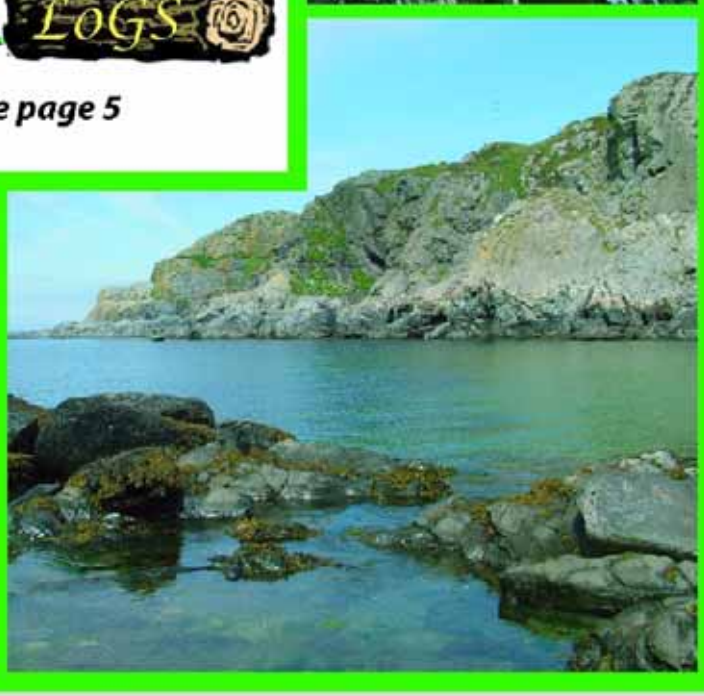
WGCG

Autumn 2009 Newsletter

Issue No 18

See page 5



Summer field trips

Warwickshire Geological Conservation Group

From the Chair

In this issue you will find accounts of some of our activities this summer and also of the second Colonsay visit arranged by Maurice Rogers. Those of us who went, spent another week on a beautiful island with challenging geology and excellent leaders from Skye, Edinburgh University and the British Antarctic Survey.See Jane's account.

Our final field excursion in late September, with the Leicester group, was to Boon's and Gee's quarries in North Warwickshire also gave us plenty of challenging geology across the Pre-Cambrian/ lower Cambrian boundary with the added bonus of Carboniferous fossil plant collecting from the barren Coal Measures brought in from Daw Mill colliery. Last year, incidentally, the greatest underground coal production in Britain came from from the 'Warwickshire Thick Coal' and this one remaining pit. With help from leaders Alan Cooke, John Crossling and Chris King we were helped to unravel some of the story of the pyroclastic and depositional features in these ancient Warwickshire rocks. Tess Ormrod found a stunning selection of 'Small Shelly Fossils' from the early Cambrian hyolithes limestone. These are some of the earliest fossils with hard skeletons known, and our Warwickshire examples mirror those in Russia and Newfoundland.

Tess is preparing a small display for the evening of the AGM. I hope this will then be taken to the London, on Saturday 31st October. You will find out more about the Festival of Geology on pages 10 & 11. WGCG winter programme of talks at the Senior Citizen's club in Kenilworth and also details of the Warwick University Open Studies Earth Science courses can be found on the back two pages of this newsletter.This year could be the last of these adult courses as there is no longer government funding supporting them. Reorganisation in the University means that WGCG has also lost the office and accommodation in the Centre for Lifelong Learning. Committee members and volunteers helped the move out over the summer.Though WGCG are currently without an office the address can still be used.

Ian, Maurice, John Crossling and Jon Radley have continued WGCG initiatives with RIGS, building stones, the North Warwickshire Ridge Project and the LGAP. Chris and Jane follow up meetings with regional and local LGAP and LBAP groups. Added to my contacts with the Wildlife Trust, UKRIGS, GT and the Geoconservation Commission, WGCG is able to contribute to wider geoconservation development. WGCG was the first group to use Geological Conservation in our title. Next year we will be 20 years old. A time to celebrate?

I hope you may be free to come to the launch of the new Leaminton trail on Thursday 15th October and that you will be at the AGM on 21st, the GA Festival is on 31st Many October opportunities for geology !

At the AGM there will be the opportunity to have explained a proposed new constitution with attendant changes in the way WGCG could be organised in the future. A group have been working extensively on this and will put their proposals to members then, so do come along.

