

Manchester Geological Association

Founded 1925

President: Jane Michael

September 2016

www.mangeolassoc.org.uk

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Broadhurst Lectures Saturday 19th November

This year the Broadhurst Lectures are being held in a new (to us) venue: the Cordingley Theatre, Humanities Bridgeford Street Building. This is very close to The Place and the Williamson as shown on the map on page 10. It can seat around 200 so there is no problem with numbers.

There are currently 5 confirmed and one unconfirmed speaker (late change) covering the topic of The Climate History of the Earth:

Catherine Rose (Trinity College Dublin)
Richard Twitchett (National History Museum)
Alan Haywood (Leeds)
Mike Hambrey (Aberystwth)
Dave Matthey (Royal Holloway, University of London)

Booking is essential and the booking form is enclosed with the newsletter. Anyone can attend and the cost is £10 per person to cover the food (a finger buffet lunch) so please do tell (and bring) your friends and relatives.

Bookings should be sent to Niall Clark (whose address is on the booking form on page 11) by Thursday 10 November (we have to advise numbers on Friday 11 November). Whilst you can pay by direct credit to the MGA account, a booking form **MUST** also be sent.

Any enquiries should be sent to Jane at indoors@mangeolassoc.org.uk.

I look forward to seeing as many of you as possible at what will be an excellent set of lectures.
Jane Michael: President

Who's Who in the MGA Officers

President: Jane Michael BSc (Hons)

Vice-President: Dr Cathy Hollis

General Secretary: Sue Plumb BSc

Membership Secretary: Vacant

Treasurer: Niall Clarke MSc

Indoor Meetings Secretary: Vacant

Field Excursions Secretary: Penny Heyworth MPhil

Newsletter Editor: Lyn Relph BSc (Hons)

Webmaster: Peter Giles MSc

Other elected members of Council

Nicola Fowler BSc (Hons)

Jennifer Rhodes

Ex officio members of Council

The Immediate Past President, Manchester Geological Association: Ray Burgess PhD

RIGS Representative: Chris Arkwright PhD

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: 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

The Upper Goyt and Shining Tor Trip Report

by Jane Michael MGA President

On a pleasant morning, but with rain forecast, I joined other members of the MGA for the field trip led by Paul Aplin to look at the geology of the Goyt Valley and Shining Tor area. We were also to investigate the dominance of the Goyt syncline in controlling the scenery and to see evidence of former coal mining at Goyt's Moss.



Fig. 1 Paul explaining the basis of the trip.

Paul introduced our route for the day (Fig. 1), on this south west margin of the Dark Peak, which lies between the Red Rock Fault (running north/south near Macclesfield) and the Carboniferous Limestones around Buxton. He explained that the area is comprised of a dissected plateau (which became more obvious later in the day) with the highest point being Shining Tor. The rocks within this late-Namurian/early-Westphalian area (Fig. 2) are successions of weak shales and resistant sandstones. These were greatly affected by faults, anticlines and synclines (Fig. 3) that were generally aligned north/south. Within them are sub-parallel folds and faults; some of which we were to observe later.

Paul explained that, generally, anticlines formed valleys because the rocks under stress from folding tended to be weaker and 'crack' more easily thus enabling erosion. However, the Goyt Syncline was the exception: a syncline forming a valley – unlike the valley containing Todbrook Reservoir which followed the Todbrook Anticline. The Upper Goyt Valley is 14km long on an axis from Derbyshire Bridge to New Mills.

