



Cymdeithas Daeareg Gogledd Cymru
North Wales Geology Association

NEWSLETTER

Issue 86

January 2015

Inside this issue:

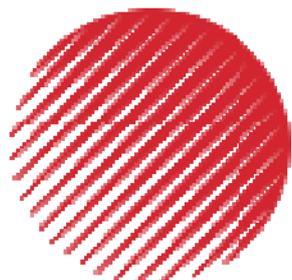
Chairman's Message	3
Articles	4
More pyritic rambles	
App of the Month -Mineral ID	
2014 – the geological year that was	
Prospects for open cast coal in the UK	
Darwin Festival 2015	
Book and Podcast Reviews	10
Abstracts	12
Reports	14
Publications relevant to North Wales	15
Dates for Your Diary	16
Academic Research Opportunities	18
Web Site and Social Media	18
Committee Contacts	18

Front Cover Image:

Outcrop of Upper Crafnant Tuff showing distinctive soft sediment deformation and forced dewatering structures. Found on a forestry footpath south of Llyn Geirionydd, Conwy.

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OPUS

Chairman's Message

A Happy New Year to all our members!

It hardly seems possible that years pass so quickly, and so many of them. It seems both a very long time ago, and only yesterday, that Cymdeithas Daeareg Gogledd Cymru was initiated; actually 20 years ago, back in 1995. I don't have an exact tally, but over those years we have organised approximately 160 meetings, mostly indoors but a good many in the field, in which we have ranged from the Jurassic of South Wales to the Precambrian of Anglesey. We are fortunate in sharing such fine country with so many excellent geological diversions, and we look forward to exploring more geology over the next year.

Your committee is changing significantly at the forthcoming AGM, as we have been advised of the retirement of Will Jones, Frank Buxton and Judith Jenkins. At present we do not have a candidate for the position of Secretary, so if you think that you could commit a very small amount of time to that task, please let me know or come along to the AGM and volunteer in person. We thank those who are retiring for their efforts over the years and hope that we will continue to see them at meetings in future.

On the anniversary of the great tidal surge and cyclone that shredded the promenade in Deganwy (and so much other national infrastructure) work commenced upon the repairs. This time, the section which was removed so efficiently is being built upon proper foundations. I have not had the opportunity to look closely at the excavation, but large lumps of grey clay were dumped among the boulders put down to form a wave barrier and it will be interesting to see them when the sea has had an opportunity to wash the included pebbles clean. Unfortunately, at this time

of year most of my dog-walking is done in actual or almost dark conditions, which is not conducive to field studies.

An idea which seems to be achieving higher prominence these days is that of the tidal lagoon for power generation. A company is in discussion with Conwy County Borough about the possibility of a tidal lagoon with an impoundment stretching from Rhos Point to Prestatyn. Bi-directional turbines have the potential for generating power as the natural tide rises and falls and the water inside and outside the barrier seeks equilibrium. Naturally this a "low-head" system and the volume of water that must flow in and out must be very great, hence the large reservoir capacity. It would be intrusive, and in my view, likely to become a stagnant and silted pond - but I am not fully-appraised of the technology - though it would provide the coastal protection that is craved. Submerged, tidal turbines have been operating in the mouth of Strangford Lough in Ireland for some years, but there is only natural 'impoundment' of the water. Meanwhile (and bear in mind where the AGM will be held) another proposal for the community benefit company is testing the feasibility of small-scale, run-of-river hydro-electric power generation in the Anafon valley above Abergwyngregyn. Energy at any price, sans-carbon?

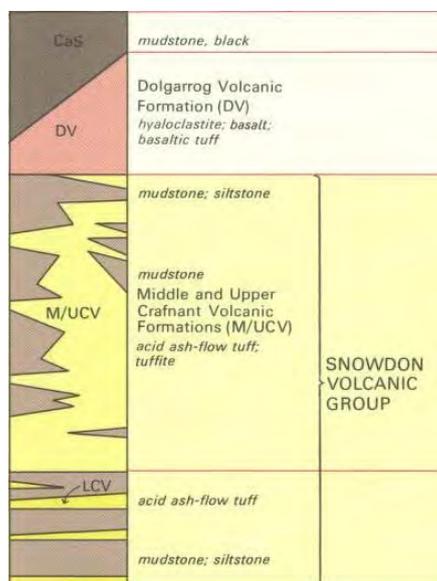
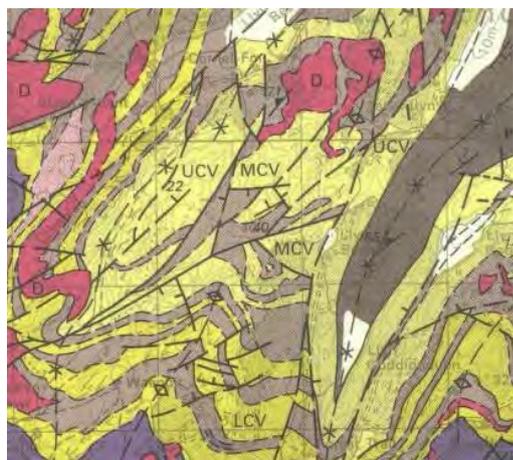
The programme of meetings for the Spring is essentially complete, as you will see inside, and the focus is now upon the field season. We have some ideas, but as yet no completed itineraries. The success of last year's meetings suggests that we can be more bold in our ideas, so we are hoping to come up with something a little different. As ever, we are responsive to the interests of our members, so if you have any suggestions for a visit please be sure to mention them.