Martyn Bradley

CONTENTS - Issue No. 18

Autumn 2009

Cover photos

Watchet & Colonsay field trips.

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A NEW OPPORTUNITY

Changing the groups' status by Ian Fenwick

For several years there have been serious problems in persuading members to put their hands up to help with the running of the Group, and for good reason, notably a fear that they could be liable for any debts incurred by the Group. This has resulted in fewer and fewer people being involved in what has been a growing number and size of commitments. Conservation schemes such as the Mancetter project, site monitoring and management plans, education projects like Brueton Park have all had to be managed by a very small core of members …. most of whom are already doing an awful lot! Clearly this situation couldn't continue.

So, for nearly 12 months, a working group of some 14 members has been seeking solutions to our dilemma. They have proposed, and the Management Committee have supported, a plan to convert the Group into a Charity run by a Board of Trustees. Now, charity law is not simple so what follows must be a simplification!

A draft governing document has been approved for submission to October's AGM. Key points of this are:

The Objectives of the Group - these are wholly charitable and focus on our key activities of identifying, documenting & conserving vital sites in Warwickshire's geological story, and creating 'public benefit' - a key Charity Commission requirement - through our programme of talks and field trips. **In other words our focus remains exactly the same.**

A Management Committee comprising nine trustees and two observers from Natural England and the Museum; this larger committee should give more opportunities for trustees to 'learn the ropes of the main' positions;

Elections by a postal/email ballot of members (to encourage maximum participation)

Devolution, as now, of conservation and education issues to sub-committees

What will change however is that the Trustees will work to a rigorous regime of procedures and reporting. In return, a 'shelter of protection' is provided by the Charity Commission, and this will probably increase in the fairly near future. The Group will benefit by gaining access to Gift Aid, VAT exemption and to funding opportunities available only to charities.

In short, we hope that these changes, if endorsed by members at the October AGM, will encourage more of you to come forward and 'get involved', even in small roles so that, as a whole, the Group can move forward in a more secure and professional way.

Come and join us. The next few years could be really exciting!!

Warwickshire LoGS - NO. 1:
A22 QUARRY, HORNTON

by Ian Fenwick

A422 quarry Hornton

As of 1st August 2009 we have some 85 sites designated as Local Geological Sites (formerly RIGS). The change is terminology was initiated by the Dept. of Environment, Food & Rural Affairs back in 2006 when they produced new guidance covering both geological and wildlife sites. In that the terminology used by the two conservation interests were quite disparate Defra advocated that we use the term Local Geological Sites (abbreviated by us to LoGS - seemed quite appropriate).

A few of these have been selected for their geomorphological interest but the vast majority are included for their geological significance. The latter tend to be clustered in those areas of the county where quarries, be they small or extremely large, have been excavated over the centuries. It's no surprise, then, to find a cluster of LoGSs on the Marlstone Rock escarpment, commonly referred to as Edge Hill. One of these has the undistinguished name of 'A422 Quarry, Hornton'.

Until the end of 2008 this was an active quarry operated by the Hornton Stone Co. where they quarried Hornton Stone, a feature of local villages, but also used in the Shire Hall in Warwick and the Post Office in Solihull. Unfortunately, hit by the recession, the company was taken into administration and, to date, no purchaser has been found. However, the quarry is well worth a visit by the eager geologist.

A section some 4m high and 200m long in the Lower Jurassic Marlstone Rock Formation remains hard by a public footpath. This runs from the A422 to Hornton road at SP 3773 4580 through to the A422 itself at SP 3785 4440. From the path the oolitic ironstone can easily be examined as can the fine soil profile which has developed on it. In its unweathered state the ironstone is rich in berthierine (formerly chamosite), an iron silicate, which gives to the freshly quarried rock the local name of 'Blue Hornton'. More commonly, you will find the rich, rust coloured rock so characteristic of villages like Ratley and Warmington. Fossils, notably brachiopods, often as 'nests', bivalves and belemnites, can commonly be found in the debris by the footpath.

Happy hunting!

ROYAL LEAMINGTON SPA
its geology and building stones
by Martyn Bradley

The WGCG has recently produced a new leaflet, **Royal Leamington Spa - its geology and building stones**. An earlier version, written by John Crossling for Warwickshire Museum, was used in the second term of the University Open Studies Earth Science certificate course. Now two of our members, Dez Barbara and Tony Elger, have updated and expanded this trail as part of their coursework.