We set off to the first locality 'pursued' by many cyclists who were taking part in a 100 mile cycle round Derbyshire: pre-1987 bikes (and bikers!). All very polite: both sides taking care not to get in each other's way on the narrow road! Paul explained, as we looked down at the stream, that we would be climbing up the rock sequence during the day. The ribs in the stream are the Woodhead Hill Rock, dipping at 10° East and representing the western limb of the Goyt Syncline. The core of the syncline is, apparently, in the car park! A little farther back towards the car park there is a very

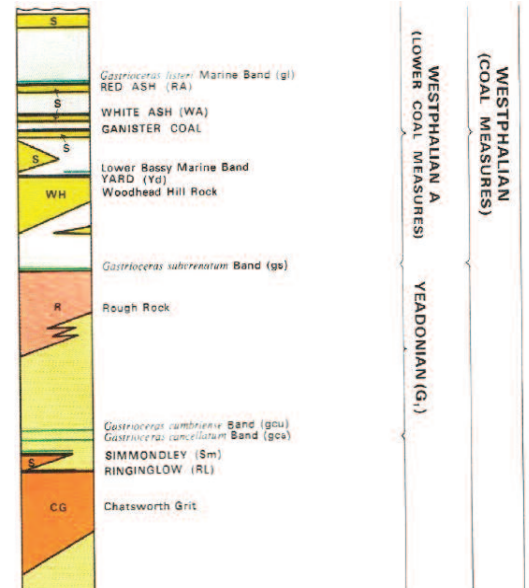


Fig. 2 Stratigraphic Column

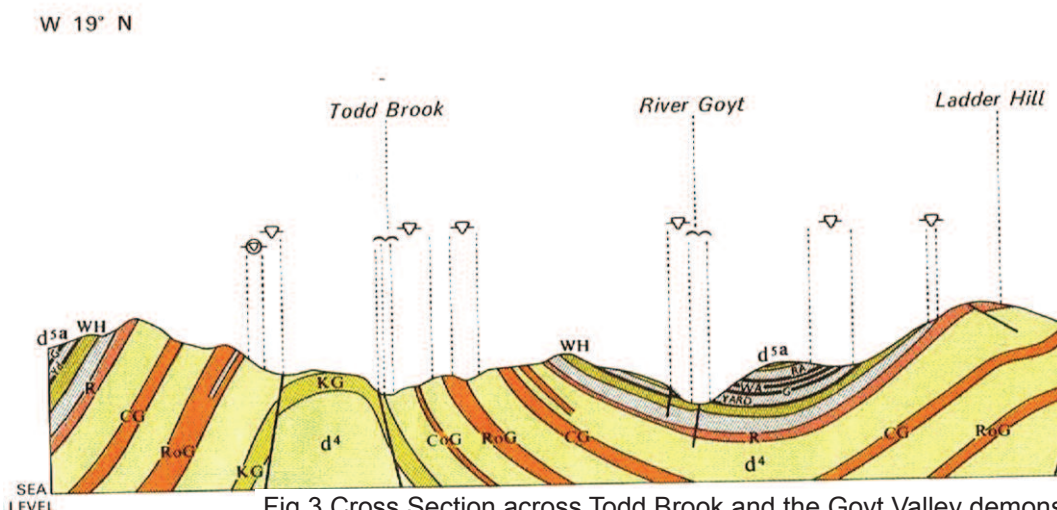


Fig.3 Cross Section across Todd Brook and the Goyt Valley demonstrating anticline/syncline basis for the valleys.

fragmented rock face with lots of very thin shaley beds; coal can be found at the base (river level). Paul explained that the Goyts Moss Coalfield is an outlier sitting on the Woodhead Hill Rock. The coal is very poor quality, but used at Grinlow for fuelling the lime kilns from 1600s onwards.



Fig. 4 Cliff section showing the fault.

We followed the road down the Goyt valley back towards the car park (again avoiding the cyclists!) until we arrived at a fault in the valley side. The rock was generally very dark, but there were patches of a reddish colour (Fig. 4). This colouring is from siderite – an iron carbonate.

Continuing down the road brought us to Derbyshire Bridge. We left the road to visit a cliff area where, at stream level, organic material can be seen. Slickensides were found on some loose pieces of rock but not *in situ*. Occasional fossil plant roots were also found.

We also visited a drainage sough (Fig. 5) – the drain of workings from the Yard Coal Seam (Fig. 6).

Apparently 568000 litres of water per day were draining into the Goyt!

Paul explained that the local coal workings were widespread and that a couple of other soughs were built after the one we could see.

