Buckinghamshire Geology Group

Newsletter No 39 August 2022

Sarsens in Oxfordshire

Ice Age gravels in East Burnham

Fossil finds in Loudwater

Fossil displays in Aylesbury

From the Editor

Thank you for sending in a steady stream of rock and fossil photos for identification. Many come with a sense of enthusiasm that is a real pleasure to share. Please keep them coming in. I am also grateful for the trickle of articles arriving in my email in-box. It is not always possible to publish them straightaway but I will endeavour to include them in future newsletters so please carry on putting pen to paper or finger to keyboard to help maintain an interesting and varied newsletter.

Mike Palmer

News

Congratulations to Graham

Congratulations to Graham Hickman, Bucks Geology Group committee member and webmaster, who has recently been elected President of the Geologists' Association.

Vanessa Banks handing over the President's 'badge of office' at this year's Geologist's Association AGM

This is a two-year position covering an interesting phase post-pandemic, which sees the way meetings and events are being held virtually as well as face to face. Graham's familiarity with modern technology should stand him in good stead in overcoming the challenges of the new world we live in.

Mick Oates

Recent finds

Searching for proof of Wycombe's prehistoric seas

I was sure I could find fossil evidence of the prehistoric sea that once covered High Wycombe. It took a bit of searching but then in Loudwater I found this flint with a shell on it.

Dominic Roe

Your fossil looks like an external mould or impression of a bivalve called *Spondylus*, probably *Spondylus spinosa*. I've included an image of a complete shell below.

The chalk is a rich source for fossil hunting. Have a look on our website www.bucksgeology.org.uk. If you click on the 'Bucks Geology' tab on the opening page, a list of geological strata found in Bucks will appear. Select 'Chalk Group' and scroll down to see a selection of photos of fossils found in the chalk. Hover your mouse over each image to reveal further information.

Mick Oates

Really excited. Have just found another bit of flint with fossils in, from Loudwater again. The big bit of shell caught my eye. After I washed it and had a closer look, I spotted some smaller interesting shells as well.

Dominic Roe

The two large shell fragments in your photo (top left and bottom right) are from the large Inoceramus group of bivalve fossils. These have a thick fibrous calcite shell (which you can see at the edges of the upper left example with lots of parallel lines running down). There are a number of species in this group and from the photo alone it is difficult to say which. One possible candidate is *Volviceramus* sp – see below

Volviceramus sp. A large Inoceramus-type bivalve. Specimens can commonly be found up to 30cm long.

Between these two large fossil shell fragments are some smaller pieces of shell. These look to me more fossils of *Spondylus* sp bivalve fragments, similar to your previous fossil find.

Below this is a rather nice echinoid (sea urchin) spine. Some sea urchins have simple spiked spines for protection. Others, such as those belonging to the Cidaris group, have more club-like spines. A range of Cidaris-group echinoid spines can be seen on the Discovering Fossils website at www.chalk.discoveringfossils.co.uk/ECHINOIDS.htm#Cidaroids for a range of examples

Spine from *Temnocidaris sceptrifera sea urchin, Prehistoric Seas case, Discover Bucks Geology gallery*

The new museum fossil displays in Aylesbury include a spine from *Temnocidaris sceptrifera*. *Temnocidaris* sp could be a likely candidate for your fossil, however, your spine is incomplete. Also, it is difficult to make a definite identification without the sea urchin's shell. Some nice images of *Temnocidaris sceptrifera* can be seen at the Discovering Fossils website at

www.chalk.discoveringfossils.co.uk/temnocidaris%20sceptrifera.htm

Mick Oates

Recent finds

Marine reptile found in pond

Here are some photos of a fossil vertebra found at Weedon while pond digging. It turned up when the JCB hit limestone.

Tom Clarke

The top of Weedon hill is capped with Portland Limestone. As you move downhill towards the find spot for this fossil you move into the Kimmeridge Clay below. Therefore, if the pond was being dug into the Kimmeridge Clay, the 'limestone' that was hit by the JCB would be calcareous concretions that formed within the clay (like the septarian nodules featured on page 4 of Newsletter No. 38).

Ichthyosaur vertebra centrum showing the concave (bowl-like) surface. The point of attachment for the (missing) neural arch can be seen on the top edge of the disc

Ichthyosaur vertebra from above showing the point of attachment for the (missing) neural arch.

A vertebra of this size in Bucks is almost certainly going to be from a marine reptile. Your example has the characteristic form of an ichthyosaur vertebra which is easily distinguished from those of plesiosaurs and other marine reptiles. The differences can be seen by comparing the vertebral columns of a plesiosaur and ichthyosaur on display at Discover Bucks Museum in Aylesbury

Ichthyosaur vertebrae – assorted front and side views

Plesiosaur vertebrae – assorted front and side views (with additional limb bone bottom right)

The ichthyosaur vertebrae are clearly thinner than those of plesiosaurs. The face of the ichthyosaur vertebrae are very concave (bowl-like) on both sides while much thicker plesiosaur vertebrae are less so.

As to which species of ichthyosaur this vertebra come from, the recent *Fossils of the Kimmeridge Clay Formation* (Palaeontological Association, 2020) lists three species from this formation: *Nannoptergyius entheckiodon*; *Ophthalmosaurus* sp; and *Brachypterygius extremus*. Unfortunately, with only a single vertebra to go on it would be impossible to say which one this fossil belongs to.

Mike Palmer

Recent finds

Tom's echinoid

I found this small fossil shell while metal detecting near Lower Road, just south of Stoke Mandeville hospital. It measures 20mm in diameter and is 9mm thick.

