

# Manchester Geological Association

## Newsletter ~ June 2010



President : Tony Adams PhD

[www.mangeolassoc.org.uk](http://www.mangeolassoc.org.uk)

### Saturday 17 July Jumbles Trip cancelled: new trip to Park Bridge, Ashton-under-Lyne

Unfortunately it has been necessary to call off the trip to Jumbles Reservoir as the leader has dropped out. However, Council Member Chantal Johnson has offered to lead a half day trip to look at the Carboniferous at Park Bridge, Ashton-under-Lyne.

For further information, please contact Jane Michael on 07017 434598 or [outdoors@mangeolassoc.org.uk](mailto:outdoors@mangeolassoc.org.uk)

Dear Member,

As you can see from above, the trip on 17th July has had to be changed, however if you've never been to Park Bridge... do go along.. It's an old industrial site with a lot of Industrial Archaeology as well as some super Carboniferous geology ~ a fascinating visit.

Also in July there's our Styal Day... the MGA has a stand at Quarry Bank Mill and Fred Owen and Peter Loader are leading trips round the Secret Garden... again, if you've not already seen the stunning Triassic Geology there, do take this chance to go and see it. (see ad overleaf)

Other field visits this summer are itemised on page 7. For all our trips, please book in with Jane Michael beforehand.

Jim Spencer has already sorted out a great programme of lectures for next winter, the dates are on page 7, lecture notes and more details will be in the September newsletter.

I'm enjoying this summer's geology.. I do hope that you are!

Best wishes to all

*Mary Howie* MGA newsletter editor

#### Quick Diary 2010 ~

##### Remaining Field Trips

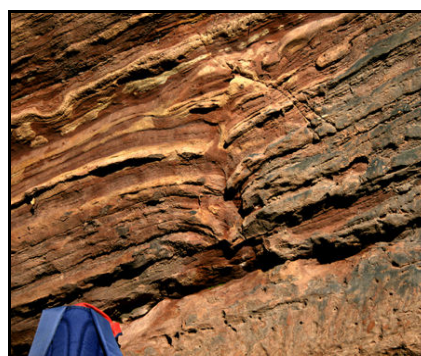
Sun	4 July	MGA Open day at Styal
Sat	17 July	Park Bridge with Chantal Johnson
Sat	14 Aug	Goodluck Lead mine, Matlock ~ Paul Chandler
Sat	4 Sept	Dovedale ~ The Fred Broadhurst Memorial Walk ~ Jane Michael
Sun	17 Oct	Farndon ~ Cynthia Burek
<b>Autumn Lectures</b>		
Wed	13 Oct	- Meteorites
Sat	13 Nov	- The Broadhurst Lectures: Jurassic Seas, Jurassic Skies
Sat	11 Dec	- The Quaternary of the North West

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## Styal Desert? A special MGA day at Quarry Bank Mill, Sunday 04 July

We have teamed up again with the National Trust at Quarry Bank Mill, Styal Country Park, for another day of geological fun, frolics and fossils on Sunday 04 July from 11.00 am to 4.00 pm. The theme for the day remains the Styal Desert?, reflecting the arid, fluvial setting which the underlying geology tells us existed where the Park is now located. but combining it with its place in the Rock Cycle. There will be a MGA gazebo in the main yard, furnished with appropriate displays of the local geology, activities to interest youngsters and lots of other things to promote geological interest for the public.



Dewatering structures in the secret garden

Central to the day is a series of four short walks, being lead by Pete Loader and myself, around the newly renovated Secret Garden and a section of my Styal Country Park geology trail along the River Bollin. The Secret Garden has been further developed and improved since last year. The walks, lasting about an hour, have easy access and are suitable for accompanied children. The NT will charge £3 for adults (children free) and will take bookings in advance to Jayne Gudgeon on tel: 01625 445845. For safety and access reasons a maximum of 20 persons/walk will be allowed.

Put the date in your diary now and tell all your friends and relations about it – it's just before the school holidays. It will be a great family day out. Please help us make the day another huge success. Our new members will find it especially interesting and a good opportunity to meet other members.

