



Newsletter December 2023

Sixty fifth session

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Welcome to the December Newsletter. Amongst a number of other things, this edition contains information on the remaining winter lecture programme that to date has been very successful and well attended. As it is Christmas there is also a short quiz to give you something to do when Christmas TV gets too much! I am extremely grateful to all those who have sent me items for this Newsletter but am always looking for more. As you will see from the *Message from the President*, we are beginning the process of planning next year's summer field meetings but are still in desperate need of someone to take on the role of Programme Secretary to make the process much easier and less prone to mistakes! So, to re-emphasise his comments, if you might be interested in helping the Group out in this role **please** do get in touch.

The next Newsletter should be out in March 2024 and I am happy to receive items at any time up to 1st March for inclusion in that edition. In the meantime, I hope that you find something of interest amongst the varied topics on offer in this edition.

Stephen Howe



Message from the President

As we approach Christmas, we are delighted that the first half of our 2023/24 winter programme has been very successful with good attendances for all 3 lectures. Surprisingly, our new venue at the Trallwn Community Centre in Swansea seems to be attracting more members than Cardiff at the moment, and I suspect that this is partly due to the ever-increasing difficulty of parking in Cardiff city centre. The committee will monitor the situation and will see how things develop; there are several similar community centres in Cardiff with ample parking which might be easier to get to, although we do value the academic link with Cardiff University. Our hybrid meetings have thrown up some unexpected technological difficulties which we are doing our best to overcome, and next year's committee will take a decision on how best to proceed with these. At the very least we will continue to

record all the lectures (as long as the speakers consent) and these will be available via a link on the website.

I have sent out the first request for speakers at our Holiday Geology event in Cardiff on January 13th and have already received 6 offers of talks! So, if you would like to tell us about your geological travels in 2023, please get back to me (john.nudds@manchester.ac.uk) ASAP to avoid disappointment.

Once again, I have to remind members that we are still without a Programme Secretary, and whilst we have been successful in arranging a full winter lecture series, we will not find it so easy to arrange a full programme of summer field excursions. If you are willing to lead a field trip to any area within reasonable distance, please do let the committee know, and even better, if you would like to be involved in having a say in developing our programme, please do consider taking on this committee post. We are all extremely lovely people, and the chocolate biscuits are even better!

Meanwhile may I wish you all a very Happy Christmas and a rather more Peaceful New Year!

John Nudds, President



Winter Programme 2023-2024

All of these lecture meetings will be hybrid, held both in person and also available live on Zoom. They all start at 11.00am, apart from the AGM that commences at 10.30am. The Cardiff meetings are held in our usual rooms in the University, while those in Swansea will be held in our new venue at the Trallwn Community Hub, Bethel Rd, Llansamlet, Swansea SA7 9QP. The remaining programme is as follows:

2024

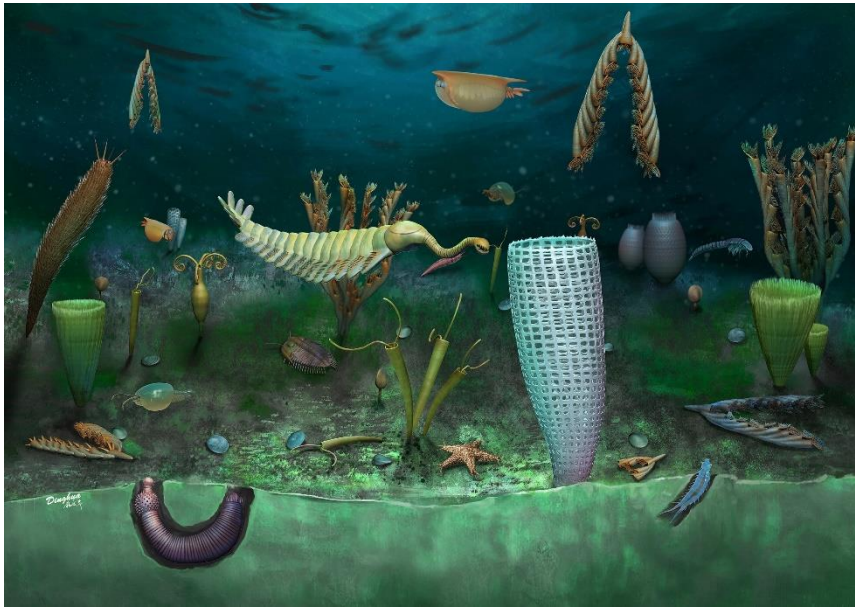
Saturday 13th January: (Cardiff). *Holiday Geology*

