Warwickshire Geological Conservation Group

NEWSLETTER ISSUE No. 13

Spring 2007

From the Chair

The Geological Society of London founded in 1807, is publicising bicentennial events in the Midlands as well as further afield. Our WGCG programme will be included and we will have details of other events at our meetings. The West Midlands Branch of the Open University have specifically invited us to join their fieldtrips. The Leicester Group who will be joining us at Mancetter Quarry in September. So there will be plenty of opportunities for geology this summer. The longer trip to Colonsay is confirmed - it is not too late to combine it with a summer holiday in Scotland.Two days are planned to Shropshire in September.

Keith Ambrose from BGS who surveyed both the Warwick and Redditch geology maps has been helping with the Warwickshire Local Geodiversity Action Plan (LGAP) which Jon Radley and Ian Fenwick are producing with a grant from. Natural England. Ian has been busy with his geoconservation team surveying and clearing sites and producing interpretation materials. The display board erected by members in Wolston village was unveiled by Professor Shotton's daughter, with press and radio cover for WGCG and support from the Parish Council. Do think about joining Ian's team. We had the bonus of a splendid tea provided by Wolston WI! Colin Frodsham has worked hard both on organisation and at Brueton Park where the WGCG display has been revitalised and extended. Paul Akers project work at Wood Farm finishes this Easter, but we hope that provision will be made for future support. UKRIGS education team have now produced education materials based around WGCGs conservation work in Ryton Pools Country Park, if you have not seen it, the park have an evening walk on 20th June.

Members who give us their email will be sent a monthly update of field trips. Do send your email address to Hazel Coliver at brianandhazel@ hotmail.com.

This information is also on our website www.wgcg.co.uk

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A welcome from your new editor

Jim Passmore

Hello,

When I joined the WGCG in the middle of last year I wasn't expecting to become editor of the newsletter.

Capadoca - Turkey

I have always had an interest in the countryside and have a passion for walking. In January last year I joined Martyn's geology course to learn more about the landscape that I see on my walks, my only recollection being those of hanging valleys and ox-bow lakes from the geography lessons in my school days.

The year I spent in the class and site visits with Martyn has expanded my horizons. On my holidays in the past I would wonder at the lava flows of the volcano Hekla in Iceland, the rugged coast of Norway and, more recently, Capadoca in Turkey where houses are hewn into the strange pyramid shape tufa rock formations. However I am now able to understand better the contorted strata seen at waterfalls in Spain and the origins of the recent lava flows on Mount Merapa in Java.

Waterfall - Broto, Spain

Mount Merapa - Java

The Forest of Dean

Chris Hodgson

Our traditional October Field Trip met on Friday morning in the Dean Heritage Museum Café, moments before rain came down in torrents. We enjoyed our coffee and the moorhens on the mill pond below us while studying the geological map and talking through the day's plan. We were on the eastern side of the Forest of Dean syncline and intending to follow the stratigraphy log here and correlate with the sites visited later. The brief geological history and the table of strata issued were discussed

Suddenly the skies cleared and the sun shone. Making up for lost time we used cars to eliminate the road walk to the start of the Soudley Valley Trail. There we passed through nearly 50 million years of the earth's history, easily visible as the rocks have been tilted considerably. Also the disused 19th century cuttings and quarries are kept clear by the Gloucestershire Geoconservation Trust, who devised and published this route.

Starting with the oldest rocks on the trail, Devonian 'Lower Old Red Sandstone' the Brownstones were exposed dipping steeply west on the SE side of the cutting. We saw a cyclic pattern showing fining up sequences from conglomerates (lag gravels) coarse sandstones (with cross bedding) to red siltstones (with ripples and desiccation cracks) We agreed this to be typical of a meandering river system with limited seasonal rainfall. Britain was then about twenty degrees south of the equator.

Next, separated by an unconformity was a much coarser grained rock, the Quartz Conglomerate. This motley collection of clasts, and pebbles mainly consisting of quartz, may have been deposited when the vast erosion following the Caledonian Orogeny was washed south and dumped. This formed a rock highly suitable for use as grinding stone -we saw one earlier by the mill. Also in this conglomerate we found quartzite, various igneous rock and a possible piece of jasper.

We then passed to the next sequence the Tintern Sandstone Group, the top unit of the ORS, mudstones and sand stones with a similar origin to the Brownstones, seen in an old sand quarry. Again cross bedding was observed with conglomerate bands representing the beds of ancient watercourses.

