



WGCG

Conserving Warwickshire's Geological Heritage



It's cold and drizzly - no problem when the geology is this good!

The WGCG field party at Calton Hill Quarry, Derbyshire in May (see pages 5 & 6)

Photo credit: Roger Pinkney

Newsletter

Autumn 2017 Issue Number 34



Warwickshire Geological Conservation Group

Hidden wonders in the landscape of Warwickshire

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Chairman's Notes Autumn 2017 John Crossling

In my last notes, I referred to the history of the group and I will be again this time but for a rather different reason.

This time I am marking the end of an era as far as the Geology Group is concerned and to a lesser extent also the County Museum Service. Ever since I joined the County Museum in the 1980s there was a constant person I could turn to on the end of a phone and then later an email who was an unfailing source of knowledge, ideas, contacts and even occasionally funding. I am referring to Anton Irving of the Nature Conservancy Council, later English Nature and more recently Natural England.

Anton became involved with the Geology Group right from the start and was instrumental in providing £10 for each of the RIGS we notified – not a lot of money but it was important to the group at that time. He has supported the protection of geological sites irrespective of whether they were nationally important Sites of Special Scientific Interest or local exposures that the group was interested in. He has encouraged experts to come and look at Warwickshire sites and in so doing has increased the recognized importance of some of them. He has funded conservation activities including cleaning Lower Jurassic exposures at Temple Grafton; temporary exposures in Pleistocene deposits at Wolston and experimental techniques in trying to preserve soft sediment faces.

He has regularly attended Conservation Committee meetings where his contribution over the years has been invaluable. His contacts were not exclusively focused on geology. His contacts with other aspects of nature conservation have helped partnership working – in particular with the Wildlife Trust.

The fact that he has now retired and will not be attending any more meetings and will not be there to respond to questions will be hard to adjust to. Although we wish him well in his retirement he will be sadly missed by the group, not least for his good humour and wit. He will not be replaceable.

On a different note, I helped out with a recent trip to see the fabulous Chinese dinosaurs at Wollaton Hall in Nottingham by arranging for the group to visit Derby Museum in the morning where I first started my career in Museums. I was able to arrange for some specimens to be shown from the reserve collections demonstrating the diversity of the Ashford Black Marble trade together with items of Blue John and the links between local leading lights and the Lunar Society. Geology, art and technology all coming together – most unlikely connections.

At Wollaton Hall it was good to meet Adam Smith who is their geologist. He started doing voluntary work for me at Warwickshire Museum while he was still at school and was an active member of WGCG while he still lived in the area.

I apologise if this item is a bit self-indulgent – it won't happen again – even if I am still Chairman!

Field Excursion to the Peak District Norman Dutton

This year's May weekend field trip was based in Buxton with the opportunity to study aspects of the geology of the western part of the Peak District. The 17 WGCG members were led, this time, by our own Mike Allen who had prepared for us a comprehensive and extensively-researched booklet full of geological maps, diagrams, photographs and supporting text.

The trip began at the Miners Standard Arms, accurately described as a cosy pub with hearty food in the Derbyshire Dales about 5 miles from Matlock. With the morning rain at an end, we visited Gratton Dale, a small steep-sided dry valley where it was soon possible to appreciate that the strata of the Eyam and Monsal Dale Carboniferous limestones were dipping in the opposite direction to the slope of the valley floor. This was geology in 3 dimensions and as well as an opportunity to appreciate the landscape of the White Peak.

Monsal Dale Limestone, dipping
north west.

The stream is flowing towards
the south west.



Eyam Limestones overlying the
Monsal Dale Limestones.

As well as noting variations within the limestones, this was our first encounter with the basaltic igneous rocks of the area viewing the Lower Matlock lava which, proved by borehole evidence, is limited in lateral extent. The visit to the Dale also gave the chance to see mineralisation and adits on the hillside and to study an old lime kiln close-up. On return to the pub, there was also a chance to see the nearby Ore House – a building that used to act as a lead ore miners' 'night safe'.

At the Palace Hotel in Buxton, we were treated, before a 3-course dinner, to a well-illustrated introduction to the geology of the area by Mike. We discovered that the view of the Derbyshire dome as a northward plunging anticline, flanked by Millstone Grit and Coal Measures was complicated by faulting, tilting and minor folds. The depositional environment of the area in Lower Carboniferous times, although essentially shallow water tropical marine, had produced much lateral variation, and had led to the use of many local names for strata, making correlation difficult. This is complicated further by reef structures of different types. There is a clear distinction, however, between the 'shelf' province and the 'off-shelf' province of deeper water limestones exposed in Dovedale. The many outcrops of volcanic rocks, found around 4 centres of the Peak District, also indicate that extrusive activity took place at different times during Carboniferous Limestone times, again making correlation a tentative business.

The trip on Saturday morning began with a brief view of Wyedale followed by a visit to the nearby Calton Hill, a former road stone quarry, now an SSSI.



Few localities in England can match this site to study igneous rocks, although some features (including the volcanic plug) are no longer visible. Here are vesicular and amygdaloidal lavas and tuffs with all kinds of structures including gas cavities, steeply dipping folds and small intrusive dykes. There is extensive mineralisation and, at the base of the quarry, a uniform columnar jointed basalt/dolerite which contains small greenish xenoliths of peridotites brought up some 50km or so from the Earth's mantle. Calton Hill is claimed to be the only site in England where such directly mantle-derived material is present and must represent a 'within-plate' basalt in a localised region of crustal thinning.



