The Black Country Geological Society

NEWSLETTER No. 150
DECEMBER 2001

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.

FUTURE PROGRAMME

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

SATURDAY 1ST DECEMBER Field meeting. Leader: Dr. Andrew Rochelle. The Ercall Nature Reserve, Shropshire. Meet at the car park at the side of the road GR SJ 637 094 at 11.00 am. The day will involve about 3 miles of walking so please bring stout shoes and weatherproof clothing.

This trip will examine the general geology of the setting of the Wrekin and Ercal hills from the basement of ancient Precambrian lavas, ashes and intrusive granophyre and basaltic dykes which cut them on upwards in time to the ripple bedded sandstone of the Cambrian which lie on top of this ancient eroded basement. A short walk to Maddox Hill quarry to see grapolitic shales and a camptonite intrusion will complete the day.

TUESDAY 8th JANUARY 2002. *Joint Meeting with the West Midlands Group of the Geological Society of London.* A talk on Vulcanology ; Speaker Bill Maguire. Held at **Wolverhampton University 6.30pm. Room MA 30, School of Applied Sciences, Wulfruna Street.**

MONDAY 28th JANUARY 2002. Lecture: Dr. Joe Jennings. " The Elf/Elgin Hydrocarbon Fields in the North Sea."
The talk concentrates on the background to the discovery of the Elgin/Franklin Fields; the geological setting which includes details of their reservoir and potential source region. Also included is the design and extraction layout with particular emphasis on the landfall, i.e. tunnelling works. The talk concludes with a breakdown of anticipated production levels.

MONDAY 25th FEBRUARY 2002. ANNUAL GENERAL MEETING at 7.45 pm followed by a lecture - Dr. Jill Norton, B.G.S. Kinsley Dunham Centre, Keyworth, Notts. " Caribbean Volcanoes."

MONDAY 8th APRIL 2002. Lecture: John Armitage. "Meteorites and the Search for Life in Retrospective and Prospective."

MONDAY 29th APRIL 2002. Lecture: Professor Aftab Khan, Department of Geology, University of Leicester. "Lithospheric Structure and Dynamics of the Kenya Rift."

SATURDAY 4th MAY 2002. Field Meeting: Ice Features in Shopshire. Leader: Dr. Andrew Rochelle. Meet at the Canal Warehouse Newport (GR SJ 744 194) on the A 518 at 11.00 am.

The trip will view meadows and subsidence along the road towards Meretown and provide views across moors to look at a glacial landscape. Glacial deposits near the roadside, including a number of glacial boulders, will be examined. A pub stop will be available if required. The party will then go on to view Gnosall Overflow Channel and a saucer shaped area representing a relict glacial lake. Weaver's Hill kame will be visited in order to study till fabric. The final stop will be at the Guild of Monks in order to study eskers and a relict lake shore.

MONDAY 27th MAY 2002. Lecture: Dr. Ian David Sutton. "Yellowstone, its Evolution and Geology."

SUNDAY 7th JULY 2002. Field meeting: Snailbeach lead and zinc mining area near Shelve, Shropshire. Meet at Snailbeach car park at 11.00 am (GR SJ 373 023, OS 1:50 000 sheet 126)

The trip will examine the mines at Snailbeach and provide views of the Shropshire landscape. At the mine there are interpretive boards and information explaining the structures and life in the mining industry of the area. There is the possibility of underground visits here. A short walk will include many mining features and take in the Lord's Hill Baptist Chapel (1833). At the spoil heaps, samples of the minerals mined and their host rocks can be obtained.

We will stop at Stiperstones Inn for lunch where good food is available. The afternoon session will be spent at The Bog Mine, where another reconstructed and interpreted mining complex and a field study centre are present.

21st and 22nd SEPTEMBER 2002. Dudley Rock and Fossil Fair.

