Conserving Warwickshire's Geological Heritage

WGCG
Hidden wonders in the landscape of Warwickshire

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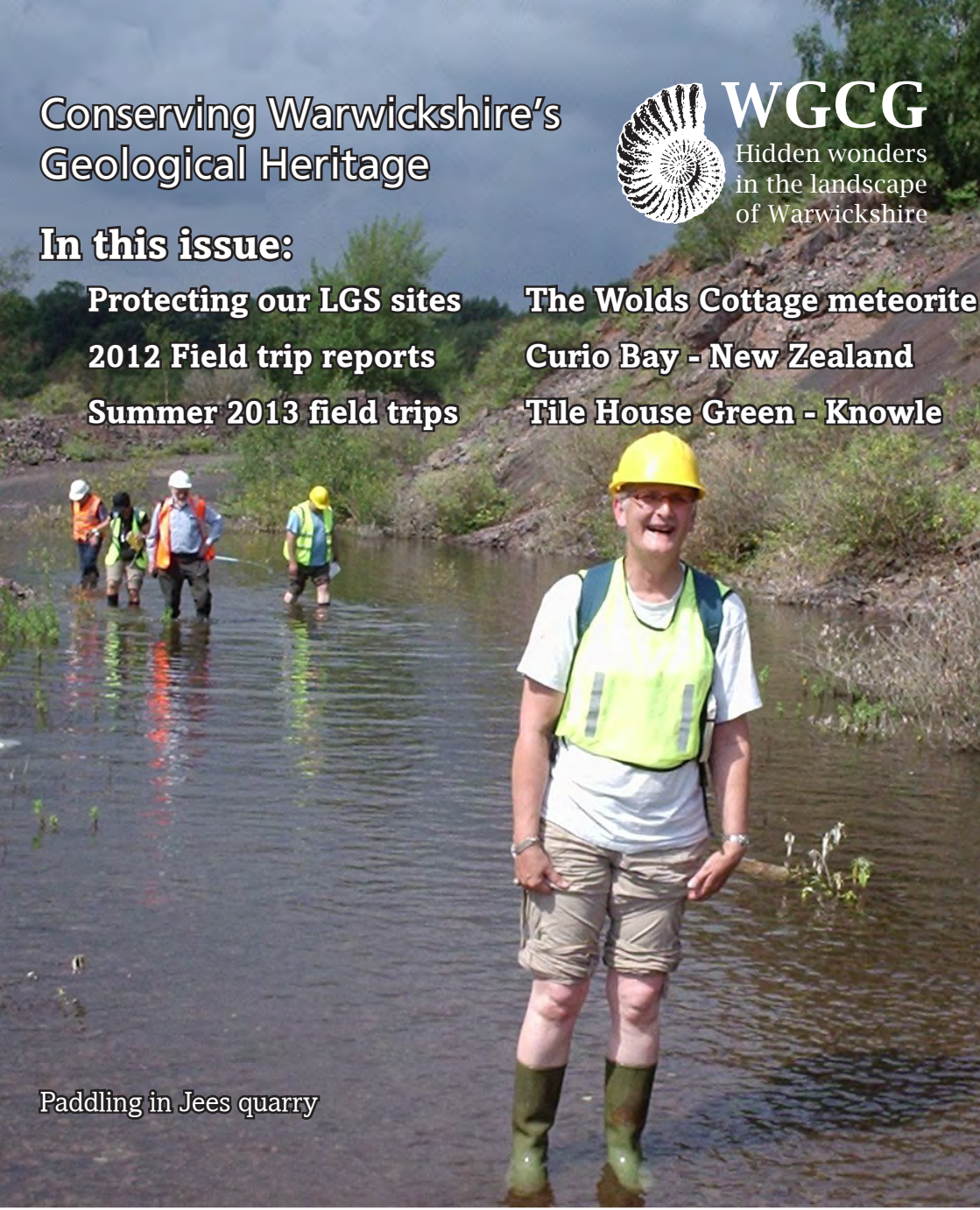

Paddling in Jees quarry

Newsletter
Spring 2013 Issue Number 25

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Front cover

Paddling at Jees quarry.