Tom Clark

These photographs show a small, regular Cretaceous echinoid, something along the lines of *Phymosoma* sp. The actual shell (test) has dissolved so what you see is the internal cast (in flint I think). The external mould is probably the more diagnostic feature but is not available in this case. The find location is firmly where the Gault Clay crops out, however, it is more than likely that this is a piece of flint remaining after the formerly more extensive chalk scarp has receded during the Palaeogene and Neogene periods. There are plenty of flint pebbles lying around on the Gault outcrop, some remain from the gravels opposite the Chiltern gaps and some from glacial till (more probably the first where this one was found)'.

Mick Oates

News

A walk around the new Discover Bucks Geology gallery

In 2019 Discover Bucks Museum (formerly Bucks County Museum), in Aylesbury, embarked on a £1.3M complete redesign of its permanent galleries. The previous displays were over 25 years old and took an integrated approach to collection display with a strong social history leaning. It was widely agreed that the new galleries should return to a subject based layout reflecting museum's collections and its quartet of specialist curators. After seemingly endless discussions, designs and redesigns, carried out before and throughout the Covid pandemic, a workable plan was mapped out. Opening with the Discover Bucks Geology gallery, visitors then move through galleries displaying archaeology, social history, art and finally, wildlife.

Discover Bucks Geology gallery looking through to the Discover Bucks Archaeology gallery

A common approach to design was taken throughout with the exception that each gallery has its own carefully chosen signature colour– a simple approach that works surprisingly well. In April 2022, four out of five of the galleries opened to the public (Wildlife still requiring further work).

The *Discover Bucks Geology* gallery rightly sits at the start of the County-based story and has three areas of focus – Bucks rocks and minerals, Jurassic and Cretaceous Bucks and Ice Age Bucks. An introductory panel provides a summary of Bucks geological past while individual case panels include timelines to show visitors where they are in the prehistoric story.

The Bucks rocks and minerals area currently comprises one case. Contained within is a 1.9m

tall annotated stratigraphic column, made from specially collected rock samples, that introduces visitors to the type of rocks that underlie the county. The rest of the case comprises items that show how our local rocks have been used, from a Palaeolithic hand axe, Penn tile and Brill pottery bowl to 'coprolites' for fertiliser and sand for water filters. A selection of Bucks minerals is also displayed here. In the coming months this case will be joined by a large interactive projection (note the hardware bolted to the ceiling). This will enable visitors to explore how these rocks were formed, how they influence the modern landscape and show how they are reflected in its built environment.

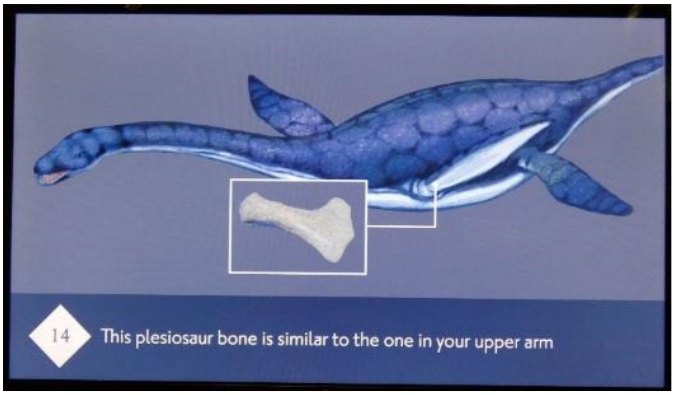
Bucks Rocks & Minerals case with the stratigraphic column on the left

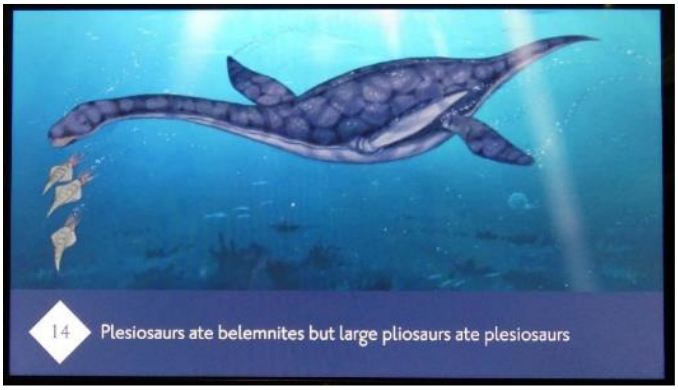
The rest of the gallery is more fossil based. Two large cases introduce visitors to the animals that inhabited the varying series of prehistoric seas that covered Bucks for large parts of the Jurassic and Cretaceous. The fossils have been arranged within broad taxonomic groupings so that people who are new to the subject can get a feel for the basic types. However, with over 100 specimens on display there is plenty of potential for the more interested visitor to explore the diversity within these groupings.

Life-size drawings on the display case backs, along with a rolling slideshow on an in-case screen, help bring these potentially abstract objects alive. The 7.6m drawing of the (not fully grown) Watermead pliosaur extends out onto the floor. A small selection of the 80 pliosaur bones discovered during groundworks for Aylesbury's short-lived dry-ski slope in 1987 are displayed here. If you are visiting the gallery, have a close look at the ribs to see the fossil oysters that called these home while they rested on the sea floor prior to final burial.


