



Cambridgeshire Geological Society

Newsletter

May 2025

Cambridgeshire Geological Society



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Chair Report: by Penny Coggill

We have had an interesting Spring, starting with a New Year's Warm-up Members' evening, with talks by Dominic Davey describing Septarian Nodules, Peter Fletcher talking about carbonatites and me illustrating the British contributions to the International Geosites; these talks were followed by a lively quiz kindly

Machines used in the Crossrail project.

Further talks throughout the year are advertised on the website.

Talks have been well-attended with lively exploration of the fossils and rocks that you bring for discussion or identification. Please continue to bring these. Exchange of books is also very worthwhile.

At our December meeting, Steve Boreham gave a talk on our Geodiversity Landscapes – an initiative by our Geosites team to describe 17 landscapes within the county – for more information see our website. In particular, Steve showed several maps he had produced that show the geology of each landscape.

geodiversity potential. Pub lunch is included in the day (not free), and the days will also be an excellent way to meet others and have a good day out in the country to places not normally visited. The first expedition to one of these was to the Heydon Chalk Uplands and the second to the Woodwalton 'Apron'.

Dates and locations for future months' Landscape visits have been issued to members

Ketton Quarry

We are looking at arranging a visit to this prolific quarry in the Lincolnshire Limestone ridge later in the year, and help arranging this would be welcome.

There will be a **Building Stones Tour** of Cambridge in June

Help for arranging things of all sorts, Fen Edge Trail, Local Geological Sites, outings, is always welcome, and you don't need to be on the committee for any of these.



*Looking North over the Apron
from near Woodwalton*

provided by Chris Donnelly.

Our February meeting was a look at Quaternary geology as it relates to the building of railways with direct comparison between HS2 and East-West Rail by Seb Gibson. This was followed in March by Ursula Lawrence describing the wondrous Tunnel Boring

Each month between April and October, Chris Donnelly has arranged an outing, for a day, for our volunteers to explore one of the landscapes to familiarise themselves with the geology and topography and look out for sites to investigate further for their

Security update to our websites

Our websites have recently had their security updated so there is now an 's' in their address i.e. <https://cambsgeology.org> and <https://fenedgetrail.org>. Your browser may not automatically go to the revised pages so please check that it is not the old address (http) that you are looking at.



Walkway from subway exit



Brass Necked Dino

Evolution Garden at the NHM, Cromwell Rd. *Reg Nicholls*

The exit from the Underground tunnel up to the front entrance of the Museum, has been adorned with a new "Evolution Walk". They have lined the exit walls with examples of rocks tracking the timeline of the history of Britain. You exit into the deep Pre-Cambrian Lewisian Gneisses, then pass up through the Torridonian Sandstone towards the Cambrian Quartzites. There are examples of Welsh Slates,

Permian Sandstones and many other UK rock examples.

I chose an extremely wet day which showed the rocks off to their best – even the brass Sauropod in the gardens looked cold!

It is great to see such good examples of the wealth of British geology, but I do think that more explanatory plaques would have helped to explain what folk were passing through, I had the

distinct feeling that most visitors were just walking past with no appreciation of what was to their sides.

Another example of a "Geological" walk can be found in the grounds of the BGS headquarters in Keyworth. If you are in the area, this is well worth a visit. You can download a guide at <https://www.bgs.ac.uk/about-bgs/our-facilities/geological-walk/>



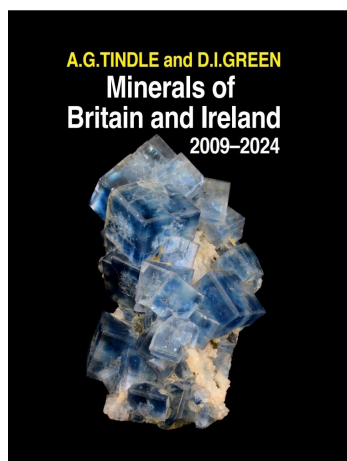
Book Review: Geopedia: A brief Compendium of Geological Curiosities By Marcia Björnerud

This is a brief dictionary of lesser-known geological terms. In describing and explaining these terms the author also covers many other important aspects of Geology. It is both amusing and informative. It is easy to read and does not require any more than a basic

knowledge of Geology to understand. It is a mix of engaging and entertaining facts about how the earth works and the history and etymology of geological terms. I really enjoyed reading this book and learnt lots from it including terms I had not come across. Don't

try reading it like a novel. Dip into it when you have moment to spare. Open any page and you will find some interesting fact.