Also visible (though not easily due to vegetation) was a spring line – where the Woodhead Hill Rock and the underlying shales meet. The Woodhead Hill Rock contains quartz and angular orthofeldspars. Holes can be seen where active weathering is taking place.

We continued to walk down the succession before turning off to visit Goytsclough Quarry. Had we continued down the road, we would have reached the Rough Rock – the top of the Namurian. From our path to the Quarry we got a good view of the series of dip and scarp slopes (Fig. 7) that characterise the Goyt Syncline. Generally the Rough Rock forms the slopes – dipping either west or east from the syncline axis.



Fig. 5 Drainage sough.

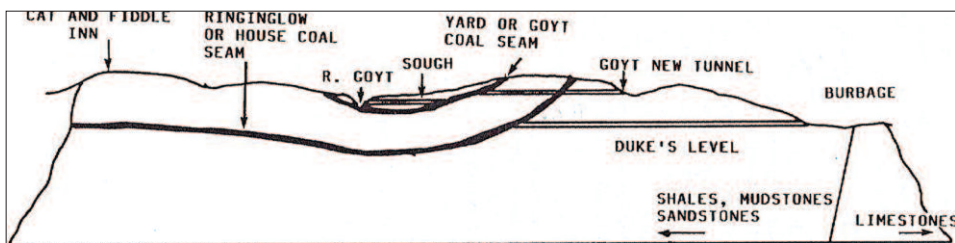


Fig. 1. Cross section of strata from 'Cat and Fiddle' to Burbage showing approximate position of coal seams and major underground features.

KEY

Tunnel	Approximate Date of Construction	Height Above Sea Level (ft.)	Purpose
Duke's Level	1770	1170	Access, canal transport, drainage
Goyt New Tunnel	1812	1360	Access, rail transport
Sough	?	1285	Drainage

No coal was mined below the level of the Duke's Level

Fig. 6 Mining Cross Section

Returning to the road we continued downhill until we entered the quarry. The stone was initially used locally for roads, but later expansion resulted in deliveries to London for building. It was originally owned by Pickfords (of later removals fame). The stone was loaded onto pack horses for transport; 50 horses in a train!

The quarry is in the Rough Rock which is 30m thick and composed of coarse arkose (mainly quartz with some feldspar) sandstone; it is laterally very extensive over the north of England. Its source was from the north and north east – Scandinavia.



Fig. 7 Scarp and Dip Slopes of the Goyt Syncline (looking roughly north).

We saw cross bedding (Fig. 8) that formed in a braided river environment and some planar bedding. Sandbanks formed in the river – foresets are inclined down current and the beds are truncated by the one above. Some straight crested ripples were also seen. We could identify a line of concretions, nucleated round fossil plant material, held together by calcite and ferroan calcite. The source of the calcite was possibly the shells of non-marine bivalves.



Fig. 8 Cross bedding in Goyt's Quarry.

Our journey now turned away from the River Goyt and uphill. After a brief stop on the edge of some woods, we walked up Stakeside (Rough Rock) where we could see how the dip slopes face each other across the syncline. Unfortunately visibility was rather hazy and I did not get a good photograph of the slopes heading off into the distance. What we could see was the plateau dissected by rivers, but with summits fairly level (Fig. 9).

The resistant sandstones form the summits and the valleys are eroded into the shales.