I look forward to seeing you there. Thanks very much.

Fred Owen 15 June 2010

### **\*IMPORTANT NOTICE: MGA INSURANCE\***

Each person attending a field meeting does so on the understanding that he/she attends at his/her own risk. The MGA has Public Liability Insurance cover (including member to member cover), for field and indoor meetings and an element of Personal Accident cover.

However, members should always ensure that they have Personal Liability cover (normally part of the standard householder's insurance policy - please check your policy) and comprehensive Personal Accident cover. These are *\*/your/\** responsibility. Overseas trips are not covered.

The next newsletter will be in September. Copy to me by end of **August** please.  
Mary Howie - [newsletter@mangeolassoc.org.uk](mailto:newsletter@mangeolassoc.org.uk) or Snail Mail to Kinder View,  
118 Glossop Road, Marple Bridge, Stockport SK6 5EL. Tel: 0161 427 2965

Views expressed in the Newsletter are not necessarily those of the Association or its Council.

## Exploring the Geodiversity, Biodiversity and Cultural Highlights of Inner City Salford

Saturday, 17<sup>th</sup> April 2010. Leader Dr. Tony Adams

On a beautiful sunny afternoon, a group of ten assembled in Lower Broughton Road. Salford. Most of us had arrived on foot or by the excellent GM public transport system. Tony explained that we were on the northern edge of the Cheshire Basin, on rocks of the Permo-Triassic (295-200 ma) that are cut by north-west trending faults of the Carboniferous Coal Measures, and dip at a slight angle to the south and south west. During the Quaternary they were covered with a thick and extensive 'blanket' of glacial and glaciofluvial deposits that provide an economic resource in the region.

Walking a short distance up Lower Broughton Road Tony pointed out a row of Arts and Crafts Movement houses built in 1906 for teachers at Manchester Grammar School, and further on the training ground of Manchester United Football Club. On the right, in Priory Grove, is the site of the home of William Crabtree (1610-1644), a mathematician and close observer of the planets, especially Venus, Jupiter, and Saturn. His aim was to refine Kepler's predictions of planetary motion after the lost chance to view the transit of Venus in 1619. Crabtree corresponded with Jeremiah Horrocks (1619-1641) a mathematician and amateur astronomer of Toxteth, and using the Rudolphine Tables the transit of Venus was predicted for 24 November 1639. With Horrocks in Bretherton, near Preston, and Crabtree in Broughton, the successful transit of Venus across the setting sun was recorded by them both. The transit of Venus is a rare event, having most recently occurred on 6 June 2010. The next occasion will be in 2117.



The Cliff landslide - note the precarious position of the houses ~ photo Marjorie Mosley

At the top of the hill is The Cliff, composed of glacial sand and gravel on top of boulder clay, part of a ridge of glaciofluvial outwash sands extending from Swinton through to Pendlebury and across the Irwell valley to Prestwich and Cheetham Hill. At The Cliff the River Irwell, meandering against the ridge between Lower Kersal and Higher Broughton, has undercut a steep slope in these sands and gravels resulting in an unstable area of landslips and erosion. Evidence of this can be seen from the precarious position of the remaining tramlines, some sections of which, along with the road and pavement have slipped downwards towards the river. This instability resulted in the tramway being diverted in 1927.

More landslips are to be expected, especially after heavy rain, as water moving down through the sand to the impervious clay, causes slip and movement sideways. Interestingly, the edge of the remaining pavement

still has its metal studded safety kerb to protect the stone from wear and tear by horses' hooves.

