



The
Black
Country
Geological
Society

NEWSLETTER No. 174

December 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.

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Best wishes for Christmas and 2006 to all who read this
Newsletter
from the editorial team
(Why not give a Wen's Nest Calendar? – Page 8)

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FUTURE PROGRAMME

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

SATURDAY 14TH JANUARY 2006 (*Field visit*)

Visit to the Lapworth Museum of Geology, University of Birmingham, Edgbaston. This visit continues the excellent visit made in December 2004. Please telephone either: *John Clatworthy*; **0121 414 7294** or *Alf Cole*; **01922 634899**, after the holiday, to find out about the exact time. (Probably 2 pm.)

MONDAY 6TH FEBRUARY 2006 (*Indoor Meeting*)

Christopher Rochelle: " CO₂ Sequestration and Disposal."

Christopher spoke to us two years ago on the same topic, however, Global Warming, due to anthropomorphic greenhouse gas emissions, has increased public awareness.

Our speaker is a senior scientist at the Geological Survey, and has worked in this field in the UK, Canada and Norway for some time. He will be able to bring us up to date with the latest progress being made to counter what the government's chief scientist has called 'the most serious problem facing us'. This will be a joint meeting with the West Midlands Group of the Geological Society, whose secretary is Adrian Collins, based in Wolverhampton at ARUP.

MONDAY 27TH FEBRUARY 2006 (*Indoor Meeting*)

Professor John Hudson. "The Geology of Eigg and Muck".

More information will be available in the next Newsletter.

SATURDAY 18TH MARCH 2006 (*Field visit*)

Alan Cutler: Barrow Hill and the Dudley Volcano

Meet at the Vicarage Lane Car Park. Further details to follow.

MONDAY 27TH MARCH (*Indoor Meeting – debate*)

"Evolution or Creationism/Intelligent Design, are they Equivalent Hypotheses?"

This is subject to alteration unless we can get a Creationist speaker – any offers?

SATURDAY 20TH MAY 2006 (*Field visit*)

Andrew Rochelle: Periglacial Landscape and Ice Sheet Debris in East Shropshire.

Meet at the Car Park in Water Lane, Newport. Grid Ref. SJ 744 194.

Come and see the bluebells!

Further details to follow.

MONDAY 24TH APRIL (*Indoor Meeting*)

Spencer Mather. 'Clearing up the feldspar mystery'.

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Spencer is our expert mineralogist and will dispose of this 'mystery'. He has recently returned from one of his collecting trips to the Ukraine.

LATE NEWS

There is a germ of an idea that has come to me from Alf Cole, our Chairman, that we could organise a mineral weekend, incorporating a visit to the huge Mineral Fair in Amsterdam. I believe that it is to be held over the weekend of 6th-7th May 2006. No further details available for this Newsletter, but if you are interested, I hope to have something for the February edition.

EDITORIAL

Christmas is nearly upon us again, and with it, hundreds of old films on television. Undoubtedly, there will be repeats of Indiana Jones films, starring Harrison Ford as the serious archaeologist come adventurer searching for the Holy Grail or the Ark of the Covenant. This makes archaeology exciting, and along with programmes such as 'Time Team' raises the profile and helps to popularise the subject. Geology has had its fair share of interesting documentaries on television, particularly since computer technology has enabled former life, and not only dinosaurs, to be animated on the screen.

But why not a fictional geological hero on a par with Indiana Jones? The closest is probably Pierce Brosnan as a volcanologist – Harry Dalton – in the 1997 film *Dante's Peak*. He predicts an eruption and no one believes him with disastrous consequences, and so geologist Harry is the hero. Other supposed geological films are often ludicrous, have a look at *Krakatoa – East of Java*, made in 1969. Its researchers did not even discover that the volcano is west of Java, not east; so, not much hope for geological accuracy!