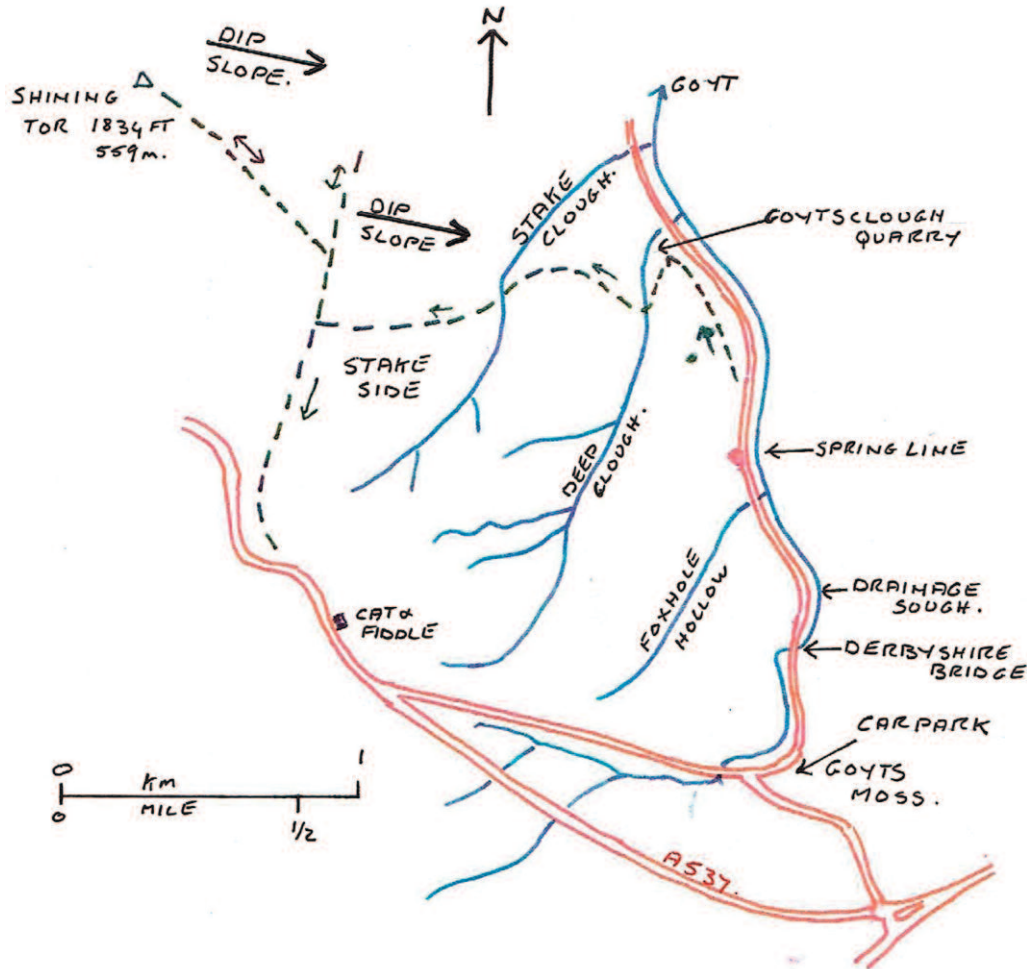
Fig. 9 Dissected Plateau.

The summits we could see were: Cat and Fiddle Stakeside and Shining Tor they are formed of different sandstones: Woodhead Hill Rock, Rough Rock and Chatsworth Grit respectively. This is known as stepped topography.

After a short descent, we climbed up the Shining Tor, the highest point in Cheshire at 559m. Whilst the far distant view was again rather hazy, we could see the near distance clearly.

Paul explained that the west facing scarp of the Chatsworth Grit formed a ridge 5km long to Windgather Rocks. The Todbrook Valley follows along the crest of an anticline (the Todbrook Anticline). The core of the anticline has been eroded – possibly due to the stresses caused by the upward 'bend' of the anticline with the scarp facing east and the dip facing west. The Todbrook Valley may have been at least partially glaciated.

We could see the Cheshire Plain below and the Red Rock Fault in front of us. We see its manifestation as a fault line scar rather than a fault plane. Later movement had lifted the beds up. Shutlingsloe, which is capped by Chatsworth Grit, stood out clearly with its unusual topography. This is an example of an outlier that has suffered extensive erosion. Further away Sutton Common (with its mast) and Bosley Minn, both anticlines, formed unusually upstanding 'crag's'. Their cores are formed of resistant protoquartzite.



SKETCH MAP OF THE GOAT'S MOSS / SHINNING TOR AREA. (BASED ON ROCKY RAMBLES PAGE 108)

Fig. 10 Map showing the route we followed.