WGCG

Hidden wonders in the landscape of Warwickshire

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On the web: http://www.wgcg.co.uk

On facebook: http://www.facebook.com/WarwickshireGeologicalConservationGroup

On twitter: https://twitter.com/#!/wgcg_uk

From the Chair

It is over ten years since I had my last spell as Chairman, and it is striking how much the group has developed over that period. We have become a charity, are now much more secure financially, have widened the range of our activities and, most welcome of all, have increased the size of our membership. My predecessor, Ian Fenwick, has played a large part in leading these changes and he is a difficult act for me to follow.

It has been good to see that the group is confident enough to look outwards through a variety of activities. Locally we have been spreading the '*geological word*' by putting on displays at local events at Coombe Abbey Country Park, Rugby and Stratford (although it was a good year not to go to the Coventry Godiva Festival since it was cancelled due to the summer deluge). Several members have been giving talks to local groups, such as U3A and we are building on Martyn Bradley's waving of the geology flag at the Warwickshire Wildlife Trust. As a result of putting on a display at the GA's conference on geoconservation at Worcester in November 2010 the group was invited to write an article for the Proceedings of the Geological Association about the soft sediment conservation work that members undertook at Wood Farm. This was followed by an invitation to contribute to the Earth Heritage magazine which has published an article on our work on the Kenilworth Sandstone exposures along the new Sustrans cycleway and footpath. These are '*real feathers in WGCG's cap*'. It was also a pleasure to introduce our Pre-Cambrian and early Palaeozoic hard rock geology to visiting groups from Reading and North Staffordshire and this is illustrated later in the Newsletter.

Over the coming summer we will be continuing our programme of conservation work through identifying new Local Geological Sites, monitoring the condition of a selection of our existing ones and doing some remedial work, particularly on one or two of our more accessible sites. Paul Akers, our LGS Officer will be inviting members to join in these activities which gives you the chance to develop your geological knowledge and skills as well as the chance of a bit of fresh air and physical labour. The summer will also see our first offering of a basic geology course for members, now that such courses are no longer on offer at Warwick University, then tutored by Martyn Bradley.

It is also good to see contributions to the Newsletter from members spreading the word about geological activities they have been involved in. May I encourage you all to keep your eyes open during your summer trips for things to tell us about in future Newsletters?

Brian Ellis

The Wold Cottage Meteorite

Mike Allen

The inscription

Here
On this spot, December 13, 1795
Fell from the atmosphere
An extraordinary stone.
In breadth twenty-eight inches
In length thirty-six inches,
And
Whose weight was fifty-six pounds.
This column
In memory of it
Was erected by
Edward Topham
1799

Take a walk, if you will, south from the village of Wold Newton, ten miles south of Scarborough. You will soon come to a driveway leading up to Wold Cottage, and beyond that a permissive path brings you to a tall, elegant brick pillar within a small enclosure in the middle of a field. A slightly weathered inscription borne on one face commemorates the spot where, at 3.00 p.m. on 13th December 1795, some twenty five kilograms of chondrite meteorite landed, accompanied, if we are to believe contemporary accounts, by "a report much like the discharge of two large cannons" followed by further rumbling sounds.

This event occurred "not thirty yards" from three, no doubt highly alarmed, witnesses who were at the time "amusing themselves in the field". Perhaps fortunate for science, these same witnesses were servants to one Captain Edward Topham, landowner; a man of an enquiring mind. Eton, Cambridge and "Grand Tour" educated, the man on whom Laurence Sterne (author of Tristram Shandy) had modelled his first essay "The Adventures of a Watch-Coat", Topham was quite a character in his own right, and not a man to pass up a (heaven sent!) opportunity like this to widen his renown.

Having been away in London at the time, when the news reached him he hastened back home to investigate the occurrence for himself, and for the benefit of the many enquiring epistolarians who had expressed an interest in the affair. He duly reported the following February, perhaps fittingly via a newspaper called the "Oracle". "*The stone which fell*", he wrote, "*on being dug up, was, by Merlin's balance, 3 stone 13lbs (remember them?) on being measured: it had buried itself in 19 inches of soil, and, after that, in 6*

inches of solid chalk rock, whence it was some little time in being extracted." He went on to describe the rock as *"of grey granite"* unknown in this country and that it was still warm, smoked and had a strong smell of sulphur.

