



Cambridgeshire Geological Society

Newsletter

September 2026

Cambridgeshire Geological Society



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Subscription for 26/27

Annual Membership
£15 for 26/27 season

Student Membership
£7.50

Due from 1st September 26

Chair Report: by Penny Coggill

The society has been growing healthily both in numbers and in engagement with our various projects.

Other cities in other counties, those perhaps more exciting in terms of visible rocks than ours, have universities who are still actively involved in researching, documenting and exalting their local geology.

It seems that those of such a nature in the University of Cambridge are mostly at retiring age and beyond, and the younger generation are able to pursue more esoteric and cutting-edge research. This does not imply that Cambridgeshire's geology is all fully researched and protected, very far from it, and the result is that the work of documenting, designating and conserving for posterity any scientifically, historically, educationally or culturally

relevant and interesting sites now rests with CGS and GeoPeterborough.

You are all now aware of the work of our Geosites team, spear-headed by Chris Donnelly, and the visits organised to investigate potential sites in the county's Geodiversity Landscapes. These have given many of us real insights into the huge variety of local landscapes and of the underlying rocks there are in the county, including their past industrial exploitation. The task is on to find these important sites before they get lost to erosion and development.

To help with this, and to while away a spare moment, why not go to the Scottish Library OS maps for the 1800s, choose an area, and search for any old pits, quarries, springs or wells, and other relevant features

you might spot.

<https://maps.nls.uk/geo/explore/#zoom=7.0&lat=53.18347&lon=-1.73763&layers=257&b=ESRIWorld&o=100>

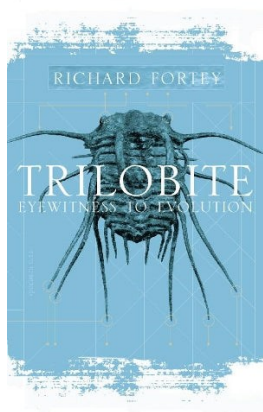
Call up the same place on the BGS map:

<https://geologyviewer.bgs.ac.uk/?ga=2.213066518.346917898.178772580-1553236757.178772580>

You can overlay modern LIDAR layers to check for any remaining indentations to back up your findings.

These sites need designating so that their geological interest can be considered when Planning applications are made. Hopefully, this may conserve them for posterity against development and destruction.

Looking forward to seeing most of you at the new season of meetings.



Book Review: *Trilobite!* by Richard Fortey Penny Coggill

If you have never come across this delightful book then do get hold of one as soon as you can whether or not you are a geologist.

Richard Fortey is the Trilobites' biographer and champion. He takes us through from their first

appearance in the Cambrian – when they appear fully formed with exoskeleton and arthropod legs and crystalline eyes! – to their disappearance in the Permian ~300my of existence and evolution. Their variety of form and speed of evolution mean they can be used as accurate rock daters. Fortey has studied and

loved them all his life and helps us imagine where they lived how they negotiated and navigated their environments, how they managed to see – wonderful calcite crystals for eyes quite unlike any other visual apparatus in the animal kingdom. You won't want to put the book down until the end.

A Short Visit to Anglesey—Reg Nicholls

Last July I treated myself to a 5 day trip courtesy of Chris Damon's tours to this exotic island. This trip was a real eye-opener – the rocks are rather stunning (and from a Scotsman, that is high praise!).

The area is comprised the Late Precambrian and Cambrian Mona Complex overlain by a succession of lower Paleozoic sediments and some volcanics – ending with some Carboniferous Limestones and sandstones.

The Mona Complex is quite diversified from Greywackes, siltstones, granites, volcanic ash beds and Pillow Lavas. The Gwna Mélange is incredibly unusual and very impressive. Parys Mountain offers a bleak dystopian landscape of copper mine spoil heaps with its ochre, red and yellow streaked vistas.

The older parts of the Mona Complex have been metamorphosed into gneiss grade with the overlying unconformable Ordovician and Silurian being also affected by the Caledonian Orogeny.

The Old Red Sandstones are seen in coastal exposures where they dip slightly, showing good vertical profiles. At many horizons caliche deposits are exhibited as well as desiccation marks. These appear to match playa and terrestrial deposit origin. The ORS rocks have also suffered deformation into folding and occasional cleavage.