This is your annual chance to deliver a short (15min) talk about anything that you think may be of interest. To date we already have six volunteers that will take us to the USA, Iceland, Greece, France, Northern Ireland and the UK, but to fill the day we still need more. If you are willing to speak – in person or on-line – please contact our President, John Nudds. As usual, a buffet lunch will be provided but in order to ensure that we have enough refreshments could you please book a space at the event with the Meetings Coordinator (programme@swga.org.uk) by 5th January 2024.

Saturday 27th January: (Swansea). *Joe Botting/Lucy Muir: Castle Bank: Wales' answer to the Burgess Shale.*

The Burgess Shale-type faunas yield exquisite fossils of entire communities of soft-bodied organisms, and have been crucial for understanding the early evolution of animals during the “Cambrian Explosion”. However, the closure of this preservational window in the succeeding Early Ordovician means that we know little about the evolution of most groups of soft-bodied animals after that point. In particular, there have until now been no such fossil deposits revealing the evolution of life during most of the Great Ordovician Biodiversification Event (GOBE). This has changed with the discovery of the Middle Ordovician Castle Bank Biota of Llandrindod, which rivals the best Cambrian faunas in preservation and diversity.

The Castle Bank Biota was discovered during the first Covid lockdown by mid-Wales-based palaeontologist Joe Botting, and worked on through the pandemic by him and his palaeontologist wife, Lucy Muir, together with a small group of international collaborators. The announcement paper about



Castle Bank reconstruction © Dinghua Yang

differences between it and the Cambrian and Early Ordovician faunas. We will also explore the implications, especially for the GOBE, of the presence of many late-surviving Cambrian lineages alongside unexpectedly early appearances of other groups, making the Middle Ordovician a truly remarkable phase in animal evolution.

the site was published in the prestigious international journal *Nature Ecology and Evolution* in May 2023, following a paper on the opabiniid-like arthropod *Mieridduryn* in November 2022. These were only the initial papers to raise awareness of the site. The deposit also contains a plethora of soft-bodied animals, including many that have not yet been announced, and some groups with no other fossil record. This talk will introduce the Castle Bank Biota, its importance and its peculiarities: from the small size of

many of its fossils, to the

Saturday 10th February: (Cardiff). Jeremy Hucker: *The Legacy of Coal Mining in South Wales*

The legacy of historic coal mining remains a significant constraint to development in former coalfield areas. Shallow abandoned mine workings, mine entries, former colliery sites and coal tips remain as hazards which can adversely impact on future development. The Coal Authority retain responsibility for these assets of theirs and, therefore, are a statutory consultee to planning applications and often request a planning condition requiring full investigation of the mining hazards and, where necessary, mitigation of the risks. This can result in significant costs to developers and so it is important that the hazards and risks are fully understood and defined. This requires a good understanding of not only the geological setting, but also of how the miners would have worked the coal in past times.

In this talk, I will discuss what the mining hazards are that remain across coalfield areas, concentrating on the South Wales Coalfield and how we, as engineering geologists, investigate the hazards, identify the risks, and then undertake risk mitigation to get planning conditions discharged, and to allow development to safely proceed.