Minerals of Britain and Ireland 2009-2024



"Since 2008, Andy Tindle's *Minerals of Britain and Ireland* has been essential reading for collectors and academics interested in the rich and fascinating mineral story of these islands. This has been brought up to date by Andy and co-author David Green in the 400-page book *Minerals of Britain and Ireland 2009-2024*."

This book tells the compelling story of the mineralogy of these islands, which are the birthplace of the science of geology, and the mineral wealth of these islands kick-started the Industrial Revolution.

This new book can be purchased from the Books & Journals section of the [Steetley Minerals website: https://www.steetleyminerals.com/40-books-and-journals](https://www.steetleyminerals.com/40-books-and-journals)

The price in the UK is **£75** including postage and packaging.



Limestone Pavement



Limestone Pavement Close up

Limestone pavement Monica Frisch

As a botanist/naturalist my main interest in geology is how it creates and shapes the landscapes which I explore and how the habitats in which the plants I find are influenced by the geology. As a botanist, I know that some plants like rich damp soils, how wet acidic areas have a relatively limited, but specialised flora, and how the most interesting areas seem to be those with underlying chalk and limestone. As a botanist I had heard of limestone pavement, but have not yet visited the Burren where

there is extensive limestone pavement and an exciting specialist flora.

I knew that limestone pavement was found in other parts of the UK, particularly in Yorkshire, but hadn't expected to stumble across some on a recent short break in the Wharfedale area. A walk in the Conistone area had been recommended where there was a limestone feature called Conistone Pie, because it is roughly circular and shaped like a pie. On the way we walked through

Conistone Dike, a narrow limestone gorge. The scenery was lovely, with views across Wharfedale, though these were intermittently obscured by snow flurries, and there were lots of rocky outcrops. One of which was a stretch of almost flat limestone pavement, with knobbly, rather than flat, clinks and deep grykes. It was too early in the year (mid-March) for most plants but one could see that there would be all sorts of things in the shady, sheltered grykes.

Fen Edge Trail Update by Chris Donnelly



Spring is a great season in which to explore the Fen Edge and a walk that is particularly nice at this time of year is that between the villages of Wood Walton and Upwood, with hedgerow shrubs and bluebells in flower. **Wood Walton** lies at about 20 metres above sea level on the slopes of a high ridge that encloses a deep basin on this far western edge of the Fens. The walk starts close to a **medieval motte and bailey** in the village and passes through quiet farming countryside as you descend the ridge, with extensive views north over **Woodwalton Fen National Nature Reserve** in the **Great Fen**. You pass **Gamsey Wood Nature Reserve** (and

Lady's Wood NR nearby) and then **Upwood Meadows**, another **National Nature Reserve**, famous for its orchids. The walk then goes through the village of **Upwood**, which was once home to an important Saxon nobleman, *Ailwyn*, who founded Ramsey Abbey. The Walk Guide covers this walk and the one that continues on to the town of Ramsey where it finishes at the remains of the abbey gatehouse.

The walk is mostly over Oxford Clay on the lower slopes of a ridge covered in Oadby Glacial Till higher up. Crossing a peninsula of Till provides views over the fen Peat and you finish back up on the Till in Upwood. Check

the Wildlife Trust's website prior to going if you wish to visit Gamsey Wood, Lady's Wood or Upwood Meadows as the reserves are sometimes closed in wet (or other adverse) conditions.

