The Black Country Geological Society

www.bcgs.info

Newsletter No. 288
December 2024

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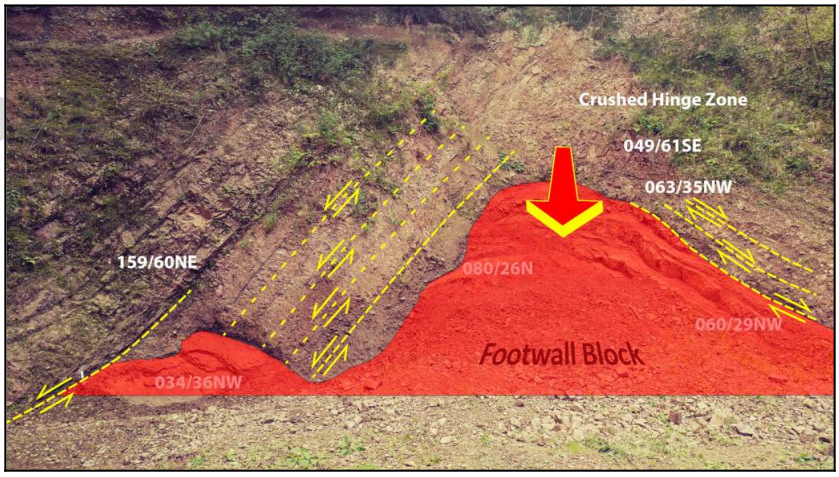
To find out more about this photo - read on!



Copy date for the next Newsletter is Saturday 1 February

Mark Jeffs **Honorary Secretary,** honsec@bcgs.info	**Andy Harrison,** **Field Secretary,** ☎ 07973 330706 fieldsecretary@bcgs.info	**Julie Schroder,** **Newsletter Editor,** 42 Billesley Lane, Moseley, Birmingham, B13 9QS. ☎ 0121 449 2407 newsletter@bcgs.info

For enquiries about field and geoconservation meetings please contact the Field Secretary.
Please notify Andy Harrison in advance if you will be attending these events.
To submit items for the Newsletter please contact the Newsletter Editor.
For all other business and enquiries please contact the Honorary Secretary.
For more information see our website: bcgs.info, YouTube, and Facebook.

Future Programme

Indoor meetings are now held in the Lamp Tavern, 116 High St, Dudley, DY1 1QT
7.30 for 8.00 o'clock start unless stated otherwise.

Visitors are welcome to attend BCGS events but there will be a charge of £1.00.

Saturday 14 December *(Geoconservation Day):* Portway Hill, Rowley. With the Friends of Rowley Hills and the B&BC Wildlife Trust. To work at the dolerite exposure in the former quarry. Meet at St Brades Close, off Tower Road for 10.00 (Grid ref: SO974893, nearest PC: B69 1NH). Directions: from Birmingham New Road (A4123) turn left on to Tower Road if coming from Birmingham, right if coming from Wolverhampton. Just after Bury Hill park, turn left onto St Brades Close. Wear old clothes, waterproofs and strong footwear. Please bring gloves. Tools provided, or bring your own. Bring a packed lunch, hot drinks provided. Finish around 2.30.

Monday 16 December *(Indoor Meeting, 7.00 for 7.30 start):* Members' Evening and Christmas Social. This is our annual chance for members to share their geological experiences in a sociable atmosphere with a Christmas buffet provided by the Society. This year the Lamp Tavern is providing the buffet with the usual teas and coffees. Other drinks may be purchased from the bar downstairs. We need a few of you to volunteer to do a short presentation - on any topic with geological connections; or perhaps bring some of your specimens for admiration, discussion and identification. Please contact Mark Jeffs if you can contribute to this event: honsec@bcgs.info

Monday 20 January *(Indoor Meeting):* 'Revealing the Geology of the Lickey Hills - The Continuing Importance of the Amateur Geologist.' Speaker: Alan Richardson (BCGS, OUGS and Lickey Hills Geo-Champions). To the south of Birmingham, an inlier of Ordovician quartzite rises through the cover of Carboniferous and Permo-Triassic rocks to form a prominent north-south ridge. Several disused quarries offer snapshots of the geology, but in spite of its proximity to Birmingham, and the work of many prominent academic geologists, the hills have held on to many of their secrets. In the last decade, the work of local conservation volunteers has been revealing previously unrecognised clues to the geological history of the area *(see front cover photo for Alan's* ►

diagram showing some new thinking at Barnt Green Road Quarry). This talk will describe the geological and historical contexts and explain how the new discoveries are being interpreted.

Saturday 8 February *(Geoconservation Day):* Cotwall End Quarry, Dudley. Parking/meet on Cotwall End Road, opposite house No. 61 (Grid ref: SO 906 919, nearest PC: DY3 3EJ). This is the closest access to the quarry. Meet at for a 10.00 start. The area has had very little management over the last 25 years, but has some amazing features to unveil. The wardens are currently removing larger material to restore the area to grassland and encourage geological interest and biodiversity. Bring appropriate footwear and outdoor gear and a packed lunch. Wardens will provide tools. We will aim to end by 2.30.

Monday 17 February *(Indoor Meeting):* Talk and speaker TBC.

Saturday 8 March *(Geoconservation Day):* Castle Hill Woods, Dudley. Details TBC.

Monday 17 March *(Indoor Meeting, 7.00 for 7.30 start):* AGM followed by talk and speaker TBC.

Saturday 5 April *(Field Meeting):* Visit to look at the Arden Sandstone. Led by Prof. Stuart Burley. Details TBC.

Monday 14 April *(Indoor Meeting):* Talk and speaker TBC.

Subscriptions 2025

Your next subscription is due on **1 January 2025** and there has been no increase. Our bank account details with Lloyds Bank are as follows:

Name of account:	Black Country Geological Society
Sort Code:	30-90-89
Account Number:	43898960

For any new member who joined after 1 September this year, the subscription paid automatically covers them for 2025, so there is no need to pay again until 2026.

Other payment options are:
1) By making an individual online payment using the information above.
2) By writing a cheque and posting to the address below.

You may post your subscriptions to the Treasurer:

Alan Clewlow,
19 Manor Court Road,
Bromsgrove,
Worcestershire,
B60 3NW

email: treasurer@bcgs.info

Subscription rates:

Individual	£20 per annum
Family	£30 per annum
Full time student/Unemployed	£5 per annum
Group/Company	£35 per annum

Cheques should be made payable to **'The Black Country Geological Society'**.

Other Societies and Events

Geological Society, West Midlands Regional Group

Tuesday 14 January 2025: 'Ironbridge Gorge (title TBC)'. Speaker: Declan Kearney, Telford & Wrekin Council.

Lectures are being held at Mott MacDonald, 10 Livery St, Birmingham, B3 3NU and by Zoom. They commence at 6.00 for 6.30. For further details please contact the Group Secretary at: geolsoc_wmrg@live.co.uk Click here for website.

Woolhope Naturalists' Field Club - Geology Section

Friday 17 January 2025: 'Paleontology and the school fossil project'. Speaker: Mark Baggot, University of Worcester.

Meetings are in Hereford Town Hall, from 6.00 to 8.00. Non-members are welcome and pay £2.
More info. at: https://www.woolhopeclub.org.uk/meetings

Shropshire Geological Society

Wednesday 11 December: 'Sir Arthur Russell and his mineral collection'. Speaker: Roy Starkey.

Meetings commence at 7.15 for 7.30. Lectures are now being held in hybrid form, in person at the Higher Education Centre, Shrewsbury College, as well as by Zoom. If you wish to attend please contact Albert Benghiat: 07710 421 581, email: SGS.chair@hotmail.com
Further information: https://shropshiregeology.org.uk/

Teme Valley Geological Society

Thursday 9 January 2025: 'Volcanoes, their eruption and management of risk'. Speaker: Prof. Stephen Sparks.

Talks take place in Martley Memorial Hall at 7.30. Non-members £3. For further information email: enquire@geo-village.org or visit: https://geo-village.org/

Warwickshire Geological Conservation Group

Thursday 16 January 2025 from 7.30 to 9.00: 'Early Humans in Britain'. Speaker: Jim Rose.