There are also good exposure of the Carboniferous beds, mostly limestones and shales cyclotherms and some thick

bedded sandstone horizons. There are also opportunities to see some palaeokarst features. Good examples of fossil arthropod / worm trails can also be seen in places. Body fossils of solitary and colonial Corals as well as abundant Brachiopods can be seen.

The processes that led to the nature of the rocks as we see them today are still being debated. The evidence leads to oceans being created and destroyed with complex subduction, obduction processes with the associated back arc volcanism and accretionary terrains.

In summary, I was impressed by the complexity and scale of the rocks on this island – the range in ages, tectonism and types of rocks in such a small area approaches the best the UK has to offer.

Hidden Lisbon: Step Inside the Geological Museum : Peter Fletcher

I visited this excellent geological museum in Lisbon in April this year and would recommend anyone visiting Lisbon to have a look!

Tucked inside the former Convent of Nossa Senhora de Jesus on Rua da Academia das Ciências, Lisbon's Geological Museum is a wonderfully atmospheric stop for anyone curious about deep time. Founded from Portugal's nineteenth-century geological collections, the museum still preserves the feel of a historic "museum of museums", with elegant

cabinets, fossils, minerals, archaeological finds and displays that trace the country's natural history from prehistoric life to the rocks beneath the city.

Its permanent exhibition is arranged across four evocative rooms: palaeontology and stratigraphy; vertebrate palaeontology; pre-historical archaeology; and mineralogy. Visitors can browse rows of wooden cabinets holding fossils, rocks and minerals gathered through more than 150 years

of Portuguese geological fieldwork, alongside prehistoric archaeological objects that help tell the story of early life and human activity in the region. The vertebrate displays are especially memorable, with large fossil remains and dramatic specimens that bring ancient animals vividly into view, while the mineralogy room offers a colourful survey of crystals, ores and geological materials from Portugal and beyond. It is a quieter alternative to Lisbon's better-known attractions and a rewarding detour for families, science lovers and curious travellers exploring Bairro Alto or Príncipe Real.

A Geo Môn exhibit showing all the local rocks

Gwa Mélange showing huge white quartzite mega-clasts

One of the many exposures of Pillow Lavas

Visit: Museu Geológico, Rua da Academia das Ciências 19, Lisbon. Open weekdays, with visitor information available from LNEG and Visit Lisboa.

Fen Edge Trail Update —Chris Donnelly

Soham Lode

Completion of the main part of the Fen Edge Trail is now in sight, with most of the walks either described in a published guide or soon to be so. We can now see how the walks relate to many of our **Geodiversity Landscapes (GL)**, giving an opportunity to explore both the geology and history of the latter. Our three latest Walk Guides take you on some pleasant routes, most of which are not well known but definitely worth exploring. Between Waterbeach and Milton you enjoy a walk through the **Cam Valley GL**, crossing surface geology from three time periods: the Cretaceous bedrock Gault Clay and Chalk, the Terrace Gravels from the Pleistocene 'Ice Age' and River

Alluvium from the recent (and still ongoing) Holocene. This was an area that had a very important pottery industry, using the locally available clay to produce items such as 'Horningssea Ware'; the well-connected river transport also playing a significant role. <https://www.fenedgetrail.org/st-ives-to-cambridge/waterbeach-to-cambridge>

The other two (consecutive) walks take you around the bed of Soham Mere, at the south eastern end of the **Fen Edge GL**, and along Soham Lode towards Fordham, at the north eastern end of the **Lode Apron GL**. Starting in Wicken, the first walk also

takes you to Kingfisher Bridge Nature Reserve where you can see some Upware Limestone (from the Upper Jurassic). We have organised two guided walks on Friday 25th September that each cover a part of these two walks – **contact us as soon as possible to book.** <https://www.fenedgetrail.org/cambridge-to-isleham/wicken-to-isleham>

Penny, Peter and Dominic all contributed to work on the first walk whilst Reg and Ian worked on the other two. Thanks also go to Reg and Andy for the maps. If you'd like to help with the remaining walks, let us know.