<https://www.wildlifebcn.org/nature-reserves/upwood-meadows>

Download the Walk Guide from <https://www.fenedgetrail.org/peterborough-to-ramsey/sawtry-to-ramsey>



Fig.1 Carbonatite in the field, in Ledmore Junction area



Fig.2 Carbonatite sample close up

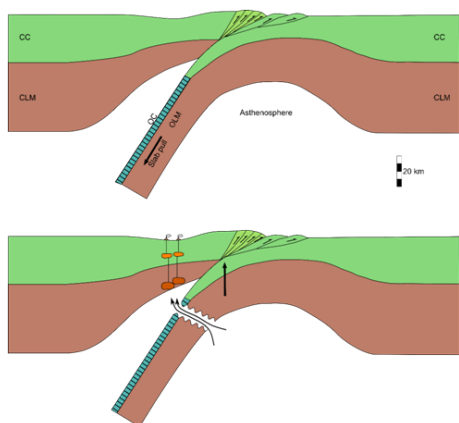


Fig.3 Schematic depiction of the process of slab detachment. OC=oceanic crust, OLM=oceanic lithospheric mantle, CC=continental crust, CLM=continental lithospheric mantle. (Mike Norton 2018)

Igneous Chalk—Caledonian Alkali Magmatism

Peter Fletcher

Observations from a recent field trip to Assynt, Sutherland

That's impossible – there's no such thing I hear you say! Well that's true but on our recent field trip to Assynt under the leadership of Dr Paul Williams, we explored some very rare rocks and one exposure, the subject of this brief overview, is the only exposure and example of Carbonatite in the UK! I'm not going to reveal its precise location, save to say that it's in the vicinity of Ledmore Junction, Sutherland, Scotland

Anyway, what is Carbonatite, when and how was it formed and how does it come to be in North West Scotland?

Carbonatite (see figure 2) is igneous calcium carbonate CaCO_3 . It is an igneous rock formed in the crust by fractional crystallization of carbonate-rich parental melts that are mostly deep-mantle derived and usually formed in areas of continental extension such as

rift valleys, where the crustal thinning process allows specific melts of the mantle to occur and rise up. Indeed, there's even an active volcano, Tanzania's Oldoinyo Lengai, which erupts carbonatite lava.

Carbonatites are defined in the IUGS system of

classification as: "igneous rocks composed of more than 50 modal per cent primary (i.e., magmatic) carbonate (*sensu lato*) and containing less than 20 wt.% SiO_2 " (Le Maitre 2002).

This particular example of Carbonatite (See Figure 1) is "Calcite Carbonatite," reflecting its mineral structure more accurately and in this exposure it's also found in agglomerate with the Durness Limestone country rock. It has a crystalline texture, with interlocking white translucent to colourless clear transparent crystals, which are quite soft. Another defining feature is the presence of Phlogopite Mica, which appears to be a common trace mineral in the uppermost part of the mantle. Phlogopite is encountered as a primary igneous phenocryst within lamproites and lamprophyres, the result of highly fluid-rich melt compositions within the deep mantle.

But how did it get emplaced in North West Scotland, a location not known for its rift valleys? It's still the subject of research, but a current theory and model is as follows. We need to account for a high potassium, silica undersaturated, alkali enriched melt with hydrous fluids subject to slab influence with active rifting and extension. Casting our

minds back to c. 425Mya, Avalonia (England) was in the process of colliding with Laurentia (Scotland) in the late Silurian. Then, in the Devonian c. 415Mya, the Avalonian continental and oceanic lithosphere were being subducted under Laurentia, but only at a very shallow angle, resulting in mantle penetrating faults around the Iapetus Suture (a zone of potassium rich alkali intrusions).

The theory now goes that due to the shallow angle of subduction, slab break off and delamination of the Avalonian Lithosphere occurred, beneath the continental lithosphere, resulting in extensional forces and active rifting. This allowed decompressive mantle partial melting, in turn creating magmas, the source of the Lamprophyric melts, to rise and pond beneath Laurentia. (See Figure 3).

Bibliography

Proceedings of the Open University Geological Society, Volume 8 2022, Assynt and Scotland's NW Highlands: Northumbria, August 2021. Paul F. V. Williams

Alessandro di Mommio :

<https://www.alexstrekeisen.it/english/index.php>

Geosites Update by Chris Donnelly



Our Geodiversity Landscapes work continues but we need help from members to explore the county further to understand more about the links between geology and landscape and to discover potentially interesting geological sites. We are, therefore, organising monthly visits to various landscapes to



familiarise ourselves with the landforms present and their geological (including geomorphological) features. If you would like to get to know our local geology or learn about aspects of geology generally, do join us for these days. We hope they will encourage you to contribute, even in small ways, with ideas and future investigations. Cambridgeshire has much of geological interest that is often overlooked and we

aim to both conserve its geodiversity and promote it – for education, heritage and community, as well as inherent scientific values. It's a chance to learn, so no previous knowledge is needed, just a fascination with our earth history.