There is a charge of £2.00 for non-members. For more information visit: https://www.wgcg.co.uk/ or email: WarwickshireGCG@gmail.com.

East Midlands Geological Society

Saturday 14 December at 6.00: 'Medicine and Geology - an exploration'. Speaker: Albert Benghiat.

Saturday 11 January 2025 at 6.00: 'Atlantic volcanoes'. Speaker: Tony Waltham.

Non-members are welcome and should register with the secretary. Further info: www.emgs.org.uk or email: secretary@emgs.org.uk For field trip booking instructions see: emgs.org.uk/#fieldtrips

Open University Geological Society, West Midlands

Saturday 14 December: Practical Igneous Petrology Day School.

Saturday 11 January: Practical Sedimentary Petrology Day School.

Saturday 15 February : Practical Metamorphic Petrology Day School.

Alan Richardson leads the sessions at the Lickey Hills Country Park Visitors' Centre (B45 8ER). Non-members are welcome. A charge of £10 is made for each event. This covers workbooks, published course guides and the use of all the necessary testing equipment. For full details of these Day Schools, please visit the West Midlands page of the Open University Geological Society: https://ougs.org/westmidlands/

Editorial

In this bumper Christmas issue, the BIG NEWS is the heralding of our **50th anniversary** year in **2025**! *(See below for details.)* Then there is the welcome news that we are settling into the new routine of holding our indoor meetings in the Lamp Tavern. We have Andy's report of the Severn Valley Country Park field trip in August, and the extraordinary story of my 15 year long correspondence with Eric Robinson, which came about purely because of my privileged position as BCGS Newsletter Editor. I hope you will find it interesting.

We have another short geological snippet from Mike Williams, whose contributions are becoming quite a fixture within our pages as he shares with us some of his many geological holiday exploits. Thanks Mike, keep them coming! And finally our thanks to the 'other' Mike of Musing fame, for never failing to keep us entertained, amused and informed through his wide-ranging geological knowledge and experience - this time introducing us to the fascinating subject of 'tektites' in the 3rd instalment of 'Gifts from Heaven'.

Our programme for 2025 is gradually taking shape. Please note the dates of our forthcoming activities. Maybe I can look forward to contributions for the Newsletter from more of you next year? I hope so!

It remains just to send best wishes to all our readers for a very Happy Christmas! ■

Julie Schroder

BCGS is 50 years old in 2025!

Celebration weekend planned for the weekend Saturday/Sunday 5 & 6 July 2025

Did you know that the BCGS is officially 50 years old on the 3rd July 2025! Way back in 1975, in what was quite a different world, 25 local people who had been attending some night school classes in geology decided to form a local geological society. They held their inaugural meeting on 3rd July in Dudley Museum, in St James Road, Dudley and the Black Country Geological Society was born!

From the outset it established a constitution (or mission statement if you like), based around conserving geological sites and museum collections, promoting local geology and celebrating and sharing knowledge about the science by holding events, hosting walks and talks and contributing to all sorts of geological projects. That mission is still true for our Society today. It is very widely respected and has made a big impact for local geology over all those years.

BCGS 1st Field trip in 1975

So, next year is a very big year for the BCGS and of course we will be marking it with a number of events and activities to celebrate all that this humble local geological society has achieved in those 50 years.

Note the dates in your diaries: 5 and 6 July 2025!

There will be an exhibition and open day event at Dudley Museum at the Archives with talks; we will be refreshing our publicity leaflet and display materials; we will be holding an open arts competition that crosses the generations and hopefully will capture a sense of the geology and culture of this wonderful place that we call the Black Country. The competition theme will be:

'Celebrating the Rocks, Fossils and Mines of the Black Country'

We will be accepting any form of 2D artwork, stories and posters. Full details will be posted on the website in due course. A selection of the entries will be shared in the celebration exhibition at the museum in July. ►

In 1981 the Society published a volume of papers entitled **'The Black Country Geologist No.1'** (see: https://bcgs.info/pub/wp-content/uploads/pdf_files/Volume_No1.pdf) So far, It has never been followed up with a subsequent volume, so at last we will be producing **'The Black Country Geologist No.2'**, a special volume of papers to commemorate our 50 years as a very special local voluntary organisation that has contributed so much to local geological life and been at the forefront of caring for and protecting the geological heritage of the Black Country. In this publication we will also celebrate the new developments and scientific discoveries the Black Country has contributed to geology over the last 50 years, and our Society's involvement in this work.

As ever, this Society belongs to its members, so if you have any other ideas of how we might celebrate this special year in our history, please get in touch via the Honorary Secretary *(contact details above).* ■

Graham Worton, Chair

Field Meeting Report

Saturday 17 August: BCGS Field Event – Severn Valley Country Park and Abberley & Malvern Hills Geopark's Geofest. Leader Andy Harrison (BCGS).

This field trip coincided with the Abberley & Malvern Hills Geopark's Geofest 2024 event being held at the Severn Valley Railway (SVR) Engine House at Highley, which is adjacent to the Severn Valley Country Park (SVCP). For the Geofest, members of the Geologists in the Geopark Forum put on events between May and September to promote local geology, education, science, heritage and natural history.

The day was fine and warm when our small group met at the SVCP at 12.00 for an introduction to the area. Situated on the western outskirts of Alveley, approximately half way between Kidderminster and Bridgnorth, the SVCP straddles the River Severn and comprises roughly 126 acres of man-made and natural woodland, open meadows, water courses and pools. The Country Park also includes a visitor centre, parking and many footpaths and tracks. It originates from a coal mining legacy that started during the late 1870s at Stanley Quarry/Colliery in Highley and finished at Alveley in June 1969. In 1986, Shropshire and Bridgnorth Councils commenced restoring the post-mining landscape of waste heaps and unused mine workings. The Severn Valley Country Park opened in 1992.

The restoration works included re-profiling the colliery waste spoil heaps and installing drainage systems to feed surface water from the landscaped spoil mass to the River Severn. Finally, grasses, wild flowers and trees were planted to form the meadow grassland, woodland and wetland habitats that can be enjoyed today. The former Stanley Quarry/Colliery was redeveloped into a mining memorial park and the SVR Engine House. The Alveley Colliery was redeveloped into the Alveley Industrial Estate.

View west from Chapel Lane

From the visitor centre car park, we walked roughly 500m upslope to the Country Park's Chapel Lane toposcope. With great views along the Severn Valley and over the country park to Highley and the Clee Hills beyond, the group was introduced to the local landscape. ►

The underlying geology strongly influences the local landscape, which comprises numerous roughly north to south trending ridges and valleys that are present across south Shropshire. Late Triassic extensional forces have generally given the underlying strata a regional dip towards the east. Beneath our feet and the landscaped colliery spoil lie red-brown sandstone and mudstone strata belonging to the Alveley Member. The change from black-grey colliery spoil to red-brown sandstone is obvious within the paths when leaving the Country Park meadows into the fields beyond.

Reptile Footprints in the Alveley Sandstone

To the west, underlying the River Severn and Highley, is an older buff-coloured, cross-bedded sandstone, locally known as the Highley Sandstone, which belongs to the Halesowen Formation. Both the Highley Sandstone and Alveley Member formed under fluvial conditions on low-lying floodplains during the Late Carboniferous. The visitor centre has on display casts of reptile foot prints from creatures walking along the river banks when the Alveley Member was deposited. Discovered at nearby Butt's Quarry in 1914, the original slabs containing the footprints were taken to the Lapworth Museum where they can be seen on display today.

East of Alveley and the A442 is the Romsley Ridge, which comprises younger (Permo-Carboniferous) sandstone strata belonging to the Bowhills Group, part of the Enville Formation. The Highley Sandstone and Alveley Members represent fluvial deposition within the shallowing Pennine Basin prior to the Hercynian/Variscan orogenic events. In contrast, the overlying Enville Formation represents deposits eroded off the resulting mountain chain at the end of the Carboniferous and into the Permian.