He went on to have the stone exhibited in London, not without a little fanfare (and a shillings fee!) together with the closely vetted testimonies of several witnesses. More importantly, this high profile approach led to some serious thought by the philosophers of the age as to the origin of such stones. The timing of the event could hardly have been more providential. Similar objects were not unknown at the time and a certain E. F. F. Chladni (the "Father of Meteoritics"), a German physicist and lawyer had just had a small book published (in 1794, in Riga and Leipzig) in which he argued for their extraterrestrial origin. Such ideas were not favoured by the conservative establishment but a detailed chemical study of the Wolds Cottage meteorite showed up concentrations of nickel amongst the mostly "stony" material. This helped to establish a link with the better known iron meteorites and although it was a long time before their true and precise sources were understood, resistance to an extraterrestrial origin began to thaw and the rest, as they say, is history.

The Wold Cottage meteorite remains the largest one recorded on British soil, and indeed second only in Europe to one of 127 kilograms that fell near Ensisheim in Alsace in 1492 (while Columbus was being entertained in Cuba). The well known geologist James Sowerby purchased Topham's estate in 1804, and his heirs sold the meteorite on to the Science Museum in 1835, where it remains to this day. And perhaps surprisingly Topham's monument is the only one in the world to mark the actual landing site of a meteorite (though of course there are many craters).

Originally a Georgian city gentleman's country retreat, Wold Cottage is now a luxury Bed & Breakfast together with self catering and a caravan site.

The monument may be visited by kind permission of the owners, Derek & Katrina Gray.

http://www.woldcottage.co.uk/

(Photographs by kind permission of the owners)

Fallen Giants: The Fossil Forest at Curio Bay

David Coates

Travelling in the South Island of New Zealand last year, my wife and I found ourselves in the beautiful but relatively unfrequented area known as the Catlins. For approximately 100km the only tarmac road links a handful of small villages, while gravel side roads lead up into the wooded hills or down to even smaller settlements along the coast. At nearly 47 degrees south, this is the most southerly part of the south island. Its promontories are exposed to the full force of the Southern Ocean; due south, there is only Antarctica.

The area does not have the high-profile tourist attractions such as are found elsewhere in New Zealand, but our guidebook noted the existence of a Fossil Forest at a location called Curio Bay. We found it on our map, and set off to explore. About 20km of gravel tracks took us to a small car park from where a path led through a thicket of harakeke (*Phormium tenax*) to an interpretation board with a flight of steps leading down to the rocky beach and a surprisingly large number of people.

Low cliffs surrounded the bay, and although the tide was high we could make out a partially submerged rock platform in which the long outlines of fallen tree-trunks could be seen weathering out.

At the top of the steps we looked at the interpretation board which advised that the rocks were of mid-Jurassic age (c. 160 Ma) and consisted of volcanic material washed in by intense floods. These inundated the gymnosperm forest, felling the trees and embedding them in sediment.

This part of New Zealand originated in late Carboniferous times (approx. 300 Ma) when an oceanic crust collided with, and subducted under, the eastern edge the ancient Gondwana continent. The resulting volcanism created a string of volcanic islands – an island arc – that deposited volcanic material into the surrounding seas[6]. This tectonic activity and volcanism continued for nearly 200 million years, so that by the mid-Jurassic period the Curio Bay forest would have been growing on a plain close to volcanic uplands.

Fallen tree-trunks weathering out

A few fossil stumps were visible in their growth positions

The area has been subject to academic study – although published papers are difficult for lay people to access, of course – and the sources I have found suggest that there were several successive flood events resulting in perhaps ten fossil forest horizons[2]. Apparently the fossil forest deposits occur over a wider area than Curio Bay[1,4], but we were not able to explore further because there was no apparent public access to the coast to the west of the Bay.

The site is managed by the New Zealand Department of Conservation, who must balance the requirements of geological and ecological conservation against those of tourism. The site is promoted as a "honeypot" to attract visitors to the area but this risks damage to the

The grain of the wood preserved in silica (ballpoint pen for scale)

The endangered yellow-eyed penguins

geological evidence as well as disturbance to wildlife, including the endangered yellow-eyed penguins which nest at the top of the beach. We saw reports of fossil tree stumps having been prised out of the rock, while many visitors were ignoring the notices requesting them to give penguins and sea lions a wide berth.

