

# Manchester Geological Association

## Newsletter ~ September 2009



President : Christine Arkwright PhD

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

Dear Member,

Well, I hope that you all enjoyed your BBQ summer! We certainly had some good outings despite the rain, which played a part in our Styal Day but didn't dampen the enthusiasm of participants.

Before we start on Jim's mouth-watering programme of lectures, we have one more field trip to enjoy. On **Saturday, 10th October**, **Norma Rothwell** is guiding us round the **Building Stones of Manchester University Campus**. This a Low-Mobility trip and a joint trip with the North West OUGS (see box on p 2) There is Blue Badge free parking in the Quadrangle.

We really get going on our indoor activities with a **Conversazione**, to which we have invited students from SEAES, and a lecture on Wednesday 14th October. So come along at **6.00 pm** and catch up with the summer's gossip over a glass of something and then enjoy **John Nudd's** lecture on **Feathered Dinosaurs at 7.00 pm**.

After that we have **Spiders** on 28th October and a **Darwin Day** of 5 lectures in November, with **Volcanoes** to follow in December.

If you are coming to the **Darwin Day** please let Jim Spencer know (his details are on p 8). There is no charge but space is limited. There are five lectures that day with a break of two hours for lunch (bring your own or go to a café). Our full programme is on page 9, lecture notes are on pages 7 and 8.

With this mailing you will have the latest edition of the NWG... enjoy!

Quite a few people have expressed an interest in going to **Newfoundland** next year, so Jane will go ahead and make enquiries about accommodation and travel.

With best wishes to all

*Mary Howie*

MGA Newsletter Editor

### Quick Diary 2009

<b>Saturday 10 October</b> (morning field trip)	<b>M/C Uni stones field trip 10.30.</b>
<b>Wednesday 14 October</b> followed by lecture 7.00pm	<b>Conversazione 6.00pm</b>
<b>Wednesday 28 October</b> (evening lecture)	<b>Feathered Dinosaurs of China</b>
<b>Saturday 21 November</b> (day of lectures)	<b>Spiders: The Ultimate Predators</b> 400 Million Years of Evolution
<b>Saturday 12 December</b> (afternoon of lectures)	<b>Darwin and the Voyage of the Beagle</b>
	<b>Volcanoes and Volcanic Hazards</b>

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## Field Trip to look at Building Stones of Manchester University Saturday October 10th ~ 10.30 am

**Leader Norma Rothwell**

this is a joint field trip with OUGS NW

**A Low Mobility Trip** designed for those of us with limited walking ability.

**Meet** at 10 30 am outside Manchester Museum, on Oxford Road, Manchester.

**Finish** ~ 1.00 pm.

**Bring** a hand lens if you can, umbrella and waterproofs might also be useful.

If you have a Blue Badge you can park in any of the University's car parks for free, including the one in the Quadrangle. This is accessed through the gate at the head of Burlington street which leads down to the Library. If there is no porter there you will need to speak into the intercom and then show your badge to the camera.

### Can't get to our meetings?

I have become aware that we have a small number of long standing older members who, for health or mobility reasons, are now less able to travel to our meetings or field trips. They continue to enjoy their membership through reading newsletters and the website but occasionally feel that they would like to go to a meeting on a particular topic of interest, or, just to meet acquaintances. If there is sufficient interest Council is prepared to look at ways in which some sort of help may be provided to assist those members who are in this position to get to these events.

If you are interested in Council developing this kind of assistance please contact Jane Michael on 0161 366 0595 or at [secretary@mangeolassoc.org.uk](mailto:secretary@mangeolassoc.org.uk), telling her what kind of help would be most useful to you, maybe you'd welcome a lift to a particular event.

Fred Owen, Membership Secretary

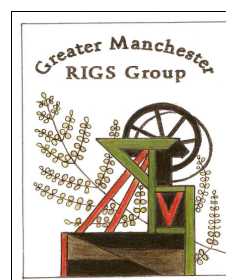
### Greater Manchester RIGS Group

At the July meeting of the North West Geological Partnership, held at Natural England's office in Manchester, it was agreed to provide funds for the restoration of the Rochdale Cemetery Geological Trail.