Sandstone quarrying in the Alveley/Highley area dates back to Medieval times. The sandstone was used for constructing local village and farm buildings. Highley Sandstone was also used in constructing the bridge at Bridgnorth and in Worcester Cathedral. The Alveley Sandstone, particularly from the quarry adjacent to the village, was also used for grindstones many of which were transported to Belbroughton where they were used for sharpening farm tools.

Underlying the Highley Sandstone, at depth, lie older red-brown mudstone strata belonging to the Etruria Formation, which includes thin layers of coal. Sandstone extraction first started in Highley's Stanley Quarry in 1804. After becoming uneconomic the site was turned over to coal mining. The Highley Mining Company sunk a 279m shaft at Stanley Quarry (subsequently renamed Stanley Colliery in 1878), to work the Upper Carboniferous coal seams within the Upper Pennine Coal Measures (Etruria Formation). Coal extraction lasted until the mid 1930s when the workings started to become inefficient. Therefore, production was slowly moved over to Alveley where a new shaft, to around 350m, was sunk. It opened in 1938. The Highley Colliery finally closed in 1940. ►

The Severn Valley Railway

Up until 1862, stone from Stanley Quarry was mainly transported via boat along the River Severn. This came to an end when the Severn Valley Railway arrived in 1862 and coal from the collieries was transported using rail. However, with the arrival of better road transportation, the Severn Valley Railway closed in 1963. Alveley Colliery operated until 1969 after which coal extraction became too uneconomic.

Changing drainage patterns following the last (Devensian) Ice Age have sculpted the current landscape. During the Devensian, ice sheets from Wales and Ireland stopped the flow of the River Severn and checked its course northwards to the Dee estuary. The current Severn Valley was a small tributary to the River Stour, probably created during the pre-Devensian warm period. As the glacial ice slowly retreated, meltwater eventually broke through at Ironbridge and set the River Severn on a new drainage path southwards through the Stour valley towards the Bristol Channel. The River Severn shaped the Severn Valley to its current profile with man's activities finally adding a more superficial appearance to the present landscape.

Descending from the toposcope, we crossed meadows created from re-profiled colliery spoil. This forms ideal nutrient-poor soil conditions for wildflowers such as clover, buttercups, oxeye daisies, birdsfoot trefoil and orchids. In turn, these host myriads of insects that provide a food resource to the many birds that call the Country Park home. In 'green ant meadow', we saw how the ant hills defined the difference between sloping and well-drained Alveley Sandstone where the ant hills dominated, to more poorly drained mudstone strata where there were no anthills.

Green Ant Meadow

We returned to the visitor centre for lunch where the group could view reptile footprint casts from Butt's Quarry and find out more about the Country Park and its mining heritage. After lunch, we walked to the Alveley industrial estate to see where the former colliery once stood. Today, the industrial estate houses various commercial businesses and some of the former colliery buildings are still present. However, the old colliery shaft has been capped.

From the Alveley industrial estate, we continued west following the route the coal would have taken via aerial ropeway down across the River Severn over the world's first cantilevered bridge. The coal was then loaded on to tubs and taken by rail to the Alveley Halt for washing and grading before being loaded onto a coal train for transport to destinations such as Stourport power station. The tubs then carried processed coal waste back to the aerial ropeway where it was taken back across the river to be tipped with other colliery waste.

After crossing the River Severn our route continued southwards along the west bank to Highley Station. Here we visited the mining memorial park, where the former Stanley Quarry/Colliery was situated. At the park entrance, we passed some tall Highley Sandstone exposures that were clearly cross-bedded from fluvial activity. From the memorial, we ended our visit at the SVR Engine House and were able to view the Geofest event. The group was also able to look at historic engines and carriages and learn about the heritage of the Severn Valley Railway. Today, only the section between Bridgnorth and Kidderminster survives, which is thanks to 50 local train enthusiasts who, in 1965, set up the Severn Valley Railway Society. Over the next 19 years, they restored this section of railway to its former glory and today, as a voluntary organisation, run trips throughout the year. ■

Andy Harrison

Eric Robinson – a Living Legend

and a loyal friend of BCGS

I have never met Eric Robinson, but since I became editor of the BCGS Newsletter at the beginning of 2009, he has been a towering geological presence in my life through an extraordinary sequence of correspondence. Discovering recently that I am not alone in receiving inspiration-by-mail from Eric, I think the time has come to tell this remarkable story.

It all started when, as a new and very 'green' editor, I sent a message round with the February 2009 newsletter (No. 193) politely asking if members would be prepared to receive their copies electronically in future. The response was mainly positive but I received a hand-written reply from Eric Robinson. At the time I did not know who he was, but he was on the list we had inherited as an 'honorary recipient' of the Newsletter. Here is Eric's reply to my request:

"14/6/09
Dear Julie,
This is sad. You ask in the current Newsletter (193) how you might simplify distribution in future, costs and logistics being what they are these days.

I have always enjoyed hearing about the activities of the Black Country G. S, and have been involved at times on street walks. I go back almost to pre-Worton years! although not pre-Cutler. Dudley was always a good place for street geology even as shops closed or were taken over (it still is)! There will always be the wonderful fountain and Duncan Edwards.

In part I tried to transfer thoughts and activities into the pages of GEOLOGY TODAY, if only to shame other areas into trying what Dudley did with success. The GA circular was also there to use. Sadly, I have lost my roles in both publications. Wiley's want a more scientific journal in place of our magazine. The GA, likewise Elsevier want it to be upmarket. Both are disaster policies for amateur geologists - so - strength to your NEWSLETTER - which keeps the Faith.

You can cut me off as economy:

Best wishes to Graham (Biddulph Grange waits for us) and to Alan.
Best wishes Julie
Eric Robinson
CHERISH YOUR IKON"

My first reaction was to find out from Graham: Who is Eric Robinson? I soon learned of Eric's geological credentials, notably his long academic career in the UCL geology department, his editorship of 'Geology Today', and a long connection with the Geologists' Association including a spell as Chairman. I learned that the 'Ikon' for us to 'cherish' is Dudley's magnificent fountain. 'Biddulph Grange', mentioned at the end of the letter was, at the time, waiting for restoration. Eric and Graham had some input into the initial plans to carry out this work (more on Biddulph Grange below). It was also clear from this letter that Eric was not up for joining the modern fast-moving world of electronic communication! ►

Graham Worton explained Eric's Black Country connections:

"The first time I met Eric was at a Dudley Rock and Fossil Festival in about 1992. He came as part of the Geologists' Association group manning a stand and led a field trip to the building stones of Dudley town centre. From that point on his interest in the building stones of the Black Country began, and a very fruitful and long lasting dialogue with him began. He was particularly a fan of the Dudley Fountain which he felt was a true ikon of the town."

Photo of my on-going efforts to organise 15 years of correspondence from Eric!

After receiving Eric's first letter, I replied that we would certainly **not** follow his instruction to **"cut me off as economy"** but would continue to send a hard copy of our Newsletter. This was the beginning of what proved to be a long, enjoyable and endlessly inspiring correspondence over the next 15 years.

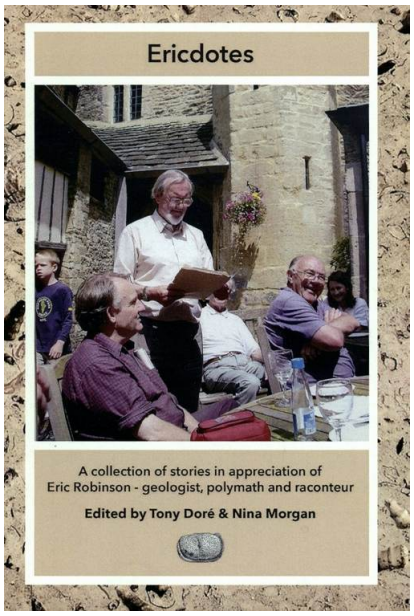
Eric knew that I am an amateur geologist, but he could not have been kinder or more inspirational in encouraging me as editor of a publication which was not academic, but aimed at a wide cross-section of amateurs, professionals and the general public. Hence his comment: *"strength to your Newsletter which keeps the Faith"*. He would follow up items from our Newsletter with letters, articles, newspaper cuttings, illustrations, and photographs picking up on material from the Newsletter. He would keep us well supplied with ideas for places to visit, and gave numerous helpful suggestions, especially while we were working on the Birmingham Building Stones project. Eric pioneered the idea of building stone trails as an ideal way of teaching geology in an urban setting.

