



The  
Black  
Country  
Geological  
Society

# NEWSLETTER No. 154 AUGUST 2002

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.

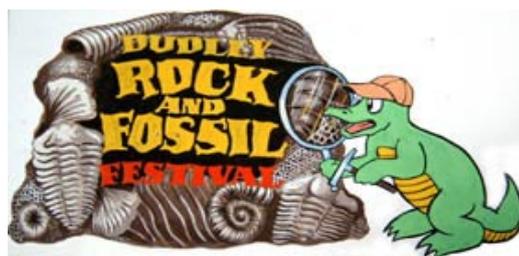
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## FUTURE PROGRAMME

Lecture meetings are held at Dudley Museum, St James's Road, Dudley. Phone (01384 815575)  
7.30 for 8 o' clock start.

**SAT 21<sup>st</sup> and SUN 22<sup>nd</sup> SEPTEMBER 2002.** Dudley Rock and Fossil Festival

***The biggest geological event that the Midlands region will see for years.*** It will take over both Dudley Museum and Art Gallery and the adjacent Town Hall. It will feature all kinds of activities, a children's discovery area, special events and trips with many exhibitors and dealers. Celebrating the whole sphere of geology and Earth science there will be something for everyone.



If you would like to enjoy the privileges offered to volunteers who help to warden the event, please contact Graham Worton at Dudley Museum on 01384 815575.

Chairman  
G.J. Worton B.Sc.,  
C.Geol.,  
F.G.S.

Vice Chhairman  
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.

Meetings Secretary

The BCGS is sponsoring the event and has a large stand at the event. If you have material that could be sold at the event to raise funds for the society please let us know.

**MONDAY 30<sup>TH</sup> SEPTEMBER 2002** Lecture: David Brew  
"Shoreline Movement and Shoreline Management in the Wash, Eastern England"

Dr. Brew is the Senior Coastal Geomorphologist at Posford Hoskins Ltd. and specialises in the geomorphology of coasts and estuaries, and sea level change. He is a graduate of London University and also holds an MSc. in Oceanography from Dalhousie University, and a Ph.D. in

Environmental Science from the University of East Anglia.

This lecture will outline and explain the post-glacial development of the Wash and the possible changes due to a rise in sea level as a result of global warming.

**MONDAY 28<sup>th</sup> OCTOBER 2002.** Lecture: Dr Ian Sutton "Yellowstone, its Evolution and Geology."

Dr Sutton graduated from Norwich University where he also obtained his Ph.D on Silurian tabulate corals in 1964. He has wide experience as a Senior Lecturer and Head of Dept. in the Adult Education Dept. of Nottingham University, and as an organiser of numerous geology courses and field work in many parts of the world. He has been a member of the East Midlands Geological Society for many years including 3 years as President.

Yellowstone National Park in the western USA was originally established largely because of the wonderful array of geothermal features that adorn the area. Those features are there for geological reasons as Yellowstone currently sits right over a thermal plume or hot spot. Yellowstone is situated at a high elevation in the Middle Rockies and during the last two million years has been the site of 3 cataclysmic eruptions and it is in the caldera of the most recent of these eruptions that the geothermal activity has been concentrated. In this talk we will try to develop an understanding of the geological history of the area, visit the spectacular geothermal features and try to evaluate the possibilities for the future.

**MONDAY 25<sup>th</sup> NOVEMBER 2002.** Members evening at the Museum. Your chance to have a guided tour of the Museum followed by a series of short talks given by Society members. This will be open to anyone who would like to share something of interest, whether it be some rock or fossil specimens collected on holiday or a short talk accompanied by a few slides. The more people that contribute the better so please fill in the slip at the end of the newsletter or email us with your suggestions so we can put a programme together for the next newsletter.