Still following the track we came to an exposure of Lower Limestone Shale, showing that sea had moved in covering the Devonian land. This is the lowest division in the Carboniferous Limestone Series.

Climbing up into Blue Rock Quarry worked until 1890 for lime and sand, a curiously quarried wall of calcareous sand stone was visible on the right. There were man sized hollows where sand had been quarried after fires in small excavations had cracked the surrounding hard calcite veins. A partially buried lime kiln remains on the floor of the quarry showing that rock was processed on site.

Passing a cobbled stream - cobble-lined to prevent underground workings being flooded, we entered Shakemantle Quarry. The Lower Dolomite here was originally a limestone, dolomitised once during deposition and again later probably in the Triassic. This Dolomitic rock is sandwiched between the Lower Limestone Shale and the Crease Limestone. Dipping 70"W to the left, it shows perpendicular joints formed as a result of shrinkage during diagenesis. The

only fossils found were Carboniferous crinoid (round) columnals and a possible part of a brachiopod.

The Crease Limestone is very porous and has acted as a host rock for iron rich solutions We saw definite red staining here, elsewhere there are haematite deposits. The brush ore etc. was mined from Roman times, these workings known as scowles. We did not reach the Whitehead Limestone or the Drybrook Sandstone here, these two formations complete the Lower Carboniferous. The Middle Carboniferous is absent in the Forest of Dean.

Returning to our waiting lunch we enjoyed good locally sourced food and set off for Hopewell Colliery and the Upper Carboniferous. Suitably equipped with helmets and lamps we walked underground going gradually downhill right to the end of the mine, trying not to concuss ourselves. We noted the size of the coal seams-1.5 to 2.0metres, thick in a very few places but generally much less. We came out of this section into the open, where this seam outcropped, and walked down to enter a second seam. This also showed how there was sufficient massive sandstone (both Pennant and Trenchard Formation) to support tunnelling. Only some wall building and a little propping. was needed at a site where Calamites were found. Equally interesting on our tour was the seat earth and root remains, and small fish in an underground stream.

This is the last commercial mine here selling coal. The owner is a Free Miner, born in the Forest, who worked for a year and a day in a local mine and is allowed by ancient statute to work his own claim or 'gale'. He mines the Yorkley and Coleford High Delf seams. This bituminous coal was once sold for local domestic use, but is now pulverised for use in a power station.

The small museum rounded off a most interesting tour, and we took ourselves off to Bell's Hotel where comfortable rooms and a good meal awaited us.

Our Symonds Yat circular geological walk on Saturday was blessed with fine weather and Nick Chidlaw our leader, who had supplied us in advance with a comprehensive handout. We crossed the Wye on the 'wire' passenger ferry, and had a splendid hike seeing the same formations as Friday. Particularly impressive was the Suck Stone, a quartz monolith thought to be the largest fallen rock in Britain. We entered Arthur's Cave and Merlin's Cave used by early man and where fragmentary remains of Woolly Mammoth etc. were found. We looked at limestone pavements, and the limestone cliffs. Nick spoke of the River Wye story, he related this to the type of rock present, the subsequent land uplift and the fall in sea level.

We enjoyed another meal at the hotel and discussed the area geology with Nick.

Sunday again was a fine day, with Dave Owen from GGT taking us first round Clearwell Quarry- where we saw the variation within the Lower Limestone Shale.

Fossil hunters had to be dragged away so we could get to Tintern Quarry and eat. Here the thickest section of Carboniferous Limestone in the area is exposed, and a forestry track circling the quarry provided safe and easy access to a full sequence from Lower Dolomite up to Drybrook Limestone. Looking across the top bench we could see there had been large rock falls. The boundary between the Whitehead Limestone with algal structures and palaeokarstic surfaces and the Drybrook Sandstone was visible. The sedimentary evidence showed how conditions changed from the Devonian through the Carboniferous Period. We found thin discontinuous bands of chert in the Crease Limestone perhaps derived from radiolaria and some crinoid fragments.

It was a rewarding day to end a very pleasant weekend with friends we will not forget.