The correspondence was frequently punctuated by references to our Treasurer, Alan Clewlow who was a former student of Eric's. This was usually in appreciation of one of Alan's articles reporting on his 'Volcanic Experiences' trips, or there would be reminiscences about old times and personnel known to Eric and Alan, and to the antics of his former students - notably a cartoon from a time when Eric was known affectionately by the anagram of his surname: 'Ron Bison'. Here are Alan's memories of Eric:

"I first met Eric when he interviewed me for a place on the geology degree course at UCL in 1969, in which a discussion about geodes and their origin, stimulated by a specimen in his office, sticks in my mind.

On my arrival there later in the year Eric was my personal tutor in the first year and lectured on courses throughout my time at UCL. I remember his quietly spoken delivery of lectures in a gentle north-eastern accent, and the fact that he was always willing to stop for a chat in the corridor, and how the conversation regularly strayed onto all manner of topics, not usually related to geology. He was always good company on field trips, of which there were many - mapping in mid-Wales, weekends in the Mendips and Peak District, and a week covering the Midland Valley of Scotland in detail, and he was apt to turn a blind eye to some of the japes we students took part in, such as a ride back from the local pub on the roof-rack of the department's minibus!... In his most recent letters, Eric gave me a good account of how he came to be a lecturer at UCL, and how the geology department developed in the postwar years. I will truly hold a lot of fond memories of Eric." ►

Eric's response to our Newsletter 262 (August 2020) was heartening for me and for Alan: *"Congratulations on your current Black Country journal, you have managed to blend local with overseas accounts of La Palma, when that was still possible in March. Glad to see my old student Alan Clewlow was responsible!"* and in August 2021: *"I do find your Newsletter successful in many ways, after the style of the GA (tell this to Alan!)."* Eric's seal of approval has always meant a lot to me and I looked forward to receiving his parcels of 'goodies' in the wake of many of our Newsletters. Sometimes he would include photos of his dog, or steam trains, and through these random snippets of his interests I felt I really began to know Eric the man, not just the geology teacher! Something compelled me to keep together everything I received from Eric, and I now have three folders full of this material *(see photo, p.11 above)*.



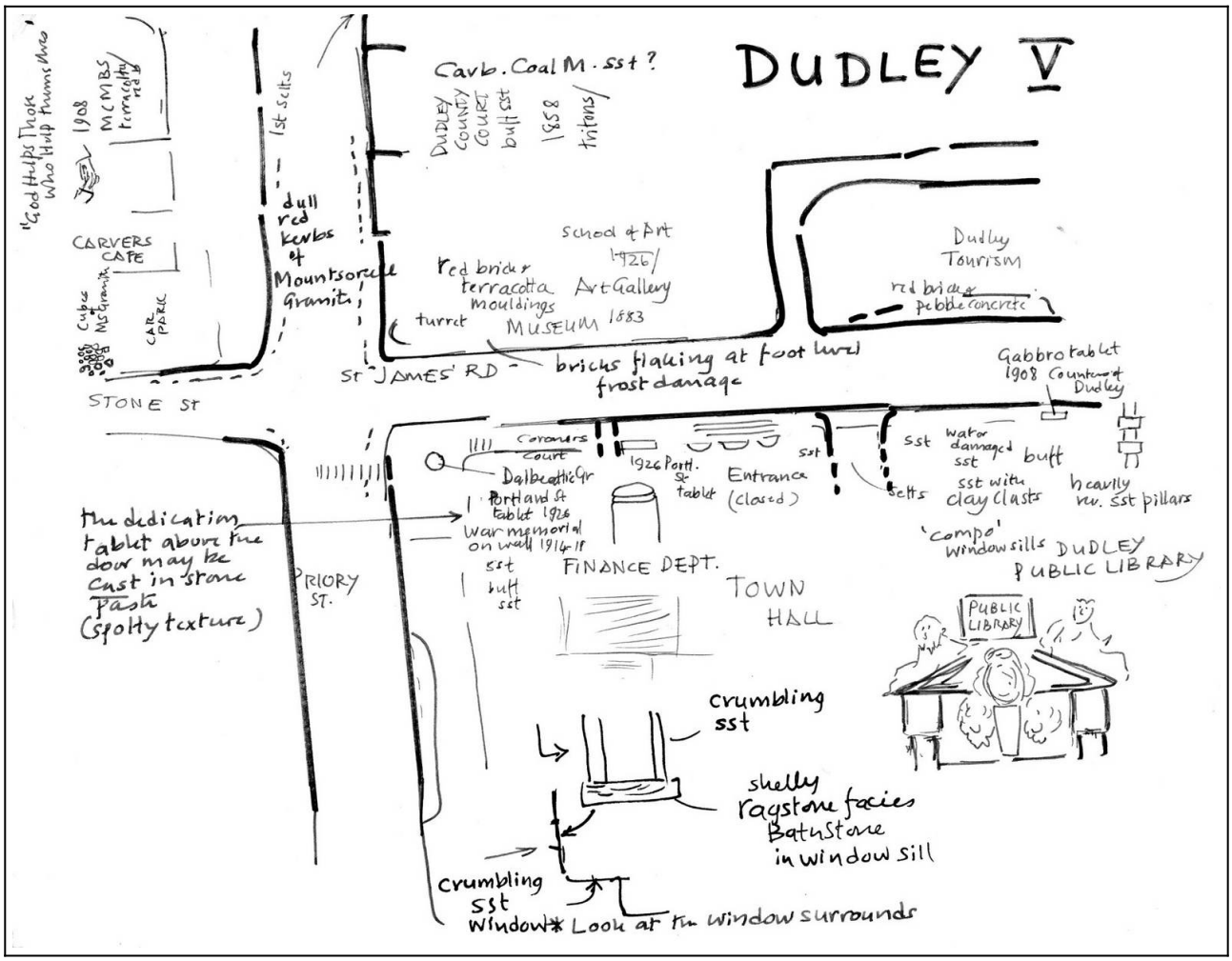
Imagine my amazement when I found in the GA Magazine a notice about a little booklet entitled 'Ericdotes' published by the HOGG group of the Geological Society in 2020. I sent for a copy, and found that this was a collection of anecdotes, mostly from Eric's ex-students and colleagues who had warm and appreciative memories of time spent with Eric. Nina Morgan was one of the editors of the booklet, and I recognised immediately her description of Eric's missives: *"they are always addressed by hand... and have been through a postie's hands many times. Held together by copious amounts of sellotape... these envelopes are always bulging with an amazing array of leaflets, pictures, postcards, typescripts, magazine articles... But best of all, they always include a letter..."* This description chimes perfectly with my own experience.

I learned from a report featuring Eric in the June 2024 GA magazine that a surprise reception was held for him in March, after advancing years had precipitated a move from his home in Watchet to a nearby retirement home. Tony Doré wrote the report, and revealed his 'hobby' project, which was to collect as much Eric-related material as he could for an 'Erichive' – to follow on from 'Ericdotes'! This gave me the final incentive to act on my privileged position as a recipient of Eric's geological largesse. My 'archive' would surely contain some material worthy for inclusion in the 'Erichive'.

