



# The Black Country Geological Society

## NEWSLETTER No. 169 February 2005

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.

### 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.**

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

*Vice Chairman*  
A. Cutler B.Sc., M.C.A.M.,  
Dip.M., M.CIM.

*Hon Treasurer*  
M Williams

*Hon Secretary*  
S.H. Worton B.Sc., PhD.,  
F.G.S.

*Meetings Secretary*  
G.W.J. Hensman B.Sc.,  
F.R.Met.S.

*Field Secretary*  
A. Rochelle B.A. Hons.,  
Tech.RICS.

#### **MONDAY 28<sup>TH</sup> FEBRUARY 2005 (*Indoor Meeting*)**

**'Global Mass Extinctions: Volcanism versus Impacts' by Prof. A.D. Saunders of the Geology Department, University of Leicester.**

Professor Saunders was born in the West Midlands and educated at the High Arcal Grammar School in Sedgley, and so he is very familiar with the Wren's Nest and the Baggeridge spoil heaps! He read geology at Sheffield and took his PhD in Birmingham. His research has been mostly into igneous petrology and geochemistry, and he is now working on mantle plumes and their relationships to volcanism and mass extinctions.

#### **SATURDAY 19<sup>TH</sup> MARCH 2005 (*Field visit*)**

**'Meltwater, ice sheet debris and sandstone around Cosford. Leader: Andrew Rochelle.'**

Meet at Cosford Grange Farm (GR: SJ 785 044) at 10:30 am. Later at Cosford Waterworks to view cores from the wells bored into the sandstone aquifer. Picnic at the Aerospace Museum for lunch or visit the café, and spend the afternoon at the museum. Entrance free.

**MONDAY 4<sup>TH</sup> APRIL 2005 (*Indoor Meeting and Society AGM*)**  
***Replacing the meeting previously arranged for March 28<sup>th</sup>***

The agenda for the AGM can be found at the end of this Newsletter. Following the AGM there is a talk by **Graham Worton** and **John Hemmingway** entitled: '**The life and times of Dud Dudley**'. Dud Dudley lived at the time when charcoal made from burning wood was becoming scarce, but the need for iron tools and weapons was growing, and no one knew how to make good iron using coal as the fuel. This is the story of a remarkable life of discovery set against the turbulent times of the English Civil War.

**MONDAY 25<sup>TH</sup> APRIL 2005 (*Indoor Meeting*)**  
**The fascinating minerals of Northwest Scotland, by Spencer Mather.**

As you will know, Spencer is one of our own members, and his lectures are always relaxed, amusing and highly informative. He will share with us his unparalleled knowledge of minerals from a part of the world that he knows well. An evening not to be missed.

**SATURDAY 7<sup>TH</sup> MAY 2005 (*Field visit*)**  
**National Stone Centre, the Peak District Mining Museum and Temple Mine. The limestone landscape of Derbyshire.**  
**Leader: Andrew Rochelle**

Meet at the National Stone Centre between Cromford and Carsington, south of Matlock at 10.30am. At 1.45pm visit the Peak District Mining Museum and Temple Mine in Matlock.

**20<sup>th</sup> – 22<sup>nd</sup> MAY 2005 (*Field visit*)**  
**Weekend in Anglesey. Parys Mountain Mine.**  
**Leader: Bob Duncan**  
Details to follow.**SATURDAY 18<sup>TH</sup> JUNE 2005 (*Field visit*)**  
**The story of the Stour. A longitudinal traverse.**  
**Leader: Gordon Hensman**  
Details to follow.**JUNE 2005 (*indoor Meeting*)**  
**The mysteries and marvels of Quartz by Jan Sibsten (Mineralogical Society of the Netherlands)**

This talk will look at the composition, crystal types, colours and many uses of this very common rock forming mineral. It will focus on the very special and unusual varieties that are seldom seen or described.

**SATURDAY 16<sup>TH</sup> JULY 2005 (*Field visit*)**  
**Joint meeting with the Woolhope group to the Wren's Nest and Dudley Canal Tunnels. Leader: Graham Worton**

Details to follow.