Julie Harrold has then edited, designed and organised the printing of the new leaflet, with the Gloucester Geology Trust assisting us with software.

This new leaflet was first used on Sunday 20th September during a Geologist's Association field trip to the town. The formal launch will be on Thursday 15th October by the mayor of Leamington.

WGCG members will be very welcome to come to this launch which will be starting from the top of the Parade at 10am. I hope we may be able to use Julie's geology knowledge and design skills to help us with further trails.

Dudley Rock and Fossil Festival
by Jim Passmore

This is the year of Darwinian celebrations. In Dudley Museum one room has been set aside for an exhibition. The many children present were more interested to see the large fossils on display, especially the Tyrannosaurus Rex scull on loan from the Lapworth Museum.

Stalls in the Concert Hall opposite were gems, crystals and fossils as well as old geology books for sale.

At the Coroner's Court next door Andy Reece, a PhD researcher, gave a facinating talk about Carboniferous Genko seeds. He uses using CAT scan technology to produce 3D models and is able to show that the seeds of today have changed very little.

Watchet - May 2009

by Tiur Passmore

In the Spring I dutifully followed my husband on a geology field trip to Wachet, the event being organized by the Warwickshire Geology Conservation Group. Each year a weekend field trip is organised, this year taking place in the Spring. Members take their respective vehicles but are expected to carshare making it easier to stay in local B & Bs and drive to the various sites.

This year the field trip is in Watchet, a small town located along the North coast of Somerset. In the olden days it was a bustling port with many ships on their way to Bristol. In addition to that, there is a ferry near the town to transport the stone which is a well known "Watchet Lime". The purpose of this visit is to explore Watchet geology and be guided by a local expert geologist. Most members of the group are amateur geologists, but many have attended a geology course held at the Centre of Life Long Learning in the University of Warwick.

On the first day; we arrived at the meeting place, Chives Deli & Café from where the field trip will begin. Jane, Jim and Peter and I arrived at 11:45 where we met with fellow participants. With not much time for lunch I quickly filled my stomach with a pork and apple pasty. The event coordinator asked us to sign the list of attendance for health & safety and insurance purposes and also reminded us of equipment to be used - safety boots and helmets, plus goggles when using hammers to break rocks.

The group departed for Woolston Quarry in the Quantock Hills. We would be able to see a different type of red stone called the Old Red Sandstone. The former quarry is located near a working dairy farm, and at 3:30 it is milking time so we must be away by 3.15m. Our next visit is to the Kilve shore, to see the mud volcanic (tufa capped Mud Volcanoes).

Woolston Quarry

Once we satisfied visiting the beach, we go to a cream tea house to enjoy traditional hot drinks and scones. This is my highlight of the event, enjoying the tea and chocolate walnut cake enjoying conversation with new friends about stone.

That evening dinner was held at Chives Deli & Café. Normally the cafe is only open until 5 pm but it was opened especially for us. Discussion at the table was not too far from what we saw or

Kilve shore

experienced earlier. The lady sitting opposite me, Hilary was a new member of the group, a retired music teacher. She enthusiastically participates in lectures and will be joining an "Earth Science" course at the University of Warwick in the upcoming autumn term.

On the second day, we met in the town centre at 10.00 am. The walk was guided by Chris Wood an experienced Geologist. He suggested that we bring our food and drink with us as there are no restaurants near the area we are visiting. Firstly we walked through the city and our guide Chris showed us some of the old buildings that still have their walls made of the Watchet limestone.

Our destination is the Watchet Fault some way along the stony coastal beach. At the entrance to the beach Chris explained the history of the area. There is a stone wall by the entrance to the beach. He said that he will start his explanation from the start of the beach and we moved toward to the entrance. As we walked along, ss far as one can see are rocks and a dry stony beach . Why we are here? But the most striking thing is how clean the beach is. I did not see any litter there. Ann Fenwick explained that this beach is a SSSI site meaning that it was kept that way as this is a beach for scientific purposes; people can come to enjoy the beach but no restaurant or cafés so as not to damage the environment.

