# Manchester Geological Association

## President: Niall Clarks MSc

## March 2020

www.mangeolassoc.org.uk

Founded 1925

### Holiday Geology Talks

Whilst I have received a couple of offers for talks, there is plenty of scope for more. So even if you just want to show a few slides and talk for 5 minutes that is fine. It doesn't have to be a long presentation. In fact, the more short talks the merrier! So just let me know on gmicsch@gmail.com.

# Quick Diary

### Outdoor Meetings 2020

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| **Sunday 15 March** | **Apedale** |
| **Sunday 2 August** | **Wirral** |

### Indoor Meetings 2020/21

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| **Tuesday 5 May 2020** | **Joint Meeting with Manchester Geographicals Association** |
| **Wednesday 14 October 2020** | **Holiday Geology** |
| **Saturday 14 November 2020** | **Broadhurst Lectures: Aspects of Volcanology** |
| **Saturday 5 December 2020** | **Who We Are and Where Did We Come From** |
| **Saturday 16 January 2021** | **Update Your Knowledge** |
| **Wednesday 10 February 2021** | **AGM and Presidential Lecture** |

# Who's Who in the MGA

## Officers

**President: Niall Clarke MSc**

Vice-President: Dr Margaret Hartley

General Secretary: Sue Plumb BSc

Membership Secretary: Niall Clarke MSc

Treasurer: Jennifer Rhodes BA

Indoor Meetings Secretary: Jane Michael BSc (Hons)

Field Excursions Secretary: Vacant

Newsletter Editor: Lyn Relph BSc (Hons)

Webmaster: Peter Giles MSc

Other elected members of Council
Prof. Ray Burgess
Nicola Fowler BSc (Hons)
Peter Gavagan BSc (Hons)
Penny Heyworth Mphil
Ken Jacobs

Ex officio members of Council
The Immediate Past President, Manchester Geological Association: Prof. Cathy Hollis

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

**Trip Report:**

# The Geology of Oldknow's Mill and the Goyt Valley round Marple

**Sunday 22 September 2019**

Nine Members and visitors joined our leader Jane Michael on a damp Sunday morning at Roman Lakes, Marple to explore the local geology, industrial archaeology and geomorphology of the Goyt Valley. After outlining the two parts of the trip, Jane explained the regional geological setting. The area is in the Carboniferous, about 318/19Ma, near Namurian/Westphalian boundary. It comprises sequences of sandstones and mudstones/shales/silts with coal seams in certain areas. Structurally it is very complex with many faults. The whole area is covered by layers of glacial deposits laid down over the last 2Ma either by ice sheets or meltwater.

Jane then talked about the industrial history; around 1785/6 Samuel Oldknow, who owned a cotton mill in Stockport, was looking to build a new spinning mill locally. He chose to place it in the Goyt Valley near Marple Bridge (it had all the attributes he was looking for) power, building materials, good (for the late 17th century) transport links (for import and export of goods) without, it is suspected, the high cost of being in Stockport. He needed water for power and manufacturing, stone and clay for building materials, a 'damp' atmosphere for spinning and access to the 'new' canal network to ensure he could get his raw materials (ie cotton bolls) in and his manufactured goods (yarn and also lime for mortar which he produced in Marple itself) out. This area could provide all this and yes he had to go up the hill to the Peak Forest Canal (he was a major shareholder), but that was not too much of a problem when everything else was in his favour.

Fig. 1

Jane told us about Roman Lakes although not Roman they were built specially as a water reservoir. We walked up the river to see the water cut off point (recently renovated) (Fig. 1) and farther on to Roman Bridge to look at the gorge. The river flowed out of this gorge (apparently cut after the last glaciation) through the wide valley where Roman Lakes are and into another meltwater gorge to Marple Bridge. On our return we noticed how the weir under the railway viaduct affected the turbulence and depth of the water; still waters run deep.

