



Manchester Geological Association

President: Dr Margaret Hartley

September 2021

www.mangeolassoc.org.uk

Founded 1925

Niall is stepping down from the Council

Niall is stepping down from Council for personal reasons and Margaret has very kindly offered to take over her role as President a few months earlier than expected. Niall is hoping to return to Council at some point in the future.

Quick Diary

Indoor Meetings

Wednesday, 13 October 2021 Holiday Geology

La Palma

Ken Jacobs

Basque Country

Peter Bennett

North Wales Manganese Mineralisation and mining Lyn Relph

Saturday, 13 November 2021 Broadhurst Day, a tribute to the Late Tony Adams

See pages 12 and 13 for details.

Saturday, 4 December 2021 Early Hominins

Denisovans

Dr Katerina Douka

Neanderthals

Prof. Tom Higham

Saturday, 15 January 2022 Geological Skills

Wednesday, 9 February 2022 AGM and Presidential Lecture

Wednesday, 16 March 2022 Mires, meteors and mass extinctions: what does coal tell us about deep time climates? Dr Rhodri Jerrett

Who's Who in the MGA

Officers

President: Dr Margaret Hartley

Vice-President: Vacant

General Secretary: Sue Plumb BSc

Membership Secretary: Ken Jacobs

Treasurer: Jennifer Rhodes BA

Indoor Meetings Secretary: Vacant

Field Excursions Secretary: Peter del Strother MBE Mphil

Newsletter Editor: Lyn Relph BSc (Hons)

Webmaster: Peter Giles MSc

Other elected members of Council

Prof. Cathy Hollis

Prof. Ray Burgess

Nicola Fowler BSc (Hons)

Peter Gavagan BSc (Hons)

Penny Heyworth Mphil

Dr Steve Donovan

Ex officio members of Council

The Immediate Past President, Manchester Geological Association: Niall Clarke MSc

RIGS Representative: Dr Chris Arkwright

The Association's representative on the North West Geologist's editorial team: Peter del Strother MBE Mphil

President of the Student Geological Societies of the University of Manchester

MGA Archivist: Dr Derek Brumhead MBE

MGA email addresses

To contact our President: president@mangeolassoc.org.uk

To contact our Vice-President: vicepresident@mangeolassoc.org.uk

To contact our General Secretary: secretary@mangeolassoc.org.uk

For membership enquiries: membership@mangeolassoc.org.uk

For field visit enquiries: outdoors@mangeolassoc.org.uk

For indoor meeting enquiries: lectures@mangeolassoc.org.uk

For newsletter correspondence: newsletter@mangeolassoc.org.uk

For other enquiries: info@mangeolassoc.org.uk

Fred Broadhurst trip to Lyme Park

18th Sept 2021

Led by Jane Michael

The topic for the day was geomorphology and active erosion. The underlying geology is at the bottom of the Carboniferous Westphalian (Coal Measures), say 315Ma. It comprises a series of sandstone ridges with shales/mudstones and the occasional coal seam. It is also highly faulted. Approximately 4km (2.5 miles) to the west is the Red Rock Fault which brings the Permian Collyhurst Sandstone and Triassic Manchester Marl down beside the much earlier Carboniferous rocks. Generally what we see today reflects the Devensian stage covering the period 115Ka to 10Ka. However, it is known that there was a late flourish of ice advance known as the Loch Lomond Stadial around 11,000 years ago which resulted in much of the landscape we see today locally.

The first stop (see Fig 1) was the rocks beside car park where we saw several large sandstone blocks that have plant fossils. They are probably stems of *Calamities* a type of very large horsetails and stems of seed ferns (Fig 2).

