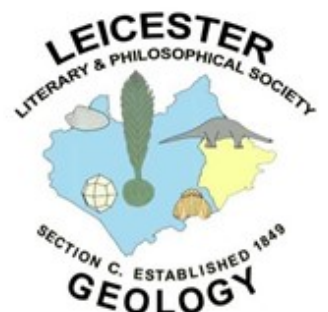


# CHARNIA

Newsletter of the  
Geology Section  
Of the Leicester Literary and Philosophical Society



January 2022



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## Editors notes

Leicestershire and Rutland featured a lot on television in January 2022. Work on a Roman mosaic in Rutland and excavations at Castle Hill Park near Leicester featured on the BBC programme “Digging for Britain”. For our members the discovery of the Ichthyosaur at Rutland Water, featuring in the same series, probably trumps them both. It featured on our national news and across many other countries, often referred to as “the sea dragon”. Fortunately for the Section, our own Mark Evans was involved and he is giving a talk about the discovery at our meeting on the 9th March—see page 11.

Roger Latham also writes in this issue in his capacity of outgoing Acting Chair seeking members to volunteer for the committee, including officer posts. These are needed for the AGM scheduled for 30th March. His piece starts on page 3. The Section does not organise itself and needs new ideas and enthusiasm to take it forward. What can you contribute?

Thank you to Geoff Warrington and Roger Latham for their contributions. More are always welcome: do get in contact if you have any ideas. The next deadline is the end of May 2022.

Brian Waters

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Cover picture: Launch of James Webb Telescope on a voyage to help our understanding of the beginning of our universe.

Source NASA

## Looking to the future.

### Future meetings.

The last two years have been difficult for the Section. The Covid restrictions meant that we have been unable to hold “live” lectures for the Winter Programme, and the Summer Programme has been much impeded. Over this period we have lost about half of our membership, some permanently, and some temporarily. The Government has now removed most of its Covid restrictions, and, like our friends in the Warwickshire group with whom we have been sharing lecture events on Zoom, we are now faced with the opportunity of restarting lectures again in our usual lecture theatre in the Ken Edwards building at Leicester University.

But it’s inevitable that some of our members may feel uncomfortable at getting together in this way, or may have medical reasons why it is not advisable. The Committee has been thinking about ways in which we can adopt a hybrid arrangement whereby we can hold the lectures in our former way, but still be able to record and broadcast those lectures for those members who are unable to attend for whatever reason. So, over the last two lectures of our Winter Programme we are going to try out a couple of experiments. For the next lecture on February 9 on Ethiopian volcanics we will be meeting again in the Ken Edwards building lecture theatre, but we will be recording that lecture and will circulate the details of that recording to all members and to colleagues in the Warwickshire group. People could then log onto that recording to watch it in their own time, or again as they chose. We would add the recording to our own website to go alongside the recordings that we made of most of our Zoom lectures.

On March 9 we will be looking into reversing the process, so to speak. Mark Evans, former President, has been closely involved in the recent excavation of the Rutland ichthyosaur. He has agreed to give us a presentation about this which will complete our Winter Programme. As Mark is currently based in Cambridge we are thinking that we would have his presentation on Zoom, but that we would link the Zoom host computer into the audio-visual system at the University, so that people could attend the lecture theatre and watch a simultaneous broadcast there. In this way we hope to test out some alternatives to stand as in good stead for the next Winter Programme. There may be some hitches on the way, as there always are, but we hope to learn from these two lectures.

With the removal of restrictions the New Walk Museum has also become available to us for future member meetings. Because the lack of time it is not going to be possible to organise a members meeting in February this year, but we hope that by the next Winter Programme we will be able to schedule the Christmas members meeting and the February members meeting as part of our events.

