



## NEWSLETTER NO. 141

JUNE 2000

# The Black Country Geological Society

The Society does not provide personal accident cover for members or visitors on field trips. You are strongly advised to take out your own personal accident insurance to the level you feel appropriate. Schools and other bodies should arrange their own insurance as a matter of course.

Leaders provide their services on a purely voluntary basis and may not be professionally qualified in this capacity.

The Society does not provide hard hats for use of members or visitors at field meetings. It is your responsibility to provide your own hard hat and other safety equipment (such as safety boots and goggles/glasses) and to use it when you feel it is necessary or when a site owner makes it a condition of entry.

Hammering is seldom necessary. It is the responsibility of the hammerer to ensure that other people are at a safe distance before doing so.

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### FUTURE PROGRAMME

Lecture meetings are held in the Banquet Room (Dudley Suite) at the Ward Arms Hotel, Birmingham Road, Dudley. Phone: (01384) 458070. 7.30 p.m. for 8 o'clock start.

**SATURDAY 10th JUNE** 10.00 a.m. - 4.30 p.m. *'Over and Under Dudley'*. Visit for the public organised by Dudley Planning and Leisure Department. An illustrated talk, a boat trip into the limestone caverns and a tour of the Wren's Nest National Nature Reserve. Bring a packed lunch. The trip involves walking 8 kilometres. **Booking is essential.** Cost Adults £5 Children and Pensioners £2-50 Contact: Alec Connah (Wren's Nest Senior Warden) on 01384 812785.

**SUNDAY 18th JUNE** Field Meeting: The Landscape of North West Shropshire. Leader: Gordon Hillier, Shropshire Geological Society. This is a joint meeting between Shropshire, Manchester and The Black Country Geological Societies. The aim of the excursion is to provide an overview of the geology, geomorphology and archaeology of the country around Oswestry - from the Ordovician to the Triassic (with a cover of glacial sediments). The variety of rocks, especially the Carboniferous, and their influence on the landscape and upon man's activities throughout the ages will be demonstrated.

Meet at 10.00 a.m. at Mile End Tourist Information Centre car park on the by-pass just outside Oswestry, located at the major roundabout at the intersection of the A5 and A483. It is easily recognised by the presence of the Esso station, Little Chef and travelodge, NGR SJ 309 285 (OS Landranger 126 1:50000).

Please bring usual field trip gear, especially strong walking boots, shoes or wellingtons if it has rained recently. There is not a lot of walking involved. Please bring a packed lunch.

### **Black Country Geological Society 25th Anniversary Weekend**

**FRIDAY 30th JUNE** Black Country Geological Society Conversazione to be held at Dudley Museum at 7.30 p.m.

**SATURDAY 1st JULY** Field Meeting to the Lickey Hills. Leader: Paul Shilston - Black Country Geological Society. Please meet at 10.30 am at the Lickey Hills Visitor Centre, Warren Lane, (Grid Ref 998 754)

Chairman  
G. J. Worton B.Sc., C.Geol.,  
F.G.S., M.I.Env.Sci.  
Vice Chairman  
A. Cutler B.Sc., M.C.A.M.,  
Dip.M., M.CIM.  
Hon Treasurer  
S. Fairclough B.A. PGCE  
Hon Secretary  
S. H. Worton B.Sc., PhD.  
F.G.S., Grad. M.Inst.W.M.

Paul Shilston writes "The Lickey Hills provide an interesting group of geological exposures which also relate the physical features of hills and valleys to the underlying geology and include the Lickey Gorge, a glacial overflow channel. They also provide good view points to look at the general geology of the wider area.

Exposures visited will include the Lickey Quartzite (Ordovician) which forms the main body of the Lickey Hills, Keele Clay with sandstone beds (Upper Carboniferous) forming the low level area of the golf course, and also evidence of Clent Breccia (Permian) and the Kidderminster Formation (formerly described as the Bunter Pebble beds) (Triassic). Finally we shall visit the celebrated unconformity at Rubery between Rubery Sandstone (Silurian) and Lickey Quartzite (Ordovician).

There will be a lunch stop at the Visitor Centre where there are picnic tables and a snack counter, alternatively at the nearby 'Poacher's Pocket' at the roundabout (GR 000759).

