



The
Black
Country
Geological
Society

NEWSLETTER No. 151 FEBRUARY 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.

FUTURE PROGRAMME

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

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.**"

The Lesser Antilles volcanic arc stretches from Saba in the north to Grenada in the south. Most of the islands have dormant or extinct volcanoes, and there have been several notable eruptions during the last 100 years. The volcanoes are typically andesitic, comprising dome-building eruptions with associated pyroclastic flows, although activity across the whole range arc ranges from basaltic lava flows to rhyolitic domes and caldera forming ignimbrite eruptions. The most famous eruptions in this region include the Montagne Pelee eruptions on Martinique in 1902 during which pyroclastic flows (or nuees ardentes) were first recognised scientifically, and which resulted in the deaths of 28000 people; the underwater volcano of Kick 'em Jenny which last erupted in late 2001; and the Soufriere Hills Volcano in Monserrat which has been erupting since 1995.

In this talk De Norton will outline the activity across the island arc, with particular emphasis on the recent activity on Monserrat, and the challenges faced by scientists and the populations of developing countries in the shadow of an erupting volcano.

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Tech.RICS.

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

John wrote a paper in the 1970's suggesting that science should examine meteorites more closely for evidence of extraterrestrial life, and it came as no surprise to him when NASA scientists claimed that the S.N.C. Martian meteorite ALH 84001 had structures resembling micro-organisms. This is a topic of considerable controversy that will be examined in John's talk in the context of the latest information. This promises to be a most provocative and lively indoor meeting.

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

Professor Khan will speak about the Kenya Rift International Seismic Project and in particular the experiments carried out between 1985 and 1994 which show abrupt changes in the depths to the Moho (the interface between the crust and the mantle). Beneath the rift itself, there are major differences in crustal thickness, extension, and upper mantle structure between the north and the south. He will talk about the seismic methods used and how they can be used to interpret the earth's structure.

SATURDAY 4th MAY 2002. Field Meeting: Ice Features in Shropshire. Leader: 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 lakeshore.

SAT 18TH and SUN 19TH MAY 2002 Canal side mini geology show at the headquarters of the Dudley Canal Trust (DCT), Peartree Lane, Dudley. Displays and dealers stands with guided narrowboat geology trips to Saltwells Local Nature Reserve. Event organised by DCT and Dudley Museum. Further details in April newsletter.

MONDAY 27th MAY 2002. Lecture: John S Harris. "Ground Freezing in Civil and Mining Engineering." This talk will use real life examples of projects to look at the ways in which deliberately freezing the ground can help us to construct tunnels and structures where groundwater makes working conditions treacherous and unstable. [note that Dr Sutton's talk on Yellowstone which had been advertised for May has had to be re-scheduled for October]

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.

SUNDAY 21st JULY 2002. Field meeting: Joint meeting with the Shropshire Geological Society. "Geology of the Black Country – Part 2" Leader: Graham Worton. This will start with a view across the south-western Black Country from atop the intrusion at Barrow Hill, Pensnett, and will look at exposures that tell the long story of the Black Country from the Upper Carboniferous to the Ice Age. Further details to follow.

SAT 21st and SUN 22nd SEPTEMBER 2002. Dudley Rock and Fossil Fair. Returning after four years this will be similar to those of the 1990's and will take over both Dudley Museum and Art Gallery and the adjacent Town Hall. It will celebrate the whole sphere of geology and Earth science with many exhibitors, dealers, a children's discovery area, special events and trips. If you would like more information or would like to enjoy the benefits offered to volunteers, please contact Graham Worton at Dudley Museum on 01384 815575.

MONDAY 30TH SEPTEMBER 2002 Lecture: David Brew "Shoreline Movement and Shoreline Management in the Wash, Eastern England" This lecture will examine the processes that change the shape of the coast in the wash and measures taken to manage that change.

MONDAY 28th OCTOBER 2002. Lecture: Dr Ian Sutton "Yellowstone, its Evolution and Geology." This lecture will look at one of the world's most famous geological areas. It will explain how it was created, how it has evolved and describe its spectacular geological features.

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. Date & details to follow.