Jonathan Wilkins

Articles:

Further pyritic rambles

Following on from Peter Appleton's description of a potential interesting new exposure in Gwydir Forest a small group of NWGA members and friends ventured out on an autumnal weekend to gauge the prospect of running a full summer trip to the site.



Contains British Geological Survey materials © NERC [1985].

After meeting at the Llyn Geirionydd Car Park we set out southwards on Forestry Tracks covering ground underlain by tuffs of the Snowdon Volcanic Group (Upper Crafnant Volcanic Formation (pale yellow

and grey colours on the map and section above).

Whilst these tuffs were interesting in their own right, displaying spectacular soft sediment deformation structures (see front cover image), with limited daylight, and the threat of unpredictable early December weather, we needed to pass these by relatively quickly. Of more immediate interest was the black mudstone fill material that Natural Resources Wales were using as a road stone. This was noted to be pyritic, and rich in mineralised vugs, with unusual quartz growths. Peter confirmed that this was the material being borrowed from further up the track.

After a relatively short walk we started to notice that the rocks in the trackside grips, and occasionally exposed in the road itself, had become a black fine grained mudstone. We appeared to have crossed onto the outcrop of the Cadnant Shale (the dark grey on the map and section). We then very quickly came across the borrow pit, and started to have a fossick – with some of the party focussing on the mineral horizons, others looking for graptolites. This was one of those places where you needed to “get an eye in” – but after 15 minutes or so both the nodules and the fossils seemed to be everywhere.

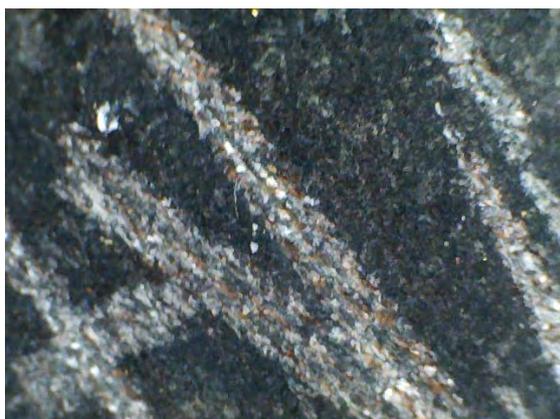


Looking first at the fossils – this is an assemblage dominated by what appears to be a monospecific assemblage of

graptolites, preserved locally in prodigious quantities.



The photograph above may begin to show the density of the graptolites present in these rocks, but what of the ovoid structure just right of the hammer shaft? Looking closely it is apparent that the graptolite stipes seem to radiate from it. This would appear to be the air sac from which the planktonic graptolites hung in the water column. At least three of these features were seen. Unfortunately the preservation of the stipes themselves is not very detailed, making identification, beyond noting them to be consistent with biserial orthograptids at generic level, extremely difficult.



Close up image of graptolites – diameter of specimens typically about 1mm (copyright KHN)

The Cadnant Shales are the local name for the Nod Glas Horizon, an anoxic marker present throughout much of mid Wales, and associated with the Cheney and

Streffordian Stages of the mid to late Caradoc. These rocks are associated with the *clingani* graptolite stage (Fortey et al, 2000). Graptolites that could be expected within rocks of this age include *Orthograptus calcuratus*, *Orthograptus truncatus*, *Climacograptus bicornis* and *Amplexograptus perexcavatus* (Howells et al, 1978).

For those interested in the mineralisation, there was much to be seen. Pyritic nodules, some approaching the size of an egg, were plentiful, with many showing the tufts of quartz described by Peter Appleton previously. It seems probable that the pyrite nodules (or concretions) were formed as part of the original lithification process; and by the time of the Caledonian Orogeny, which imposed the slaty cleavage of the district on the shales, the nodules were already significantly stronger than the surrounding host rock. As such the tufts of quartz probably represent mineral fibres growing along the direction of the minimum principal stress during deformation. In at least one case the mineral fibres seem to change direction slightly – apparently reflecting a change in the regional stress field.

As well as the concretionary nodules the pyrite was also seen to be associated with particular bedding horizons. This is consistent with descriptions of mineralisation as a “stratified pyrite deposit” in the same rocks near Dolgarrog (Howells, 2007). Reference to the geological section above shows the close association between the mudstone and the basaltic Dolgarrog Volcanic Formation. The sulphide mineralisation seen at the quarry is thought to be primary mineralisation, associated with sea floor hydrothermal volcanism of “black smoker” type. Much of the mineralisation in the surrounding metalliferous ore field of course is quite different, being of a secondary origin, formed by remobilised

minerals, presumably originating from primary sources such as this.

Much else of interest is apparent in these rocks, with intriguing structural variation apparent in the dips of bedding exposed in the quarry (seemingly much steeper towards the front (ie west) of the quarry) perhaps indicating the proximity of the outcrop to the axis of the syncline that can be seen on the BGS map above.