Left to right: Aylesbury's Mystery Dinosaur case; Prehistoric Seas case; and the Watermead Pliosaur case


Prehistoric Seas case close-up. Note life-size illustrations of ammonites, heteromorph ammonites, belemnite and crinoids

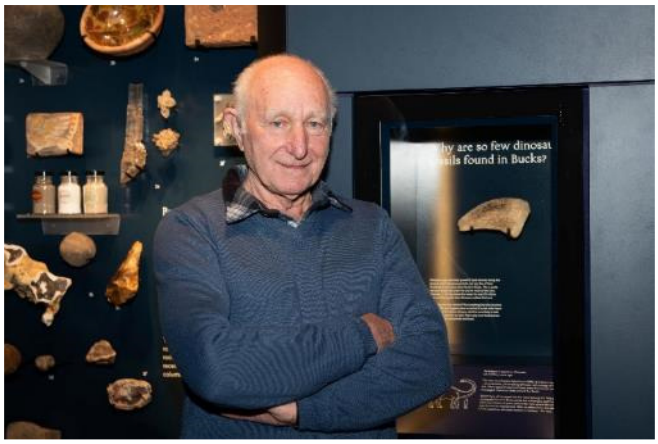




Example slides from the Prehistoric Seas in-case screen showing how the fossils would have related to the living animal

Watermead Pliosaur case close-up

The addition of the animals 1.6m skull to the display would have been fantastic but sadly no skull was found. It is not uncommon for the skulls of such animals to become buried some distance away from the main body. Experiments carried out on dead porpoises have shown that when large marine animals die, they often float on the surface for some time and that there first thing to drop off are the heads. This means that unless environmental circumstances afford a swift burial, the head is likely to end up some distance away from the main body of the animal.



Finder of Aylesbury's dinosaur claw

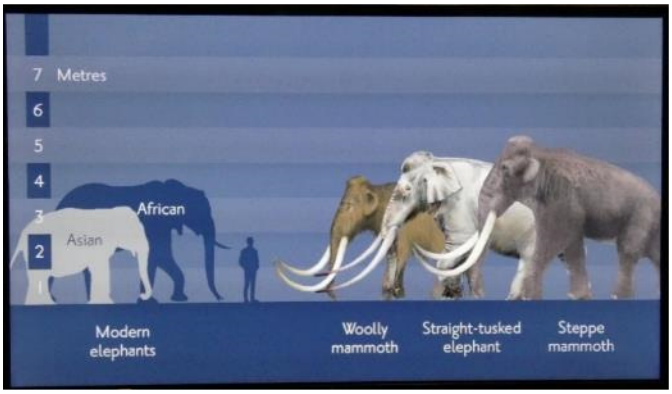
A third case is conspicuous by its small size and contains only a single object – a dinosaur claw discovered in Aylesbury in 1994. This single fossil may seem a poor show when compared with some larger museums with their enormous, gallery-dominating articulated dinosaurs. But check the labels - many of these are artificial casts of dinosaurs found in other parts of the world, commonly America. Dinosaur fossils in Britain are very rare. There have been only six fossil finds that show evidence of dinosaurs in Bucks, four of which are in other museums. The finder of this claw was keen for it to stay in Bucks and we were more than happy to oblige.

The claw was identified as coming from a sauropod – a 'four legs, long neck, long tail' type of dinosaur. But what type of sauropod? It was originally thought to be a cetiosaur (as reported in BGG Newsletter No. 30, Jan 2018) based on historic fossil finds in Oxfordshire and north Bucks. However, cetiosaurs lived 20 million years before the rocks in which this claw was found formed. I approached Natural History Museum dinosaur expert, Paul Barrett, on the matter but he knew of no sauropod fossils corresponding to Upper Kimmeridge Clay 150 million years ago. And so, for the time being this solitary claw remains the only evidence we have for Aylesbury's mystery dinosaur.

A large mammoth tusk draws the eye forwards in time towards the *Ice Age Giants* case. A cast of this tusk did form part of the previous permanent galleries but this is the first time that the real fossil has been displayed since it was carefully-lifted out of the ground over 40 years ago. All items in this case came from excavations in the early

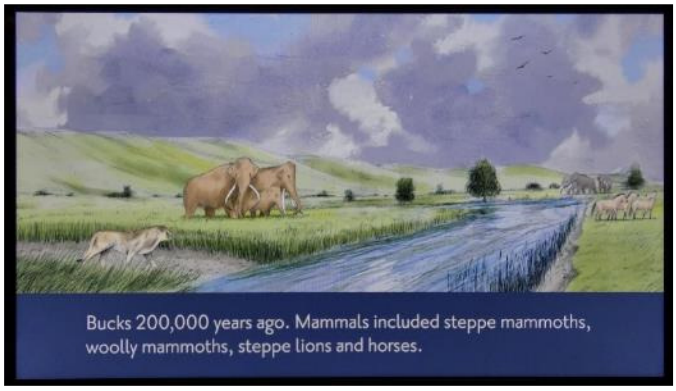
1980s at, what was, Pitstone Quarry No 3 but now better known as College Lake Nature Reserve. Here is displayed the fossil evidence that allows us to say that at least three members of the elephant family plodded across Bucks during the Ice Age - the well-known woolly mammoth, the once enormous steppe mammoth and the more elusive straight-tusked elephant.