## EDITORIAL

Some excellent progress has been made on re-vamping the society's website. Thanks to the efforts of members Graham Hickman (who currently lives in America!) and more recently David Miller, who is a geology student at King Edward 6<sup>th</sup> College Stourbridge, the website is looking really good. Please check it out and send any comments / suggestions onto the web team (there's a link to contact them on the site). David will be at the fair on the Rock and Fossil Roadshow stand where he will demonstrate the new site (amongst other things) so if you haven't got a computer but want to know what all the fuss is about please come along. Many thanks to Graham and David for their efforts to date – keep up the good work! A note of thanks also to Amir Kanwar, who put considerable time into developing the first web site.

This year the BCGS stand will feature a case of the material donated by society members to the BCGS geological Collection part of the Dudley Collections. Some of this material, apart from having scientific value, is stunningly attractive and has wonderful human stories attached to it. More information is given in the conservation column below.

The new website address is [www.bcgs.info](http://www.bcgs.info)

## REPORTS

### **MONDAY 25<sup>th</sup> MARCH 2002 Annual General Meeting**

The twenty seventh annual general meeting of the Society was held on 25th March 2002 at Dudley Museum and Art Gallery. Twenty-six members were present with apologies for absence received from Alan Cutler, Peter Smith and Mike Williams.

Minutes of the 2001 AGM had been distributed, taken as read and approved, proposed by Hilary Giltrap and seconded by Alf Cole. Sue Fairclough presented a statement of the accounts and treasurer's report. This outlined slight excess in income over expenditure although income had generally fallen from previous years. Without income from conservation work expenditure would have exceeded income. The accounts and report were proposed by Bob Fairclough and seconded by Douglas Warren. Sue went on to discuss the prospects for the following year. The committee had reviewed the current levels of expenditure and, given the lack of any known conservation income for 2003, proposed an increase in subscription rates from 2003. The proposed new rates were as follows:

Full time student	£5
Individual	£15
Family	£20
Group	£30

A visitor fee for indoor meetings of £1 was also proposed.

The changes were proposed by Barbara Russell and seconded by Morris Hanston, carried unanimously.

The chairman, Graham Worton, then presented his Annual Report.

Graham reported that membership levels had dropped slightly from 2000 levels. It was hoped that levels would be boosted following September's Rock and Fossil Fair. Although the field programme had been plagued by difficulties associated with foot and mouth, a small number of trips went ahead. This included our first December meeting to the Ercall in Shropshire. Society members had, once again, taken a leading role in various conservation activities, which had included a clean up of the Brewins Bridge SSSI. The Chairman's report was proposed by Steve Hughes and seconded by Martin Normanton.

The following changes were made to the offices and the committee of the society. Peter Smith resigned as a member of the committee and was replaced by Mike Williams, proposed by Alf Cole and seconded by Martin Normanton. Barbara Russell joined the committee, proposed by Sue Fairclough and seconded by Bob Fairclough. The remaining members of the committee agreed to continue in their posts and were proposed 'on-block' by Bob Fairclough, seconded by Barbara Richards. The 2002 members are currently:

Chairman:	Graham Worton	Vice-chairman:	Alan Cutler
Treasurer:	Sue Fairclough	Secretary:	Sarah Worton
Meetings:	Gordon Hensman	Field Meetings:	Andrew Rochelle

Members:	Barbara Russell	Mike Williams	Alf Cole
Auditor:	Martin Normanton		

At the end of the meeting the chairman paid tribute to Kate Ashcroft, who had served the society as newsletter editor for 10 years before retiring from the role this year. All at the meeting thanked Kate for her tireless efforts in carrying out such a vital role for the society. Kate was presented with a small gift on behalf of the membership as a token of our appreciation.

Sarah Worton

#### **MONDAY 4<sup>th</sup> MAY 2002 Lecture 'Ground Freezing in Civil and Mining Engineering' by John S Harris.**

Explosions aside, historically, innumerable underground disasters often with serious loss of life have occurred when unconsolidated strata have been encountered unexpectedly during mine-shaft boring and tunnelling operations. Other disasters, whilst not immediate have often occurred before security measures such as grouting etc. could be completed.