So much of interest, and much remaining to be seen.

KHN

References:

Fortey R. et al (2000) *A revised correlation of Ordovician rocks in the British Isles*, Geological Society Special Report No 24, London.

Howells M., Francis E., Leveridge B. and Evans C. (1978) *Capel Curig and Betws-y-coed, Description of 1:25,000 Sheet SH75*, Classical Area of British Geology, IGS, NERC, London

Howells M. (2007) *Wales*, British Regional Geology, BGS, Nottingham.

App of the Month - Mineral ID

Mineral ID is designed to help the geologist who needs to identify minerals under the microscope. This is achieved by answering a series of 16 questions (some examples shown below), and based on the responses given, the choice of potential minerals that it could be is narrowed down. Answers can be skipped if an answer is not available, and thus later questions can be answered instead, all in order that a choice of potential minerals is produced. Most of the responses are in the

form of a 'selection list' of available possibilities although in the case of birefringence, for example, either a value can be entered manually or a selection made from the included colour chart (see image below). At any point 'Skip to Results' may also be selected, and a list of remaining minerals meeting the criteria to that point is given.





A second option is to 'View Mineral Library', which is simply a list of all the 55 minerals in the database. On selection of a particular mineral, its mineral properties are displayed in a scroll down list (as shown in the example provided below for Hornblende).



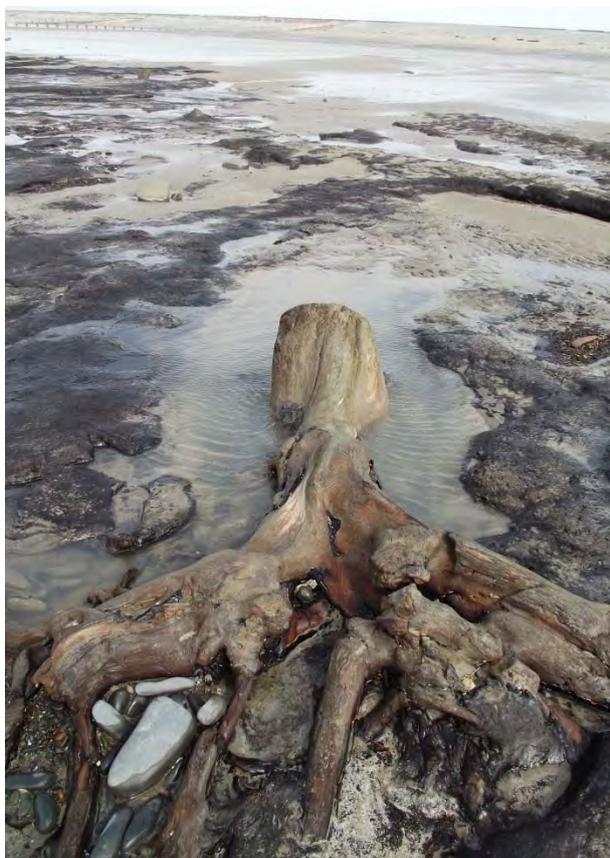
Unfortunately what this app lacks are images of each mineral under the microscope which would greatly enhance its use-ability. However, at least having narrowed down the possibilities one can then refer to the list of options in a text book to confirm identification?

Gary Eisenhauer

2014: The geological year that was

January

An unusual perturbation of the Atlantic Jet Stream brings successive storms to the UK causing landslides, flooding and considerable infrastructure damage. One plus for the North Wales Geological Community is the exposure of the Fossil Forest at Borth.



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February

A rock fall in the southern French Alps kills two passengers when it derails a tourist train.

March

Cuadrilla announces a new estimate of shale gas “reserve” in North West England amounting to 330 trillion cubic feet of gas.

April

The volcano Tungurahua near the Ecuadorian capital Quito erupts

<http://www.bbc.co.uk/news/world-latin-america-26901834>

May

An arson attack at Brymbo, Wrexham destroys many stored specimens from the Brymbo Fossil Forest Project.

June

Work starts on ground preparation for the Hermedon Tungsten Mine on the edge of Dartmoor, the first new metalliferous mining scheme in the UK for 40 years.

July

The Channel Islands are struck by a 4.6 magnitude earthquake felt over much of South West England

August

A huge tailings dam failure occurs at Mount Polley in British Columbia. at a site run by Imperial Metals. Some estimates indicate that 5 million cubic metres of contaminated slurries were involved:

<http://www.mining.com/tailings-breach-at-imperial-metals-mount-polley-mine-40156/>

September

Mt Ontake in Japan erupts with little warning causing considerable loss of life to hiking parties in the area

October

Researchers from Flinders University (amongst others) publish descriptions of the earliest recorded external sex organs on vertebrates from Scottish fish fossils:

http://www.nature.com/articles/nature13825.epdf?referrer_access_token=R5wKzZNKHq4jRd7I5Yqq19RgN0jAjWeI9jnR3ZoTv0Nu6R31hpOpF8146btZAxZNBgI8p89EUpFZT1JWEUGvDYyHWAftmBMc9f3GJUmEHDQ9XIU4CYK6mLSzSonerk1

November

A court in Italy quashes the earlier convictions for manslaughter of the earth scientists involved in the 2009 L’Aquila earthquake.

