The Black Country Geological Society

NEWSLETTER No. 186
DECEMBER 2007

The Society provides limited personal accident cover for members attending meetings or field trips. Details can be obtained from the Secretary. Non-members attending society field trips are 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.

COPY DATE FOR NEXT NEWSLETTER IS 4TH FEBRUARY 2008

In this edition:

FUTURE PROGRAMME

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

MONDAY 28th JANUARY 2008 (*Indoor meeting*)

Joint meeting with the West Midlands Regional Group of the Geological Society

Where was the Devensian Ice Margin in the West Midlands?
Speaker yet to be confirmed.

FEBRUARY 2008 (*Field meeting*)

We are planning a field day to Kinver, but unfortunately cannot give any details as yet. To follow in next Newsletter.

MONDAY 25th FEBRUARY 2008 (*Indoor meeting*)

Techniques and Practices in Geology.
This will be an evening for all our members to brush up on their knowledge, or learn some of the basic techniques used in geology. However, to get it off the ground, we need to know if any members have an expertise that they could share with us all, please let us know. We hope that if this is successful, it will be followed by a field day in summer when "instruction" will be given in outdoor techniques.

SATURDAY 29TH MARCH 2008 (*Field meeting*)

Joint trip with the North Staffs Geological Association to the Lapworth Museum, University of Birmingham
Meet at the Museum at 10.30am. This date will confirmed or otherwise in the next Newsletter.

MONDAY 31st MARCH 2008 (*Indoor meeting*)

ANNUAL GENERAL MEETING
Further details of the Agenda, visiting speaker etc will be in the next Newsletter.

SATURDAY 19TH APRIL 2008 (*Field meeting*)

Field excursion to Hanter Hill. Leaders: Sue Hay and Geoff Steel.
Meet at 10.30am in the lay-by at Burlingjobb on the B4594 (SO251583).
This will be a circular walk up, around and down Hanter Hill. I estimate about 4 miles total distance much over quite rough moor land. Bring a packed lunch and drink.

Gordon Hensman and Andy Harrison

OTHER SOCIETIES

NORTH STAFFORDSHIRE GROUP OF THE GEOLOGISTS' ASSOCIATION

Lectures: Diary Dates for 2008
10 Jan 2008 - to be announced
7 Feb 2008 - Speaker Dr Derek Siveter on Cambrian soft body fossils of Chengjiang, China and the flowering of early animal life.
6 Mar 2008 - AGM and Chairman's Lecture with Elizabeth Hallam.
More details are available by following the links at www.esci.keele.ac.uk/nsgga

WEST MIDLANDS REGIONAL GROUP of the GEOLOGICAL SOCIETY

December 11th 2007 AGM followed by: Professor Rae Mackay, Birmingham University: 'Urban Groundwater and Applications'. Dome Lecture Theatre, Geology Department, Birmingham University; 6.30pm.

For further details please contact the Secretary, Adrian Jones, 0121 252 3100:
Adrian.jones18@firstengineering.co.uk

EDITORIAL

I am not sure when you will be reading this, and whether the result of the Black Country Urban Park Lottery Bid has been announced or not. If it is before December 10th you still have time to vote. If it is after December 12th then you will know the result. All that needs to be said is that the proposed developments at the Wren's Nest are the most exciting and important plans for geological conservation that I can remember. It also is a suitable time to remember how our own society started in 1975. A small number of earth science enthusiasts, and they are still members, were alarmed at the rapidity that Black Country sites were being swallowed up, mostly for landfill. The first encounter concerned Powk Hill in Walsall, and an exposure remains intact because of pressure by this infant group. Our main purpose is geoconservation, and may it always be so.

Bill Groves

REPORTS

Dudley Rock and Fossil Festival – evaluation summary

Out thanks go to those members who helped with the society stall at this event. We are obviously not the 'main attraction' at this event but we have always been a main supporter of the development of geology in the Black Country. This weekend was particularly successful and I have received a copy of the official evaluation from by Dudley Metropolitan Borough; it is too long to print in full, but here is some interesting feedback taken from the report.

"From Saturday 22nd – Sunday 23rd September 2007, Dudley Concert Hall and Dudley Museum and Art Gallery hosted the 'Dudley Rock and Fossil Festival' an event selling fossils, minerals, jewellery, gems, crystals and earth science books to the public. The 'Return of the Dinosaurs' exhibition within Dudley Museum was the theme for this years event and was enhanced by various children's activities available including dinosaur model making, fossil casting, trilobite racing and JAM (Juniors at Museums) club activities. The aim of the Rock & Fossil Festival was to celebrate the wonderful geological heritage we have here in Dudley and inspire people of all ages to engage in the fun and educational aspect of this popular event.

