers away and may limit oxygen, thus reducing bacterial action. The type of sediments can be very important. Very fine sediments have produced clear imprints of animals such as the many impressive fish imprints from the Green River Formation (USA) and the fantastically important flattened Archaeopteryx fossils (from Solnhofen in southern Germany) that provided the first clues to the evolutionary links between certain types of dinosaur and modern birds.



Fossil fish from the Green River Formation

By way of contrast, Jill showed some exquisitely preserved, three-dimensional fossil fish from the Santana Formation in Brazil. Jill described how the internal preservation matched that of the precise external preservation. Internal organs were preserved, right down to the cellular level. In one fish, not only could its stomach contents be studied but also the stomach contents of shrimp contained within the stomach of the fish.



How is such exceptional preservation achieved? Jill cited speed as a key factor in this case. The fossilised gill arches of the fish were found to be erect – a significant feature. Research by palaeontologist, David Martill on modern fish showed that gill arches collapsed within 20 minutes of death and so, fossilisation here must have been very swift. Research from the Pacific coast of South America has occasionally revealed fish with high levels of calcium phosphate. This is thought to result from winds and ocean currents caused by El Nino creating an upwelling of minerals from deep in the ocean. Not only does the calcium phosphate kill the fish but also starts the fossilisation process while the fish is still alive. It is thought that similar conditions may have occurred in the fledgling Atlantic during the time of the time of the Santana Formation fish in the early Cretaceous.

Fossilisation, so it would seem, is a diverse and varied thing.

#### **Mike Palmer**

#### Reviews

## Breakthroughs in Geology: Ideas that transformed earth science

As a non-geologist struggling over many years to understand the discipline's shifting terminology, a review in the *Proc. Geol. Assoc* 131, of *Breakthroughs in Geology: ideas that transformed earth science* by Graham Park (Dunedin 2020), caught my eye. The book itself is a delight to handle. Each chapter contains many subheadings and it is liberally supplied with annotated coloured diagrams – the majority being sectional views, and there is a helpful glossary.



Not surprisingly its contents accord with its title. It is a history of the development of geological thought, but its principal emphasis is on structural geology and tectonics (the author's specialism). On page 31 the term 'continental drift' makes its first appearance and the remaining 200 pages consist entirely of themes arising from this momentous advance in understanding. You won't find the word 'Buckinghamshire' mentioned here and only rarely the word 'fossil'. That the subject takes up so much of the book reflects of course the rapidly shifting world of scientific thought, but perhaps the accompanying advances in technology, such as satellite imagery and seismology that are routinely available to researchers might have received a little attention.

Of additional interest to an outsider is Park's careful acknowledgement of the contribution of named individuals (whose biographies are always supplied), in the development of current knowledge.

So, what did this reader get out of it? Well, perhaps despite all the helpful aids an understanding of perhaps seventy percent of it ... but there is a lot to absorb and I look forward to trying again – it will be worth the effort! The abiding impression left with the reader, which will not be news to geologists, is of the instability of the thin surface-skin of lithosphere which *Homo sapiens* happens to occupy ... at the moment!

Mike Farley

### Minutes of the Buckinghamshire Geology Group AGM

3.45 - 4.30pm via Zoom (rescheduled from Saturday 27th July due to the Covid-19 pandemic)

#### 1. Apologies: Julia Carey

- 2. **Present:** Bryan Moseley, Jill Eyers, Mike Farley, Susie Gregory, David Hammond, Graham Hickman, Linda Holmes, Ian Hudson, George Lewis, Mike Palmer (minutes)
- 3. Minutes of previous AGM: 27<sup>th</sup> July 2019, Buckingham Old Gaol (published in BGG Newsletter No 34, March 2020, available at <u>http://www.bucksgeology.org.uk/pdf\_files/BGG\_Newsletter\_March\_2020.pdf</u>

#### 4. Membership report

Membership Secretary, Julia Carey, was unable to make the meeting but did send Mike Palmer some notes and a breakdown of the membership figures.

Several changes to our membership renewals have taken place in the last few years. Firstly, the change in the renewal date from 1<sup>st</sup> January to 1<sup>st</sup> April. And secondly, due to the Covid-19 pandemic, the decision to roll-over free membership from 2019-20 to 2020-21. While soundly based, these decisions have meant that calculating current membership numbers is not the exact science we would have hoped for.

Current membership is estimated at 31, compared to 29 at the last AGM. Of these,13 have been members for over 10 years with 15 being members over 5 years. This is contrasted by another 16 people who have been members for between 1 and 3 years. The latter group has been the more dynamic over time and so, our aim should be to continue to provide and build upon a strong events programme, interesting newsletters and quality social media in order to hold on to the new members we are attracting.