December

Storms cause considerable landslides and many fatalities in Indonesia.

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Prospects for open cast coal in the UK

In addition to the document cited in the section on Publications Relevant to North Wales the BGS have also published their Statistics for Open Cast Coal Production in the UK for 2013. It is always the case of course that statistics are best discussed amongst statisticians, as the rest of us either:

- 1) over-simplify and draw inaccurate conclusions, or
- 2) spin them to support a particular pre-defined conclusion.

I see myself as being of the former persuasion and wish to point out some (possibly wholly inaccurate) conclusions that arise from the data published:

In 2013 2.47 million tonnes of coal were won from the three north east England regions of Durham, Northumberland and Newcastle upon Tyne, compared with 2.34 million tonnes from Wales. England, Scotland and Wales have respectively 4.5 million tonnes, 10.4 million tonnes, and 14.5 million tonnes of what are termed “permitted reserves” at sites currently in production. Taking last years published production rates as average production rates going forward this implies the following in respect of the lifetime of reserves at existing sites:

Table 1: Lifetime of Reserves – Sites already in production

Nation	Permitted Reserves	2013 Production Rate	Lifetime of Reserves
England	4.5	3.4	1.32
Scotland	10.4	2.8	3.71
Wales	14.5	2.3	6.30

Reserves and Production rates in million tonnes – Lifetime quoted in years.

It is the case of course that any particular site has a finite and predefined lifetime, subject, to technical mining engineering limits (how steep and how deep, can these pit walls stand safely) and the vagaries of the price of coal. The lifetime of reserves must also be judged against the permitted reserves not yet in production.

Looking at the data for sites not yet in production is perhaps of even more concern:

Table 2: Lifetime of Reserves – sites not yet in production

Nation	Permitted Reserves	2013 Production Rate	Lifetime of Reserves
England	0.72	3.4	0.22
Scotland	22.36	2.3	9.72
Wales	0.8	2.8	0.29

Reserves and Production rates in million tonnes – Lifetime quoted in years.

Open cast coal reserves currently in production, or planned and permitted are only available based on combining the figures of sets of permitted reserves) for about 18 months in England, 12 years or so in Scotland, and little more than 6 years in Wales. The reality of course is that as production diminishes in England and Wales, this will lead to an increase in the rate of production of coal from the Scottish Coalfield to fill the gap in the market. Taking the UK as a whole we have about 53 million tonnes of reserve in production, or planned and permitted. At an assumed national production rate of 8 million tonnes per annum, there is no more

than 7 years supply of open cast coal in the ground.

There are prospects of course for coal to be won from locations currently not being worked, not planned to be worked, and not worked in the past, but it must surely be the case that all the “low hanging fruit” has been taken, and without ripping into the heart of urban areas, it seem unlikely that significant quantities of new found coal will come on stream. This implies (or is it simply my inference?) that UK open cast coal reserves cannot be considered as part of a balanced energy supply going forward; and can only be considered as a temporary stop gap in our growing energy gap, becoming exhausted in commercial terms at the same time as our Magnox reactors go off line, and North Sea Oil & Gas becomes clearly “Post Peak”.

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Darwin Festival 2015

The 2015 Darwin Festival will be held between the 8th and 22nd February. The festival, which has been arranged by Shropshire Wildlife Trust, aims to inspire people with curiosity about the natural world and awaken understanding of the marvellous wildlife with which we share our world. An exciting range of events has been arranged with something for all ages.

The 2015 programme will be available to download soon. For any queries in the meantime please contact:

Sara Pearce, Business Development and Events Officer, Shropshire Wildlife Trust.
Tel: 01743 284277 or

SaraP@shropshirewildlifetrust.org.uk

Sara Pearce

Book and Podcast Reviews:

“Evolution, the first four billion years”

Edited by Michael Ruse and Joseph Travis

First published in 2008, the paperback edition which I found in Manchester’s Waterstones followed in 2011, so this review is a little after the fact. The book is positively biblical in its size, getting very close to 1000 pages of pretty small type, and not padded out with copious illustrations or excessive dead white space between chapters. It is basically two books in one – the first is a substantial evolutionary theory text book, with invited authors providing chapters on the key topics associated with the subject. Running to 400 pages itself, this first half of the book stands alongside any undergraduate text book on evolution as a cogent, readable and authoritative guide to the subject. It is extensively referenced and up to date (as at 2008 at least! – this is after all a fast moving field of research).

The remainder of the book (the “Alphabetical Guide”) is an expanded glossary of terms and collection of short biographies of the evolutionary great and good, from Darwin to Dawkins, and many points between. Infuriatingly, this section, which was intended to allow the reader to dip in and out of the subject matter, doesn’t have a separate contents listing – so there is no way of knowing what’s in and what’s not. By way of an example – Stephen J Gould makes the listing, but his “punctuated equilibrium” co-author Niles Eldredge does not. The reproduction of many of the figures and illustrations has suffered a little as a consequence of the downsizing of the page sizes to the

paperback edition – but since there are relatively few illustrations (this book is not a light read) the overall content does not suffer. I am not convinced that the “book of two halves” concept has really worked. I would have happily paid the same price for the same text book without the glossary, but with a larger type face and more legible figures – and would then probably have happily paid the same amount (next year maybe) for the glossary - particularly if that was to benefit from a few colour illustrations. Furthermore, written by Americans, with presumably an American target audience, the serious half of the book has three chapters devoted to “Evolution and Society”, “Evolution and Religion” and “American Antievolutionism: Retrospect and Prospect”. Whether these chapters are necessary here in somewhat more secular thinking Europe I am not entirely sure.

