Llanymynech – Limestone and Fossils Unit 11

This is a half-day study of the rocks and fossils at Llanymynech. This unit could be taken in conjunction with unit 5 (Rocks and Soils) or unit 12 (Limestone industry at Llanymynech)

Summary of the Day

Introduction
Fieldwork
Classwork

SAFETY

ENSURE THAT THE CHILDREN:

- **TAKE CARE WHEN BREAKING ROCK, IF THIS IS NECESSARY, PLACE SAMPLES IN A STRONG SEALED BAG SUCH AS AN OLD HANDBAG BEFORE HAMMERING**
- **WEAR GOGGLES**
- **WASH THEIR HANDS AFTER HANDLING SOLI AND ROCKS**
- **ARE AWARE THAT THEY MUST NOT CLIMB ON THE CLIFF OR ENTER THE TUNNEL**

These activities cover geography and science

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Habitats and Wildlife

Introduction

From this study the children will develop their knowledge of:

- The main physical features of carboniferous limestone
- How limestone was laid down and fossils formed
- The plant life that lives in this type of habitat

Overview (also see introduction to Unit 5, Soils and Rocks)

The carboniferous limestone crop that runs down through north-east Wales terminates here at Llanymynech Hill in steep crags that are part natural and part quarry face.

To wildlife it is all much the same – an uncultivated area of thin soil or bare rock – waiting to be colonized as soon as human quarrying activity ceased, as it did in the 1920s.

The old quarries on the south-east side of the hill became a nature reserve in 1972.

Habitats and wildlife

There are three distinct habitats on the reserve:

Woodland Dominated by ash, harts tongue fern, hawthorn, rose briars and wild clematis (old man' s beard).
Grassland Thin soil supports a variety of lime-loving species, such as bee orchid (June/July) lady's tresses (August/September) and a wide range of common wild flowers. Common Blue Butterflies are found.

More noticeable here than on some other limestone sites is yellow-wort. This flowers in July/August but is unmistakable from an early stage with its pale waxy green leaves clasped around the stem, which grows up through them. Yellow-wort is particularly abundant in the upper part of the quarry workings

Longer Grass Nesting birds include the stock dove, jackdaw and kestrel. In winter the peregrine can be seen.
Nearby is Offa's Dyke footpath and the Montgomery Canal.

Geology – Sedimentary Rocks

The **carboniferous limestones** were laid down during the **Palaeozoic Period** (meaning ancient life). The carboniferous (carbon-bearing) period began 350 million years ago and took 80 million years to be completed.

Limestones are widely used as building stones, because they are soft and easily carved.

When rocks are weathered and eroded they break down into smaller pieces of rocks and minerals. This material, which is called sediment, may be eventually transported to a new site, often in the sea or in river beds. The sediments are deposited in layers, which become buried and compacted. In time the particles are cemented together to form new rocks, known as sedimentary rocks.

Many sedimentary rocks also consist of the remains of once living organisms. Limestone is a vast cemetery in which teeming life of the sea has been entombed. The shells of these creatures are made of calcium carbonate, which accumulated on the sea bed and were compacted into the sediments, to become rock.

Limestones were dissolved by rainwater, because they are made of calcium carbonate (calcite or lime). This produces deep cracks in the rock called grikes. In time the water percolating down such cracks enlarges them into passages. Although the surface remains dry, flowing water dissolves the rock.

Fossils

A fossil is a rock containing the preserved remains of once-living animals or plants. Fossils are formed when the animals or plant is buried in sediment. Usually the soft parts rot away but the hardest parts remain. This is why most fossils consist of bones or shells of animals, or the leaves or woody parts of plants.

During the carboniferous period several groups of amphibians emerged from the warm sea, these became the early reptiles. Fern-like plans began to colonise the dry land, which then became huge forests.

The fossils that you will find there are:

- Coral (Lithostotianb basaltiform and zaphrentis cornucopia)
- Shells (Brachiopods) (Triobites) (Garptolites)
- Ferns and leaves
- Snails, centipedes, millipedes, cockroaches, dragonflies

Organisation

After the initial talk explaining how carboniferous limestone and fossils were formed, split the children into small groups:

SAFETY

ENSURE THAT THE CHILDREN ARE AWARE OF THE DANGERS OF

- **Climbing on the cliff and rocks**
- **The old tunnel**

Resources Reference books on plant life
Reference books on rocks and fossils
Magnifiers
Geological hammers
Goggles
Collecting bags
Clipboards, paper and pencils
Old handbags
Quadrants

Time Time has been allowed for the journey to and from Llanymynech Hill. Three hours including follow-up investigative studies.

Method

1. Gather the children around you and explain how the area was formed.

2. Walking in pairs or small groups, the children are to collect samples of rocks, from a small area designated to each group or pair

Children are to number each bag and to note where they collected that sample from and to identify their samples

3. Children to sketch the cliff near their site

4. Children to draw a plan of their site and to mark where they found the samples

Children to place a quadrant in 3 places and to collect a small sample of the plant life.

5. Return to the Centre; the pairs/groups collate their information about their site. At the end of an agreed period, each group present their findings to the other groups.

National Curriculum References

Geography	1b, d
	2a, b, c
	3a, b, c
	5a
	8c
	9c
Science	AT2 3c
	4a
	5a, b
	AT3 1a, d