Once we arrived to the end of the beach, Chris Wood explained about the stones and the stones walls. He explained about the fossils there. We found many stones with a fossil shells. There are small fossil shells also a large mother of pearl fossil. After that he invited us to sit and have our lunch. I did not realise it was already past midday having been engrossed in the walk along the beach and the explanations given by Chris. I quietly enjoyed my Pear and Exmoor Blue Cheese sandwich from Chives Deli.

After enjoying our rest, we started looking at all the fossils and I collected some sea shells. After that we continued our way back to the entrance. Chris explained that every layer can be translated and connected to the activity to humans at that era... The cliff does indeed look like a layer cake. Dr Chris Wood Geologist with a specialty in anthropology. The participants appear enthusiastic; with a small hammer theyplit stone, seeing the stone through the magnifying glass and exchange views discussing about the rock that they found. I was also busy walking and collecting sea shells or odd-shaped stones, these are in many different forms such as a triangle, rectangle or rounded like a "Faberge" egg. Once satisfied with

the Watchet Fault, our group moved back to the town centre, this time to the docks. Today's tour ends here.

It was already 4 pm already but many of the participants still want to go to another beach. My stone lecture is enough for today so Jim and I, together with several others went back to our B&B. After enjoying a cup of tea we went out again to tour the "Watchet Heritage Trail" based on the map obtained from the tourist information centre. We saw the heritage of this town including the Coronation clock and an old building that was a factory for a clothing brand Van Heusen. Later, in the museum, we saw examples of the local stone and information about the quarry that existed in the past.

Watchet museum

For Saturday night dinner, we went to Pebbles Bistro. The bistro is a small yet giving the warmth and has an impression a homely feeling. We had been requested to confirm our dinner menus beforehand so on arrival the restaurant is ready to serve us, since we all flock in at the same time.

I sat with the other Hilary. Apparently, she had read "The Malay Archipelago" and has been to Bali and Singapore. Both of us are fans of Arthur Russell Wallace. I mentioned that in Indonesia I learned about Wallace in primary school. We have to show where the Wallace line is on the map. Wallace found that there is a similarity between flora and fauna on the islands of Sumatra and Maluku and that in parts of Australia. Last year there was a celebration for the work of Wallace. Perhaps next time I go to Indonesia I can produce a Wallace Trail! As a plant lover, Hilary has been pleased to see all the plants that Wallace has written about in his book. Our other friend, Jane, who gave us a lift in her car, shared stories of visit to a geology conference in Australia. I am amazed not only with her stories and experiences but about her travels to another continent in order to listen and learn about rocks. Definitely it can be a really passionate hobby. Such an enjoyable evening, surrounded by people who love plants and talking about rocks and fossils.

The next day, after breakfast, we check out. Before our return trip home, we will visit two places, Blue Anchor Bay and St. Audrey's bay. On this last day Jon Radley, curator of the Warwick museum, will be our guide. He explained Palaeozoic environmental change. In Blue Anchor bay we can see the changes on the Palaeozoic era. Where there is a layer of stone at the top from the Triassic period

St Audrey's bay

and at the bottom from the Jurassic period.

After enjoying our lunch in the car, we continued the journey to St Audrey's bay where he explained that another series of stone - Mercia mudstone. The last place that we should visit before returning home is a stop behind a cliff in St. Audrey's bay. Surprise! There is a water fall. Everyone is enthusiastic, except me. If only I could show them the Seven Water falls in Cilember, Puncak in West Java they would have more excitement.

Prior to this trip my view was that all stones look the same. In 2006, when visiting Wadi Rum in Jordan a fellow traveller was a geologist. He tried to explain to me about the rocks surrounding us, saying that by looking at the rocks he can tell that there was a flood there. I was sceptical and laughing inside but he was adamant that the rocks can talk. Over the past year with the WGCG and now, learning from the expertise of Chris and Jon about how each rock can indicate the changes in one era, either from Jurassic or Palaeozoic, impressed me. Never again will I be laughing at people who say that rocks can talk. We can learn a lot about past history from them.