**SUNDAY 2nd JULY** Field Visit to Cotwall End. Meet at the Nature Centre off Catholic Lane, Sedgley at 10.00am. Leaders : Alan Cutler and Graham Worton. Investigation of the geology of the Western Boundary Fault and the way it has disturbed the ground. Rocks from Silurian to the Upper Carboniferous will be seen. This is a morning only trip.

**EXHIBITION: Tracking Dinosaurs 27th MAY TO 2nd SEPTEMBER** at Dudley Museum

We can learn a lot about the biology and behaviour of dinosaurs from their footprints. Did they walk on two legs or four? Did they hop like kangaroos or crawl through the prehistoric earth's sludge or slime? Were they sociable or solitary? This is a touring exhibition organised by the National Museums and Galleries of Wales.

**SEPTEMBER** Lecture to be arranged.

**SATURDAY 23rd SEPTEMBER** Walsall Local History Fair at Walsall Town Hall, Leicester Street, Walsall. Admission free.

**EXHIBITION "The Rocks of Walsall" 3rd OCTOBER - 18th NOVEMBER** in the access Gallery above Walsall Central Library in Lichfield Street, Walsall.

**FRIDAY 13th OCTOBER - SUNDAY 15th OCTOBER** History of Geology Group of the Geological Society . The Dudley Gathering: A Celebratory Event to Discuss and Relive Dudley's Role in the History of Geology.

Friday 13th October: Informal Gathering in Dudley Museum to view the Historical Collection.

Saturday 14th October: 10.00 am - 4.00 pm. A series of talks at Dudley Museum. This will be followed by a visit to the Black Country Museum, a boat trip through the canal tunnels and the re-enactment of Murchison's talk underground. in darkness, followed by food and drink.

Sunday 15th October: Field visit to Wrens Nest.

The programme is subject to confirmation. Although this is not a BCGS event members are invited to attend if they wish. Further details and booking form should be in the August newsletter.

**MONDAY 23rd OCTOBER** "Volcano: Subaerial and Submarine Volcanic Phenomena" Dr P Floyd, Department of Earth Sciences, Keele University. This lecture will concentrate on subaerial and submarine volcanic constructs produced by basaltic volcanism, as representative of the most common lava type. The global tectonic environment and the origin of basaltic volcanism will be briefly outlined to illustrate the differences between lava generation at spreading ridges (shallow mantle melting) and within lithospheric plates (deep plume-related melting). Examples from the Mid-Atlantic Ridge and recent research from the western Pacific Ocean will be used to illustrate the submarine environment, and the Hawaiian Isles for the subaerial environment. Also a look at basaltic volcanism on our closest planetary neighbours (Venus and Mars) as well as on the Jovian satellite Io.

**MONDAY 27th NOVEMBER** "A Comparison of the mass extinction events at the end of the Cretaceous, Permian and Triassic periods". Professor A Hallam, University of Birmingham School of Earth Sciences.

MONDAY 4th DECEMBER Mini-lectures and Specimens A chance for members to bring along a few transparencies and/or specimens and talk about them.

MONDAY 29th JANUARY 2001 "Little Geophysics - looking at the top 100 metres" Dr I A Hill, Department of Geology, University of Leicester. The lecture is concerned with the common ground of engineering, archaeological, environmental and geological geophysics in the depth range 0.5 to 50 metres.

MONDAY 26th FEBRUARY 2001 Quaternary Topics Dr D. H. Keen, Department of Geography, Coventry University

MONDAY 26th MARCH "Bringing Dinosaurs to Life" John Martin, Managing Curator, Leicester City Museum

MONDAY 23rd APRIL "A Walk across the Mid Atlantic Ridge: A geological Guide to Iceland." P F Regan, Division of Earth Sciences, University of Derby

MONDAY 21st MAY "The Geology of Eastern Europe" Dr Jan Zalasiewicz, Department of Geology, University of Leicester

### EDITORIAL

I've just returned from a geological field class on the Isle of Skye run by the University of Nottingham Continuing Education Department and was told of many of our members who had attended courses with the tutor, (and impressed him by their knowledge!). You do keep your activities secret! Over many years I've been on geological field courses run by the Universities of Liverpool, Leicester and Aberdeen. It is disappointing to hear that, largely due to changes in government funding, many of these courses are likely to disappear. I've heard of a number of universities which are to stop running these part time recreational residential courses and to concentrate their efforts on part time degrees instead. Our lives will be impoverished by the loss. Don't miss out! Support these courses while they are still available.