Saturday 16th March: (Swansea). AGM followed by the Presidential Address by *John Nudds: Probably the Best Lagerstätten in the World: Exceptional Preservation of Fossils*

This lecture will cover much of the ground discussed in the two textbooks written by John Nudds and Paul Selden, '*Evolution of Fossil Ecosystems*' and '*Ecosystems of North America*', published by Manson Publishing in 2012 and 2008 respectively. A short introduction will define the term, 'Fossil Lagerstätte' followed by a description of the various types of Lagerstätten, which will explain the different methods of exceptional preservation of soft tissue in fossils. The main body of the lecture will be devoted to a lavishly illustrated tour of some of the better-known Fossil Lagerstätten, such as the Cambrian Burgess Shale of the Canadian Rockies and the Jurassic Solnhofen Limestone of Bavaria, plus some less well-known examples, such as the Eocene sites of the Green River Formation of Wyoming and Grube Messel in the Frankfurt region of Germany. Some more recently discovered sites in China (Chengjiang and Jehol) will also be briefly described and analysed.



Subscriptions 2023-2024

Subscriptions for the new session become due on 1st September. The rates are once again the same as the previous year; Ordinary £10, Optional Concessionary £5 and Family £10 plus £5 for each additional family member. Many of you pay by Standing order so won't need to worry about this, but if you do not you can send a cheque to the Membership Secretary (Cindy Howells) at the Department of Natural Sciences, National Museum of Wales, Cathays Park, Cardiff, CF10 3NP or ask her for our bank details so that you can do it via BACS.



GA Festival of Geology 2023

For the first time since before Covid, the annual GA Festival of Geology was held in person this year. On 4th November, your President, Secretary and Membership Secretary travelled to University College London to present a stall promoting the SWGA and our activities. Elen had produced a number of posters detailing the various RIGS activities with which we have been involved, and also took along some local fossils to show attendees. We also had posters about our local dinosaur footprints, and about the historical significance of Welsh geology. Of course, we also took along a few boxes of books to sell.

For those who haven't ever visited this event, it is run annually and attended by many regional geology groups as well as various others. There are always a few dealers selling minerals, fossils, books, and other geological curiosities ideal for Christmas presents. This year's talk was on the Geology of Hogwarts although none of us managed to get along to hear this as we were kept busy with the stall. There was also a side room with a rather fine 1815 William Smith map laid out alongside Greenough's slightly later map, and these were available to view with explanatory talks by Duncan Hawley and others, throughout the day. The History of Geology Group had a stall nearby selling replica Greenough maps and various historical books.



Our stand and Cindy at the Festival of Geology. Both © Cindy Howells

It's a marvellous opportunity to see what other groups are getting up to and meet geologists from around the country, and is lovely to catch up with old friends as well, so if this tempts you at all, please do think about coming along next autumn and helping out for part of the day if at all possible.

Cindy Howells



News from BGS

Congratulations to Rhian Kendall, our Editor, who has recently been appointed Chief Geologist for Wales by BGS. We believe that she is the first SWGA member to hold this position and wish her well in her new role.

A new BGS report assesses the current situation around and future potential of deep geothermal energy in the UK. In collaboration with Arup, BGS was commissioned to develop a White Paper entitled *The Case for deep geothermal energy – unlocking investment at scale in the UK*. The report provides an evidence-based assessment of the opportunities and makes recommendations for building the deep geothermal sector in the UK.

Geothermal energy can provide an ultra-low-carbon source for heating, cooling and power generation and so can play an important role in providing our green energy needs. Currently, high drilling costs restrict the use of geothermal energy to areas with the best geological settings but, as technologies improve, more areas should become economically viable for geothermal exploitation. Most of the UK's onshore geothermal potential is found in deeply buried (deeper than 500 m) limestones and sandstones in sedimentary basins, where groundwater within the rocks can reach temperatures of more than 100°C. In some areas, hot granites provide a potential source for geothermal power.

The report can be found at <https://www.bgs.ac.uk/news/new-report-assesses-deep-geothermal-energy-in-the-uk/>.