FESTIVAL OF GEOLOGY

Saturday 31st October 2009 - 10.30am to 4.30pm Entrance **FREE**
University College London, Gower Street, London, WC1E 6BT

GEOLOGICL EXTRAVAGANZA - *Fossil & mineral displays, stonecraft, books, maps & geological equipment*

DISCOVERY ROOM *-Activities for children. Fossils, racing trilobytes, Jurassic dioramas*

TALKS BY -

Prof Iain Stewart - *How Earth Made Us*
Dr Danielle Schreve - *The Life & Death of the Woolly Rhino*
Dr Steve Edwards - *Big Booms, Moving Mountains & Wicked Geohazards*
Dr Ruth Siddall - *Dust to Dust & Ashes to Ashes: Geology of Romano Egyptian Decorated Mummy Cases*

GEOLOGISTS' ASSOCATION

WGCG is affiliated to the GA. We receive copies of their magazine and full members also receive the Proceedings. WGCG members are welcome to join all GA activities. The programme of talks in Burlington House, Piccadilly, is free to full members, affiliates and guests pay £5. All participants on their day field trips pay a registration fee of £5, the longer excursions both in UK and abroad are priced to cover travel and accommodation. Each autumn there is a 'GA Festival' which is free. This year it is at UCL in Gower St on Saturday 31st October with displays by GA local groups, trade stands and speakers including Iain Stuart who fronts the TV "Earth" series.

On the Sunday there are field trips including a building stones walk in London with Eric Robinson as well as day trips to Essex, Surrey and Kent. Details at **www.geologistsassociation.org.uk** or on the back cover of the current 'Down to Earth. WGCG usually take a display, and I am hoping that some members will be able to help this year .The GA through the Curry Fund give a small grant towards materials for the display and transport to take it to London. In the past the Curry Fund has financed our Warwickshire 'fossils' and 'building stones' boxes. The Curry fund also contributed to our Warwick trail leaflets and the new Leamington geology and building stones trail leaflet.

The GA supports WGCG in other ways, we use their public liability insurance policy and they advertise our events. For the opening of our Brueton Park geology display Rockwatch loaned us radio controlled trilobites which will be on the Rockwatch stand at the festival, but I suspect competition to have a go will be intense! The GA is keen to recruit new "full members", details and their future programme is available on their website.

Martyn Bradley

Do you know about these FREE magazines?

Earth Heritage: The geological and landscape conservation magazine. You can be placed on the mailing list through **david.evans@naturalengland.org.uk**, phone 01733 455204 or online at **www.seaburysalmon.com/Earth Heritage.html** as a PDF file.

Planet Earth: Published by the Natural Environment Research Council - you can be placed on the mailing list via editors@nerc.ac.uk or by phone 01793 442629

Those of you who visited BGS and saw the Ediacaran material might like to know that the Spring 2009 edition of Planet Earth pointed to some new evidence about environmental conditions. This can be accessed at **www.planet-earth.nerc.ac.uk** and on the Home Page enter in the search box the word *snowball* for one item and Ediacaran for the other.

Brian Ellis

Colonsay - August/September 2009

by Jane Mitchell

Once on board the Ferry in Oban the members of our party gradually congregated in the lounge after we had stowed our luggage. I think we began to recognize members of the party by the style of our travelling clothes. Maurice introduced Elizabeth and himself and briefly explained what was planned once we arrived in Colonsay. We were also introduced to Dr. Mike Flowerdew and Professor Brian Upton as our expert guides for the week.

Later that evening we all gathered in the lounge of the local hotel where Maurice explained at greater length what was planned but that it would remain flexible depending on the weather or peoples wishes.

Monday morning we started off on the track for Scalasaig Lighthouse Headland and Loch Staosnaig where we looked at small scale folding and kinking (crenulation) of Phyllites. Dr Mike Flowerdew asked us to examine the surfaces very closely for small dark spots of chlorite and muscovite minerals in the aluminium rich rocks. The spots may have formed as a secondary product after the first metamorphosing event of shallow marine sediments. They were not so easy to see!

Pennant Dyke with augite and biotite crystals

We continued on to Staosnaig to take a look at an ancient dolerite dyke. We tried to find the point where the hot magma contacted the cold country rock and cooled rapidly. A few people did recognize the point.

Professor Brian Upton explained how the term 'dyke' came to be used by the early geologists. Apparently, when the dyke has been exposed by weathering of the much softer surrounding rock, it resembles a dry stone wall, referred to as a dyke by countrymen who built the walls dividing farm fields and boundaries etc. Fracture lines in an intrusive dyke give it the appearance of the varying sizes of stones used for walls in the north of the U.K. As many of the exposed dykes are sills and therefore horizontal, the resemblance to a 'wall dyke' is plain to see.