## The AGM.

The AGM for the Section will take place on Wednesday 30th of March by Zoom. Notices about the AGM and calls for nominations for the Committee will go out in early March, and the Section is desperately in need of some new volunteers. As I said at the last AGM I will be stepping down from the Committee as your Treasurer and Vice President, having given a year's notice. An email appeal for volunteers to fill the posts from the Committee that went out before Christmas last year did not get positive responses. I'm pleased to be able to say that Rob Tripp, who is currently our Field Secretary, has agreed to take over the role of Treasurer. However, this only creates a further vacancy now for Field Secretary, to add to the existing vacancies that we have for Publicity Officer, President, and for ordinary Committee members. Soon the Vice President vacancy will be added to that list. Many members of the Committee have served now for quite long periods of time, and our constitution which envisages a regular turnover of Committee members and officers is now honoured more in the breach than in the observance.

So it is critical for the future of the Section that any member who feels able to volunteer to become a member of the Committee puts their name forward as a nomination when the request for nominations goes out. Without it the Section will continue to struggle to fulfil Winter and Summer Programme and to reinstate the annual seminar.

Please consider this appeal carefully.

Roger Latham.

## Mid-Triassic times at Alderley, Cheshire - not dry and lifeless

Base-metal ores, principally of copper, were mined at Alderley Edge in north-east Cheshire until 1919 (Warrington 2016). The mineralization occurs in the highest beds of the late Early Triassic Wilmslow Sandstone and three members of the overlying early Mid-Triassic Helsby Sandstone, the highest formation in the Sherwood Sandstone Group. The Helsby Sandstone is succeeded by the Tarporley Siltstone, the lowest formation in the Mercia Mudstone Group.

More than 15 km of disused mine workings give access to successive levels in the ore-bearing succession at Alderley Edge (Warrington 2010). The lowest level is in the topmost beds of the dominantly aeolian Wilmslow Sandstone and in the overlying fluvial Engine Vein Conglomerate, the lowest member of the Helsby Sandstone. Workings higher in the succession are in the fluvial Wood Mine Conglomerate and the overlying dominantly aeolian West Mine Sandstone members of that formation. From east to west the workings differ in character. In the east the relatively small Stormy Point and Engine Vein mines are in the lowest level in the ore-bearing succession and show a close relationship with faults. Farther west the more extensive Wood Mine workings are in the Wood Mine Conglomerate, a cyclic succession of conglomerates, sandstones and mudstones deposited in a river system (Warrington 2014). Farthest west, in the West Mine, the most extensive workings are in the relatively homogeneous aeolian facies of the West Mine Sandstone.

The Helsby Sandstone is Anisian (early Mid-Triassic; between 247.2 and c. 242 Ma) in age. Evidence for this is provided by miospores (spores and pollen) from a mudstone bed in the lowest member of the formation at the Engine Vein Mine. The miospores reflect a flora that included pteridopytes and conifers. Conchostracan arthropods (*Euestheria*), indicative of temporary bodies of fresh to brackish water, and a solitary footprint (*Chirotherium* sp.) of a reptile are the only traces of the contemporary fauna at this level (Thompson et al. 2016). Higher in the Helsby Sandstone invertebrate trace fossils and tracks (*Rhynchosauroides*) of another reptile occur in the Wood Mine Conglomerate (Pollard 2016). Fragmentary plant remains and invertebrate trace fossils occur in the West Mine Sandstone (see below). Miospores indicative of an Anisian age, and invertebrate trace fossils, occur in the overlying Nether Alderley Sandstone, the highest member of the Helsby Sandstone (Thompson et al. 2016).