**AUTUMN 2005 (Field visit)**

**North Wales day out by coach to Snowdonia, studying some geology and geomorphology.  
Visit to the Slate Museum and the Pump Storage HEP scheme at Llanberis.**

Details to follow, but please express your interest to Andrew Rochelle.

**EDITORIAL**

When we look at the geology of the Black Country, in particular that of the Silurian, one name crops up time and time again: Sir Roderick Impey Murchison. He is revered as the father of Silurian geology, and his books, *The Silurian System* of 1839, and several editions of *Siluria* from 1854, are still very readable classics. The British Geological Survey has recently published a new biography of Murchison: *Murchison's Wanderings in Russia*. This describes his travels in that country in the 1840s that led him to establishing the Permian system in the geological column. A review in the New Scientist calls this one of "his list of geological trophies", and describes him as an ambitious man.

It makes one wonder what sort of personality this great scientist and leading geologist had, if he gave a lecture to the BCGS, would we 'like' him? I did a little Internet search on Murchison, and one of the first appearing was devoted to 'Victorian snobs'!! Even so, he had a very interesting life, originally trained for a career in the Army, he fought in the Peninsular War under Wellington when only 16 years old. On returning home he is said to have become one of the greatest foxhunters in the Midland counties. It appears that it was his wife who encouraged him in more intellectual pursuits, she was artistic, collected fossils and was very interested in natural history. Murchison, now in his thirties, became hooked on geology, and as you are reading this you will no doubt have experienced the same feeling.

He joined the Geological Society of London, and turned his undoubted energies, intellect, drive and ambition to the study of geology. It was apparently Sir Humphrey Davy who actively encouraged Murchison to embark on a career in science. Imagine the meetings of the Society with such men as Conybeare, Buckland, Sedgwick and Lyell, and it was with these leaders of Victorian geology that he travelled so extensively, not only in Britain but also to Italy, the Alps, Auvergne, Russia and Scandinavia. But it is his work on the Silurian in Wales and the Borderlands, which of course includes the Black Country, that is his most lasting monument. Later in his life he devoted more energy to the Royal Geographical Society, of which he was a founder in 1830, and closely associated himself with David Livingstone's explorations of Africa.



The nature of his character is not evident, and looking through *Siluria*, the only hint of him being a snob is found on the frontispiece. We all know of people who are fond of putting lots of letters after their name, but Murchison is a little excessive:

**SIR RODERICK IMPEY MURCHISON, Bart., K.C.B., G.C.St.A. and St.S; D.C.L.; LL.D.; M.A.; F.R.S.; F.G.S.; F.L.S.; H.M.R.S.Ed.; R.I.Ac..**

*Murchison's Wanderings in Russia* is edited by Michael Collie and John Diemer; published by the British Geological Survey at £40.

Other information from:

- "SIR RODERICK IMPEY MURCHISON." *LoveToKnow 1911 Online Encyclopedia*. © 2003 2004 LoveToKnow.  
[http://23.1911encyclopedia.org/M/MU/MURCHISON\\_SIR\\_RODERICK\\_IMPEY.htm](http://23.1911encyclopedia.org/M/MU/MURCHISON_SIR_RODERICK_IMPEY.htm)
- [www.scottishgeology.com/history/people/roderick\\_impey\\_murchison.html](http://www.scottishgeology.com/history/people/roderick_impey_murchison.html)

(Image of Calymene is taken from *Siluria*; thanks to [www.geo.ucalgary.ca](http://www.geo.ucalgary.ca))

Bill Groves

## TSUNAMI

### **TSUNAMI timeline**

**07:58 local time.  
Magnitude 9.3 quake 200km.**

**Early waves hit Aceh, North Indonesia and Andaman and Nicobar Islands. After 1½ hours tsunami reaches**

**2 - 2½ hours after the quake, tsunamis reach**

**Tsunamis spread over the whole of the Indian Ocean, affecting the Maldives and East Africa. They reach Somalia over 7**

Much has been written about the tsunamis that followed the earthquake of December 26<sup>th</sup> last year, and the focus amongst geologists now shifts towards explanation and prevention of future, human tragedies.

