



**The newsletter of Malvern U3A geology group
February 2016**

The leader

How lucky we were in January to have the opportunity to hear Professor Ian Fairchild talk on Snowball Earth. It was fascinating to hear the latest research and theories on the topic given by someone so closely involved with it. For those of you who would like to revisit the topic here are a few options:

- [Download](#) Ian's whole presentation.
- [View](#) a simpler explanation of the theory.
- [Read](#) a related Guardian article.

The next of our monthly meetings is on 10th February and will feature Robert Vernon talking about the metal mines of North Wales.

New Members

This month sees the start of the new members' introductory sessions being run by Hilary Edgeley and Geoff Carver. Hopefully all our new members are aware of the programme and the need to book onto each of the sessions. If not then please contact either Hilary or Geoff.

Rocks!

I mentioned last time our hope that we might cultivate interest within the group to study rocks and minerals in a little more depth through a subgroup. To that end we have started the rock of the month feature and have also bought a microscope for use within the group. We are currently producing a simple user's handbook and agreeing a method of controlling its use after which we will give you more information. We are having a problem finding a suitable protective case for the microscope. Could anyone donate a nice wooden box that we might convert into a carrying case? Alternatively, does anyone have the carpentry skills to build us one? If so, we would love to hear from you!

Finally on this theme, we have investigated the running of a rock and mineral course by Nick Chidlaw later in the year. He ran a very well received course in 2013. The course would consist of 2 days run consecutively in November and the maximum number of attendees would be 20. We would like to gauge if we have sufficient interest to give Nick the go ahead to put it in his diary. **So, subject to the final date being acceptable, please would those interested in attending such a course give their names to Dick Harris.**

Group Funds

The Steering Committee has reviewed our accounts and we are pleased to report that our financial situation is good. Taking into account our forecast of expected expenditure through to the end of this U3A year, we believe we have ample reserves. **We have thus decided not to charge the group subscription at the February and March meetings. So come along for just £1!**

The Outdoor Programme

The outdoor activities team has been working away in their usual purposeful way and now has a programme for the first part of 2016 and here it is:



Last year's trip to the Sgwd Gwladus waterfall in the Fforest Fawr Geopark

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| 16 – 23 April | Expedition to the Azores |
| 18th May | Darrens and the Black Hill led by Dick Bryant |
| 25th May | Building stones of Malvern led by Kate Andrews (EHT) |
| 15th June | Various locations on the Malvern Hills led by John Payne. |

This is, of course, the outline and we will send you more detailed information nearer the time. In addition, we will soon bring you confirmation of some other activities taking place later in the summer. In the meantime Richard Newton will be pleased to answer your questions.

Finally, plans are well in hand for a residential trip to Bude, Cornwall, lead by Rosemary Dartnell, who looked after us so well on our Anglesey trip last year. We are delighted that David and Gwyneth Adams have agreed again to do

the administrative organisation. **The dates are 19 – 23rd September and we need you to book onto this trip as soon as possible.** More details and the booking form are in the attachment.

And now for something different

For the last month, our Editor has opened the curtains in a morning to reveal this view:



Well clearly it isn't Malvern. The next picture, though, rather and quite deliberately gives the game away.



The first photo is of Cabo Girao, at an impressive 800m, one of the highest sea cliffs in Europe; whilst the second is Ponta de São Lourenço a dramatic peninsula on the south east of the island. Essentially basaltic, this superb scenery is the result of eruptions during the Miocene period. Intriguingly though, there are also reef limestone deposits. The volcano is extinct and so the island is now in an erosional phase, hence the sea stacks in the photo above. This erosion can be quite dramatic. Lavas are not always solid, and can be interspersed with quite friable material. Also, being deposited on a steep slope does not help stability and so in certain areas the rates of erosion can be quite dramatic and alarming. The photo on the left below shows the result of a catastrophic cliff collapse on the north coast of the island. Several

million tons of rock fell and produced a recordable earthquake. The second shows the much more solid and less easily eroded, columnar basalt.



And if you doubted the existence of carbonate rocks on the island, well here is your proof. Just to add to the picture, in the town of Camera de Lobos there is a preserved lime kiln, made from basalt of course, but none the less very

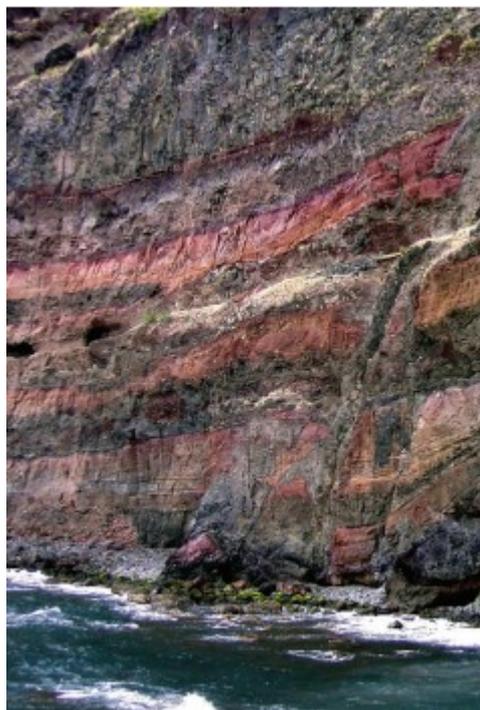
distinctive. Just by the by, this town is one where Sir Winston Churchill painted on a holiday after the war.

This final picture, of a cliff face shows various layers of basaltic rocks that

have quite distinctively different appearance, but only small chemical differences. They have weathered to form these various coloured layers.

You can also see on the right hand side of the exposure a small dyke cutting up through several beds. In various parts of the island there are some quite serious dykes and dyke swarms that are many tens and in some cases, hundreds of metres long.

Madeira is not just about geology. There is a good variety of interesting things to do and see. Strange fish to eat and very colourful local markets. For the gardener, the plant growth is very lush and the island is also home to one of the few remnants of the once widespread Laurasia forest. If, like us, you are there at New Year then there is the world's largest fire work display. Do go - there is literally something for everyone.



https://www.youtube.com/watch?v=fqa_0VUi4Ko

Rock of the month

Last month we told you about Basalt which is very common, but by way of a contrast, this month's offering, like so many minerals, is fairly rare. It is the mineral Goethite formed as a cube.



Goethite itself is common and widespread, what is rare is the particular crystal form of this specimen, which is known as a pseudomorph (taking the shape of another). It is thought to have started life as iron pyrites (iron sulphide) and at some later point was acted on by a mineralising solution that removed the sulphur and substituted oxygen. Its chemical formula is $\text{Fe}^{3+}\text{O}(\text{OH})$

This particular specimen came from Morocco, which has some remarkable geological sites.

A final warning – this is a beautifully lit and photographed specimen, and this has made it seem quite large, whereas its longest side is only 2cm.

Don't forget to contact Geoff Carver if you have an interesting rock, mineral or fossil.

Who's who?

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