### REPORTS

Lecture: Caledonian Appalachians: Ocean Closure and Links with the British Isles. Dr J A Winchester - University of Keele 28th February 2000.

Dr. Winchester began by briefly outlining the background and basis of his lecture. He said that the Appalachians have many similarities with the Caledonides of the British Isles. They are part of the same mountain belt that formed about 400 Ma ago, which was broken much later during the opening of the Atlantic Ocean. The earlier ocean that closed at the time of the formation of the Appalachian-Caledonide mountain belt (or orogen) with the collision of Laurentia (approximately North America) and "Avalonia" (a continental fragment derived from the southern continent Gondwanaland) is generally called the Iapetus Ocean. Ocean closure can happen when ocean crust is subducted either beneath continental crust (as is happening along the Pacific coast of South America) or beneath oceanic crust formed in back-arc basins (as where the Pacific Plate subducts beneath the Japanese arc and its back-arc basin, the Sea of Japan). Extensive mapping over many years has shown that the Appalachians consist of several zones representing different tectonic environments, and these are well seen in the Atlantic Provinces of Canada, especially in Newfoundland and New Brunswick.

Dr. Winchester then began describing the geology and geochemistry of the zones. Starting in SE Newfoundland on the Avalon Peninsula (after which Avalonia was named) he explained that rocks typical of Avalonia could be seen there. These comprise volcanic and sedimentary rocks of late Precambrian age similar in age and composition to those of the Uriconian and Longmyndian groups of Central England. Moving west, the next zone (the Gander Zone) comprises Cambrian metamorphosed marine clastic sediments deposited on the continental margin of Avalonia. Further west, marking the junction with the Dunnage Zone, the Gander River Ultramafic Belt (abbreviated as GRUB) comprises fragments of late Cambrian ophiolites (pieces of ocean crust) 500 Ma old and containing layers of podiform chromite, thrust on top of the Gander Zone. In southern Newfoundland, by the Bay d'Espoir, the same boundary is marked by extensive mylonitization up to 1 km thick, suggesting a huge amount of movement. The Dunnage Zone, forming the centre of the orogen, is divided into two subzones: the Notre Dame Subzone to the NW and the Exploits Subzone to the SE. The latter contains spectacular melanges, jumbled masses of rocks including huge blocks of mainly basalts and pillow lavas, that have been mashed up in zones of overthrusting. Some of these blocks are up to 1 km across: the basalts have a composition similar to present day ocean crust and appear to have formed parts of Ordovician ophiolites about 460 Ma old.

Moving to the NW side of the orogen, on the west coast of Newfoundland the Humber Zone contains late Precambrian metamorphosed sedimentary rocks deposited on the the opposing continental margin, that of Laurentia. They are overthrust by well-preserved early Ordovician ophiolites between 480-490 Ma old, which have been worked for copper. These ophiolites are overlain by mixed sedimentary and volcanic rocks of the Notre Dame Subzone of the Dunnage zone, which, by their chemistry were formed in both arc and backarc settings. All these ophiolites are too young to be original Iapetus ocean crust, as Iapetus opened between 600-585 Ma ago: hence they are best interpreted as relics of oceanic back-arc basins developed as the main ocean floor was subducted, analogous to those in the western Pacific at the present day. The suture line along which the Iapetus Ocean was closed, which contains few ophiolites, is marked by the Red Indian Lake Line, the division between the Notre Dame and Exploits subzones, being a boundary between rocks containing the distinctive faunas of Laurentia to the NW, and those of Avalonia to the SE. In Newfoundland, therefore, closure of Iapetus was accompanied by formation of three successive arc-backarc systems: the Gander arc (500 Ma) and Exploits arc (460 Ma) on the Avalonian side, and the Notre Dame arc, often called the Taconic arc in mainland North America, (490-480 Ma) on the Laurentian side.