Descending The Cliff into the River Irwell, we saw gravel spits and undercutting of the banks - the result of rapid erosion by the river. Displaced duckboards, arising from the slippage of the boulder clay, are another indication of The Cliff's instability. Because of improved water quality, the river is allegedly home to otters, mink, and fish eating ducks. To one side of the path, at the point of the sand-clay contact is an ochre stained boggy area. Using a pH meter Tony demonstrated that the ochre mud has pH 5.9. He explained that this is caused by the oxidation of pyrite in the sediment to form sulphuric acid and ferric oxide, which then reacts to form the ochre -ferric hydroxide. The pyrite may have been carried to the site in glacial till and oxidised locally, or the ochre may have formed in drainage water from nearby coalmines. (Thank you to Fred Owen for his input here)



River Irwell and an imbricated pebble bank  
photo Fred Owen

In St. Paul's Cemetery, Broughton is the granite headstone of Alexander T. Cussons (14. 7. 1875 – 20.8.1951) the soap magnate, known best for his Imperial Leather soap. He established the very first Cussons' soap factory in Kersal Vale, only recently demolished. The Cemetery is also the resting place of Robert A. Smith (15.2.1817 – 12.5.1884) famous for his research on air pollution carried out in 1852 in Manchester, in the course of which he discovered and coined the term *acid rain*.



Adjacent to the cemetery is Kersal Moor, a Site of Biological Importance, with heather and deciduous trees, mostly oaks, growing on Quarternary fluvial-glacial sediments of gravels. Looking north west towards Swinton and Pendlebury Tony pointed out the aforementioned ridge of glaciofluvial outwash sands extending across the valley to Prestwich and Cheetham Hill. In the past The Moor was used for military manoeuvres and public meetings – famously the Great Chartist Meeting of 1838, which prompted Freidrich Engels to dub it “the Mons Sacre of Manchester.” The Moor was once the habitat of the now extinct Manchester Moth, *Euclemensia woodiellia*. Only three specimens of this moth have survived and they can be seen in the Natural History Museum, London, Museum Victoria, Australia, and the Manchester Museum. The specimen in Manchester Museum is too fragile for general display, and can only be viewed by arrangement.

*Euclemensia woodiellia*

Leaving the Moor by a footpath through a golf course, and crossing Hilton Lane, we entered Drinkwater Park. Across a stream on the right, is an outcrop of early Triassic rock of the Sherwood Sandstone Group, topped by glacial drift. The rock is bright red with well-sorted rounded frosted grains, and contains a layer of mudclasts about 3cms deep, intermittently visible laterally along the outcrop. This indicates a continental aeolian desert environment with flash floods. The outcrop is saturated and is extremely friable.

Nearby, at Agecroft Bridge, is the decorative ironwork aqueduct transporting Thirlmere water up to Heaton Park. On both banks of the River Irwell can be seen inaccessible outcrops of dull red Triassic sandstone recorded as “containing a few quartz pebbles.” (L. Livingstone, 17/11/1978).

Walking along the banks of the Irwell, west of Littleton Road, Kersal, we saw the River Irwell Flood Defence Scheme. After many devastating floods of the lower reaches of the River Irwell, the latest in 1980, the River Irwell Flood Defence Scheme was officially opened in 2005, and the levees and playing fields alongside the river act as an emergency water catchment area.



Kersal Cell built 1563

Just off Littleton Road is Kersal Cell, the site of a Cluniac Monastery, established sometime between the twelfth and fourteenth centuries. The Cluniacs were a branch of the Benedictine order originally established in the tenth Century in the Burgundian region of France; the present building was built in 1563. Returning to the river bank we saw, on the opposite bank, landslips and deposits from the 2008 flood, and through binoculars, pebbles showing an imbricate structure. Further along the river, on the opposite bank again, was an inaccessible outcrop of Permo-Triassic sandstone.

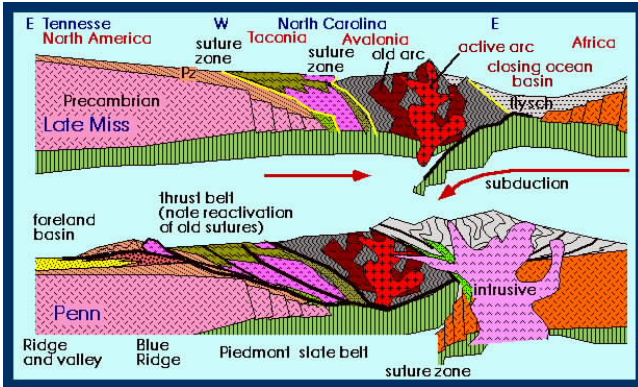
Walking across the vast green area that was once Manchester Racecourse, sold for £45,000 in the 1960's to Salford University, we made our way to Cromwell Bridge and the end of our walk. We thanked Tony for a very enjoyable and engaging afternoon and proving to us that Salford is not just notable for L. S. Lowry.

