ROYAL LEAMINGTON SPA

its geology and building stones

An Introductory History

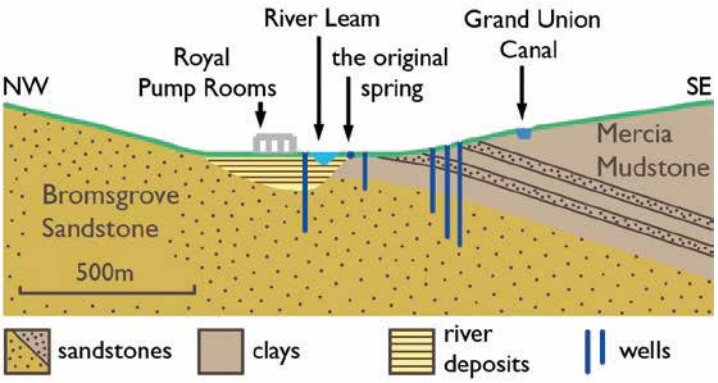
Royal Leamington Spa exists because of the natural rock beds upon which it is built. Although the village of Lamintone was already nestling on the south bank of the River Leam when the Domesday Book was compiled, it was small and unremarkable. A salt-water spring was recorded as early as 1480. The waters were known to be good for making bread and preserving meat; they were even believed to be able to cure rabies! The fortunes of the town were transformed when "taking the waters" became fashionable towards the end of the eighteenth century. Leamington grew from some 50 cottages in 1783 to having 12,812 inhabitants in 1841. This rapid growth meant that the new town was built in an elegant Georgian style, much of which survives today.

However, this elegance is not necessarily quite what it seems. The pleasing frontages often cover a mild deception: the work of Georgian architectural spin-doctors. People have long sought desirable stone to construct important buildings, from Stonehenge to the great mediaeval Cathedral Churches; but before modern transport, importing stone was not an easy prospect.

The local sandstone quickly deteriorates. Competing as they were with the refinement of Regency Bath and its limestone crescents, the local entrepreneurs constructed many of the buildings out of brick covered with stucco (plaster or cement), coloured to resemble limestone.

Nevertheless, much stone has been used in the more important buildings and memorials and on modern shop fronts. Since Georgian times two major things have changed. From the Victorian era through to the present day, developments in modern transport meant that building stone could be brought economically from increasingly distant places. Moreover, today, brick or stone walls no longer form the load-bearing structures of larger buildings. Instead, structural steel frames are given a façade of stone panels, no more than a centimetre or two thick. As a result, an array of interesting and beautiful stones from Britain, Europe and beyond can be seen in a short stroll down the main shopping street, The Parade, and into the Old Town, in buildings spanning the last several hundred years.

The rocks beneath your feet



This simple cross-section of the ground below the town shows that Leamington's spa water comes from a rock bed called the Bromsgrove Sandstone. This rock is permeable – water can seep through it, unlike the younger, clay-rich Mercia Mudstone, which lies above it south of the river.