In northern New Brunswick, in the Miramichi inlier, in a complex area which has undergone five separate episodes of deformation, geochemical analysis has helped to distinguish several different basalt suites, overlying thick and mylonitized felsic volcanoclastic rocks. These volcanic rocks, dated at 460 Ma, are the equivalent of the Exploits arc-backarc system in Newfoundland. Evidence of subduction is provided by extensive blueschists, rocks that had been metamorphosed at low temperatures and high pressures. The geochemistry of the basalts showed that most were erupted in a broad backarc basin, with the composition of those to the NW becoming progressively more like those of an island arc. This shows that subduction was towards the SE at the time the backarc basin formed.

Dr. Winchester next moved across the Atlantic to look at how this pattern is reflected in the British Isles. The zones in Newfoundland can be traced into the British Isles, and portions of both the former continents that were separated by the Iapetus Ocean can be found in the UK. Laurentia is represented by the ancient rocks of far north-western Scotland, while the Scottish Highlands and NW Ireland comprise late Precambrian metasedimentary rocks analogous to the Humber Zone of Newfoundland. Ophiolitic and volcanic rocks of South Mayo in Ireland, and at Ballantrae in SW Scotland, dated at 490 Ma are analogous to the Notre Dame/Taconic arc-backarc system in Newfoundland, while the Iapetus Suture, which bisects Ireland and approximately follows the Anglo-Scottish border across Britain, marks the same faunal divide as the Red Indian Lake Line in Newfoundland. Avalonia is represented by the late Precambrian rocks of Central England and South Wales, while the earliest Ordovician arc-related volcanism in mid and south Wales may be equivalent to the Gander arc system of Newfoundland. Cambrian turbidites similar to those in the Gander zone are found near Bray in SE Ireland. Further NW, the middle Ordovician andesite-dominated Borrowdale volcanic rocks of the Lake District and contemporary back-arc volcanism, represented by the bimodal rhyolite-basalt association formed in the basins of North Wales and Leinster, are analogous to the Exploits subzone of Newfoundland. In the British Isles however, unlike in Newfoundland, this back-arc extension did not produce a basin floored by oceanic basalts.

Dr. Winchester concluded by giving a brief outline of how the closure of Iapetus and the subsequent formation of the Appalachian-Caledonide mountain chain proceeded. Combining the information from Atlantic Canada and the British Isles, closure of the Iapetus Ocean appears to have happened in stages: 1) subduction beneath the Avalonian margin at 500 Ma (Gander arc); 2) subduction also beneath the Laurentian margin at 490-480 Ma (Notre Dame or Taconic arc); 3) renewed subduction beneath the Avalonian margin (Exploits arc) eventually led to collision of opposing arc systems around 440 Ma and subsequent closure of all backarc basins. Mountain building had finished by 400 Ma.

As a final comment, Dr. Winchester finished his lecture by explaining that Avalonia is thought to have rifted away from the edge of Gondwanaland from a position near to the Guyana massif of South America. So it emerges that the Precambrian rocks of Central England were formed on an outlying part of South America. The rifting was probably a result of the Gondwanaland continental margin overriding an oceanic spreading centre, assisted perhaps by the presence of a mantle plume, in a situation approximately analogous to the present opening of the Gulf of California in Mexico. Evidence for the existence of this mantle plume during the early Ordovician is being provided by current work on the distinctive geochemistry of basalts now found in the Bohemian Massif of Central Europe, the Massif Central of France and NW Spain.

Adam Stinton

Lecture: 300 Years of remarkable History of Geology In and Around the Potteries, 27th March 2000 Dr Hugh Torrens, Department of Earth Sciences, University of Keele

Dr Torrens, in his inimitable way, gave a lively, passionate and often controversial talk on the history of geology in the North Staffordshire Coalfield and its impact on other sciences and technology both locally and nationally. The Six Towns of the Potteries lay on the coalfield and exploited the coal, iron ore, clay and oil found in the coal measures.

The area has been studied from the 17th century. In 1686 Robert Plot wrote a natural History of Staffordshire which included a discussion on stratification and dip of the coal seams. The book was illustrated with etchings of fossils and crystals drawn with such accuracy that modern geologists are able to identify them all. Erasmus Darwin (1731-1802) the great polymath and grandfather of Charles Darwin, lived in Lichfield. He was a member of the Lunar Society, founded in Birmingham in 1765, which encouraged all types of scientific studies. Erasmus Darwin had geological interests and studied oil, coal and strata in Staffordshire. He drew a famous Section of the Earth, with a central core of granite, volcanoes and stratified rocks.

