

Southern Malvern Hills

July 12, 2019

Leader Prof. Richard (Dick) Bryant



View from Malvern Complex ridge

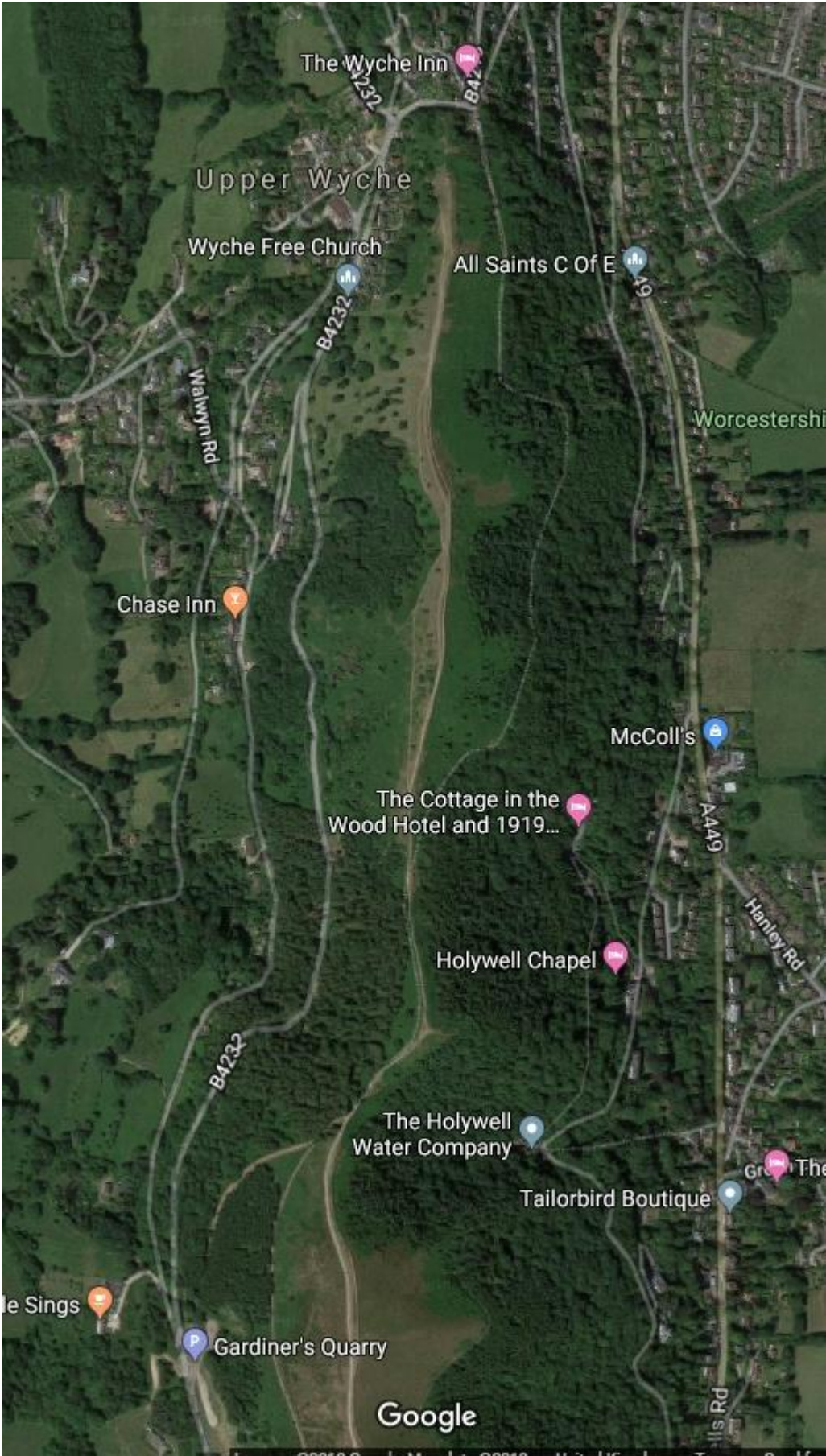
Compiled by. Ray Pratt

* This walk can be followed using the Explorer app from Earth Heritage.