Interestingly, we often have to delve into the golden age of geology, the 19th century to find a geologist sensitively portrayed. The film *The French Lieutenant's Woman* was made from the 1969 novel of the same title by *John Fowles*. In the film, Jeremy Irons plays Charles Smithson, a wealthy amateur palaeontologist in Lyme Regis in 1867. It is a good film in its own right, but go to the book for a well-researched view of the Victorians' interest in geology. As early as the fifth page there is a discussion of Darwinism, a theme developed later in the book. Charles is a Darwinist and is portrayed as a modern, forward-looking, gentleman of the time. John Fowles writes that '*men not unlike Charles.... laid the foundations of all our modern science. They sensed that current accounts of the world were inadequate; that they had allowed their windows on reality to become smeared by convention, religion, social stagnation; they knew, in short, that they had things to discover.*' There is also a wonderful piece about Mary Anning; '*one of the meanest disgraces of British Palaeontology is that although many scientists of the day gratefully used her finds to establish their own reputation, not one native type bears the specific anningii.*'

The Victorians themselves were using geological terms and metaphor in their contemporary literature. In *Martin Chuzzlewit*, written in 1843, *Charles Dickens* describes an afternoon tea that included; '*a highly geological homemade cake*. While in America, Martin is invited to give a talk, and it is suggested; '*that any remarks upon the Elements of Geology or upon the writings of your talented and witty countryman, the honourable Mr Miller, would be well received*. Charles Lyell's *Elements* was published in 1838, and Hugh Miller, the Scottish palaeontologist and writer would have been 41 in 1843.

You would have thought that some of these geological luminaries and their stories might make exciting historical drama. The Gideon Mantell and Richard Owen saga of the discovery of dinosaurs, a tragic story, or perhaps the whole development of the theory of evolution, from the voyage of the Beagle to the great Oxford debate, could make excellent cinema, as would the story of Mary Anning. Perhaps this is all wishful thinking from an enthusiast, although when I am in a cynical mood, I sometimes come to the conclusion that the United States is the centre of the film industry, and a picture that celebrates the early development of our science, particularly when the acceptance of Darwinian theory is concerned is unlikely to get backing or much showing in that country.

Bill Groves

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MEETINGS REPORTS

Monday September 26th 2005

Italian Volcanoes by Kate Ashcroft,

Kate is a long-standing member of the Society and former editor of the Newsletter. After several visits to Italy she has many slides of the country's volcanoes about which her talk centred. She began with an introduction to the tectonic picture of southern Italy that has 30 volcanic centres, seven of which are recognised as being active today.

Northern Italy lies within the Alpine Orogenic belt formed during the Tertiary in response to the collision of the African and Eurasian plates and the closure of the Tethys Ocean. Tectonic processes within the collision belt include the subduction of oceanic lithospheric wedges and collision, rotation and fracturing of continental lithosphere, as the African plate is subducted beneath the Eurasian Plate.

Italy's volcanic heritage is a complex one, which has been heavily influenced by its tectonic setting. Rotation, twisting, stretching and fracturing of the oceanic crust approximately 7 to 8 million years ago resulted in outpourings of large volumes of basalt over the floor of the Tyrrhenian Sea, and this led to the formation of three fractures within the oceanic crust, that form a triple junction centred approximately 100 km off the west coast of Italy. There are three volcanic Provinces; Romano to the north, Vesuvius to the east and the Aeolian Islands / Etna to the south. Kate's talk generally concentrated on the characteristics of volcanoes associated with the two southern volcanic provinces of Etna / Aeolian Islands and Vesuvius.

Etna is approximately 40km across, over 3,300m high and forms a 'shield' with a stratacone at the summit; a vast caldera, dominates the eastern flank. The 10° lower slopes are covered in settlements and vineyards whilst above 1800m the slope angle steepens to 20°.

The summit has been very active since 1997 with lava fountains and flows. Seven explosive fissure eruptions to the south and northeast flanks in 2001 caused much damage to infrastructure and tourism. The eruption of two types of magma, one rich in amphiboles and more explosive, and the emission of pyroclastic deposits indicate that Etna is evolving and the chemistry of its magma is changing. This was confirmed by an explosive eruption in 2002/3, which started with an enormous flank slip.

The Aeolian Islands comprise an arc of seven volcanoes, four of which are extinct, a few kilometres north of the Sicilian coast. Three of these extinct volcanoes occur as seamounts and the three main active volcanoes are Vulcano to the south, Lipari and Stromboli to the northeast.

The Aeolian Island Arc is believed to have formed by crustal melt, from the subducted African plate, rising to the surface. Volcanic activity has been associated with the islands for some 300,000 years, and migrated from west to east. The erupted lavas range from calc-alkaline and andesitic types, typical of subducted crust, to Potassium rich basalts, typical of continental rifting. This wide range of variation has been attributed to partial melting, fractionation of the melt, rifting and variations in mantle chemistry. Often the more runny basalt rich lavas are erupted first altering the chemistry of the magma chamber and causing later eruptions to be more violent and the lava produced more acidic and sticky.