The initial earthquake has been well documented. Recently upgraded to 9.3 on the Richter scale, it is one of the largest ever recorded. It started West of Sumatra in the Java trench, at 30 kms depth, where the Indian Plate is subducting north eastwards beneath the Burma Plate. The average rate of subduction is about 6cm/yr, but the plates remain locked for long periods of time, and on this occasion the movement is thought to be up to 20 metres. The rupture probably travelled along the subduction zone in a northwesterly direction, covering 400kms in 200 seconds.

It is thought that a large part of the sea floor lifted by 5 metres while other parts fell by half that much. With the ocean being 5 kms deep at that point, the huge volume of water being displaced made a tsunami inevitable. There were aftershocks as the plate margin 'settled down', nine shocks over magnitude 6 occurred within 24 hours of the major one. Indian geologists reported over 120 aftershocks in the Andaman and Nicobar Islands in the month following the quake. Many reached a magnitude of 6, but they did not cause any major damage, as the focus of the epicentre was very deep.

Earthquake prediction does not really come into preventing the human tragedies that come with major tsunami events. The Pacific Tsunami Warning Centre issued a bulletin recording an 'event' of magnitude 8 (later revised to 9) off the northern coast of Sumatra, within 20 minutes. As time progressed, it became obvious to the duty geologists in the centre that this was a major submarine earthquake with a high risk of accompanying tsunamis. But as they said afterwards for television, there was not a warning system for outside the Pacific; "Who were we to contact?" Countries in West Africa were warned of the impending danger, but still

in Somalia, 4,500km from the epicentre, 298 were killed and 50,000 people displaced.

The timeline above indicates the time it takes for a tsunami to travel, its speed being directly proportional to water depth. At the deepest parts of the ocean, the wave could reach 900km/hr, with a wavelength of 100km and amplitude (height) of 0.5metres. In shallow coastal waters the wavelength shortens to 5km and the height can increase to 30metres. The Pacific has many 'tsunameters' that detect the changes in pressure caused by the passing waves. They are linked by satellite to a computer network that will give adequate warning to at risk areas, where local agencies put evacuation procedures into operation. There are no such large-scale procedures in the Indian Ocean.

There are many implications for at risk areas, most of them non geological, such as building techniques, building 'escape towers', in areas without high ground, and above all local awareness and an inbuilt disaster procedure. However, the interesting geological background is there to be found. Much of the information for this article came from *NewScientist* magazine and its website on [www.newscientist.com](http://www.newscientist.com) Another major source has been *The Guardian*, and particularly its Thursday supplement called 'Life' which deals with science and the environment. In its edition of January 6<sup>th</sup> was an analysis by Bill McGuire, who is a leading geologist and expert in this field. His book 'A Guide to The End of the World' (OUP) covers all potential geological catastrophes

and is well worth a read. The follow up, due in June is called 'Surviving Armageddon: Solutions for a Threatened Planet' and is eagerly awaited.

## WEBSITES

There are some excellent geology web sites, too numerous to list. Occasionally an exceptional site crops up, and if you discover one, perhaps you could share it with others through the Newsletter. I am indebted to Paul Trower for putting me onto <http://geology.about.com> a large and very interesting resource.

## GEOBABBLE

The English language seems to have played a large part in the development of geological terms, with a little Latin and Greek thrown in. However, one term that has become part of the geological vocabulary that is not English is *Lagerstätte*. We were reminded of this term by two lectures that the Society had last year: firstly Derek Siveter told us about a Silurian Lagerstätte in Herefordshire, and more recently Laura Braznell's description of the Coseley Carboniferous Lagerstätte.

*Stätte* means a place in the original German and *lager* is a stock, bed or store, so the term means a resting place or a place where lots of things, in this case fossils, are found together. Exact geological definitions are difficult to come by and it is only in very recent publications that the word seems to appear. I suspect that it first came into prominence when the Middle Cambrian



*Burgess Shales* were described in the eighties. The photograph shows the 'Walcott Quarry' in British Columbia. This locality has become famous because of its influence on the discussions concerning the evolution of life forms. There are a large number of different fossils, beautifully preserved, including soft parts that are normally lost.

