



Bulletin of the North Staffordshire Group of the Geologists' Association Number 134 : October 2021



Dates for Your Diary

Winter Lecture Programme 2021-22

These winter lectures for 2021/22 will continue to take place online via Zoom

Thursday 14 October @ 19:30

Lecture: What sedimentary rocks can tell us about astronomical cycles and climates in deep geological time by Jim Riding (BGS)

Thursday 11 November @ 19:30

21st Wolverson Cope Lecture: Minerals of Staffordshire and the Peak District by Roy Starkey

Thursday 2 December @ 19:00

Virtual Christmas Social with short talks on the Bateman Gallery at Biddulph Grange

Online Lecture Programme by Zoom.

Due to coronavirus restrictions, it is still not possible to hold lectures at Keele until further notice. The NSGGA will continue to host their talks on the Zoom platform.

NSGGA Members

To ensure that all NSGGA members can attend the lecture, as Zoom has a limit of 100 participants, all NSGGA members on the Bulletin distribution list will be sent an email with a link to the Zoom session and a password to join. **Please do not share this link on Facebook, Twitter or other social media.**

Non-NSGGA Members

If you are not on the NSGGA distribution list (and why not? – membership is only £13 [or £15 family, £10 retired and £3 student (for the duration of your course)] – see the back of the Bulletin to join) then please go to the contact page on the NSGGA website (nsgga.org/contact/) to request a link. Links will be sent out by email a few hours before the lecture starts. Again, **please do not share this link on social media.**

Winter Lecture Programme 2021/2022

Thursday 14 October 2021 @ 19:30

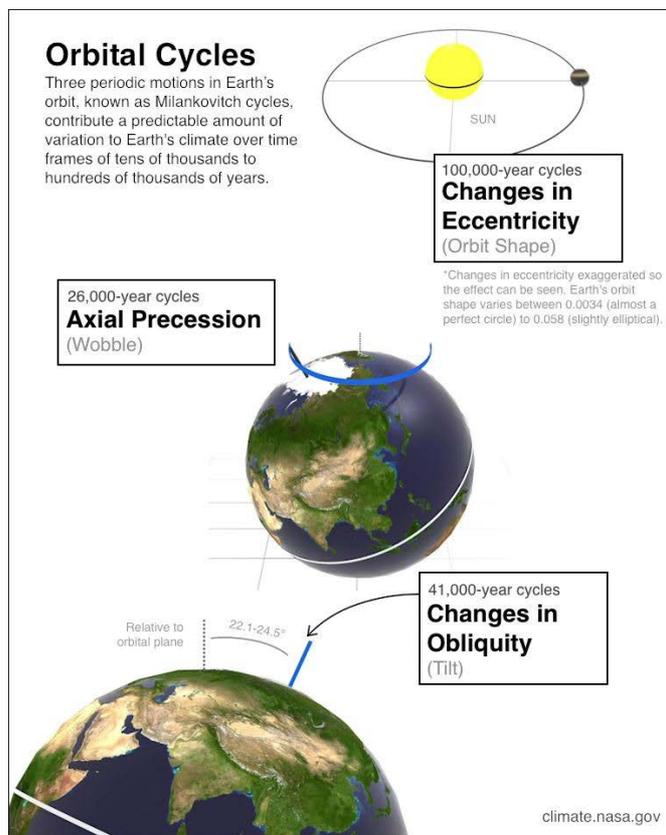
What sedimentary rocks can tell us about astronomical cycles and climates in deep geological time

Dr James B. Riding (British Geological Survey)

Sediments in the natural world familiar to us all such as sand on a beach or the mud which settles on lake bottoms can, if preserved, be formed into hard sedimentary rocks such as sandstone and shale respectively. These sedimentary rocks represent an invaluable archive which records information on climates, environments and life deep into the geological past. While in the field, geologists can glean much information simply by observing the fossil content and texture of sedimentary rocks.

However, using modern laboratory-based techniques, earth scientists can extract far more sophisticated and quantitative information from the deep time sedimentary record.

