



ALLANCHE & APCHON AUVERGNE FIELD EXPEDITION JUNE 2 2012



Rocher de Laval, Neussargues.

The purpose of this day's work was to look at what's happening/has happened on the flanks of the Cantal stratovolcano to identify the evidence of the various active and passive phases of the build-up of the structure over time; the day was spent on its northern flank.

The last day dawned as hot as before and the Group, breakfasted and eager, boarded the vans for the anticipated sights and sites. During the drive to Col d'Entremonte, the first stop, there were several landslides to observe, including one very large rotational slip, closely resembling that at Quirang, in Scotland.

The footpath at the Col led to a quarry from where the phonolites, the lauzes discussed on Day 2, came from. The quarry is now disused, possibly due to the cost of the material. The phonolites, trachyandesites, found here have the prized blue tinge, although finding the actual blue crystals, which have good cleavage,

proved challenging.

feldspathoids

In this small area, there was too much sodium and potassium in the magma mix to make plagioclase and not enough silica to make true feldspar. So the phonolites here contain feldspathoids, similar to feldspars but with less silica. There are two main types, haüyame, which has the famous local blue tinge, and analcine, which is milky white. The haüyame found at the Col is a quite rare occurrence and



phonolite

is rich in sodium and calcium. It was erupted about 7.4 Mya.

After a short stop in Murat to pick up lunch, and a stop in the sunshine by the bridge just outside Allanche to eat it, the Group headed to Neussargues, driving into a valley that contains a huge volcanic basaltic plug. The quarry on the right just after the turn into the valley, was mining diatomite, a sedimentary rock that contains diatoms, tiny animals found in the plankton, indicative of marine conditions. These are earlier deposits, predating the basalts found nearby and which showed very clear columnar jointing in the cliffs of the valley sides.

red palaeosol

The roadside exposure in this location, between St Anastasie and Allanche, showed both horizontal and vertical cooling joints in early basalts, deposited some 12 Mya, part of the infra-Cantal basalts. The lower stratum is iron-rich and rotten, overlain by a breccia band.



These iron-rich sands are visible along the road, so the feature stretches for some distance. Between the red sands and the whiter material where the lava has become quite rubbly, is a chilled margin about 50-75 cm thick. Above the igneous material, there is a palaeosol, a bole, as was seen at Lemptégy. Finally, at the top of the section, the igneous material has weathered into a deep soil horizon 1–1.5 m thick, in a manner typical of weathering in warm, humid conditions. In approximately the middle of the length of the section is an intrusion,





Martin at work.

possibly a dyke, showing cooling fractures and disrupting the iron-rich band but overlain by, and therefore younger than, the upper strata. The basalts are the remains of a lava flow and the differential fracturing, appearing in some places as banding, indicates cooling at different rates within the flow - there was more fracturing at the base and the top of the basalts. The whole section is between 8-10 m high and has been disrupted by road working.

The next stop was at Pont de Gazelle to look at a pale-coloured roadside exposure which contained a large number of unsorted, angular rocks in a matrix-supported outcrop. After some discussion, it was decided that this was the remains of two pyroclastic flows, the first protruding as a lobe from beneath the second,

both having moved rapidly down from Puy Mary, some 10-12 kms to the south, infilling existing depressions as they descended. The flows contained ignimbrites and were, again, some 7.4 Ma. The area has since been eroded by glaciation and, on the drive to Apchon, our last stop of the trip, the Group passed over and through many glacial features, including drumlins, till deposits and, possibly, an esker.

A footpath took the Group to the ruins of a castle on the top of a volcanic plug at Apchon. This feature is the remains of a dome and the cooling structures showed very clearly as basalt columns both vertical and, dramatically, horizontal, where the doming had "bent" the columns to the shape of the dome as they cooled. Beautiful views over the valley were obtained before the party descended for the onward journey to Salers.

The day's exposures had shown the Group how different phases and types of eruption, over several million years, with climate and erosion imposing themselves between and after these events, leave traces in the landscape. Whether these be rocks and minerals, rock and other physical structures or fossils, this day and the whole trip helped the Group to understand how to read a volcanic landscape and the events that shape it.

filed by
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