BGS has recently released reports from over 260 mineral exploration projects carried out in the UK between 1971 and 1984 through the Mineral Exploration and Investigation Grants Act (MEIGA). This provided grants for mineral exploration of non-ferrous metals, fluorspar, barium and potash which resulted in significant new discoveries and developments, including the Gairloch copper–zinc–gold deposit, the Parys Mountain copper–lead–zinc deposit and the Hemerdon tungsten–tin deposit. The reports are available in a geographically searchable, online and free-to-access format and can be found at <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/>

Also available on the BGS web site is a report from the UK Critical Minerals Intelligence Centre on the *Potential for Critical Raw Material Prospectivity in the UK: Decarbonisation and Resource Management Programme Commissioned Report CR/23/024*. The full report can be accessed at <https://ukcmic.org/downloads/reports/ukcmic-potential-for-critical-raw-material-prospectivity-in-the-uk-cr23024.pdf>



News from the GA

The Geologists' Association's ***Geology from your Sofa*** will finish after the December 2023 issue. Originally created during Covid *Geology from your Sofa* has been a great source of stories, talks and other items with lots of links to other associated organisations. There have been stratigraphically themed editions and, lately, each issue has been 'sponsored' by a local group or association with the contents reflecting geological items of interest in their areas. All of the information supplied by these groups will stay on the GA Website until June 2024 and will then be removed. The last edition has just appeared, sponsored by the London Geodiversity Partnership. So, if you haven't sampled ***Geology***

from your Sofa yet, you have until June to do so! It can be found at the following:
<https://geologistsassociation.org.uk/sofageology/>

Due to issues related to open access publishing the **Proceedings of the Geologist's Association** will cease to become a hard copy publication from January 2024 and will only be available electronically. GA members who used to receive the Proceedings and wish to retain access to the electronic form, and haven't already done so, need to notify the GA so that they can be given access.



News from the Fforest Fawr Geopark

The Fforest Fawr Geopark, like many other organisations in the public sector, has suffered financial hardship over the last few years. This has seriously restricted its ability to organise events, like its once annual Festival, and also to produce or update information leaflets. Alan Bowring, the Geopark Development Officer, has recently been able to identify sufficient funds to allow for the tweaking, updating and re-publication of three existing leaflets, which will hopefully be completed by the end of March 2024. These are: *The Ridge & River geotrail* (starting from Abercraf and exploring Cribarth and a section of the Tawe gorge); *The Cribarth geotrail* (which approximates to the route which Alan guided us along from Craig y nos onto the ridge in June 2021 and a new version of the general leaflet for the Geopark. Keep a look out for these in the Spring.



SEWRIGS

SEWRIGS (South East Wales RIGS group) held its AGM in Llanhennock on 19th November, followed by a General Meeting to discuss future projects. The committee was re-elected with Nigel McGaw continuing as Chair of the group. Due to the demise of Geoconservation Cymru, under whose auspices the group was insured, SEWRIGS has now become an affiliated group of the Geologists' Association and partakes of their insurance cover, like the SWGA. The lack of insurance had brought a curtailment to any field work or site clearance but, now that this is resolved, planning has begun for 2024. If you are interested in geoconservation and would be interested in joining the group details can be found at <https://sewrigs.wordpress.com/>.



Charles Darwin and John Phillips

This item is courtesy of Danielle Czerkaszyn, Librarian and Archivist at the Oxford University Museum of Natural History and comes from the archive of John Phillips. He was the first Keeper of the museum in 1860 and Reader in Geology at Oxford. He was influential for his work on the development of the geological time scale and was well connected to other scientists through his membership of numerous societies including the Royal Society, the Geological Society of London, the Yorkshire Philosophical Society, the British Association for the Advancement of Science, the British Geological Survey, and more. It was through these connections, that he met Charles Darwin (1809-1882).