The sill with columnar jointing

A small dyke of basalt intruded into rubble basalt tuffs



A curious synclinal structure.
Is this the infill of a lava tube?

On to lunch at Miller's Dale with its high rock faces and a large disused quarry west of the old station, now a honeypot for the teams of cyclists who use the abandoned railway line. Of particular interest was the exposed junction between the limestones of Brigantian (D_2) and Asbian (D_1) age. There was a 'washout' cut into the top of the (D_1) Miller's Dale beds, indicating erosion before the deposition of the overlying D_2 strata, here called the Station Quarry Beds.



Down the narrow road to Litton Mill, we were now competing with rock climbers practicing on the overhanging rock face, Ravenstor, blissfully unaware that at the base was an exposure of Lower Miller's Dale lava. The rock was the same colour as the limestones so a hammer blow was required to identify its basaltic nature.

Having crossed the river, there was the chance to walk along another section of the disused railway line, the Monsal Trail, including into the long, curved Litton Tunnel. There was the opportunity to see a second washout, chert beds, bentonite and further varieties of limestone, including a bituminous variety with a pungent smell on fracturing.



There was also a superb exposure of Upper Miller's Dale Lava. Here was a cross section through a lava front with rubbly lava containing various-sized blocks of more uniform lava. Some of the more rounded ones may have been pillow lavas.

Photo credit: Norman Dutton



The Sunday began with a visit to Minninglow Hill, south of Buxton, where old pits and ponds are evidence of so-called 'pocket deposits'. Hollows in the limestone have been filled in with unconsolidated sediments, including pure silica sands, hence their extraction. Spores and pieces of redwood, have identified these sediments as Miocene in age. One possibility is that these hollows represent caverns into which the Miocene sediments collapsed and with the many metres of limestone above having been eroded since their formation.



A further karstic feature was seen in one of the small limestone quarries on the disused railway line (now the High Peak Trail). Here the exposed limestones showed widened joints that were lined with tufa. We were also able to study another well-preserved lime kiln.



The final visit of Sunday was to Dovedale with a walk around Thorpe Cloud (the hill above) to Hamston Hill Quarry where the structure of the strata had us all mystified. Dip and strike could be determined but seemed to change along the quarry face in a way that could not be explained alone by apparent dip. It turned out that these beds had accumulated as coatings around a mud mound, the limestone mud accumulating through the work of micro-organisms rather than the standard reef builders such as corals. The limestones of the Dovedale area were deposited in deeper water below the photic zone. Whereas most of the central, northern and eastern areas of the White Peak represent shallow water facies with reef knolls and bedded limestone, Dovedale was in the 'off-shelf' area. Detailed studies have identified 4 distinctive assemblages of organic remains based on depth. These reef knolls or mud mounds in the off-shelf area, with un-bedded limestones at their core, tend to grow large and to coalesce. No trip to Dovedale would be complete without a visit to the stepping stones. Here the disappointment of running out of time and an excess of day-trippers was somewhat tempered by the discovery of a large block of limestone, probably not native to the area. It was full of large crinoid stems over 1 cm wide and had been sufficiently weathered to allow it to be broken up successfully. Members hoping to take back fossils from the weekend trip were finally rewarded.

Our thanks must go the Mike on many counts but especially for all his hard work, to Brian for his added contributions and to Julie for getting an excellent deal with the Palace Hotel where the temptation to over-eat was all too apparent. So much learning took place, whatever our knowledge and experience of geology and as the trip was led by one of our members, participants were not afraid to ask for explanations to help their individual understanding of geology. Discussions at the site were varied in nature and often unpredictable in direction. Although we did not see much spring sunshine and winter coats were required, the opportunity to see so much geology "off the beaten track" in such a beautiful part of the country was unmissable.

Photo credit: Mike Allen (except where indicated)

Field Day Around Martley Norman Dutton

Those who came to the evening lecture on 21st September 2016 will have heard about the amazing number of geological periods represented in and around the small village of Martley near Worcester. John Nicklin and Bill Barclay from the Teme Valley Geological Society gave us a taster of what to expect on 17th June this year when 9 WGCG members braved the searing temperatures to study the real thing. It was to be a field day like no other.

After a short introduction in the Village Hall, it was off to Martley Rock, a trench dug out through a major fault complex to expose rocks in a sequence north to south of Carboniferous, Cambrian, Precambrian, more Carboniferous, Silurian and finally Triassic rocks. The central section (below) shows the Malvern Precambrian complex. Letters and display boards help the observer identify each formation.



The remainder of the morning involved walking northwards along a ridge where, given the glorious sunny weather, it was possible to see the surrounding hills for miles around, including the Clents, Lickeys, Malverns, Bredon and even a distant Edge Hill. Then we climbed down to a quarry in Bromsgrove Sandstone known as the Nubbins. Apart from the classic sedimentary structures from fluvial deposition in a Triassic desert, there was an example of growing tree roots soon to dislodge a large block from the quarry face; a feature viewed from some distance.