Geosites Team News: - Chris Donnelly

Dry River Bed of the River Kennet

Our Geodiversity Landscape visits continued in August with a visit to the Kennett Valley where we started the day at Snailwell spring and pool (a potential Local Geological Site) to consider how the spring relates to the Melbourn Rock. This hard band ('hardground') of Chalk lies towards the bottom of the Holywell Nodular Chalk and is underlain by the Plenus Marls, which cover the underlying Zig Zag Chalk. As with the Totternhoe Stone and its underlying clayey West Melbury Marly Chalk, the combination of a hard, jointed (easier for water flow) Chalk horizon over less permeable, marly (clayey) Chalk appears to result in springs emerging from the Melbourn Rock. The attractive, round-towered, flint church next to the pool seems to have a chalk pit next to it – presumably a source of 'clunch' - to be investigated!

Most of our morning was spent at the wonderful Chippenham Fen National Nature Reserve, where we

set up an outdoor 'classroom' to pore over geology maps and diagrams to consider the structural setting that has resulted in a 'wetland' fen being located atop an anticline in the Chalk – definitely a potential Local Geological Site. A walk around this unique and ecologically valuable wetland followed including a visit to one of the chalk springs that supply water via the Totternhoe Rock, which almost encircles the site. We hope to return for a full day's visit next year. The afternoon saw a brief call by at the empty bed of the River Kennet (the border with Suffolk) and visits to Isleham Lime Kilns LGS and Chippenham and Isleham churches.

Thanks in particular to Chris Hainsworth, the Natural England Senior Reserves Manager (Breckland NNRs) for hosting us at Chippenham Fen, and to Steve B, Kevin and Andy

for their contributions to the day.

In contrast to our fun days out for landscape visits, we have also continued the serious work of producing the LGS Strategy! This has been helped by having a very pleasant 'site review' day when Steve B, accompanied by other members of our team, guided the staff from the county's Environmental Record Centre (CPERC) around several Local Geological Sites. CPERC are responsible for maintaining the records of all of our LGS and County Wildlife Sites so supporting their work is of great benefit all round. We hope to present a draft strategy to the Local Sites panel this November and to have the main document 'The Geodiversity of Cambridgeshire', which will no doubt be of wider interest, ready for publication in spring. Thanks to Kevin for his comprehensive work on the Strategy so far and, in advance, to other members of the team for their future input.



Stop 1. Ampthill Great Park looking to the north. Note sandy rabbit burrows to the right.



Stop 2. Silsoe Quarry. A group of CGS geologists getting up close and personal with the Woburn Sands.



Stop 3. Church wall in Husborne Crawley showing green Woburn

Woburn Sands Fieldtrip with the Bedfordshire Geology Group: Kevin Purvis

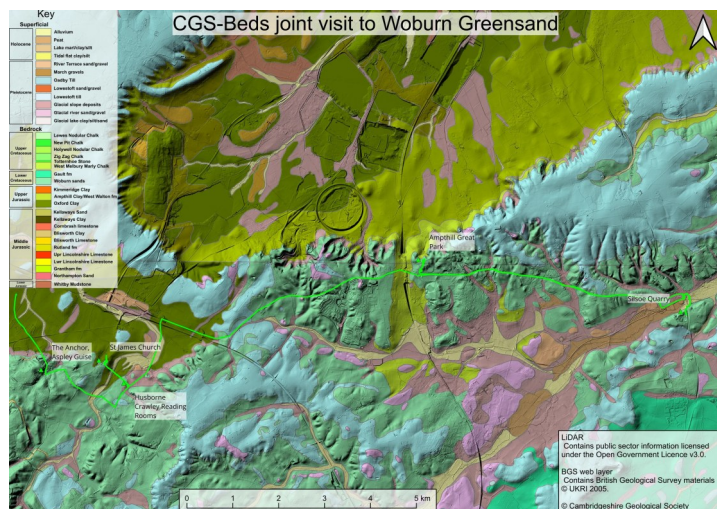
A group of CGS members travelled across the border into Bedfordshire to join a trip organised by the Bedfordshire Geology Group to explore the Lower Cretaceous Woburn Sands in the area around Ampthill. The trip was arranged and ably led by Paul Hawkes, who outlined the geology of the area at the first stop off point in Ampthill Great Park. The park is located at the edge of the Woburn Sands ridge, with a view to the North across the relatively flat lying deposits of the Jurassic Clays (primarily the Oxford Clay). The Woburn Sands Formation is the lowest Cretaceous interval in the area, dated at c. 113 Mya, some 50 million years younger than the Jurassic Clays that it rests upon. This boundary is a major unconformity and reflects a period when the area was uplifted and erosion took place prior to a rise in sea level and the deposition of the Woburn Sands. The ridge forms a significant topographical feature, but owing to the relatively friable