Number of Visitors

- *Approximately 7,000 people attended the event*
- *2,221 postcode and family data was captured from people attending Dudley Concert Hall*
- *69% of visitors came from the Black Country*
- *23% of visitors came from the Birmingham area*
- *8% of visitors came from outside the area*
- *13% of visitors were under the age of 5*
- *25% of visitors were between 5-10 years old*
- *6% of visitors were under 10-15 years old*

Most of the people who had attended the event came to see the Dinosaur exhibitions, see the exhibitor fossil displays and undertake the various activities for children. The main thing people liked about the festival was the dinosaurs, the range of fossils and minerals, activities for children including the interaction with the knights in shining armour and generally everything about the event. Only a few people said they would have liked to have seen more dinosaurs, more exhibitors and for the venue to be less crowded.

Out of 129 people interviewed by Heart of England Tourism, 84 people said they were extremely satisfied and 45 said they were satisfied with their visit to the Rock & Fossil Festival. All of those interviewed said they would return again to the next festival.

Some of the comments from the public received about the Rock & Fossil Festival are: 'Very impressive'; 'Fossil interests are well covered and portrayed'

Comments from the exhibitors were also positive, e.g.: 'Retain the status quo. Most criteria are covered. Other shows have suffered the fate of being too bead and jewel orientated. The Geological nature of this show is its forte'

The comments show that visitors and exhibitors alike have had an enjoyable time, whilst providing an informative and educational experience. A good proportion of people to the event were repeat visitors from the previous year and this is indicative of a well organised and memorable event that people wish to return to visit in the future."

Sarah Worton

Monday 29th October 2007: Spencer Mather: Caledonian Crystal Collecting

We were treated to a fine display of minerals, which were passed around with enthusiasm, and a description of the locality Spencer had visited on the east coast of Scotland, in the area of Montrose, just north of the Firth of Tay. The rock is of Devonian age, the Lower Old Red Sandstone, consisting of fluviatile and lacustrine deposits forming in an area of volcanic activity. In amongst the sandstones there are andesite lava flows, and after deposition there was considerable activity of fluids rich in quartz, which when confining pressures are released will deposit agates and related minerals. Spencer showed us many excellent pictures. The first one on the left shows a typical purple andesite with vesicles (gas bubbles) which have been partially filled by amygdales of agate. The other photo shows veining with red Jasper, quartz stained by iron oxide. As Spencer explained, these minerals are all varieties of Chalcedony, cryptocrystalline or microscopic crystals, all silica (SiO_2). We saw the flesh coloured Carnelian, brown Sard and various forms of agate.

Spencer has a photographic memory when it comes to minerals and will tell you the exact chemical formula of any type. He showed us some examples of Zeolites, low temperature hydrated minerals which occur very commonly in Basalts and Andesites. We passed round a piece of Epistilbite, which I think has a composition of $NaCa_2Al_5Si_{13}O_{36}.14H_2O$, but Spencer will tell me if I am wrong. He closed the talk by showing pictures of a variety of things from the area, flowers, gravestones, the local museum, as Spencer told us, you should go into an area not just for the geology, take in the whole scene. This was a most enjoyable evening.

Bill Groves

Sunday October 28th 2007. Field Trip: Whitman's Hill Quarry led by Tom Richards (Hereford and Worcester Earth Heritage Trust)

The quarry at Whitman's Hill sits overlooking the village of Storridge to the northwest of the Malvern Hills. Although the early history of the quarry is a mystery it has experienced a long operating life dating back to 1876. Originally worked by hand it yielded limestone for lime production which was used in agricultural, as limewash for houses and farm buildings, it was added to clay for the manufacture of 'daub' used with wattle and other uses included tanning hides and paper manufacture. By the 1960's the quarry was largely used generally for road aggregate, and contributed between 80,000 and 100,000 tonnes a year. The working life of the quarry ended in 1988 when the site had been worked as much as possible and because of problems with poor design, poor rock quality and groundwater.

