U3A Geology Group 2018

2018 Geology Trips

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British Rocks & Geological Time Scale

On Friday 26th January 22 geology members met in Ruthin library at 2pm to attend the presentation ' British Rocks and the Geological Time Scale' given by Dr. Frank Nicholson.

Everyone received a hand out which showed the geological time scale graph covering the Pre Cambrian Period (The oldest) up to the Quaternary Period. (The youngest).

The oldest fossils found in rocks were the Stromatolites, single cell cyanobacteria. These cells expelled oxygen and 'so it all began'. The Stromatolites were discovered in Pre Cambrian rock and we saw a sample of this in the Anglesey Museum run by Dr. Margaret Woods on one of our field trips. It was her prize specimen.

Frank explained how each geological period got its name. Cambrian Period being the Roman name for Wales, Carboniferous from the coal measures etc.

Graptolite fossils were found in rocks from the middle to the lower Cambrian Period 521MYA up to the begining of the Permian Period 240 MYA.

Volcanic rocks of the Lake District, Scotland and Wales were discussed, the carboniferous limestone and coal measures, the New Red Sandstone of the Permian/Triassic Periods, the Vale of Clwyd fault and the Jurassic clays and marl where fast evolving ammonites, corals, sponges and brachiopods were found. Fossils of dinosaurs, bony fish and other reptiles were found in the Cretaceous chalk.

At the top end of the geological time scale Frank spoke about the Tertiary, Miocene and Pliocene periods up to the Quaternary 2.58 MYA, the period of the Ice Ages. We saw the effects of this period when Paul Kabrna and Linda Yorke were our geological guides along the beach at Lleiniog, Anglesey.

To download a totally correct version of Frank's presentation click Britrox.

Tea and delicious refreshment followed the talk.

Isabel

Fossils From Land And Sea

On Friday 23rd February 31 geology group members met in Ruthin library to attend a presentation given by **Anthony Vine**, a lapidary & jewellery designer who collects and buys fossils which he polishes and makes into jewellery.
His talk **'Fossils from Land and Sea'** covered fossils from the Precambrian era up to the Cenozoic era with fossils from each period.
One of my favourites was a piece of green ! Precambrian rock full of stromatolite fossils. Stromatolites were some of the first cellular life, single cells that absorbed seawater, carbon dioxide and sunlight and expelled oxygen which changed the world's atmosphere.
One rather attractive fossil was coprolite which Tony makes into jewellery. This is actually fossilized dinosaur dung! Another specimen was a piece of fossilized wood and you could still see the yearly growth lines. Cephalopods, ammonites and many more fossils were on show. (Sadly not a Trilobite in sight)
The two geology books that were on display, Eyewitness Fossils and Remarkable Creatures will soon be added to our geology group library.
After questions, everyone collected around the exhibits for a hands on session. Followed by delicious tea, cake and scones.
The talk and exhibits gave the members who don't yet have a great deal of geological knowledge a chance to discover what geology is all about. As we are a group from beginners to experts in the geological field, presentations and trips vary and I try to meet the needs of all. I always notify the speaker/guide about the diversity in our groups knowledge.

Isabel

Vale of Clwyd Geology

On Friday 23rd March at 2pm in Ruthin library group member Dr.Wyn Hughes gave a brilliant presentation on
'The Contribution of Microfossils to our Understanding of the Vale of Clwyd Geology'.

He brought rock specimens for a hands on session and slides of extremely thin slices of rock which when viewed through his microscope members could actually see the microscopic fossils.

Wyn explained about supercontinents, plate tectonics, climate, changes in sea levels, splitting of the supercontinents and mountain building. Mudstone of the Silurian-Ordovician Period being formed in deep seas. Limestones in warm, shallow, tropical seas and sandstones in desert conditions.
In the Silurian Era the Vale of Clwyd was situated way below the equator then due to the action of plate tectonics over millions of years moved up to its present position. During this time mountains were created, seas formed and closed and sea creatures flOurished in many forms. Some died, became fossilized and Wyn had brought some graptolite fossils of around 500 million years old to show us.