A LOCAL GEODIVERSITY ACTION PLAN FOR WARWICKSHIRE

Jon Radley - Warwickshire Museum

Geological conservation in the United Kingdom is now adopting a strategic approach, similar to that applied to biological conservation (Local Biodiversity Action Plans - LBAPs). As a consequence, Local Geodiversity Action Plans (LGAPs) are emerging as important tools for co-ordinating and delivering local geological conservation. Central to the philosophy of these schemes, the 'geodiversity' concept views geological (rocks, minerals, fossils), geomorphological (landforms and active geological processes) and soil features in a holistic sense.

The Warwickshire LGAP was initiated by the Warwickshire Museum in 2002 through a pilot study funded by English Nature. This looked at existing biodiversity and geodiversity action plans within the UK at that time, and established several themes to provide a co-ordinated strategic approach (LGAP) to Warwickshire's museum and WGCG-based geological conservation activity. This was followed by a second study during 2003-2004, also funded by English Nature, which tested these themes with special reference to a 'mini-LGAP' for Warwickshire's Permian-Triassic fossil sites.

Modern geological conservation activity in Warwickshire stems largely from a partnership between the WGCG and Warwickshire Museum, responsible for compiling the LGAP. The WGCG identifies Warwickshire's Regionally Important Geological/geomorphological Sites, within the context of the 'Greater Warwickshire' Vice-County 38 boundary, which includes Coventry and Solihull Districts, as well as parts of what are now within the West Midlands administrative region. Vice-County 38 also forms the geographic framework for Warwickshire Museum's Geological Localities Record Centre (GLRC) and is therefore the logical area in which to establish and deliver an LGAP.

In late 2006 the WGCG's conservation sub-committee accepted an offer of further funding from English Nature (now Natural England) and assistance from Keith Ambrose of the British Geological Survey to take the LGAP forward. We have now established five objectives to be used as a framework for time tabled actions, which make up the draft Warwickshire Local Geodiversity Action Plan.

The Objectives that we have identified are:

1 *to identify and audit the geological resource.*

2 *to conserve and manage Warwickshire geodiversity.*

3 *to protect Warwickshire's geodiversity through the planning system.*

4 *to interpret Warwickshire's geodiversity.*

5 *to increase awareness of Warwickshire's geodiversity with reference to professional bodies, conservation practitioners, landowners, the education sector, and the general public.*

In the light of our pilot studies, other LGAPs and guidelines, we recognise the need to establish a network of partners to help us deliver our geoconservation actions, and consultees who will assist in the drafting process. We have now delivered the draft LGAP to Natural England's geologists. When we have received their feedback we will send the list of actions out for wider consultation.

Ultimately, and partly relying on further funding, we will convene a partnership and start implementing the plan into real action. Our aim is to use the LGAP as a flexible, adaptable framework for all future activities of the WGCG and Warwickshire Museum in the field of geoconservation. So everyone will be involved!

VOLUNTEERS MAKE BIG IMPACT ON QUATERNARY SITES

Ian Fenwick (Acting Project Officer)

One of the main raisons d'etre for WGCG is to conserve the County's earth heritage - and there is an awful lot of earth heritage in Warwickshire! Another time we will perhaps discuss the older rocks which are such an important part of the record. However, at the moment, a lot of energy is being devoted to conserving that most difficult part of the geological sequence - the Pleistocene. Two years ago English Nature (now Natural England) awarded the group a grant of £25000 to conserve and interpret for the public a clutch of sites in the Brandon - Ryton - Wolston - Bubbenhall area.

Ryton site before clearance
(c) John Hiatt

Ryton site exposed
unit displaying periglacial involutions
(c) John Hiatt

The big problem is that Pleistocene 'rocks' are very unconsolidated and therefore 'conservation' is extremely difficult. You may recall that a very successful experimental conservation of the section at the Wood Farm quarry, Bubbenhall, was initiated by Clark Friend in 2004-5. Paul Akers picked up on this and has not only monitored the section but has carried out major modifications to the structure and the protective cover over the past 18 months. The results can be seen on the web at:

www.WoodFarmProject.org.uk

A more primitive exercise involving many WGCG members has now been completed on parts of the Ryton and Brandon SSSI. This is an unusual site in that it comprises three quite distinct elements. One of these lies to the east of the access road to the Warwickshire. Wildlife Trust's Brandon Marsh Nature Centre. Another is adjacent to the eastbound carriageway of the A45 opposite the ex-Peugeot plant at Ryton. Neither of these exposures, left from the old quarry workings, has been visible for many a year. Slumping and vegetation growth have taken their inevitable toll.