In 1997 the lease of the quarry reverted back to the landlords, the trustees of the Madresfield Estate. In 2007 the Herefordshire and Worcestershire Earth Heritage Trust took out a ten year lease from the Mandresfield Estate to run the Whitman's Hill Geodiversity Discovery Venture. The venture is funded by the Aggregates Levy Sustainability Fund and involves research into geology, natural history, by the Woolhope Naturalists Field Club, and the local heritage, by the Cradley Heritage Group.

The main aims were to make the quarry safe; to see what was present in the quarry and to establish it as an educational resource. It is now a RIGS site and in order to make it safe for visitors, such as school groups, the Trust had to construct safety bunds along disused ramps and around disused pools and clear vegetation from outcrops. Towards the quarry entrance piles of spoil have been placed to allow school groups to hunt for fossils which may also be found in the safety bunds and over the floor of the quarry. A resident pair of Peregrine Falcons occupies the main face of the quarry and consequently access is restricted during the nesting season so as not to disturb them.

Sunday morning started cloudy and drizzly when 11 of us met Tom Richards in the car park of Storridge village hall shortly after 10:30 am. After a short walk up the old quarry access road we stopped outside the quarry entrance for a short introduction into the site history and conservation. The sun appeared as we ventured inside and started a very slow descent whilst hunting for fossils into the quarry bottom.

So what's so special about the Whitman's Hill Quarry? There are many similarities to our very own Wren's Nest and the quarry comprises Silurian Wenlock Series strata which includes the Coalbrookdale Formation overlain by a thick unit of the Much Wenlock Limestone Formation. In beds not dissimilar looking to the Nodular Member, of Wren's Nest, up to 11 bands of bentonite have been recorded with associated death assemblages and dated to around 425 million years using apatite and zircon crystals. Unfortunately difficult access to exposures and the unknown original location of the spoil in the quarry has meant that the different members of the Much Wenlock Limestone Formation have yet to be properly identified. Similar fossil assemblages to the Wren's Nest have been found within the Coalbrookdale Formation and Much Wenlock Limestone Formation. These include brachiopods (*Atrypa*, *Gypidula* and *Leptaena*), calcareous algae, crinoids, bivalves, orthocone nautiloids, gastropods, trilobites (including *C. Blumenbachi*), corals, bryozoans and the occasional patch reef.

A small exercise Tom set some of us was to distinguish the boundary between the Coalbrookdale Formation and Much Wenlock Limestone Formation. This is not obvious since the boundary appears somewhat erratic and it is questionable whether or not the first limestone band or coral marks the start of the Wenlock Limestone.

The Coalbrookdale Formation represents the oldest strata within the Whitman's Hill Quarry which were deposited by sediment laden rivers flowing from the east. A later, quieter period allowed for the growth of bioherms and their associated explosion of living organisms which suffered from the occasional devastating volcanic eruption and produced the limestone of the overlying younger Much Wenlock Limestone Formation strata.

Whitman's Hill Quarry is situated between a Wenlock Edge type location, to the west, and Wren's Nest type location, to the east. It is likely that this site represents an 'in between' position on the same continental shelf with the same environmental setting of a relatively shallow tropical sea but further in towards land than the Wenlock Edge.

Around 16:00 we made our way to the carpark with the sun still shining. I would like to thank Tom for an extremely insightful and enjoyable visit to this interesting site. For members who are interested Tom has suggested making this an annual trip which will probably take place in October 2008.

Andy Harrison

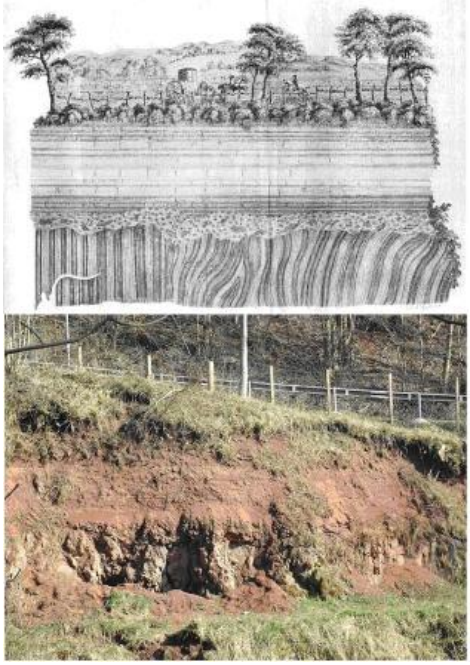
FROM OUR MEMBERS

Hutton again

Hutton found a large number of unconformities, and I am indebted to *Peter Twigg* for sending me the description of this one at Jedburgh in Scotland. Peter writes:

"Further to Sarah's note about the famous Hutton's Unconformity at Siccar Point and on Arran, some readers may not be aware that there is another lesser known, albeit less spectacular

location in the banks of the River Jed, just south of Jedburgh. This in fact is located in the garden of Inchbonny House on the A68 but when my wife and I were in Jedburgh in 2003 the local information bureau in the town arranged with the owner of the cottage for us to view it. *He kindly* showed us round and said they were *planning to make a public access from the road. The site was very much overgrown but as the figure (taken from the internet) shows it has been cleared. This photograph is dated 2003 and so the clearance must have taken place shortly after our visit. The drawing is by John Clerk, who accompanied Hutton in 1787, shortly after their visit to Arran and a year before they discovered Siccar point.*



The upper photograph shows the detail of the deposits, including the intermediate breccia layer.
Last year a monument to Hutton, depicting an unconformity (with considerable artistic licence) was built in Jedburgh".

Peter Twigg

From Kate Eiloart, an Assistant Geochemist at the URS Corporation Ltd

I am currently undertaking a three-month placement under the USGS Volunteer Scheme, at the Hawaiian Volcano Observatory on the Big Island of Hawaii. My qualifications in both geology and geochemistry made me a good candidate for the role as 'Assistant Gas Geochemist'. The Observatory is responsible for monitoring and documenting changes on the Big Island as a whole, but especially the two active volcanoes – Mauna Loa and Kilauea.

Mauna Loa, although not having shown effusive activity since March 1984, is still the cause of many earthquakes, and scientists here believe it is only a matter of time before it erupts again. The, less dominant, but in no way less important volcano, Kilaeua, has shown near-constant activity for several years. Although current eruptions are not as spectacular as past ones, for example in an area known as Kilauea Iki (Little Kilauea) during December 1959 immense lava fountains erupted to heights of 1,900 feet, there is still plenty going on. Between 1983 and 1988 there was constant activity in the Pu`u `O`o-Kupaianaha area, which is located on the east rift zone of Kilauea, approximately 10km from the main caldera. Since July 21$^{st}$ this year, lava has been constantly pouring from Pu`u `O`o, and was headed toward an inhabited area. However, on Wednesday 21st November, the lava over spilled the channel and appears to be making a new course down to the sea. This is where many people journeyed to in the last few years to view the massive explosions that occur when the 500°C lava hits the 25°C seawater.

My main responsibility is to monitor the plume of gases which stream constantly from not only the active Pu`u `O`o crater, but also the main caldera. Even though the caldera appears quiet, lurking 1km below it is the source of all the earthquakes and lava – the Hawaiian Hotspot. Evidence of this is seen as a constant plume of gases streaming from this area. By chance (and somewhat conveniently), the road that runs through the National Park provides excellent monitoring conditions of this plume, as the trade winds send the gases tangentially to the road, where they can be detected by a spectrometer mounted in a car. The spectrometer works by measuring the drop in UV light caused by the sulphur dioxide in the gas plume. In turn, this data is used to determine an effusion rate for the current eruption. At time of press, this was in the order of between 500,000 and 800,000 m^3 per day DRE (Dense Rock Equivalent).

My other responsibilities include sampling and analyzing gases emitted from summit caldera fumaroles, reducing data from the spectrometer measurements, and hiking out a couple of times a week to download data from instruments in the field. Weekends are holiday time! We have explored the whole island and also visited two other islands within the Hawaiian – Emperor Seamount Chain. It is fascinating to see the apparent differences caused by erosion and weathering to the older islands in the chain.

Kate Eiloart

Sweet Geology

You find illustrations of geology in all sorts of unexpected places, and ***Joy Duckworth*** has come up with a most unusual occurrence. Imagine having a coffee at a pavement café in old Vienna, and when your waiter brings it the sugar is in small bags, and you are given four:

It may be difficult to make out from the illustrations but the series of bags – twelve of them – is called "Mineralien in Osterreich" which does not take too much translation. They all come from a museum in Vienna; "Sammlung Naturchistorisches Museum, Wien". The two minerals illustrated here are "Malachit" (Malachite – $Cu_2CO_3(OH)_2$) from Falkenstein in the Tirol, and "Zinnober" (Cinnabar – HgS), the main ore of Mercury from Vellacher Kotschina, Kärnten. An unusual and interesting collection.