We then walked to the recently excavated remains of Oldknow's Mellor Mill. Jane explained that the track was in fact a dam wall and that Samuel Oldknow had diverted the river to the left (going downstream) to make space for the reservoirs for his mill. The valley is covered with thick glacial deposits through which the river has incised.

Fig. 2

We arrived at the mill via a look at Marple Bridge Gorge and trees with ferns growing on their branches indicating a temperate rain forest environment (Fig. 2). The original front area of the Mill has been covered over now the excavations have finished. The builders would have used locally sourced materials and we saw some cobbles used; Jane explained the difference between glacial and river worn stones. We found examples of Shap granite, other granite, sandstones, Skiddaw and Welsh slate and Borrowdale volcanics. The large

flagstones (Fig. 3) of Millstone Grit were local and came from a quarry on Cobden Edge which Oldknow also owned.


Fig. 3

The drop from the bottom of the wheelpits back into the river is 30ft; this gives sufficient head to power the mill and corn mill. A third wheel was added in 1815 lower downstream. There was insufficient head to go straight into the river so a tailrace tunnel was dug under the river and water vented half a mile down the valley near Marple Bridge. Steam power was in use by mid 1850s once there was access to coal.

We returned to Roman Lakes, ate our lunch and then moved to nearby Brabyns Park for the second part of the trip.

We started in the car park on what is the highest river terrace that remains to be identified in this area (Fig. 4). It is down stream of Marple Bridge Gorge. Jane advised us that the river eroded 30m into the bedrock and at some stage it diverted from its pre-glacial course. The Valley is estimated to be 200m wide. We then walked uphill onto a ridge through the Pennine Lower Coal Measures formation of mudstone, siltstone and sandstone. There are no 'named' sandstones.


Fig. 4

We arrived at the Peak Forest Canal a locality that was more historical than geological. By 1800, a canal link was in place between Whaley Bridge/Bugsworth Basin and Marple, and Marple Aqueduct and Manchester. This enabled limestone and lime for mortar or fertiliser to be moved from the quarries in Derbyshire into Manchester, which was growing very quickly. Jane outlined the history of the building, which involved borrowing money from Sir Richard Arkwright to finish it. It was completed in 1805 and the 16 locks raises the canal 62.7m in just over a mile. A tramway was in use whilst it was under construction and a map of this was shown to everyone as there is little trace left on the ground.

The Marple Aqueduct was our next location. Designed by Benjamin Outram, it took seven years to construct, being completed in 1800, and cost the lives of seven men. It rises 100 ft above the River Goyt and is 309ft across. It is situated upstream of Ley Hey Park Gorge. This is an incised valley meander which has eroded into the Carboniferous rocks which are mainly sandstones (part of the Pennine Lower Coal Measures formation), which are harder than the surrounding land. This gorge was also considered a product of post glacial erosion. A former preglacial buried valley has been traced from Redbrow Wood to the Chadkirk/Hydebank Tunnel. The view through the railway viaduct (constructed around 1865) shows a wide open valley where the glacial deposits have been removed. Downstream, through the gorge, the erosion continues as far as Chadkirk where the valley widens again before flowing to Stockport to join the Mersey.

Our route took us back up the canal and then down to the River Goyt. We saw the remains of a meander cut off that is at quite a high level and is now a drainage ditch. Apparently, this is the highest part of the valley floor in the park.


Fig. 5

We stopped by the river where we could see two features. Firstly we could see how far down the river has cut into the underlying alluvium (silt, clay and gravel). Jane advised that when the river level is low (which it wasn't), it is possible to see that it has cut down to bed rock. She told us that the river is apparently cutting across the line of a pre-glacial valley that wasn't very deep. RH Johnson (*Geology of the Manchester Area, GA Guide No 7 1991* P 85) says river has freely migrated across the valley floor over time. He considered current valley topography was reverting to that of the bedrock surface ie having removed the glacial cover. Secondly river terraces can also be seen across the river reflecting lateral movement of the river as well as down-cutting (Fig. 5).


