Rock around campus

2 Ashton Street [Campus map location D8 & D9]

This fully accessible trail is one of a planned series of walks around the University of Liverpool. The aim is to introduce the rocks and man-made materials used in the buildings and paving around the campus.

To help you, in this leaflet you will also find:

- a map showing the names of buildings in Ashton Street;
- a glossary of terms;
- a geological timechart.

This is a self-led guide and you need to get close to the buildings so that you can see the fine details. Allow an hour to complete the trail.

There are three types of rock: **igneous** (crystallized from molten rock); **sedimentary** (derived from the breakdown of other rocks) and **metamorphic (**rocks changed by heat and/or pressure). Man-made materials are also derived from Earth materials. Examples include **bricks** (baked clays); **concrete** (a mixture of sand, gravel and limestone); **glass** (a mixture of sand and limestone); **mortar** (a mixture of sand and limestone); **metals** (lead used in flashings, copper used in wires and lightening conductors, iron used in drain pipes and railings) and **alloys** (mixtures of metals for example bronze used in statues).

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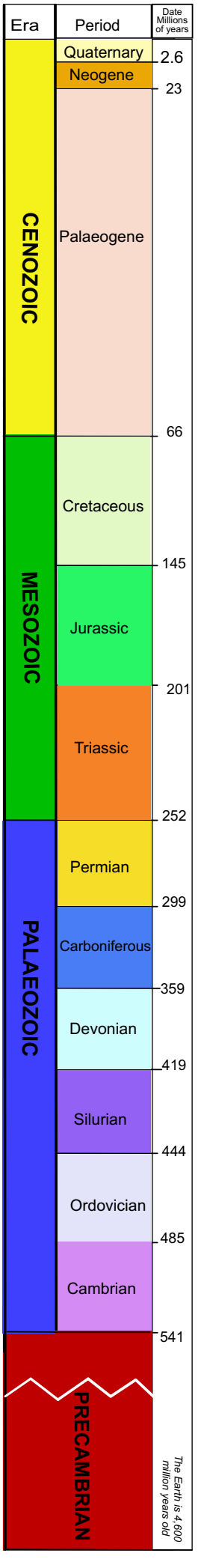
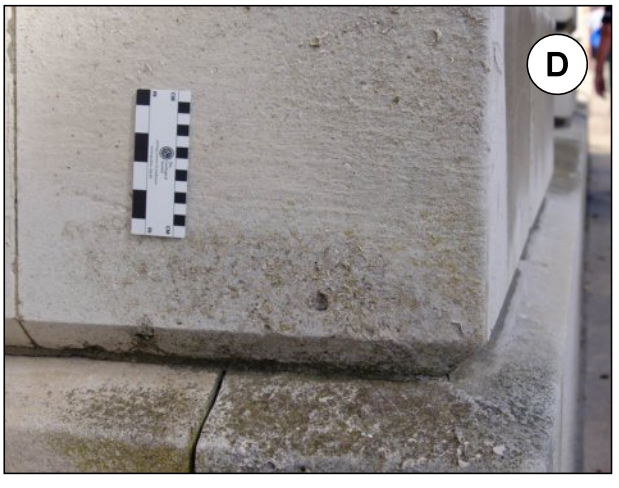


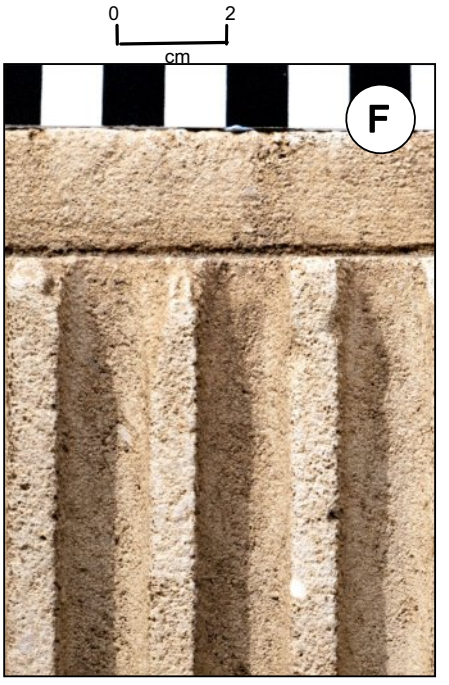
Map showing the names of the buildings in Ashton Street

Start at the archway (photo A) from the Quadrangle [Rock around Campus 1] and progress towards the *Harold Cohen Library* (photo B).

After passing through the archway, look to your right at the walls and window sills on the *Ashton Building* (photo C). The rock is Portland Limestone which is a sedimentary rock of Jurassic age and is full of fragments of sea shells such as oysters. Rain water is a weak acid which attacks the alkaline limestone and gradually eats it away (photo D). The shells are less susceptible to the acid attack and stand proud of the surface (photo E). In places the limestone shows bands or layers where there are larger amounts of shell fragments. These layers are a sedimentary structure called bedding.