Additional research is being carried out into the provenance of the specimens used in the trail.

The projected survey of Healey Dell is in progress as is the assessment of a number of other sites.

Marjorie E. Mosley, Secretary, GMRIGS Group, September 2009



## Why Rochdale Cemetery is dead interesting!

Jane Michael

When Marjorie Mosley proposed a walk round Rochdale Cemetery I suspect most of us were a bit sceptical: yes there would be different types of stone to look at but so what? In fact Rochdale Cemetery has had a geological trail since it was opened in 1855. It was planned by Abraham Stansfield and two geologists: James Horsfall and Robert Law. It is thought that the idea was to 'educate and instruct others in the science of the earth' (Maxim ms.note 133).



**The MGA "In the Field"**

Photo Jane Michael

So it was that 10 of us joined her early on a Sunday morning to follow this trail.

She gave us an excellent handout listing all 27 of the different stones: they were usually small blocks up to 2ft high following a track round the main cemetery roadway. I will not give a list of all of them but will mention a few specifically. The stones had been laid out in a sort of chronological order: Volcanic Series (basalt), Plutonic Series (granites), Metamorphic Series (marble, porphyrite, serpentinite), Cambrian (slate), Silurian (limestone), Old Red Sandstone (as they called it: we know it as Devonian) (sandstone!), Carboniferous (limestones), Upper Carboniferous (coal in a sandstone

trough), Coal Series (Millstone Grit, sandstones and flagstone), (all three are now known as the Carboniferous) Permian (Magnesian Limestone), Salt Series (gypsum, desert sandstone), Liassic (limestones) (these latter two are now the Triassic), Lower, Middle and Upper Oolitic (fossiliferous sandstones, Corallian limestone and Portland Stone), (now known as Jurassic) Wealden (marble), Chalk (Kentish Rag - which was actually missing) (both now included in the Cretaceous) and the Drift Series (glacial erratics) representing the Quaternary.

The trail started with a Starting Stone with a quote 'In the beginning God created the Heavens and the Earth' and a note that the trail moved from old to young rocks - this was found in a ditch by the side of the cemetery wall.

There was a Finishing Stone with the quote 'Speak to the Earth and it will teach Thee'. This stone was actually hidden under a tree and not easy to see.

Marjorie started the trip with a short history of the development of the cemetery and noted that the Church of England dead were on one side of the road and the Catholics, Jews and non-conformists on the other. She had also told us that towards the back of the cemetery there was now a Muslim graveyard and that the headstones all pointed North East. No-one could explain why and she had not been able to find out. There is a very old yew tree in the area and apparently it was grown from the yew tree on Napoleon's grave on St Helena. During the trip we also passed the grave of Benjamin Rudman, one of the original Rochdale Pioneers.



**The Starting Stone**

Photo Jane Michael

As we proceeded round the trail, it became clear that the rock specimens had come from

various parts of the country together with Ireland and Italy. Sufficient detail had been kept that many of the quarries were known by name (for instance the granites were from Rubislaw Quarry, A McDonald's works in Aberdeen). There were, as might be expected, local examples within the Carboniferous, Upper Carboniferous and Coal series from Buxton, Littleborough, Whitworth, Wigan etc. We saw a variety of different fossils: bryzoan, rugose coral, brachiopods and crinoids.

Several of the limestones we saw had been referred to as "Marble" - this was a stonemason's term generally applied to limestones. Stonemasons also tend to refer to anything else hard and that didn't cleave well as granite even though it could be quartzite as that found in the Ingletonian Granite Quarry near Ingleton.