Turning away from the view, we retraced our steps to the top of Stakeside and then headed for the road, passing the Cat & Fiddle (regrettably closed!), at which point it started to rain, before returning to the car park (Fig. 10). Thanks were expressed to Paul by everyone on the trip. It had been fascinating – especially to learn about the coal mining that had taken place. The moors above Buxton and Macclesfield are not the place I would want to be miner!!

OTHER SOCIETIES' EVENTS

Black Country Geological Society

Monday 19 September (Indoor meeting): 'Iron Ore Mining in the Pilbara; a focus on Rio Tinto Iron Ore.' Speaker: Rachel Cornah. Rachel will include other projects in which she was involved with reference to other mining companies and operations (Pilbara is in the north of Western Australia).

Saturday 1 October (Geoconservation Day): Saltwells Nature Reserve, Brewin's Cutting Canal Section. Meet at the Nature Reserve car park (GR: SJ 934868) on Saltwells Lane for 10.00. Wear old work clothes, waterproofs and stout footwear or wellies. Please bring gloves and garden tools; loppers, secateurs, forks and spades if you have them. Either bring packed lunch or hot food can be acquired from the Saltwells Inn adjacent to the car park. Finish at 14.30.

Monday 17 October (Indoor meeting): Update on the Black Country Global Geopark. Speaker: Graham Worton.

Saturday 5 November (Geoconservation Day): Sedgley Beacon. Meet at the Sedgley Beacon car park entrance (GR: SO 923943, off Beacon Lane for 10.00. Wear old work clothes, waterproofs and stout footwear. Please bring gloves and garden tools; loppers, secateurs, forks and spades if you have them. Also bring lunch. Finish at 14.30.

Monday 14 November (Indoor meeting): Optical Mineralogy. Speaker: Frank Wells.

Saturday 3 December (Geoconservation Day): Portway Hill, Rowley. Meet at St. Brades Close at 10.30. Directions: from Birmingham New Road (A4123) turn left onto Tower Road if coming from Birmingham, right if coming from Wolverhampton. Just after Bury Hill park, turn left onto St. Brades Close. Wear old work clothes, waterproofs and stout footwear. Please bring gloves and spades, brushes and trowels in order to excavate and expose more of the dolerite. Bring packed lunch. Finish at 14.30.

Monday 12 December (Indoor meeting): Members' Evening.

Cumberland Geological Society www.cumberland-geol-soc.org.uk

WINTER LECTURE PROGRAMME 2016-17 All meetings begin at 7.30 pm

21st September: Dr. Tristan Pottas: The York Potash Project

The Hall, Queen Elizabeth Grammar School, Ullswater Road, Penrith CA11 7EG

12th October: Dr. Simon Ferley: Storm Desmond and A591: Damage and Repair

Friends' Meeting House, Elliot Park, Keswick. CA12 5NZ

9th November: Prof. Mike Hambrey: Glaciers and Climate Change, and their relevance to Cumbria.

Braithwaite Institute on A66 (GR: NY233241)

14th December: Members' Evening. Friends' Meeting House, Elliot Park, Keswick. CA12 5NZ

2017

25th January: Dr. Dave Millwood: Graphite in Borrowdale

Tullie House Museum & Art Gallery, Castle Street, Carlisle CA3 8TP

22nd February: Joel Gill: Geology and International Development: Interdisciplinary Work across Three Continents - The role of geology in fighting global poverty and supporting sustainable development.

Friends' Meeting House, Kirkgate, Cockermouth, CA14 9PH

22nd March: AGM & President's talk: Relations on the Celtic Fringe.

Friends' Meeting House, Kirkgate, Cockermouth, CA14 9PH

GeoLancashire

Winter Programme 2016 -2017 All meetings will take place at Hanson UK's Ribblesdale cement works at Clitheroe, BB7 4AQ, in the training building, accessed through the gate beside the level crossing. Meetings start at 7.15pm. Visitors are always welcome.