In the 1920s, the Serbian scientist Milutin Milanković hypothesised that variations in the axial tilt, eccentricity and precession of our planet's orbit resulted in cyclical (rhythmic) variation in solar radiation reaching Earth. Furthermore, that this orbital forcing has significantly affected climate on Earth (and of course still does!). Milanković was a true scientific pioneer; these orbital cycles are now termed Milankovitch cycles, and their periodicities are well known. These cycles, which are measured in thousands of years, can be discerned in the sedimentary rock record, and they represent the combined effects of changes in the Earth's orbit around the Sun on terrestrial climate. The orbital tuning of successions of sedimentary rocks (for example the Lower Jurassic rocks of the Mochras Borehole in Wales) to Milankovitch cycles can help us work out the time scale and climate dynamics of the geological record with unprecedented precision.



Milankovitch Cycles (Image: NASA)

Certain chemical elements have variants with different numbers of neutrons (and hence atomic numbers). These forms of specific elements are termed isotopes and can be either radioactive or stable. The relative variations in certain stable isotopes in a succession of sedimentary rocks are caused by fractionation by natural processes. These can reveal, for example, fluctuations in temperature. Researchers in this field look for and analyse trends in isotopic signatures as well as sudden significant variations in isotopic composition ('excursions'). The best-known example of stable isotope analysis is the fractionation of water with 'heavy' and 'light' oxygen (^{18}O and ^{16}O respectively). Because 'light' water is more readily evaporated from the oceans, it builds up as ice at the poles during cold (glacial) climatic intervals as it is not returned to the sea by the water cycle. This means that, in cold periods, the remaining sea water is richer in ^{18}O , and hence that organisms with calcite (CaCO_3) shells which lived during these 'cold snaps' are relatively enriched in 'heavy' oxygen.

This talk will describe the theory behind orbital tuning and stable isotope analysis and give examples of how these techniques are used by geologists.

Thursday 11 November 2020 @ 19:30
The 21st Wolverson Cope Lecture
Minerals of Staffordshire and the Peak District
Roy Starkey



Baryte (variety Oakstone) from Arbor Low (Image: Roy Starkey)

The mineral wealth of the English Midlands has been exploited for centuries – lead, copper, zinc, and to a lesser extent silver, have all been worked. Deposits of coal, iron ore and limestone powered the Industrial Revolution, providing the raw materials for such visionaries as Sir Richard Arkwright, Matthew Boulton, James Watt, William Murdoch and Josiah Wedgwood.

The area has produced a wide range of interesting mineral specimens. Examples of these are to be found in local and regional museum collections, and especially at the Natural History Museum in London. However, such was the importance of Britain in the development of mineralogy as a science that specimens from the English Midlands are to be seen in collections all over the world.

Minerals such as phosgenite, matlockite and mottramite are recognised as having been first described from the English Midlands. Although the glory days of mining are long gone, quarrying operations, and to a lesser extent, mining, mean that fresh exposures are constantly being created, and new mineralogical discoveries continue to be made today.

The area has also produced a variety of decorative stones such as Blue John, alabaster and Ashford Black Marble and these too will be examined. Thanks to the efforts of miners, mineral dealers and collectors over the past few hundred years, interesting and beautiful specimens have been preserved for us to enjoy today. This talk will provide an overview of the fascinating stories associated