The Cambrian Clay slates had been carved into octagonal shapes, though no one knows why, possibly because they did not cleave as easily as other slates. The Liassic series was supposedly fragments of limestones taken from various locations Whitby to Lyme Regis but unfortunately these seem to have disappeared - road widening at that point had probably been the cause. The Wealden series was represented by 'Bethersden Marble' from Kent which is a freshwater limestone (used in Canterbury Cathedral) and containing Paludina fossils. The glacial erratics had not been identified and were now partly buried near the Finishing Stones and very difficult to find.



**Crinoids in Limestone**

Photo Jane Michael

Whilst some of the stones are difficult to find, the value of the trail has been acknowledged and Marjorie said that funding is being obtained to renovate the trail and provide a guide. She will be very much involved in this and that is a credit to her research and persistence in persuading the Council that it needed to conserve this piece of history.

Professor Sir William Boyd-Dawkins (Manchester University and of the Boyd-Dawkins Room at Buxton Museum) was apparently very impressed by the trail and gave a public lecture and field trip round in June 1881 to 30 members of the Rochdale Literary and Scientific Society.

There may only have been 10 of us, but 128 years later, we found the experience extremely interesting and well worth the trip.

Jane Michael

#### **O.S. Maps:**

OS Explorer 287 *West Pennine Moors*.

#### **Reference:**

Broadhurst, F.M., Eager, R.M.C., Jackson, J.W., Simpson, I.M. and Thompson, D.B. 1970 No. 7: *The Area around Manchester*. Geologists' Association Guide.

Baldwin, A and Alderson, D.M 1996 *A remarkable survivor: a 19th Century geological trail in Rochdale*. Geological Curator Volume **6**, No. 6

The next newsletter will be early in **December** Copy to me by end of **November** please.

Mary Howie -

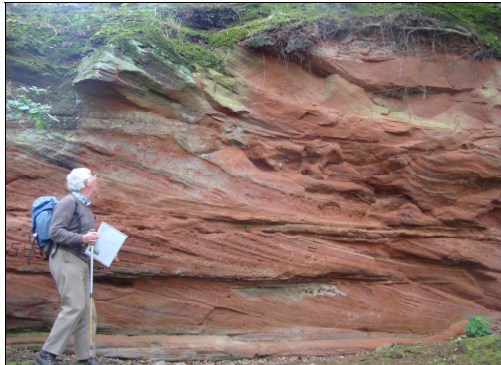
newsletter@mangeolassoc.org.uk or Snail Mail to Kinder View, 118 Glossop Road, Marple Bridge, Stockport SK6 5EL.

Tel: 0161 427 2965 Views expressed in the Newsletter are not necessarily those of the Association or its Council.



## MGA field trip to Frodsham, 7th June 2009

On a clear morning in June, seven of us gathered on Overton Hill for a field trip led by Duncan Woodcock. The sandstone escarpment is clearly visible from the M56, and so it was interesting to get up



Cross stratification and slump structures on Overton Hill (photo MDH)

close. During the nineteenth century the sandstones were quarried extensively for building stone and together with the natural outcrops we have the opportunity today to inspect the rock faces and see what conclusions we can draw regarding the environment of deposition.

The first location displays rounded grains and cross bedding which indicate that the sand been deposited in a shallow river channel. The red colour is due to a thin coating of haematite. Further along the path, mud flakes were found in coarser grained sandstone. Perhaps these were deposited by flash floods.

The Cheshire Basin sandstones were deposited in the Triassic period, 248 to 213 Ma, when Britain lay at about 15 degrees North of the Equator.

A large river system carried sediments and these form the basis of the sandstones we see today. Finally we drove down to Frodsham station and inspected the dune bedded sandstone there, which had many bee holes in it. Duncan's interpretation of the rocks was helpful and sometimes thought provoking. A good morning out was had by all.