Friday 7 October. Some Lancashire Local Geodiversity Sites

11 November. Gold Rush: Jim Richards

25 November. Under the skin of the Lizard: Lesley Collins

9 December. Opencast coal working in the Lancashire coalfield: Alan Davies

2017

27 January. AGM and A geologist at large in Morocco/Majorca (to be confirmed) Peter del Strother

10 February. The influence of geology and water supply on industrial development – Whalley, Read, Altham: Brian Jeffery

10 March. The geology of the Indian Himalayas: Dr John Nudds

7 April. Building stones: Archaean to Triassic (linked with a field trip) Jennifer Rhodes and Peter del Strother

OUGS North West

<http://ougs.org/events/index.php?branchcode=nwe>

Oct 09, 2016 Rocks and Building Stones around Liverpool City Centre - DIY

Exploring exposed rocks and building stones around Liverpool city centre, including both cathedrals and the area around St Georges Hall (William Brown St) and the Met Quarter

Nov 06, 2016

Winter Lectures and Social afternoon at Heald Green, near Cheadle, S Manchester.

An afternoon of geological talks, with a break for tea/coffee and cakes and perusing the branch library. FREE!

For full event details and contact info: <http://ougs.org/events/index.php?branchcode=nwe>

NWGA

Contact/Find: <http://www.ampyx.org.uk/cdgc/rhaglen.html#agm15>

Leeds Geological Association

<http://www.leedsga.org.uk/>

13th Oct. Imaging Life on Earth. Prof Phil Manning Manchester University

10th Nov. 35 years on the road with Shell in Russia, the Far East and India. Mr Nick Shaw. Shell

08th Dec. AGM and Conversazione – Short Talks and Displays by Members

North Staffordshire Group of the Geologists' Association

<http://www.esci.keele.ac.uk/nsgga/>

Thursday 13th October

'Landslides and the work of the British Geological Survey'.

Dr Helen Reeves / Dr Vanessa Banks (British Geological Survey)

Thursday 10th November. Wolverson Cope Lecture

'Diversity's Big Bang: Early Palaeozoic radiations and the history of life'

Professor David Harper (Durham University)

Either Thursday 1 December or 8 December.

'Christmas Social'

2017

Thursday 26th January. 'Medical Geology' (exact title to be announced)

Dr Mark Cave (British Geological Survey)

Thursday 9th February. 'Geological Mapping' (exact title to be announced)

Leanne Hughes (BGS and Vice-President of the Geologists' Association)

Thursday 9th March at 19:00 AGM & 'Geoengineering'

Dr Ian Stimpson (Chair's Address)

Manchester Branch of the Geographical Association Meeting

The Martin Degg Lecture, Tuesday 22nd November 2016

The GA is holding the following meeting and would welcome any MGA members who wish to attend. The lecture is entitled: **Tectonic Hazards in the Land of the Inca: Managing earthquake and volcanic risk in southern Peru and northern Chile.**

The countries that lie along the Pacific rim of South America are exposed to some of the highest levels of earthquake, volcanic and tsunami hazards in the world yet tend to be under-represented in A Level texts and course materials. This talk explores distinctive aspects of tectonic hazard and risk in the region, including historical (1530s) influences of colonial and post colonial development, in creating current conditions of vulnerability to hazard. The talk concludes by examining recent success stories, in tsunami and earthquake disaster risk management, from the region and shows how aspects of pre-colonial indigenous (e.g. Inca) expertise can be harnessed to reduce present-day risk.

The lecture will be given by Dr M.R.Degg, Head of Department of Geography and International Development, The University of Chester

The venue will be The Birley Building, Manchester Metropolitan University, Oxford Road, Manchester (actual room to be confirmed nearer the time), start time 5.15pm.

Further information from Pete Ware warep@stpetershigh.com

DATE CHANGE

The date for the joint meeting with the Geographicals has changed to Wednesday 8 March from 1 March as Iain Stewart could no longer make 1 March

Eric Foster

Members may remember Eric Foster, a MGA member for many years who sadly died in July aged 93. He was for many years the auditor of the MGA accounts. He was also a long-standing member and former President of the Lancashire and Cheshire Antiquarian Society.

The North West Highlands Geopark has a few places left on their Autumn Geotour.

Full details of the tour and information on how to book can be found here:

<http://www.nwhgeopark.com/geotours-2016/>

Note that the MGA does not endorse any outside events. This listing is for Members information only.