Look carefully at the grains comprising the limestone on the window sills. As well as the shell fragments you may be able to see highly spherical grains about 1mm across (photo F). These are ooliths and are formed when calcium carbonate is deposited around a central nucleus while being washed around in shallow water.

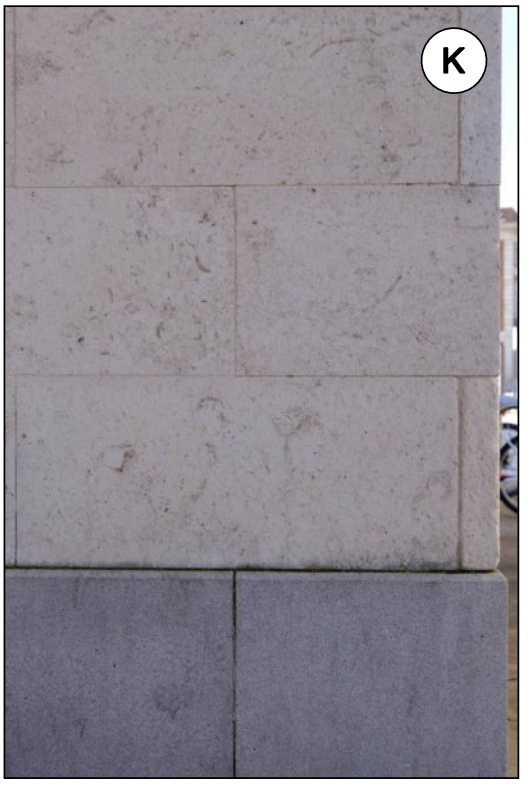


To the left of the *Ashton Building* is the *Victoria Building*.
This building is made of different types of brick. Most of the building is made from rough standard brown brick with smooth terracotta bricks of different sizes around windows and doorways (photo G).

Opposite the V*ictoria Building* in Ashton Street is the *Electrical Engineering and Electronics Building* (photo H). Notice the white glazed tiles used for the cladding on the building and the stainless steel used for the railings and handrails at the entrance to the building. Stainless steel is an alloy of iron with a minimum of 10.5% chromium. It also contains carbon, silicon and manganese.

Now look at the paving stones. They are made from different types of igneous rocks formed when molten rock crystallizes at depth in the Earth's crust. At first glance, the obvious difference is in the overall colour which will be determined by the mineral constituents of the rock (photo I).

Cross the pavement to the *Harold Cohen Library* (photo J). This is another building that is mostly faced with Portland Limestone, so look for fossil shells such as oysters. To the right of the library entrance note that granite (an igneous rock) is used as a facing stone on the lower parts of the building and Portland Limestone facing is used on the higher parts (photo K).



Look at the shell fossils in the Portland Limestone (photo L). You will notice that some fossils are fragments; others are whole shells.

Around the entrance is a different type of limestone known as travertine (photo M). This is a banded limestone deposited in hot springs.

Cross the pavement away from the *Harold Cohen Library.* Notice the cast iron metal pavement grills (photo N) close to the *George Holt Building*.

Continue along Ashton Street, away from the *Victoria Building* until you reach Dover Street. [Progress to Rock around Campus 3 Dover Street]

Glossary of terms

Bedding: term that describes the layering that occurs in sedimentary rocks.

Bosses: knobs or protrusions of stone.

Cast iron: a hard, relatively brittle alloy of iron and carbon which can be readily cast in a mould. It has a higher carbon content than steel.

Feldspars: rock forming minerals that are common in igneous rocks; includes plagioclase and orthoclase.

Fossil: any preserved remains, impression, or trace of any once-living thing from a past geological age. Examples include bones, shells, exoskeletons, leaf impressions, tracks and trails.

Granite: light coloured, crystalline igneous rock with large crystals of quartz, plagioclase, orthoclase and mica.

Limestone: a sedimentary rock composed primarily of calcium carbonate ($CaCO_3$) in the form of the mineral calcite.

Mica: a shiny silicate mineral with a layered structure.

Mineral: a natural solid material of fixed chemical composition with an orderly internal atomic structure.

Orthoclase: a type of feldspar mineral rich in potassium.

Paving slabs (or stones): naturally-occurring igneous, sedimentary, or metamorphic rocks which can be cut, shaped, or split into blocks or slabs for use as paving materials.

Permeable: allowing liquids or gases to pass through it**.**

Plagioclase: type of feldspar mineral.

Quartz: a mineral composed of silicon and oxygen atoms.

Slate: a metamorphic rock formed from mudstone and which has small crystals and splits (or cleaves) into thin sheets.

Terracotta: moulded baked clay. The clay is refined before firing so has a smooth surface after firing and can be used to provide decorative and ornamental shapes.

Stonemason: a person who cuts, prepares, and builds with stone.

Weathering: is the breakdown of rocks at the Earth's surface, by the action of rainwater, extremes of temperature, and biological activity. It does not involve the removal of rock material.