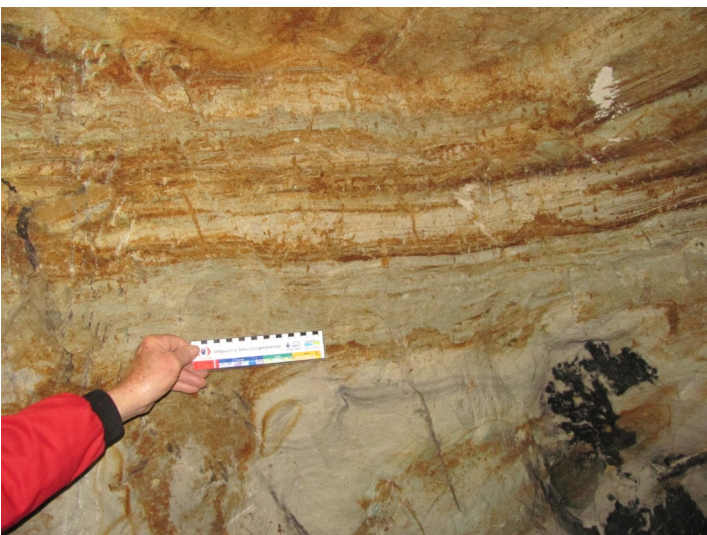
The West Mine Sandstone is c. 20 m thick and consists largely of sandstone with well-developed aeolian dune bedding (Figure 1) which records deposition under the influence of winds from the east (Thompson et al. 2016, fig.5.12). However, this environment was neither completely arid nor devoid of life. Structures in the roof of a small stope in West Mine record the temporary existence of an interdune body of shallow water in which fine sediment accumulated. Drying out of this water body resulted in thin concave flakes of desiccated sediment, the convex undersurfaces of which are now seen in the roof of the stope (Figure 2). A few fragmentary plant remains have been observed on this surface, showing that vegetation developed briefly around the water body. In a vertical face elsewhere in this mine numerous narrow, vertical to subvertical tubular burrows are seen in a thin unit of fine-grained laminated sediment (Figure 3). The burrows (*Skolithos* sp) probably reflect opportunistic colonization of the sediment by insects under subaerial conditions (Thompson et al. 2016).



**Figure 1.** Steeply inclined aeolian dune foresets and disseminated copper mineralization in the West Mine Sandstone.



**Figure 2.** Convex undersurfaces of thin concave flakes of desiccated sediment, the result of the drying out of an interdune body of shal-



**Figure 3.** Burrows (*Skolithos* sp.), probably made by insects.

The Alderley Edge mining district is an SSSI and included in the Geological Conservation Review (Warrington 2010). An important aspect of the site is the unweathered condition of exposures in the mines. This renders it possible to see features of the mineralization and its host rocks, and traces of the contemporary biota such as those evident in West Mine, that would not generally be preserved or visible in weathered outcrops.

Geoff Warrington DSc., CGeol. FGS (Snr)

Honorary Visiting Fellow

School of Geography, Geology & the Environment, Leicester

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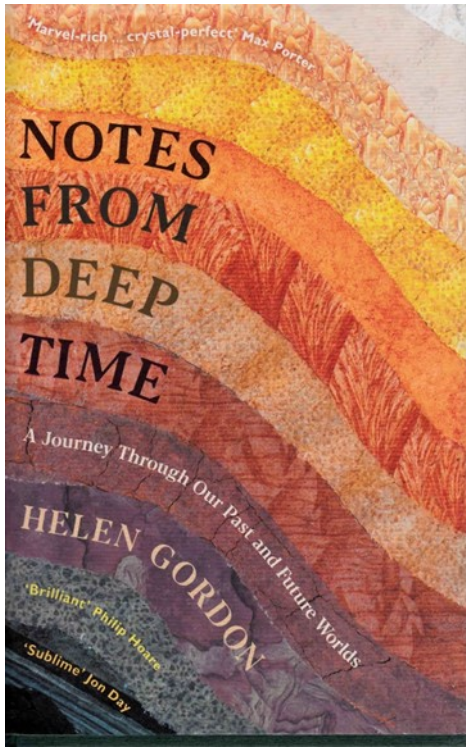
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Photos: G. Warrington (2021).

## Notes from Deep Time – A Journey through Our past and Future Worlds.

Helen Gordon – Profile Books 2021.