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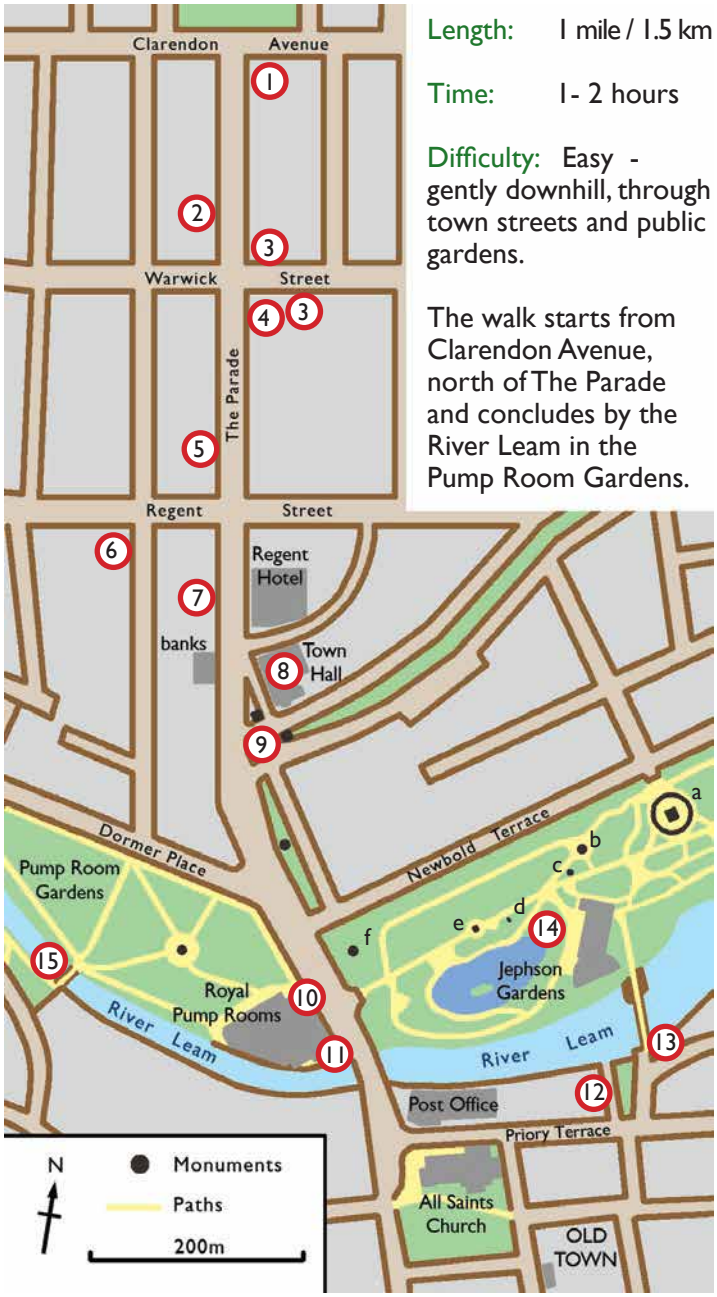
The Trail

This leaflet will guide you on a walk through the centre of Leamington to see the fascinating array of stones that have been used in buildings historic and modern. *Before you start, you should read about how rocks are formed, on the back cover.*



Length: 1 mile / 1.5 km

Time: 1- 2 hours

Difficulty: Easy - gently downhill, through town streets and public gardens.

The walk starts from Clarendon Avenue, north of The Parade and concludes by the River Leam in the Pump Room Gardens.

(1) George House - *pencil-veined marble and stucco*

This is one of the elegant Georgian terraces, built of local brick and stuccoed to resemble those then fashionable in Bath. The steps are made of a pale grey rock with fine, darker grey veins shot through it. This is "pencil-veined marble" from Sicily. Marble is metamorphosed limestone – a sedimentary rock that has been altered by extreme heat and pressure.

Pencil-veined marble

(2) McDonalds - *travertine*

Below the windows, a polished, cream-coloured stone has been used. This is travertine, a rock that forms when calcium carbonate, dissolved from limestone, is re-deposited as a crust around freshwater springs and streams. It is full of holes, which in this case have been filled with yellow, man-made cement. Most travertine comes from Italy.

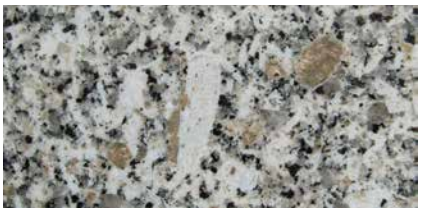
travertine

(3) Blacks, Boots and Jade – *granites and gabbro*

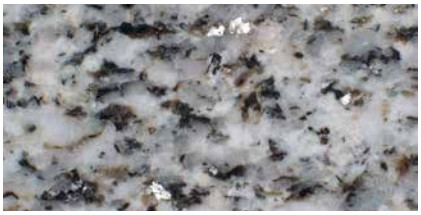
This is your introduction to igneous rocks! These are named depending on the proportion of light and dark coloured minerals they contain and the size of the crystals. The most common pale minerals are quartz (pale-grey to transparent), pink and white feldspars, and mica (silver flakes). There are several common dark minerals which look similar to one another. Granites contain large crystals of predominantly pale minerals. Gabbros are igneous rocks with large crystals, many of which are dark.

Polished igneous rocks are often used for shop fronts, to look attractive and draw customers.

A European granite with very large, pink and white feldspar crystals has been used at Blacks.



At Boots in Warwick Street, see if you can spot the sparkling flakes of silvery mica. This granite is probably from Cornwall.



The stone used for the façade at Jade shows interesting swirls of a dark mineral and large pink feldspars.

A much darker stone has been used for the door surround at Jade. This is a gabbro known as Bon Accord from South Africa.