EDITORIAL

Welcome to our 150th issue of the Black Country Geological Society newsletter. We are now into our 27th year and the editorial group felt that it was somehow very fitting that this edition co-incides with a newer look and includes reports from new initiatives taken by the society in the past year.

This anniversary edition is marked by the fact that this is the very first issue of the newsletter that has been issued electronically, instantaneously and in glorious technicolour to those members and institutions who have signed up to the BCGS email list. You will notice that we have made some other slight changes in presentation and format while respecting the traditions of corporate style.

This is also the edition in which we are able to publish the report of the first student expedition that the society has sponsored. The account of the trip taken by Lucy Hollis to Svalbard, Norway is given on page _____. We hope that you like the changes and that these new initiatives of the society will also become valued parts of the traditions of the society as time goes by.

Please let us know your views.

REPORTS

MONDAY OCTOBER 29th 2001 Lecture
'The Disposal of Carbon Dioxide in Spent Oil Wells' by Dr Christopher Rochelle, the British Geological Survey.

The lecture focused on carbon dioxide storage in three principle domains; biomass, oceans and deep underground, as opposed to releasing it into the atmosphere where it may potentially acquire a use for future power generation with improved technology.

Dr Rochelle began with an introduction to climatic change resulting from carbon dioxide emissions. The Intergovernmental Panel on Climate Change (IPCC) are concerned with carbon dioxide emissions having a noticeable effect on the worlds' climate, especially in the period of 1995-2000. Four main gases contribute to climate change namely carbon dioxide, methane, chlorofluorocarbons (CFC's) and oxides of nitrogen. Of these carbon dioxide is the biggest contributor with the greatest effect of around 63.5% in proportion to the other three. This makes it the main target to be tackled.

In the last 200 years carbon dioxide concentrations have risen sharply and continue to do so. The IPCC have tried setting up the Kyoto Protocol involving the main carbon dioxide producing nations reducing global emissions by 60% by 2018. The UK aims to reduce emissions by up to 23% by 2010.

Industry, transport and power stations are the main contributors of carbon dioxide production. Individually it is easy to tackle emissions from transport or industry. However this may in turn shift carbon dioxide production in a way that makes power stations emit more. The UK, Germany and Italy are the greatest carbon dioxide producers in Europe, mainly from fossil fuel burning power stations. Whilst Norway and France produce the least carbon dioxide as a result of making greater use of hydroelectric and nuclear power stations.

So what can be done to reduce the levels of carbon dioxide? Firstly reduction in the use of energy and improvement in energy efficiency would help to reduce emissions. Switching to alternative energy resources such as gas, renewables; wind, wave and solar, and nuclear power. However these methods all have problems of space and intermittent supply. Another alternative is the capture and sequestration of carbon dioxide. That is separating, transporting and storing it in another domain such as the oceans, biosphere (biomass) or geosphere (below ground).

Next Chris went on to describe the advantages and disadvantages of these three domains.

1. The oceans are a controversial domain. Methods already exist of seeding algal blooms, with iron, to absorb carbon dioxide. However the algae removes oxygen from the oceanic water as well as smothering the ocean floor once a bloom grows and dies. Alternatively carbon dioxide could be ejected into deep oceanic waters as a liquid or gas hydrates. This poses the problem of increasing oceanic acidity, however, if a leak were to occur if the oceanic waters were insufficiently mixed.

2. Use of the biosphere involves locking carbon dioxide up in biomass such as forests. However these take up space, can cause soil depletion and are prone to destruction by wind or fire.

3. The geosphere provides a practical solution for today's technology. Costs the same as disposal in the oceans, provides long term storage with little or no environmental concerns. A number of carbon dioxide traps occur naturally. In the US limestone rocks domed by from igneous intrusions are utilised by oil companies. In Europe natural carbon dioxide is associated with shallow surface springs and geothermal activity in France and Italy. Hot springs in Germany also provide a source of natural carbon dioxide.