Surprise number three came with lunch, in the trip leader's garden, known as Scar Cottage Quarry; his own personal exposure of the Bromsgrove Sandstone. With a look at another exposure opposite the entrance to the Cottage, it was back to the Village Hall to change leaders from Ian Pennell to John Nicklin who took us in the afternoon to the area of Silurian limestones and shales in and around Penny Hill Quarry. Here a magnificent overfold exposed mainly Wenlock limestone. Fossils were found including a trilobite and the tabulate coral Favosities, dutifully in growth position in a small patch reef.



The temperature rose further as we walked the ridges and vales to examine other exposures including a set of long steps named 'Stairway to Heaven'. Crumple folding, slickensides and bentonite layers were among the features on view. By now the water bottles were becoming empty and, although we thankfully had not covered the 6 plus miles promised, it was time to return to the village.

Full details of all the geological features of the area can be accessed via the TVGS website at <http://www.geo-village.eu/>. Full descriptions and photographs are available via an inter-active map together with leaflets and images of all the display boards in the area.

Holloway Bursaries

Prof. Gawen Jenkin

Some Holloway Bursaries in the Department of Geology at the University between 2014-2017

The aim of this scheme is to support undergraduate and postgraduate students in the Department of Geology to develop, co-ordinate, and deliver a programme of outreach promoting the broad field of Geology. Maximising the impact of the outreach is a key criterion in gaining funding. It is expected that the experience will also contribute to the professional development of the individual. Over this period 16 students have been involved in 7 projects supported by £6k of funding. Interest in the scheme has built over time and in 2016 six viable project applications were received but we were only able to fund four of them. Some highlights of final reports are presented below.

Geology Rocks! (*Introductory geology programme for local Year 3 students*)

Rosie Haworth and Courtney Hudson 2014/15

Three Primary schools were visited over the course of the project providing 5 sessions to a total of 200 children. Teaching materials were passed on to schools and a blog was used to broaden the impact of the work: <http://geologyrocks-hollowayoutreach.blogspot.co.uk/>.

Feedback from schools was extremely positive and they have requested visits in following years. Reflecting on their experience the students commented “Our aim of teaching



basic geology was met: by the end of the sessions the children demonstrated a good understanding of the topics covered. We also feel that we have met our further aim of raising awareness of the subject, as prior to our visit many of the children had not heard the term ‘geology’ let alone knew what it encompassed or that they could make a career in it.”

The experience has positively impacted the career development of both students. Rosie comments “Following my graduation last year, I have been working in recruitment and admissions in the geology department at Leicester. Completing a Holloway Award outreach project undoubtedly helped me gain this role; it improved my confidence in communication and delivery and gave me valuable experience in planning and organising outreach activities.”

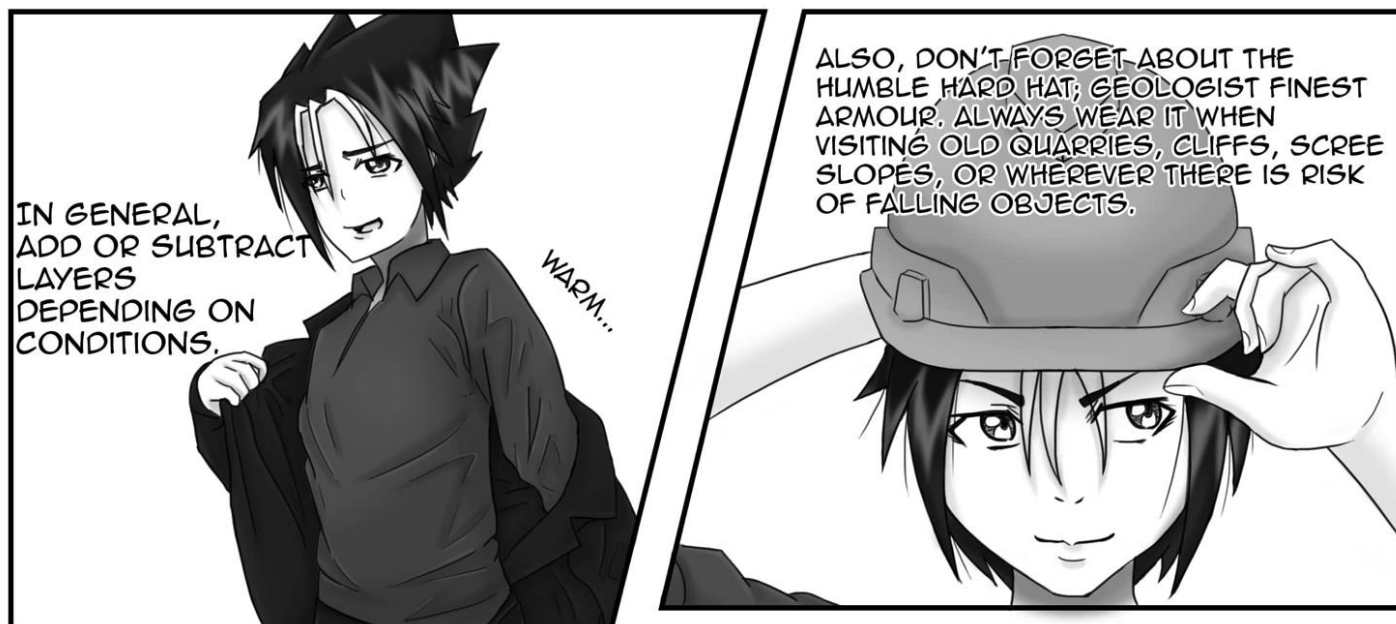
Courtney adds “The Holloway Bursary was an invaluable experience in teaching geoscience, and as a result opened my career and passion for teaching Geology. I currently work as a Geology/Geography Student Teacher in a school, and the bursary was strong evidence in my application. Additionally, during interviews for PGCE teacher training programmes, it proved vital evidence of experience within a variety of schools. The Holloway Bursary is a wonderful experience and is not only invaluable for the pupils being taught, but also for the undergraduates/graduates contemplating a career in teaching or outreach.”