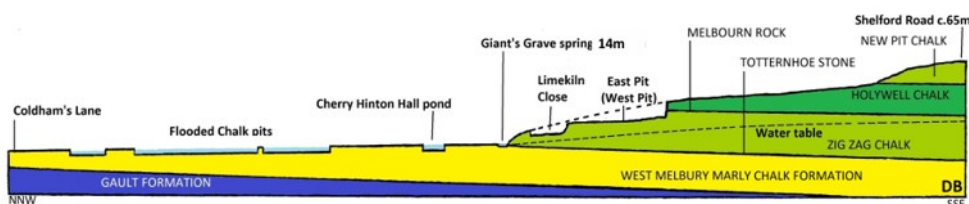
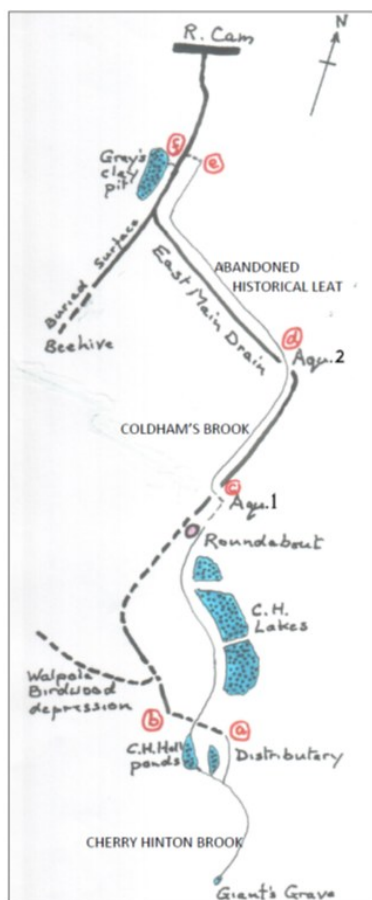
nature of the sands, there are no natural outcrops, except for the sand brought to the surface by burrowing rabbits etc.

In order to see the Woburn Sands in detail the group next visited the Silsoe Quarry near the village of Clophill. At this location a previously worked quarry face provided a good exposure of the large-scale bedforms deposited. The Woburn Sands formed as a result of sea level rise and were deposited in a shallow marine (probably estuarine) environment. Large cross beds were observed in the quarry face, reflecting the deposits of large-scale marine sand dunes. The grain size is relatively coarse, and locally thin mud layers have been found, suggesting both a high-energy deposit and tidal influence, typical of a shallow marine estuarine environment.

Although previously termed the Lower Greensand, the interval is typically brown in colour as a consequence of the oxidation of any iron-bearing minerals originally present in the sands. The shallow marine environment of deposition resulted in the formation of iron-rich clays such as glauconite, chamosite and berthierine that are related to chlorites and are typically green in colour, hence the term Greensand. However, the Woburn Sands have been at the surface, or very close to it for millennia, and any clays have been altered, giving the rock its brown (rusty) colour. The final stop

of the day at St James Church in Husborne Crawley gave those who wanted to experience green Greensand the opportunity to see blocks of very green Woburn Sands in the church walls. Paul Hawkes explained that the sandstone blocks had retained their green colouration as a consequence of quartz cementation during the burial of the rock, that had locked in the clays and protected them from any meteoric fluids and oxidation. Paul believes that there is a small quarry nearby (no longer visible) that probably was the source of the blocks used in the construction of the church. The group then convened in the Anchor Pub in Aspley Guise (still on the Woburn Sands) for a well-deserved drink and meal. Thanks were given to Paul for arranging and leading such an interesting field trip.



