The newsletter of Malvern U3A Geology Group
July 2016

The leader

First of all thanks must go to the organisers and leaders of our 2 latest outdoor trips. Earlier in the month John Payne led a trip round some of the local quarry sites that had been cleared of vegetation during the year by EHT volunteers. This has allowed a number of interesting exposures to be visible once again. Last week a group went to visit the newly refurbished Lapworth Museum at Birmingham University, a visit set up by Rosemary Dartnell. Our group was delighted to be hosted by the Director, Jon Clatworthy and report that the new museum is very impressive and state of the art; well worth a visit – you may have seen a Midland Today report on it last week. Thank you to all involved including Richard Newton and James Berry from the Outdoor team

This month saw the completion of the fossils course with an outdoor trip to Garden Cliff at Westbury on Severn and Hobbs' Quarry on the lower slopes of May Hill followed by a classroom discussion session. This was a fitting climax to another excellent course led by Paul Olver and organised by Richard Newton. We are very lucky to have developed a close working relationship with Paul and hope that he will run a rock/mineral course next year and also come and talk to the wider group. Many thanks to both Richard and Paul.

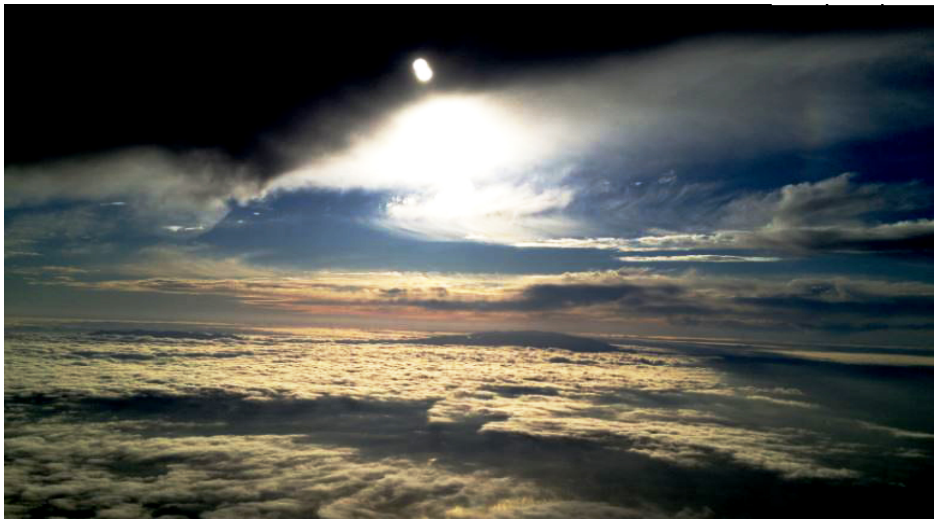
Our last trip of the summer is planned for 10th August – see calendar later. Unfortunately we find the Big Pit is currently closed and so are looking at alternatives. However, please keep the date in your diaries.

I thought that I would plug the 2016 Geofest programme run by the Abberley & Malvern Hills Geopark again this month! The programme includes activities at all levels from June until August. One event that didn't make the printed programme but might be of interest to members is a guided walk by Paul Olver in the Longhope to May Hill area which will include visits to the Huntley and the Hobbs quarries. Booking details are not yet available but we will circulate them when we know them.

La Palma revisited

Our Group's very first overseas visit was to the island of La Palma on the western edge of the Canary Islands archipelago and your editor has just spent

a relaxing couple of weeks there, oh and looking again at some of the geology too. Our outbound flight arrived towards sunset and gave great views of Volcan Teide on Tenerife and then El Heiro (on the left of the picture) and La Palma (centre) sticking up above the clouds of the inversion layer.



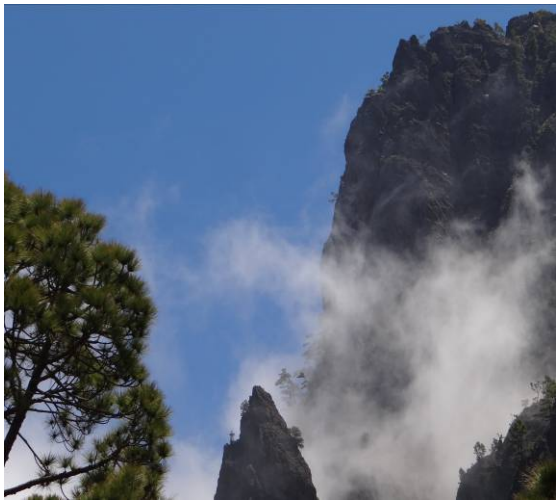
There are so many really interesting things to see on the island, so we decided to concentrate on just a few:

- the caldera of Volcan Taburiente
- the Barranco de las Angustias
- Volcan Teneguia

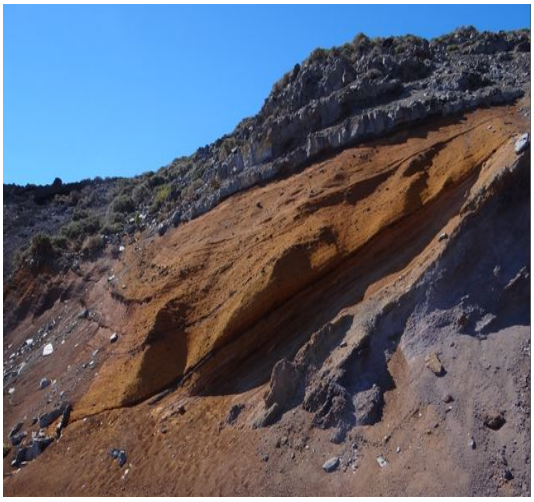
To give you an overview of a 5km wide caldera is quite difficult and so here is the most open view of the southern wall. This is how you see it on the approach from the National Park Centre. In the centre left is Volcan Bejenado and tumbling over the ridge of Cumbre Nueva and Vieja is the “cloud waterfall” driven by the brisk north-east trade wind. The rocks are essentially basaltic, with numerous dyke swarms. The island has very steep flanks composed of layers of ash and more solid basalt lavas. This side of the island underwent a dramatic flank collapse when about 200 cubic kilometres of this unstable rock slid off into the Atlantic Ocean. The resulting tsunami must have been extraordinarily dramatic and devastating. This flank collapse resulted in the topography on the western side of the island being much smoother than that to the east and north, which is deeply eroded. If you would like to read an academic article that gives more detail then please click on the following link:

http://www.atan.org/geologia/articulos/PalmaHierroCarra.pdf

Subsequently a catastrophic release of water that built up in a temporary lake excavated the Barranco (valley) that now exits the caldera in a south westerly direction. The Barranco must have been further widened and deepened at the end of the ice age when the ice and snow fields on Taburiente melted. This has revealed a fascinating sequence of rocks starting from the seamount on which the volcano is built.

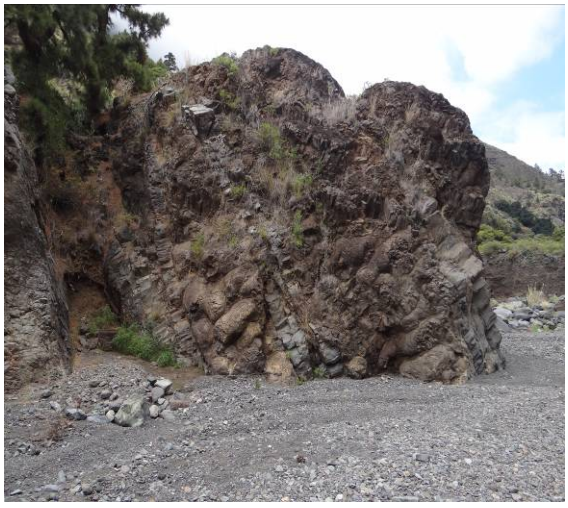


A phonolitic dome high on the crater

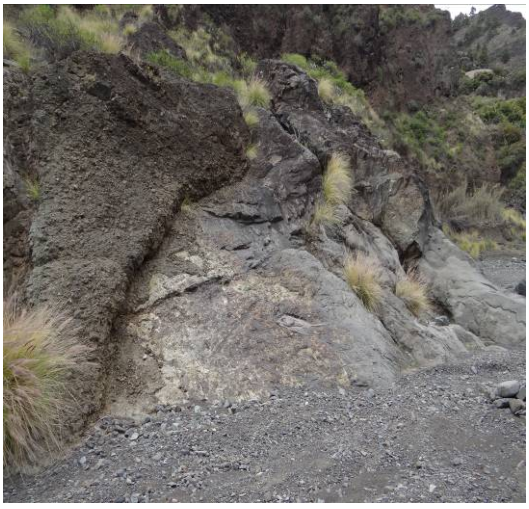


High level pyroclastic flows

Starting with gabbro rocks, the sequence builds up through the pillow lavas and dykes and eventually, over 2000m higher up into the multicoloured pyroclastic deposits at the top of the volcano.