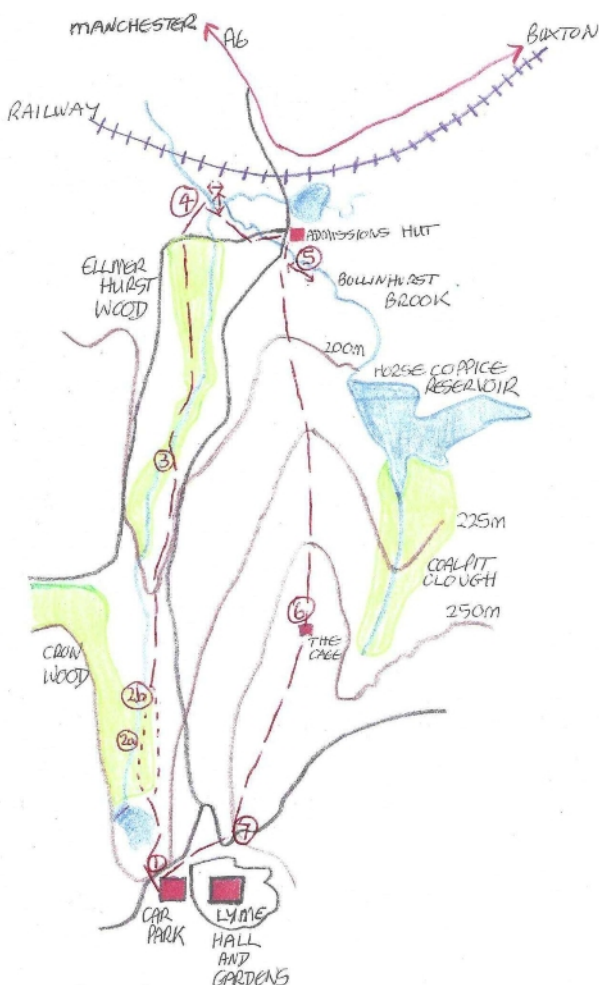


Fig 1. Plan of the route we took.



Fig 2. Plant stem fossil.



Fig 3. River terrace and river valley.

In 2019 there was a big flood which caused considerable damage; a 9 metres high stone wall was demolished, a wooden bridge was moved about 2cm and the gabbions (Figs 4 & 5) that reinforced the river bank were found 100 metres down stream. Field drains in the moor above reduced the water residence time on the moor so contributing to the damage and enhancing the ability of the river to erode the banks and modify the channel, we will see evidence of this later in the day. We could not go to see the demolished wall because the park staff were working on repairs. However, we stood on the ridge above from where we could see the sandstone ridge and river terrace (sunlit in Fig 3) that has been cut into, by the now much smaller river, to form a steep sided valley incised by small streams .



Fig 4. The bridge was moved about two cm down stream. The gabions were placed to the left of the bridge to reduce river bank erosion.



Fig 5. The gabion (it is about two meters long) that remained intact. We found the mangled remains of others farther downstream.

As part of the Riverlands Project several River Guardians (volunteers) have been appointed to take regular water samples and river fly surveys every month for the next 12 months. The old drainage pipes up on the moor are being located and blocked to reduce the peak flow in the river. 12/15 leaky dams and scrapes are to be built over the winter to hold water during times of heavy rainfall including here in Elmerhurst Wood, which is upstream of the bridge. A knock-on effect should be improved wildlife habitats and water quality while controlling runoff/flooding and hence river bank erosion.

We went on to look at some of the many small rivers and streams running through the Park and how they have changed the topography over time and still continue to do so. In fig 6 there is a river terrace that is sunlit in the distance and a much lower, younger one below to the left where the rivers still run; note the confluence of two small rivers. Note also the two areas where the river is cutting into the glacial deposits (Fig 7) that form the older terraces. In this picture two distinct layers of sediment are visible; the upper layer is sandy and falls away a bit like an egg timer when dry, but the lower layer is more clayey and the sediment forms a more cohesive unit. The two layers would have been deposited in differing flow rates with the upper sandy layer deposited from faster flowing water that the lower layer. The river is now cutting down into a recent terrace.



Fig 6. Small rivers cutting into the older terrace and



Fig 7. Small cliff formed by the river cutting into the glacial till which forms an older terrace.

A little farther down this river it makes a ninety degree turn (Fig 8). To the left by the tree it can be seen to be cutting into the bank, but this meander has been abandoned and a new course followed. There could be several reasons why the river changed course; resistance to erosion by the tree, flooding or blockage by river bank collapse or vegetation.