All in all, a thoroughly well researched reference book, which should serve as a general guide to all those studying “natural history” subjects at undergraduate level for a few years yet. At £19.95 for a thousand pages it is coming in at about tuppence a page which, in my world at least, represents excellent value for money.

“Evolution: the first four billion years”, Editors: Ruse, M. and Travis, J (2011), Belknap Press (Paperback) Edition, ISBN: 978-0-674-06221-4 – available from Waterstones and other good booksellers (£19.95).

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“PALAEOCAST”

Palaeocast is a free webseries / podcast exploring the fossil record and the evolution of life on earth. I first discovered

Palaeocast as a result of a link via social media, advertising a forthcoming episode on Ostracods. I should add at this point, that these little organisms were the subject of my PhD research and despite not currently being an active researcher, they will always remain dear to my heart. Hence, the remaining links to the subject via the Internet. That, and my previous job as a micropalaeontologist.

Anyhow, so on downloading Episode 35 on Ostracods, I was then to discover a whole series on various topics, including the different geological age periods; different fossil groups (including macro / microfossils, vertebrate palaeontology, through to dinosaurs), palaeontological related research (e.g. Mass Extinction, Amber etc) or slightly more offbeat subjects such as Palaeo-art. In addition to this, there are also episodes dedicated to reporting back from palaeontology conferences / AGMs, both at home, and abroad. Here the production team may record interviews with eminent palaeontologists, or report back news on the latest research being conducted. Equally, an entire episode on a particular subject may revolve around an interview with an individual with specialist knowledge, e.g. the episode on Trilobites revolved around an interview with Richard Fortey.

Currently they are up to Episode 39 (on Dinosaurs of Alberta - posted January 2015) with previous episodes stretching back over the last few years. Enough to cover all interests and all of which are still available for download either via a podcast App on your smartphone (search for Palaeocast) or following this link: www.palaeocast.com/

Gary Eisenhauer

Abstracts:

Joining details for all the talks described below are available in the “Dates for your Diary” section

“Cambrian Fauna of the Llanberis Slate”

Dr Richard Birch

Those who came on the Porth Ceriad field excursion may well recall seeing one of Richard’s trilobite finds from the locale. This was not by any means a one off, and Richard has kindly agreed to show our members his collection. The following is Richard’s brief abstract:

“A collection that no-one see's is just a pile of rocks. I have toyed with the concept of a 'mobile museum' for some time, so material is mounted in glass-topped cases that stack safely in the car. I will present some of my extraordinary Cambrian fossils from the Llanberis slate, which I am reliably informed by Adrian Rushton from the Natural History Museum in London, is the best and most comprehensive collection from that site in existence.”

Others may contribute to the regional geological setting – and a reminder of some of our recent field visits to rocks of similar age. There will also be a digital microscope available allowing Richard to display his finds in their full digital glory.

“Natural History Museum, Bangor”

Dr Nigel Brown

It is not widely known that Bangor University is home to a museum of Natural History - mostly because it is not open to the general public except during special events. We are therefore privileged to be invited as an Association for a guided tour under the guidance of Dr Nigel Brown, who is a member of the School of Biological Sciences.

The tour will include the zoological collection, herbarium and mineralogical and fossil collections which are all located on the first floor of the Brambell Building on Deiniol Road. The museum is large, so there is no particular limit on participants; the herbarium is much smaller but Dr. Brown will display some special specimens on tables outside for ease of viewing. The geological specimens are in the main corridor.

Access to the Brambell Building will be via the foyer at the back of the building i.e. on the side furthest from Deiniol Road. Late comers may well find the door locked, so it would help if people could arrive promptly. There is some parking to the rear of this building and pay and display 250 metres away on Sackville Road.

Please let either Jonathan Wilkins or Gary Eisenhower know in advance if you intend joining the visit just so we have an idea of numbers. Tea and coffee will be available to make this a properly sociable trip.

Location map (Building No.38):
<http://www.bangor.ac.uk/tour/LocationMap.pdf>

“Radon: Just another ground gas?”

Peter Waring, Ground Gas Solutions.



Radon is a naturally occurring hazardous ground-gas which causes over a thousand premature deaths per year in England and Wales. The properties of radon (density, boiling point and half life) help to explain the hazard. Radon enters buildings through various routes and is breathed in by building occupants. The probability of radon causing harm, i.e. the risk, is dependent on the concentration.

Radon is a known human health issue and is therefore regulated. The Ionising Radiation Regulations set a trigger level for the workplace to minimise employee exposure. Radon is a decay product of uranium, therefore the probability of radon being present in hazardous concentrations has been mapped in the UK, based largely on underlying geology which is known to contain uranium.