4 HSBC – *fossiliferous and carved limestone*

While shops like a bit of glitz, banks preferred to look solid and dependable! To convey their respectability and importance, unpolished sedimentary stones are often used for banks and public buildings. At HSBC, possibly one of the best-known building stones in the country has been used: clean, white Portland limestone, from Dorset.

Some limestones contain many fossils. At the south end of the building, around eye level, a 140 million year-old oyster shell lies entombed in the rock.

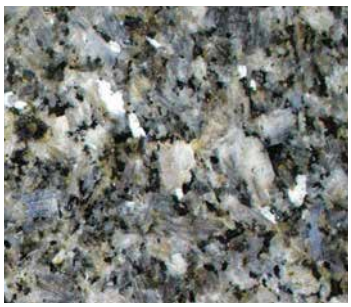
Look closely – the rock is composed of broken fossil shell fragments and tiny spheres, called ooids. They consist of concentric layers of calcium carbonate, that has solidified around a sand grain or shell fragment as it rolled around the sea floor. This type of rock is called an oolitic limestone.


shelly oolitic limestone

Many limestones can be finely carved. Further along the trail, look at the carving on the HSBC and Barclays banks opposite the Town Hall and at the Post Office, where the ooids show up particularly well.

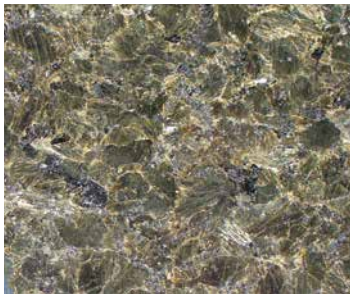
5 Marks and Spencer – *Blue Pearl Larvikite*

The area to the left of the doorway is panelled with a beautiful, blue, igneous rock, from Larvik in Norway. The large, iridescent crystals are a type of feldspar. The shimmering effect is caused by light reflected from thin layers within the crystals.



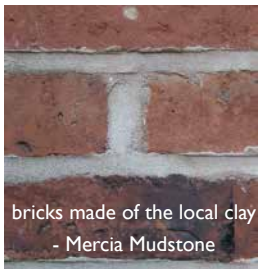
6 Stone the Crows – *Emerald Pearl Larvikite*

Another splendid Larvikite surrounds this shop front, shimmering with a greenish hue. This stone is known as Emerald Pearl Larvikite.



7 Shops opposite the Regent Hotel – *local brick*

These early 19th century buildings are constructed of local clay bricks made at the old Leamington Brickworks, a short distance north of the town centre. You can see the old bricks at ground level by The Benjamin Satchwell pub.

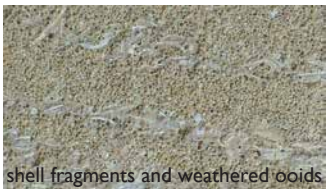

bricks made of the local clay - Mercia Mudstone

8 Town Hall – *limestone weathering*

Built in 1882 in the Italian Renaissance style, rich cream limestone from the Cotswolds has been used for the portico and decorative features, contrasting strikingly with the high-quality brick.


The town hall, Victoria statue and the Henry Bright obelisk

Limestones are very susceptible to weathering, especially from acidic rainwater. Both fossil fragments and ooids can be seen (left of the entrance door and on the outer right side of the portico), but the weathering process tends to erode the ooids more rapidly than the fossils, leaving the latter standing proud on the surface of the stone, and tiny circular pits where the ooids once were.


shell fragments and weathered ooids

Pillars at the front of the building have weathered badly as rain has dissolved minerals from the stone, re-depositing them in the surface layers, which then flake off.

9 Queen Victoria Statue – *marble and pink granite*

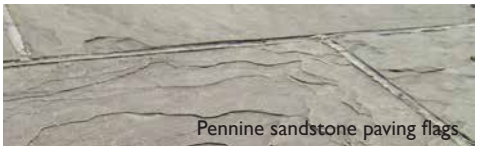
Victoria is carved from pure white Carrara Marble from Northern Italy. This stone, used since Roman times, is regarded as the finest quality marble for sculpting - only the best for the woman who gave Leamington its Royal charter. The statue stands on a plinth of unpolished, pink granite, in contrast with the polished rock used for the nearby obelisk. These pink granites are probably from the Aberdeen area.

pink granite

(10) The Pump Rooms – *sandstone columns and paving*

This is the grandest of the seven bath houses that once existed. It appears to be built of stone, but in fact, much of it is stucco. The large round columns at the front of the building, however, are a pinkish sandstone.