There is a very similar fauna to the Burgess shale in the *Chengjiang Lagerstätte* of eastern Yunnan Province, Southwest China. This is of a similar age to the Burgess Shale with many common fossils and the same sort of preservation. An even older Lagerstätte is the Lower Cambrian soft-bodied fauna of Sirius Passet, North Greenland.

Nearer home, both in time and geography are the Lagerstätten of our two recent lectures. Derek Siviter was describing a Silurian arthropod from Herefordshire, while Laura Braznell told us about the varied plant and animal assemblages that included arthropods and fish. Both sites have a high degree of soft tissue preservation. So it appears that to be called a *Lagerstätte* an assemblage must have exceptionally well preserved fossils, with complete organisms, including soft parts preserved, and a complete community present. Or could it include a site that is just very rich in fossil forms; is the Wren's Nest a Lagerstätte? Probably not, as there are no soft parts preserved. What about the Solnhofen Limestone with the primitive bird *Archaeopteryx*, including feathers? Again, probably not as there is not a wide range of forms.

The most important feature of a Lagerstätte would seem to be the soft-bodied preservation; after all, it has been the development of modern techniques of looking at these rare features that have led to the widespread use of the word.

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Mnemonics continue to surface and two have been e-mailed to us by *Barbara Russel*. *China Owls Seldom Deceive Clay Pigeons They Just Chase Each Other Mouthing Preposterous Puns*. This is the most comprehensive for the Periods as it subdivides the Tertiary, and if you want the Planets thrown in as well, Barbara offers: *Many Volcanoes Eject Mulberry Jam Sandwiches Under Normal Pressure*. Many thanks.

Bill Groves

## NEWSLETTERS

Many of you will be reading the colour version of the Newsletter that has been sent by email, while others will have received a black and white copy through the post. Unfortunately the system has not been working perfectly, and some members have not received the Newsletter. It is bimonthly, so you should receive a copy in February, April, June, August, October and December. It is normally dispatched in the Middle of the month.

If you having difficulty with email deliveries, please tell Bill Groves; email address below. Please also make sure that you tell Bill if you change your email address. There is a space for this information on the subscription form below, if you prefer to use that. If you want to join or update your postal delivery, please tell Sarah Worton, again, her address is given below.

## CONTACT US

As ever we would love to hear your news and views so please put pen to paper or fingers to keyboard and give us your thoughts. 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 April Newsletter, please send or give it to one of the Editorial Team by **Monday 4<sup>th</sup> April 2005**.

<b><i>EDITORIAL TEAM</i></b>		
<i>Hon. Secretary:</i> Sarah Worton 158 Oakham Road Oldbury B69 1QQ Tel 01384 235946	Dudley Museum and Art Gallery 1 St James' Road Dudley DY1 1HU Tel 01384 815574 Or email: <a href="mailto:graham.worton@dudley.gov.uk">graham.worton@dudley.gov.uk</a>	Bill Groves 23 Churchward Grove Wombourne Wolverhampton WV5 9HB Or email: <a href="mailto:billofgroves300@btinternet.com">billgroves300@btinternet.com</a>

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

## **ANNUAL GENERAL MEETING 2005**

Notice is hereby given of the **thirtieth Annual General Meeting** of the  
**BLACK COUNTRY GEOLOGICAL SOCIETY**

To be held at Dudley Museum at 7.30pm Monday 4<sup>th</sup> April 2005

### **AGENDA**

1. Apologies for absence
2. Minutes of the AGM held on 29<sup>th</sup> March 2004
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 Committee members:**

Chairman: [Graham Worton](#) Vice-chairman: [Alan Cutler](#)  
Treasurer: [Mike Williams](#) Secretary: [Sarah Worton](#)  
Meetings: [Gordon Hensman](#) Field Meetings: [Andrew Rochelle](#)  
Members: [Barbara Russell, Alf Cole, Andrew Harrison.](#)  
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 2005

Your next subscription was due on **1<sup>st</sup> January 2005**. 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	£15	per annum
	'Family'	£20	per annum
	Full time student	£5	per annum
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