There are various methods to measure radon, including simple and effective passive monitors. Measurements must be taken to reflect ‘worst case’ conditions, taking into account the environmental factors which affect radon ingress into buildings.

New buildings can be protected against radon ingress using gas-proof membranes or sumps. Existing buildings can be remediated using a variety of techniques, including retrofitting of sumps. The

effectiveness of preventative or remedial measures should be shown through validation monitoring, to demonstrate that building occupants are not exposed to unacceptable radon levels.

“Characterizing and producing from reservoirs in landslides: challenges and opportunities”

Dr Alastair Welbon, VNG Norway.



Dr. Alastair Welbon is a Geological Advisor in VNG Norway based in Oslo. He holds BSc and MSc degrees in Geology from the University of Wales Cardiff and a PhD in Structural Geology from Leeds University. He started his career as a geologist in a consultancy providing services to oil and gas and mining companies. In 1997 he joined Statoil and worked on exploration and production projects on the Norwegian shelf and internationally. Some of these included defining and drilling exploration targets in areas of landslides and landslide reservoirs in fields in production.

In 2006 Alastair joined BG Group working in both the Specialist Structural Team and New Ventures in the head office. In 2009 back in Norway he worked on the Knarr exploration and development wells and was Team Lead for North Sea Exploration. In 2012 he joined VNG Norway and was Geological Advisor and license geologist during the farm-down and drilling of the Pil and Bue wells, Pil was the largest

discovery on the Norwegian shelf last year.

Abstract:

Landslides are often present in oil and gas provinces and can be found at any level from the sea floor to the reservoir reflecting the evolution of a rift or a passive margin. They are often difficult to interpret and mis-identification can lead to significant challenges to defining exploration risk, reservoir characterization and can result in significant drilling and production issues. The use of geomorphological principles, empirical datasets, analogues and good seismic and well data can improve landslide characterization. Using outcrops from the south coast of England and elsewhere and well data from fields in production it is possible to put together a conceptual model for prediction of the uncertainty range of a reservoir. Mapping geomorphological elements can be used to estimate the likely range of net to gross and porosity of an accumulation. Since there are frequent lateral changes in properties in landslides, their flow behaviour may not reflect the rock encountered in the well, but nearby material which is significantly different. Small, sub-seismic scale landslide features are important both in understanding reservoirs but also carrier beds and source rocks.

Geomorphological principles are also used in understanding shallow hazards such as sea-floor instability, layer bound and detachment slip systems, the distribution of shallow gas in reworked sediments and structures likely to reactivate during stress-arching during field depletion.

Reports:

North Wales Geology Association

Wednesday 12th November 2014

“The Fossil Forest at Brymbo, Wrexham: studies on preservation and ecology of Carboniferous plant fossils”

Professor Barry Thomas – Aberystwyth University

A good audience, many with first-hand knowledge of the site, attended this enlightening lecture presented in an entertaining way by Professor Thomas aided by some exquisite specimens.

After a brief introduction from the NWGA’s Jonathan Wilkins, the talk began with a map showing the global extent of the Variscan foreland coalfields, of which Brymbo forms a part. Then with clear maps and sections he went through the history of the site, and described the flora found between the Crank and Two Yard coal seams, preserved in an exceptional manner, as a result of a crevasse splay flooding event.

The rapid sedimentation and formation of iron nodules enabled fantastic preservation to take place. Pictures of individual types of Coal Measures plants were shown, and how the use of acid maceration techniques was described, enabling detail knowledge of spores etc. to be obtained and photographed with stunning effect.

I can now see why it is a problem for geologists to link various partial fossils as part of the same organism. Mineralisation around the plants and its effect on fossilisation was something I had not previously thought about.

A data base compiled by Peter Appleton was described, and Professor Thomas showed how various interpretations are obtained from this tool. The use of kernel density mapping, and nearest neighbour

analysis was also touched upon. These statistical techniques have been used to discover that Calamities grew in clumps connected by an underground rhizome, made me realise how little we know in schools about data presentation and interpretation. He linked this information with to the principle of uniformitarianism by showing clumps of modern horsetails.

The lecture ended with a comparison with other sites and reiterated the fact that Brymbo is an exceptional site worthy of world heritage status. One member of the audience stated that Brymbo was far better than that other well-known site Joggins. I sincerely hope that Brymbo obtains the money to preserve this remarkable site and enable public access to an informative display in a suitably constructed educational/information centre. Come those who play the lottery, hurry up and win and give some of the money to Brymbo, I would!



A cored sample of Coal Measures mudstone with a pith cast of *Calamites* (Sternberg). (Copyright – KHN)

Barry was thanked by Atkins' Rob Hunt (representing our co-hosts, the Geological Society of London) and his request for a round of applause was warmly received by the audience.

Rhys Greening
(Wirral School)

Editor's Note: Those wishing to follow up Professor Thomas's work in detail are referred to his recent publication:

Thomas, B.A., (2014), *In situ Stems: Preservation states and growth habits of the Pennsylvanian (Carboniferous) Calamitaleans based upon new studies of Calamites Sternberg, 1820 in the Duckmantian at Brymbo, North Wales, UK. Palaeontology*, Part 1, 57.