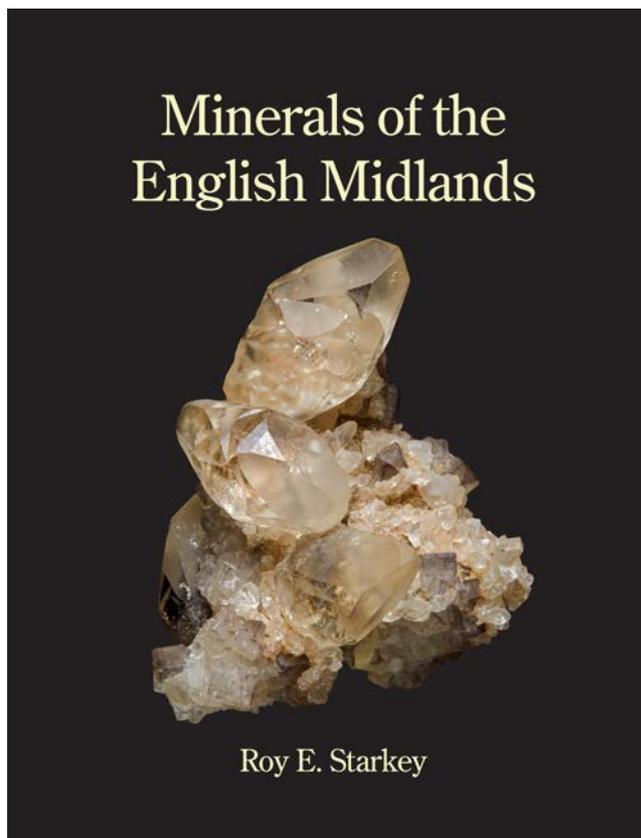
with the mines, quarries and minerals, illustrated by images taken especially for a recently published book *Minerals of the English Midlands*.

Membership Subscriptions

Subscriptions for 2021/2022 Due

Just a reminder that subscriptions are now due for the 2021/2022 season. Full membership is still £13, family membership £15, retired / unemployed £10. Student membership is just £3 for the entire duration of your course.

Please complete the membership form at the back of the bulletin and send it to David Osborn, our membership secretary. If you want to pay by online banking, please ask David for the account details.



Thursday 2 December 2021 @ 19:00 Virtual 'Christmas Social'

Talk: Bateman Gallery Restoration at Biddulph Grange

Following the success of last year's online event, the Christmas Social in 2021 will again be held online via Zoom. There will be informal entertainment, including a quiz. The social will also include a series of short, illustrated talks featuring the restoration work that has been taking place in the geological gallery at Biddulph Grange. Several NSGGA and Keele University members have contributed to this project and a preview opportunity was included in the NSGGA contribution to Geoweeek on Sunday 5th May 2019 (see Bulletin No. 127).

As last year, the Committee look forward to sharing this festive event with as many of you as can make it. Please feel free to join in with your own food and liquid refreshment – and once again we will no doubt take the opportunity to propose a toast to Association and its members, and absent friends. Further details of the event will be circulated nearer to the time.

NSGGA News

The NSGGA is sad to note the passing of two of its members.

William Barrie Whitfield 1943-2021

W. 'Barrie' Whitfield died on 12th July, aged 78. He was a NSGGA member in the past and was the Association of Geology Teachers Treasurer 1977-81 and taught Geology at Stoke Sixth Form College.

Dr Peter Antony Floyd 1937-2021

Dr Peter Floyd, former Reader in Geochemistry died on 11th September, aged 84. Peter was heavily involved with the NSGGA, serving as chair 2003-2005 and vice-chair 2002/3 & 2005/6. He was made an Honorary Member of the Committee in 2017. He wrote the guide to the Building Stones of Newcastle-Under-Lyme leaflet and the book on Building Stones of Staffordshire and helped with advice on the restoration of the Bateman Gallery at Biddulph Grange on behalf of the NSGGA.

Peter did research in Geochemistry and Igneous Petrology of both ancient volcanic rocks and sediments from the Variscides of Europe and SW England. He was involved in the geochemical and petrographic analysis of volcanic material in cores obtained by DSDP and ODP in the western Pacific Ocean. With colleagues he was involved in the chemical analysis of Turkish ophiolites, siliceous volcanics and ignimbrites. He was also involved with John Winchester and European colleagues on the EU funded "Palaeozoic Amalgamation of Central Europe" (PACE).

Halstead Medal Award

Dr Ian Stimpson (Keele University) has been awarded the Halstead Medal by the Geologists' Association (GA). This prestigious medal was presented to Ian by Dr Vanessa Banks (GA President) at a special outdoor ceremony held at Keele on Saturday 26th June, 2021. Following the presentation, Ian led a fascinating geological walk around the University campus, which culminated in a very pleasant picnic lunch in the grounds of Keele Hall.