Start at Café H2O in the village of Upper Colwall, which is just west of where the B4218 cuts through the crest of the ridge of the Malvern Hills. The full address for the café is; **Café H2O, Wyche Innovation Centre, Walwyn Road, Upper Colwall, Malvern, WR13 6PL.**

Grid reference for Café H2O is SO 7679 4358



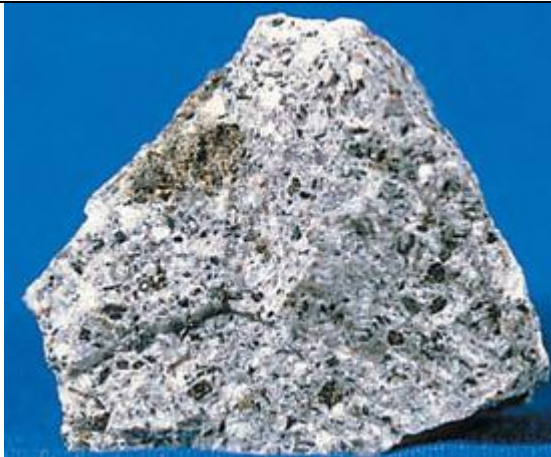


Leave the car park and walk left up along the road to the point opposite the bus shelter.

The spine of the Malvern hills is a complex of igneous and metamorphic rocks. Known as the Malvern complex. Lots of lithological variability. Main composition is granite and diorite. In general there are more granitic rocks to the north and diorite to the south. On the flanks to the west are Silurian shales and carbonates dipping and younging to the west. The dips at the edge of the ridge are circa 60 degrees, decreasing westwards. On the East is a vale of Triassic rocks, with the Jurassic rocks of the Cotswolds forming the scarps in the distance. This is a rift with the fault parallel on the side of the Malvern ridge. The other fault has been overlain by Jurassic rocks.

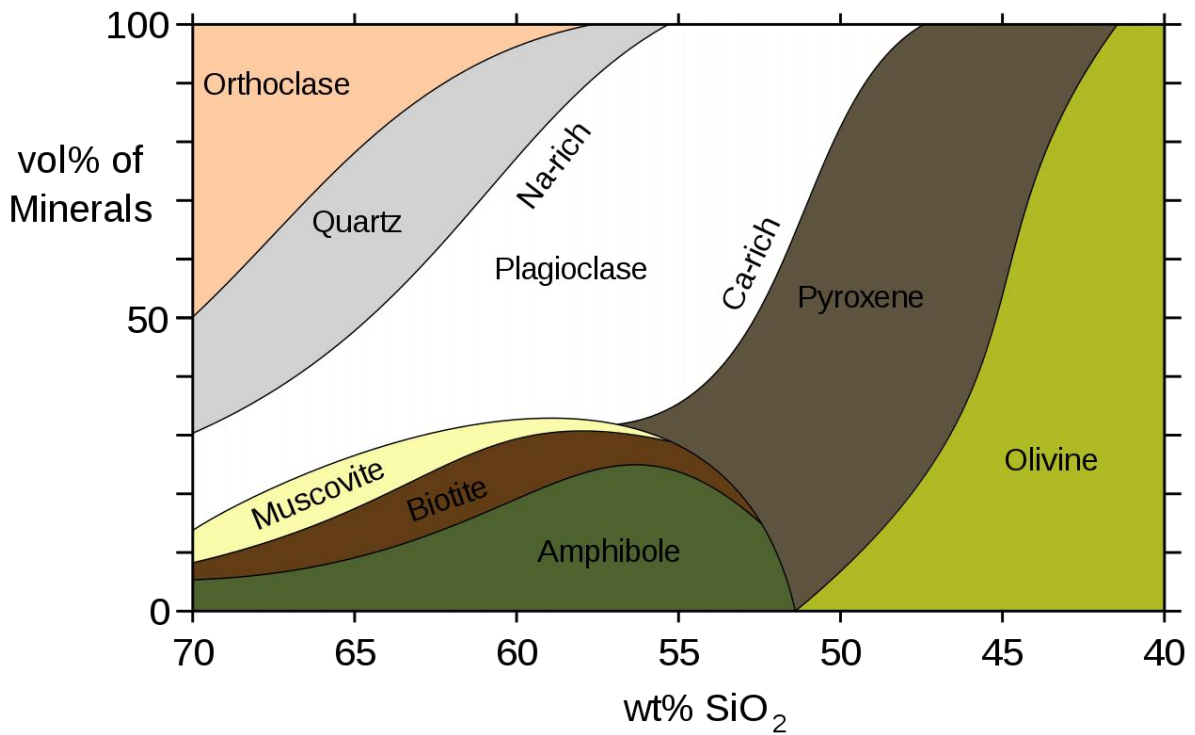


From Wikipedia: **Diorite** is an intrusive igneous **rock** composed principally of the silicate minerals plagioclase feldspar (typically andesine), biotite, hornblende, and/or pyroxene. The chemical composition of **diorite** is intermediate, between that of mafic gabbro and felsic granite. It is produced in volcanic arcs, and in mountain building where it can occur in large volumes as batholiths in the roots of mountains (e.g. Scotland, Norway). Because it is commonly speckled black and white, it is often referred to as "salt and pepper" rock. Diorite is the plutonic equivalent of andesite.