EDITORIAL

It's another new year and it's begun quite dramatically in the world of geology. The last two months have seen many people challenged by dramatic geological phenomena. Some of these like the eruptions of Etna in Sicily and that of Nyiragongo in the Democratic Republic of Congo which devastated the city of Goma have filled our TV screens and pages of national newspapers for some weeks.

Closer to home, this newsletter publishes the geological challenges faced by Lucy Hollis. Lucy, you may recall, was sponsored using the BCGS money raised from conservation works to go to the Arctic region of Svalbard in northern Norway. As you will read in her report this was quite an experience with many challenges that will provide her with unforgettable memories as she moves onward to the University of her Choice and beyond that, the university of life.

Lucy is the first student that the BCGS has sponsored and we hope that this like many other initiatives that have been tried by the society in the past years will become one of its cherished traditions in the years ahead.

REPORTS

Field meeting , 8th June 2001 to Cresswell Crag.

Only six members made the longish trip to The Cresswell Crag Heritage Centre Open Day. As part of The Trust's Open Day, Peter Gutteridge and members of the East Midlands Geological Society led a guided geological tour of the basal crags of this quite impressive

mini-gorge which is a Permian relic of wind blown yellowish dune sandstones, which probably bordered the Zechstein Sea and overlie the earlier Carboniferous limestone.

Periodic melting of Carboniferous ice-caps caused several major flooding cycles and sea-level rises in the Zechstein Sea, possibly enhanced by run-off from the rapid erosion of the lofty, youthful Hercynian Mountains lying to the south. Rapid evaporation of the highly saline Zechstein waters under intense, near tropical sunshine led to the deposition of evaporites such as gypsum, halite and orange iron stained sylvite (which we identified by taste!) indeed, not unlike conditions at the Dead Sea of today. In addition a red-brown veneer of ferric oxide was deposited here and there on the well-rounded quartz grains in the sandstone.

Downward percolation of the concentrated salt-charged waters into the underlying Carboniferous Limestone led to:-

- Dissolution of calcium carbonate leaving cavities...viz. today's caverns etc.
- Dolomitisation of the limestone by partial replacement of Ca by Mg ions, as is happening today in the "Blue Holes" in The Caribbean.
- Emplacement of gypsum mineralisation in fractures and vugs, and also the formation of minute voids within the dolomite in which volatile hydrocarbon molecules, from the decay of organic carboniferous matter, gradually accumulated.
- Subsequent, occasional release of hydrocarbons into the overlying red sandstones led to chemical reduction of the reddish ferric iron to the much paler ferrous iron state producing the paler and the mottled sandstones.

Finally, Peter gave us a quite detailed analysis of the "Cresswell Palaeoclimate" and showed us evidence of palaeocurrent directions, high-energy tidal action with evidence for occasional violent coastal storms of 250Ma ago, in the Permian period.

Back at the EMGS base display tent many labelled hand specimens were available for discussion as well as some thin sections of blue araldite injected porous limestones and sandstones in which the blue areas had probably, at some much earlier stage, contained hydrocarbon molecules.

By way of novelty, some of us managed to get about 20 minutes of personalised instruction in flint knapping by John Lord, who had been specially invited up for the Open Day from his King's Lynn base.

Alf Cole

Field meeting to the Ercall Nature Reserve, Shropshire, Saturday 1st December. Leader Andrew Rochelle.

The weather proved to be good for December, although conditions were a little wet underfoot. About fourteen members attended. A walk through the disused Ercall Quarries before lunch enabled us to examine examples of ripple marks, dykes, Wrekin quartzite, lavas and other features. After lunch at a local pub Maddox Hill quarry was visited to view a camptonite exposure and examine a shale exposure for graptolites. Members contributed £10 as a donation to the Shropshire Wildlife Trust.

Andrew Rochelle

British Schools Exploring Society (BSES), Svalbard 2001 Expedition. Report by Lucy Hollis, (abridged)

How I heard about the BSES Expedition

I heard about the expeditions that the BSES runs through a teacher at King Edward VI College during a geology lesson. He explained that each year BSES provides opportunities for young people, aged between 16 and 20, to take part in exploratory projects in remote

regions of the world. As soon as I heard about the expeditions I was interested in joining one. I thought the opportunity was too good to miss, and was interested in the Svalbard expedition in the High Arctic.