Ice Age Giants and Ice Age Mammals cases

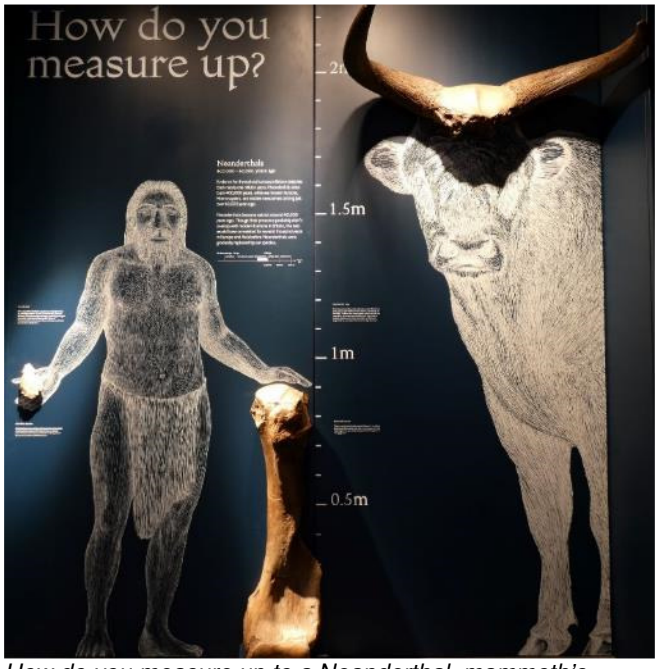


An example from the rolling slideshow for the Ice Age Giants in-case screen

Adjoining this case, *Bucks Ice Age Mammals*, reviews the evidence for other locally found species. In addition to expected Woolly Rhinos and Aurochs, fossils from animals more usually associated with Africa such as (Steppe) Lion, Spotted Hyaena and Hippo are also present. The very rare lion jaw is suitably picked out by the accompanying life-size drawing behind it while illustrations of other animals feature on an in-case screen. This screen also provides graphic visualisations for the fluctuating climate of the Ice Age and its impact on the British coastline and Buckinghamshire landscape over time.



One final display element features life-size drawings of an Aurochs (ancestral ‘cow’) and a Neanderthal holding a real hand axe in one hand and resting the other on a cast of a large mammoth humerus bone (the real fossil being on display in the case) just short of a metre long – a chance for visitors to measure up against three ice age species.



How do you measure up to a Neanderthal, mammoth’s humerus or an aurochs?

It was, of course, during the Ice Age, that early humans first made their appearance in Britain. Neanderthals are now thought to have been the

third species of human to have made it to England (after *Homo antecessor* and *H. heidelbergensis*). And Neanderthals were certainly in Bucks as finds of 400,000 year old hand axes near Burnham Beeches attest to. Current evidence suggests a height range of between 5ft and 5ft 6 inches with average heights tending to get smaller during their 360,000 year, intermittent tenure of the Britain prior to their ultimate demise some 40,000 years ago.

It is good to have had this opportunity to increase the profile of local geology in the Museum's permanent displays. Looking forward, it is planned to introduce a series of A4 information sheets and trails to the gallery in order to expand on certain key objects and themes. We also hope to use the gallery as a venue for a series of hands-on geology events for selected dates over weekends and holiday periods.

Please note that Discover Bucks Museum charges for admission. Please visit https://www.discoverbucksmuseum.org for details

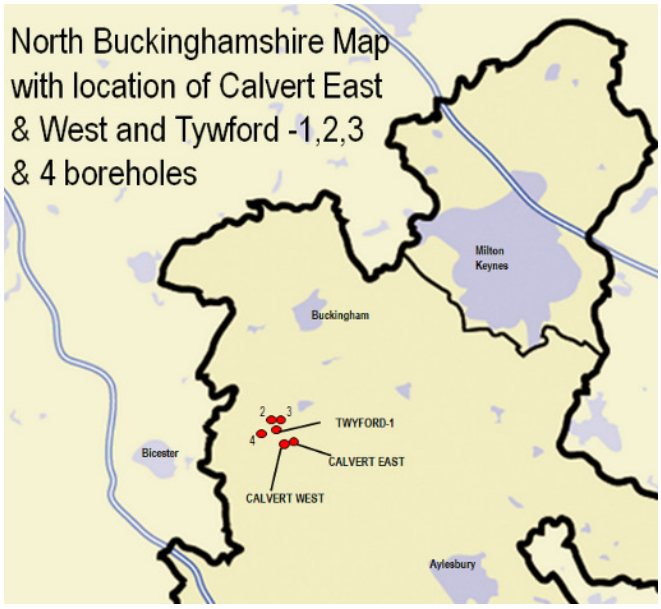
Mike Palmer

Member's article

Calvert Borehole

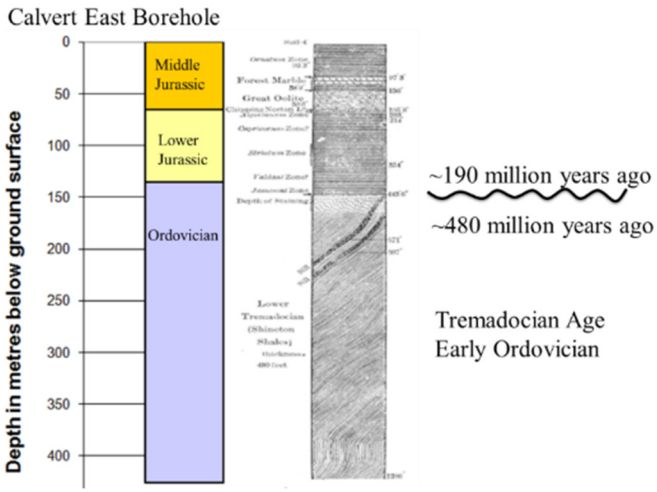
The rocks which crop-out in Buckinghamshire are predominantly of Jurassic and Cretaceous age. To learn about the older and deeper rocks we must examine borehole data. Boreholes have been drilled across the county to explore for water, coal, hydrocarbons, engineering and environmental reasons. Much of the information is available to view online using the BGS website. www.bgs.ac.uk/map-viewers/geoindex-onshore/ and the onshore geophysical library ukogl.org.uk/

This article is the first of a series looking at some of these boreholes in the north of Buckinghamshire starting with Calvert West. Some of the core taken from this well is stored in the Bucks County Museum.