Fig 8. Ninety degree turn in the river

The glacial deposits that the rivers are cutting down into are quite variable even over short distances as can be seen in Fig 9. In the left middle quarter is a break in the iron pan deposit that is half way down the profile, this could be an old river channel that has been in-filled by coarser material. Over the top of the coarse material is a layer of fine material that a much paler colour. It is very thin in the left half of the photograph and thickens to the right where it also becomes finer.



Fig 9. Glacial deposit.

As we walked up Bollinghurst Brook we saw more examples of how much material the streams have cut down through. Also the depth to which the streams have incised and this is not just due to the one 2019 flooding event. The river that currently runs here is clearly not able to remove these vast amounts of material. Therefore, the volume of water moving down the valley has changed over time. The melting glaciers provided large amounts of water so when these finally melted there was a big reduction in the amount of water in the river during the spring and summer. The river then settled to a lower level abandoning the higher terraces (Fig 10) seen in the background. Two dams were built, the lower one in 1861 and the upper in 1872 (Fig 11) reducing the amount of water in the river. In the photograph the parapet on the left and the water to the right belong to the 1861 dam. The 1072 dam can be seen above the water.



Fig 10. Bollinghurst river now just a small stream.



Fig 11. The two reservoirs that deprive the river of water.

Coalpit Clough pass to the east of the Cage (the big square building on the hill) then runs under the stable block and continues as far as Pot Shrigley. There are a lot of bell pits in the area. The coal below the Cage was mined to supply the house. By the mid-19th century, the kitchen alone needed one ton per day which was more than could be supplied locally so more was brought in from pits owned by the family around Haydock. within the Lancashire Coalfield.

On the way down from the Cage we saw two erratics. The fig. 12 is a tuff from the Lake District; this has an interesting shape and there was some discussion about how this might relate to it's transport within a glacier. Fig. 13 is Eskdale granite; lower photograph shows the large crystals.



Fig 12. Tuff erratic.



Fig 13. Eskdale granite and bottom close up showing the crystal structure.

The road cutting by the entrance to the Hall is an exposure of the Milnrow Sandstone. The stratification dip is apparently 65° west. This steepness is partly due to the regional dip and partly due to oblique bedding: cross stratification. Figs. 14 & 15.



Fig 14 Milnrow Sandstone



Fig 15. Close up of the Milnrow Sandstone.

Margaret Hartley and Stephen K Donovan are the prospective co-editors of the third edition of *Geology of the Manchester Area*; the publication is planned to coincide with the MGA centenary.

Where is Manchester? An Editor's Dilemma
By Stephen K. Donovan (SKennethDono@gmail.com)

In the 1920s, Herbert Leader Hawkins (1887-1968) of University College Reading published two papers on the fossil echinoids of Jamaica based on specimens collected by Charles Taylor Trechmann (1884-1964). In the second of these contributions (Hawkins, 1924) 17 species were described from five incompletely-defined localities. Four of these sites were certainly in the parish of St James, north-west Jamaica, and I at first assumed that the fifth – Glasgow – was so located. There is a Glasgow in this parish which is more or less on the outcrop of the Eocene Yellow Limestone Group, a unit locally rich in echinoids. I assumed that this was the Glasgow, but it turned out to be only a Glasgow. The fossil locality is more likely to be the Glasgow spanning the boundary between the parishes of Westmoreland and Hanover in far western Jamaica. The full story of this correction can be read in a brief paper available free on-line (Donovan, 2010).

So, what has this got to do with our Manchester? A lot, really. We all know what we mean by Manchester, but does everyone have the same understanding? I'm sure not, which makes my job as a prospective co-editor of the third edition of *Geology of the Manchester Area* interesting from a geographical perspective. Any suggestions for limitations that might be placed on the extent of the Manchester area are likely to be an unwelcome restraint on the editors. My co-editor, Margaret Hartley, and I have to look at the 'Manchester Area' as having elastic sides.