Finally, it has been noted that many potential members are discovering the Group part way through the membership years and so, instead of asking them to wait until the following 1<sup>st</sup> April to join that we set a date part way through the year that any new members joining can have their membership carried over for the following year. At a recent business meeting the committee decided that anyone joining after 1<sup>st</sup> November this year would have membership to 31<sup>st</sup> March 2022

#### 5. Annual review

#### 5.1. Events & Field Meetings

**Saturday 4<sup>th</sup> May:** Graham Hickman led a trip to **Kimmeridge Bay** in Dorset including a visit to the new Etches Collection Museum housing an extensive collection of Kimmeridgian fossils and state of the art audio-visuals to recreate the Jurassic sea. This was a joint meeting with the Bath Geological Society, with the Bucks Geology Group represented by three members.

**Saturday 27<sup>th</sup> July**: Following last year's AGM at Buckingham Old Gaol, nine members and guests joined Jill Eyers for a **Visit to Buckingham Sandpit** to view a variety of Ice Age sediments laid down just under half a million years ago, including the impressive remains of an esker.

**Saturday 3<sup>rd</sup> August:** An opportunity for members to join in a Geologists' Association field trip to **Two North LincoInshire Quarries**, with former local geologist, Mick Oates, as joint leader. The morning's visit to the enormous South Ferriby chalk quarry was followed up in the afternoon with a trip to Conesby Mine, a disused ironstone pit. With fossils aplenty it was unfortunate that the Bucks Geology Group contingent was only represented by three members. Despite this, I would argue to keep trips like these in the programme to allow members to take a wider view of Britain's geology (as well as collecting fossils). An added bonus was a visit to the Barrow upon Humber Geology Museum, aka, Mick Oates' extensive fossil collection (see Newsletter No 34) with high tea in the garden.

**Saturday 10<sup>th</sup> August:** saw the Group back on home ground with Jill Eyers leading 14 members and guests on a **Geological Walk around West Wycombe Hill and Bradenham Village** exploring the Iron Age hillfort, St Lawrence's church and the Dashwood Mausoleum, followed by the numerous and varying puddingstones and sarsens on Bradenham village green.

**Friday 30<sup>th</sup> August:** Five members and guests joined Mick Oates for a **Visit to Kensworth Quarry** across the border in Bedfordshire. The unavailability of weekend visits meant that the trip had to be run on a Friday, thus reducing potential attendance to six members and guests. Mike reiterated that one of the major benefits of belonging to a group such as ours is the ability to visit sites that otherwise would be inaccessible.

**September**'s planned **Visit to Stowe Quarry** had to be rescheduled due to temporary issues with access. When circumstances allow, we will look reschedule the trip to view and log these Ice Age deposits.

**Saturday 19<sup>th</sup> October:** An opportunity for members to go behind the scenes at the County Museum Resource Centre for a **What's in Store** trip to the geology collections with Mike Palmer. With numbers reduced due to limited space in the stores, three members joined Mike for a 90-minute look through assorted shelves, drawers and boxes. It is planned to re-run this event in future years.

**Saturday 16<sup>th</sup> November:** The final event of 2019 saw ten members and guests join Jill Eyers for **Stories in Stone**, another in the ever-popular series of hands-on workshops, this time looking at what rocks are and how to identify some of the more common examples.

**Saturday 15<sup>th</sup> February:** The first event of 2020 began with a hands-on **Ammonites Workshop**. Nine members and guests joined Jill Eyers at the Museum Resource Centre. These workshops are proving popular events in the winter months. More will be planned for the future.

March: The planned visit to Northmoor Hill had to be cancelled due to high winds

Further scheduled events for 2020 were knocked of course due to a different force of nature, in the shape of the Covid-19 epidemic. As a result there was: -

- No Rock & Fossil Day at the Museum (April)
- No Geological and Landscape Walk around Aston Rowant (May)
- No Visit to Hartwell House and grounds (June)
- No out-of-county trip to Aust Cliff on the Severn estuary (July)
- No return to the County Museum's geology store (August)
- And no trip to the Uffington White Horse (September)

In **October**, Jill Eyers was the first to pick the batten up again for the group, leading a trial, socially-distanced trip with five people **Exploring the Jurassic Geology of Great Linford**, Tuesday 13<sup>th</sup> October.

Saturday 21<sup>st</sup> November: Jill Zoom provided a talk to 30+ members and guests on Volcanoes – the what, where and why, in lieu of the planned Hands-on Volcanoes event (which will be rescheduled as and when circumstances allow).