Vulcano is between 4.0 and 8.0 kilometres across and approximately 1000 feet high with tourist facilities on its lowest flanks. The Fossa Caldera dominates the summit of the volcano and shows a cyclic eruption pattern, which is typically violent. The first stage of this cycle involves the explosive clearing of the main volcanic vent within the existing stratocone, producing volcanic bombs, fragmented ash, and columns of gas and ash. This is followed by an effusive eruption phase of smooth outpouring lava, which leads to the collapse of the stratocone, and the formation of a caldera, which steadily fills up with material. Over time four different calderas have formed on Vulcano from north to south as the centre of volcanic activity has moved, i.e. in response to plate movement.

The island of Lipari is the third most active volcano in the Aeolian Island chain and last erupted some time in the 17th century. Like all the volcanoes in the chain the island began life peacefully with the eruption of pillow and flood basalts which over time progressed to Andesites and

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Rhyolites which produced more violent eruptions complete with pyroclastic flows. Unlike the other volcanoes in the chain Lipari also produces pumice and Obsidian, a type of glass, which is very rapidly cooled upon being erupted.

Stromboli is a small island, approximately 3000 feet high. It is also the youngest island having built up in the last 100,000 years as the volcanic centre has migrated eastwards and is still very active. The last major eruption occurred in 1930, which killed 6 people, when a cloud of glowing gas rapidly raced down the volcano's flanks. It smokes all the time and produces minor eruptions approximately every 20 minutes in response to the build up of gases within blocked vents at the top of the volcano. Once the pressure gets too great the vents will pop, throwing volcanic bombs and ash into the air. After an eruption it is not long before another strata cone forms and collapses to form a caldera. Stromboli is prone to flank collapse and its western side bears the scar of a huge collapse from around 5000 years ago down which current lava flows to the sea. In 2002 a small flank collapse resulted in tsunamis and caused the evacuation of locals and a violent eruption occurred in April 2003 before most people had been allowed to return. The southern slope of the volcano is prone to collapse and where most tsunamis result. The lava produced from Stromboli is also very Potassium rich and is probably the result of crustal rifting.

Vesuvius is probably the most well known of Italy's volcanoes with many towns and cities around its base such as modern day Naples and Pompeii and Herculaneum. The volcano is approximately 25,000 years old, and the last major eruption was in 1944 when lava flows threatened the outskirts of the city of Naples. Like Etna the origins of Vesuvius are a mystery because of its tectonic setting and range of different lavas. The magma chamber is once again shallow at 3 to 4km depth and is cause for three types of eruption from Plinian (the most violent), to Sub Plinian (the least violent).

Vesuvius is currently silent although a strata cone is forming at the summit around which outpourings of lava release the pressure and ash. Eventually the strata cone will collapse to produce a new caldera, and all will go quiet once more. Plinian type eruptions are estimated to occur every few thousand years and it may be that long before the next one. Most of Vesuvius's eruptions are sub Plinian like that of 1944 and produce rivers of lava, clouds of ash and volcanic bombs that covered Naples.



The most famous eruption of Vesuvius happened in AD79 with the violent eruption of the Mount Somma strata cone and the destruction of the Roman towns of Pompeii and Herculaneum. The magma chamber beneath the Mount Somma strata cone was tight and near the surface. Accumulating gases built up the pressure until the mount exploded allowing seawater to rush into the magma chamber. The result was major ash falls, pyroclastic flows and surges and mudflows that overwhelmed the townsfolk perfectly preserving them and the two towns as a part of history.

Kate's talk gave both an enlightening and informative overview of Italy's volcanoes and illustrated the cost of living with such sleeping giants. As Kate concluded with her talk "Watch this space" since it is only time before one of the restless giants once again awakens.

Andy Harrison

Monday 31 October 2005

Wierdos of the Wenlock Limestone by Liam Herringshaw

Liam Herringshaw of Birmingham University gave us a superb lecture on the rare and problematic fossils from the Much Wenlock Limestone Formation.

Formed 15° South of the Equator, 425 million years BP, there are 650 -700 fossil species described so far from Wenlock Edge and Dudley. The best fossils come from the Upper Quarried Limestone and the top of the Nodular beds. The shallow high-energy environment of the Upper Quarried Limestone yields particularly well-preserved fossils in its crinoidal grainstone.