A Much-Abused Suburban Chalk Stream : David Brooks

The pond at Giant's Grave (a Local Geological Site, LGS)¹, on Cherry Hinton High Street, is the source of the Cherry Hinton Brook which, in post-periglacial times, flowed northwards towards the River Cam as a true Chalk stream. Nowadays this can no longer be said. Ground water from the Zig Zag Chalk (see sketch section) still emerges through the massively jointed thin stratum of Totternhoe Stone up through the floor of the pond, being unable to percolate any lower through the impermeable West Melbury Marly Chalk Formation. The brook flows across the Marly Chalk which was quarried for the benefit of the local cement works, three voids now being occupied by the Cherry Hinton Lakes (see rough sketch map). Since the dip is towards the south east the Gault Formation comes closer and closer to the surface northwards and is at the surface where it was extracted from Gray's clay pit near the Abbey Stadium and Newmarket Road. The loss of identity as a Chalk stream² can be attributed to at least nine changes to the channel and the hydrology wrought by entrepreneurs and local government for our immediate benefit.

The first, on a small scale, was the pond at Giant's Grave itself. A spring naturally creates for itself a hollow by the process of spring sapping. There is no process whereby it can create a pond. Some Totternhoe Stone was undoubtedly quarried. In any case a pond would have provided some benefits to villagers. Three or four hundred yards downstream, the Domesday Brook records water mills in the grounds

of the present Cherry Hinton Hall³. In the 19th century the builder of the hall designed, as a vanity project, ornamental fish ponds.

Throughout the length of the brook it is clear that the original channel has been (completely) destroyed by straightening, widening, and deepening. This is typical throughout the Cam Valley and is still, to a degree, practised today. A 'levée' seen from Snakey Path next to the lakes is clear evidence of the process.

The area including the lakes and the present Sainsbury's by the roundabout (see map) on Coldham's Lane was a hive of heavy extractive and manufacturing industry⁴. A 1927 OS map shows the Sainsbury's shop site occupied by the Atlas Concrete Works. The car park on the opposite side of the brook was occupied by the Portland Cement Works.

Within living memory the brook ran 'grey'. Just the other side of Coldham's Lane the Cherry Hinton Brook disappears into a long culvert before tunnelling under Barnwell Road and reappearing as Coldham's Brook and crossing the Cambridge East Main Drain via Aqueduct 1 (see map). Enough said. It is the East Main Drain,

constructed for our benefit, which has had the greatest impact on the local 'natural' hydrology. Between (c) and (d) (see map) it is lower than Coldham's Brook with the result that the water of the brook seeps downwards and laterally into the drain. During dry periods the brook is more less entirely lost to the drain before it re-crosses the drain through Aqueduct 2.

In the 16th century a leat was constructed from near (d) to supply the paper mill beside the Newmarket Road (between (e) and the Cam on the map). This leat was unusual in that an 1830 (Baker) map suggests that the entire flow of the Coldham's Brook was diverted through an artificial channel to the mill. Normally a leat only takes a portion of the water from a parent stream. Now the abandoned leat is mainly a muddy ditch. The ditch is blocked altogether at (e) so that when there is flow along it the water is diverted through a short buried pipe down to the East Main Drain at (f). Between (d) and (f) imagine a natural, liberally-meandering stream cut straight through by a significantly deeper drainage ditch.

The eighth process has the most general impact on these two brooks and all the other 'Chalk streams' of the Cam system. That is the abstraction of water by Cambridge Water, from the Chalk aquifer, for the benefit of us all.



Fig. 5 Massive joint pattern in the Totternhoe Stone Giant's Grave pond

Fig. 19 Snakey Path c. 1950s



1<https://www.cambsgeology.org/local-sites>

2https://www.friendsofcherryhintonbrook.org.uk/Publications/OtherPublications/FCHB_CH_and_Coldham%E2%80%99s_Brooks%E2%80%942025.pdf

3<https://static1.squarespace.com/static/67c7620c2ba7e3286aa30c79/t/67cf57e281ab175b59c395a7/1741641714140/History+of+Cherry+Hinton+Hall.pdf>

4https://capturingcambridge.org/wp-content/uploads/2015/09/East_Romsey_Cement_Works_2nd_edn.pdf



Building Stones Tour of Cambridge by Penny Coggill

The first effective, long-lasting and structurally sound stone to be used in Cambridge buildings was Barnack stone, a Lincolnshire limestone from the Jurassic limestone band. This is an oolitic limestone with a good proportion of bioclasts – shelly fragments - and peloids - small oval grains of microcrystalline carbonate

mud. It is therefore very tough but can be carved. Here we are inside St Benet's Church admiring the Tower arch and it's dominating lions, all constructed from Barnack. Clearly the parishioners were out to make a statement of their affluence. This stone was

used to build the cathedrals in the area, and for the plinths and quoins of most churches in the region - the plinths due to its capacity to keep water away from the walls, and the quoins as structural ties in rubble-walls.