Joy Duckworth

GEOLOGY IN STAMPS

Joy Duckworth has come up with this edition's stamps, and they are a set of mineral illustrations from New Zealand. They are Nephrite (a variety of Jade); Agate; Iron Pyrites; Amethyst; Carnelian; Native Sulphur. The occurrence of Agate and Carnelian also nicely complements the report of Spencer Mather's talk above as these were two of the minerals he was talking about.

Bill Groves

GEOLOGICAL PLACES

David Miller has sent me this from Switzerland where he is studying:
"One of the best things (if not the best thing!) about studying geology is fieldtrips. Having just graduated from Bristol and being one of his numerous former A-Level students, Bill Groves collared me at the Dudley Rock & Fossil Fair and asked me to write a piece for the Newsletter. Of course I agreed, though it was much more difficult that I first thought. My piece is ***a short guide to the geology of northern Syros, Cyclades, Greece****"*

(For words in ***bold italic,*** refer to the glossary)
Of the northern islands of the Cyclades, Syros represents probably the finest examples of ***blueschist*** rocks any geologist is likely to see. The major part of the island is composed of

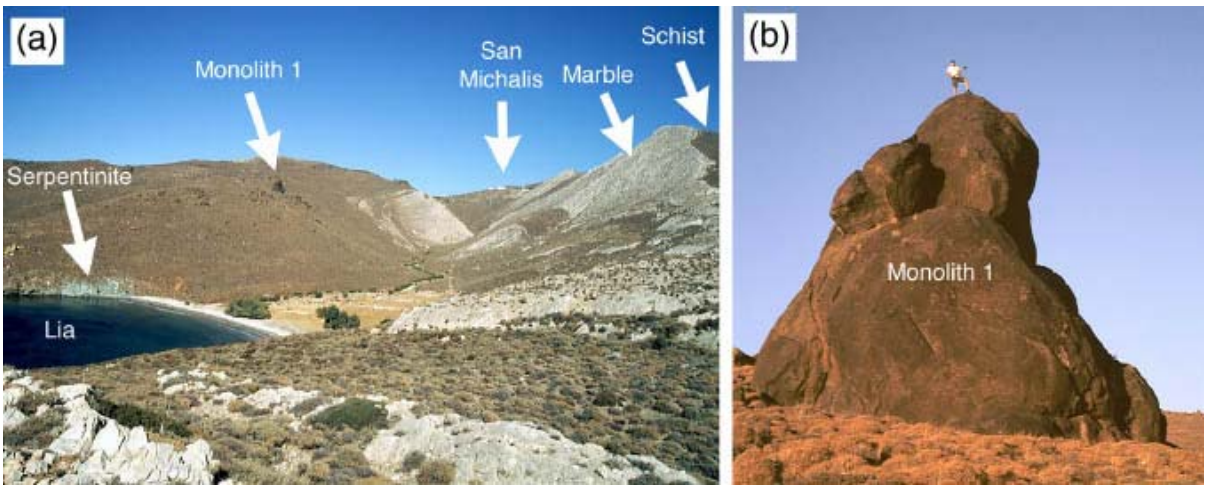
interlayered schists and marbles dipping N to NE. However, around the northern section of the island, ***mélange*** formations are exposed composed of ***eclogites***, metagabbros, ***serpentinites, meta-plagiogranites***, metasediments and ***glaucophane***-rich schists. These high-pressure, low-temperature metamorphic formations preserve Eocene blueschist- to eclogite-facies mineralogy and are interpreted as subducted oceanic crust relating to the subduction of the African plate beneath Eurasia. Subduction is still continuing today, with the southern Cycladic islands forming the South Aegean Arc. The most active of these volcanic islands is the stunning caldera volcano of Santorini.

The most striking thing you notice when you first arrive in the north of the island is the number of dismembered eclogitic 'knockers' (you can probably guess what they look like…) dotted around the hillside. These house-sized boulders of metabasic rocks, interpreted as a dismembered ***ophiolite*** are surrounded by a serpentinite matrix. The high-pressure, low-temperature metamorphism has produced spectacular metabasic assemblages of glaucophane-***epidote-phengite-garnet*** (blueschist) and ***omphacite***-garnet (eclogite). Not only are the rocks wonderfully pleasing to the eye, with the blue glaucophane, green epidote and omphacite, and deep-red garnet, but the crystals can be huge with garnets as big as your finger nail!