Liam introduced more unfamiliar terms than I can recall in any previous lecture in the history of the society, not withstanding his lecture was fully lucid and comprehensible.

Among the six **starfish** of the Wenlock Limestone is one, *Lepidaster grayi*, with 13 rays not five. Liam discussed the projected sequence by which the extra rays may have developed. Did it

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develop 8 extra rays between one initial pair or did it develop two generations of supernumerary rays in between 4 primary rays. One juvenile clearly shows 9 suggesting that the latter option was correct. Was it predatory as are modern multirayed starfish? Were its rays sufficiently flexible to make this possible?

Next the lecture turned to **Machaeridians**. (little sabres). To which group do they have affinities? From Dudley comes *Lepidocoleus ketleyanus*. Is it related to the molluscs, annelids, or echinoderms? It has a sclerite of low magnesium calcite of two layers with tube like structures on the internal surface of the inner layer. Examination of the skeleton indicates accretionary growth and structures closely related to chitons and thus they are probably simple molluscs.

Next came the confusing **Cornulitids**, small conical annulated calcitic tubes. Are they related to the annelids, crinoids, cephalopods, stromatoporoids or molluscs? They have a cellular structure. Cones of calcite lamellae are stacked within one another and become more undulating away from the apex. The lamellae have chambers between them. They have tabulae. The shell is perforated and porous. The organism lived upright near the top of the cone. The likeness to the rugose corals is evident and these may be an early offshoot from that group. Also found are odd tall **crinoids**. **Rostrochonchs** have 2 valves but a gape and no hinge. Are they an extinct class of pseudo bivalved mollusc? Then there are **Conularids**. Are these weird jellyfish with a four-part symmetry?

The discovery of fossils of never ending oddness is by no means complete. It makes me feel better when I can't identify the strange fossils I find. Thank you Liam for a very well presented and stimulating lecture.

Kate Ashcroft

CONSERVATION MATTERS

16th – 18th September 2005

UKRIGS Annual Conference University of Derby

This year the Association of UKRIGS Groups (UKRIGS) joined forces with the Earth Science Teachers' Association (ESTA) Annual Course & Conference at the University of Derby for a joint conference with the overall theme of 'Earth Sciences and the Countryside'. It was the first time that the two organisations have formally collaborated in this way and it reflects their many common interests and shared ideals.

Unlike last year at Dudley when presentations took place in the mornings with field excursions in the afternoons, Friday and Saturday consisted primarily of workshops, offering mainly education themes for teachers or geoconservation themes for the RIGS delegates, running in parallel. Sunday was given over totally to field visits when the two conferences truly came together. Unfortunately I was only able to attend on the Saturday but as always it's a good opportunity to renew old friendships and contacts. Geodiversity Action Plans were the favourite topic this year or so it seemed, but so was the UKRIGS Earth Science on Site (ESOS) project, which uses geological sites for teaching science curriculum at Key Stages 2,3,4.

The ESOS project is about producing high quality teaching materials to encourage and facilitate educational use of geoconservation sites (usually SSSIs or RIGS) formerly used for aggregate extraction. These materials will all be available for downloading from www.ukrigs.org.uk (click on education). The 2004/5 pilot phase featured four sites, The National Stone Centre; Apes Tor/Ecton Hill Staffs; Black Rock, Matlock; Park Hall Country Park, Stoke-on-Trent. The first phase of the main project is now underway for completion by March 2006 and will include four more sites two of which are local; the Ercall Quarries adjacent to the Wrekin plus our own Barrow Hill, Dudley.

At the UKRIGS AGM on Saturday afternoon Mike Browne, Chairman of Lothian & Borders RIGS Group (and who works for BGS in Edinburgh) was elected the new Chairman for a two-year term. He has been on the exec committee since UKRIGS' formation and is a popular choice. Alan

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Cutler (BCGS) was re-elected Hon Treasurer for another two-year term. Otherwise it was uneventful.

The last presentation on Saturday, "Air, Earth, Fire and Water" was from Professor Pat James, University of South Australia. A highly entertaining account of some earth science conservation problems from down-under and a few solutions. He was very entertaining (or is it interactive) using bananas and toothpaste etc with volunteers from the audience to demonstrate tectonic forces. However I found the fact that Professor James heads a department of the '*Natural and Built Environment*' shows a measure of some awareness of environmental empathy, and the need for creative solutions. Whilst it may be a long time before we reach such an accommodation in this country I was all the more appreciative of Graham Worton and Ali Glaisher's (Dudley MBC) lone efforts in arranging awareness days in the field for their colleagues in other departments such as Planning.