Publications relevant to North Wales:

Cameron, D.G., Bide, T., Parry, S.F, Parker, A.S., and Mankelov, J.M, 2014, *Directory of Mines and Quarries*, 10th Edition, British Geological Survey, Nottingham. Downloadable FoC from: <http://www.bgs.ac.uk/mineralsuk/whatsnew.html#dmq>

Campbell, S.G., Wood, M. and Windley, B. (2014), *Footsteps through time – the rocks and landscape of Anglesey explained*, Geomon, Isle of Anglesey County Council. *

Lee, Jonathan R.; Wakefield, Oliver J.W.; Phillips, Emrys; Hughes, Leanne. (2015), *Sedimentary and structural evolution of a relict subglacial to subaerial drainage system and its hydrogeological implications: an example from Anglesey, north Wales, UK*. Quaternary Science Reviews, 109.

Loydell D.K., Frýda, J., Butcher A. & Loveridge, R.F, (2014), *A new high-resolution $\delta^{13}C_{carb}$ isotope curve through the lower Wenlock Series of Buttington Quarry, Wales*, GFF, DOI: 10.1080/11035897.2013.865668. To link to this article:

<http://dx.doi.org/10.1080/11035897.2013.865668>

Morton, A., Waters, C., Fanning, M., Chisholm, I., Brettle, M (2014): *Origin of Carboniferous sandstones fringing the northern margin of the Wales-Brabant Massif: insights from detrital zircon ages*. Geological Journal . 10.1002/gj.2572

Peel, J.S, and McDermott, P.D. (2014): *An association of problematic corals, crinoids and parasites from the Shoeshook Limestone Formation (Ordovician) of Wales*. Geological Journal. DOI: 10.1002/gj.2617

Thomas, I., (2014), *Quarrying history in Wales – a history*, National Stone Centre, Wirksworth. *

Waring, M. (Editor) (2014) *A Grey Past and a Blacker Future: Reminiscences of a Cardiganshire Lead Miner in the early 1900s* *

Copies of the publications marked with an asterisk * will be available at the AGM, and can be made available for a short term loan to anyone willing to write a review for the next NWGA Newsletter.

Dates for Your Diary:

NWGA: 2015 Programme

NWGA Annual General Meeting

Saturday January 24th 2015 at 10:00AM
Canolfan yr Hen Felin, Abergwyngregyn

Followed by talk by Malcolm Bates (Lampeter University) *“Drowned landscapes of the British Isles”* Lecture commences at 11:30AM. (Abstract of talk and formal notice of the AGM were published in the previous Newsletter).

NWGA Meetings

Wednesday 25th February, 2015

Dr Richard Birch

“Cambrian Fauna of the Llanberis Slate” - see Abstract elsewhere in this Newsletter
Pensychnant, Conwy
7:00PM for 7:30PM start

Saturday March 7th 2015

Nigel Brown, Bangor University

“Visit to the Natural History Museum, Bangor” - see Abstract elsewhere in this Newsletter
10:00AM

Wednesday March 18th, 2015

Peter Warman

Ground Gas Solutions

“Radon in the built environment” - see Abstract elsewhere in this Newsletter
Pensychnant, Conwy
7:00PM for 7:30PM start

Wednesday 29th April, 2015

(NB change of usual venue)

Joint Meeting with GeoScience Wales

Dr Alastair Welbon – VNG Norway

“Characterizing and producing from reservoirs in landslides: challenges and opportunities” – see Abstract elsewhere in this Newsletter
Royal Cambrian Academy Conwy 7:00PM
for 7:30PM start

Geologists’ Association (UK)

Saturday and Sunday 16th / 17th May, 2015

Field Weekend: *“The Old Red Sandstone of South Wales”* led by John Davies and Geraint Owen. For further details contact Sarah Stafford at the GA Office Tel: 020 74349298 (Cost £10pp)

North Staffordshire Group of the Geologist’s Association

Saturday and Sunday 6th / 7th June, 2015

Field Weekend: *“Ordovician / Silurian rocks of the Ceredigion coast”* led by Keith Nicholls and Jerry Davies. NWGA members welcome to attend, for joining details speak to KHN.

Geological Society of London – North West Regional Group

13th March 2015,

“*Severn Valley Slope Failure*” by Julian Hughes The Swan, Winwick WA2 8LF

17th April 2015

“*The state of the Geological Map*” by David Schofield (BGS Wales), University of Chester

further details on the Society Website at:
<http://www.geolsoc.org.uk/~media/shared/documents/specialist%20and%20regional%20groups/nwrg/Newsletter%20Autumn%202014.pdf>

British Geotechnical Association

September 13th – 17th 2015

XVI ECSMGE Edinburgh “*Geotechnical Engineering for Infrastructure and Development*” – Conference web site at:
<http://xvi-ecsmge-2015.org.uk/>

Shropshire Geological Society

Wednesday 11 February 2015

Instability in the Ironbridge Gorge (guest speaker: Neal Rushton, Telford)

Wednesday 11 March 2015

The 60 million year magma chamber on Rhum (guest speaker: Dr Brian Driscoll, Keele)

Talks are generally held at Shire Hall, Shrewsbury, commencing at 7.15pm for 7.30pm. Note that the venue might have to be changed, depending on the possible sale of Shire Hall (a nominal charge is levied for attendance by non-Members).