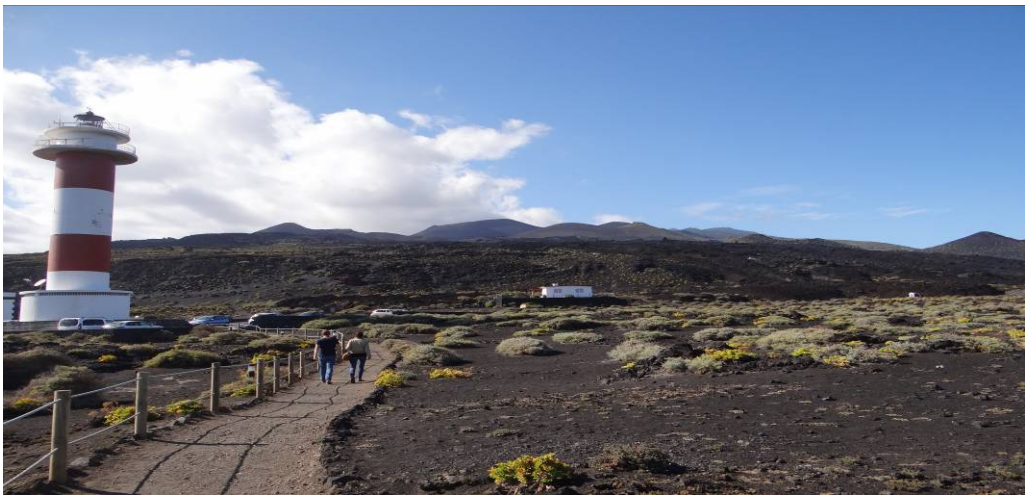
Sequence of pillow lavas and dykes



Slickenside

In the centre of the right hand image is a triangular area of rock with some pale green patches; this proved to be a slickenside - an area of material formed in a fault zone where there is sliding contact between the two sides of the fault. This may well be the fault that marked the northern extent of the gravitational collapse.

This is a really impressive canyon which illustrates clearly the immense power of water on the move. The scouring effect of sediment and boulder-filled flows clearly showing on the walls. The size of boulders too is impressive, with sizes ranging from a few tons up to perhaps several hundred tons. Even today it can be a dangerous place when in flood, as some careless tourists found to their cost. Five of them were drowned after ignoring advice not to go there.



Volcan Teneguia and the Cumbre Vieja volcanic rift

Cumbre Vieja is a volcanic rift that forms the north-south spine of the island and has over a hundred volcanic craters. The most recent of these is Volcan Teneguia, which is the first peak to the right of the light house. After preceding earthquakes, it erupted in 1971 for several days. It still has fumaroles that are venting warm gases. Like this one and others before it, volcanic eruptions have added to the surface area of the island and enterprising locals have used the newly created land for banana plantations.

It's a great destination for holidays, particularly in winter. For geologists it is packed with amazing sites; for walkers there are many routes through beautiful but challenging countryside and for relaxing, well that's the easiest of all.

And now for some adventurers nearer home

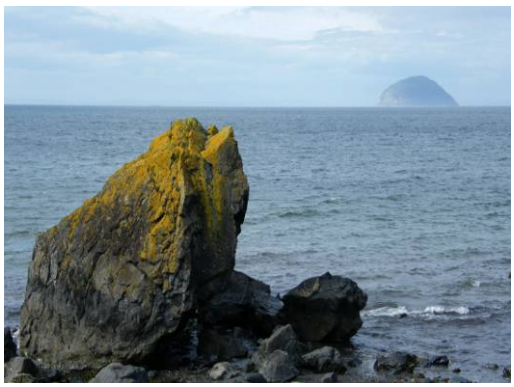
You will probably recognise the photo on the following page – it is of two of our most enthusiastic members, Colin and Rosemary Fretwell. As a retirement project they set themselves the rather daunting task of walking around our beautiful coastline. The mapping authority for the United Kingdom, the Ordnance Survey, records the coastline of the main island, Great Britain, as 11,073 miles (17,820 km). Whilst not all of this is walkable, it is still a dauntingly long distance. You can read about their adventures on Rosemary's blog: http://leftatbognor.blogspot.co.uk/

Given a free hand, Rosemary chose to write about the isle of Ailsa Craig and its geology. So here goes.....