Darwin is best known for his theory of evolution published in his 1859 book *On the Origin of Species*. While Darwin is primarily known for his contributions to evolutionary biology, he was also heavily influenced by geological discoveries and the emerging idea that the formation of the Earth happened

over a much longer period than biblical accounts suggested. Darwin and Phillips corresponded regularly to discuss these ideas and the Museum holds these letters in the Phillips archive but it is one such letter that gives considerable insight into how Darwin anticipated Phillips would react to the contents of his seminal work...

In a letter dated 11 November 1859, just under two weeks from the book's publication, Darwin writes to Phillips informing him that he will soon receive an abstract of his next book. He asks Phillips to 'try not to condemn it utterly' and fears that he will 'be inclined to fulminate awful anathemas against it.' Darwin knew that despite growing evidence that the Earth was much older than the 6,000 years proposed by James Ussher in 1654, and even widespread acknowledgement in geological circles that the Earth was millions of years old, to propose that life on Earth was changing, and not a perfect creation of God, would be controversial, even heretical to many at the time. As a religious man, Darwin knew Phillips was inclined to reject his argument but the letter showed he still respected Phillips' opinion greatly as a regular correspondent (perhaps friend?) and eminent geologist.

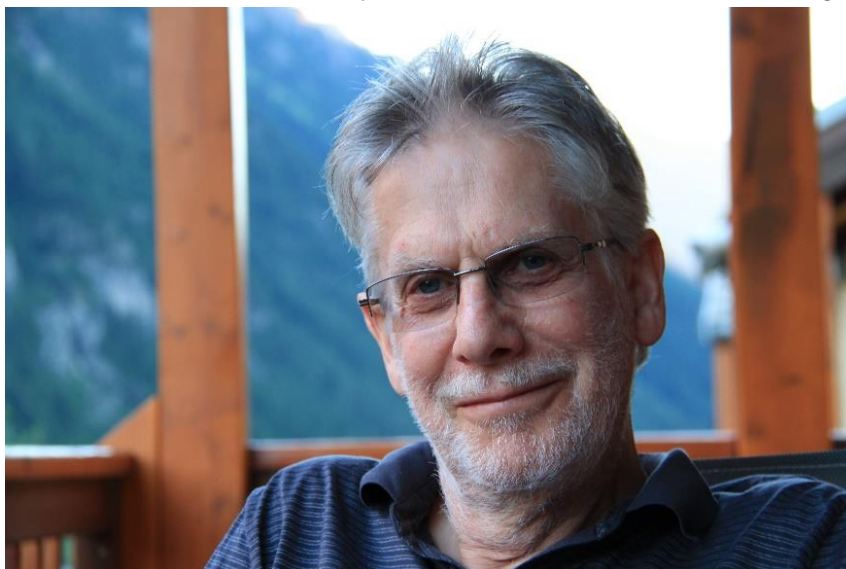
Although the museum does not hold Phillips reply to this letter in the archive, Danielle says it is not hard to surmise that while Phillips recognised the Earth must have existed for an enormously long time, he was less than impressed by Darwin's book overall as the following letter is Darwin making one last attempt to justify his reasoning. The correspondence ends not long after and we know Phillips never came around to Darwin's evolutionary theories.

As you can see from the scan of the letter, Darwin isn't exactly known for his neat handwriting but the signature is unmistakeable. You can read the full transcription of the letter via the Darwin Correspondence Project: <https://www.darwinproject.ac.uk/letter/DCP-LETT-2521.xml>



Dyfed Elis-Gruffydd

It is with sadness that we have to inform you of the loss of another of our long-standing members, Dr



© Siân Bowen

Dyfed Elis-Gruffydd and thank John Davies for the obituary below and Dyfed's wife, Siân for her help and supplying the photo of Dyfed:

Although the investigation of the geology of Wales contributed greatly to our knowledge of the world, very few native Welsh geologists are recognized. Only one person, O.T.Jones, published on the subject in his native language when he published a Welsh translation of one of his own papers (translated by himself). Not only did Dyfed Elis-Gruffydd publish extensively on geology and geomorphology in English and Welsh, he also produced the first Welsh language dictionary of geological terms *Geiriadur Daeareg a Gwyddorau Daeareg* (2021).