Manchester Geological Association

Wednesday 11 February 2015 at 19:00 -
AGM followed by Presidential Address
“*Evolution of the Mars Atmosphere and Hydrosphere*”- Dr Ray Burgess,

Wednesday 4 March 2015 at 18:30 - Joint Meeting with the Geographical Association

“*Coastal Dunes and Climate Change*”

Dr Paul Rooney, Liverpool Hope University

Visitors welcome. Further details available from the Association’s web site at:
<http://www.mangeolassoc.org.uk/indoormeetings.htm>

Liverpool Geological Society

Feb 3rd - Rob Duller on “*Icelandic Floods*”.

Feb 10th - Practical Session with Jason Hall & Maggie Williams – “*Flint Knapping and Cave Paintings*”.

Feb 17th “*Modelling the Intrusion of Igneous Rocks*” by Janine Kavanagh.

March 3rd - Afternoon Session with “*The 1815 William Smith Map*” with Professor Hugh Torrens at The World Museum.

March 3rd - Distinguished Visitor's Address by Prof Hugh Torrens on ‘*William Smith in Yorkshire*’.

Details available from the Society’s web site at:
<http://liverpoolgeologicalsociety.org.uk/index.php>

Academic / Research Opportunities:

NERC / BGS and St Andrews University
PhD CASE funded studentship:
*“Integration of Geodiversity into
Ecosystem Services Frameworks”*
Interested candidates should contact Dr
Heidi Burdett to discuss their application.
Email: hb57@st-andrews.ac.uk
Tel: +44 (0) 1334 464948

Web Site and Social Media:

Up to date information on our activities is
posted regularly on the Association web
site at:
<http://www.ampyx.org.uk/>

A much more informal way of keeping in
touch with an eclectic mix of NWGA
events, and other geological News items is
available on the NWGA Facebook page at:
<https://www.facebook.com/groups/northwalesga/>

Committee Contacts*:

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Secretary:

Position Vacant

Treasurer:

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keithnicholls@gmail.com
or keith.nicholls@opusinternational.co.uk

Ordinary Committee Members:

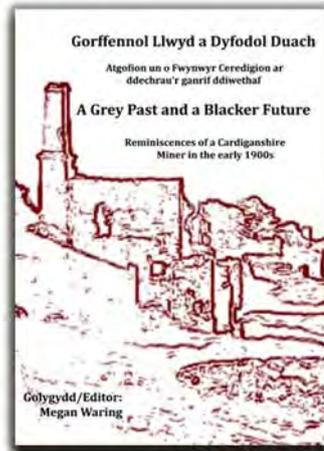
All Positions Vacant

* Subject to ratification by the
membership at the forthcoming
AGM

Gorffennol Llwyd a Dyfodol Duach A Grey Past and a Blacker Future

Atgofion un o Fwynwyr Ceredigion ar ddechrau'r ganrif ddiwethaf Reminiscences of a Cardiganshire Lead Miner in the early 1900s

Ganed Elias Jones ym mhentref Pontrhydygroes, Ceredigion, yn 1881 a dechreuodd weithio fel mwyngloddwr yn 13 oed. Wedi'r gostyngiad ym mhris plwm, teithodd i'r De, i Sir Forgannwg, i chwilio am waith yn y pyllau glo, gan ddychwelyd adref adeg y cynhaeaf neu amser oedd yn hunan-addysgedig, o dueddfryd gwleidyddol, ac fe adawodd sawl darn o'i atgofion gweld yn y gyfrol hon yn y Gymraeg gwreiddiol chyfieithiad Saesneg. Mae'r casgliad hefyd yn erthyglau papur newydd amdano ac erthyglau ar fwyngloddio a oedd ganddo yn ei feddiant. Caiff y ei hun yn ôl mewn cyfnod pan oedd gwaith yn yn wael. Ond mae hiwmor y mwynwyr a'r glowyr, diddordeb yn y byd mawr tu hwnt i'w bro, yn drwy'r cyfan.



ŵyna. Yr

sydd i'w
ynghyd â
cynnwys

darllynydd
galed a'r tâl
a'u
treiddio

Elias Jones was born in the Cardiganshire village of Pontrhydygroes in 1881 and started life as a lead miner at the age of 13. When the price of lead fell, he travelled to Glamorgan to find work in the coal mines returning home at harvest or lambing time. He was self educated, politically motivated and left several memoirs in Welsh that have been translated here. This compilation also includes newspaper articles about him and mining articles in his possession. The reader will find him/herself back in an era where work was hard and badly paid. However, the humour of the miners can be seen and their interest in the wider world.

Golygydd/Editor:

Megan Waring



To: M. Waring, Pine Lodge, Gannock Park, Deganwy, Conwy LL31 9PZ

Please supply _____ copies of *Gorffennol Llwyd a Dyfodol Duach/A Grey Past and a Blacker Future* at £9.50 plus £1.50 p&p each.

Name:

Address:

Postcode:

Enquiries to : Megan Waring, 01492 572169, Email: Meg@t-waring.demon.co.uk