The quarry was worked out in ~1450s



When King Henry VI conceived of his wondrous chapel for his college he envisaged it as gleaming white. It so happened that he owned quarries in Yorkshire, near Tadcaster, that produced beautiful white ashlar of Magnesian limestone from the Permian era. This limestone, where alternate calcium ions are replaced

by magnesium ions, is not oolitic in content, but more like a consolidated lime slurry and is a dolomite. It carries darker veins and cracks.

The rock is now referred to as the Upper Permian Zechstein Supergroup, and it formed possibly as a partial evaporite on western margins of the shallow

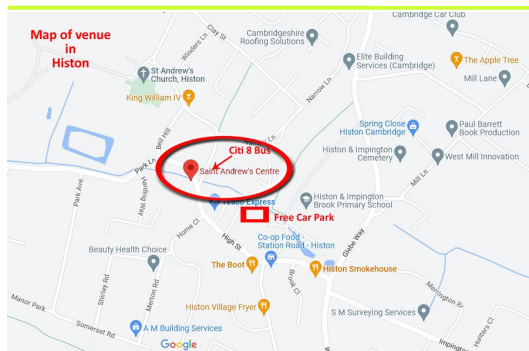
landlocked tropical Zechstein sea which was rich in calcium and magnesium salts.

The quarries Henry owned were worked out by the time Edward IV, Henrys VII and VIII came to finishing the chapel. They looked to the more local oolitic Jurassic Lincolnshire limestones for their white ashlar – Weldon and Clipsham. Unbeknownst to them these limestones would darken on aging.



This is the final stop on the tour, amongst the pebbles outside Trinity Great Gate. Most of the pebbles are flints, basalts, sandstones with some granites, but a very small handful are the exotic Rhomb Porphyry. A geology Fellow of the college, Tresilian Nicholas, recognised these as coming from the Oslo Graben, so can only have been brought

to Cambridgeshire via the Norwegian ice-sheet during the Pleistocene. The college finally acknowledged Professor Nicholas' elucidation by carving his initials, TEN, into the finest example just in front of the gate.



Monthly Society Meetings

All talks are at 7.30 pm (doors open 7.00 pm). Everyone welcome, free to CGS members, small charge for non members. Refreshments available

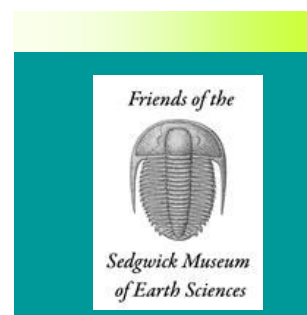
Hall 1, St Andrew's Centre, School Hill, Histon, CB24 9JE

Other Society Meetings

Friends of the Sedgwick

For information on the FoS,

<https://sedgwickmuseum.cam.ac.uk/support-us/friends-sedgwick-museum>



CNHS lecture meetings

The CNHS lectures can be found on their "Events" website page and start at 6:45 pm prompt, usually in the David Attenborough Building CB2 3QZ. Some events, including talks, **take place online**. It may be necessary to book in advance, including for outdoor events. **We advise checking with organisers.**

<http://www.cnhs.org.uk/>



Cambridge Natural
History Society

Local Fen Edge / Cambridgeshire museums

There are several museums with interesting fenland exhibits. Two that are now involved in the Fen Edge Trail are Burwell Museum www.burwellmuseum.ork.uk and Ramsey Rural Museum www.ramseyruralmuseum.co.uk.

Out in the Fen Basin, are a number of other collections including those at Wisbech Museum www.wisbechmuseum.org.uk which has numerous natural history specimens including local fossils. Also Chatteris Museum www.chatterismuseum.org.uk, Peterborough Museum www.peterboroughmuseum.org.uk, and Ely Museum www.elymuseum.org.uk