Previous guides have had similar such flexible limits. Examine the lists of itineraries in earlier versions of the guide, Broadhurst *et al.* (1970) and Eagar & Broadhurst (1991) (Figs 1, 2). The geographic net is spread wide, from Clitheroe to the Peak District to Alderley Edge to Staffordshire. These earlier guides were stretched well outside the limits of Greater Manchester as currently defined and, to be blunt, were all the better for it.

My thesis is a simple one:

The limits of the Manchester area are wider than those of Greater Manchester. Indeed, regarding the forthcoming guide, the limits are not defined except by the considered decisions of the Editors with, we hope, the support of the contributors and the membership.

Any editor can only publish, at the most, what is submitted. What is submitted is constrained by the skill and knowledge sets of your contributors. This is the primary rule that governs all publication. If X wants to see an itinerary of area Y, Margaret and I will be delighted to accommodate them, but someone must write it. So, do I turn to X for copy? If not, then who? A suggestion for a topic without an author is only half an idea.

This point has an obvious validity. Any editor can only publish what is submitted. It is a painful example for any idealistic editor to learn. I was taught this lesson as editor of *Journal of the Geological Society of Jamaica* in 1989-1991 (*JGSJ*). Never, ever was I swamped by copy, sad to say. I tried various schemes to encourage potential authors to write, but found it easier to do it myself, with my various co-authors, although I would rather have sent many of my papers elsewhere. Yet when I heard 'there is too much palaeontology in *JGSJ*' (I am a palaeontologist), I could only agree and most wholeheartedly. I would then suggest, sometimes forcibly (you get fed up saying the obvious *ad nauseum* to people for whom the obvious is a closed book), that the speaker's next (non-palaeontological) paper was eagerly awaited by their editor. I do not believe that this method ever led to one submission; people just complained behind my back instead of to my face. What people want is not what they are willing to give. So, be patient with Margaret and myself. Our perception of the 'Manchester Area' will have to be flexible of necessity; at best, we can only publish everything that is submitted and not a word more.

We have been lucky to receive many suggestions from the membership of the Association, not just for the where, but also for whom. This is gold dust; Margaret and I thank you. We have a draft proposal in the final stages of completion, but it must, of necessity, remain slightly incomplete. The definitive document will be the guide and not the proposal. Until then, we need elbow room for just one more contribution that might only arrive out of the blue at the last minute from an unexpected contributor. We are still twisting arms for proposed itineraries and will continue to do so, but it is essential that we know which arm to twist and why.

In summary, any comments you have made to us about scope and content of the draft proposal have been gratefully received, read, digested and, where possible, acted upon. If what is eventually published does not quite fit with your perception of the guide, then I do say that it fits your perception as closely as we could make possible. I will not be co-editing the fourth edition in many years' time and it may be that the new editor(s) will produce a very different document (surely they will), again influenced and guided by the membership and contributors, but it will still be controlled by the same limits that determined the form of the first three guides.

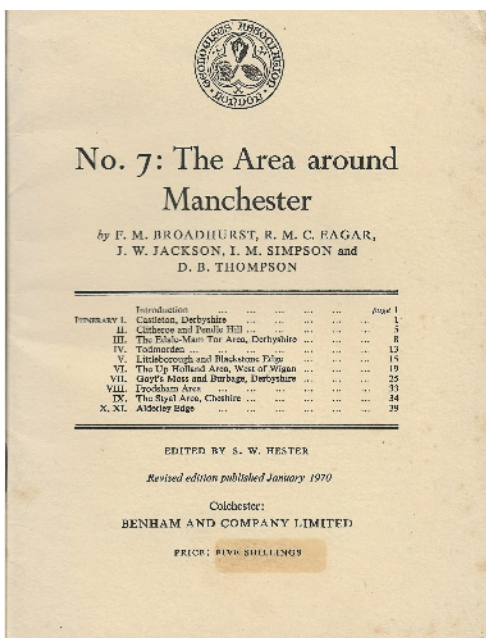
References

Broadhurst, F.M., Eagar, R.M.C., Jackson, J.W., Simpson, I.M. & Thompson, D.B. (Hester, S.W., ed.) 1970. *The Area around Manchester*. Geologists' Association Guides, 7, 51 pp.