As the weather forecast looked to be promising, it was decided to visit the beautiful Kiloran Bay on the second day. At our first stop we looked at some rounded phyllites half buried in the footpath as we approached the bay. We could not see mineral spots in these specimens but we were also asked to look for fine grooves and striations, evidence of glacial movement. The rocks were really smooth and I could just see these marks as I changed the angle at which I was looking and hence the angle of the light hitting the surface. A quick glance is never enough.

On to the beach where we took a look at more folded phyllites. The larger crenulations exhibited the same alignment as the fine ones and, therefore, both were probably formed in the same event. However, apparently some geologists believe there were two periods of folding. The folding can occur at about 347 degrees Celsius and at this temperature muscovite and chlorite follow the line of least resistance to form new minerals.

We moved along the beach to view the lovely Vent Breccia with its kaleidoscopic mixture of colours and varying sizes of rock fragments, which has been worn smooth by wind and wave action. We eventually left the breccia and passed up and over a steep sand dune into Port Easdail where a large block of syenite had intruded millions of years ago but now stood out on the beach in a glorious salmon pink colour. A few metres away looking southwest a much smaller black hornblende rich dyke was exposed, lying horizontal along the sand, in which small pebbles of undigested white quartz could be seen.

In this bay we had our lunch and enjoyed the scene but soon a very large dark cloud was moving towards us rapidly, so we made our way back to the cars but we were drenched before we reached the cover.

On the fourth day we had a steep and fairly arduous climb up a narrow footpath, negotiating large rocks on the way, then a trek across a very wet bog and stream. Finally, after another climb through more bog myrtle we reached the Thos.Pennant Dyke. Brian Upton had studied this dyke in detail before it was made a GCR site. We were rewarded with good exposures of the rock to photograph but not to hammer. The large crystals of biotite and augite were immediately visible and not difficult to photograph.

Mr. Kevin Byrne kindly accompanied us on the visit to this dyke together with his rich brown Labrador dog. During our 2007 visit Mr Byrne gave our group an interesting talk with slides one evening on the archaeology of the island.

We also met the midges for the first time as it was rather humid and the wind had dropped. They really are rather fierce little critters!

The following day there was another long walk before we reached Balnahard Bay but this time the path and route was reasonable. We visited several rock formations and I now think I can recognize Pegmatite (well maybe). At some distance away we saw an excellent example of conglomerate which had both rounded pebbles as well as those which had been deformed and stretched into thin pencil like shapes during a period of plasticity and strain.

Lamprophyre-fold-in-Balnaha

Brian Upton suggested we should remember to talk about 'compositional layering' when discussing 'banded gneiss'. The different minerals collect together and form layers under metamorphism and the texture of the layers can be distinguished by touch.

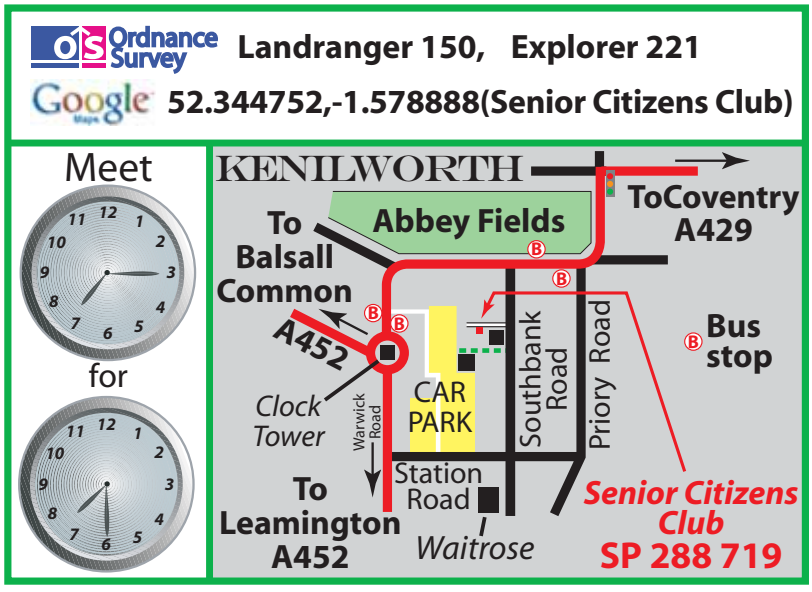
At the end of the afternoon, after another difficult climb over sharp rocks ranging from shallow to 2-3 feet high, we saw a large dyke of folded lamprophyre in a shade of pinkish beige. It was a really dramatic example of folding and well worth the scramble over difficult terrain.