We were shown a recent map of the the Vale of Clwyd and one drawn by William Smith in 1828. A canal constructer who created 'The Map That Changed The World'.His book is well worth reading.

The rocks of the Vale of Clwyd are,

- The Dolhir Formation, Ordovician shale.
- Elwy Formation, Silurian shale.
- Elwy Formation Mudstone.
- Red Basement Beds, Lower Carboniferous limestone.

The Vale of Clwyd is a sedimentary basin. On our field trip Wyn will explain about the half graben and the faults forming the vale. These are the formations we will be examining on our field trip. Maybe seeing brachiopod fossils, coral and graptolites and Wyn will explain about the microfossil formineria, calcarious alga, palymorphs and conodonts.

There was so much more explained to us but the above report is really for anyone without too much geology knowledge to get an idea of what we see and learn. There will be a pdf available on the geology site soon covering the presentation.

Many thanks to Wyn, welcome to our new members, thanks to Karen for the delightful cakes, Bill's help in the kitchen and to myself for the fruit cake.
Isabel

Vale of Clwyd field trip

A Carboniferous, (Alun Valley) Geological Field Trip.

On Friday 27th April 17 geology group members met at the Clwyd Gate car park at 10 am ready to meet Dr. Wyn Hughes who was our guide for the day. This trip was a follow up after his presentation on 'Microfossils of the Clwyd Valley' last month.

Wyn had prepared handouts for everyone and after introductions he produced a large poster and diagrams of what we would see, how and where it was formed and spoke about the 8 sites we would visit. Due to the wet, muddy weather 2 sites were bypassed.
We would be seeing 9 different limestone formations. Formed in the Lower Carboniferous Era 330-345 MYA.

The Formations.

- Mineral
- Cefn Mawr
- Loggerheads
- Leete
- Llanarmon
- Foel
- Basement Beds
- Elwy
- Nantglyn.

At one stop numerous different rock formations could be seen as faults and tectonic movement had tilted the rock face. At the Pistal Gwyn Quarry we saw large Llanarmon blocks full of brachiopod fossils and a few crinoids.
In the village of Llanarmon-yn-lâl above the Leete Formation was Tomen y Faedre an 11C Motte. The steep limestone providing some protection. On the opposite side of the road in the same rock formation was a large natural cave.
We lunched at Loggerheads Country Park from where we had excellent views of both Leete & Loggerheads limestone formations.
Next stop was Cefn Mawr Quarry. Conditions were now so wet and slippery that our visit around the quarry was cancelled. However we were made very welcome and given maps, photos & fossils to look at. Wyn made the most of the afternoon discussing our morning observations. He made a chart of the conditions that the different limestones could have been formed under.

- Land
- Intertidal
- Shallow Shelf
- Deep Shelf
- Basin.

We had to say which. Then Wyn wrote the correct answers!

Well despite the wet weather everyone enjoyed the trip.
H & S conditions were adhered to.
Many thanks to Wyn and Jason Parry (Quarry Manager). Jason will be happy to give us a guided quarry visit in better conditions.

A full correct itinerary of Microfossils A & Microfossils B can be found on the Ruthin Geology Website. For more photos of the visit please click Vale of Clwyd field trip photos

Field Trip To Ponterwyd Silver/Lead Mine

On Friday 25th May 13 geology members met in the cafe of Ponterwyd Silver/Lead Mine ready for a guided trip from 12 to 2pm. (A reduced number of members as it was the start of a Bank Holiday weekend plus the begining of the school holidays.)

We received a very warm welcome from the manager Wendy Hurst who introduced us to our guide Sheldon. She was dressed like a miner from bygone days. A bonus for us as Sheldon was a third year geology university student and she was excellent.

The tour cost £9.95 per head, taking us on the 'Miners Trail' which included all the out buildings and a trip down the mine. H & S issue's were discussed as there were steps leading down to the mine and at times you needed to bend to pass through some of the tunnels so hard hats had to be worn.

We visited all the buildings connected to the lead ore being processed once out of the mine. Such as the rock crusher and the ore rugger sheds. The original enormous water wheel had disappeared long ago but we saw where it had been situated when used to keep the mine free of water and on display were two smaller water wheels.