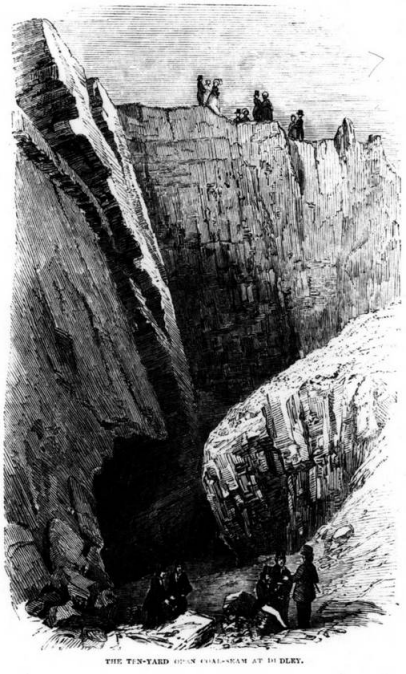
Via ex-GA President and BCGS member, Graham Hickman, I got in touch with Tony, and this has led to many happy hours of re-reading my collection of articles, papers, newspaper cuttings etc. and Eric's letters. The work is on-going, and I am intending to send a selection to Tony. John (BCGS webmaster) and I also hope to create a BCGS web 'Erichive' in due course. Eric had volumes of material to share on Dudley, Biddulph Grange, Building Stones and many other items of interest. A selection of this material is featured below.

Eric on Dudley

Early in our correspondence Eric sent me his trail notes for the walk he led during the Dudley Rock and Fossil Festival in 1992. He was particularly interested in the iconic fountain: *"If Dudley has a symbol which could represent the town to the outside world, it must be the elaborate fountain which stands in the centre of the Market Place, now a pedestrianised open space"*. His notes show a black and white image of the fountain, and the trail notes consist of a hand drawn town map with buildings sketched on and notes added. As an example of Eric's many similar sketch maps, here is the Dudley Trail page 5 of 6. This includes the old Museum and Art Gallery, in 1992 *(see p.13, below).* ►



Other Dudley-related material included a page showing the officers of the original Dudley & Midland Geological Society in 1842. This was sent with other snippets of Society history, along with the programme for a much more recent event: 'The Dudley Gathering', 14th - 15th October 2000. In the same parcel he included a copy of a magnificent BCGS Christmas Card with the caption 'The Ten-Yard Open Coal-Seam at Dudley'. **Does anyone know when this was produced?** Much of the Dudley material was sent in 2015, but I received Dudley-related odds and ends throughout the correspondence. ►



THE TEN-YARD OPEN COAL-SEAM AT DUDLEY.

THE THICK COAL

The South Staffordshire Thick Coal, or Ten Yard Coal was the most famous and sought after coal seam in the Black Country. It resulted from a period of unusually slow but continuous subsidence during its deposition in the swamps of the Carboniferous Geological Period. When traced northwards to the Cannock area where subsidence was more rapid, the 30 ft. Thick Coal is found to be equivalent to three distinct coal seams seperated by sandstones and shales totalling 170 ft.

The Illustrated London News recorded a visit in 1849 of a party from the British Association for the Advancement of Science to Messrs Cresswells' open works in the Thick Coal near Dudley.

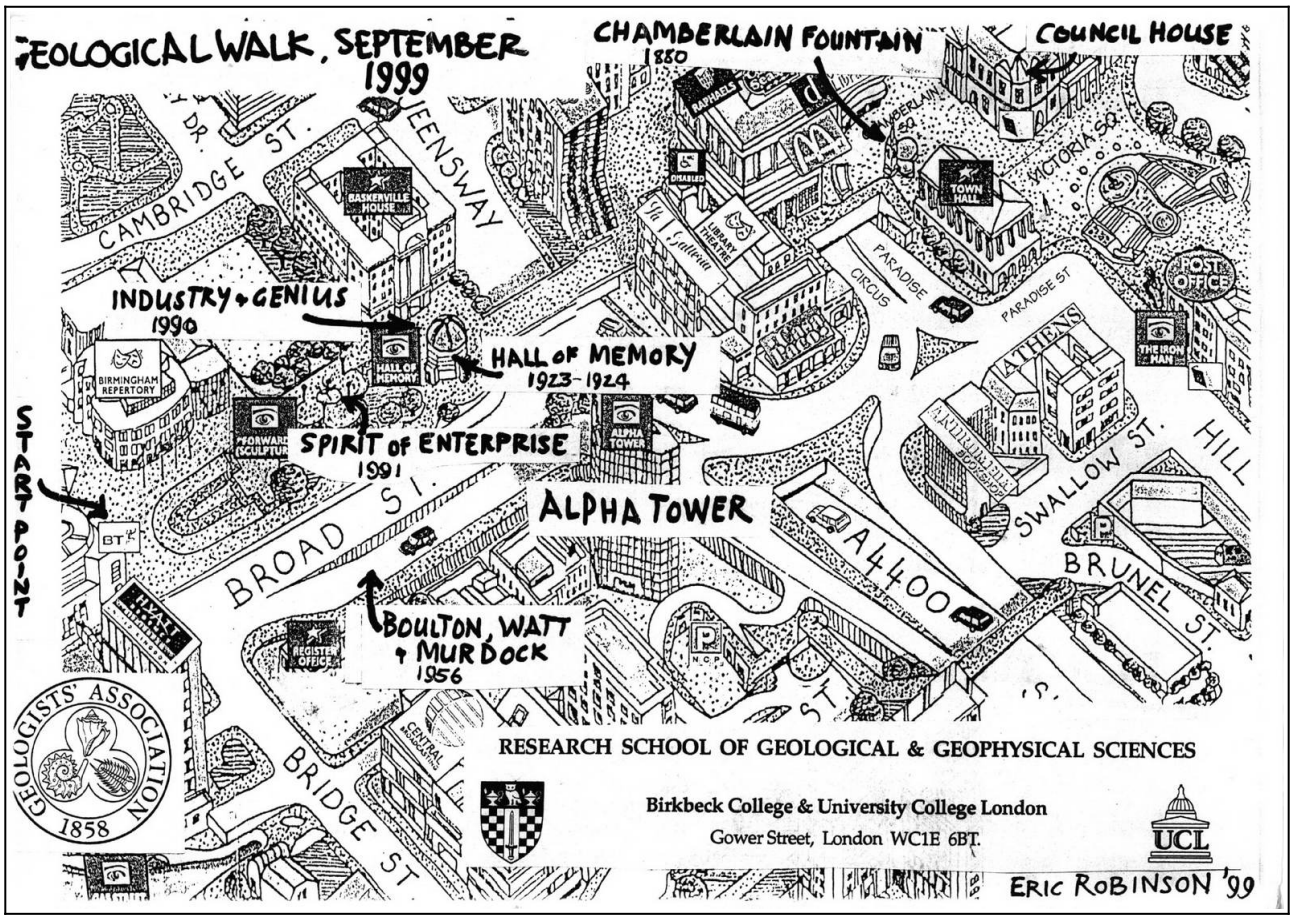
"..... it is a seam of coal ten yards in thickness; and at the spot represented, the coal, instead of being brought up from a great depth, as from a mine, is quarried as if it were stone in works in the open air."

The extent of the workings is graphically described by J. Beete Jukes in his 1859 Memoir.

"..... A few years ago the unusually thick coal at Foxyards was worked by "openworks" as it there "cropped out" to the surface and was got out from a large quarry exposing a cliff of coal 40 feet high and about 100 yards in length."

Published by The Black Country Geological Society.

Text inside the Christmas card



Eric on Birmingham

In several instalments Eric sent me copies of his notes and illustrations for building stones excursions around Birmingham City Centre Centre which he had guided in the 1990s. Most of the items relate to a guided walk for a GA conference in Birmingham in 1999. These include a splendid over-view diagram of the City Centre *(see illustration above)* with separate detailed sketches of Victoria Square and the Hall of Memory. All this material sowed the seeds in my mind that it must surely be time for Birmingham to have a professionally produced building stones trail for the general public, just like many other urban centres around the country.