Marjorie Mosley

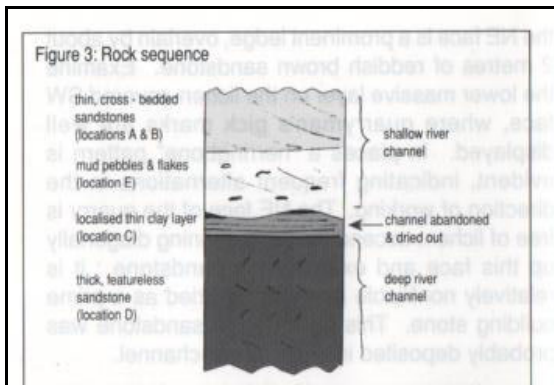


Figure 3 is an annotated composite cross section of the rock sequence that we have seen on the trail: the oldest rocks are at the bottom, so a possible interpretation of events in the immediate area is as follows:

- (i) Development of a deep river channel that deposited the thick sandstone bed. Waning currents allowed deposition of finer grained sands and eventually muds.
- (ii) Development of a new shallow river channel which mobilised mud pebbles and flakes from the underlying beds. Occasional periods of desiccation and incursion of dune sand blown across the river bed from the adjacent landscape.

A Rock Sequence copied from Duncan Woodcock's Overton Hill Geological Trail Guide which he devised as part of his studies with Manchester University CCE some while ago.



Bee Holes in the sandstones at Frodsham station (photo MDH)

Frodsham's emblem



is this bee! (ed.)

**Has anyone got any Holiday Geology Experiences to share?  
A photo plus a paragraph or two will let others know of exciting places to go!**

### Who's Who in the MGA Council 2009

President	Dr Christine Arkwright	
Vice President	Dr Tony Adams	SAES University of Manchester
General Secretary	Jane Michael	22 St Giles Drive, Godley, HYDE, Cheshire SK14 2ST 0161 366 0595 secretary@mangeolassoc.org.uk
Membership Secretary	Fred Owen	
Treasurer	Niall Clarke	
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Field Excursions Organiser	Marjorie Mosley	0161 432 4343
News Letter Editor	Mary Howie	0161 427 2965
Web Site	Sue Plumb	<a href="http://www.mangeolassoc.org.uk">www.mangeolassoc.org.uk</a>
RIGS Group	Marjorie Mosley	<a href="mailto:gmrigs@hotmail.com">gmrigs@hotmail.com</a>
Minutes Secretary	Sue Plumb	
Archivist	Derek Brumhead	
Other Council Members	Chantal Johnson, Lisa Abbott and James Jepson	
President Manchester University Geol. Society (ex officio)		

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

### Other Societies

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

**Ring the contact given below for further details or look on their websites via links from ours.**

#### Leeds Geological Society

**Contact** [anthea.brigstocke@zen.co.uk](mailto:anthea.brigstocke@zen.co.uk)  
15 Oct Deglaciation in the Tyne valley Dr Linda Yorke  
12 Nov Plate tectonics and Human Evolution  
Prof Geoffrey Bailey  
10 Dec AGM and Conversazione ,Talks and Displays by Members

#### Liverpool Geological Society

6 Oct - Presidential Address -  
20 Oct - Early Life On Earth - Peter Crimes  
10 Nov - Southern North Sea Basin - Oil & Gas -  
Prof. John Collinson  
24 Nov - DIY Geological Quiz and Cheese & Wine  
13 Dec - 150th Anniversary of the Founding of the LGS -  
Distinguished Visitor's Address by Iain Stewart  
**Contact** [Joe Crossley](mailto:Joe Crossley) 0151 426 1324

#### North Staffs GA

8 October 7.30 pm 'Minerals, hydrocarbon and porosity changes: a short history of fluid flow in Carboniferous limestone' Dr. Cathy Hollis  
12 November 7.30 pm The Professor Wolverson Cope Annual Lecture, 'Charles Darwin, the Beagle and Quaternary geology' Professor Peter Worsley  
3rd December 2009 Christmas Social  
**Contact** **Gerald Ford**, 01630-673409

#### Oldham geological Society

No details at present but they hold monthly meetings.  
**Contact** **Jo Holt** 01457 874095