Temporary, in situ, consolidation of incompetent- (often water saturated unconsolidated deep sediments)- by means of freezing dates back to a French suggestion of nearly 150y ago. This was the age of ever deeper drilling for coal and for artesian water in deep aquifers. It was also suggested that other unstable strata could be artificially saturated with water before freezing to render them stable for the duration of the drilling and lining procedures.

The following describes a basic freeze-drilling/tunnelling system whereby the development of a petrified enveloping cylindrical "wall of ice" is temporarily created by pumping -40C refrigerant through a predrilled cylindrical array of narrow tubes. Gradually the adjacent freezing zones merge initially to form a solid, frozen cylindrical wall, which in turn gradually creeps radially inwards. Drilling/tunnelling can begin at the critical time through the as yet

unfrozen cylindrical core material, whilst the now petrified outer frozen cylinder not only protects the shaft drilling operations but also guarantees secure conditions for subsequent grouting and necessary lining procedures

The first recorded example of the application of this novel method was in S.Wales in 1882. A German Patent followed one year later!

More recently earth freezing techniques have proved very useful in (horizontal) tunnelling operations where great accuracy in drilling procedures as well as high skills needed on the part of the drilling team particularly when curved/angled tunnels are needed, eg to avoid pre-existing structures and on occasion to avoid trespass.

A near saturated solution of calcium chloride precooled to  $-40^{\circ}\text{C}$  is the refrigerant most frequently employed. It is safe to use and dispose of although it can cause corrosion problems. More recently liquid ammonia ( $-37^{\circ}\text{C}$ ) has been used.....minor leakages are easily detected but serious breathing problems may arise if there is any significant gas escape. Even more expensive is the use of liquid nitrogen ( $-180^{\circ}\text{C}$ ) which is a by product of the extraction of oxygen from the atmosphere.

### SOME TYPICAL INSTANCES OF CRYODRILLING

1. The construction of underground storage containers on Canvey Island in the 1960s for liquefied methane brought by tanker from The Sahara. This £nM project by Shell Ltd., had to be abandoned long before completion because cheaper North Sea methane come on stream unexpectedly quickly. Nonetheless the construction methodology had worked well.
2. The stabilization of old (1929) abandoned flooded coal mining shafts prior to, and during the construction of the Wrexham bypass.
3. The working of a rich metalliferous ore body in Australia was rendered viable. The recovered Au financed the huge cost of the ground freezing operation. The Cu and other heavy metals extracted was pure profit.
4. Underpinning and replacement of otherwise inaccessible sections of the Vyrnwy-Liverpool water pipeline, which was confined between the R.Mersey & Manchester Ship canal.
5. Repairs to and realignment of part of The Blackwall Tunnel which was additionally complicated due to of the use of substandard concrete by an earlier contractor.

Certainly this cryogenic method provides an elegant and compact means by which mobile water can be temporarily excluded by containment refrigeration before drilling and tunnelling in unstable strata. However the procedure is far more costly than traditional standard methods such as the use of for example coffer dams etc. The particular advantage of cryogenics arises when unstable and/or uncertain circumstances arise in isolated situations, especially where access is difficult.

This was a very well presented and interesting talk on engineering geology, about which we don't hear very much.....sadly !

Alf Cole.

### SUNDAY 7<sup>th</sup> JULY 2002 Field Meeting to Snailbeach Lead and Zinc Mining area Shropshire.

Ten members and guests attended. The day was blessed with good weather for the meeting, which began at 11pm. The reconstructed area of the Snailbeach area was visited and the continuing lead pollution problems discussed and described. Old buildings and mine entrances were visited using the guided trail. The miner's chapel at Lord's Hill was opened for the party and provided an historical prospective to the area and its history. Before returning to the car park members were able to pick over mine spoil and collect lead ore and other geological specimens.

After a hearty lunch at the Stiperstones Inn the party visited the Bog mine area, where the reconstructed area was described and discussed, specimens collected and the landscape described. An excellent day was had by all.