Donovan, S.K. 2010. Where is Glasgow? Clarifying a Jamaican locality after 85 years. *Bulletin of the Mizunami Fossil Museum*, 36, 127–128.

Eagar, R.M.C. & Broadhurst, F.M. (eds). 1991. *Geology of the Manchester Area*. Second edition. Geologists' Association Guides, 7, 118 pp.

Hawkins, H.L. 1924. Notes on a new collection of fossil Echinoidea from Jamaica. *Geological Magazine*, 60, 199–216.



CONTENTS		PAGE
Preface	R. M. C. Eagar and F. M. Broadhurst	5
Geology of the Manchester Area	R. M. C. Eagar and F. M. Broadhurst	7
ITINERARIES		
I	Wye Dale area, east of Buxton A. F. Adams	16
II	Clitheroe and Pendle Hill I. M. Simpson	20
III	Cheesden Brook and Turf Moor F. M. Broadhurst	24
IV	Chunal, Charicsworth and Broadbottom, near Glossop P. A. Selden	28
V	Goyts Moss and Burbage, Derbyshire R. M. C. Eagar	37
VI	Low Side Brickworks, Glodwick and Rocher Vale, Park Bridge, near Oldham F. M. Broadhurst	47
VII	Jumbles Country Park, Bolton K. Riley	53
Z		
VIII to XI	Triassic Rocks of the Cheshire Basin D. B. Thompson	57
	Alderley Edge 1 (VIII)	59
	Alderley Edge 2 (IX)	67
	Styal area, Cheshire (X)	74
	Frodsham area (XI)	79
XII to XIV	Goyt Valley between Marple and Stockport R. H. Johnson	82
	Marple Bridge-Compstall to Marple Aqueduct (XII)	86
	Marple Aqueduct to Chadkirk (XIII)	91
	Chadkirk to Stockport (XIV)	91
XV	The mineralisation of Ecton Hill, Staffordshire R. S. W. Brailhwaite	96
XVI	Building stones of Manchester city centre I. M. Simpson and F. M. Broadhurst	101
	References	107

Figure 1 The front cover of Broadhurst et al. (1970) including the list of contents. Note field excursions to Derbyshire, Clitheroe and Alderley Edge.

Figure 2 Table of contents of Eagar & Broadhurst (1991, p. 5). Again, destinations are widely spread around Manchester.

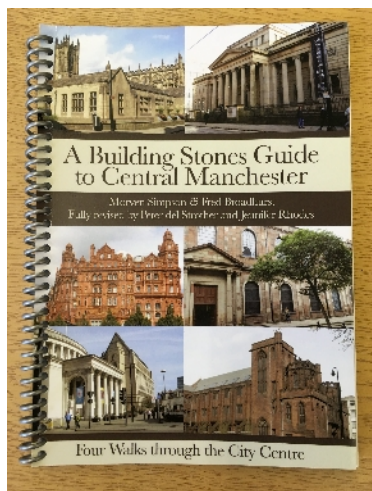
MGA Officer Vacancy – Indoor Meetings Secretary

Ideas and contacts for indoor meetings generally come from members suggestions. The role of the Indoor Meetings Secretary is to then organise the when, where and how the meetings will take place, with lots of help always available from other members. Also as a member of the MGA council you are involved in the overall running of the society. The council meets every few months.

If you might be interested or would like to know more about what is involved and how it all works, please contact me at ken.jacobs.2011@gmail.com

Ingleton Waterfalls expression of interest

Postponed from 2021 due to Covid-19. Waterfalls Walk (full day) or Ingleton Quarry (half day, so need something else nearby). The quarry is nearing the end of its life. The waterfalls walk and nearby Meal Bank quarry, which incorporates a thin coal seam on an emergent surface within the Carboniferous limestone succession. The Waterfalls Walk is quite arduous, with hundreds of steps, and one would have to allow four hours or more. Please register your interest at outdoors@mangeolassoc.org.uk



The new edition of ***A Building Stones Guide to Central Manchester*** is available at £6 per copy (MGA members £4.50) + £2.50 p&p, please email your requirements and details to lgga.info@gmail.com.