Josiah Wedgwood, a contemporary of Erasmus Darwin, realised that a knowledge of Geology could lead to the discovery of new sources of clays and other materials to improve his ceramic pots. He even went to Australia only a few years after it was discovered in an attempt to find new materials. James Brindley, a Staffordshire man, was the leading canal engineer in the country in the late 18th century. The evidence derived from cuttings made for canals greatly improved the understanding of stratification of rocks. During the construction of a one and a half mile long tunnel in Staffordshire in the 1760s, Brindley came across fossil remains of a large ribbed creature. He described the finding to Erasmus Darwin who considered that "it had the back of a camel and other features of a Patagonian ox"!! William Smith, another canal engineer, constructed the Newcastle canal which required excavation to a depth of 20 ft. Smith compared the sections here and elsewhere and used fossils to develop sequences. He can be regarded as the father of mineral exploration. John Farey, a pupil of Smith, wrote a "Description of the Geology of Derbyshire" in 1811 and produced a Mineral Survey Map of 1815.

Other influential, but little known, geologists working in Staffordshire were Joseph Dukes, Robert Garner (who founded the North Staffs Field Club which is still in existence) and John Ward who visited all the mines collecting and recording fossils which were published in a catalogue of 1890.

Many of the coal seams in the Potteries have oil in them. The oil was exploited by Walker Brothers (now Century Oils). The Corbridge Oil Works, started in 1874, was the first oil refinery in Britain, producing 5 tons of processed oil per week. Lord Cadman, from Silverdale, must have known about the oil mixed with the coal seams. He became an Inspector of Mines in Scotland and in the First World War was appointed Fuel Oil Advisor to the Admiralty which was aware of the potential of oil to Naval Warfare. After the war, Cadman taught oil technology and in 1923 became a Director of Anglo-Persian Oil, the forerunner of BP.

He died in 1941 and is buried in Silverdale, though his grave has been vandalised and he is largely forgotten. Dr Torrens has tracked down the Cadman Archives in the University of Laramie, Wyoming. The contribution of practical men to geology is largely unrecognised: the practical men did it and are forgotten, the academics wrote about it and are remembered. Dr Torrens concluded his stimulating talk with a plea for more geology to be taught in schools and colleges. Apart from its own interest and value, it can be used to introduce students to other science and technology subjects.

In the autumn this year, the History of Geology group of the Geologists' Association will be holding its meeting in Dudley and Dr Torrens will be talking about James Ryan of Dudley, 1770-1847, another practical man whose achievements are little known. BCGS Members are invited to the Lecture.

John R. Brown

Lecture: Military Geology in the Middle East by Dr Frank Moseley. Monday 17th April 2000.

This engaging lecture described the activities of geologists in the Middle East during and after the last War, in providing the British Army with supplies of drinking water. This was particularly important when operating in the desert conditions of Egypt and Libya and also in Saudi Arabia.

First Dr Moseley outlined some of the wartime geological activities of Dr Fred Shotton (later Professor Shotton of Birmingham University) with whom he worked. At one time Dr Shotton was Chief Geologist to the forces in North Africa, charged with obtaining vital supplies of fresh water in what was virtually desert terrain. Then Shotton was transferred back to Britain to prepare for the D-Day landings and the following campaign. An important need was to identify beaches where the ground was firm enough to support tanks and heavy equipment, and to separate them from beaches with soft sand and underlying peat. Trials were made during covert visits at night and on one occasion the soil auger they were using was somehow left behind on the beach. Fearing that if the Germans found the auger they would suspect it was the location of a planned landing, there was a proposal to drop many other augers at points along the coast to confuse the enemy. Dr Moseley did not say if this plan was carried out!

Then the speaker turned to his own geological activities in the Army Reserve. Shotton had suggested that he join the Army Reserve as a geologist, and Dr Moseley found this a good idea as he could combine interesting geological work with all-expenses-paid travel to exotic locations. His work was particularly to find supplies of drinking water for the British Army based in Libya and also in South Arabia (now Yemen and South Yemen). Libya in the 1960s was a monarchy under King Idris, friendly to Britain, and the Libyan desert was used by the British Army for manoeuvres and training. The British Army were also involved in Yemen in the days before Yemen's independence.