#### Open University Geological Society NW Branch

6 Dec: 14.00 –16.30 Lectures at Rainhill "Investigating Past Life, including trace fossils, trackways and echnoids"  
**Contact** **Jane Scholick** 01704 565 751

#### Russell Society

**3 Oct:** Field trip to Benault\* mine. Field trip  
**15 Oct** Wigan College (in Leigh) to viewing of mineral Collection  
**Contact** **Alan Dyer** on [Aldilp@aol.com](mailto:Aldilp@aol.com) or Harry Critchley, Tel: 01204 694345 if you are interested in these mineralogical events.

### Our Geological Fun Day in July at Styal Mill was a great success, despite the rain!

The two Freds put up the banner and then led parties around the superb exposures in The Secret Garden and the Geology Trail

The exhibition of rocks and the children's activities were visited and enjoyed by many members of the public.

Many thanks to all who helped and attended! We hope to repeat the event in the future.



Fred Owen and Fred Broadhurst put up the MGA banner

## Lecture Notes for MGA Indoor Meetings – Autumn 2009

**Wednesday 14<sup>th</sup> October 2009 – Feathered Dinosaurs of China**

**6.00 pm for 7.00 pm**

Dr. John Nudds, University of Manchester

In little more than a decade many accepted theories of palaeontology have been turned upside down by some remarkable fossils coming out of China. Colourful insects, fossil birds, giant mammals, and most amazing of all - the 'Feathered Dinosaurs'. More remarkable is that these fossils are preserved complete with their soft tissue - so that they are giving us much more information on life in the early Cretaceous than we have ever seen. The lecture will illustrate some of the more remarkable new species and will discuss exactly what they mean in terms of the evolution of the dinosaurs and of their descendants - the birds.

**Wednesday 28<sup>th</sup> October 2009 – 7.00 pm**

### **Spiders: The Ultimate Predators – 400 Million Years of Evolution**

Dr. David Penney, University of Manchester

Given their geological longevity and numerical abundance in terms of both described species and numbers of individuals, spiders probably represent the most successful group of predators ever to have existed. This lecture explores important events in the spider fossil record, including origins, diversification, mass extinctions and co-radiation with their insect prey. It also examines how data derived from fossil spiders can be used to address interesting palaeobiological problems. Finally, new imaging techniques employed on fossil spiders will be illustrated. These now permit digital dissection of specimens trapped in amber to the point where they can be incorporated into cladistic analyses alongside their extant relatives.

The following book will be available for purchase at the reduced price of £35.00 (normal price £40.00 plus p+p)

Penney D. 2008. Dominican Amber Spiders: a comparative neontological approach to identification, faunistics, ecology and biogeography. Soft cover 176 pages 24 x 17 cm 88 colour photos, 11 black & white photos, 14 colour illustrations, 224 greyscale illustrations. ISBN 978-0-9558636-0-8. Please email the author david.penney@manchester.ac.uk to reserve a copy.

**Saturday 21<sup>st</sup> November 2009 – Darwin and the Voyage of the Beagle 10.30 am ~ 5.00 pm**

**Charles Darwin; the making of the naturalist and geologist in Cambridge and Wales,**

Reverend Michael Roberts, Lancaster

**Charles Darwin: Gentleman Geologist aboard H.M.S. Beagle,**

Dr. Robert Callow, University of Manchester

**Charles Darwin (1809-1882) – A Mercian ‘Glacial’ Geologist,**

Professor Peter Worsley, University of Reading

**The Beagle Collection as a Collection of Geological Objects: Acquisition, Usage and Continuing History**

Dr. Lyall Anderson, Sedgwick Museum, University of Cambridge

**On the Geological Origins of Darwinian Theory: Charles Lyell, Charles Darwin and Alfred Russel Wallace,**

Professor Jon Hodge, University of Leeds

H.M.S. Beagle set sail from Falmouth on the 27<sup>th</sup> December 1831 bound for South America, where it was to conduct the second leg of a coastal survey for the Admiralty. On board was the young naturalist, Charles Darwin, equipped with microscopes, collecting equipment and a library of reference books. Darwin had accepted the invitation of Captain Fitz-Roy, and the voyage would take him over the Atlantic to Brazil, Argentina, the Falklands, Patagonia, Tierra del Fuego, Chile, then across the Pacific to New Zealand and Australia via the Galapagos and other islands, before returning home to Portsmouth on 2<sup>nd</sup> October 1836.