Muscle power, however, can make a major impact. So, with about 8 willing (?) volunteers on each day, we cleared a substantial section at each of these sites. The section at Ryton, in particular, is quite stunning as can be seen in the photographs. Apart from fine primary fluvial structures in the basal sands, there is also much interest in the uppermost 2m. Here a period of cryoturbation (frost heaving during periglacial conditions) is represented by fine involutions involving reddish sand and gravel units. The whole appears to have been planed off and then buried beneath much looser and paler coloured gravelly sand. Our interpretation of this is that this top unit is probably a fluvial deposit of the Avon Terrace No. 4.

Brian Ellis examines the periglacial structures revealed at Ryton
(c) Jane Mitchell

I think it is fair to say that those taking part in the exercise were quite exhilarated by what they had achieved in a relatively short time. My hope is that we can build on this enthusiasm and involve others in clearing and conserving some of the wonderful geology that we have under our feet in Warwickshire.

Hopefully, these sections will now be used by visiting parties so that there is an incentive to keep the exposures 'fresh'. Indeed, the Group itself has plans to visit them on Wednesday 15th August. Further information about the sites will be published on the web at:

www.WoodFarmProject.org.uk

WOLSTON INTERPRETATION PANEL UNVEILED BY FRED SHOTTON'S DAUGHTER

Ian Fenwick

A pleasant early Spring day was the setting for the unveiling of the Group's latest interpretation panel on Ice Age Warwickshire. The venue was the village green in Wolston - right in the heart of the country which Prof. Fred Shotton came to know so well during his ground-breaking work on the British Pleistocene during the '50s and '60s.

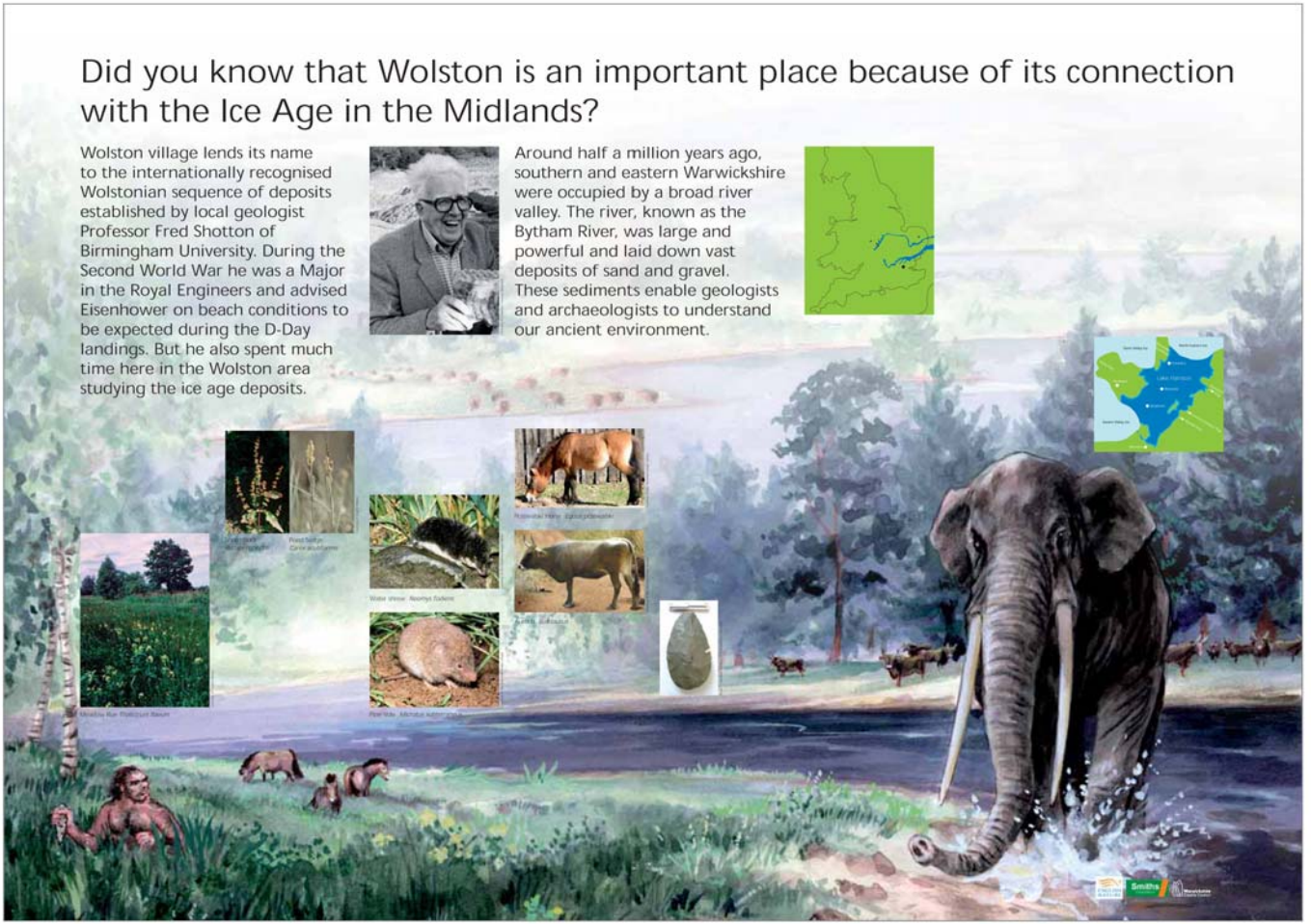
The panel has been designed by Jeff Jones of The Drawing Room in Leamington and depicts 'Heidelberg Man' hunting his prey along the banks of the Bytham River. More detail is provided on the nature of some of the evidence - pollen, mammal remains and the fine artefacts found at Waverley Wood and Brandon. After recounting the story of the advance of the main Anglian ice sheet, the account concludes by highlighting the massive diversion of drainage caused by the ice.