The Geo Supplies website is a source of geology related things, including a newsletter, online courses, field trips and equipment. For more information go to:

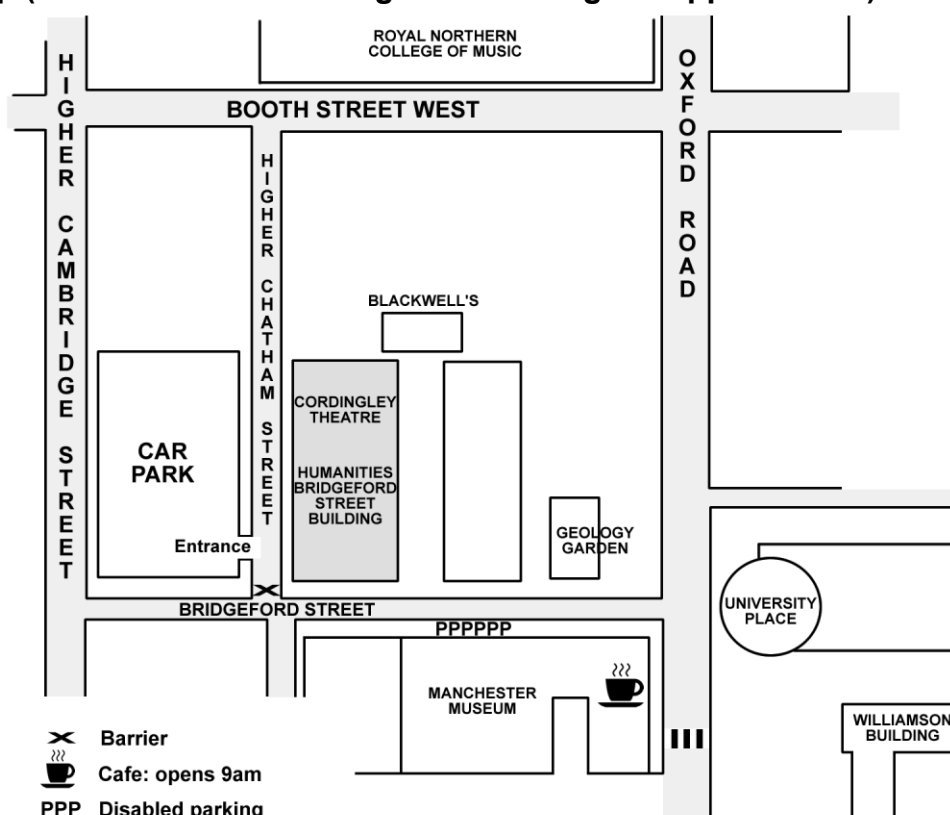
<http://www.geosupplies.co.uk/>

Note that the MGA does not endorse or promote commercial enterprises, but sometimes lists items that may be of interest to Members.

The Cordingley Theatre, Humanities Bridgeford Street Building

Sketch Map and Directions

Sketch Map (Scale: Oxford Rd to Higher Cambridge St approx 250m)



Parking:

There is a Pay and Display Car Park immediately behind the Building (see map). This is accessed from Booth Street West along Higher Chatham Street.

On Saturdays this costs £2 (cash only) for the whole day.

There are 6 or 7 Disabled Bays immediately next to the Building (see map) which are also accessed from Higher Chatham Street (please advise if you require this so that we can arrange access).

Directions to Car Park:

Please note that at the present time, September 2016, Oxford Road is closed to traffic from Booth Street (East and West) (City end) to approximately Grafton Street (near Manchester Hospitals). Use either

1. Oxford Road B5177 from the City Centre and turn right at the Royal Northern College of Music into Booth Street West and then left into Higher Chatham Street,
2. Higher Cambridge Street from Mancunian Way A57M and then left into Booth Street West and right into Higher Chatham Street
3. Princess Road A5103 and Stretford Road A5067 from M60 North to join Higher Cambridge Street and then turn left into Booth Street West and as 2 above.
4. Upper Brook Street A34 to join Booth Street East from Didsbury and South Manchester. Then cross Oxford Road at the Royal Northern College of Music into Booth Street West and left into Higher Chatham Street.
5. Stockport Road A6 from M60 South, left into Plymouth Grove, left onto Upper Brook Street and then as 4 above.
6. For all other directions, you will need to join either the Mancunian Way, Oxford Road or A34 and follow 1 – 5 above.