For any other WGCG members visiting this part of New Zealand, Curio Bay would be a good place to visit. It would be worthwhile to plan the trip better than we did and check the tide times so that you visit on a falling tide; if you could be there early or late in the day, when fewer people are around, it would be even better.

Curio Bay - Further reading:

1. **CURIO BAY FOSSIL FOREST, An Encyclopedia of New Zealand, 1966**, Graeme Roy Stevens, M.SC.(N.Z.), PH.D.(CANTAB.), Paleontologist, New Zealand Geological Survey, Lower Hutt.
http://www.teara.govt.nz/en/1966/curio-bay-fossil-forest

2. **Repeated flood events and fossil forests at Curio Bay (Middle Jurassic), New Zealand**, Mike Pole, Department of Botany, University of Queensland, Brisbane QLD 4072, Australia,
http://www.sciencedirect.com/science/article/pii/S0037073800001858

3. **Vegetation communities of a high palaeolatitude Middle Jurassic forest in New Zealand**, Vanessa Thorn, School of Earth Sciences, Victoria University of Wellington, P.O. Box 600, Wellington, New Zealand
http://www.sciencedirect.com/science/article/pii/S0031018201002036

4. **Curio Bay/Porpoise Bay** NZ Department of Conservation, www.doc.govt.nz/parks-and-recreation/places-to-visit/southland/southland/curio-bay-porpoise-bay/features/fossil-forest/ (the DOC website quotes the age of the exposure as 180 Ma, contradicting the 160 Ma stated on the interpretation panel)

5. **Geology of the Catlins**, Tourism Catlins
http://www.catlins.org.nz/index.php?/site/natural_history

6. **The Rise and Fall of the Southern Alps**, Glen Coates, Canterbury University Press, ISBN 0-908812-93-0

7. **The Geological History of New Zealand**, University of Waikato Website
http://sci.waikato.ac.nz/evolution/geologicalHistory.shtml

Tilehouse Green Lane - Knowle

Peter Band

Reading the Brian Ellis article in 'Down to Earth' (December 2012) about geological street names reminded me of my own address of Tilehouse Green Lane, in Knowle, which must have a geological significance.

Tilehouse Green showing Marlpitts Cottage, with Copt Heath rising in the background.

We live on a heavy clay soil above Mercian Mudstone. At the end of the road is 'Marlpitts Cottage' and a hollow where a tile kiln was reported to have stood. Just beyond this cottage, the Mudstone is covered by fluvio-glacial sand and gravel; this is Copt Heath - no farms here but a well drained golf course. Half a mile in the opposite direction lies Bentley Heath - again an area covered by sand and gravel - which remained uncultivated common land until enclosed during the early nineteenth century. On the way to Bentley Heath, is Brown's Lane, Mr. Brown operated a commercial gravel pit until the land was recently taken for housing. In both Four Ashes Road and Mill Lane there were brick works processing the local Mudstone clay.

Much of this is recent history; both Mr. Brown's gravel pit and the Mill Lane brick works were still in business in the 1960s. Dating back to earlier times, there are at least five moats in the area, around former farm houses or manors - all on the Mudstone - were they dug for protection or water and food supply, or for drainage on the impervious clay soils?

It can be inferred from the local BGS map (Sheet 183) that the whole neighbourhood was once covered by Pleistocene deposits but it seems that the nearby River Blythe and its local tributaries - Purnells Brook, Bentley Heath Brook and Tellewell Brook - have washed away some of the drift to expose the underlying fertile Mudstone clays, leaving sand and gravel heathland in between. The names, the land use and the former industrial activity were mostly determined by the underlying geology - as is the poor drainage of my garden.

Tilehouse Green moat

The Nuneaton – Atherstone Ridge

A visit by the Reading Geological Society

Carole Gregory

The objective of the visit was to study the Cambrian-Precambrian junction and the rocks of which it was composed. We were fortunate to have John Crossling and Brian Ellis from the WGCG to lead us on this visit, who with the benefit of their local knowledge, were able to take us to both Boons and Jees (Hartshill) quarries, followed by an overlook at Mancetter quarry.

The geology of Warwickshire is very different from the Thames Valley and the South East of England, so a visit to this area was particularly interesting for us. We are rather more familiar with exposures of much younger material, particularly limestones, clay and sandstones.