The only disappointing feature this year was the relatively low attendance from UKRIGS membership. In fact the only adverse comments I heard were about the quite high delegates costs, especially day rates, compared to previous conferences. However numbers overall were buoyant thanks to support from the teaching profession.

Alan Cutler

OTHER NEWS

DUDLEY'S GEOLOGICAL INHERITANCE.

Many Black Country lads, and, I suppose some wenches, went to the "Wrenner", to get a handful of those intriguing fossils for which the Wrens Nest Hill in Dudley is famous the world over. In the 19th century there were several shops in Dudley which exclusively dealt in the sale of these fossils – especially the world famous Dudley Bug/Locust (*Calymene blumenbachi*). Many famous fossil collections were built up, and some of these can be seen in the Lapworth Geological Museum, University of Birmingham which is open to the public. So important and famous all over the world is the geology of the Wrens Nest that 50 years ago next year it was declared as a **National Nature Reserve for Geology** – the first of its kind in the country.

The trilobite *Calymene blumenbachi* was so abundant that it was incorporated into the original Coat of Arms in 1957. However, before this it was included in the Common Seal of the Corporation in 1866. This is only one of a few such fossils utilised in heraldry in the U.K. Others are Whitby with its "snakestone", Scunthorpe with its "Devil's toenails", Street in Somerset has its Ichthyosaurus skeleton on its seal dating from 1974, and Maidstone uses an Iguanodon on its Coat of Arms. However, of all these, Dudley's is the oldest. Unfortunately, when the local government reorganisation took place in 1974, the fossil was dropped, and now no longer appears, although it is still on the Mayoral Regalia dating from the second half of the 19th century, and can still be viewed above the Central Library entrance in St. James' Road. A roundel took its place with parallel, wavy blue lines from the medieval manor of Kingswinford.

All of Dudley's geological sites taken together form a World Class Geology which has great potential for attracting visitors from all over the world – especially if they are granted World Heritage Status under U.N.E.S.C.O. (United Nations Educational, Social and Cultural Organisation). Some of the most important features are listed here:

Did You Know that....

- the first geological map in the country was drawn by Dud Dudley in the 17th century.
- the thickest coal seam in the country was the 10 yard coal. It outcropped all around Dudley Castle Hill and Netherton.
- a subterranean canal tunnel links Wrens Nest with Dudley Castle Hill, opening out at Castle Mill Basin.
- over 650 fossils are found on these two hills – some found nowhere else.
- the pure Much Wenlock limestone of these two hills, formerly quarried for the iron industry, contains the complete sequence of the layers – strata – forming this limestone, but the Wenlock Edge – the type area – does not.
- the limestone contains several layers of volcanic ash called bentonite, from volcanic eruptions, probably in nearby south Shropshire.

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- Dud Dudley claimed to be the first to smelt iron ore using “sea coale/pit coal”, around 1618 – nearly 100 years before Abraham Darby at Coalbrookdale which has World Heritage Status.
- Abraham Darby was born on the Wrens Nest Hill, Dudley, at the “Lodge”. The site is now marked by a sycamore tree.
- Dud Dudley and Abraham Darby families are linked by marriage.
- the Lamp Tavern, near top church, Dudley, is built on the site of one of the Earl of Dudley’s iron works. They used horses instead of waterpower to create the blast as the site is at the top of a hill. Dud Dudley managed it for his father for some time.
- Cradley Forge at the bottom of Quarry Bank Hill, was another of the Earl of Dudley’s iron works. Dud Dudley managed it, and it was here that he produced good quality pig iron using coal. The works were washed away by a flood in the 17th century, but was rebuilt and lasted to just before the First World War. The pub here, now called the Wagon and Horses, used to be known as the Hammer – for obvious reasons, as the River Stour and Mousesweet Brook powered large tilt hammers.
- Dudley Castle Hill is riddled with old limestone caverns, some of which can be seen if you take a boat trip from next to the Black Country Living Museum. The limestone was a very important mineral used as flux in the process of smelting iron ore. Some of the caverns have been infilled because of subsidence, and some were used in the last war for various purposes.
- limestone, coal, sandstone (refractory quality for lining blast furnaces), for foundry moulds, and for the edged tool industry, iron ore, clay for bricks and dolerite basalt for road metalling were all found in abundance in Dudley.
- the only known volcano in the West Midland area is located at Barrow Hill next to Russells Hall Hospital. The volcanic neck, although extensively quarried away, can still be seen.
- nearby are volcanic ash deposits some 300 million years old, containing volcanic bombs, and the oldest known early coniferous plant fossils in the world.