Hands-On Palaeontology a practical manual.
By Stephen K. Donovan. 250pp Dunedin Press 2021.

I didn't realise it until I read it, but the world needed *Hands-On Palaeontology - a practical manual*, all 53 chapters and 250 pages. This remarkable publication covers everything you need to know about how to be a palaeontologist.

The book is aimed primarily at novices, undergraduates or the geologically curious amateur. It is written in a very readable style and the decision to have 53 very short (3 or 4 page) self-contained chapters works very well, resulting in a book that you really can pick up, read a little and put down again without any risk of losing the plot or fear of losing your train of thought.

Stephen K. Donovan is a dedicated professional palaeontologist who has written (and continues to write) a lot about fossils throughout his remarkable career so far. *Hands-On Palaeontology* is a distillation of pretty much everything he has put into practice over the last 35 years or so relating to the practical aspects of palaeontology. The too-numerous-to list chapters deal with such topics as common sense in the field (chapter 15) how to label specimens (chapter 27), making field drawings (chapter 29), problems with preservation; the pyrite problem (chapter 33) as well as practical ways to think about your fossils; are they disarticulated, oriented or reworked? (chapter 23).

While *Hands-On Palaeontology* is very much a practical manual some chapters deal with more theoretical aspects such as palaeoecology (chapters 18, 19) but are written to encourage a more in-depth way to think about the fossil you have collected to get more information from the fossil, as Steve has done so often in his career. While Steve has his preferred fossil groups to work with, his advice on techniques and thought processes apply equally well to any fossil of any age.

Importantly, some field guides are included for a number of Steve's favorite locations; from exotic Antigua in the Caribbean or Den Haag in the Netherlands to the Isle of Wight, Cromer, Cleveleys, Clitheroe, Hurdlow and Southport Beach. There is even an excursion to the Piltdown Trail. By examining borings on beach shells, or ancient pebbles Steve unwraps intimate insights into the life cycle of these fossils, and he tells you how he did it.

Almost every chapter is illustrated with examples from Steve's own publications and it is this personal touch about how he thought about what he found that gives the book the depth and value that a more clinical approach would have lost. While this is a practical manual it is also so much more, it is an insight into a life dedicated to palaeontology and it provides the beginner with encouragement, enthusiasm and the tools that make palaeontology accessible to all.

This book takes palaeontology out of dusty museum drawers and opens it up for all curious minds. If you know somebody that occasionally picks up fossils, have a niece or nephew with a budding collection or a friend who has started their university geology journey then I highly recommend this book as an ideal gift, one that is likely to become a cherished favorite.

Dr. Eamon Doyle,
Burren and Cliffs of Moher UNESCO Global Geopark.

OTHER SOCIETY EVENTS

Catch up on the latest [#EIGWebinar](#) on YouTube: Stephen Hadley – What is a (Legal) Mineral? Stephens slides are here: <https://www.eigconferences.com/s/What-is-a-Mineral-Slides-14721.pptx>
If you missed any of the previous 8 webinars they can be viewed at EIG Webinar presentations.

BCGS <http://bcgs.info/pub/>

18 October	Zoom Meeting: Black Country Geopark: Progress through its first year
15 November	Zoom Meeting: Salt Industry and Brine Subsidence
13 December	Indoor Meeting: Deciphering the Fossil Record
17 January	Indoor Meeting: West Midlands National Park

Yorkshire Geological Society <http://www.yorksgeolsoc.org.uk/>

Leeds Geological Society <http://www.leedsga.org.uk/>

1 to 3 October	Alston Residential Field Trip. (Fully booked)
7 October	Volcanoes from Space: Dr Susannah Ebneier. Leeds Uni SSE
4 November	Dinosaur Eggs and Embryos: Dr John Nudds. Manchester Uni
9 December	AGM

GeoLancashire <https://geolancashire.org.uk/lectures-and-excursions/>

12 February	AGM, followed by talk by Peter del Strother on NE America
12 March	Metamorphic Rocks and Minerals: Lesley Collins
9 April	Pollen and Spores: Duncan McLean