**Looking forward**, in the short to medium term, it looks like events will continue to be delivered via digital media. However, it is hoped that as spring moves into summer that some rescheduling of 2020's lost field meetings may be able to take place.

Graham Hickman noted that, as with Jill Eyers' October trip, the GA had been compiling information on other local geology groups' experiences of running socially distanced field meeting with a view to compiling a range of useful tips. The GA will be emailing local group contacts shortly. Mike Palmer to pass on details to the committee when they arrive.

#### 5.2. Conservation

Jill reported that with many of our key local geology sites now managed by dedicated charitable organisations there was less need for BGG members help out with site conservation efforts.

Jill has been visiting some of our smaller local geology sites to review their current state and conservation requirements

Jill also undertook some work with the MK Parks Trust volunteers at Great Linford quarry and stone circle including the recording of a 5 minute video, *Geology at Great Linford Manor Park*, for YouTube

#### 6. Newsletter and digital media

#### 6.1. Newsletter

Mike reported that three newsletters have been published since the last AGM - July 2019 (N° 33), March 2020 (N° 34) and September 2020(N° 35) with a general trend towards more pages. Moving forward, the aim is to increase the number of newsletters per year from three to four. In order to achieve this, Mike needs committee members and members in general to continue to send in articles, observations, reviews and questions to help fill the pages. It is hoped that the ongoing *Brief Encounters with Bucks Geology* project introduced in Septembers newsletter N° 35 will help with this – see <a href="http://www.bucksgeology.org.uk/pdf">http://www.bucksgeology.org.uk/pdf</a> files/BGG Newsletter September 2020, N° 33).

#### 6.2. Website

Graham noted that the website was in need of updating to make it more compatible with mobile phones. There was a brief discussion of what was needed. This will be picked up by the committee at their next meeting

#### 6.3. Facebook

Jill continues to provide content for the group's Facebook page which is generating interest in the group. We currently have 147 followers. In the last 28 days 4,935 people had been reached and 102 people had engaged with the content

#### 7. Treasurer's report

Unfortunately, Jill was unable to find the treasurer's report on the morning of the meeting and didn't have time to compile a new one. Rather than reschedule the whole AGM the committee decided to proceed without the report. A new report will be produced in the next few days and be reviewed at a forthcoming committee meeting before being circulated to members.

In summary Jill reported that at in April 2019 we had a balance of  $\pounds4,761.48$  and that April 2020 we had a balance of  $\pounds4,523.50$ . Due to the prevailing pandemic there had be far less financial activity. Full income and expenditure accounts to be attached to these minutes

#### 8. Election of officers and committee members

Mike reported that there were no changes to the committee members and officers from last year. The following members were elected *en bloc*. Proposed by Mike Farley, seconded by Susie Gregory

- Chair: Mike Palmer
- Secretary: Post vacant
- Vice chair / Membership secretary: Julia Carey
- Treasurer: Jill Eyers
- Other committee members: Phil Clapham, Graham Hickman, Ian Hudson, Mick Oates

#### 9. Any other business

None

#### 10. Date of next meeting

We will look to hold our next AGM in June next year

Bucks Geolo Income and Expenditure Account	ogy Group for year ending	g 30 <sup>th</sup> March 2020
Income:	£	3
Book Sales	0	
Membership	140.50	
Donations/field trip non-members	6.00	
Site monitoring UKRIGS	0	
		146.50
		_
Expenditure:		
UK RIGS subscription	10	
Geol Assoc Membership	40	
AGM room hire	7	
Insurance (not renewed due to COVID until 0ct 20)	0	
Materials & equipment	48.65	
Web Domain and Hosting	251.53	
Site travel	25.80	
Fees/consult	0	
Print, materials), conservation	1.50	
		- 384.48
Excess of Expenditure over Income	-	237.98
Opening Bank Balance (25 <sup>th</sup> April 2019)		£4761.48
Less Excess of Expenditure over Income		237.98
Balance accounted for:		£4523.50
Balance as per Bank Statement (30 <sup>th</sup> March 2020) Balance for petty cash <u>Total balance</u>		4523.50 0 £4523.50

Prepared by J. Eyers  $30^{th}$  March 2020 For AGM 25.11.2020

### Buckinghamshire Geology Group – Early 2021 Programme

**Cost:** Unless otherwise stated, all events are <u>FREE to members</u>. Non-members will be asked to pay a small charge for attending field meetings and indoor events.

**Booking:** Booking is usually required for all field meetings and indoor events. This avoids meetings becoming oversubscribed and allows the organiser to contact attendees with any last-minute changes.