Too much carbon dioxide leads to increased soil acidity which results in the death of trees and other vegetation. Being denser than air it also accumulates caverns, valleys and volcanic craters where it can suffocate animal and human life.

How can carbon dioxide be stored underground? At normal temperatures and pressures gaseous carbon dioxide take up a large volume. Increasing temperature and pressure will reduce this volume by as much as a quarter to eventually form a 'super critical fluid'. Solid carbon dioxide, or 'dry ice', exists at around

pressures of 5.1 atmospheres and a temperature below -78◦. At around 67 atmospheres and between 56-25◦C carbon dioxide exists as a liquid. Gaseous and liquid carbon dioxide are indistinguishable around 72.8 atmospheres and 31◦C and said to be in a supercritical state that corresponds to a depth of 700m below ground. This supercritical state will enable carbon dioxide to float on water and is ideal for underground storage. Aquifers, oil and gas fields all have huge potential storage capacities for carbon dioxide where it may sit for millions of years.

For the final part of the talk Dr Rochelle discussed ongoing projects and the economics of underground carbon dioxide storage. Pan Canadian increase oil production at their Weyborn site by pumping carbon dioxide into the reservoir to displace oil. A US gasification plant provides the carbon dioxide which it produces as a waste product..

In it's North Sea gas fields, Stat Oil, has displaced natural gas using 1 million tons of carbon dioxide since 1996. Seismic studies show how the carbon dioxide breaks through and ponds beneath successive layers of capping strata.

CONSERVATION COLUMN

Seven Sisters Cavern Collapse, 20th October 2001

As you may know the lower levels of the Seven Sisters Caverns at Wrens Nest have been slowly deteriorating since the mines were abandoned early in the last century. A loud fall was reported in September 2001. This was followed on the 20th October by a surface collapse event. This event produced a sink hole and large subsidence crater which disturbed a number of trees, made substantial noise and dust and achieved substantial press coverage including TV footage of another collapse on the following morning while a local BBC new team were actually on the site. All of these events occurred in the excluded areas within safety fences which were put in place many years before because of the extremely hazardous condition of the underground parts of the mine. Dudley MBC in partnership with other specialists including English Nature are currently assessing the risks and liabilities posed by the ongoing instability and the options for making them stable in the longer term. In the interim period the engineers have established an additional safety measure of viewing platform and adjacent footpath closure with further fencing and attendant site security. I will give an update on this situation in the next newsletter

Other Wrens Nest News

The 86m of rock core taken during the drilling works at Mons Hill that I mentioned in the last newsletter, should soon be under scientific scrutiny at the University of Birmingham School of Earth Sciences. Further to a meeting that I had with Dr Paul Smith and Dr Alan Thomas, we hope to have the core quartered. The museum will hold a quarter as a stratigraphical/ scientific reference and the rest will be carefully logged and sampled for palaeontological and sedimentological analysis. This 'fresh' and undisturbed core could add much to our knowledge about the area during Much Wenlock Times.

We also hope to get permission from English nature to take further samples of bentonite from various horizons at the reserve and other localities to look for microfossils. This is an extension to the work that David Ray did at the University of Cincinnati where he noted the presence of microfossils in the bentonites. These are two exciting projects and will give us a better understanding of the importance of these sites to bolster future World Heritage work and add to the importance of the Dudley Collection.

Geological Site Management Workshop, Peterborough

The BCGS have been invited to present our experience of protecting, managing and using a variety of different types of geological site at this important conservation workshop. The purpose being to update the *'Handbook of Earth Science Conservation'* appendix to the 1990 strategy document *'Earth Science Conservation in Great Britain'*. This with the RIGS Handbook are probably the most important source documents for information relating to the practicalities and options that are available for such sites.

The BCGS was one of only seven organisations in Britain in 1990 that was doing something about the loss of local geological sites that had been occurring at increasing frequency up to that point. In the years following the publication and launch of the strategy document, the RIGS network has become established

and is now a major force in natural heritage conservation. We have learned a lot about the difficulties and possibilities in those years and hopefully our input will be a valuable addition to the revised document.