Fig. 6

We moved upstream to the confluence of the rivers Etherow and Goyt. The Etherow rises at Salter's Brook Bridge on the Yorkshire border and the Goyt rises in Goyts Moss above Buxton. Often at a confluence one river has a higher sediment load than other but this is not usually the case here. At Metal Bridge (refurbished for the Millenium, an islet can be seen in the river (Fig. 6). Jane explained about the sediment load that a river can carry; it is based on river speed and what happens when speeds alter. We could see how vegetated the islet is. Eventually it will be permanently attached to left bank.

The nearby river cliff demonstrates how the river has eroded into the bedrock. In the cliff face can be seen relatively thin beds; if we looked carefully. It is unlikely to erode much further as it has, apparently, reached the old valley side wall. The contact between Carboniferous rocks at the bottom and glacial till /drift cannot be seen. It has been proved in Ludworth Colliery (also known as Compstall Colliery), which went under the river and the present flood plain.

Jane explained that there is coal locally though no open pits. Ludworth/Compstall Colliery had four pits, Brow Pit and Marple Bridge Pit being the nearest. They were closed by 1879. The colliery was 1805yds long and approx 300ft deep. Some were mined by pillar and stall. Ludworth Fire Clay Workings were at Mill Brow a mile away. Fireclays (seat earths) were found immediately below a coal seam. They are very fire/heat resistant and used to make firebricks for lining furnaces.

The river terraces on which we were standing are 1.5m thick with more than 3m of gravel below them. Terraces nearest the river show the most recent stages in down-cutting – the lowest is only 200 years old and reflects changes in the river's flow due to the effects of the Industrial Revolution locally. The next one up is probably 10-4000 yrs BP when the land was first deforested.

On our return to the car park along the river, we passed a weir. The river's course is mainly natural but in 19th century the Victorians tried to impound it via the weir and walls. The weir, which was built in the 19th century to assist power production for mills in the valley, is now used for water-flow measurement. On the opposite side of the river, where the woodland ends, the downstream end of an in-filled palaeovalley has been inferred.

On our return to the car park, Jane was thanked for an interesting and informative trip and for keeping the rain at bay (mainly).

# Corals: Mullaghmore on The Burren Ireland

By Jane Michael

# Fred Broadhurst Memorial Field Trip Sunday 27 September 2020

**The Geomorphology of Lyme Park led by Jane Michael**

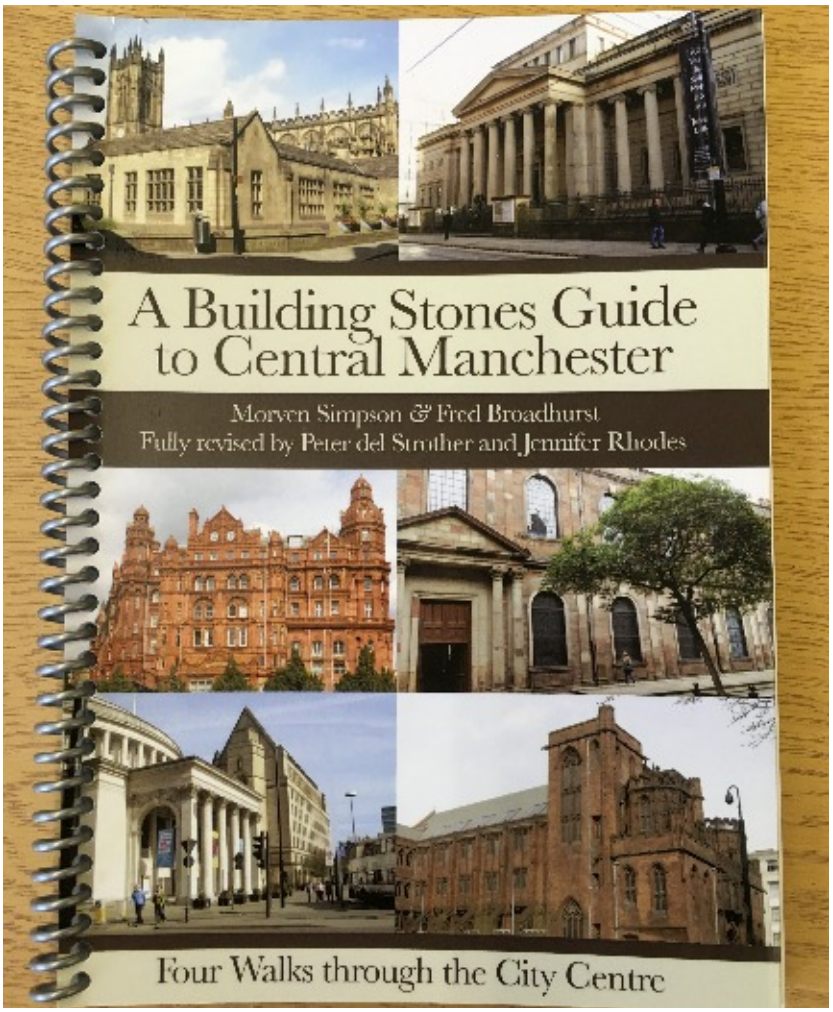
Fred Broadhurst in his *Rocky Rambles in the Peak District* included two walks in the National Trust's Lyme Park. These covered 2/3 of the park. I am now going to visit the remaining third to investigate the geomorphology demonstrated and how the major flooding episode in July/August 2019 affected the landscape.