The Ediacaran Enigma: Leicestershire's weird wonders**Tom Hearing 2014/15**

This pilot project generated 14 cast replicas of Ediacaran fossils held at the BGS that can be used for outreach investigating the enigma of where the Ediacaran biota might lie in the tree of life. Tom trialled the kit at a school. He commented *"The easy engagement of a lower set GCSE Science class with ideas so far beyond their normal curriculum was truly inspirational"...* *"Planning and running this project has helped to crystallise in my mind the importance of outreach revolving around current and active research questions."* The materials have since been used by Tom in a number of schools outreach visits around Leicester, including an A-level Biology class. Tom adds *"This bursary has had a lasting impact on the style of my outreach work as a STEM Ambassador beyond the duration of the bursary itself, and particularly given it more of a local focus."*

Vivacious Volcano Venture! - Volcano sessions for years 5 and 6 (current)**Lori Kendall, Jordan McDevitt, Dani Howard, Daniel Hope 2016/17**

This project is delivering sessions based around volcanoes to school groups and passing on lesson plans for future implementation by teachers. Lori comments *"The age group we are promoting our project towards can be considered very impressionable in their views. Often children, especially girls, can be put off from studying STEM subjects (including Geology) and interest is lost. Statistics show 56% of those who take maths or a core science subject at GCE level are male, indicating an imbalance in genders in STEM subjects."* Lori adds *"The Holloway Bursary award has allowed me to consider a variety of career paths that I may take once I have graduated. It has enabled me to teach what I am passionate about to a range of audiences that I have seen develop and grow within the space of hours, and become almost as passionate as I am. This is something that is so rewarding to me and has confirmed that I would like to continue teaching and following my path to encourage passion and learning in future children and educating as many people as possible. The project has also challenged me to create my own resources and develop my own lesson plans, this has been so enjoyable and will be a major asset to my CV and future career."*

Mineral Moe Comic Project - *manga style comic featuring geology and mineralogy (current)***Muhammad Aqqid Saparin 2016/17**

This remarkable outreach project aims to spark interest in Geology through manga-style cartoons drawn by Aqqid. This has the potential to access a different audience from more conventional outreach. The comic will be launched at a comic convention this summer, followed by on-line distribution that will provide a potential global readership. We are aiming to generate publicity around the launch. To begin viewing these cartoons, go to www.otakuclubrkdz.com/2017/07/mineral-moe-manga-cover.html.

The human effect on the geological record? - *School sessions and materials for explaining the Anthropocene to year 6 (current)***Tara Moore 2016/17**

This project is tackling how to positively engage with the issue of our generation with young children, who may not yet be aware of what is happening to our planet. Tara comments *"The ambition is that students return home and transfer the information to their wider family, as they feel it is a concerning issue that they need to do something about. This will educate an older generation to change their opinions about the effect we are having on our planet. As well as going to schools it may be possible to hold public presentations during school holidays in places such New Walk museum, so a wider audience is reached."*

Little Stone Researchers - a workbook for primary school studies in Hebrew (current)

Bea Baharier 2016/17

סלעי משקע – סלעים שנוצרו משקיעה של חומרים שונים שמתלכדים ליצירת סלע.



יבשתי – נוצר בעיקר ע"י
רוח



ימי ואגמי- נוצר ע"י
זרימת מים

There is remarkably little understanding of geology in the school system in Israel, and this project seeks to develop a workbook in Hebrew to engage young students with geology. Bea adds *"There is much to learn about the area not only for general knowledge but also in order to manage natural and water resources which directly affect geopolitics. The Middle East as a whole is a conflict zone; many of the conflicts are generated by the lack of cooperative management of natural resources and are aggravated by different belief systems. I would like to promote Earth Sciences in mixed Arab and Jewish schools and afterschool programmes so that students can work together to understand the nature of our planet. I would like to do this in the hope that by teaching about the Earth and its resources at a young age in a mixed environment; students will grow up together thinking about ways they can manage resources and through this, trying to resolve geopolitical problems in the region."* During her project Bea got in touch with various people working in Geology in Israel and as a result was invited to speak about her project at the Israeli Geological Society annual conference in March. Her talk was well received and enabled her to meet many professionals and academics in Israel including the chief scientist of the Ministry of National Infrastructure, Energy and Water Resources of Israel. See <https://www2.le.ac.uk/news/blog/2017-archive/june/geology-student-presents-on-inspiring-outreach-work-at-international-geological-conference-in-israel> Bea's talk is on YouTube: <https://youtu.be/GzGUHJj7-A> (in Hebrew)