Our visit to Boons quarry led to a lively discussion about the formation of the rounded blocks seen at the corner of the SSSI and the dykes and sills intruded into the pyroclastic material.

John had suggested that, as the access to Jees quarry might be under water, wellingtons would be advisable to avoid getting wet. He was almost right! If the water had been 5cm lower all would have been well, but everyone ended up with their own portable paddling pool, to the amusement of all! After emptying boots and wringing out socks we then examined the Cambrian sandstones and shales, some with spectacular evidence of bioturbation. We were challenged by John and Brian to locate and identify the sills and dykes of Ordovician age. The RGS enjoys a challenge, so went to it with gusto!

We left Warwickshire with a great sense of fulfilment, determined to return. We are very grateful to both John and Brian for giving up a Sunday to lead us and for providing such an interesting day.

The Nuneaton – Atherstone Ridge

A visit by the North Staffordshire Group of the Geologists' Association

Patrick J Cossey

On a warm summer's day in September, 6 members of the NSGGA ventured south into the English Midlands to visit, along with 16 members of the WGCG, some internationally famous sites of Precambrian - Lower Cambrian age in the Nuneaton inlier. The meeting was led by Alan Cook and Brian Ellis.

Our first stop, at the disused Woodlands Quarry provided a spectacular Lower Cambrian section extending from the Hartshill Sandstone Formation (Woodlands Member) through to the overlying Stockingford Shale Formation (Purley Shale Member) where a complex lamprophyre sill close to the formation boundary containing large rafts of country rock (xenoliths) generated lively debate about intrusion mechanisms.

Xenolith 'raft' in lamprophyre sill at Woodlands Quarry

After 'lunch on the move' the party rapidly descended into the depths of the enormous Boon's Quarry another disused stone quarry and SSSI. Among the features seen was an impressive section of the Precambrian Caldecote Volcanics Formation and the the overlying Boon's Quarry Member (Hartshill Sandstone Formation). Other features examined included the deeply weathered top (unconformity surface) which separated these two units and a vesicular basalt of contentious origin (lava, dyke or a sill) within the volcanic pile.

Brian Ellis addressing the troups at Boon's Quarry

Following several votes of thanks to our leaders the party dispersed happier and wiser with their new found knowledge of this intriguing part of the English Midlands. A thoroughly enjoyable day was had by all!

Protecting Warwickshire's Geological Heritage

Paul Akers

An important role carried out by WGCG involves the selection, monitoring and conservation of Local Geological Sites (LGS) in Warwickshire. These sites do not have formal statutory protection in the same way as SSSIs but, by notifying local planning authorities of the sites that have been designated in their area, they can be protected through the planning process. The location of all the sites is included as a layer on the Geographic Information System.

Selection of sites is the responsibility of the LGS Panel comprising the Keeper of Geology at Warwickshire Museum and the Area Representative of Natural England together with the Chairman, Conservation Committee Chairman and the LGS Officer from WGCG. To be selected a site must be valuable for educational purposes, for study by Earth Scientists or be of historical importance. Suggestions for new sites can be submitted to the Conservation Committee who maintain a list of potential sites. This list, which currently stands at 16, is reviewed regularly and sites are selected for evaluation based on their accessibility and importance of the geology plus, of course, the willingness of members to spend the time on visiting the site and writing a proposal.

The first LGS designated was Roundberry Quarry near Polesworth where the only good exposure in Warwickshire of the Triassic Polesworth Formation, formerly known as the "Bunter Pebble Beds", which comprises poorly cemented, reddish-brown sandstone with thin beds of red mudstone and conglomerate, can be examined.

Over the past twenty years 101 sites have been selected. The 90 of these that are still designated represent virtually all of the geological formations that occur in the county ranging from the Pre-cambrian Caldecote Volcanics at Judkins Quarry near Nuneaton to present day deposition at The Dumble Tufa Springs near Kingsbury. Only three formations are not represented. The first site selected was

Roundberry Quarry (Triassic sandstone, mudstone and conglomerate) near Polesworth and the most recent at Astley Castle (Carboniferous sandstone) near Nuneaton.

Occasionally some obstacles have to be overcome when visiting a site. In order to examine the exposure of the Devonian Oldbury Farm Sandstone Formation at Mancetter Hill Farm Quarry, we had to coax the cows to move.