Dyfed was born on 23rd July 1943 and educated at Cyfarthfa Grammar School, Merthyr Tudfil, where he soon became captivated by the study of physical geography and geology. He took a degree in physical geography at University College, London and then undertook the mapping of the geomorphology of the Bannau Brycheiniog for his PhD. In the 1960s Dyfed lectured at the Sir John Cass Institute, in East London, and the City of London Polytechnic.

Dyfed met his first wife, Robina, at John Cass after which they moved to Bwlch-y-groes, near Crymych in Pembrokeshire, where Dyfed joined the Pembrokeshire Coast National Park. He then moved to Gwasg Gomer and later to the Welsh National Woollen Museum in Drefach Felindre, where he became director and worked on promoting the history of that industry, delighting in leading groups around the various mills and recounting their history. However, it wasn't long before he was tempted back to Gwasg Gomer as Welsh Language Editor, where he was responsible for the publication of many classical works in both English and Welsh, in a wide field of study from geography to literature. This inevitably led to him returning to teaching physical geography, this time for the degree course at Trinity College Caerfyrddin, where he led the student field excursions to the Auvergne district of France, to study the vulcanicity of the area and then to one of his favourite places, Iceland, where his interest in glacial and volcanic history was also stimulated. Dyfed was a great advocate of the idea of glacial transportation of the Bluestones of Pembrokeshire to Stonehenge.

During this period Dyfed campaigned vigorously for a Welsh Language Television Channel and for equal rights for the Welsh Language. Sadly, his life was changed when he and Robina were involved in a tragic car accident at Felindre Farchog, in which Robina was killed and Dyfed was seriously injured. Dyfed was one of the leaders of the Welsh-language naturalist's society, Cymdeithas Edward Llwyd, spending many Saturdays leading excursions and introducing many to the processes which formed the landscape. For many years he led a geology-geomorphology study weekend in southern Eryri, at Plas Tan-y-bwlch, to introduce Welsh-speakers to the great interests of the area, and as a side-effect re-introduce many to the wealth of physical geographical and geological terms. It was their membership of Cymdeithas Edward Llwyd that brought Dyfed and his second wife, Siân, together and they settled in Llechryd east of Aberteifi, where they formed a natural team in the production of Dyfed's later publications.

Over a number of years, Dyfed delighted in leading Saturday walks around Ceredigion and north Pembrokeshire to explain the natural features of interest. Latterly, he concentrated on publishing a number of books on the landscape and history of Wales and his patriotic love of the human and natural stories and the physical geography woven together in its fabric. His book *100 o Olygfeydd Hynod Cymru* (2015) later published as *Wales: 100 Remarkable Vistas*, was shortlisted for the Welsh Book of the Year. He also wrote *Rocks of Wales* for Gwasg Carreg Gwalch. His final work was a biography of another Welsh geologist *Dr Henry Hicks- The Life and Times of Dr Henry Hicks of St Davids and the Bubble that Refused to Burst* (2022).

Over the last year, cared for by Siân, his health gradually faded and he passed away on 16th of October 2023 having made a huge contribution, to science and scholarship in both our languages.

John Davies



Reminder

- Most of our lectures are recorded and uploaded to our website (www.swga.org.uk) for a few months.
- We also have a YouTube channel as well as maintaining a Facebook presence (<https://www.facebook.com/groups/179899022064977>) and Twitter account (@swgeologists). With Facebook and Twitter, anyone can join in and the more that do, the better it is!
- **Earth Heritage Magazine:** This is now only available as an electronic copy, which can be found at: http://www.earthheritage.org.uk/wp/wp-content/uploads/EH-53_final.pdf