*Clothing:* Some trips, especially quarry visits, may require protective clothing such as helmet and high-vis jackets. Please enquire with the event leader or see event flier nearer the time for details.

*Covid-19 Pandemic:* All field meetings may be subject to change depending on the prevailing Government regulations at the time.

Attending ZOOM talks: All members will receive an emailed link to each of our advertised Zoom talks. Simply click on the link and follow the instructions. If you are not a member please request the link, ideally at least the day before, via <u>bucksgeologygroup@gmail.com</u>. To avoid talks being over-subscribed please do not share the link.

*Wednesday 13<sup>th</sup> January, 4 - 5pm* Geology and Hydrology of Burnham Beeches. A ZOOM talk by Graham Hickman. This talk will describe the origin of the gravels, clays and Chalk underlying Burnham Beeches. We see how the geology dictates the location of springs and follow the streams to where they disappear into sink holes. The talk can be followed-up with a self-guided tour – free download from our website.

**Saturday 6<sup>th</sup> February, 4 - 5pm The Chilterns and the London Aquifer**. A ZOOM talk by Graham Hickman. Following on from the January talk we will look the larger scale hydrology of the Thames Basin and will consider where the water goes that disappears into the Chalk at Burnham Beeches.

*March 6<sup>th</sup> March, 5-6pm* It's Life Jim but not as we know it. A ZOOM talk by Jill Eyers exploring the first life on earth – the weird and wonderful animals of the Precambrian and Cambrian.

**Sunday 7th March 10.30 Hidden Aylesbury**. A town centre walk to discover the geology of Aylesbury hidden beneath the surface and the source of its very varied building stones. A view of Aylesbury that is a bit different! Led by Jill Eyers with guide notes to follow. It will take us to c. 12 noon and depending on social distancing rules may include a coffee or lunch indoors at the end. Free to members, £3 to non-members. For details and to be put on the list contact Jill at <u>i.eyers@btopenword.com</u>

*Thursday 1st April* Geology at Great Linford. A look at the stone circle and small quarry section with Jill and options for seeing further geology as self-led. Slots will be available from 10.30 to the end afternoon. This is a Milton Keynes Parks Trust event. More details to follow. Mark date in your diary. A contact link will be sent to all members to book when available.

**Saturday 10<sup>th</sup> April, 4 - 5pm** Ammonites – from myth and folklore to geological relevance. A Z00M talk by Mick Oates.

*Saturday 8th May* Vale of the White Horse walk. 10.30 to 4.30. A day looking at the geology and archaeology of this beautiful National Trust area. From the NT car park (free to NT members, cost to non-NT Members) we first walk the Ridgeway to Wayland Smithy with lots of landscape geology and history on the route. Back at the car park it is time for a picnic lunch or lunch at the White Horse pub (the only loo opportunity).Back in the car park we walk up to the top of Uffington Hillfort (slow pace though!), see the white horse chalk figure along with several other archaeological features and classic geology from the amazing view. More details nearer the time, depending on the latest government regs. Free to members, £5 to non-members. Contact Jill j.eyers@btopenworld.com at to be added to the list & get more info nearer the date.

Sunday 30th May, 10.30 - 12.30 Visit to Northmoor Hill Local Geology Site, near Denham. Geological walk around the nature reserve to see geology and landscape from Cretaceous to the Anglian glaciation. Nature included where it turns up! ring picnic lunch. No loos on site. To be put your name down & get more information contact Jill at <u>i.evers@btopenworld.com</u>.

## Membership Details

#### Annual membership now runs from 1<sup>st</sup> April to 31<sup>st</sup> March the following year.

#### Individual membership is £7.50 and Family membership is £12 per annum.

Membership is open to beginners and experts alike.

A copy of the membership form is available on our website under the 'Contact Us' tab. Please complete and return payment to

Membership Secretary, Julia Carey, c/o BMERC, Place Service, 6<sup>th</sup> Floor, County Hall, Aylesbury, Bucks HP20 1UY (Email: <u>jcarey@buckscc.gov.uk</u>)

Alternatively, you can pay your subscription direct to the Buckinghamshire Geology Group account at: Lloyds TSB (White Hart Street, High Wycombe) Sort code: 30-94-28, Account no 00744003

### **Further Information**

**Mike Palmer** Bucks County Museum Resource Centre Rowborough Road, off Tring Road Halton Bucks HP22 5PL

Tel: 01296 325223

Email: mpalmer@buckscountymuseum.org

Website - www.bucksgeology.org.uk

Facebook - www.facebook.com/bucksgeology