During the voyage Darwin was to have many adventures – discover large fossil mammals, ride with gauchos, and witness armed insurrection in Argentina, encounter savages and wonder at glaciers in Tierra del Fuego, see

volcanic eruptions and survive a large earthquake in Chile. The journey was to be the major formative event in Darwin's career. The large number of rock, fossil, plant and animal specimens he collected would provide much material for further investigation on his return home, resulting in several geological tomes and, ultimately, the *Origin of Species* and the *Descent of Man*.

**Saturday 12<sup>th</sup> December 2009 – Volcanoes and Volcanic Hazards 1.30 pm**

**Submarine Volcanism in the Western Pacific -  
Volcan de Colima, Mexico -  
Iceland –**

Dr. Peter Floyd, University of Keele

Dr. John Stevenson, University of Manchester

Dr. Dave McGarvie, The Open University

Volcanoes can be broadly classified into three groups based on their tectonic setting: - those formed at constructive plate margins, at destructive plate margins, or within plates. The greatest outpouring of magma, mainly basaltic, takes place at ocean ridges (constructive margins), but this is mostly extruded as lava, not in the form of volcanic cones - an exception being Iceland.

The majority of volcanoes form above subduction zones at destructive margins. Volcanic island arcs (for instance, the Aleutian Islands in the Pacific or the Lesser Antilles in the Caribbean) form where subduction of oceanic crust is taking place under oceanic crust. These consist of basalts and andesites, rarely dacites and rhyolites. Continental arcs (e.g. the western coast of the Americas – North, Central and South) form where subduction of oceanic crust is taking place under continental crust. These are predominantly andesites, but with more silicic rocks - dacites and rhyolites – than those seen in island arcs.

Other volcanoes occur within oceanic or continental plates (for example, the Hawaiian Islands, on oceanic crust, or the Auvergne of France and the Eifel region of Germany, on continental crust). These are attributed to hot-spots caused by mantle plumes – columns of heat rising from the core-mantle boundary. These tend to be more silicic and alkaline, often containing phonolites and trachytes.

**Saturday 16<sup>th</sup> January 2010 – Scenes from the Precambrian 1.30 pm**

**Precambrian Shields – What can they tell us about the Origins of Continents?**

Professor Hugh Rollinson, University of Derby

**The Belingwe Greenstones, Zimbabwe -** Professor Euan Nisbet, Royal Holloway, University of London

The name 'Precambrian' dates from Adam Sedgwick's original investigations into the geology of Wales, where he dubbed the system of rocks 'Cambrian'. In Caernarvonshire he observed that some gnarled rocks underlay, and were therefore older than, the Cambrian rocks; these he termed pre-Cambrian.

Precambrian rocks form but a small percentage of the British succession; worldwide, however, they cover a much larger percentage of the earth's surface, occupying large parts of Canada, Greenland, North and South America, Scandinavia, Siberia, Africa, Arabia, India and Australia.

These Precambrian areas are of great economic importance, containing, as they do, most of the world's supply of industrially important metals, such as iron, nickel, cobalt, copper and zinc. They also host virtually all of the world's chromium, platinum, gold and diamonds.

From a purely geological point of view, though, Precambrian rocks are of the greatest importance for providing the only evidence we have to support and test theories about the formation of the earth, the evolution of continental crust, or the origins of the earliest life forms.

Notes for the other Spring Lectures 2010 will follow in the December newsletter.