Syenite is a coarse-grained intrusive igneous rock with a general composition similar to that of granite, but deficient in quartz, which, if present at all, occurs in relatively small concentrations (<5%). Some syenites contain larger proportions of mafic components and smaller amounts of felsic material than most granites; those are classed as being of intermediate composition. The volcanic equivalent of syenite is trachyte.

Volcanic: Rhyolite Dacite Andesite Basalt Komatiite
 Plutonic: Granite Granodiorite Diorite Gabbro Peridotite



The oldest rocks of the Malvern complex are 670mm years, with reinvigorations up to the Cambrian at 542mm years. The Warren House lavas are circa 550 mm years. These intrusions were formed in an island arc 60degrees south of the equator. The basement rocks to which these ingressive's penetrated are not seen.

Most of the major faulting is believed to be Variscan

Walk across the road behind the bus stop into an old disused quarry



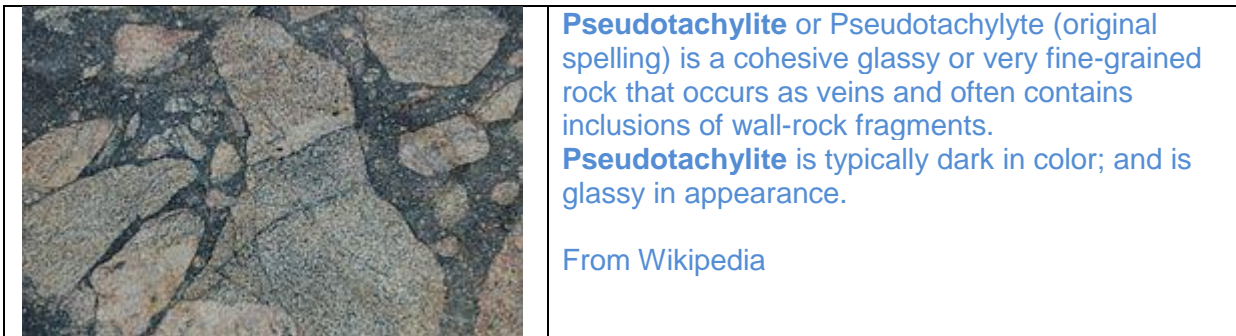
Pink Granite vein cutting through Diorite. Haematite superficial staining. All has been metamorphosed - low grade. The diorite is impossible to identify. Its traditional speckled nature is not visible. The outer weathered surface does not aid identification. The granite veins are in blobs with thin conduits linking the blobs. Alteration by stress is evident.



The complex suggests several phases of intrusion. The compression occurred later "Cheltenham Drive"

Come out of the quarry and follow the footpath to the left into the Wytch cutting. On the right is Diorite, on the left is mostly granite. Look for permeation / multiple cleavage lines - can

be seen where the rock is fractured in the diorite. This is supposed to be a site to see pseudotachylite, a black glassy igneous rock.



After this retrace path back to the steps leading up onto the ridge. On the bank to the left we see rocks exposed.



Diorite bedrock showing fine vertical cleavage, schistose texture, after metamorphism.



Schistosity within the dirites





Looking north along the ridge. Silurian limestone's to the west of the ridge picked out by the trees. The grassy areas in-between are shales.



Looking to the east the boundary between the Malvern Complex and the lower lying rocks of the Triassic is fault controlled. The shape is arcuate and is known as a debris controlled slope. The coarser material is closer to the ridge with the finer material furthest from the ridge. The slope merges into one of the River Severn terraces. This solifluction material was transported after the glaciers had retreated from the valleys below. The Anglian glaciation is believed to

be the last ice seen in this area. On the west side of the ridge evidence for this is seen in the imbrications of the pebbles



British Camp, an iron age fort. A fault (Colewell fault ?) runs to the left of the hill fort. The Malvern ridge is the pinnacle to the left of the fort extending southwards.

Follow the ridge down wards until a gate can be seen in the fence to the right. Follow the footpath down to the bottom of the hill and turn right. This leads to Gardiners Quarry.

In the quarry we see the Colewell Fault shear zone (picked out by the pinks staining). Fractured zone within the diorite rocks. The faults are running SE NW through the car park.

Return to the cafe car park then drive to the next location

Evendine Ln, Colwall, Malvern WR13 6DT

Drive along Evendine lane towards Evendine. Stop at the point where there is a road to the left. Backtrack about 20 yards and look for exposures through the trees. These are Silurian nodular Limestone's (Amestry Limestone). muddy limestone's. Same as seen at Saltwells and Wrens nest. Here we see the nodular limestone's dipping at around 45 degrees to the west. Clearly, tectonic deformation was post Silurian limestone deposition. Silurian limestone's consist of;

1. Amestry Limestone
2. Wenlock Limestone
3. Woolhope Limestone