We were delighted to have as our guests many members of Fred Shotton's immediate family and the panel was unveiled by his daughter, Mrs Ann Black.

Mrs Ann Black speaking after unveiling the Wolston Panel

Also, out in force were members of Wolston Parish Council, as well as representation from Natural England through whom the panel has been funded.

The media took quite an interest in the event and good coverage was obtained in the Coventry Evening Telegraph and on BBC Radio Coventry & Warwickshire, where Ian Fenwick gave an interview on the Liz Kershaw Breakfast Show!



The Wolston Interpretation Panel

The Colonsay field trip 12th - 19th July 2007

Maurice Rogers

Plans are well in-hand for this event and 13 persons have so far signed up for this field trip.

Professor Lisle of Cardiff University and Clark Friend have volunteered to act as professional guides despite the fact that neither have been on the island.

Our purpose will be, in essence, to use the latest BGS map and to explore the island's geology as it is seen at the surface with a view to seeing how much we can understand.

The island has a very varied geology and there is an abundance of exposed rock all round the coast line. We will be using the results of a detailed literature search as well as data from the BGS and its rock sample collection.

Ultimately we want to report back to the islanders who have indicated that they welcome our interest so that they too can start to appreciate their heritage and initiate, if necessary, conservation measures.

We plan to give them an exhibition display box along with rock samples, photographs and maps so that they can promote the island's geology to future visitors. For this we are applying for funding through the Curry Fund and the Scottish Natural Heritage.

We also have the pleasure of welcoming to the trip others who are not WGCG members - an amateur geologist from Kent and a young man from Huddersfield who is due to start a degree course at Bristol University in September.

In addition a representative of the Glasgow Geological Society will be joining us shunning the normal ferry adopting a less prosaic mode of transport - canoeing across from Islay.

The islanders have promised us a warm welcome and will no doubt be wishing to initiate us into the finer aspects of single malt whiskies of an evening time.

There are a few more places available so to join the party, please contact Maurice Rogers

Telephone: **01788 812869**
Email: **mauricerogers@macunlimited.net**

The island of Colonsay lies nearly 100 miles to the West of Glasgow and is reached by ferry from Oban

The Great Rift Valley of Africa

Maurice Rogers

There is at least one good road in Kenya, and this one, though built some sixty odd years ago, is well-metalled and without any sign of wear. But then this was only to be expected since it was built by Italians who - with their Roman ancestry - could hardly have built otherwise. These Italians were POW's in the WW2. and they were set the task of driving a road down the scarp face of the eastern side of the Great Rift Valley, a face that drops almost vertically some 3ooo feet. Their short stretch of road was an extension of the main highway north of Nairobi passing through the verdant Kikuyu National Forest full of tall trees, with the occasional small holding and plantation. The escarpment face too is tree covered and, with the hard rock underlying the scarp, this road building must have represented a massive task. The Italians' achievement is marked by the small chapel built into the escarpment and surrounded by Bourganvillias all in full bloom.