Helen Gordon is a professional writer who has written about writing as well as publishing novels! She is married to an earth scientist, and as such has picked up more than a passing interest in geology. Most of us, she maintains, live our lives very much in the present. Our perspective of time is probably only in the region of a hundred years or so. Historians like to delve back further, and their concepts of time may extend to a thousand years or so. Geologists and earth scientists have a hugely different perspective on time. To quote the old hymn “A thousand ages in Thy sight,/are like an evening gone”, and geologists have the same sort of perspective – things that happen in the course of 100 or a thousand years are from a geologists’ point of view the mere blink of an eye. We perpetually talk in time periods of millions of years and of aeons of billions of years.

So she takes this long timescale which she calls “deep time” and through a number of individual personal researches and discussions picks up a series of issues where the human understanding of time is deeply impacted by the geologists “deep time”. In doing so she describes some of the things that members will undoubtedly find commonplace – the way in which the trend of the age of rocks goes south-east to north-west in Great Britain, or the way in which the unconformity at Siccar Point was critical in leading Hutton towards the key principles of uniform materialism and the famous quote of “no vestige of a beginning, no prospect of an end”. However she picks up on key issues like the San Andreas fault and the likelihood of a major magnitude 8 earthquake in the foreseeable future because it’s “overdue”, whilst always recognising that “overdue” might mean this can happen in the next couple hundred years! Similarly, she discusses the proximity of Naples to the Phlegraean Fields and the fact that these constitute a potentially greater danger of volcanic eruption in a previously collapsed caldera than the more widely acknowledged impact of Vesuvius – dominated as it is by the Pompeii story.

There are some more unusual things though in this book, other than a well written and fairly populist account of some of the key features of geology. She relates working with the team who are currently remapping the chalk outcrops in England for the BGS – and if you, like me, tend to think that chalk is chalk, then it’s instructive to realise the different kinds of chalk that are currently being remapped. And here the geology of deep time impacts more directly on contemporary issues, and because it was an analysis of the chalk become embedded in the tyre of the murder of the little girls at Soham that enabled the police to place his vehicle close to the scene, and thus ensure a conviction.



Inevitably the book looks at the issue of the Anthropocene, and she has talked at Leicester with Jan Zalasiewicz quite extensively about the possible impacts that human beings have and continue to have on the planet. She developed one chapter of this discussion to a problem which I found intriguing, simply because I hadn't considered it before. In Finland they have prepared a site for the disposal of spent nuclear fuel which will take upwards of a hundred thousand years (bordering on "deep time") before it becomes safe. However in such circumstances how do you indicate to some future generation of whatever is the dominant life that what is buried in this facility is potentially dangerous? Using some form of language will not do. You have no idea what the technology of the discoverers might be, and digital records have changed so much even in our lifetimes that you can't pick on a technology and hope people will understand it. So you must do some thinking about what kind of visual signal, or audio signal would you give to indicate danger. Answers on a postcard please.

A well written and entertaining book picking up bits and pieces, and you're sure to find a chapter which has some interest you – mine was the one on dinosaurs.

### **Summer programme of visits**

These are expected to start again this year. Dates are yet to be finalised so watch out for the e-mails.

Brief details so far are:

Mike Allan will lead a trip exploring the volcanoes of Derbyshire - probably in April.

Another chance to visit Dennis Gamble's specimen collection.

## Leicester Literary and Philosophical Society, Section C (Geology)

### Programme 2021 –22

This listing includes lectures by the Geology Section and those by invitation of the Warwickshire Geology Conservation Group (WGCG).

#### ABSTRACTS 2021

**Wednesday 27th October.** Celebrating Scotland’s geological heritage with the Scottish Geology Trust.

Dr Katie Strang, (Scottish Geology Trust).

The Scottish Geology Trust was launched in 2020 with the key objective of inspiring people everywhere to understand, love and care for Scotland’s incredible geological heritage, and its role in creating a sustainable future. From the 1st of September to the 17th October the Trust and partners will deliver a packed programme of activities as part of the Scottish Geology Festival from Stranraer to Shetland that will showcase and celebrate Scotland’s geology. Join the Trust’s Secretary Dr Katie Strang for a virtual tour around Scotland’s most loved geological sites and the fantastic festival events that are taking place around the country, and to hear more about the work the Trust has been doing to inspire and engage people with the rocks beneath their feet, and how important these are for exploring our future.