The small museum was excellent with its exhibits, old photographs and posters. Sheldon explained everything as we walked around.

The actual descent into the mine was down numerous stairs luckily with hand rails and lights. Sheldon explained each area we passed and warned us when to bend over through various parts with very low roofs. Care had to be taken as the floor was quite wet (as in most mines.) and the water dripping off the walls of the tunnels contained Ochre which covered you in yellow/orange splodges. (Ochre's main ingredient is iron hydroxide.)

After the tour we made full use of the cafe for a light lunch. Members with picnics were made very welcome.

Everyone will have different memories of the trip. Mine is seeing a single crystal of quartz, as large as a medium sized turnip and I so wanted to bring it home to sit with my other geological delights.

Another excellent trip.
Isabel

Field trip to Rhoscolyn

On Friday June 22nd at 1pm, fifteen geology members gathered at St.Gwenfaen's Church in Rhoscolyn's village car park ready to meet our guide Andy Short. Badges handed out, disclaimer forms signed and a fee of £2.50 collected. Andy's fee was £50, the £12.50 'short fall' was covered by our geology funds.
Andy arrived at 1:30 pm and after introductions told us what the trip would cover. Health & safety discussed as always.
The rocks we would see are part of Anglesey's Mona Complex. Edward Greenly (1919) established the stratigraphical order of the rocks and he had classified them as Precambrian but they are now thought to be Early Cambrian. They are 515 million years old.
So 515 million years ago the rocks were being laid down.
The South Stack Formation as sandstone.
The Holy Head Formation sandstone formed in deep water.
The Rhoscolyn Formation sand and mudstone.
All these rocks began life in a horizontal position nothing like we see them today. Massive tectonic ground upheavals created heat and pressure, the rocks became slightly pliable and were pushed, squashed and bent over creating anticlines (upward folds), synclines (downward folds) faults, fissures and many other features that we see today.
The heat caused by this upheaval 'low grade metamorphosim' changed the three rock formations into the schistose and quartzose that we see today.
Andy was a delightful guide and spoke a little about Rhoscolyn's history as well as all the splendid geology. He showed us where the New Harbour Formation was in faulted connection with the Rhoscolyn rocks and we saw the hematite pink rocks. A stop was made at the Coastguard's Lookout, the slate memorial plaque in remembrance of Denis Wood as a tribute to all his pioneering geological work in Anglesey and St. Gwenfaen's Well. We didn't have time to see the white arch but I'm sure many members will visit this area again.
One of the most delightful features that Andy showed us was a mini anticline of the 3 Rhoscolyn Formations. It meant a scramble down an area on the cliff face. He took a few members at a time explaining how care must be taken.

So another great field trip made even better by our fantastic guide and lovely weather.
I try to write the report so that any U3A members can read and understand a little of what we do without having to be a geologist. I hope they all realize just what they are missing. You main join us any time.
Isabel.

Field trip to Cefn Mawr quarry

On Friday 27th of July, 17 Geology Members were booked for a guided tour of the working quarry at Cefn Mawr, Mold.
The quarry would provide us with High Viz jackets, goggles and hard hats. We needed very sensible footwear, raincoats, drinks and a picnic. Meeting in the quarry car park at 12.30 for a prompt 1pm start.

As the weather was threatening us with rain and thunderstorms I had emailed everyone that the visit could be cancelled as stormy weather could cause H&S problems. So to check their emails on the morning of the trip to see if the visit was still to take place.

Once again the visit was cancelled. Our guide had to attend an emergency in another quarry and smoke from the Horseshoe Pass fire was making conditions in the quarry rather unpleasant.

It was a great disappointment as the weather during our proposed trip was lovely. I will arrange another trip in the future. (Third time lucky!)
Isabel

2018 Show and Tell

August's Geology Meeting. ' Show & Tell '.

As many geology group members were away on holiday or performing grandparent duties I didn't plan a field trip for August. Instead I booked Ruthin library room for 2pm on Friday 17th to have 'A Fossil, Rock & Gem Show & Tell' meeting. I thought this would be something different and members who can't manage the outdoor trips would appreciate it.
I suggested everyone took photos of their specimens to prove ownership incase needed. Tables were positioned around the room and each member had their own area.