Contacts for other local geological organisations

- **Russell Society, Wales and West Branch:** Contact: Tom Cotterell. Tel: 01594 845935 before 9 pm
- **Welsh Stone Forum (Fforwm Cerrig Cymru):** Contact Jana.horak@museumwales.ac.uk or www.museumwales.ac.uk/en/welshstoneforum
- **Open University Geological Society:** Contact: Andy Mitchell (ougs.org/severnside)
- **South East Wales RIGS Group:** <http://sewrigs.wordpress.com/>
- **West Wales Geology Society:** www.westwalesgeolsoc.org.uk



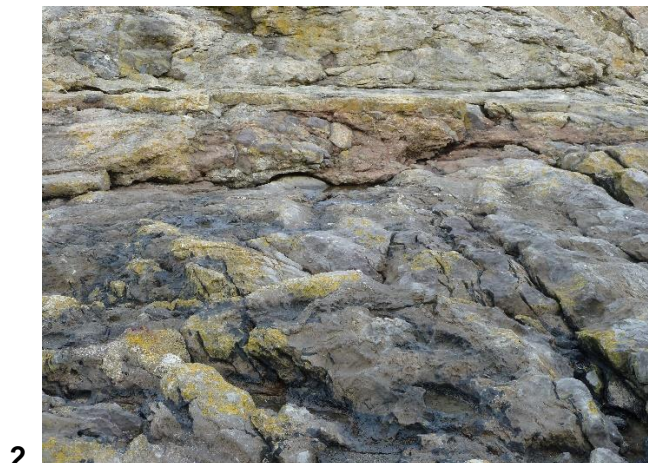
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The Committee wish you all a very Happy Christmas and New Year

Christmas Quiz

Something to pass the time and let the Christmas food digest and escape from the visitors! The following photographs were all taken in the old county of Glamorgan, south Wales, but where? The easy ones are at the beginning and they get progressively harder. Answers at the end.



Answers on the next page.

Answers:

1. As I said an easy one to start with! The image is of one of the many slabs of ripple-marked siltstones from the Cotham Member of the Lilstock Formation (Triassic, Penarth Group), that litter the beach between Penarth and Ranny Bay. This particular slab exhibits desiccation cracks cutting across the ripples.
2. Another fairly easy one. This image shows one of the Triassic wave-cut platforms that can be seen on the west side of Nell's Point, Barry Island. The platform is cut into dipping beds of the Friar's Point Limestone (Carboniferous, Pembroke Limestone Group). Sitting on top of the platform is a bed of coarse Triassic conglomerate that forms part of the marginal facies of the Mercia Mudstone Group.
3. The image is of some of the superficial deposits that lie on top of beds of the marginal facies of the Mercia Mudstone Group (Triassic) at Sker Point, near Porthcawl. The bottom of the small cliff consists of boulder clay of Devensian age (Pleistocene). The deposit is full of clasts of rocks of various sizes, that are derived from the coalfield. These are dominantly sandstones from the Coal Measures (Carboniferous). The clay matrix is generally impervious and often has water seeping out along its upper surface that has passed through the very porous blown sand (Holocene) that overlies the boulder clay.
4. This view is looking west into the flooded pit of the western end of the former Margam/Parc Slip Opencast mine near Kenfig Hill, which stopped extracting coal in 2008. The rocks exposed in the wall of the lake are sandstones, mudstones and coals that belong to the Middle Coal Measures (Carboniferous), here dipping north into the coalfield.
5. St Mary Hill, near Cowbridge. These large stones are a few of a large number that litter the surface of the south side of St Mary Hill Down, near St Mary Hill in the Vale of Glamorgan. They are blocks of grey-coloured, quartz-rich, Quarella Sandstone (Triassic, Cotham Member) and are the remains, presumably waste, from the quarrying of the stone that took part around the hill in the C19th, if not earlier.
6. This image is probably the most difficult to identify. It is a view looking west along the valley of the river Waycock, below the village of Penmark, near Rhoose. It is a lovely example of a misfit valley in which the present-day stream sits in a valley far bigger than it could have eroded by itself. It is one of a number of such valleys to be found across the Vale of Glamorgan, that have been enlarged by flows of glacial meltwater