In 2014 an opportunity arose for me to be involved in a short trail connected with the 'Stones and Bones' temporary exhibition at the Library of Birmingham. This was devised by the Lapworth Museum during its closure for refurbishment. I wrote to Eric to 'pick his brains' and ask if I could use some information from his notes about the stones in Centenary Square to create this trail. This spawned a deluge of helpful material and suggestions from Eric over the next few years, starting with a letter in January 2015 (filling every space on an unused Christmas card!): *"I wish I could be more direct and help you to document buildings in Central Birmingham! ... You are right. Birmingham deserves its guide!"*

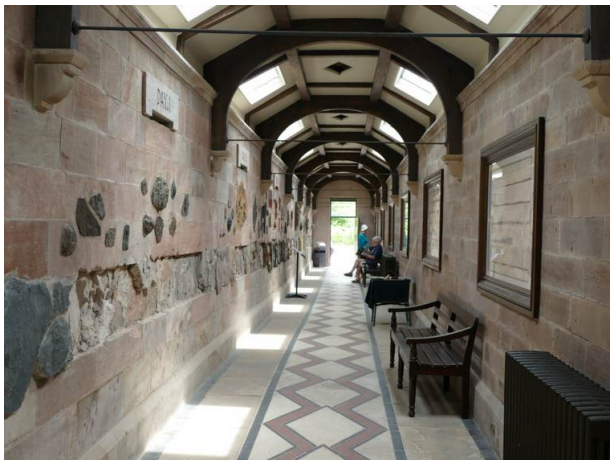
Eric's encouragement fired my enthusiasm, and I was keen to get BCGS involved. His next intervention was to alert me to a field trip to see Birmingham's 'Devonshire Marbles' in October 2015, led by Gordon Walkden who had just written two books on the subject. A fortuitous encounter with Ruth Siddall during this event set the seal on the direction of the Building Stones project. At the time, Ruth was a staff member at UCL and a former colleague of Eric's. She kindly created three detailed trails for us ►

to summarise into shorter leaflets for the general public. With help from the GA's Curry Fund and much involvement from BCGS members, three 'Building Stones of Birmingham' trails were produced over the next few years and were finally launched in August 2021. Would this have happened without Eric's impetus? I doubt it - certainly not at that time.

During this time Eric sent all his Birmingham photos taken in the 1990s along with illustrations from magazines, cut out articles about the source areas of building stones, and the occasional progress reports on the failing health of his wife, Isabel. In April 2018 came the sad news of her death from Parkinson's disease. Then in June of the same year, Eric poignantly writes: *"I am suffering here, not helped by the loss of Ben, my bull mastiff. He was 10 and got sad decline which called for the local vet to put him to sleep! I do miss his company."*

Eric on Biddulph Grange

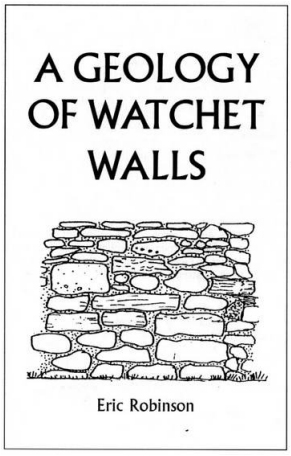
Eric's first letter to me *(quoted above)* was my first wake-up call to the existence of Biddulph Grange and its Geological Gallery. Then, along with a letter in 2015 with suggestions of places for BCGS to visit, Eric sent a wodge of letters and cuttings relating to his earlier involvement, along with Graham Worton, with the restoration proposals for the Geological Gallery. This inspired me to visit the lovely NT gardens and Geological Gallery at Biddulph Grange, and then to write an article on the subject for BCGS Newsletter No. 251, October 2018. Have a look at the article to find out what it's all about! It is a fascinating story. The restoration work was unfinished at the time, but it is good to know that it is now complete. In 2015 Eric wrote on a postcard: *"It looks as if Graham and I are off the hook at Biddulph Grange: The Nat. Trust grow their own experts... As it is, it is clearly worth a visit by your society!"* Would my article have been written without the impetus from Eric? I doubt it. All that remains is to follow Eric's encouragement for a BCGS visit! It's a long way, and just one small site of geological interest - but maybe it could be incorporated in day of visits to other nearby places.



The Geological Gallery at Biddulph Grange during restoration

Eric on lots more!

As Eric continued to *"offload debris"*, numerous items of potential interest to BCGS members came my way, always with suggestions for possible excursions. Much of this material is the result of projects Eric has been associated with, or the walks he has written and led - mostly connected with building stones. It is a treasure trove! It includes places such as Brown End Quarry in Staffordshire; Temple Balsall, Stoneleigh and Baddesley Clinton in Warwickshire; Loughborough and Keyworth; places connected with the Lunar Society; 'Murchison amongst the veterans in Brompton Road Cemetery'. In the realms of fiction there is 'The Strange Legend of the Rowley Hailstone'. Even dry stone walling enters the panoply of possible building stones-related activities or field trips suitable for geological society members, with a magazine from the Dry Stone Walling Association. I treasure the copy Eric sent of his leaflet 'A Geology of Watchet Walls', and hope to follow the trail one day *(see leaflet cover right)*. ►



Postscript

In 2022 Eric wrote: *"I am coming up to my 6th JAB to satisfy the NHS, but I must concede that I have lost mobility to deal with geology other than to read your Newsletter"* then later in 2022: *"I'm surviving Covid and Old Age, but I must admit that the ignorance of geology in politicians keeps wakening me up."* In 2023 he followed up a BCGS article about the Birmingham Erratic Boulders project with a tale of a project he was involved with in Holland in the 1980s when part of the Zuider Zee was reclaimed. The sea bed was littered with shipwrecks and piles of rocks (used as ballast): *"Those piles of boulders included glacial erratics from Sweden... and the Rapakivi Granites and Augen-Gneisses of Finland. This history is recorded for schools as a Geopark in the new towns of Flevoland"*... Eric was 93 when he wrote this, but I quote it to exemplify that threading through his life's work is his passion to share the joy of geology with everyone.

In June this year I received a final letter from Eric: *"This is a kind of Hail and Farewell effort as I am now in a Home along with 21 dementia customers, neither geologists, nor science, or any kind of conservations. Sadly, I am now out of my papers and correspondences; they are all left at Watchet. I have enjoyed our letters and interchange over Black Country Newsletters which you have sustained..."*

On behalf of BCGS, I have been very lucky to have had the benefit of Eric's wisdom, humour and encouragement for so many years. It is hard to put into words the depth of my gratitude, but the feeling will be with me forever. Thank you, Eric. ■

Julie Schroder

Geological Coastal Features of the Esha Ness Peninsula

(Shetland's Volcano)

The Esha Ness Peninsula is famous for its coastal scenery. It is part of the Northmavine district of Shetland and is accessed via the strangely named isthmus of Mavis Grind. Strata extruded from a volcano of Devonian age have been deeply eroded into spectacular sea cliffs riven by deep inlets known as geos *(see photo, right),* often accompanied by blow holes, caves and sea stacks, the local names of which bear testament to the Viking heritage of Shetland.

Calders Geo cliff detail, agglomerate above pillow lava followed by lava flow resting on tuff

An excellent field publication is available entitled 'Shetland's Volcano' with several suggested trails through an array of andesitic lavas, agglomerates, ignimbrites and rhyolites including local examples of features such as 'fiamme' and lahar mudflows.

Although most of the access is over fairly flat coastal farmland it should be noted that the Shetland's Volcano trail guide stresses that the cliffs are high, steep-sided and may be subject to strong winds which can make these walks very dangerous! ►

Dore Holm, natural arch south of Esha Ness, known locally as the 'horse drinking deeply'

So, as described by Dr W Mykura *('Geopark Shetland', Shetland Heritage Trails),* "the best section through the flank of a strato-volcano in the British Isles", is certainly a unique experience made even more so as the journey across the Esha Ness Peninsula involves passing over the Melby fault, thought to be one of the great transcurrent faults for which Shetland is also famous. ■

Mike Williams

Muckle Ossa, west of Esha Ness, interpreted as solidified feed channel to main volcano vent

Mike's Musings No. 54

Gifts from Heaven? (Part 3)

Before I move on entirely from the subject of impact craters discussed in Part 2, (Newsletter No. 287, October 2024) I must mention an unusual class of small, glassy, naturally occurring objects called **tektites**. Their name is derived from the Greek word 'tektos' (melted), because they are now believed to be rapidly cooled, molten residues of terrestrial rock thrown up into the air during asteroid impact events, rather than being of extra-terrestrial origin themselves. The high pressures and temperatures generated by such events are widely thought to be sufficient to melt large volumes of displaced rocks which fall back to Earth as glassy silicate droplets. Subtle chemical differences distinguish them from other glassy rocks such as obsidian. They take on a limited variety of colours (straw, green, brown or black) and surface sculptures (ridges, furrows, bubbles and swirls), but a much wider variety of shapes (e.g. spherical, elliptical, pear-drop, dumb-bell, disc, button and irregular).