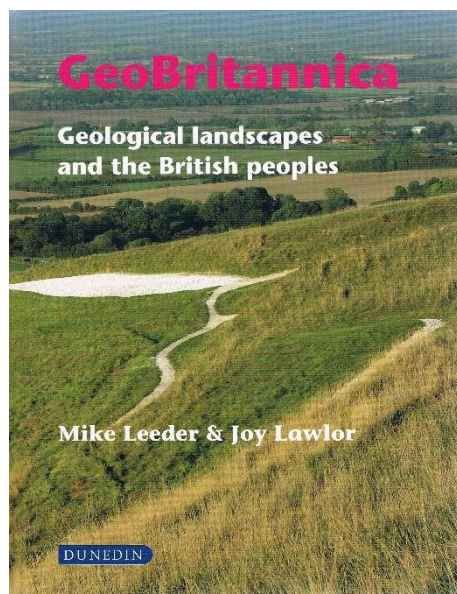
Book Review

Brian Ellis

**GeoBritannica: Geological landscapes
and the British peoples**

Mike Leeder and Joy Lawler

Dunedin Press 2017



Here is a book, aimed at a 'more general audience', which will give you a different view of the geology of Britain. Mike Leeder is a professional geologist and Joy Lawler's background is in art and literature. Together they tell a story which sets the geology of Britain in its historic, social and artistic contexts, and reveals how these, in combination, contribute to the contrasting landscapes of Britain.

Three chapters, by Leeder, provide a clear, succinct, up-to-date introduction to the geology of Britain. This is a real '*tour de force*'. There are also short chapters on the links between geology with settlement and communications; and with natural resources including building materials, aggregates, metals and salts; coal, peat and oil. These are quite conventional but significant for what comes elsewhere in the book. What is distinctive and especially attractive about the book is the attention it gives to, what one chapter calls, 'Works of the Imagination' and then illustrates this by discussing geology in relation to architecture and monuments, sculpture, painting and literature, all liberally illustrated by high quality images and extracts of text. Here we get, amongst many others, references to the works of Henry Moore, Anthony Gormley, Joseph Wright of Derby, Holman Hunt, Paul Nash, Daniel Defoe, D.H. Lawrence, Ted Hughes. The reader is invited to look at rocks and landscapes through 'different eyes'.

The book concludes with 18 short chapters on what the authors call 'GeoRegions': cameos of landscapes, culture and history; which take you from the 'Assynt Foreland and Outer Hebrides' to 'Southern England'. Each has a geological and a topographic map, geological cross section, landscape photographs and some artworks. Each starts with some evocative or provocative quotations. You might agree or not with what the authors choose to include or omit from areas you know well. The cameos might provoke you to visit areas that you do not know.

The book is lavishly illustrated and has the highest production values. It is not a coffee table book. Rather it is an interesting and innovative read and you should be able to buy it for under £25. It is not too early to put it on your Christmas shopping list.

A Stunning Encounter

Ian Fenwick

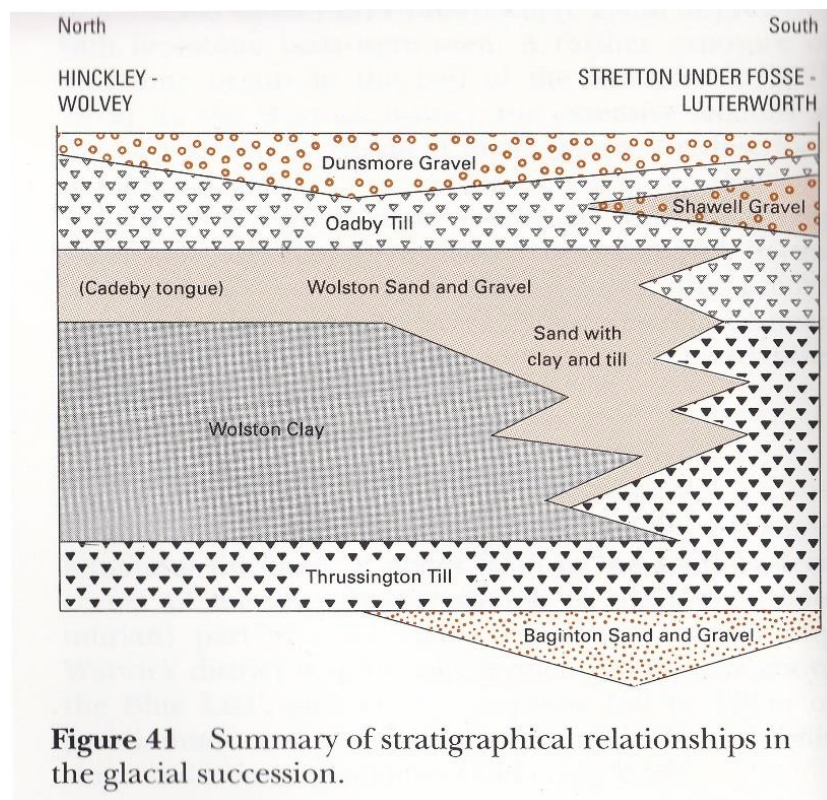
In July, a chance encounter led to the 'discovery' of what we believe to be a potentially significant exposure of a much-debated part of the Warwickshire Quaternary sequence. The Kenilworth Show provides the backdrop to this encounter. A visitor from the north of the county, David Callington (of Burton Farm, Burton Hastings, north of Bramcote, near Bedworth) stopped at the Warwickshire Wildlife Trust stand and let drop that he had been quarrying clay on his farm for the past 20 years. Seemingly, his excavator had brought out some large pieces of wood, even a tree trunk (below), to the surface which had been provisionally assigned by the late David Keen of Coventry University, an eminent Quaternary scientist, to a period between the deposition of the Thrussington and Oadby Tills.