Dudley Museum Collections and Display

After what has been a very difficult year for the museum, we are getting back on our feet. By the publication of this newsletter, a temporary geological gallery will be in the process of being fitted out in gallery 4 which is upstairs in the museum. This will be called 'Moments in Time' and will allow us to stage a variety of temporary geological exhibitions until the Time Trail Gallery and adjacent teaching area are in place.

This room will feature six large display cases that we obtained from the Ashmolean Museum in Oxford and has plenty of wall and window space to use for interpretation. In the first place am planning to include a wide selection of the fine Silurian and Coal Measures fossils, many of which have never been on public display before to my knowledge. There will be recent acquisitions and select pieces which illustrate processes and the way to read and understand the story behind the fossil evidence.

But this is a great opportunity to be creative. The nature of this gallery will allow a regular change over of geological material and themes as well as providing the basic educational resources for geology that have been so desperately lacking since the loss of the Time Trail.

I would therefore love to hear your views about the kind of geology that you would like to see on display at the museum-whatever that may be!

I have already been approached by a gentleman who has a world-class collection of Ammonites which I wish to use to stage a special display along the lines of the 'Trilobites of the World' exhibition in the millennium year. Ideally this will co-incide with the 2002 Rock & Fossil Fair
For the first time ever we are in a position to

Until next time……. Graham W

OTHER NEWS ITEMS

Lapworth Lecture. 5.00 pm in the 'Large Hills' Lecture Theatre, School of Earth Sciences.

Tuesday December 4th. Dr Gareth George (University of Greenwich). "Sedimentology and sequence stratigraphy of Upper Carboniferous (Namurian) sequences from South Wales.
Contact Jon Clatworthy, Curator of the Lapworth Museum, for further details. 0121 414 7294.

Lucy Hollis – sponsored student

You may remember at the last AGM we agreed to sponsor Lucy Hollis, a geology student at King Edward VI College Stourbridge. She took part in the British Schools Exploring Society trip to Svalbard in July 2001. She has now sent us a full report of her experiences which will be in the next edition of the newsletter.

CONTACT US

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ANNUAL GENERAL MEETING 2002

Notice is hereby given of the twenty seventh Annual General Meeting of the
BLACK COUNTRY GEOLOGICAL SOCIETY

To be held at Dudley Museum at 7.30pm Monday 25th February

AGENDA

1. Apologies for absence
2. Minutes of the AGM held on 26th March 2001
3. Statement of accounts and Treasurer's report
4. Chairman's annual report
5. Election of officers and committee
   a) chairman
   b) vice chairman
   c) treasurer
   d) secretary
   e) meetings secretary
   f) field meetings secretary
   g) three committee members
   h) auditor
6. Any other business

Current members:

Chairman:	Graham Worton	Vice-chairman:	Alan Cutler
Treasurer:	Sue Fairclough	Secretary:	Sarah Worton
Meetings:	Gordon Hensman	Field Meetings:	Andrew Rochelle
Members:	Peter Smith	Alf Cole	vacant post
Auditor:	Martin Normanton		

All posts are honorary and available for re-election. Nominations may be made to the secretary or declared at the AGM.

SUBSCRIPTIONS 2002

Your next subscription is due on 1st January 2002. Subscriptions can be paid at the January meeting or sent to the treasurer:

Mrs Sue Fairclough, 7 Pool Street, Woodsetton, Dudley DY1 3SN

SUBSCRIPTION RATES:	Individual	£10	per annum
	'Family'	£14	per annum
	Full time student	£3	per annum
	Group/Company	£28	per annum

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NAME ADDRESS

Telephone:

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I/we enclose £…….. for …….membership Date:

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I would like to receive my newsletter by email YES/NO