A Geology Trail at the County Museum

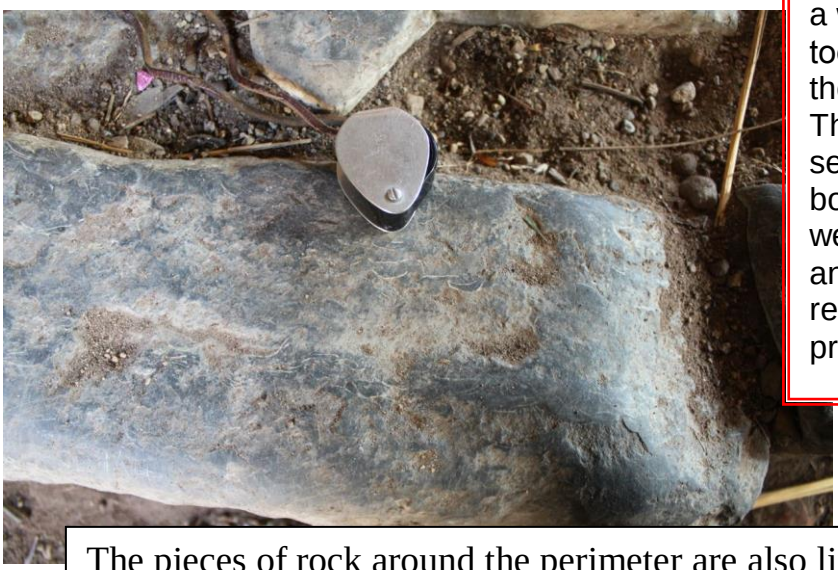
Within the confines of the Museum there are many rocks for you to see. They are of different geological ages. The Geological Time Scale text box will help you to understand ancient time as you look at the different rocks.

GEOLOGICAL TIME SCALE (start of periods in millions of years ago)
Quaternary 1.6
Neogene 23
Paleogene 65
Cretaceous 142
Jurassic 205
Triassic 248
Permian 290
Carboniferous 354
Devonian 417
Silurian 443
Ordovician 495
Cambrian 545
Precambrian 4600

The trail starts outside the entrance. Here you will see an area of large pebbles. These are predominantly brown coloured sedimentary rocks known as quartzite. Pebbles of this type are common in the Severn valley. They were deposited by the river at the end of the Ice Age some 10,000 years ago.

SEDIMENTARY ROCKS
Sedimentary rocks are made up of particles deposited in layers. They usually form beneath the sea, in lakes and rivers or in deserts. The particles may become cemented together by specks of mud or new minerals such as iron or calcium carbonate. Over millions of years the sediments become rock.

Walk back through the shop to the Cider Mill. There are quite a few different rock types here. They are all sedimentary rocks. The wheel and the trough are made of limestone.



LIMESTONE was formed in a warm shallow sea such as today's great barrier reef off the east coast of Australia. The shell fragments of dead sea creatures fell to the bottom of the sea and these were eventually compacted and cemented into rock. The remains of sea creatures are preserved as fossils.

The pieces of rock around the perimeter are also limestone. Look carefully at these on the floor. There are two types of limestone and both are Jurassic in age. The yellowish pieces are Cotswold Stone and the bluish grey rock is known as Blue Lias. Can you see the fossil shells in the Blue Lias rock? They are similar to sea mussels and belong to a group known as bivalves.

Walk through the gardens to the courtyard where you will see the old forge building. This is composed of a red sandstone of Triassic age. It was quarried locally in Hartlebury. You will be able to see the tool marks on the rock faces which were made when the stone was being cut and shaped. Take a close look at the sandstone and you might be able to see the tiny grains of the mineral quartz that makes up the rock.

SANDSTONE
As the land is eroded small particles of rock are carried away by wind and water to be deposited on river beds, in deserts or on the sea floor. Sand sized particles may accumulate to a thickness of many metres. Over time the sediment is buried, compressed and cemented into a hard rock called sandstone.

Now move towards the glass entrance doors of the Museum. The floor both outside and inside, is made up of slabs of Jurassic limestone with lots of fossil shells.

Make your way to the first gallery on your left – Worcestershire's Source. Here you will see rocks from around the county. Note the large piece of Malvern granite. This is an igneous rock and is Precambrian in age; some 700 million years old. It was formed deep in the Earth's crust and over millions of years all the rocks above it have been eroded away so that extensive volumes of this rock now form the Malvern Hills.

IGNEOUS ROCKS are formed when molten material (magma) rises from deep within the Earth. As it cools it solidifies to form igneous rock. When magma is forced into spaces in existing rocks it is known as an intrusive igneous rock. Examples are granite and dolerite. When the magma reaches the surface and forms a volcano it is known as an extrusive igneous rock. The lava basalt is an example.

Walk up the steps into the next gallery, Here you will see an interesting sculpture made from another igneous rock.

This rock is called gabbro. Note the black and white crystals on its polished surface but also note how the rock weathers to a brown flaky surface.

Take a close look at the pebbles. Many different rocks are present. Note the white ones. These are composed of the mineral quartz.

QUARTZ or Silica is a mineral with the composition silicon dioxide. It occurs commonly in many different forms. It is an original constituent crystal in many igneous rocks. It forms the bulk of the grains in sandstones. It is also a prominent constituent of veins that cut through older rocks. It can be found as clear and coloured crystals such as rock crystal, amethyst and rose quartz. Silica occurs also as flint, agate and jasper.

Finally if the Great Hall is open take a look at the floor ‘tiles’ and the fireplace surround. All are made from limestone of Jurassic age and supplied from quarries in the Cotswolds.

We hope you have enjoyed this trail. To find out more about geology in the Abberley and Malvern Hills Geopark go to www.geopark.org.uk