# MGA Programme of Indoor Meetings

2009/10



**Wednesday 14 October**      **Conversazione ~ at 6.00 pm ~ Wine, Juice and Nibbles**  
**Lecture at 7.00 pm**      **Feathered Dinosaurs of China**      SEAS students are invited  
Dr John Nudds, University of Manchester

**Wednesday 28 October**      **Spiders: The Ultimate Predators ~ 400 Million Years of Evolution**  
**Lecture at 7.00 pm**      Tea and coffee at 6.30 pm  
Dr David Penney, University of Manchester

**Saturday 21 November**      **Darwin and the Voyage of the Beagle**  
**A Day of Lectures**      **10.30 am to 5.00 pm**

**Charles Darwin;** the making of the naturalist and geologist in Cambridge and Wales,  
Reverend Michael Roberts, Lancaster

**Charles Darwin:** Gentleman Geologist aboard H.M.S. Beagle  
Dr Robert Callow, University of Manchester

**Lunch break 12 noon to 2 pm ~ bring packed lunch or use local cafés**  
Time also to visit the Darwin Exhibition across the road at The Manchester Museum

**Darwin in Tierra del Fuego,** Professor Peter Worsley, University of Reading  
**The Beagle Collection**      Dr Lyall Anderson, Sedgwick Museum, University of Cambridge  
**On the Geological Origins of Darwinian Theory :Charles Lyell, Charles Darwin & Alfred Russel Wallace**      Professor Jon Hodge, University of Leeds

**Saturday 12 December**      **Volcanoes and Volcanic Hazards**      **Afternoon Lectures 1.30 pm**

**Submarine Volcanism in the Western Pacific**      Dr Peter Floyd, University of Keele  
**Volcan de Colima, Mexico**      Dr John Stevenson, University of Manchester  
**Iceland**      Dr Dave McGarvie, The Open University

**Saturday 16 January 2010**      **Scenes from the Precambrian**      **Afternoon Lectures 1.30 pm**

**Precambrian Shields - What can they tell us about the Origins of Continents?**  
Professor Hugh Rollinson, University of Derby  
**The Belingwe Greenstones, Zimbabwe,** Professor Euan Nisbet, Royal Holloway, University of London

**Wednesday 17 February 2010**      **AGM followed by the Presidential Address**      **7.00 pm**

**Various Volcanoes ~ Vesuvius *et al***

Dr. Christine Arkwright, University of Manchester

**Wednesday 10 March 2010**      **The Sichuan Earthquake Disaster**      **Evening lecture 6.30 pm**

Professor David Petley, University of Durham      a Joint Meeting with the Geographical Association

**Please note the various start times for lectures**

All meetings will be in the Williamson Building, Oxford Road, Manchester (opposite the Manchester Museum)  
Tea and coffee will be served before the evening lectures and in the afternoon break on Saturdays

Further information about the MGA from the Hon. Gen. Secretary Jane Michael  
tel. 07932 927040, or email [info@mangeolassoc.org.uk](mailto:info@mangeolassoc.org.uk) or go to our website [www.mangeolassoc.org.uk](http://www.mangeolassoc.org.uk)

**Visitors are always welcome**

**Who's Who in the MGA Council 2009**

President	Dr Christine Arkwright	
Vice President	Dr Tony Adams	SAES University of Manchester
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Minutes Secretary	Sue Plumb	
Archivist	Derek Brumhead	
Other Council Members	Chantal Johnson, Lisa Abbott and James Jepson	
President Manchester University Geol. Society (ex officio)		

**Other MGA email addresses :-** To contact our President or Membership Secretary use [info@mangeolassoc.org.uk](mailto:info@mangeolassoc.org.uk)  
Marjorie Moseley for field visits - [outdoors@mangeolassoc.org.uk](mailto:outdoors@mangeolassoc.org.uk)  
Jim Spencer and indoor meetings - [lectures@mangeolassoc.org.uk](mailto:lectures@mangeolassoc.org.uk)  
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