We started in Bognor Regis in 1998. Why Bognor? Because we lived there at the time. Last June we got to Abercastle in Pembrokeshire. I have been having trouble (arthritis) with my left knee for nearly two years now, and when we struggled into Abercastle I realised that my knee would let me go no further! I had keyhole surgery just before Christmas, but that only seemed to have made it worse. Next week I see the knee surgeon again because I desperately need a knee replacement -- in fact I'm going to scream and shout until he agrees to give me one! Then there'll be the dreaded waiting list.....

But we ***will*** be back! We've ***got*** to finish it now -- we're four-fifths of the way round!

The pictures are of Ailsa Craig which I took from the Ayrshire coast when we walked along there in 2011. We could see the volcanic plug on the horizon for miles along that coast; it always seemed to be there. When we walked along the beach by Turnberry Golf Course we came across dozens of granite stones. We can only assume they had been washed across from the quarry on Ailsa Craig.



Geologically Ailsa Craig is the remains of a volcanic plug from an extinct volcano. It stands out because all younger sedimentary rocks covering south west Scotland have long since been eroded away. But the island survived erosion because it is composed of much harder igneous rocks from the Palaeogene period. The plug, which is composed of granite, is all that remains from the massive volcanic activity caused by the formation of the Atlantic Ocean. Dykes of similar age can be found in Scotland through other older rocks such as the extensive Cleveland and Eskdalemuir dykes. Though only a few metres across, these volcanic dykes can be traced all the way from northern England back to an ancient supervolcano on the Isle of Mull.

Research has shown that the granite on Ailsa Craig has an unusual crystalline composition that has a distinctive appearance but a uniform hardness. These properties have made the island's rock a favourite material for curling stones.

Rock of the month

Well here it is, and quite dramatic too. But can you identify it?

Well here are a few clues:

The picture was taken in Sicily and the rocks featured were deposited between 5.96 and 5.33 Ma during the Messinian event when the northward moving African plate closed the Strait of Gibralter. The rate of evaporation of the seawater exceeded the rate of inflow from rain and rivers and a substantial sequence of evaporites was deposited. This is a huge salt mine (NaCl) at Realmonte on the southern coast of the island. For more details:

http://www.amusingplanet.com/2015/11/the-realmonte-salt-mine-in-sicily.html

Correction

In Margaret Rodway's article about Gypsum published in the June edition, we inadvertently published the uncorrected proof, for which our apologies. The captions on two of the pictures are incorrect and there are minor textual amendments. If you would like the corrected version then please email Geoff Carver at the address given in Who's who?

Malvern summer season

Our field trip programme is now drawing to a conclusion. Two early trips were carried out in splendid weather; here we see horses paying careful attention to discussion about a terminal moraine near Abergavenny.

Richard Edwards

This occurred on a field trip organised by the Maps sub-group. For details of our forthcoming programme, please see the calendar below:

Calender

July	27	A trip to Hadley Quarry (plus beer tasting)!
August	8	Steering Committee Meeting
	10	Coach trip, location yet to be confirmed
September	5	Registration Morning

September	19	Field trip to Bude (until 23rd)
October	12	Talk: Geology of Anglesey
November	9	Talk: Ancient Subduction Zones in the UK
December	14	Talk: Historical Large Scale Volcanism and Future Risks
January	11	Talk: East African Rift Valley
February	8	Talk: Use of Stalagmites in Geology/The Anthropocene
March	8	Talk: What's Underneath a Volcano?

Who's who?

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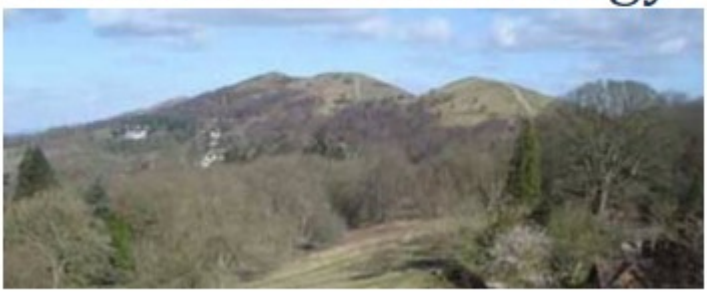
Malvern U3A Geology



http://geology.malvernu3a.org.uk/