The rocks of northern Syros are formed in a subduction zone, where cold oceanic crust and sediments are dragged down fairly rapidly. The ***prograde path*** follows the characteristic blueschist path towards transitional eclogites with high pressures but only moderate temperatures. To allow the preservation of these incredible metamorphic rocks they must be brought back to the surface quickly with little ***retrogressive metamorphism***.

GLOSSARY of TERMS

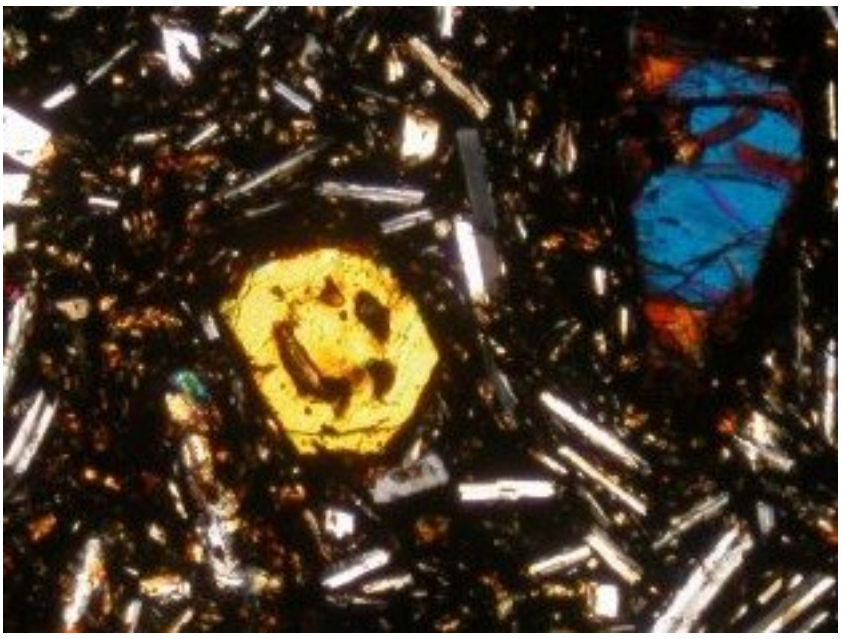
- *BLUESCHIST – a low temperature, high pressure regional metamorphic rock of basic composition containing the blue mineral GLAUCOPHANE. Often called GLAUCOPHANE SCHIST.*
- *MÉLANGE – clastic blocks in a finer grained matrix.*
- *ECLOGITE – a coarse, metamorphic rock consisting of red pyrope GARNET and green OMPHACITE without plagioclase.*
- *SERPENTENITES – a group of rocks consisting of serpentinite minerals; $Mg_3Si_2O_5(OH)_4$*
- *META-PLAGIOGRANITES – metamorphosed granites that are rich in plagioclase feldspar.*
- *GLAUCOPHANE – a blue amphibole mineral $Na_2Mg_3Al_2Si_8O_{22}(OH)_2$*
- *OPHIOLITE – a piece of the lithosphere put onto the continental crust during subduction, this process is known as OBDUCTION.*
- *EPIDOTE – a green metamorphic mineral $Ca(Al,Fe)Al_2(SiO_4)(SiO_7)(O,OH)_2$*
- *PHENGITE- a form of muscovite (white) mica that is rich in silica compared to Al (3:1).*
- *GARNET – a group of hard, cubic minerals common in metamorphic rocks.*
- *OMPHACITE – a green pyroxene mineral found in eclogites $(CaNa)(Mg,Fe,Al)Si_2O_6$*
- *PROGRADE PATH – the changes in temperatures and pressures experienced along the subduction zone path.*
- *RETROGRESSIVE METAMORPHISM – metamorphism experienced after peak conditions are met and pressure-temperature conditions are reduced, essentially when high-grade metamorphic rocks are changed into lower grade ones.*



Opposite:- Field views of the northern part of Syros. (a) A View of Lia Bay (left); to the east (San Michalis), showing white marble and dark schists on the right, and the Kámbos mélange with serpentinite and eclogite blocks above the valley in the centre. The largest eclogite block in the centre is Monolith 1 (b) Monolith 1, a 20m tall High-Pressure block, composed of eclogite. 6 foot 7 inch geologist for scale! (From Horst Marschall's Dr.rer. nat. thesis)