Google Maps and the like will show more detail.

Manchester Geological Association

The Broadhurst Lectures Saturday 19 November 2016

Start Time: 10am for 10.30am
Finish Time: by 5pm

Venue: Cordingley Theatre
Humanities Bridgeford Street
Manchester M15

Booking Form

BLOCK CAPITALS PLEASE

First Name		Surname	
Address			
Post Code			
Email			
Telephone			

Please give below the names of people attending additional to the above:

Name 1..... Name 2.....

Name 3..... Name 4.....

The cost of attending the lectures is £10 per person to cover all refreshments (ie lunch, tea, coffee)

Please make cheques payable to Manchester Geological Association
Or make a bank transfer with the following details:

Bank	Nat West
Sort Code	01/03/90
Account No	91055733
Reference	Your name: this is VERY IMPORTANT

Cheque for £..... enclosed/direct bank transfer made * please delete as appropriate

Any dietary requirements (eg allergies, intolerances etc)

Please send the completed form (even if you have paid by direct credit) plus your cheque to: Niall Clarke, 64 Yorkdale, Clarksfield, OLDHAM OL4 3AR

MGA EVENTS

Wednesday 12 October 2016 at 19:00

The geology of the Indian Himalayas: a view from our new Manchester student fieldcourse - Dr John Nudds, University of Manchester.

Saturday 19 November 2016 at 10:00 - The Broadhurst Lectures: The Climate History of the Earth
The venue for this meeting only is the Cordingley Theatre, Humanities Bridgeford Street Building, University of Manchester (directions and map in Word or PDF). This is a venue new to the MGA. It is a tiered lecture theatre, seating 244, and is very close to The Place and the Williamson Building. All-day parking is available for £2 in a multi-storey car park immediately adjacent to the Humanities Bridgeford Street Building.

Registration commences at 10:00, with the first lecture at 10:30.

Confirmed speakers are:

Catherine Rose (Trinity College Dublin)
Richard Twitchett (National History Museum)
Alan Haywood (University of Leeds)
Michael Hambrey (University of Aberystwyth)
Dave Matthey (Royal Holloway, University of London)
There is one unconfirmed speaker.

Booking is essential (booking form in Word or PDF and on page 11 of this newsletter). All are welcome and the cost is £10 per person to cover the food (a finger buffet lunch).

Booking forms must reach Niall Clark at the address on the booking form by Thursday November 10. Whilst you can pay by direct credit to the MGA account, a booking form must also be sent.

Any enquiries should be sent to Jane Michael

Saturday 10 December 2016 at 13:30. Recent Discoveries in British Palaeontology
Four speakers: Cindy Howells (National Museum Wales), Dean Lomax (University of Manchester), Dr Russell Garwood (University of Manchester) and Dr Jenny Clack (TW:eed project)

Saturday 21 January 2017 at 13:30. Rare Earth Elements: vital commodities
Three speakers, including Prof Frances Wall (University of Exeter)

Wednesday 8 February 2017 at 19:00
Annual General Meeting and Presidential Address

Wednesday 8 March 2017 - Joint meeting with Manchester Geographical Association
Faulty Communications: Seismic Hazard in Istanbul - Prof Iain Stewart, Plymouth University

Venue and time to be confirmed

Wednesday 29 March 2017 at 19:00
Regionally Important Geological and Geomorphological Sites: assessment criteria and how they are selected - Dr Christine Arkwright

A field trip to a Greater Manchester RIGS will follow this lecture: date, time and location to be confirmed.

Unless otherwise stated, all lectures are in the Williamson Lecture Theatre, Manchester University, Oxford Road, Manchester.