Karl Curtis of WWT, who has been cooperating with Brian Ellis over the interpretation of the geology of the Bubbenhall Fields reserve (formerly Wood farm LGS), conveyed the gist of the exchange to Brian. Soon he brought Ian Fenwick on board and the two met up with Mr Callington on site on 5th July.

Some years ago, Mr Callington discovered the clay when excavating a fish pond. He then used the clay to line the pond and, finding that it was ideal for 'puddling', had analyses conducted which revealed that the clay was extremely fine quality – a rarity indeed. With an almost total dearth of suitable clay for puddling canals, the Burton Farm deposits have proved a boon for both the Canals & Rivers Trust and for Mr Callington! It transpires that his quarry is situated in the heart of an area mapped by BGS as Wolston Clay, one of the units first described by Professor Shotton in 1953 in his 'Wolston Series' (see stratigraphic relationship diagram below). It also lies on the axis of the projected *Proto-Soar of Rice* (1968), roughly along the line of the present-day River Anker. Shotton proposed that these clays were the result of deposition of sediment in a pro-glacial lake. In recent years Mr Carrington has had several 25m boreholes put down through the deposit to establish its depth – all failing to reach the Thrussington Till, so it is a deposit of some considerable depth and volume.

For the most part, the clay is stone free and a grey/dark blue colour with a consistent smooth texture, very much in accord with Shotton's original description from Wolston. There are some sandy lenses, which are not commercially valuable, but suggest influxes of coarser sediment into the lake.



From a geological standpoint, the exposure is especially exciting since it is the only exposure of any size within the Wolston Series. It is quite possible that further logging and analysis of the sections could well contribute to the debate over whether a single 'Lake Harrison' or a plethora of smaller water bodies might have been impounded by an ice lobe to the north. Might we dream that it could help to pin down just where these 'Wolston' deposits belong in the Quaternary sequence?

International Earth Science Olympiad 2017

Gordon Neighbour

Gordon Neighbour was one of the teachers who received a Holloway Award in 2016 to attend the Summer School at Keele University which supports science teachers in developing skills in teaching Geology and Earth Science. He is Head of Geology at Torquay Girls Grammar School. He bid for support from WGCG to take a team from the school to the IESO 2017. We made a contribution to the costs from the Holloway Bursary. This is his report..

Students from Torquay Girls' Grammar School have just returned from Nice, having competed in the International Earth Science Olympiad 2017. The team of Victoria Ashworth, Hannah Capstick, Rachael Smith and Ellie White, together with teachers Gordon Neighbour (Head of Geology) and Karen Bumby (Head of Science and STEM coordinator) wish to pay tribute to the support of the Earth Science community in the UK. The competition was the largest in the 11 years of the IESO, with 108 students competing from 35 countries.



Representing the United Kingdom for the first time at the event, the school has been pleased with the success, with Rachael Smith gaining an individual Bronze medal and Victoria Ashworth (pictured left) gaining a Gold Award in the Earth Systems Project. The students had to undertake two written examinations and four practical examinations, as well as working in an international team for the International Field Team Investigation (undertaking fieldwork at a local site and presenting the results of their work to an international jury of teachers) and the Earth Systems Project (a collaborative poster presentation that students prepare in their teams to solve a problem using an Earth Systems approach).

The attendance this year was supported by many sponsors including the WGCG, without which we would not have been able to take a team. We are extremely grateful to the WGCG, who have by their sponsorship, allowed attendance at the event and the opportunity to showcase the quality of Geoscience Education in the UK. In addition to the opportunities for the students, this was invaluable CPD (Continuing Professional Development) for the staff involved. For the staff, the work involved reviewing the practical and written tests, attending workshops on Teaching Geoscience in French Schools (with some excellent and invaluable resources), taking part in the ITFI (International Team Field Investigation), together with tours of major geological sites in the Alps and along the Cote D'Azur.



The IESO students at the ruins of Malpasset Dam

The Malpasset Dam was an arch dam on the Reynar River, located approximately 7 km north of Fréjus on the French Riviera (Côte d'Azur), southern France, in the Var département. It collapsed on December 2, 1959, killing 423 people in the resulting flood.

Source: Wikipedia

The final presentations for the ITFI and ESP were made at Thales Alenia Space in Cannes, who also provided a guided tour of their facilities for the students. The students had an equally busy time, meeting their peers, partaking in social, as well as academic activities, allowing them to prepare for the tests and the collaborative work over the week.

The IESO raises students interest in and public awareness of the Earth Sciences and is an annual Earth Science competition for secondary school students. It was founded by the International Geoscience Education Organisation (IGEO). The IGEO is an affiliated organisation of the International Union of Geological Sciences. A key difference to other International Olympiads, is that in addition to competing, students are also asked to take part in two co-operative activities (the International Field Team Investigation and the Earth Systems Project), which allow students to work with students from different nationalities, diverse cultures and varied backgrounds. It is this emphasis on international co-operation and forging bridges of friendship that sets this Olympiad out from the others. This is singularly relevant today, and will become much more so in the future, as leaps in scientific advances will become increasingly possible through the efforts of groups of scientists from different disciplines and organisations working together.