From the lay-by near the chapel we see out across the flat plains to a distant hazy horizon and identify nothing in the way of trees or farmed land. Only the faintest outline of the western flank of the Rift Valley could be seen some 40 miles away.

The contrast then cannot be more marked. The high land behind us to the east of the scarp face is rich and fertile and one readily notes that everywhere the soil is a deep red and fine laterite. We could see nothing comparable with this as we drove on and out westwards across the flat lands of the base of the Rift Valley It was all too apparent that the soil - and hence to rocks beneath - had changed. The land now was mere scrub and worthless grasslands temporarily green due to some unseasonal rain. To our left we could see the low lying stump of a volcano called Suswa and to our right the slightly higher Mount Longonot - another volcano that is evidently simmering with steam and vapours. This surely has to be considered as the prime cause for the change in soil and vegetation. For unlike the red laterite on the highlands, we were now driving along a rutted earth road of grey fine dirt and across a sparsely grassed and arid landscape. All this - so we were informed -is due to the wind-blown trachyte ash originating from these two volcanoes which erupted sometime in recent geological history.

The Great Rift Valley
with Mount Longonot on the horizon

The Great Rift Valley represents one of the Earth's most spectacular geological features caught as in a

freeze frame, for one can readily appreciate that this whole part of Africa lying on the Equator is being- and has been for the last 30 million years - slowly torn apart due to enormous terrestrial forces - and some say due to the rotation of the Earth itself as it seems to want to get rid of the Continent lying uncomfortably on its back.

It seems that the Rift is due to the splitting apart of the ancient basement rocks with a sideways movement of about 10 km and the collapse of all the material between by some 1000-15000m or more. Such a collapse allowed enormous out flowing of a very fluid basalt-like lava up through the fault lines and spreading out across much of that which comprises Kenya today. This molten lava freezing to a black crystalline rock however was of an unusual composition being rich in soluble alkali minerals and on account of these the rock readily weathered down leaving a residue of red iron oxide as the fine till that bears the name laterite.

After this period of igneous activity, a second phase occurred and the deep igneous rock had become depleted in both its iron and alkali rich minerals and the resultant melt was now more silica rich and could surface only through pipe vents as violent eruptions of finely powdered ash that built up as shallow volcanoes as well as being dispersed by the wind as airborne deposits.

A water course showing a vertical section

Our road -if you could call it such- passed over a bridge over a water course and I was able to see and record a deep section though the soil. There was in the vertical walls of the gully a clear separation of a grey upper deposit and a redder one below more akin to the laterite of the highlands we had just left.

We had travelled to Africa on safari - to see the Big Five. Our party could not understand however why I was at this stage of the journey so excited at what I was finding and taking so many photographs with my new digital camera and wasting valuable memory capacity.

TO BE CONTINUED

Geology Trail at the Parkridge Centre, Brueton Park, Solihull

Colin R Frodsham

Working closely with our Warwickshire Wildlife Trust partners at the Parkridge Centre, the WGCG's education project has recently embarked on the final stage of improvements to a geology display, part of the nature trail that encircles a small lake and includes a 'dipping' pond for children. School parties are conducted round the nature reserve in term time and during holiday periods large numbers of children converge on the centre to attend a series of workshops supervised by the Trust's education officers based at the centre's education unit located next to the cafe.

Following last year's upgrade of the ten original geology display panels, a new information board has recently been installed on the rear wall of the Trust's education unit. A selection of typical rocks of Warwickshire is currently assembled on a gravelled area adjacent to the new board to form a rock and fossil display, extending the centre's existing geology trail. Entitled A Walk Through Geological Time in Warwickshire, the new display board is designed to convey information to young children (and adults) in a way that is both simple and visual; the text has been kept to a minimum and the illustrations direct. Brightly coloured artwork is used to link a time-line of geological periods to a map of the county. The same colour coding will be used for the labelling of the new rocks and fossils sited on a gravel bed (courtesy of Smith's Concrete) beneath the wall-mounted information board. It is hoped that this colour co-ordinated approach will stimulate interest and help visiting children and adults to understand and appreciate the geology of Warwickshire.