Marjorie Mosley



**Holiday geology: The Smoky Mountains of Tennessee**

The Smoky Mountains are part of the Blue Ridge Province of the south western limit of the 4000km Appalachian Mountain Range. They were formed in the Late Palaeozoic Variscan Orogeny (contemporaneous with the Arcadian Orogeny in America) following the closure of the Rheic Ocean and subsequent continental collision of Laurasia with Gondwana to form Pangea. They comprise metamorphosed sedimentary rocks between 1 billion and 350 million years in age. They have been folded,



(Ref: <http://geologyindy.byu.edu/>).

faulted and thrust in several deformations caused by collisions between different terranes of crust as shown in the diagram.

The present topography is the result of millions of years of erosion exposing metamorphic basement and massive sandstone. Our holiday, in April 2009, was in the east Tennessee and west Carolina region in the Great Smoky National Park - the only free-access National Park in the States. A dominant feature in the locality is the Great Smoky Thrust Fault.

In the Park here are several locations known as 'coves'. They are areas of rich soil which the early settlers farmed for grazing and growing crops, mainly wheat. A good example is Cades Cove, shown below

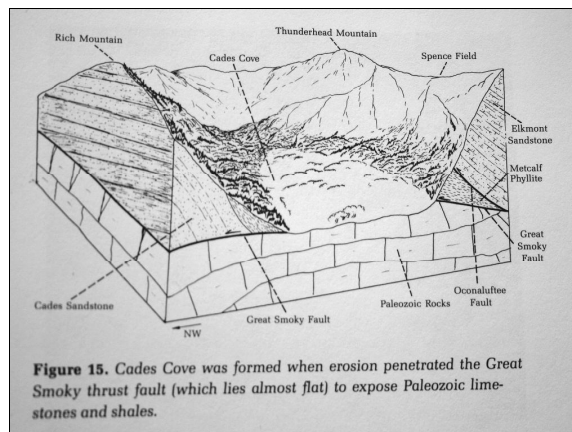


Cades Cove panorama showing the fertile farmland surrounded by metamorphic overlying thrust beds.

Geologically the coves are the upper beds of limestone/shale underlying the Great Smoky Thrust Fault. The overlying meta-sandstones and phyllite beds of the thrust have been eroded to expose the base of the thrust as shown in the diagram.

(ref: Harry L Moore, 1988. A Roadside Guide to the Geology of the Great Smoky Mountains National Park, University of Tennessee, P137).

Originally, The Smokies got their name from the hazy blue aura form by water of respiration exuded from the indigenous forests. This is no longer the case; it has changed as a result of lumbering operations denuding the forests combined with atmospheric pollution, from vehicles and industry hundreds of miles from the Park, replacing the water vapour.



**Figure 15.** Cades Cove was formed when erosion penetrated the Great Smoky thrust fault (which lies almost flat) to expose Paleozoic limestones and shales.

We were fortunate to discover that our holiday coincided with the annual Great Smoky Mountain Spring Wildflower Pilgrimage. Folk travel from all over the States and Canada to see the bewildering array of wild flowers, so colourful and prolific in the Park in the Spring. Over 150 walks are arranged led by knowledgeable rangers, botanists, ecologists etc. I searched the programme for a geology walk and found only one that even mentioned the word, so I booked to join it. At the start of the walk the leader, in typical American fashion, asked us all to introduce ourselves, where we were from and what our interests were. I mentioned my interest in the geology and was hoping to learn something about it from the leader.



A typical settler's house chimney

After a while examining numerous trees, plants, flowers etc we came across an anomalous pile of rocks. The leader said "Well, Fred, what can you tell us about the geology then?" With a manageable piece of rock in hand, I spoke authoritatively about mountain building, metamorphism and schists, which they seemed to find interesting and satisfied their immediate curiosity

Later I discovered that the anomalous pile of rocks was the fireplace/chimney of a long-since removed settler's log-cabin. When the Park was taken over by the State the settlers were forced to move out; they took the timbers but left behind the heavy stone parts – the chimney and fireplace.