GA Halstead Medal (Image: Peter Jones)

The Halstead Medal is awarded for 'work of outstanding merit, deemed to further the objectives of the Association and to promote geology'. Speaking at the Keele ceremony, Nicholas Pierpoint (Chair of the GA External Relations Committee) highlighted some of the numerous ways that Ian has furthered the Association's objectives over many years. Particular reference was made to the steadfast support that Ian has provided to the GA's North Staffordshire Group (NSGGA). It has included three terms of office as Vice-Chairman (2008-09, 2014-15 and 2017-18), two terms as Chairman (2009-11 and 2015-17), more than a decade as Editor of the NSGGA Bulletin (2010-Present) and long-standing service as Geoconservation Staffordshire Liaison Officer (2011-Present). This is in addition to the numerous contributions that Ian has made to NSGGA events.

Members of the NSGGA Executive Committee wish to congratulate Ian on an honour so richly deserved.

Peter Jones (NSGGA Vice-Chair)



Ian Stimpson being presented with the GA's Halstead Medal by GA President Vanessa Banks with GA Chair of External Relations Committee Nicholas Pierpoint

Field Trip Report: Saturday June 26, 2021

Keele Campus

Led by Ian Stimpson

After the presentation in Clock House Drive, Ian Stimpson discussed the origin of the local sandstone, the Upper Carboniferous (Asturian Substage) Butterton Sandstone of the Halesowen Formation, Warwickshire Group (Barren Measures). This 310Ma fluvial sandstone was deposited as Britain was being uplifted in the Variscan Orogeny with rivers flowing northwards across what is now the English Midlands from the high mountains of Brittany and Southwest England. The red colour is local, with sandstones in this part of the sequence passing laterally into an orange-grey colour elsewhere. Consequently, it is believed that the reddening derives from groundwater filtering down through Triassic desert sandstones that would have immediately overlain these rocks unconformably.

We then looked out over to Cheshire / Shropshire border where Ian talked about the area being the junction of three watersheds, the Severn Catchment discharging into the Atlantic via Bristol Channel, the Weaver Catchment, draining into the Irish Sea via the Dee Estuary and the Trent Catchment emptying via the Humber Estuary into the North Sea.

The trip then visited the 'amphitheatre', the former quarry used for constructing the first Keele Hall in 1580 and other buildings around the estate. The rock's friable

nature makes it a poor building stone as can be seen in the Clock House and over the original Tudor door entrance to Keele Hall, still visible from the courtyard.

We walked out across the campus, past the playing fields to Barnes Hall. Here mining subsidence from Silverdale caused fault reactivation that damaged M-block so badly that it had to be knocked down in 1978. You can map the fault traces by the displacement of kerbstones and small fault scarps are still visible crossing the playing fields, made very clear by parch marks in the hot summer of 2018. We followed these structures into the woods where subsidence has created a small pond. Also here is a linear depression caused by the mediaeval Castle Street hollow way between Newcastle-under-Lyme and the Knights Templar outpost in Keele Village. Walking further out behind the Medical School we came to a view towards Mow Cop and Ian discussed North Staffordshire geology in general.



Fault traces highlighted by parch marks in the summer of 2018
[Narrow lines are field drains]. Barnes M-Block stood where the car park to the left of the nearest residences now is. (Image: Alex Nobajas)

We returned to Keele Hall, looking at the second hall, constructed in 1860 from Triassic Hollington Stone from near Uttoxeter. Ian noted the red and white varieties of the stone, the latter caused by bleaching by hydrocarbon fluids, and the barite cement that makes it a good building stone. After looking at the courtyard cobbles that include basalt, a Leicestershire metadiorite and Mt Sorrel granite, we retired to take our picnic on the lawn in front of the hall.

Janet Osborn (with additional material from Ian Stimpson)

Myers Awards 2021

The John Myers Awards are presented annually to students at Keele University.