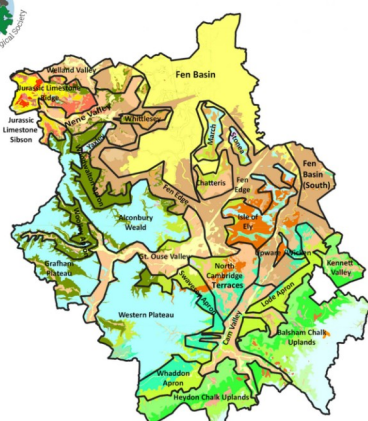
Our first visit has just taken place and, thanks particularly to glorious weather on the day, we were able to enjoy several sites in the Heydon Chalk Uplands, some wonderful views and some in depth geological information from Dr Steve Boreham at Heydon Chalk Pit Local Geological Site. Our group of 15 members, new and 'old', (and 2 friends) were joined at the Pit, high on the Chalk escarpment, by the local warden and several other village residents. We then went on to explore from the highest point in Cambridgeshire to the lower slopes, finishing with a walk at the lovely Fowlmere RSPB

Nature Reserve where we discussed the complex situation regarding the source of the chalk springs. A full report of the landscape geodiversity encountered will be put together and circulated to members after contributions from the participants have been received. A very pleasant pub lunch added to the day!

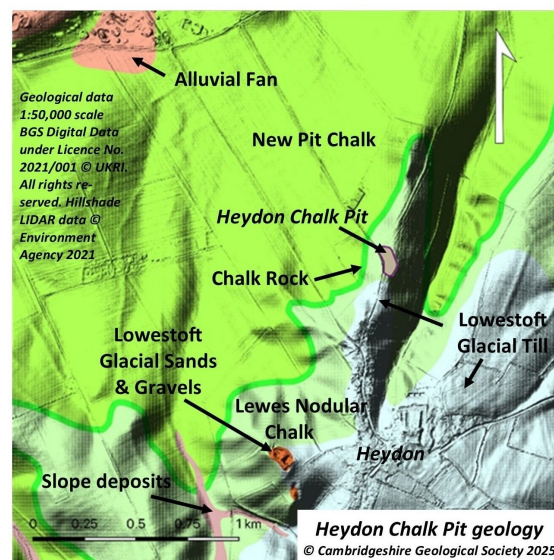
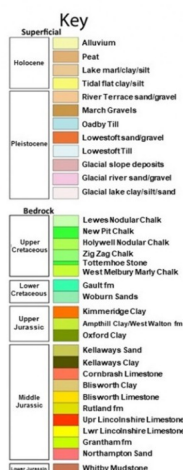
We had a very enjoyable visit to the area, the 'Woodwalton Apron landscape', on Saturday 10th May. The pleasant, sunny weather helped but we also got to grips with the local geology and had some amazing views over the fenland'. Look out for news on our next landscape visit on Sat 7th June

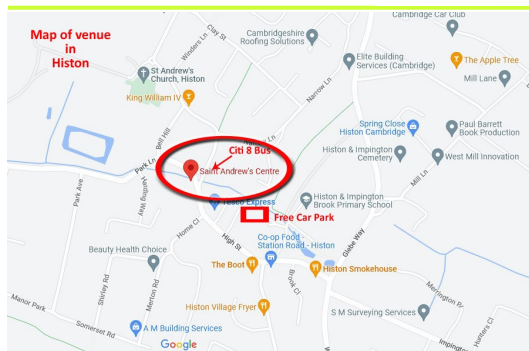


Geodiversity Landscapes Cambridgeshire



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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

Two Cambridge geological SSSIs: Are they safe? By David Brooks

GeoEssex won a bid to carry out (geological) SSSI

condition monitoring of local sites on behalf of Natural England. So geologist Dr. Peter Allen undertook to examine the Histon Road and Travellers' Rest Pit SSSIs (see map) and to photograph and report on their general state, whether or not the statutory requirement for protection is being met, and whether there is any

known threat in the future. The sites are also both **Geological Conservation Review** sites.