Why the Geology is So Important.

Dudley is uniquely placed to illustrate how the exploitation of the minerals in the rocks beneath our feet, gave rise to the world-altering Industrial Revolution. So, not only is the pure geology of World Class standard, but also the social, industrial and economic developments which took place here, arising from the use of these minerals, can clearly be seen. Dudley and the rest of the Black Country enabled the development of adjacent Birmingham as a mighty industrial city, by supplying it with raw material – especially coal.

The Future? All this adds up to an inheritance for the people of Dudley – and the rest of the Black Country – which, if developed carefully will attract people from all over the world, in much the same way Coalbrookdale does now. In many ways Dudley compliments Coalbrookdale, and there is a strong case for developing the two areas together. Dudley could gain the coveted accolade of U.N.E.S.C.O. World Heritage Status. Our claim to this is at least as good.

Gordon Hensman

Gordon’s article first appeared in the ‘*Black Country Bugle*’ earlier in the year.

[WREN’S NEST COMMEMORATIVE CALENDAR 2006](#)

A limited edition full colour Commemorative Calendar has been produced to celebrate the 50th Anniversary of the Wren’s Nest National Nature Reserve. It features 12 photographs of the reserve that were submitted to a competition earlier this year. The calendar costs £4.95 including postage and packing, and can be bought from libraries and museums throughout Dudley, or you can telephone Dudley Museum and Art Gallery on 01384 815575. Any profits from this will go towards the Mayor’s charity. To find out more about the 50th anniversary celebrations, go to www.discoverdudley.org.uk and click ‘Out and About’.

(If you receive this newsletter by email, there should be a poster attached to this effect.)

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GEOBABLE

We use several scales in geology, as many of the features and properties that we deal with vary, and by devising a scale along those variables, we are able to record and convey information in a numerical format. *Mohs' hardness scale* is one of the most familiar. It was devised by F Mohs in 1812, and has not been replaced by any more useful alternative. When compared with an absolute measure, for example Vickers Hardness Number, Mohs does not move up in regular intervals, but its merit is that it uses common minerals as reference points –Gypsum, Calcite, Fluorite, Orthoclase, Quartz etc. – and has ordinary materials such as your finger nail or a steel blade easily related to the scale.

The *Richter earthquake scale* is a very precise expression of the *magnitude* of an earthquake event. It is calculated from the amplitude of ground movement, taken from a seismogram, with a correction for the distance from the epicentre. We all understand the severity of an earthquake when we hear 'it was between 6 and 6.5 on the Richter Scale' although we may not really know what that means. The *Mercalli scale* expresses the *intensity* of an earthquake, and the effect it has on people. It has an arbitrary scale from 1-12, and each point has a descriptor, for example II is 'Feeble: noticed only by sensitive people', while VII is 'Very strong: general alarm, and the top grade, XII is 'Catastrophic: total destruction'. This scale is not used much today, and the reading is arrived at after the event by questionnaires to those who witnessed the event.

In the nineties a new scale was devised called the **Torino scale**. On a scale from 0 – 10, it expresses the chance of a particular asteroid colliding with the Earth. 0 means that there is no chance, whereas 10 is a certainty leading to total destruction. In many ways this is very similar to the Mercalli scale in that it is not completely objective, it has to be descriptive as it is referring to an event that has not yet happened. It is worth looking at www.torinoscale.com for the full details, but here are a few descriptors from this scale:

- 2. A somewhat close, but not unusual encounter. Collision is very unlikely.
- 7. A close encounter, with an extremely significant threat of a collision capable of causing a global catastrophe.
- 9. A collision capable of causing regional devastation. Such events occur between once per 1000 years and once per 100,000 years.

One of the commonest words featured in this scale is 'encounter', which since the film '*Close Encounters of the Third Kind*' seems to be associated with extra-terrestrial happenings.

www.torinoscale.com

New Scientist. Vol 188. No 2522. 22 October 2005. p56.

Bill Groves

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 February Newsletter, please send or give it to one of the Editorial Team by **Monday 6th February 2006**

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

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