Following the opening of Calvert railway station in 1898, a borehole was drilled in 1905 to the west of the station in order to provide a source of water for the station. The Calvert West borehole found instead flammable gas at 380ft (116m) below the surface and saline water so it was abandoned at 445ft (136m). In 1911 a subsequent borehole; Calvert East was drilled to a depth of 1398ft (426m) and the Calvert West borehole was also cleared and restarted, finally reaching a depth of 446ft (136m). The details of the operations are recorded by Davis and Pringle (Davis 1913) who visited periodically and collected samples for the Geological Survey.

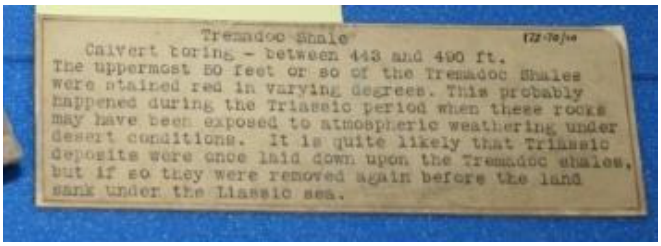
Structurally the boreholes show relatively flat lying strata of middle and early Jurassic age down to a depth of 443ft (135m), below which both the age and angle of dip of the strata increase suddenly.



The deeper rocks are of early Ordovician age (~480Ma) Palaeozoic while the shallower rocks are of Jurassic age (~190Ma) Mesozoic indicates

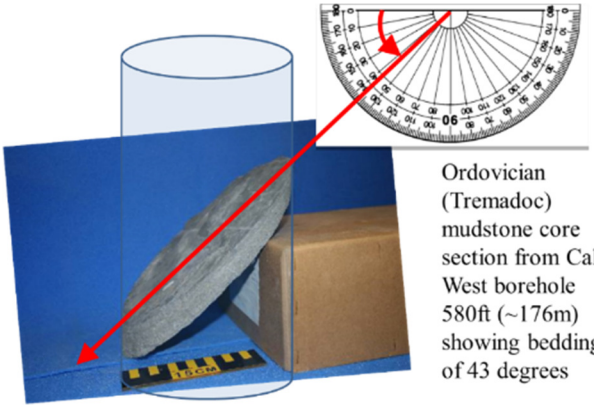
there is a substantial unconformity with around 290Ma of missing section!

The Ordovician shales were noted to have been stained red for a depth of about 50ft (15m) below this unconformity. This has been attributed to the deep weathering likely to have occurred during the Permian and Triassic when the area would have been exposed to an arid hot environment. (Bucks County Museum Sample 172.70/10 shown below).


Tremadoc Shale
Calvert boring - between 443 and 490 ft.
The uppermost 50 feet or so of the Tremadoc Shales were stained red in varying degrees. This probably happened during the Triassic period when these rocks may have been exposed to atmospheric weathering under desert conditions. It is quite likely that Triassic deposits were once laid down upon the Tremadoc shales, but if so they were removed again before the land sank under the Liassic sea.

Tremadoc shale. Calvert boring between 443 and 490 ft.

The deeper Ordovician rocks were initially thought to be Carboniferous Coal Measures, until graptolite fossils were found, this must have caused some anguish for those hoping to discover coal.



Ordovician (Tremadoc) mudstone core section from Calvert West borehole 580ft (~176m) showing bedding dip of 43 degrees

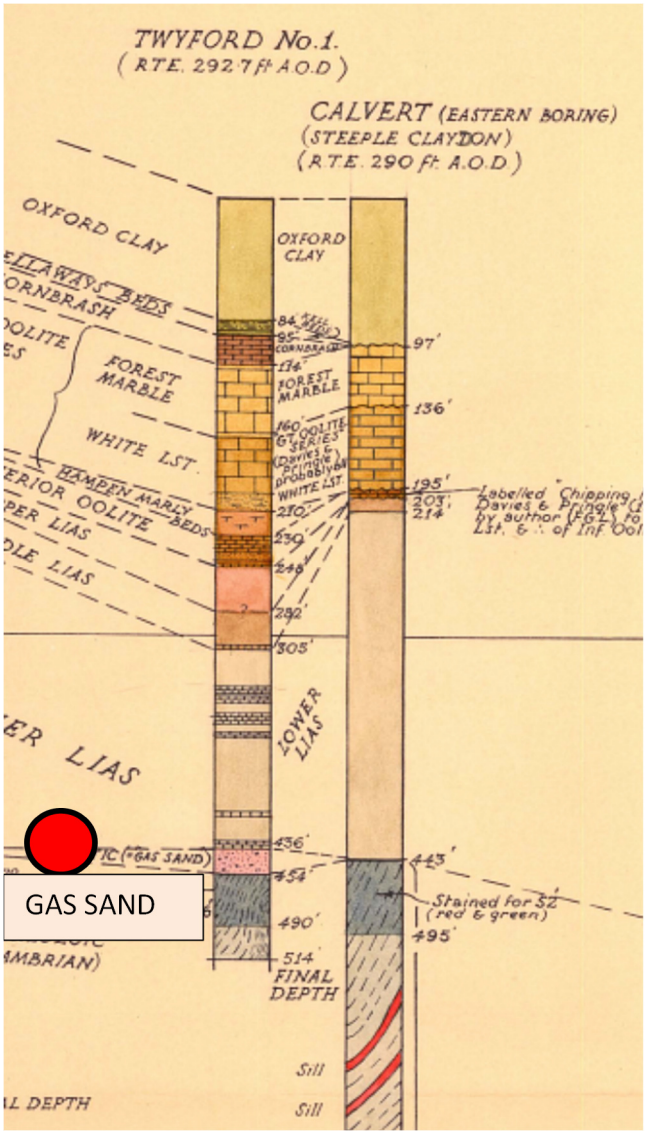
Above is a photo of a piece of the core from the Bucks County Museum Collection. It has been positioned to show the true dip of the bedding. These rocks have been deformed and probably folded, by at least two periods of mountain building; the Caledonian and Variscan Orogenies as the microplate of Avalonia and Laurentia plate collided and later amalgamated into the Pangea supercontinent. However it should be noted that the lack of metamorphism suggests they were never buried too deeply.