More significantly, they occur only in certain parts of the world (Fig.1), where the tektites seem to be of one age, presumed to be that of a particular impact event, and have clearly defined strewn-fields associated with them. This limited distribution is largely due to the necessity for suitable target rock material rich in silica, such as sandstone or siltstone and their metamorphic derivatives, which largely rules out ancient cratonic regions of the Earth's crust.

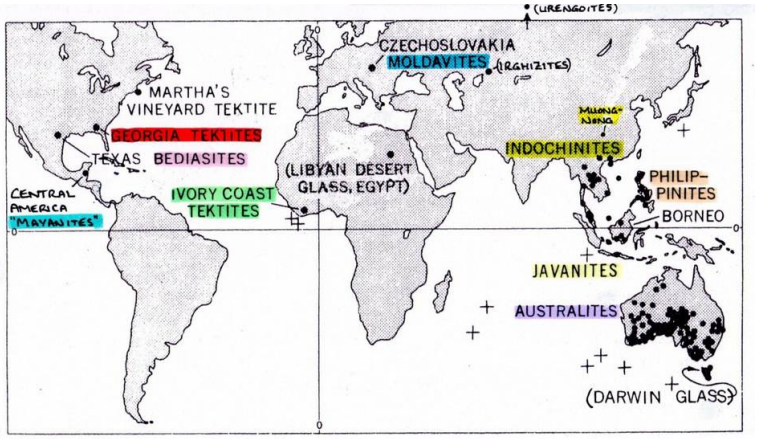


Fig. 1: The main Tektite 'strewn fields' (modified by myself)

Silica glass of any kind is inherently unstable over geological time periods such that true tektites are only expected to survive from younger impact events (<40-50 million years). Moreover, they appear to be associated with larger impacts (>10km craters) which have produced extensive strewn-fields. A word of caution is needed not to confuse true tektites with certain **'impactites'** which are glassy in character, found associated with some large impact craters and which have more restricted, proximal, strewn fields.

The various 'fields' shown on Fig. 1 are summarised in the following table, presented in order of age: it includes some other materials (in italics) that are often referred to in associated literature. ►

Field	Nomenclature	Age	Associated with...
North American	Georgiaites (proximal) Bediasites (medial)	c.34Ma	Chesapeake Bay crater 35.5Ma
Libyan Desert	*L.D. Silica Glass (Fig.2)*	*c.28.5Ma*	*Unknown (of terrestrial origin?)*
West Siberian	Urengoites	c.24Ma	Unknown
Central European	Moldavites (Fig.3)	c.15Ma	Ries crater 14.8Ma
Ivory Coast	Ivorites	c.1.3Ma	Bosumtwi = Ashanti crater 1.07Ma
Central Russian	*Irghizites / Zhamanshinites*	c.0.9Ma	*Zhamanshin crater 0.9Ma (impactites)*
Central American	*'Mayanites' / *'Zapotectites'	c.0.82Ma	Pantasma crater 0.82Ma (* =unofficially)
Australasian	Indochinites (Fig.4) (proximal)	c.0.78Ma	? possible crater in the Gulf of Tonkin
	Muong-Nong (layered structure)		
	Philippinites = Rizalites (medial)		
	Javanites = Billitonites (medial)		
	Australites (distal)		
	Darwin Glass (Tasmania) (distal)		*('impactite')*

Fig. 2: A selection of Libyan Desert Silica Glass specimens (personal collection)

Fig. 4: A selection of Australite tektites, some more obviously aerodynamically shaped

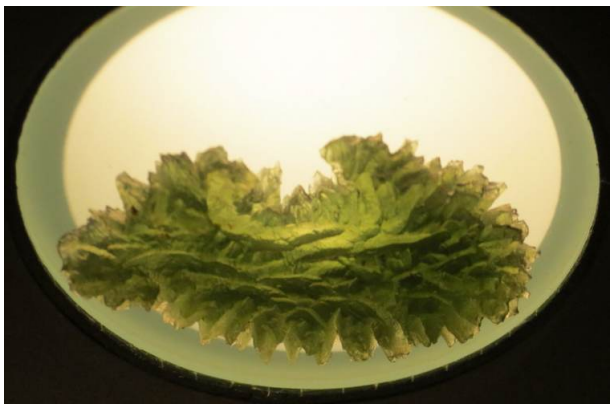


Fig. 3: A classic Moldavite tektite with detailed surface etchings (on display in the 'Terra Mineralia' Museum in Freiberg, Saxony)

Another small strewn field, Brazilian 'Geraisites' (not shown on Fig.1) has also just come to my attention. The Australasian 'field' is by far the most extensive, and is often divided into proximal, medial and distal zones related to their distance from a theorised impact site. Tektites within each zone take on different shape characteristics interpreted as being due to their varying size, viscosity and interaction with the atmosphere. Other 'fields' generally consist of tektites with more irregular shapes. ►

This brief mention of these curious objects does not do justice to the detailed, and at times contradictory, literature on the subject, and it is necessary to acknowledge that there is much we still do not understand about them. Indeed, arguments for a non-terrestrial origin are still being expressed. The still less well understood occurrence of Libyan Desert Silica Glass (see Newsletter No. 211, February 2012, p.13), and referred to in the table above, perhaps reflects even more emphatically the uncertainties that surround the subject!

Fig. 5: Chelyabinsk meteor / fireball, photo by Константин Кудинов, Wikimedia Commons

Moving on, I now turn to **meteorites**, those smaller extra-terrestrial bodies introduced in Part 1 (Newsletter No. 286, August 2024). Like larger impact events, they have been a part of Earth's history right from the start. Most have been dated to 4,567 million years (Ma), (the oldest at 4569.5 Ma), which is around the age of the Earth itself, implying that both were formed together at the birth of our solar system. NASA scientists estimate that around 48 tonnes of meteoritic material enters the Earth's atmosphere every day, but most of this burns up on entry. Occasionally it does so 'explosively' creating a 'fireball' such as that widely reported over **Chelyabinsk** in 2013 (Fig.5). A significantly larger 'fireball' is presumed to have caused the flattening of a large area of forest in the remote **Tunguska River** area in 1908 (Fig.6). Both these well-known events occurred in Siberia, but the same process is believed to lie behind the great **Chicago** fire and contemporary **Peshtigo** forest-fires in 1871. More correctly, these are examples of **meteors** which took longer in their descent to burn up completely, but were not large enough to survive in the form of a meteorite.

Fig. 6: Tunguska event, photo taken during the Leonid Kulik expedition in May 1929, Wikimedia Commons

As of 2020, around 72,000 separate meteorites have been documented (Wikipedia states that 'over 30,000' occupy the world's collections). The largest known, the **Hoba** meteorite (Fig.7), the weathered remains of which weighs around 60 tons, is still displayed exactly where it fell, in Grootfontein, Namibia. They strike the Earth daily, most weighing just a few kilograms or less; indeed most meteoritic material by volume lands on Earth in the form of micro-meteorites ('cosmic dust'), much of which may originally derive from comets.