The morning will be spent following the stream from the car park through Crow Wood and Elmerhurst Wood to the park entrance. We will then ascend Cage Hill to observe the view across the Rad Rock Fault and the Cheshire Plain. We will seek out glacial erratics and what they tell us about the landscape history of the area since the last Ice Age. The walk is approximately 4.5km (3 miles) in length with around 100m (300 ft) of ascent. This will probably take three hours.

For those of a more energetic disposition, after lunch, we will visit the lower levels of the moors on the east side of the park and make our way to Cluse Hay (glacial meltwater channel) and Paddock Cottage for a second view across the Cheshire Plain. We will return to the car park through the woods. This walk is approximately 4.5km (3 miles) with 135m (400m) of ascent. There are fewer stops on this so it will take around 2 hours.

The two parts of the trip can be done separately. The full Itinerary and Risk Assessment will be available from me in due course. For further information, please email or telephone.

Jane Michael
gmicsch@gmail.com




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.

# OTHER SOCIETY EVENTS

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

**Sunday March 15th.** Apedale Colliery/Heritage Centre (https://www.apedale.co.uk/) and geological trip around Apedale Country Park. The morning will involve a tour of part of the mine, specially tailored for Geology groups. Such tours are led by ex-professionals from that mine. We will see the 8ft coal seam with ironstone above and clay below, and a substantial fault. Access to this area is about 600ft down a 1:4 slope.
There is also the Heritage Centre Museum which has a good collection of fossils.

The tour is for 20 people max and will cost £5-£10 per head, depending on total numbers. Places will be allocated on a " first come/ first served basis". If there is a very large demand we could possibly arrange a second tour running in parallel, but would need to do that ASAP.

Therefore can you let barbara0654@live.com know, if you wish to come on the tour and also pay a £5 deposit for the trip, when booking. Preferably by bank transfer to the Geolancs Account: Nat West Bank Sort Code 01-02-14, Acct No: 25310216. Please put your name and Apedale in the Reference. In afternoon, we will be taken on a tour of the Apedale Country Park, led by Dr Ian Stimpson, who is Senior Lecturer in Geophysics at Keele University.

This 5km walk through the Apedale Valley in Staffordshire will discuss the geological resources of the valley, past present and future as well as some of the other geological features of the country park. Mining in North Staffordshire started during Roman times and there are plans to extract geothermal energy for Stoke-on-Trent from the fault-fractured rocks deep below the surface.