Olivine basalt. Calvert boring at 606ft

Within the Ordovician section there was also found two thin igneous intrusions of olivine basalt (Whitaker 1921). These show cross cutting relationships to the surrounding shales and shallow contact metamorphism. (Bucks County Museum Sample 172.70/93 recovered from 606ft). From offset boreholes and regional geophysics it is believed these are associated with early Silurian volcanism (Sumbler 2002).

The gas discovered in the West Calvert borehole was subsequently used for lighting at Calvert station until it was closed. The Calvert East well didn't encounter any gas. The presence of 1.6% Helium in the gas led to further exploration by BP/ Gas Council in the 1960s with Twyford-1 through Twyford-4 wells being drilled.

The Twyford-1 well drilled in 1960, discovered gas reservoir sands 18ft in thickness, but of unknown age, sitting at the base Mesozoic unconformity. This was called the 'gas sand' and was put on a three day production test. The test achieved a brief flow rate of 900,000 cubic feet per day but saw a dramatic pressure drop which indicated a much smaller gas resource than initially estimated. The problems relate to the presence of poor quality reservoir and the reliance of subtle stratigraphic trapping along the base Mesozoic unconformity. The gas is speculated to have been sourced from the Carboniferous Coal Measures in Oxfordshire to the west with poorly focussed migration. The gas discovery was never commercialised and the acreage was relinquished. (Gas Council 1973).



Attempts were made in the 1990s to renew the exploration interest (Oswald 1996). However no further wells were drilled and it remains a non-commercial gas field with estimated reserves of 12 million cubic feet. (Gas Council 1973).

References:
Davies, A.M and Pringle, J. 1913. On Two Deep Borings at Calvert Station (North Buckinghamshire) Quarterly Journal Geological Society, Vol 69, 308-340.

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Sumbler, M. G. 2002. Geology of the Buckingham district. NERC. BGS.

Whitaker, W. 1921. The water supply of Buckinghamshire and of Herefordshire from underground sources. Memoir of the Geological Survey.

Graham Hickman

Zoom talks

The best bits of Bucks geology

Thursday 1st July

The presentation was intended to give an overview of what is on offer in Buckinghamshire and then highlight some of the best sites to see in the County. It did what it said on the can – and it just happened that many of our 'best bits' are also Bucks Geology Group sites. By 'sites' I mean locations designated as important for geology in some way. The designation is recorded at County level and the sites are called Local Geology Sites. This importance could be as a good site to see the rocks of a certain age, or for fossils, or for landscape interest, amongst many other categories. If anyone applies for planning permission close to or affecting these sites then the group gets a chance to say how the geological interest might be protected during the works, or even why the project should not go ahead.

As I said in the talk that we could feature some of these sites as special features in future newsletters, I had better come up with the goods!

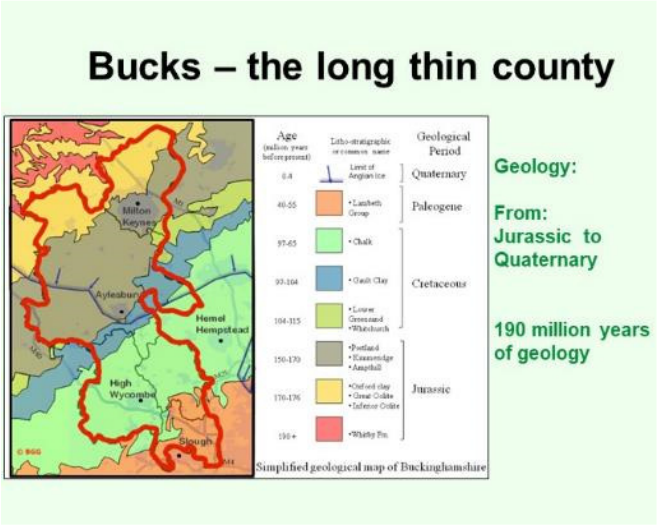
The sites included in this talk (from north to south) were:

- Olney
- Newport Pagnell
- Great Linford
- Bradwell Abbey
- Coombs Quarry
- Buckingham Sand Pit
- Soulbury Erratic
- St Mary's Church, Great Brickhill
- Quainton
- Bugle Pit SSSI
- Ivinghoe Beacon
- Incombe Hole
- College Lake
- Brill
- Whiteleaf Nature Reserve
- Bradenham

- West Wycombe Hill
- Northmoor Hill

With such a good number of sites highlighted it was going to be a whistle-stop tour but some of these have more details on the website www.bucksgeology.org.uk

Bucks geology is oldest in the north of the County (Jurassic) and youngest in the south (Palaeogene) with more than a good sprinkle of Quaternary to make some really interesting places to visit.



