Coffinswell Parish Geology

For such a small area, the Parish of Coffinswell has a great variety of rocks, of four widely differing ages. The properties of these rocks have a profound influence on soil types and the locations of springs.

1. The oldest rocks are the grey fossil-rich limestones exposed in quarries in the Orestone Plantation at the southern edge of the parish (see picture 1 in separate document).

Picture 1

These are Barton Limestones, part of the Torquay Limestone formation (also seen on the coast near Torquay), formed in the **Devonian Period*** in a clear shallow tropical sea about 385 million years (Ma) ago**. The fossils provide a record of the marine animals living at that time. These limestones were folded, faulted and elevated in the major "Variscan" mountain-building event around 300 Ma ago caused by a collision between Africa and Europe, after which the mountains thus formed started to be eroded. The limestones in the parish may be regarded as the tip of a former mountain ridge, now being exhumed as the softer rocks on top are eroded faster.

2. By about 260 Ma ago in the later part of the **Permian Period**, the remaining mountains started to become buried beneath material eroding from nearby higher ground. In a hot subtropical climate, outwash deposits of gravel, sand and clay were washed into valleys by seasonal rains, and tropical weathering produced a characteristic deep red colouring (just as today in the Australian outback). Most of the Parish is underlain by these rocks, which give rise to its red, rather acid soils.
These Permian rocks can be divided into two distinct formations. The lower (and older) Watcombe Formation covers the floor and southern slopes of the Aller Brook valley, and consists largely of impermeable clays and some fine sands. The red soils are generally heavy and clayey and sufficiently acid to grow lime-hating plants. The overlying Oddicombe Breccia Formation, which forms most of the parish including Coffinswell itself, is a series of permeable coarse flood deposits in which red, pebbly and coarse sandstones dominate (see picture 2 in separate document, taken opposite the aptly named Rock Cottage).

Picture 2

Many examples of this pebbly rock can be seen in locally-built walls: many of the pebbles are limestone derived from the Torquay Limestone, which formed the mountains being eroded at the time. At the contact between the Oddicombe Breccia Formation and the underlying Watcombe Formation, there is a line of springs, notably in the centre of Daccombe.

3. In the west of the Parish is preserved a capping of much younger rocks, originally deposited on an eroded surface of Permian rocks. Most prominent are the orange sands and gravels of the Upper Greensand, deposited about 100

Ma ago at the edge of a shallow sea in the **Cretaceous Period**. These are being extracted at the Zigzag Quarry, just west of the Parish.

4. Even younger is a skim of Bovey Beds, formed in the **Oligocene Period** of the **Tertiary Era** along the westernmost edge of the Parish, in the Aller Brook valley where it flows north towards Newton Abbot. These soft clays and sands, which extend to Bovey Tracey, accumulated in a lake about 30 Ma ago.

*Geological time is divided into Periods, each named and of specific duration. The Devonian Period is named after Devon.

**Final thought. If you wondered how we know the ages of these rock formations, geochronology is the science of finding out their actual age. The absolute dates are ultimately based on rates of isotope decay - but there is also a lot of correlation using fossil communities.

See Map and Section in separate document.