Of course, the early settlers needed to grind their wheat for flour so the areas' streams have many relict water mills of all conceivable designs. Naturally there was demand for grinding stones; they were either



A taper-grooved millstone

granite or sandstone. We came across the taper-grooved one on display shown in the photo. I couldn't help recalling the passion former MGA President, the late Tony Browne, had for the history, evolution and demise of millstones, especially those of Millstone Grit. He would have loved it here, as would anyone interested in geology, wildflowers and the history of the early settlers.

For those seeking entertainment Dollywood (Dolly Parton's emporium) is nearby and, of course, some local bluegrass as shown in the photo.



Local entertainment

Well worth an April holiday!

Fred Owen                  June 2010

All the photos are Fred Owen's... diagrams from the [www](http://www) and "A Roadside Guide to the Geology of the Great Smoky Mountains National Park"

## Manchester Geological Association Forthcoming Events 2010



**Sunday 4<sup>th</sup> July 2010**

Leader: Fred Owen

### **MGA Open Day at Styal Mill**

Members are encouraged to visit the display we will be having at Styal promoting the local geology. There will be two guided walks (both repeated): one in the Secret Garden and the second one based on Fred Owen's Styal Trail.

**Saturday 17<sup>th</sup> July 2010 CHANGE of VENUE.**

Leader Chantal Johnson

### **Half day field trip to Park Bridge near Oldham ~ Carboniferous Sediments and Structures**

**Saturday 14<sup>th</sup> August 2010**

Leader: Paul Chandler

### **Goodluck Lead Mine, Matlock**

A morning visit to the mine to view superb stone stemming, miners inscription and underground lead mining museum with displays of miners tools, artefacts and small mineral collection. On the surface, there is a display of original buildings and other mine exhibits. In the afternoon there will a mining walk on the tops. There will be a £5 charge for the mine visit – it is classified as a 'Working Mine'. Places are limited to 10. However, if more people wish to go, I will see if I can arrange for a second trip later in the day.

**Saturday 4<sup>th</sup> September 2010**

Leader: Jane Michael

### **Fred Broadhurst Memorial Walk**

A day trip, this will follow the 9 mile Dovedale Walk (No 7) from Fred Broadhurst's "Rocky Rambles in the Peak District". This looks at various aspects of Limestone Scenery. The first part of the walk involves climbing up Thorpe Cloud. However, participants not wishing to do this can arrange to join the party further on. On the return from Ravens Tor, there is more ascent to go above the valley and there will be a low level alternative for this too.

**Sunday 17<sup>th</sup> October 2010 (joint with OUGS North West Branch)**

Leader: Cynthia Burek

### **Farndon and Holt: Geoconservation Issues**

A day trip around Holt and Farndon with the emphasis on geoconservation. This will be an easy walk on gravel roads and board walk at Farndon and a grass field at Holt.

Further information including start time, start location and Risk Assessment will be provided to participants nearer the time. If you would like any information before then, please contact Jane Michael either by telephone (0161 366 0595) or email [outdoors@mangeolassoc.org.uk](mailto:outdoors@mangeolassoc.org.uk)

**EARLY BOOKING IS RECOMMENDED FOR THE ABOVE EVENTS**

**MGA Autumn Lectures ~ further details will be in the September Newsletter**

**Wednesday 13 October 2010 - Meteorites ~ Dr. Jamie Gilmour, University of Manchester**

**Saturday 13 November 2010 - The Broadhurst Lectures: Jurassic Seas, Jurassic Skies**

The Blue Lias -	Dr. Peter Hardy,	University of Bristol
Plesiosaurs -	Dr. Leslie Noè,	Thinktank, Birmingham Science Museum
Ichthyosaurs -	Dr. John Pollard,	University of Manchester
Archaeopteryx -	Dr. Derek Yalden,	University of Manchester