David Miller

GEOBABBLE



Those of you who have studied geology will know the feeling when spending hours at a petrological microscope looking at slide after slide as part of a study. Imagine then the reaction of the geologist when a smiley face presented itself. This is exactly what happened to a researcher looking at a thin-section from the volcanic deposits on Santorini. This accretionary lapilli or coarse ash had this happy olivine crystal. About 2mm across, in a groundmass of rectangular plagioclase laths, larger pyroxene crystals and volcanic glass that appears black on the slide. This erupted onto the cinder cone 54,000 years ago. *Picture and information from David Miller.*

Bill Groves

CONTACT US

As ever we would love to hear your news and views, for any part of the Newsletter, so please put pen to paper or fingers to keyboard and give us your thoughts. We are often able to print photographs that are sent by email or colour print. However, if you are sending photographs, can you please reduce them as suitable for documents. We try to keep the Newsletter below 1MB for the convenience of members who do not have sophisticated computers. Notices that appear in this Newsletter will remain in future editions until the date of the related meeting or event has passed. In order to include material in the February Newsletter, please send or give it to one of the Editorial Team by ***Monday 4th February 2008***

EDITORIAL TEAM

Hon. Secretary: Sarah Worton 158 Oakham Road Oldbury B69 1QQ Tel 01384 235946 Or email: sarah.worton@atkinsglobal.com	Graham Worton Dudley Museum and Art Gallery 1 St James' Road Dudley DY1 1HU Tel 01384 815574 Or email: graham.worton@dudley.gov.uk	Bill Groves 23 Churchward Grove Wombourne Wolverhampton WV5 9HB Or email: bill.groves@dudley.gov.uk billgroves300@btinternet.com

ENDPIECE

After our presentation on Iceland at the members evening, several people expressed an interest in stitching together digital photos to make a panorama so I thought that I would explain how I did it. The first thing is to take a series of overlapping photos - any number from 2 upwards. The program I used is free, runs on Windows, and is called Autostitch and here is where to get it:
http://www.cs.ubc.ca/~mbrown/autostitch/autostitch.html Clicking on download will get you a 1Mb zipped file which you need to extract to a directory on your hard disk. You should now have the program autostitch.exe which you can double click on to run. Along the top of the program window are the usual menu items. Follow edit->options to get a window with lots of settings that you can change. The only ones that I have played with are the scale and jpeg quality. The scale comes up at 10% and is good for quickly getting a rough idea of what pictures the program can use, but 50% or 100% will get you a better quality final version and will take longer to produce. The jpeg quality is set at 75 but I usually use 85 which gets you a better quality picture and a bigger file size.
Now follow file->open and select all the photos you want to stich together. The program gets going as soon as you open the photos so it is a good idea to have a directory with all the photos in and select those all in one go. Now you sit back and wait. If successful, it puts the panorama in the directory where it found the pictures and it will be called 'pano'. The panorama just needs trimming now in your favourite photo editor. The program does a good job of blending between photos, but sometimes you can improve it by altering the brightness levels first.
If you would like to see again the panorama of Blahnuker that we showed at the meeting, then go to my website at this address: http://www.johnschroder.pwp.blueyonder.co.uk/BlahnukurSmall.jpg
I have also made a panorama from pictures taken on Gjatindur:
http://www.johnschroder.pwp.blueyonder.co.uk/Gjatindur2smaller.jpg
If your browser works like mine (Firefox) then it fits the entire panorama into the window, making it very thin. Clicking on the picture fills the screen vertically and you can then scroll horizontally. Alternatively, you can right click on the image, save the image to your hard disk and view it with your favourite viewer.

John Schroder

BCGS Website at www.bcgs.info

SUBSCRIPTIONS 2008

Your next subscription is due on **1st January 2008**. There has been no increase, please help the society by ensuring all subscriptions are paid before the end of February – thank you.

Please send your subscriptions to the Treasurer:
Mike Williams, The Bungalow, Parkdale West, Wolverhampton, WV1 4TE

SUBSCRIPTION RATES:	**Individual**	£20	per annum
	'**Family'**	£25	per annum
	Full time student	£5	per annum
	Group/Company	£35	per annum

Please enclose the slip below ----------

NAME **ADDRESS**

Telephone:

Email Address (please print clearly):

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

I/we enclose **£……..** for Individual / Family / Student / Group .membership (please circle) **Date**:

Cheques should be made payable to **'THE BLACK COUNTRY GEOLOGICAL SOCIETY'**