In addition to new site assessments, an activity which all members can be involved in is the regular monitoring of the condition of the sites. The first monitoring of all sites was carried out during the winter of 2008/9: not the best time of the year to carry out the work but funds were on offer from Natural England which had to be claimed by the end of March. We now monitor the sites in a far more civilised manner visiting about 20% of them in the summer months and we are grateful to the 12 members who volunteered to help over the last two years. This year we aim to cover about 24 sites and all members will be invited by email to participate. It doesn't require any great geological knowledge as it's just the condition of the exposure and accessibility issues that are reported on.

The most recently selected LGS where an exposure of the Carboniferous Whitacre Member of the Salop Formation can been seen below the curtain wall of Astley Castle.

WGCG members carried out clearance work at Temple Grafton Quarry in 2009

Conservation of some of the sites has been carried out on a very limited scale. This has involved the re-exposure of faces that have become obscured by vegetation or erosion. In recent years, work has been carried out at Kenilworth Cutting, Steppy Lane, Purley Quarry and Temple Grafton Quarry. As it is only possible to maintain a very small percentage of the 90 sites and as the benefit is often temporary, there has been debate in the Conservation Committee as to whether this activity is really worthwhile. Although a conclusion has yet to be reached, it has been suggested that clearing selected sites in order to improve the interpretation of the geology and keeping clear a small number of important sites, which are readily accessible by the public, can be justified.

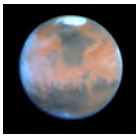
Before going to monitor the condition of The Dumbles Tufa Springs, it's advisable to telephone the MOD number supplied

Information on all of the sites can be found on the dedicated LGS web-site which can be accessed by the link to Local Geological Sites from the home page of the WGCG site. Here you can browse the sites by name or number, by location using an interactive map or by the geology present. Full information on the geology, a photograph of the exposure and a location map can be found for every site.

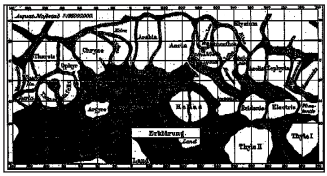
Hopefully this article will encourage more of you to use the resource at:- **http://wgcg.freehostia.com/LoGS/LoGS-home.html**

Mars - The red planet - Winter talk

Jim Passmore



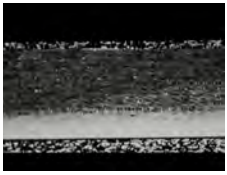
According to Bojan Novakovic (University of Belgrade), in his book "***Senenmut: An ancient Egyptian astronomer***" the Egyptians were aware of the planet Mars as early as 1534BC.



In 1877 the Italian astronomer Giovani Schirparelli mapped the surface of Mars, and described the "*connotes*" (channels) erroneously translated into english as canals.

In 1954 many of us, as children, were glued to our seats each week listening to the radio series "***Journey into space***" by Charles Chilon with the exploits of Captain "Jet" Morgan and Co. on the martian surface.

By 1964 the American "***Mariner 4***" spacecraft was circleing the planet sending back images of the surface, and in 1971 the Russian "***Mars 3***" and "***Mars 4***" landers had reached the surface - the Mars 4 craft managing to send back a single grainy image before it expired.



The first truly successful landing was in 1976 when the American "***Viking 1***" craft landed and operated for 6 years, finally ceasing in 1982.

Today the latest American craft "***Curiosity Rover***" is on the surface and around the globe are a number of principal investigators, two in the UK, one of these being ***Prof. Sanjeev Gupta*** (Imperial College) who has now turned his attention to Mars!

Many of you may recall that he gave us a brilliant talk in 2010 when he outlined his evidence for the breaching of the chalk ridge linking Dover to Calais, so forming the Straits of Dover.

WGCG are delighted to announce that **Sanjeev** will return on the **18th September** to launch our 2013 winter season with a talk entitled:

"Curiosity Rover and Martian Geology".

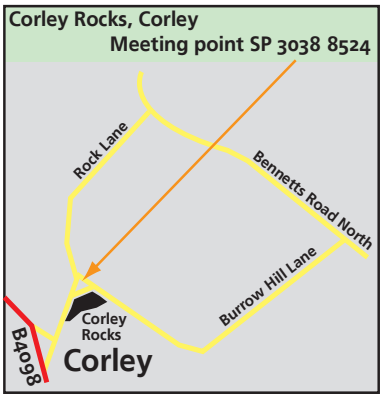
Put it in your diary now - not one to be missed, and tell your friends!