Liverpool Geological Society <https://liverpoolgeologicalsociety.org/>

5 October	What is Pyrite good for? Presidential address by Dr Alan Boyle. Liverpool Uni
16 October	Field excursion: Neston Rail cutting. Leaders: Jim Marshall and Maggie Williams

OUGS North West Branch <https://ougs.org/northwest/>

21 November	Clitheroe, Lancashire. Leader: Dr Chris Arkright
-------------	--

Geologists' Association/Edinburgh Geological Society

15 October – 17 October 2021 Annual Conference is taking place in Edinburgh

Link here to view the full programme for the GA/EGS Conference 2021:
https://mcusercontent.com/b3ea23a6951bcf5950bddd925/files/b5eef8fc-4f5d-e3d4-ed6a-85863a7282a3/Edinburgh_Conference_Advert_2021_v.8.pdf

Deadline for bookings is Thursday 30 September.

Please book online. Conference Booking:
<https://geologistsassociation.org.uk/conferencebooking/> or contact Sarah at the GA on 07952 700246

Manchester Geological Association Annual Broadhurst Lectures Memorial Event in Honour of Dr Tony Adams



Manchester Geological Association
Saturday 13th November 2021, 9.30am
Reynold Building, University of Manchester
(close to Manchester Piccadilly Station)
Please register [here](#)



Confirmed presentations

Tony Adams retrospective (teaching)

Dr Merren Jones, University of Manchester

Tony Adams retrospective (research)

Dr Peter Gutteridge, Dr Andy Horbury, Cambridge Carbonates

Controls on depositional processes on a land-attached carbonate platform and the role of sediment influx from the hinterland

Dr Peter del Strother, Independent

Carbonate-clastic interaction across an active extensional basin margin: a comparison of Lower Carboniferous sedimentary facies from the northern Lake District High and Solway Basin

Dr Andy Thurlow, Skolithos

A reassessment of Arundian–Holkerian carbonates in south Cumbria, UK

Dr Pedro Cózar, Dr Mark W. Hounslow, Prof. Ian D. Somerville, Institute of Geosciences, Madrid; University of Lancaster and University College Dublin

Lacustrine and palustrine carbonates in the Dinantian of the Derbyshire carbonate platform

Dr Peter Gutteridge, Cambridge Carbonates

Textural evolution in soil carbonates: a review

Prof. Paul Wright & Prof. Adrijan Kosir, University of Cardiff

Carbonate platform evolution & dolomitization of the Jurassic, Essouria–Agadir Basin, Morocco

Dr Cathy Hollis, Dr Aude Duval–Arnould, Prof Jonathan Redfern, Dr Stefan Schroder, and Ms Nawar Al–Sinawi, University of Manchester

A very different Barremian–Aptian lacustrine pre-salt facies association: Biotic self-organization in BMC-33, Outer Basin Campos Basin, Brazil

Dr David Hunt, Equinor

Manchester Geological Association

Indoor Meetings 2021

Wednesday, 13 October 2021 Holiday Geology. Zoom meeting

La Palma

Ken Jacobs

Basque Country

Peter Bennett

North Wales Manganese Mineralisation and mining

Lyn Relph

Saturday, 13 November 2021 Broadhurst Day, a tribute to the Late Tony Adams

See pages 12 and 13 for details.

Saturday, 4 December 2021 Early Hominins. Zoom meeting

Denisovans

Dr Katerina Douka

Neanderthals

Prof. Tom Higham

Saturday, 15 January 2022 Geological Skills

Wednesday, 9 February 2022 AGM and Presidential Lecture

Wednesday, 16 March 2022 Mires, meteors and mass extinctions: what does coal tell us about deep time climates? Dr Rhodri Jerrett

Bring Your Own Reusable Mugs

Would Members please bring a cup to use for tea/coffee when attending lectures, where refreshments are provided. It would be much appreciated. The MGA will be using biodegradable cups when our supply of polystyrene ones runs out, but these do cost more.