#### Finding water in Libya

The Army was based near the Mediterranean coast and in this area the water table, derived from the very occasional rainfall, was at sea level but very salty. At first they tried drilling boreholes but they found only a thin skim of fresh water on top of the large depth of salt water, so they had to try something else. Eventually they came up with the answer - to make a horizontal trench along the edge of a wadi at the level of the fresh water and let the fresh water percolate into it. Some of the trenches were up to 1 kilometre in length, at a level of about 3 metres below the land surface, and could deliver about 600 gallons per hour.

Another source was the coastal sand dunes which held water in their sandy base levels. Trial bore holes were drilled at many points to find out the level and contour of the water table and then horizontal trenches were dug to collect the fresh water. These trenches were interconnected to form a series of collecting galleries running to a concrete sump. Dr Moseley pointed out that the Romans, 2000 years earlier, had had the same problem! The Romans excavated cisterns under the surface calcrete layer, plastered them to make them water tight, and let the fresh water percolate into them. During the War air crews could locate them by the spoil heaps resulting from the excavation and so obtained vital water in remote places from those old Roman wells.

#### Finding water in the Yemen

Water is so important to the Arabs that Arabic has some 50 words to describe water - much as Eskimos have many words for different type of snow, but no word just for 'snow'

Dr Moseley described a number of Yemeni sites where they found water supplies, in particular at Dhala, Bayhahn and Ataq, all remote places with minimal rainfall. As geologists they had to interpret the geology before they could start looking for water. They mapped much of it from the air, taking stereo photos at 1:10,000 scale, and it was surprising how effective this was in showing up the general stratigraphy. Then they had to use their ingenuity to identify likely aquifers and these could be

- \* a pyroclastic breccia as the aquifer, crossed by a dyke which formed an underground dam. A borehole drilled at this point gave a good regular supply.
- \* an old well 20 metres deep in basalt lava with a 1 metre depth of water at the bottom. The only problem here was that frogs liked it too and had taken over!
- \* gravel deposits between parallel rock ridges which received rainfall percolating down through the limestone beds. An underlying schist basement prevented the ground water draining away.
- \* wadis, which are water channels formed by flash floods, often directed rainfall into potential aquifers. If there were impervious strata in the right place underlying the aquifer (and the challenge to the geologist was to find them), then the underground water might be stored and so could be used as a source.

#### Conclusion

This most interesting talk combined geology with tales of high adventure. Dr Moseley made light of the difficulties and hardships of working in the desert but we were all impressed by the story he had to tell. We are very grateful that he came to share his adventures with us.

Paul Shilston

## CONSERVATION COLUMN

The new century has begun with a flurry of geological conservation activity. The recently formed UKRIGS assembly has initiated a series of regional meetings for so called 'second-tier sites' (RIGS/SINC sites) which have no statutory protection, the Geological Conservation Review series of publications relating to statutory sites (NNR's, SSSIs etc.) has been relaunched, and a number of hands-on projects have come to fruition. The BCGS is in the thick of things as usual!

#### HAY HEAD GEOLOGICAL TRAIL OPENS

I am delighted to announce that the Hay Head Geological Trail is now officially open. A small party of 20 or so 'Christened' the trail on the 6th May. The feedback is that the exposures and interpretive signs, footpaths steps and

other access works make for a wonderful rocky ramble in Walsall. Information is being sent to the Heritage Lottery fund about the success of the project and we look forward to organising the first trip to the site for the BCGS in the very near future. I hope this will be the first of many such projects. If you have a spare few hours why not go and see it for yourself.

#### **DUDLEY TOWN TRAIL PLANNED**

The walks that Eric Robinson and Paul Shilston have guided around the building stones of the town centre at Dudley have always been received with enthusiasm at the various Rock and Fossil fairs. In response to this we are planning to write and publish a leaflet or brochure on the geology of the town centre landscape and structures. If anyone has any information on the sources of stone used in the town, how it was worked, old photographs etc, we would love to hear from them. It is likely that the guide will be launched at the Rock and Fossil Fair in September 2001.