Once again Maurice and Elizabeth have succeeded in organizing a very successful field trip with new sites to visit. The detailed planning and correspondence etc. take up months of work. We were also very fortunate to have two such experienced geologists with us to explain the rocks in terms that we could understand with our varying levels of knowledge. Not only did these two kind gentlemen spend the day with us but spent a lot of time during the first two evenings energetically trying to light coal fires with fuel which refused to continue to burn. Finally a good quality anthracite was purchased and collected by Elizabeth (and John I think) and which remained alight all night. Elizabeth also made all the shopping trips for our breakfasts and lunch packs as well. It was good to have Elizabeth's cousin John and his wife Brenda with us, who very kindly ferried us about the island and kept a watchful eye on the slower members of the party.

In the evening we all made our way to 'The Pantry' where we were greeted with the same smiling faces of May McKinnon and Margaret to enjoy more home made dinners as we did in 2007.

A huge 'thank you' to everyone for all the work and attention to detail, in all aspects of the trip, which once again made the second visit to Colonsay such an enjoyable and memorable experience.

Winter evening meeting venue in Kenilworth



Held at the **Senior Citizens Club** in Southbank Road unless otherwise stated. Meet at 7.15pm for tea or coffee with a 7.30pm start.

Free Car parking

Parking at Abbey End car park is Free after 6pm.
A footpath joins the car park with Southbank Road.

Bus routes

Route **12** (Travel Coventry)
Coventry - Kenilworth - Leamington

Route **X17** (Stagecoach)
Coventry - Kenilworth - Warwick

Arrangements for the unexpected cancellation of meetings:
An email will be sent to all members, and phone calls to those not on line.

The WGCG mobile phone will be answered on the day from 11am:
The number to ring is 0752 7204184

WGCG Programme summary

Meetings 2009/2010

Evening meeting - Wednesday 16th September
"Diatoms and the Quaternary"
Talk by Dr Jason Jordan

Evening meeting - Wednesday 21st October
AGM with the RIGS Presentation Loop produced by Ian Fenwick.
A review of our Warwickshire sites surveyed by members earlier this year, showing the essential fieldwork co-ordinated by Ian and Brian Ellis.

Evening meeting - Wednesday 18th November
"Darwin and Coral Reefs"
Talk by our Chris King.

Evening meeting - Wednesday 16th December
Christmas Members' Evening -
Traditional chance to share field experiences and
get that rock or fossil identified!

Evening meeting - Wednesday 20th January
"The Ediacaran, Snowball Earth and other Australian Ice Ages"
Talk by Brian Ellis

Evening meeting - Wednesday 17th February
"A Few Interesting Fossils"
Talk by Hugh Jones.

Evening meeting - Wednesday 24th March
Speaker to be confirmed

DAYSCHOOL

Fossils and the history of life - Martyn Bradley

Spend a day learning about fossils, how they were formed, when the various groups appeared in earth's history, where they lived and how they evolved. We will consider theories on the development of life and the impact of 'mass extinctions'.

Reference: 5178/AU09A

Date: Saturday 7th November 10:00 to 16:00

Venue: The Percival Guildhouse
St Mathews Street, Rugby, CV21 3BYL

See back page for contact details

Earth Science and Geology

Autumn Term 2009

LANDSCAPE AND SCENERY IN WARWICKSHIRE

Tutor: Martyn Bradley

Reference: 10043/AU09

Learn about geology with 'hands on' study using real specimens of rocks, minerals and fossils. Illustrated lectures will introduce how landscapes reflect the underlying rocks and geological structures and how wildlife and vegetation mirror this geology. A field trip will explore local sites.

Nine classes plus one field visit (cost of travel not included in fee).

Courses start on Monday 5th October
Times : 7 - 9pm Lifelong Learning Building WCE0.9a, Westwood

To enroll please go to the **centre for lifelong learning** website:

www.warwick.ac.uk/cll/courses/openstudies/bysubject/earth/

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THE UNIVERSITY OF WARWICK

CLL centre for lifelong learning