WGCG Field Trips 2013

Saturday 6th April

N. Woodloes Quarry, Warwick
Building Stones walk
and Warwickshire Museum
(joint meeting with Black Country Geol. Soc.)

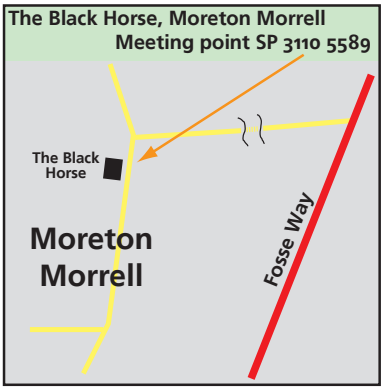
Leader: Hugh Jones
Meet: 10.30 a.m.
Warwickshire Golf Course,
Leek Wootton - car park



Wednesday 15th May

Corley Rocks
Carboniferous Salop Formation
(possible conservation exercise)

Leader: Jon Radley
Meet: 7pm
Rock Lane, Corley



Wednesday 19th June

Moreton Morrell walk
White Lias scarp & development
of the Dene Valley

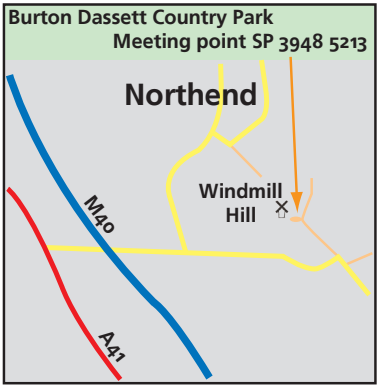
Leaders: Ian Fenwick & Brian Ellis
Meet: 7pm
Black Horse car park,
Moreton Morrell

WGCG Field Trips 2013

Saturday 13th July

Burton Dassett Hills and Cross Hands Quarry
Lower Jurassic sequence, especially Marlstone & Jurassic fossils in Chipping Norton Limestone
(Joint meeting with Leicester Lit. & Phil.)

Leader: John Crossling
Meet: 10.30am
Burton Dassett Country Park
Windmill Hill car park



Saturday 10th August

A (magical?) mystery tour of Geological sites in south Coventry

Leader: TBA
Meet: 10am
Mitchell Avenue, Canley

Wednesday 21st August

Stoneleigh Road section (Bromsgrove Sandstone) and Sandiacre garden
(another mystery!)

Leader: TBA
Meet: 7pm
Sandy Lane, Kenilworth

WGCG Outreach Events

Brenda Watts

This year we are organising Outreach activities at the events shown on page 19 during the summer of 2013. We hope you might be interested in helping at one or two of these events.

Geology expertise is not essential – it's mainly a chance to explain the activities of the group and to encourage interest in the local environment, including its geology. Those who assisted last year found the events to be enjoyable.

If you wish to become an able and willing helper please contact either myself - Brenda Watts - or our chairman - Brian Ellis - at one of the evening meetings.

If that is not possible please contact us by phone or email.

Brenda Watts
on 01926 857351 or at brendawatts5@googlemail.com

Brian Ellis
brian@cwellis.freeserve.co.uk .

In addition to the events shown on page 19 the group also hopes to organise an Event for Teenagers. Details of this will be announced at a later date.

The Kenilworth Festival

The festival runs from Tuesday 7th to Sunday 12th May. WGCG propose to have a stand here on Sunday 12th May.

The Leamington Peace Festival

The festival is on Saturday 15th & Sunday 16th June. WGCG propose to have a stand here on both days.

http://www.peacefestival.org.uk/

Coombe Abbey Country Park

The park is holding an ***Event for Children*** on Saturday 27th July at which WGCG proposes to have a stand.

http://www.coventry.gov.uk/directory_record/278/coombe_country_park

Astley Castle

The castle, run by the Landmark Trust, is holding ***Open Days*** from Friday 28th to Sunday 30th June and from Friday 13th to Sunday 15th September at which WGCG proposes to have a stand.

http://www.landmarktrust.org.uk/our-landmarks/properties/astley-castle-683

Images and logos reproduced courtesy of the respective organisations