Well it was a delight. Fossils, rocks, gems, ash from Iceland's Eyjafjallajökull 2010 eruption, minerals and an enormous specimen brought in by one of our guests Esther, who had brought it along to be classified, were all on show.

Wyn had brought along one of his microscopes so that members could see microfossils. He and Richard were happy to classify members specimens and Esther's rock was classed as quartz containing purple and pink crystals.
This meeting showed what the U3A is really all about. Sharing knowledge. Everyone talking about their specimens. Where they were found, how old, what they were etc.
We had 24 attendees, (2 were invited guests plus 1 other person hoping to become a geology group member.)

This was all followed by tea and cakes.  Once again Karen had brought in some fantastic cakes which were as good as the specimens.

Thank you to others who provided biscuits and helped with the refreshments.
Isabel

A Geology Town Walk through Llangollen

The Geology Town Walk through Llangollen was followed by a visit to Llantysilio Graveyard.

On Friday 28th September at 9.45 am 22 geology group members met in the Market St. car park, Llangollen. Fees were collected, badges & lenses handed out and the disclaimer form signed.
Our guide for the day was Raymond Roberts. We gathered around an old white granite water trough in the car park. Raymond pointed out the large feldspar crystals. Small crystals signifies that the rock cooled quickly, larger crystals show a longer cooling period. Granite comes in different colours, pink, white, grey & black and is an intrusive rock.
The next stop was the Babtist Church built of red brick with sandstone corner stones and lintels. (Probably Cefn y Fedw sandstone)
The Town Hall was built of some form of grit stone with Cefn Sandstone corner stones. Its entrance boasted pink granite pillars probably from quarries in northern England. The pink feldspar crystals appeared quite large so these had formed in slow cooling conditions. The roof was slate, probably from the Blaenau Festiniog quarry.
The Butcher's shop displayed marble steps which could be from Italy. 5 granite pillars below which were black blocks of Larvikite, a beautiful igneous rock around 292 million years old from the Larvikite Mine in Norway, near Oslo. Larvikite is found in only two places, Norway and the Thunder Bay area of Ontario.

The War Memorial was polished granite and quartz, black micas and feldspar crystals could easily be seen.
Moving on Raymond pointed out a large volcanic boulder at the base of the wall around St. Collen's Churchyard. An erratic carried down maybe from Snowdonia underneath glaciers in the last Ice Age and deposited when the ice melted.
The Old Armoury was built of 350 million year old local Carboniferous limestone, fossils of brachiopods, crinoids & perhaps the ' tail end ' of a trilobite were present in some of the building blocks.
The last building to view was the Post Office showing off its polished granite containing large white feldspar crystals.

A picnic was enjoyed near the Horseshoe Falls before we visited Llantysilio Churchyard.

Ray pointed out the large rounded boulders along the base of Llantysilio Church. These probably were brought up from the river. We examined the various headstones. Materials such as slate, granite and marble had been used. Small fossils could be seen on some of the slates.There was one grave covered by an enormous block of Aberdeen granite weighing over 2 tons.
Two headstones of good quality slate stood out amongst the others. These were the graves of our young War Hero's.

So another excellent geology field trip, great weather and a very knowledgeable guide. Many thanks to Raymond and to Mike Cryne for his Llangollen geology walk photos.
Isabel

Microfossils, Industrial application

On Friday 26th October we held our monthly geology meeting. This month was an indoor presentation given by Dr. Wyn Hughes in Ruthin library at 2pm. Fee £2. The topic was ' Microfossils & their industrial application.' A fantastic pdf of his presentation can be found on the Geology Website. Some new members would have struggled with this topic as it was their first introduction to geology so I will just point out a few main points.

Microfossils are minute fossils about the size of a full stop and come in many shapes and forms. Wyn had brought a microscope so that we could actually see them. The Microfossils he was discussing were from the Permian & Jurassic era and he was explaining how they play their part in the pursuit and driling for oil. These tiny creatures and plants swam in the seas both shallow & deep waters and some just floated. These many different types of fossils, fossil molds & plants are shown on the pdf. Very thin slices of them fixed onto slides. Some cut at different angles so that you can see the structures of the body. A couple show a minute creature with tiny hair like structures which it used to trap its prey. A secret world that not many people see.