I filled in the application form and sent it off, not really expecting to hear anything quickly. But I soon received a telephone call from a BSES representative inviting me to an interview. I was so excited as I realised I really had a chance to travel to the Arctic. After a challenging interview, I wasn't holding out much hope, as there had been over four hundred applicants, but a few weeks later I received a letter asking whether I would like to participate in the July 2001 expedition to Svalbard.

Now I had the hard task of raising a total of £2,150 towards the cost of the expedition; it was a very daunting total at first. I wrote many letters informing national and local companies of details of both the expedition and myself. The response at first was slow but soon replies were flooding in offering financial support. I finally raised the total in March 2001. Without the support of these sponsors I would not have been able to go and my sincere thanks go out to all people who donated money, equipment and advice, as without it I would not have been able to participate in this life changing experience.

The Expedition

The day finally arrived, Saturday 15th July, departure date !! I was both excited and extremely nervous – would I be able to cope for four weeks away from home with near total strangers? What were we going to do in the four weeks? Will I get on with everyone? These were just a few of the questions I was asking myself.

Everyone met at Gatwick Airport for the flight. We flew to Oslo airport, then on to Tromso and finally our destination Longyearbyen airport, Svalbard. We arrived in Longyearbyen well into the next morning and as expected people were tired, so that night we slept at a camp site next to the airport. The next morning the expedition began properly. We received our rations for the next few days (they didn't look appealing!), and on tasting, I then realised that the food over the next month was going to make my mum's cooking look good! We packed up and cleared the site and walked three kilometres to the town of Longyearbyen where we were going to catch the Langosund (a boat to carry us to base camp).

The boat dropped us around the coast at Brucebyan, and the scenery was amazing, like nothing I had ever seen before. Our 'fire' (geology group of twelve people) was chosen (or should I say forced!) to unload all the equipment from the boat, and after unloading I realised I had found muscles in my body that I haven't used since the age of 3!!



View of Urmsrumfjellet (showing typical geology)

Expedition Diary Extract – Day 4



We were investigating the geology of the area today and walked to nearby valleys. This was wonderful seeing a huge variety of minerals and rocks. Our entire findings were logged into geological notebooks, it feels great to be doing some real hands-on geological fieldwork. The hill slopes are composed mostly of scree which is quite a challenge to climb. Everyone's first encounter with the scree finds you further down the slope than where you started your ascent! After a couple of times everyone was confident and literally scree surfing. After a tiring day

we returned to base camp at 5.30pm where all the equipment was issued and I began to realise that I would have to leave half the contents of my rucksack behind to accommodate it.

I also decided that I would like to get the souvenir photo of a lifetime by swimming out in the Arctic Sea to an iceberg, climb it and strike a pose for the cameras. I indulged, took a leap and began to swim together with three lads from my fire (Gareth , Neil and Andrew). It was a fantastic experience – if a little too cold! In the photo above you can see the sheer jubilation on my face.

The fire(group) I was in was called geology, so our main science project was geologically related, which appealed to me as I wish to do a geology degree at university next year. Our main task was a geological investigation of Bunsowland where we learned and practised our geological fieldwork skills. Starting with the basic principles of rock description and identification and 'contacts' recognition, which allowed us to construct geological maps and cross-sections. I developed an understanding of the depositional environments, palaeogeography and geological history of the area. Bunsowland contained igneous, sedimentary and metamorphic rocks some of which dated back to the Precambrian. With contrasting rocks, a variety of contacts and structures, an abundance of fossils, great exposure and exciting topography it was a fantastic place to work.

From here the fire moved away from base camp at Brucebyan, traversed the Nordenskioldbreen and Florabreen glaciers and established camp at the head of the Gipsdalen valley. From here it was possible to examine the Precambrian metamorphic basement and overlapping Carboniferous/Permian sediments.



Geology camp at Gipsalen Valley

The adventure phase started from here and included the investigation of nunataks to the north (Minkenfjellt and Terrierfjellt). This was a chance to explore arctic tundra with crampons, ice axes, ropes and pulks. As we moved farther up the glacier the terrain became more harsh. Here we used skis to travel long distances. For three days bad weather forced us to stay in our tents in a blizzard, not a pleasant experience! Simple tasks like going to the toilet became a chore as it involved putting on waterproof trousers, jacket, hat, scarf, ski goggles and boots that were frozen! I also experienced bad chillblains on my face, neck and hands that required medical attention.