Despite the frequency of such objects raining down from the skies, to date the only recorded fatality is a dog, which was unfortunate enough to get in the way of the **Nakhla** meteorite (Egypt, 1911). There are now many well-documented witnesses to such landings, one of which will be described in more detail in my next piece, but the vast majority of meteorites have been found after they landed, and mostly in uninhabited regions. For perhaps obvious reasons, many have been collected from deserts or icy wastes (especially Antarctica), where they stand out more readily from ordinary rocks and where they are less likely to weather rapidly, due to the dry and / or cold conditions. ►

Fig. 7: Hoba meteorite
photo by Eugen Zibiso, Wikimedia Commons

Meteorite 'landings' have been more widely documented in recent times since their existence has become better understood. The earliest reliable record we have in Europe of such an event being witnessed comes from Ensisheim, Alsace, at around the time Columbus was 'discovering horizons new' in November 1492, although there are earlier references to rocks falling from the sky. The Greeks appear to have recognised the phenomenon. Meteoric iron in the form of a knife was also found amongst Tutankhamen's grave-goods, and a Japanese account from 19 May 861 describes the arrival of the Nogata meteorite 'from the sky' as being witnessed by a young boy.

Fig. 8: Ordinary chondrite (Viñales Meteorite) from the Asteroid Belt between Mars and Jupiter. photo by James St. John, Wikimedia Commons

We also know that meteorite falls are not just a part of human history. **Fossil meteorites**, although very rare, are chanced upon from time to time. The most celebrated example is the discovery of over fifty 'meteorite remains' in a single quarry in southern Sweden. Together, these represent over 90% of all known fossil meteorites, recovered from the same Ordovician limestone formation, but from at least 12 separate horizons spanning around 2 million years some 466 Ma ago. An earlier discovery from another site in central Sweden has been dated as around 5 Ma older. These discoveries disprove the once held notion that such events are peculiar to the Quaternary period, based more on the negative evidence that no ancient meteorites were then known. This limited evidence has also led some workers to suggest that meteorite frequency during the Ordovician was two orders of magnitude higher than today, which might be a rather tenuous conclusion from such little evidence!

Like many other things in life, scientists have sought to understand their significance by trying to classify them into manageable categories. Favoured criteria for this have been either their mineralogical, chemical, petrological or isotopic composition. We also now know that they originate from different parts of our solar system, so their origin: **lunar, cometary, asteroidal** or **planetary** (notably **Martian**) has also been a method of classification, but often their source is unclear so this scheme is less satisfactory. Needless to say, several modern schemes of classification have emerged, but the simplest traditional method recognises two basic categories: those that have undergone some degree of chemical differentiation (**differentiated**) and those that have not (**undifferentiated**), which all sounds, and is, nice and simple. But this doesn't take us very far in understanding, so you can expect things to become complicated when going into more detail.

That said, meteorites fall into three types, (which you may recognise from Part 1), when discussing asteroids: either **C - (chondritic)** (Fig.8), **S - (stony)** and **M** or **X - (metallic)** types. Note that one thing meteorites **do not** contain are bubbles. The great majority are **chondrites**, which are all **undifferentiated**, and non-metallic (although they do contain small traces of metal). The significance of this is that they were never incorporated into bodies large enough to have undergone planetary segregation (which distinguishes the 'rocky' inner planets), but derive from smaller, primitive accretionary bodies. With one exception, they all have one thing in common; they all contain **chondrules**, millimetre-scale grains composed of molten or partially molten droplets that formed in the early solar system before becoming accreted to a larger body. Chondrites may also contain particles older than our solar system, drawn in from further afield in the galaxy. ►

Differentiated types are either **stony meteorites** (or **achondrites**) (Fig.9), lacking chondrules and composed of silicate minerals, which make up most terrestrial rocks; (hence 'stony') or **metallic meteorites**, (or **irons**) likewise devoid of chondrules and consisting of metals, mostly iron and nickel, with some sulphide minerals. These types have been derived from either the outer or inner depths of larger planetary bodies (of which there are a limited number of suitable candidates) in which constituent materials have separated out to form a layered structure similar to that of Earth, with its metallic core, stony mantle and 'rocky' crust. A very small number of meteorites are described as **stony irons** (Fig.10), which perhaps originate more specifically from the core-mantle boundary.

Fig. 9: Mysterious Ungrouped Achondrite, 2023 find in Algeria, photo by Steve Jurvetson, Wikimedia Commons

A detailed explanation of further sub-types is beyond the scope of this account, but to give some idea of the further variety of meteorites, I will draw things to a close with the following, very simplified, classification.

Undifferentiated: (Chondrites) C-type 'stony': composed mostly of silicates (mainly olivine, pyroxene and chondrules). A few contain relatively high amounts of metal, water and / or organic compounds.

Enstatite types contain 60-80% chondrules; enstatite is an orthopyroxene mineral, $MgSiO_3$.
Most chemically reduced with iron present mostly in metallic or sulphide phases; EL (Enstatite Low) and EH (Enstatite High) subtypes have low or high enstatite contents respectively.
probably formed in an area devoid of oxygen, within the orbit of Mercury

Ordinary types contain 60-80% chondrules; the most abundant type of meteorite.
The subtypes are LL (Very Low), L (Low) and H (High) reflecting the iron contents respectively.
those with the least iron content may originate from the asteroid Eros

Carbonaceous types contain more carbon, including amino-acids, and some water or hydrated mineral species.
CI subtype is devoid of chondrules; chemically the most 'primitive' of meteorites.
(The 2nd letter of the subtypes is usually the initial of the name of a prominent meteorite. Ed.)
CB, CH, CK, CM, CO, CR, CV subtypes contain various % of chondrules and volatiles.
C ungrouped subtype: have characteristics of more than one sub-type.
likely of cometary provenance, and possibly large asteroids: e.g. Pallas (CR)

'Intermediate' types contain at least 30% chondrules; have characteristics of all three types (chondritic, stony, metallic - see above); R and K subtypes.
more highly oxidised, perhaps from an asteroid's regolith ►

Differentiated: show clear evidence of chemical fractionation by radioactive heat within the parent body.

M- type (Irons) composed of iron / nickel alloys (kamacite or taenite), with lesser amounts of other sulphide, phosphide, and carbide phases including some with cobalt.

3 subtypes H (Hexahedrites) pure kamacite; low <6% nickel content.

O (Octahedrites) both kamacite and taenite, with characteristic surface etchings called Widmanstätten patterns (Fig.11), medium 6-17% nickel content; **one variety may come from asteroid Hebe**

D (Ataxites) almost entirely taenite; very high 9-69% nickel content; **originate from the cores of rocky planets or large asteroids**

C-, S- or M- types (Stony Irons) composed of a mixture of metallic and silicate phases.

2 subtypes Pallasites: composed of olivine and metal; **confusingly, not from Pallas!**

Mesosiderites: mixed silicate (pyroxene / plagioclase) and metal 'breccias'.

S-type (Stony) lack chondrules and metallic phases i.e. entirely composed of silicate minerals.

(Achondrites) Some of these have been dated and found to be younger than Chondrites. Many subtypes of varying composition, and according to perceived provenance;

those from the Moon, those from Mars, those from Mercury (??), those from asteroids, including Vesta and Nysa ■

Mike Allen

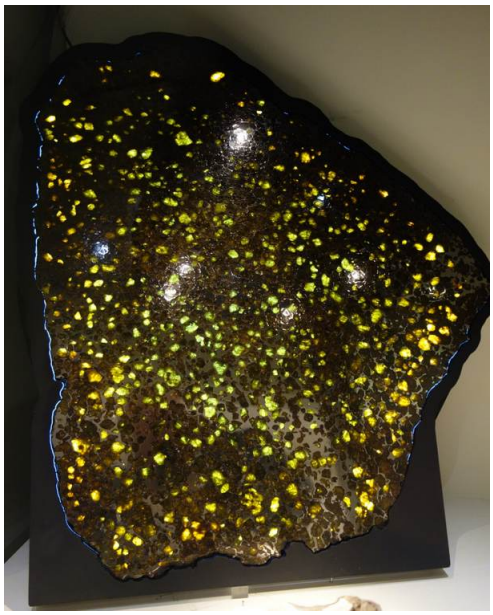


Fig. 10: Stony-Iron meteorite (pallasite), found 1822, Atacama Desert, Chile, Natural History Museum, London, Wikimedia Commons

Fig. 11: Iron meteorite with Widmanstätten pattern, found Hammersley Range, Australia, © Raimond Spekking, Wikimedia Commons