Accompanied by a local expert Professor Philip Gibbard, Peter arranged a visit on 10 September 2024. He also invited members of the Cambridgeshire Geological Society, Penny Coggill (Chair) and David Brooks to attend. The Society can now play a role

in monitoring the sites, particularly in alerting Natural England to any future threat to their integrity. A future demand for land for urban development on both sites is not impossible.

The **Histon Road SSSI** [Grid Ref. 443611] is indeed beside the Histon Road near the point where it becomes Cambridge Road but is located over the fence in the south west corner of the secured Chesterton Allotments, accessible from Howgate Road, where we were admitted by, and greatly assisted by, the Allotments Society Chair, Alan Day. The 1.5 acre site lies buried beneath a concrete 'roadway' and somewhat luxuriously-growing vegetables on a near-horizontal surface at c. 13m O.D.

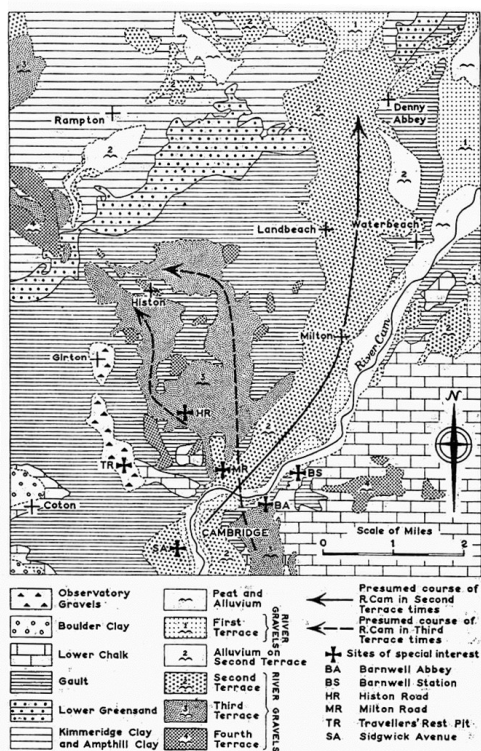
Historical studies of the underlying gravel were made possible by deep sewer trenches and boreholes to a depth of at least 8m. These revealed an almost complete sequence of the second half of the Eemian interglacial around 120,000 years ago. The map shows the site located on the Third Terrace of the

River Cam. The area of the Chesterton Allotments has already been considerably reduced by housing development.

The **Travellers' Rest Pit SSSI** [Grid Ref. 429598] lies on the Observatory Gravels ridge which reaches the altitude of the 25m contour and which represents the floor of the Cam Valley during the earlier Anglian Glaciation (c. 450,000 years ago), being an instance now of inverted relief.

The 5.4 acre site consists of an extensive, square-shaped gravel pit perhaps 8-10 feet deep, resting on the Gault, with its abandoned floor and degraded work-face entirely overgrown, with a few trees presumably damaging the gravel underneath which is particularly known for its ice wedges. The site can be observed from the cycle route which runs from Storeys Way to Eddington and it appears to be potentially very vulnerable to urban growth, depending on the future sensitivity of the University of Cambridge.

A further update on each site and other local SSSIs, will be in the next Newsletter.



Map from page 90 of 'Geology of the Country around Cambridge', Memoir of the Geological Survey, by Worssam and Taylor, 1969. Since then some evidence has been reinterpreted, not without controversy.

Other Society Meetings

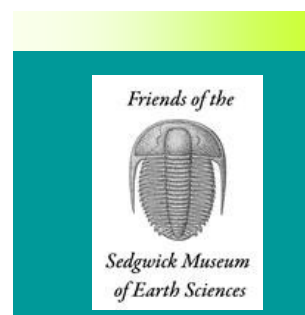
The Loughton Astronomy Society is a thriving group of amateur astronomers who meet every Thursday evening at Theydon Bois (which is approximately between Epping and Loughton, in Essex). Many members own their own telescopes and indulge in observing and imaging the night sky and the objects that appear in it, such as the planets, Sun, Moon and galaxies. Do keep an eye on our programme of meetings shown on our website and if anything seems of interest do please just come along. We feature both inhouse talks by members and guest speakers who are often scientists working on space projects. No-one has to join immediately; simply visit for a few evenings to get a flavour of what we do.

<https://las-astro.org.uk/>



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.org.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