To discover more of the geology where you are, download one or both of these free apps:

Rockd gives an overview listing of what you can find on the site you are standing on. So, it lists the geological era, rock type, ages, names and lists any fossils or minerals associated with that rock. Note it does over do the fossil lists as it will name every single thing ever found – which is very different to what you may find on a visit!

iGeology is the British Geological Survey (BGS) app. It is searchable for locations and gives you a section of the BGS map of that area, with key.

Another way of accessing British Geological Survey data is via the BGS Geology of Britain viewer at https://mapapps.bgs.ac.uk/geologyofbritain/home.html which opens with a map of the UK into which you can zoom to discover the underlying geology in your area

Have fun!

Jill Eyers

Field meeting

A geological walk around the Vale of the White Horse

Saturday 10th July 2021

This simply has to be one of the best days to go join in a field trip with BGG. A full day exploring a beautiful landscape with excellent geology and some wonderful archaeology. Add to that a fun group with a picnic lunch and an ice cream to end the day, and what more can you want!

Uffington White Horse Hill and Hillfort from the western approach

This part of the Berkshire Downs is one of the very few areas in the country where the prehistoric landscape is preserved (the others being Dartmoor and the Avebury-Silbury area). Along our route there were numerous ancient monuments including Neolithic and Bronze Age burial mounds, the Bronze Age white horse, and Iron Age hillforts as well as Celtic field systems clearly visible. The reason for the landscape features being so well preserved is the fact that this has remained grazing land for a long period of time. The fact that no-one has ever built structures or deep ploughed much of the area may be linked to the fact that this has remained a sacred and much visited region from the Neolithic to the present-day!

Surveying the geology from the vantage point above the white horse

Along the way we looked at the geology of the Vale of the White Horse and assessed what was natural landscape – and by elimination we worked out which may have been sculpted by people. Chalk geology can be complex, and it is prone to many erosion features. However, the tricks of the geology trade were given away over the day to help with geological interpretations. Geology was therefore both geomorphological with some small outcrops and standing stones to identify.

Frost shatter

The whole trip took in Wayland's Smithy, the Ridgeway, Rams Hill, Uffington Hillfort, the White Horse, an amazing landscape view of the vale beneath, Dragon Hill, the Manger and numerous burial mounds.

These photographs are just a glimpse of what was on offer on the trip:

The White horse in all its difficult-to-capture glory

Approaching Dragon Hill

Inspecting the monumental sarsen façade of Wayland's Smithy Neolithic tomb

Jill Eyers

Field meeting

East Burnham Quarry
Saturday 13th November 2021

On Saturday 13th November 2021 around 15 people attended the field trip to East Burnham Quarry. The group was made up from members of the Bucks Geology Group, the Hertfordshire Geological Society and a few local residents including Helen Read the Ecologist at Burnham Beeches. The quarry operated by Summerleaze Ltd. is exploiting the Quaternary Boyne Hill Gravel Terrace. This is one of a series of gravel deposits which represent former positions of the palaeo-Thames River. These gravels are believed to date from around 350,000-400,000 years ago (Marine Isotope Stages 11). They were deposited during the first inter-glacial period after the Anglian Glaciation.

The Bucks Geology Group last visited the quarry on 30th July 2016. A report of this visit can be found in BGG Newsletter No.28 January 2017 along with an article on the hand-axes found in the Boyne Hill Gravel Terrace which are now in the collections of the Discover Bucks Museum.

The group was escorted by a member of the Summerleaze quarry company who explained the quarry operations which had occurred since our 2016 visit. The previously visit was on the western side of the site, this area was dominated by palaeo-sinkholes or dolines. The western side has now been infilled. The workings on the eastern side didn't encounter palaeo-sinkholes, in

fact the gravels rested much more uniformly on the underlying Reading Beds (Lambeth Group). (Figure 1)

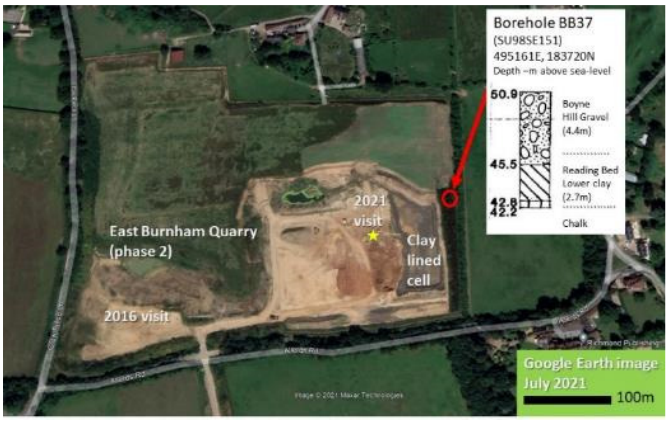


Figure 1 – Google earth image showing workings of East Burnham Quarry in 2021.

The eastern side of the site has now also been extracted and partial infilling of inert waste has begun. We were shown areas where the underlying clays had been dumped, these were the typical brown clays and sands we associate with the Reading Beds. The presence of layers of sand within these brown clays increased their permeability meaning that their properties were deemed insufficient to be used as a clay liner or bund. Consequently, deeper clays were dug. Although we were unable to view the site where these clays had been dug, we were able to see the grey clay lining the extracted cell (Figure 2).

Figure 2 – East Burnham Quarry – showing clay lining and partial infill of the extraction cell.

In the central part of the site the gravel is yet to be extracted and an excellent section through the gravels could be seen. (Figure 3, the star on Figure 1 shows the approximate location).