**Saturday June 6th** Closehouse mine and the Lunedale fault system-Lesley Collins. Joint excursion with NE Geolsoc**.**

**Force Crag mine** (National Trust) Threlkeld, Peter Del Strother). Date TBA with the National Trust. Current proposed dates are: 29th, 30th June, 13th/14th July

**Saturday August 2nd.** Wirral. This will be led by Dr. Mike Bowman, Honorary Professor of the School of Earth and Environmental sciences, University of Manchester

**Sunday August 23rd.** Ruddle Scout/Cliviger (Peter Del Strother and Brian Jeffrey)

## Yorkshire Geological Society http://www.yorksgeolsoc.org.uk/

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| **30 March** | Deep Geological Disposal of Radioactive Waste: The Role of Geo science. University of Leeds |
| **25 April** | Yorkshire Geology Day 2020 National Coal Mining Museum for England, Wakefield |

## BCGS http://bcgs.info/pub/

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| **20 April** | Silurian Rocks of the Dingle Peninsula |
| **25 April** | Visit to Wren's Nest and the Dudley Museum and Archives. |
| **8 May** | WGCG Residential Field Trip: North Lincolnshire. |
| **16 May** | North-west Herefordshire. |
| **6 June** | Northcot Brick and Blockley, North Cotswolds. |

## Leeds Geological Society http://www.leedsga.org.uk/

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| **19 March** | Faunas, Floras and Sedimentary Environments: Yorkshire's own Jurassic World - by the Sea. Speaker: Dr Chris Hill, Nanjing Institute of Geology & Palaeontology |
| **30 April** | The North-West Highlands Geopark. Speaker: Lesley Collins, Craven & Pendle Geological Society |

## OUGS North West Branch https://ougs.org/northwest/

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| **April 4th** | Alderley Edge and Wood Mine. Leader: Peter Bennet & Anton Petho |
| **May 6th–10th** | Exploration of The Jurassic Coast, Dorset. Leader: Alan Holiday and Jeremy Cranmer |
| **June 14th** | Rochdale |
| **Aug 7th –9th** | OUGS Symposium Lancaster |

## NSGGA https://nsgga.org/

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| **July 4** | Peak District |
| **September 12 or 13** | GA Cement works main quarry, Bellman cement |

## http://ampyx.org.uk/cdgc/rhaglen.html

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| **March 22nd** | Corris Slate Quarries underground exploration Leader: Mark Waite, Corris Mine Explorers |
| **March 25th** | Hot Stuff: Geothermal Insights from the Atacama Desert (and a basement in Liverpool). Speaker: Steve Beynon |
| **March 29th** | Coed Maesnewyddion Quarry. Leader: Richard Birch. Caen-y-Coed forestry walk, Nr. Betws-y-Coed |

# Manchester Geological Association

## Outdoor Meetings

**Sunday 2nd August 2020** **Wirral**

Leader: Dr. Mike Bowman, Honorary Professor, School of Earth & Environmental Sciences, University of Manchester

**Sunday 27 September 2020** **Fred Broadhurst Memorial Field Trip**

The Geomorphology of Lyme Park led by Jane Michael

## Indoor Meetings 2020/21

**Tuesday 5 May 2020** **Join Meeting with Manchester Geographicals Association** (start 6.30pm)

The 2018 Sulawesi Earthquake and the Hazard Management in Indonesia.
Speaker: Professor David Petley, Sheffield University
Venue: Manchester Metropolitan University, Brooks Building.

**Wednesday 14 October 2020** **Holiday Geology**
Confirmed Speakers: Ken Jacobs
Lyn Relph
Jane Michael (prov)

**Saturday 14 November 2020** **Broadhurst Lectures: Aspects of Volcanology**
Confirmed Speakers: Prof Mike Burton
Dr Margaret Hartley (prov)

**Saturday 5 December 2020** **Who We Are and Where Did We Come From**
Confirmed speakers: Prof Tom Higham
Dr Katerina Douka

**Saturday 16 January 2021** **Update Your Knowledge**
Confirmed Speakers: Prof Peter Burgess

**Wednesday 10 February 2021** **AGM and Presidential Lecture**

### 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.