When completed, the new display will form part of the Trust's nature trail linking rocks, erosion, sediments with soils and biodiversity. To help children and education officers to understand the cycle, the last part of the project will include the installation of two interpretation boards linking geodiversity with biodiversity. An education pack will also be on hand for workshop supervisors to answer some of those disarmingly difficult but simple questions as well as a fun information sheet for children to draw attention to the part that geology plays in our environment. The Trust's education officer Rob Stewart has suggested that a 'fossil hunting' area be sited next to the rocks display. This would take the form of a raised pea gravel bed into which small models of fossils could be buried and 'discovered' during the workshop sessions that follows conducted walks around the nature trail. Ambitious? Yes, but achievable with the Trust's continued cooperation. Come and see the work at Brueton Park and enjoy a cup of coffee at the excellent café next to the new rock and fossil display.

Autumn Days in South Shropshire

Martyn Bradley

Two day trips are planned on Saturday 22nd and Sunday23rd September to this popular area where geology can be related to memorable.scenery.

Saturday will be a transect from Clee Hill to Caer Caradoc with walking and car travel.

On Sunday short walks on the Long Mynd and Stiperstones with opportunities to collect minerals and Wenlock limestone fossils.

Members wishing to join both days may choose to stay overnight.

Ask Martyn for details of each day with suitable B&B s.

Tel.: **024 7652 3533**
Email: **martyn.bradley@warwick.ac.uk**

Warwick Town Trail.

Nigel Harris and Jim Passmore

A new town trail is about to be published revealing the geology of some of Warwick's finest buildings - illustrated by numerous photographs and pictures of the different building stones used.

With the addition of historical content it offers the visitor a choice. The walk, of about an hour, can be split into two short half hour walks, all walks starting from the present tourist information office in the Court House. From there one heads either in the direction of the Market Square (where the tourist office will relocate in due course) or the castle.

It will be available free from libraries, museums and tourist information centres with copies also going to local schools. It has been produced with financial support from the Geologist's Association and the Warwickshire Geological Conservation Group to whom our grateful thanks are due.

Geological Maps and other items are available for loan

Jim Watts

In the WGCG office at Warwick University we have an almost complete set of 50,000/63,360 scale geological maps of England and Wales.

These can be made available to WGCG members. We intend having a list of the available maps at our Wednesday meetings. If you are interested in borrowing one or more contact Jim Watts to arrange collection or delivery.

In addition to the maps there are back numbers of magazines:-

Proceedings of the Geologists Association
Quaternary Newsletter
Geoscientist
Heritage Earth
Down to Earth
Magazine of the Geologist Association

Plus a few others

We also have a selection of books. Some are of historical interest and some more modern. These may also be borrowed.

We also are looking for librarian to help catalogue these books so that a list can be made available at our Wednesday meetings. If you would like to help please let me know

Warwickshire Geological Conservation Group

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WGCG SUMMER PROGRAMME

Saturday 21st April 11am- 3pm
Day trip - Blockley, Gloucestershire
Led by Peter Blake and Maurice Rogers

Wednesday 30th May 7pm - 9pm
Evening guided walk - Warwick town trail (See page 17)
A stroll around Warwick examining the building stone used.
Led by Nigel Harris & Jim Passmore

Saturday 9th June
Day trip - BGS Keyworth
Led by Martyn Bradley. Contact Martyn for details

Wednesday 27th June 7pm - 9pm
Evening field trip - Burton Dassett hills
Led by Martyn Bradley

Thursday 12th July to Thursday 19th July
One week field trip - Colonsay (See page 12)
Led by Maurice Rogers

Wednesday 25th July 7pm - 9pm
Evening field trip - Cross Hands quarry
Led by John Crossling

Wednesday 8th August 7pm - 9pm
Evening field trip - Quaternary sites in the Wolston area
Led by Ian Fenwick

Wednesday 15th September 10am - 1pm
Day trip - Mancetter quarries (Joint Trip with Leics Lit. and Phil. Soc.)
Led by Alan Cook

Saturday 22nd September and Sunday 23rd September
Field Trip - South Shropshire (See page 17)
Exploring Clee Hill, Caer Caradoc, the Long Mynd and Stiperstones
Led by Martyn Bradley. Contact Martyn for details of each days programme
(WGCG members to make their own B&B arrangements)