John Myers gave a 60-year contribution to the understanding of Geology in North Staffordshire and beyond. From 1927 he taught at Wolstanton Grammar School for 40 years and began evening classes at "Stoke Tech" [now Staffordshire University], encouraging members to join the Geologists' Association of London and thus was born the NSGGA in 1948. In the 1950s and 60s he helped Keele University Postgraduate Certificate of Education



students with a teaching methods course, joining the staff of the Education Department in 1967 on his retirement from teaching. Also, in 1967, he was a Founding Father of the Association of Teachers of Geology that had its inaugural meeting at Keele, at which he was elected Treasurer, a post he held for 10 years. His daughter Ann has generously funded the John Myers Awards in his memory.

We have just had a new set of medals struck to cover the awards for the next few years. If you would like to help the NSGGA with the cost of these, please add a contribution to the John Myers Award Fund when you renew your subscription. (See the Membership Renewal Form at the end of the Bulletin)

Due to coronavirus restrictions the Myers Award committee convened online this year and the Awards and Medals will be presented when Keele eventually holds its postponed degree ceremonies in the spring of 2022.

Winner: John Myers Award & Medal

Lauren Clarke

Runners-up:

Mike Berry (Masters)

Joshua Catton (Bachelors)

Geoconservation News

Geoconservation work has largely been curtailed by coronavirus restrictions for the last year, but we hope to resume our extreme gardening site clearance sessions again in the spring.



Brown End Quarry site clearance in 2014: (Image Ian Stimpson)

Together with Staffordshire Wildlife Trust, we are planning a site clearance event at Brown End Quarry, Waterhouses on Saturday 12 February 2022. More details will appear in the January Bulletin.

GEOLOGISTS' ASSOCIATION ANNUAL CONFERENCE 2021

Edinburgh



***We are currently planning for a 'live' conference and field trips. Numbers in the venue may, however, be restricted [subject to Covid-19 rules in October]**

Friday 15th October Afternoon

15:00 - 17:00 Guided tour of the Geoscience exhibits at the National Museum of Scotland (Rachel Walcott, NMS) **FULLY BOOKED**

17:30 - 19:30 The Lyell notebooks and correspondence: Reception at the Playfair Library (University of Edinburgh)

Saturday 16th October, The Surgeon's Hall, Edinburgh How geology shapes Scotland (Angus Miller, Scottish Geology Trust)

The value & versatility of Geoparks - connecting people and nature for a sustainable future (Laura Hamlet, NW Highland Geopark)

The Great Glen Fault Zone - Back and forth for longer than we thought (Dr Eddie Dempsey, University of Hull)

The geology and subsurface exploration history of the Midland Valley, its role and relevance for the energy transition (Prof. John Underhill, Heriot Watt University, tbc)

What triggered the Cambrian Explosion? (Rachel Wood, University of Edinburgh) – with an exhibition of prints generated from Cambrian rocks and fossils by artists from Oxford

Archaeology and isotope geochemistry: Whatever happened to Richard III? (Jane Evans, BGS)

Swimming, crawling and stomping around an ancient Scotland (Dr Tom Challands, University of Edinburgh)

Geothermal potential of the Midland Valley and mainland Scotland (Dr Darren Jones, BGS)

Beneath the waves; a golden age of discovery through mapping our submerged Geology (Dayton Dove, BGS)

Saturday evening dinner: in the Lyceum Theatre, Edinburgh

Sunday 17th October Morning: There will be a selection of three parallel field trip options (10.00-12.30 approx):

The Geology of Arthur's Seat (Leader: Angus Miller, Geowalks). A walk up and around Holyrood Park to see features of the volcano, Hutton's evidence of sill intrusion and spectacular views of the city.

The Building Stones of Edinburgh (Leader: Andrew McMillan, Edinburgh Geological Society)

Fishing in the pavements of Edinburgh (Leader: Al McGowan, Edinburgh Geological Society)





ROCKWATCH 

2021

**VIRTUAL FESTIVAL OF
GEOLOGY**

**JOIN US
6TH AND 7TH NOVEMBER!
www.festivalofgeology.org.uk**

**FREE VIRTUAL GEOLOGY EXPERIENCE
FOR ALL THE FAMILY!**

Sit in on live talks and go shopping at the virtual stalls.

Explore virtual exhibitions from museums and local groups.