Figure 3 – members examining the section of Boyne Hill Gravel. Note the sand lens half way up the section.

The gravels were observed to be around 4m in thickness. A nearby borehole; BB37 (BGS Reference: SU98SE151) recorded 4.4m of gravel, overlying 2.7m of Reading Beds (lower clays) before passing into the chalk. A summary of the borehole data is shown on Figure 1. These boreholes were drilled prior to gravel extraction to investigate the hydrology of the area and to monitor any long-term effects on the water table. The concern is that extraction of the gravel could alter the local hydrology and have an adverse effect on the Burnham Beeches nature reserve. So far, no connection to the Burnham Beeches hydrological system has been observed.

Several sand lenses were observed mid-way up the face. Of particular note was one where the sequence started with silts and clays and coarsened upwards to sands. This then was cut and gravel deposited in the channel fill. The interpretation is that this may represent a low-energy section of the braided river which was later ''cut into'' as the faster flowing channels migrated during a flood event. Figure 4.

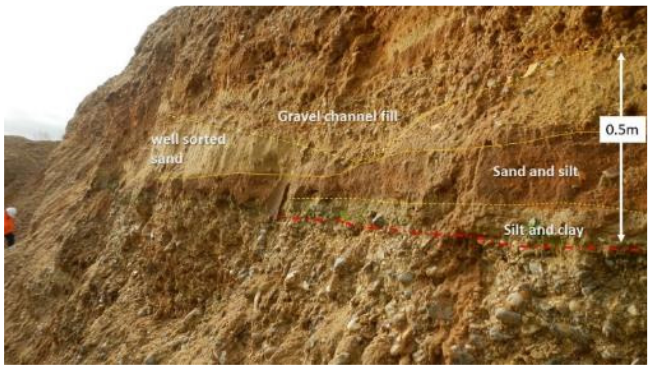


Figure 4 – detailed view sand lens showing gravel infilling a channel cut

After examining the sedimentary features observable in the quarry face, members spent the remaining time looking for derived fossils and unusual clasts within the gravels.

The majority of the clasts are flint, some often showing little signs of weathering or transportation. A large piece of tabular flint was seen (Figure 5b) it is likely that this has not been transported far, perhaps from chalk outcropping near Maidenhead?
Large quartzite clasts were also seen (Figure 5a) The darker coloured one being derived from the Bunter Formation (Triassic) and transported from the Midlands region. The lighter coloured one probably Sarsens from the Palaeocene.

Derived fossils from the Chalk recorded were mainly sponges and burrows preserved in flint (Figure 5c).

Of interest too was a quartzite pebble that had four flat faces, (Figure 5d) this was interpreted to be a possible ventifact pebble. Derived from the Triassic, the faces would have been abraded by wind-driven sand in an arid environment.


a. Rounded quartzite cobbles – well travelled


b. tabular flint – unlikely to have travelled far


d. possible ventifact pebble, derived from Triassic

Figure 5. showing a collection of the different clasts found within the Boyne Hill gravel.

The group enjoyed a pleasant time in the quarry and an informative discussion of the geology and hydrology. Despite the efforts of the group no Palaeolithic tools were discovered. The BGG wishes to thank the Summerleaze company for allowing us access to the quarry.

References:
Link to Wessex archaeology report
http://www.bucksgeology.org.uk/ice_age.html

Graham Hickman

Buckinghamshire Geology Group – *forthcoming events*

Cost: *Unless otherwise stated, all events are FREE to members. Non-members will be asked to pay a charge of £3.00 for attending field meetings and indoor events.*

Booking: *Booking is usually required for all field meetings and indoor events. This avoids meetings from 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 helmets and high-vis jackets. Please enquire with the event leader or see event flier nearer the time for details.*

Saturday 27th August, 11am to 12.30. **Visit to Northmoor Hill**, near Denham. A walk Jill Eyers and Julia Carey around this local geological site and nature reserve exploring its Cretaceous and Ice Age past along with the present-day wildlife. Optional picnic lunch following walk. For further details and to book your place please contact Mike Palmer at mpalmer@discoverbucks.org

Saturday 10th September, 4 – 5pm. **Rock Detectives 1: Sedimentary my dear Watson**, the first of three Zoom talks by Jill Eyers. This talk looks at how to identify sedimentary rocks and interpret their environment. A Zoom talk by Jill Eyers. An email invite will be sent out to members prior to the event. For further information please contact bucksgeologygroup@gmail.com

Saturday 8th October, 10am to 12.30. **Geology and Archaeology of Swanbourne.** Dr Clive Rodgers will lead a walk around Swanbourne examining building stone and field evidence for the underlying Geology and Archaeology. The walk will finish at 12.30 in time for a lunch at the village pub (if desired). Clive was until recently the Chairman of Swanbourne Parish Council. For further details and to book your place please contact Mike Palmer at mpalmer@discoverbucks.org

Saturday 19th November, 10am to 12 noon. **Trilobites – A Hands-on Workshop** with Jill Eyers exploring the world and diversity of this ancient fossil group. Bucks County Museum Resource Centre, Halton. Places limited - BOOKING ESSENTIAL. For further details and to book your place please contact Mike Palmer at mpalmer@discoverbucks.org

Membership details and further information

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

Membership year runs from 1st April 2022 to 31st March 2023. New members joining after 1st November 2022 will receive membership through to 31st March 2024. 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, 6th Floor, County Hall, Aylesbury, Bucks HP20 1UY (Email: julia.carey@buckinghamshire.gov.uk)

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

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