"It is a real honour for us to have put together a team for the Olympiad, seeing our students working together with students from other countries, and competing for the first time. We are extremely proud of our students and the opportunity to showcase the importance of Geoscience Education in the modern world. I would like to add that without the support from our sponsors we would not have been able to attend."

This came about as a result of the continuing collaborative work between the Centre International de Valbonne and Torquay Girls' Grammar School. We received an invite to attend the 11th International Earth Science Olympiad (IESO 2017), which was to be held in Nice and Valbonne Sophia-Antipolis, from Monsieur Jean-Luc Berenguer (a member of the organising committee). This was the first time that a UK team was represented at the event. The IESO is one of the youngest International Science Olympiads (it is in its 11th year) and paradoxically the oldest, given that the earth is 4.6 billion years old!

The intention is to build on this success, as we now are working to put in place a national programme to allow more schools the opportunity to participate in the IESO on an annual basis.

Outreach Work

Brenda Watts

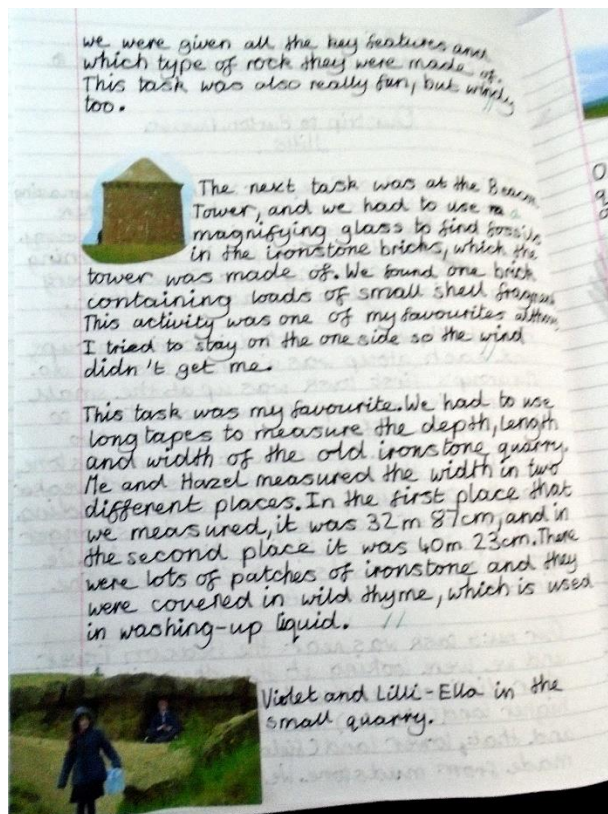
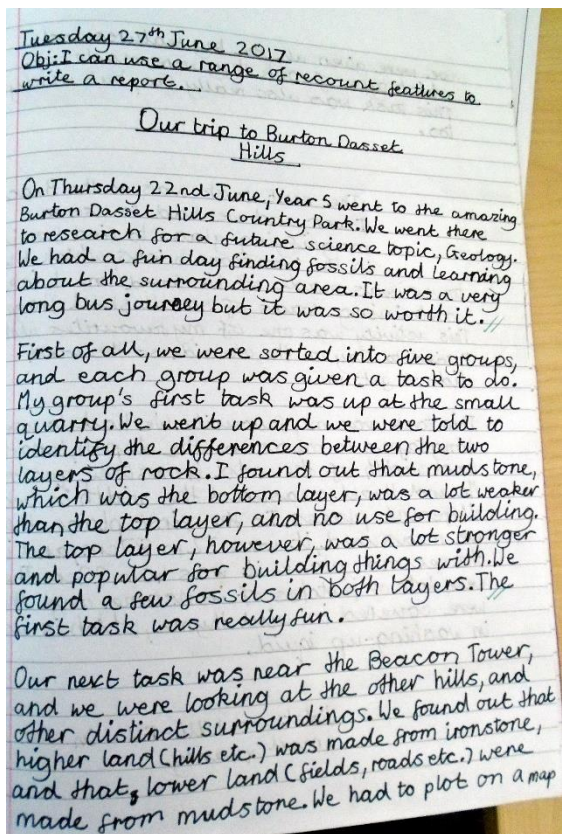
WGCG attended Stratford River Festival with the help of 16 members in all. It was very hot, especially on Sunday, and it attracted crowds of people from all over the Midlands and further afield. As usual the fossil dip was popular with the very young and the everyday mineral activity popular with adults and older children. We also met and talked to a few people who had a serious interest in Geology with the potential of becoming new members. Brian Ellis was interviewed by a local radio channel - so all in all a very successful two days!



Photo credit: Adrian Wyatt

This year we again took two parties of primary school children to the Burton Dassett Hills. The work we do in supporting primary schools helps meet one of Rob Holloway's wishes that his bequest should be used to encourage children to take an interest in geology.

Here is a sample from the best account of the June 22nd field visit by party of Year 5 pupils from Arley Primary School. The winning pupil received a prize in a school assembly that we were privileged to attend.