Eventually these creatures/plants become fossils with many layers of new rocks formed over them and can be
be found deep below the ground surface. Wyn talked obout a Permian layer 400ft down sandwiched between other layers. This layer signifies that oil will be present. A deep core sample is taken and the section containing the Permian section is checked that it contains the correct Microfossils.
The oil is obtained from the depths by Coil Tube Drilling which has biosteering. The coil passes down the bore hole and is guided to the exact layer, then the biosteered coil passes right or left into the Permian layer. Water assisting the drilling flushes all the sediment and bits of rock up to the surface where it is checked for Permian fossils. Once the coil is traveling along the correct layer it must stay within the confines of that layer. The person in control of the drill receives constant information on the contents being flushed out & examined. He can then adjust the coil if it has traveled out of the Permian layer.

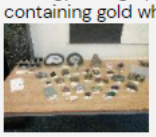
The biosteering team consists of someone constantly collecting samples and delivering them to the lab where a technician prepares a thin section of the rock sample. (done in 10 minutes.) This is then examined under the microscope. If satisfactory a message is passed to the Rigg Foreman and Directional Driller and the pathway of the coil drill can then be changed if necessary or remain the same. Biosteering is now a well established routine and Wyn and the rest of the team train in house micropalaentologists.

So who would believe that such tiny fossils could be so useful. Many thanks to Wyn for his informative presentation and please look at his pdf.

Just remember I am a trained nurse not a geologist so please excuse any blunders.
Isabel

Geology, Geography and Gems

On Friday 30th of November at 2pm in Ruthin library 21 geology group members met to enjoy a presentation given by lapidary & jewelry designer Tony Vine. ' Geology, Geography and Gems.' On display were many of his splendid polished rocks and fossils for a hands on session. There was even a lump of quartz containing gold which Tony kept a very special eye on.



He began speaking about Time Scale, how the earth was formed and described the Inner Core, Outer Core, Mantle and the Crust. (Continental & Oceanic) How the whole of the crust was broken into what is referred to as Tectonic Plates. The movement of these plates (about 2 centimetres a year) is referred to as Continental Drift. A geologist Alfred Wegener, 1912 was rediculed at this theory and it wasn't until the 60's that geologists realized that this was correct. At times the land was one great mass then broke up and this movement is still taking place. The same types of fossils and rocks can be found in different countries proving that they were once joined. Google Pangaea, plate tectonics & continental drift to get the general idea.
Tony mentioned the earth's magnetism, volcanic action, the rock cycle covering subduction, pressure & heat and how precious metals and gems were formed. Some of his fossils on show had been presented as jewelry.
Tony had not always been involved with jewelry rocks & fossils. One day he came across a box at the back of an old cupboard. This contained a Rock Tumbler. Well the rest is history.
This was followed by refreshments. Thanks to Karen, Beryl & Mike for kitchen duties and a big thanks to Tony for a great informative afternoon.
Isabel

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Limestone Landscapes & Caves

On Friday 14 December we held our Christmas geology meeting at 2pm in Ruthin's library. 21 members attended and our speaker was Dr. Frank Nicholson who gave a splendid presentation on 'Limestone Landscapes & Caves'.
The £2 fee included a Christmas raffle ticket & refreshments. Frank sent a pdf of his report which you can download from the link on this page. It began with an explanation on how limestone was formed and the special features that formed over the millions of years. Dry valleys, sinkholes, caves, underground drainage, gorges and limestone pavements formed in the last Ice Age. The pdf was full of wonderful photos showing all of these features so it doesn't really need me to add to the talk.
Everyone enjoyed the talk, the raffle was drawn, refreshments devoured and Frank thanked for his talk.
Many thanks for everyone who brought raffle prizes, cakes & biscuits and for help with kitchen duties. Lastly I would like to wish everyone A HAPPY NEW YEAR.
Isabel