#### **WOLVERHAMPTON'S GEOLOGICAL SITES UPGRADED**

Following on from the review of the geological SINC's (Sites of Importance for Nature Conservation) that Alan Cutler and I undertook for Dudley MBC to get them protected under the UDP (Unitary Development Plan), Wolverhampton MBC asked us to look at six sites in their area. We can report that all of these were of sufficient importance to merit a recommendation that they become SINC's under the UDP. This was on the basis of their uniqueness, or their existence as the best example of their type in the borough. Some of the sites (as in the case of Stafford Road Cutting, given as Black Country site No 6 at the end of this newsletter) offer an exposure of rock types which contrast slightly with rocks of the same age observed in neighbouring boroughs. It is likely that boroughs such as Wolverhampton have other exposures that need to be found, logged and assessed. So please keep a look out and let us know of any outcrops in your area, or join us in getting them recorded.

#### **BLACK COUNTRY GEOLOGICAL SOCIETY'S GEOLOGICAL COLLECTION**

As you know Dudley Museum now has additional space to begin developing the collections thanks to a basement refit last year. I am now in a position to begin taking in material. As discussed in previous newsletters, it would be great if we could set up a BCGS collection so that we can give something of permanent worth to future generations. This should ideally be high quality material that is well documented such that it really adds to the overall value and importance of the collections at the museum. However, this material will also form part of an historic archive of BCGS activities in our time and in this respect all specimens will be considered. So, if you have been wondering what to do with all the stuff you've collected and you fancy being immortalised in association with an altruistic scientific and cultural endeavour, why not donate something to the BCGS Collection at Dudley Museum?.

#### **THIRD UK RIGS NATIONAL CONFERENCE**

The next National RIGS conference will be held in the Lake District this year at Newton Rigg, Penrith, Cumbria between Wednesday 30th August and Saturday 2nd September. The title is 'Geoconservation in Action', the programme centres on case studies, trails and websites. Further details are expected in due course and the programme is currently available from me, Graham Worton or the Newsletter editor.

Graham Worton

### **NEWS IN BRIEF**

#### **Welcome to new members**

Kevin Lander - Alveley  
Richard Lewis - Kings Heath

Catherine Eales has sent me a copy of the Circular of the East Midlands Geological Society which contains an extensive list of Field trips and /Lectures taking place this summer and organised by the East Midlands Geological Society, the Geological Association, Hull, Cumberland, North Staffs, and the Yorkshire Geological Societies. The list is much too long for me to publish but details can be obtained from Catherine or from me, Kate Ashcroft.

#### **Editor**

K. M. Ashcroft  
48 Worcester Lane  
Sutton Coldfield  
B75 5NB

Tel. 0121 308 6783

#### **Hon. Secretary**

Dr Sarah Worton,  
158 Oakham Road,  
Oldbury  
West Midlands  
B69 1QQ  
Tel 01384 235946

**Web site:** <http://www.bcg.org.uk>

June 2000

## BLACK COUNTRY SITES NO 6 : STAFFORD ROAD CUTTING, WOLVERHAMPTON

Situated on the west side of the A449 Stafford Road approximately 1km to the north of the Wolverhampton ring road is a long rock exposure of Triassic rocks. The exposure principally runs between two railway bridges (NGR SJ913 002 and SJ913004 respectively). It is the best and most easily accessed example of coarse sedimentary rocks belonging to the Kidderminster Formation (formerly known as the Bunter Pebble Beds) in Wolverhampton Borough. The rocks here are coarse red sandstones, gritstones and conglomerates which show a number of sedimentary features including cross bedding and sorting. The clasts (pebbles and rock fragments in the rocks) are dominantly quartz, quartzites and darker materials which may be of volcanic origin. Many horizons contain blood-red mudstone fragments (mudflakes) and they appear to contain a calcite cement which binds the fragments together. The rocks here are a contrast to the Kidderminster Formation exposures seen elsewhere in the Black Country as they do not contain very thick beds of very coarse pebbles with very diverse rock types but rather show a more restricted host rock source with a fluctuating though relatively lower energy environment of deposition. It is thought that these coarse rocks were the result of erosion of areas to the south that were uplifted by earth movements at the end of the Permian period and that they were deposited in fairly fast flowing rivers and temporary lakes in a semi-arid environment

To the north of the rail bridge at SJ 913004, there appears to be an erosion surface which includes a channel which is infilled with unconsolidated yellowish sand and gravel which is probably of Fluviglacial origin.

There is space to park a number of cars in a layby in Gorsebrook road a little to the north of the cutting. There is open access to the exposures from the footpath adjacent to Stafford Road.