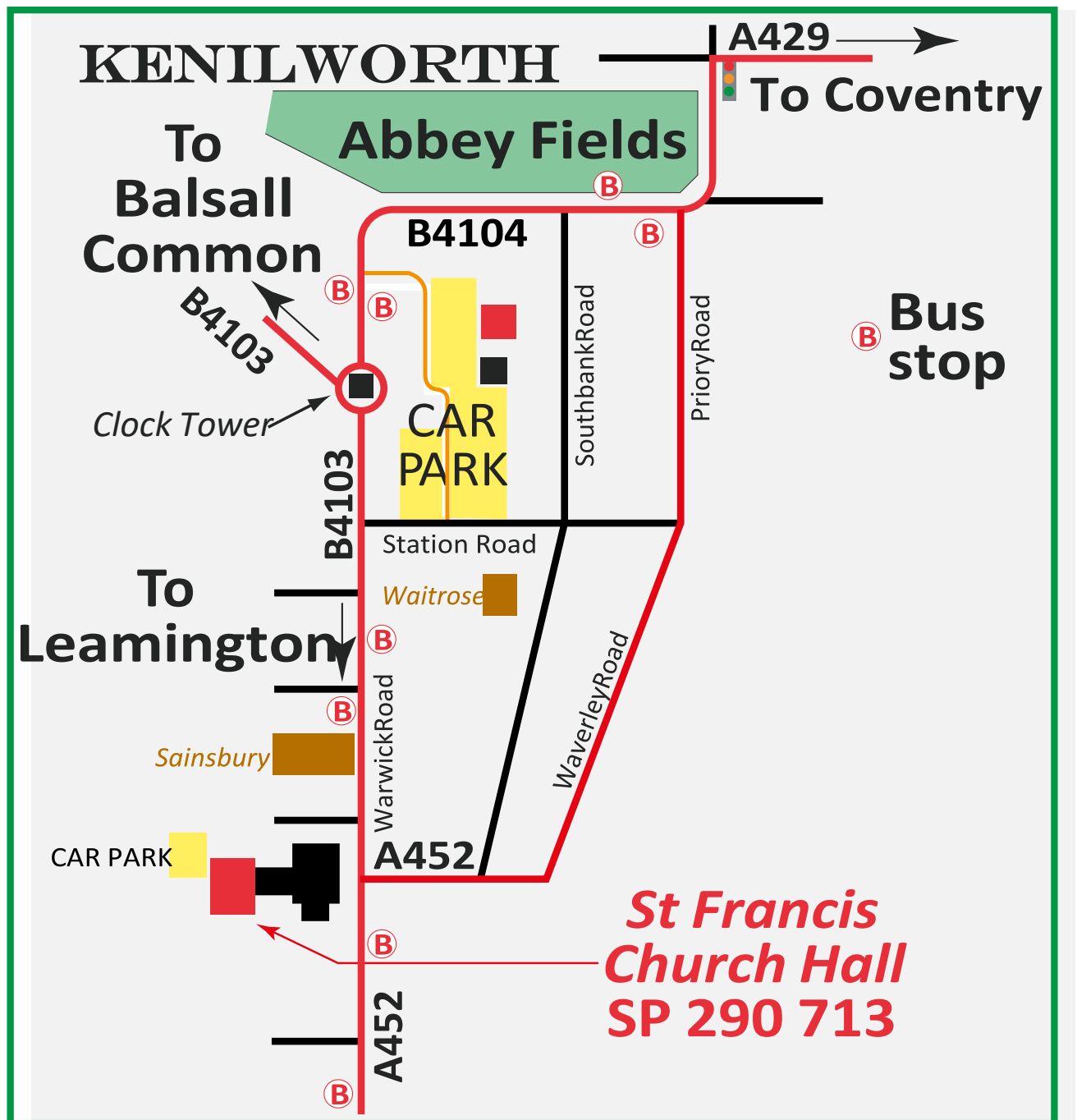


The second field visit, on 10th July, was a party of Year 6 pupils from Paddox Primary School, Rugby. Their visit was only a week before the end of term so they just had time to produce A3 posters, such as the best one, opposite. A second group from Paddox Primary School had a day at the Lapworth Museum in Birmingham, accompanied by Brian Ellis

As an additional outreach event this year, Norman and Esme Dutton have taught 1-hour lessons to Year 3 pupils at the 2 schools. The lessons on rocks fulfil part of the National Curriculum guidelines for this year group and are based on ideas supplied by the Earth Science Teachers' Association.



Our Venue for Winter Lectures



WGCG Winter Lecture Programme: 2017/8

All meetings are on Wednesdays at 7.00pm for coffee before a 7.30pm start.

*Venue: St Francis Church Hall, Warwick Road
(Kenilworth main street), Kenilworth CV8 1HL*

Enquiries: Ian Fenwick 01926-257250

Emergency phone on the day of an event: 07773-787808

20 th September	Prof Howard Falcon-Lang - Marie Stopes – sex, lies and fossil plants
18 th October	AGM and contributions from members
15 th November	Andrew Bloodworth (BGS) - The secret life of your mobile phone (strategic metals)
13 th December	Christmas Social
17 th January	Jordan Bestwick (Leicester – Holloway Bursary recipient) - Pterosaurs, teeth and a fossil festival
21 st February	Prof Richard Butler (Birmingham) - The evolution of the dinosaurs
21 st March	Dr Jonathan Larwood (Natural England) - Highlights of the collection of the Geologists' Association
18 th April	Prof Bill McGuire Waking the giant – how a changing climate triggers earthquakes, tsunamis and volcanoes