**Wednesday 17th November.** A very British summer in the late Triassic: torrential rain, the Arden Sandstone and the dawn of the dinosaurs (WGCG)

Stuart Burley (University of Keele ).

A copy of a longer paper was circulated with the calling notice—available from the editor.

**Wednesday 24th November.** Volcanic Tsunamis: Krakatau, 1883 and 2018.

Dr Seb Watt (University of Birmingham).

Although most tsunamis are generated by earthquakes, those generated by volcanic processes can cause devastating impacts. Volcanic-tsunami generation remains a poorly understood process but the hazard is significant, as demonstrated by the catastrophic eruption of Krakatau in 1883, where most of the 36,000 deaths were caused by the associated tsunami. A variety of volcanic processes can generate tsunamis, with unpredictable timing and the potential for locally extreme wave heights. Here, I will summarise results from ongoing research at Krakatau and other volcanic islands, drawing on insights from the 1883 eruption as well as the volcanic-landslide generated tsunami at Anak Krakatau in December 2018.

**Wednesday 15th December.** A very British summer in the late Triassic: torrential rain, the Arden Sandstone and the dawn of the dinosaurs (WGCG).

Stuart Bailey. Available at <https://www.youtube.com/watch?v=bvhFzMQIF7M>

## ABSTRACTS 2022

**Wednesday 12th January.** The Secret Life of the Starfish.

Dr Aaron Hunter (University of Cambridge).

Asterozoans including starfish and their close relatives the brittle stars are amongst the most instantly recognisable and iconic marine animals. They are a dominant and successful group of living echinoderms based on their diversity, abundance, and global distribution. Despite their ecological success and a fossil record spanning more than 480 million years, the early evolution of asterozoans remains a mystery. New discoveries from France and Morocco have begun to resolve this mystery. We look at the earliest common ancestors of the 'Bat star' somasteroids and their Cambrian descendants, including a new fossil from the exceptionally preserved Fezouata biota in Morocco, which is the earliest starfish like animal so far recorded in the fossil record. We then follow these exceptional fossils through the Ordovician as true starfish and brittle stars appear, and show how they rapidly diversified during the biotic revolution we call the Great Ordovician Biodiversification Event.

**Wednesday 19th January.** Mining on the Iberian Peninsula (WGCG).

Rob Vernon. Unfortunately this Zoom presentation failed due to technical problems.

Mining on the Iberian Peninsula' is a brief account of Spanish and Portuguese mining by examining the geology, history and landscape of this very diverse mining region. The introduction will include a general overview of the geology, and mining activity, followed by examples of specific mining areas including the Iberian pyrite belt, mining activities in Andalusia, and the later activities of dredging companies.

## Winter programme for the remainder of 2022

*Section meetings will recommence at the University at 19:30 so keep an eye out for the email details. The arrangements for the talks hosted by the Warwickshire Geological Conservation Group (WGCG) may also change.*

Wednesday 9th February: Ethiopian volcanics. Dr Ben Clarke, University of Leicester.

Wednesday 16th February: TBC. Dr Simon Drake. (WGCG)

Wednesday 9th March: The Rutland dinosaur . Dr Mark Evans, British Antarctic Survey.

Wednesday 16th March: TBC Dr Stephan Lautenschlager, University of Birmingham (WGCG)

Wednesday 30th March: AGM on Zoom

Monday 4th April: From Greenhouse to Icehouse, From Forests to Frost: Antarctica's Climate History.

Prof. Jane Francis DCMG FRS, Director, British Antarctic Survey. Joint meeting with the Parent Body .

Wednesday 20th April: TBC. (WGCG).

## SECTION C COMMITTEE 2021 – 2022

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