Travelling roped, using skis



Fire Group

Lasting Impressions

The people I spent the four weeks with have now become some of my best friends, friendships that are hard to explain but bonds of friendship that I hope will last for years to come. The experience of a BSES expedition is one that I wish everyone could have, it has changed me in many ways. I learned how to work as part of a group but also to use initiative in difficult situations. Due to the harsh conditions and physically demanding tasks, determination and self-discipline played a huge part, and I feel that my self-confidence has risen as a result of the expedition.

I can say with all my heart that the BSES expedition was a truly fantastic, once in a lifetime experience and I would encourage fellow young people to apply so they too can experience living and working in a remote and challenging area of the world. I would like to thank everyone at the BSES office, all the leaders (especially Lorraine, Ewan and Colin) and everyone in the geology Fire.

Thank You
Lucy Hollis

CONSERVATION COLUMN

A few things have started to happen since the last edition of this column.

Geological Trail News - Barr Beacon

Firstly Alf Cole and the 'Green Team' at Walsall have started to progress the work that was done at Hay Head Quarries to extend this trail to include Barr Beacon. Within the next few months a professional Risk Assessment report will be carried out by consultants to investigate the alignment of footpaths within the Pinfold Lane Quarries close to the summit of the Beacon. These contain magnificent exposures of Red desert sandstones and pebble beds of Triassic age which form the hill and provide visitors with commanding views of the northern parts of the South Staffordshire Coalfield.

Handbook of Practical Geological Conservation Techniques

English Nature is undertaking a review of the *Earth Science Conservation Strategy for Great Britain*, -the initiative that led to the coming together of groups carrying out this kind of work into the RIGS movement/ UKRIGS assembly. While there is a general feeling that its principles hold true there is also a feeling that the Appendices which were intended to provide guidance in conservation techniques, were rather too theoretical and of rather limited coverage.

On behalf of the BCGS I attended an English Nature workshop in Peterborough in December 2001 to contribute some of the very significant hands-on experience that the society has had in identifying, protecting and enhancing geological sites. The objective is to synthesise the past 10 years of experience into a document that offers very practical suggestion and help to those who are currently, or will be getting stuck into this kind of work. We are now compiling a series of 'best practice case studies' that will illustrate the 'real deal' as opposed to the theory that dominated the Appendices of the document 10 years ago.

I will provide an example 'case study' sheet in the next newsletter and would be very keen to hear your views on whether it would be useful to inform others of things to do or conversely things to be wary of.

Dudley Museum Update

As you know the Time Trail was removed through a dry rot problem and we have been scheming to get a worthy successor project together. The 'Deep Time Exploration Project' has been designed to do this job, vastly expanding the facilities and area available and creating a Museum Team and Friends Association in the process. We now have a floor in the gallery but a large sum of money is needed to make the scheme a reality. As such we have submitted a number of grant applications to both Local Authority schemes, COPUS and Heritage Lottery etc. We have received confirmation that these bids have been received and are undergoing assessment. We will know shortly if we have been successful and what resources will be available to us for the refit. More detail will be available in the next CC. So keep your fingers crossed!

Until next time..... Graham W

OTHER NEWS ITEMS

Please don't forget that subscriptions are now due for 2002. A form is enclosed below. Thanks to everyone who has already paid!

It was noted at the January meeting that a few members have had problems opening the emailed version of the newsletter. If you have missed issues as a result please let us know so we can sort the problem and ensure it is sent in a format that you can open or as a hard copy.

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AGM 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 | e) meetings secretary |
| b) vice chairman | f) field meetings secretary |
| c) treasurer | g) three committee members |
| d) secretary | h) auditor |
6. Any other business

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

SUBSCRIPTIONS 2002

Pls send to the treasurer Mrs Sue Fairclough, 7 Pool Street, Woodsetton, Dudley DY1 3SN

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|---------------------|-------------------|-----|-----------|
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