The grains that form sedimentary rocks often build up in layers, giving rise, millions of years later, to beds of rock. In the Pennine sandstone paving flags outside the new entrance to the pump rooms, these layers are clearly seen.



Pennine sandstone paving flags

(11) Spa Water Fountain – *spring water and slate*

Loaded with dissolved minerals, the spa water has a rather unpleasant taste. The verses are carved on smooth, grey, Welsh slate, a hard metamorphic rock that was formerly a softer, fine-grained mudstone. Slate is easily split into thin slabs or sheets (e.g. for gravestones or roofing tiles) and is valued for its weather resistance and long life. Have a look at the slate-tiled roofs in the Old Town.

(12) Elephant Wash – *paving setts*

Circuses were popular in the 19th century, and this was literally where the elephants washed, so a sturdy pavement was needed! Many of the setts are of a speckled pink and green granite-like rock from Leicestershire.

Known for its durability, it is still quarried today and used as a roadstone.

(13) Mill Bridge – *local sandstones*

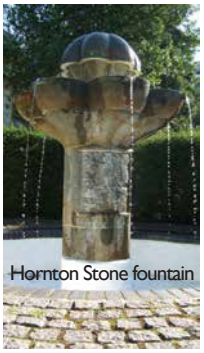
local sandstones

The parapet wall has a base of pale Bromsgrove Sandstone, known locally as Warwick Stone, and used for Warwick Castle. You can see the Bromsgrove Sandstone exposed in the riverbank by the footbridge (15) in the Pump Room Gardens. The red capping stones are typical of the red sandstones found around Coventry and Kenilworth.

(14) JEPHSON GARDENS

These tranquil gardens are named after Dr Jephson, who promoted the spa waters, making Leamington famous. The garden monuments are built of numerous different stones, almost all of which you have seen before on this trail. This is your chance to practice what you have learned!

a. William Davis clock tower
b. Jephson memorial
c. Czech memorial - you should recognise the paving, but the fountain is carved out of ironstone - Hornton Stone, from Edgehill, southern Warwickshire. Green-blue in colour when fresh, it becomes rusty brown when weathered.
d. Modern monolith
e. Willes obelisk
f. Hitchman fountain



Hornton Stone fountain

How are rocks made?

Rocks vary enormously – in colour and hardness, and this affects how we use them. Consider the differences between a lump of white chalk, a dark grey slate and a speckled granite worktop! The appearance of a rock is determined partly by its mineralogy (the range of minerals, or naturally occurring crystals, of which it is composed) and partly by its texture (the size and shape of the mineral crystals or grains and the way they are arranged within the rock).

Rocks are grouped into three main types, depending on how they have formed: Igneous, Sedimentary and Metamorphic.

Igneous rocks form when molten rock (magma) from the Earth's hot interior, rises, cools and crystallises. Magmas that cool below the surface crystallise slowly, and the crystals have time to grow large enough to be seen with the naked eye. Granite is one such coarse-grained igneous rock.

Sedimentary rocks are made up of the debris of other rocks and may sometimes also contain the remains of plants and animals. Sandstones and mudstones are composed of countless billions of particles, eroded from older rocks, and redeposited by water, wind or ice. The particles can range in size from those forming mud and silt, too fine to see, to visible sand grains and pebbles. Limestones either form from the chemical deposition of dissolved calcium carbonate (like the lime-scale in your kettle) or from the remains of shells and other sea creatures. Fossils occur in a wide variety of sedimentary rocks, however, not just limestones.

Metamorphic rocks are formed from igneous or sedimentary rocks that have been greatly altered by heat or pressure, normally deep within the Earth's crust. Marble (originally limestone) and slate (originally mudstone) are examples of metamorphic rocks.

Websites and other information sources

For more information about the town and geology in Warwickshire, see:
www.leamingtonspatowncouncil.gov.uk
www.warwickshire.gov.uk/museum (Warwickshire Museum)
www.wgcg.co.uk (Warwickshire Geological Conservation Group)

The Warwickshire Museum in the Market Place, Warwick, includes a display of local geology. The museum is open Tuesdays to Saturdays all year round, plus Sunday opening May-September. Tel: 01926 412500; Web: www.warwickshire.gov.uk/museum.

Leaflets "A Walk around Royal Leamington Spa" (by the Leamington Society) and "Royal Leamington Spa Town Trail" (by the Town Council) give a history of many buildings in central Leamington, some of which feature in this guide. Available from the Town Hall.

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