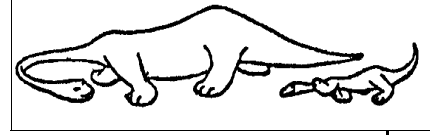
**Saturday 11 December 2010 - The Quaternary of the North West**

Cheshire/Shropshire -	Professor Peter Worsley,	University of Reading
Glacial Lakes N of Manchester -	Dr. Cathy Delaney,	Manchester Metropolitan University
Pennine Uplands -	Dr. Dick Crofts,	British Geological Survey
North/Mid Wales -	Dr. Phil Hughes,	University of Manchester

**Saturday 15 January 2011 - To be announced**



## Who's Who in the MGA Council 2010 ~ 2011



President	Dr Tony Adams	SEAES University of Manchester
Past President	Dr Christine Arkwright	
Vice President	Peter del Strother, MBE	
General Secretary	Sue Plumb	20 Ridge Crescent, Marple, Stockport, SK6 7JA 0161 427 5835 <a href="mailto:secretary@mangeolassoc.org.uk">secretary@mangeolassoc.org.uk</a> 29 Westage Lane, Great Budworth, Northwich, CW9 6HJ; tel 01606 892690.
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Treasurer	Niall Clarke	0161 434 7977
Indoor Meetings Organiser	Jim Spencer	0161 366 0595
Field Excursions Organiser	Jane Michael	0161 427 2965
News Letter Editor	Mary Howie	<a href="http://mangeolassoc.org.uk">mangeolassoc.org.uk</a>
Web Site	Peter Giles	<a href="mailto:gmrigs@hotmail.com">gmrigs@hotmail.com</a>
RIGS Group	Marjorie Mosley	
Minutes Secretary	Chantal Johnson	
Archivist	Dr Derek Brumhead, MBE	
Other Council Members	Lisa Abbott, James Jepson.	
President Manchester University Geol. Society (ex officio)		

**MGA email addresses :-** To contact our President or Membership Secretary email [info@mangeolassoc.org.uk](mailto:info@mangeolassoc.org.uk)  
for Jane Michael and field visits - [outdoors@mangeolassoc.org.uk](mailto:outdoors@mangeolassoc.org.uk)  
for Jim Spencer and indoor meetings - [lectures@mangeolassoc.org.uk](mailto:lectures@mangeolassoc.org.uk)  
for Mary Howie and the newsletter - [newsletter@mangeolassoc.org.uk](mailto:newsletter@mangeolassoc.org.uk)

**Our officers may be contacted via the MGA website**

### Other Societies

**MGA members are welcome guests at other Geological Societies' events, some of their events are below.**

#### Black Country Geological Society

**Contact** [andrew\\_harrison@urscorp.com](mailto:andrew_harrison@urscorp.com)

24 July Joint meeting with Woolhope Club in the Martley area, Precambrian/Cambrian basement, Silurian folding and Triassic sediments.

#### Leeds Geological Society

**Contact** [anthea.brigstocke@zen.co.uk](mailto:anthea.brigstocke@zen.co.uk)

25 July 2010 Sunday Daytime  
Bradgate Park, Leicestershire  
21 August Sat morning                      The York  
Moraine

#### Liverpool Geological Society

**Contact** **Joe Crossley** 0151 426 1324  
23 Jul - *The Iceland Reunion Trip to Iceland* with  
Chris Hunt.

#### North Staffs GA

**Contact** **Eileen Fraser** 01260 271505

#### Oldham Geological Society

No details at present ~ monthly meetings in Oldham  
**Contact** **Jo Holt** 01457 874095

#### Open University Geological Society NW Branch

**Contact** **Jane Schollick** 01704 565 751

Sun Jul 25, A Ramble through Limestone Country  
in the Arnside/Silverdale area with J & M Elsworth  
Sun Aug 22, Geology around Sedburgh and the  
Sedgwick Trail ~ Alan Diggles

#### Russell Society

**Contact** **Alan Dyer** on [Aldilp@aol.com](mailto:Aldilp@aol.com) or Harry  
Critchley, Tel: 01204 694345  
Saturday 10th July 2010: Shap quarry.

**Ring the contact given for further details, or link to their websites via ours.**