Get involved in the interactive Discovery Room and take part in the Rockwatch festival challenge!

Come along to a real Festival Field Trip, follow a self-led walk or enjoy a virtual field trip from the comfort of your sofa.

Events of Other Societies

Geologists' Association

Lectures at Geological Society of London, in Burlington House, Piccadilly but the lectures are available to view by members of the GA online via their website.

Saturday/Sunday 16-17 October Annual Conference, Surgeon's Hall, Edinburgh

Saturday/Sunday 6-7 November Virtual Festival of Geology, Online

More details at www.geologistsassociation.org.uk

Black Country Geological Society

Indoor meetings at Abbey Room at the Dudley Archives, Tipton Road, Dudley, DY1 4SQ

Meetings Online via Zoom for 2021

Monday 18 October @ 20:00

Black Country Geopark: Progress through its first year – Graham Worton

Monday 16 November @ 20:00

Salt Industry and Brine Subsidence – Colin Knipe

More details at www.bcgs.info

East Midlands Geological Society

Indoor meetings at the Clive Granger Building, University of Nottingham

More details at www.emgs.org.uk

East Midlands Regional Group of the Geological Society

De La Beche Conference Suite, British Geological Survey, Keyworth, Nottingham

More details at www.geolsoc.org.uk/emrg

Liverpool Geological Society

Indoor meetings at The Athenaeum, 12-18 Church Alley, Liverpool L1 3DD

Note change of venue from Liverpool John Moores. Draft Programme – please check before attending some lectures will be on Zoom at the request of presenters

Tuesday 19 October @ 19:00

Energy River: exploring the Energy Potential of the River Mersey – Amani Becker

Tuesday 2 November @ 19:00

Contaminants and Geology – Steven Millar

Tuesday 9 November @ 19:00

How resilient will the Greenland ice sheet be in the face of Climate Change? – Doug Mair

Tuesday 16 November @ 19:00

Ground engineering at Liverpool Docks – Antony Clarke

Tuesday 23 November @ 19:00

Carbon capture – Richard Worden

Tuesday 30 November @ 19:00

Mary Anning: monsters, myths and misfortunes – Tom Sharpe

Tuesday 16 November @ 19:00

Are we at last ready to drive in a golden spike to mark the Jurassic/Cretaceous boundary? – Bill Wimbledon

More details at liverpoolgeologicalsociety.org

Manchester Geological Association

Indoor meetings at the Reynold Building, University of Manchester

Meetings Online via Zoom

Wednesday 13 October @ 19:00 Holiday Geology – Peter Bennett, Ken Jacobs and Lyn Relph

Saturday 13 November @ 09:30 The Broadhurst Lectures – Memorial Event in Honour of Dr Tony Adams – Pre-registration Essential

More Details at www.mangeolassoc.org.uk

North West Regional Group of the Geological Society

Indoor meetings at Manchester University unless otherwise specified

More details at www.geolsoc.org.uk/Groups-and-Networks/Regional-Groups/North-West

Shropshire Geological Society

Indoor meetings at The Shire Hall, Shrewsbury at 19:30

Meetings Online via Zoom

Wednesday 20 October @ 19:30 GeoMon - The Anglesey Geopark – Cynthia Burek

Wednesday 10 November @ 19:30 Martley and Teme Valley – Dave Cropp

Wednesday 8 December @ 19:30 Geology of Keswick – Chris Wilson

More details at www.shropshiregeology.org.uk/SGS/SGSintro.html

Warwickshire Geological Conservation Group

Indoor meetings at St Francis Church Hall, Warwick Road, Kenilworth CV8 1HL

Wednesday 17 November @ 19:30 Arden Sandstone and the dawn of the dinosaurs – Stuart Burley

More details at www.wgcg.co.uk

West Midlands Regional Group of the Geological Society

Indoor Meetings at Deritend Room, St Martin's Church, Edgbaston St, Birmingham, B5 5BB unless otherwise specified

Meetings Online via Zoom

Tuesday 12 October @ 18:30 Nitrates in water – Josie McSherry

Tuesday 9 November @ 18:30 Using past climates to constrain future climate predictions – Kirsty Edgar