Andrew Rochelle

## CONSERVATION COLUMN

### **UKRIGS Conference 2002: *Providing Geodiversity***

Don't forget this years RIGS conference is in just a few weeks time. It will be held at the Loreto Centre, Llandudno, North Wales from the 2<sup>nd</sup> to the 5<sup>th</sup> of October . Key themes will be:- Raising Awareness, Education, Tourism, Sustainability. It will be the usual high quality presentations and field trips with invaluable opportunities to share ideas views and experiences with others from across the country.

This is a great chance to get informed and involved don't miss it. Further details available from DR Cynthia Burek Email [c.burek@chester.ac.uk](mailto:c.burek@chester.ac.uk) or Wendy Owens on 01352 715531

### **Dudley Museum Update - *Buried Treasures of the Black Country***

This small geology gallery has now entered phase three of its launch. Much more of the artwork from the three schools that were involved in the 'Waves Project' is now on the walls and is wonderful bringing colour and imagination from the young to the gallery. It also now features fossil identifier lists which allow the gallery to be used as a place to bring finds for identification by comparison to the representative material on display. Phase three will open at the beginning of September to coincide with the Rock and Fossil Festival and will bring audio and video as well as a corridor full of additional artwork to the geological feast on offer.

### **Dudley Museum Update - *The Black Country Geological Society Collection***

The Black Country Geological Society Collection has grown again in the last couple of months thanks to superb donations by a number of members. Pictured here is a large mammoth's molar from the Trent River gravels in Nottinghamshire, donated by Steve Hughes,



This is a fake fossil dinosaur slab purchased from a market in China on a visit by Gordon Hensman earlier in the year. Both pieces are of great general interest and are the kind of objects that the museum will display next year when the New Geological Galleries are fitted out in the Museum.

On the advent of the Rock and Fossil Festival 2002, who knows what else may turn up. I have arranged for these and some of the other recent donations to be displayed on the BCGS stand at the fair to demonstrate yet another valuable area of work that this society does as a gift to the future generations, and for which we can be very proud.

### **Geoconservation in print**

I would draw your attention to the front page article of the August edition of the Down to Earth geological newspaper produced by Chris Darnen of Geosupplies. This is a summary of the aftermath of the foot and mouth crisis of last year and underlines the need for sustainable management for geological sites which are under threat from neglect and falling levels of use as much as from development.

An article in the same issue by Mick Murphy of English Nature, shows some of the work that can be done using the limited resources available to the geological team at English Nature in the name of the 'Facelift' programme. You may recall that the BCGS was a recipient of funding last year through this programme and cleared vegetation from Brewins Bridge SSSI with the Dudley Canal Trust. Copies of Down to Earth will be available at the BCGS Stand at the September Rock and Fossil Fair free of charge.

The last issue of Earth Heritage magazine (which is always packed with good stuff about geology and conservation) features a CD Rom index of the publication in its various iterations from 1968 to 2002. Well worth a look and we have a few spare copies that will be available at the Fair

In the news items of Geology today there is a brief account from the independent newspaper of 8 February 2002 about threats to the giants causeway from development following the loss of the visitor centre through fire last year. This is a World Heritage site and was potentially to be sold as

the current owners could not afford to rebuild the visitor centre. The future is still uncertain but the sale does not appear to be likely to happen now.

So it would seem that no matter how impressive your sites are their future can be delicately balanced. So we must have forward vision to make sure that they maintain the best possible resource for the longest possible time.

Until next time..... Graham

## CONTACT US

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BCGS Website now at [www.bcgs.info](http://www.bcgs.info)

**Your Contributions are needed** to make the 2002 members meeting as varied and fun an event as last years. Please join in the fun

<b>Members Meeting 25<sup>th</sup> November 2002</b>	
Yes, I / we would like to contribute to the meeting  Name (s)  Address          Phone	<b>Brief outline of Contribution</b> (eg talk on trip to Skye with 4 slides and some specimens)
Please complete and return (by 1 Oct if poss please, end Oct latest) to the meetings secretary: Gordon Hensman 10 Parkway Road Dudley DY1 2QA  <u>OR</u> email us on the Ed team contact above.	Approx. time needed