Tuesday 12 December @ 18:30 Hinkley Point C: Slope loading check – Hamish Strachan & Variable glacial ground and liquifiable soil conditions – Ryan Beech

More details at www.geolsoc.org.uk/Groups-and-Networks/Regional-Groups/West-Midlands

Western Institute of Mining and Minerals

Indoor meetings are held at the William Smith Building, Keele University

Meetings Online via Zoom

Monday 8 November @ 19:00 Cornish lithium – Jeremy Wrathall

Monday 6 December @ 19:00 Mine water energy recovery – Charlotte Adams

More details at www.iom3.org/wimm

NSGGA - Next Committee Meeting:
Thursday November 4, 2021 at 7pm via Zoom.

Contacts List: NSGGA Committee 2021-22

Chair: Stephen Addison

e-mail: stephenpaddison@icloud.com

Vice-Chair: Peter Jones

e-mail: p.f.jones@derby.ac.uk

General Secretary: Gordon McKeown

email: g.mckeown@btinternet.com

Treasurer: Tony Marks

4 Scarratt Drive, Forsbrook, Stoke-on-Trent, ST11 9AN

email: welsh_tony@tiscali.co.uk

Membership Secretary: David Osborn

Stretton, 2 Croyde Place, Meir Park, Stoke-on-Trent, ST3 7XD. Tel 01782 396692

email: david.d.osborn25@gmail.com

Speakers Secretary: Peter Jones

e-mail: p.f.jones@derby.ac.uk

Field Secretary: Steve Alcock

Longfields, Park Lane, Cheddleton, near Leek ST13 7J

Tel. 01538 361904 or mobile 07711 501028

e-mail: steves261@aol.com

GeoConservation Staffordshire Liaison Officer: Dr Ian Stimpson,

e-mail: i.g.stimpson@keele.ac.uk

Bulletin Secretary: Dr Ian Stimpson,

e-mail: i.g.stimpson@keele.ac.uk

Honorary Life Member: Ann Myatt

Executive Committee (elected):

Janet Osborn (Minutes Secretary), John Reynolds, Stuart Egan, Barbara Kleiser

Executive Committee (co-opted):

Keele GeoSoc Representative

NSGGA web pages: www.nsgga.org

NSGGA MEMBERSHIP 2021/2022
Subscriptions due from October 1st



Name

Address

Telephone

e-mail address

Ordinary (Full) £13.00 John Myers Award Fund***
 Family * £15.00 contribution of £.....
 Retired/Unemployed £10.00
 Student ** £ 3.00 Course:

GDPR: For **New Members** or Members who have not yet provided consent:
 I consent to you contacting me (please tick appropriate boxes)

NAME	E-MAIL	POST	PHONE	TEXT

* For insurance purposes, please list the names of all members of the household to be included in the table above (you don't need to complete the GDPR compliance if you have already done it before)

** Students please name your **full-time** course

For electronic payment please contact the Membership Secretary for details.

Cheques should be made payable to the: **"NSGGA"** and sent to:

David Osborn (NSGGA Membership Secretary),

Stretton, 2 Croyde Place, Meir Park, Stoke-on-Trent, ST3 7XD.

Tel: 01782 396692. e-mail: david.d.osborn25@gmail.com

For our records, are you currently a member of the national GA ? yes no

*** Two John Myers Awards are presented annually to students at Keele University. John Myers gave a 60-year contribution to the understanding of Geology in North Staffordshire and beyond. From 1927 he taught at Wolstanton Grammar School for 40 years and began evening classes at "Stoke Tech" [now Staffordshire University], encouraging members to join the Geologists' Association of London. Thus was born the NSGGA in 1948. In the 1950s and 60s he helped Keele University Postgraduate Certificate of Education students with a teaching methods course, joining the staff of the Education Department in 1967 on his retirement from teaching. Also, in 1967, he was a Founding Father of the Association of Teachers of Geology that had its inaugural meeting at Keele, at which he was elected Treasurer, a post he held for 10 years. His daughter Ann has generously funded the John Myers Awards in his memory.