

# BUILDING STONES OF THE UNIVERSITY OF GLASGOW

## A Geological Trail Round The Campus



# UNIVERSITY OF GLASGOW BUILDING STONES TRAIL

## INTRODUCTION

The University moved from High Street to its present site at Gilmorehill in 1870 and waiting for it was a purpose-built stone building, the Gilbert Scott Building, still one of the largest in Glasgow. This building was constructed of local stone much of which came from a quarry on Gilmorehill itself on the site of the present Western Infirmary. Stone from elsewhere in Glasgow, and Scotland at large, was used to trim and decorate the building and to pave the quadrangles and approaches.

If you live in Scotland or the north of England, and especially if you live in Glasgow, it's likely that you won't be far from at least one source of stone used in the University's buildings.

As the University expanded from the early 20th century, especially in science, new buildings were constructed. Many buildings in the University are made of, or use, a wide variety of natural stone as a structural or decorative material and show a wide variety of architectural styles and construction techniques. Their stones reflect closely the advancement of stone-quarrying, transport and construction during that time, and form a technical and architectural history in themselves. Stone for construction continued to be used up until the early 1920's, coming from further afield as transportation improved, but became uneconomic in the years following the First World War as wages rose. Its place in construction was then taken by brick and concrete, up to and post World War II, but stone has regained its place latterly as modern building methods have turned to its use as thin cladding panels hung on a concrete framework. Good stone can be

Stratigraphic Chart	
Period	Age Ma (Ma = million years)
Quaternary	2.5 to present
Neogene	23 to 2.5
Paleogene	65 to 23
Cretaceous	145 to 65
Jurassic	199 to 145
Triassic	252 to 199
Permian	299 to 251
Carboniferous	359 to 299
Devonian	416 to 359
Silurian	443 to 416
Ordovician	488 to 443
Cambrian	542 to 488
Precambrian	4600 to 542

of any geological age and the stones of the buildings we will look at are no exception, making use of materials from much of the Earth's history, although stone from the Devonian and Carboniferous Periods is in the majority. The type of stone used in building is also important, since it must be durable, yet easy and economical to extract and work. The University has chosen many types of stone but has always favoured sandstones and limestones for price and characteristics.

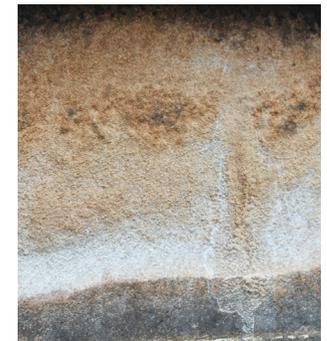
The trail follows all these developments, using both the buildings of the College of Science and Engineering and a wider sample of other University buildings.

## THE TRAIL:

1. The trail starts and finishes at the Visitor Centre.

*Leave the Visitor Centre and climb the steps to the West Quadrangle.*

2. 1870 building (The Gilbert Scott Building) and its later addition, the University Chapel (1929). Move right towards the modern sculpture, the stone slabs you are standing on are **Flagstones** of Devonian age from the Carmyllie Quarry at **Arbroath** (E. Scotland), sandstones containing mica and renowned for their non-slip qualities. They contain their mica in layers, allowing the stone to be split easily into "flags" or slabs. You may notice some deterioration of the **Gilmorehill Sandstone** on the walls. This is because the grains of sand making up the sandstone are held together by calcite (lime), which over 100 years of acid rain has dissolved. Many blocks have now been replaced.



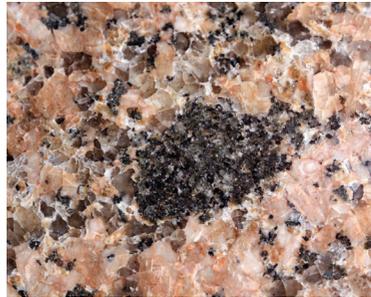
*Now enter the cloisters, turn right and make your way through the door, past the Universities Reception Offices to the hall under the tower.*

3. Look towards the main door, stopping at the glass doors. The first arch you see is supported and embellished by fine pillars of polished granite with large, regular pink feldspar crystals. This is **Shap Granite** from **Cumbria** and is of Devonian age.



*Go through the main door and stand outside facing the doorway.*

4. The door case is of carved Gilmorehill Sandstone, complemented with more polished granite, a **pink granite** from the **Ross of Mull** (W. Scotland) which contains crystals of pink feldspar, clear quartz and dark specks of mica, as well as xenoliths (fragments) of sedimentary rocks trapped in the granite.



There is a magnificent view from the doorway south over the city, in the foreground of which is Kelvingrove Art Gallery and Museum, constructed of deep red **Locharbriggs Sandstone** (Permian age) from the extensive quarries north of **Dumfries** (S. Scotland).

*Turn left through the car park*

5. Go down the steps to **Lord Kelvin's Sundial**. This handsome sundial in sandstone is reputed to have belonged to William Thomson (Lord Kelvin), professor of Natural Philosophy (Physics) in the University (1846-99). It is surrounded by a pavement of **dolerite** setts, formerly used to pave Glasgow streets and quarried in **North Ayrshire**.



Directly beyond the sundial, down a grassy bank is the James Watt Building (Engineering). The southern gable of this modern building consists of a narrow base of yellow **Heworth Burn Sandstone**, a Permian rock from **Gateshead**, (Tyne and Wear), above which is white fossil-bearing **Portland Limestone**, a Jurassic rock from **Dorset**, into which is carved a large mural.

*Walk along the pavement back towards the flagpole and then along the terrace to its western end.*

6. At the corner of the Gilbert Scott Building is a pale section of stonework, pause here. You will have noticed as you walked along the terrace numerous



sections and blocks of new stone, contrasting with the sootier nineteenth century stone. This contrast relates to the pale stonework in front of you. Notice first the difference between the smooth sandstone used for the window cases and the corners and the rougher, more weathered sandstone which fills in between. They are both local

sandstones of Carboniferous age but the better wearing, smooth sandstone is **Kenmore Sandstone** from **Bishopbriggs**, (N. Glasgow), while poorer sandstone is **Gilmorehill Sandstone**. The Gilmorehill Sandstone weathers badly because of its thinner beds and coarser texture.

Notice also in the upper windows, especially above the doors, there are occasional pillars of a red sandstone, this is **Old Red Sandstone**, of Devonian age from **Bonhill**, Dunbartonshire.

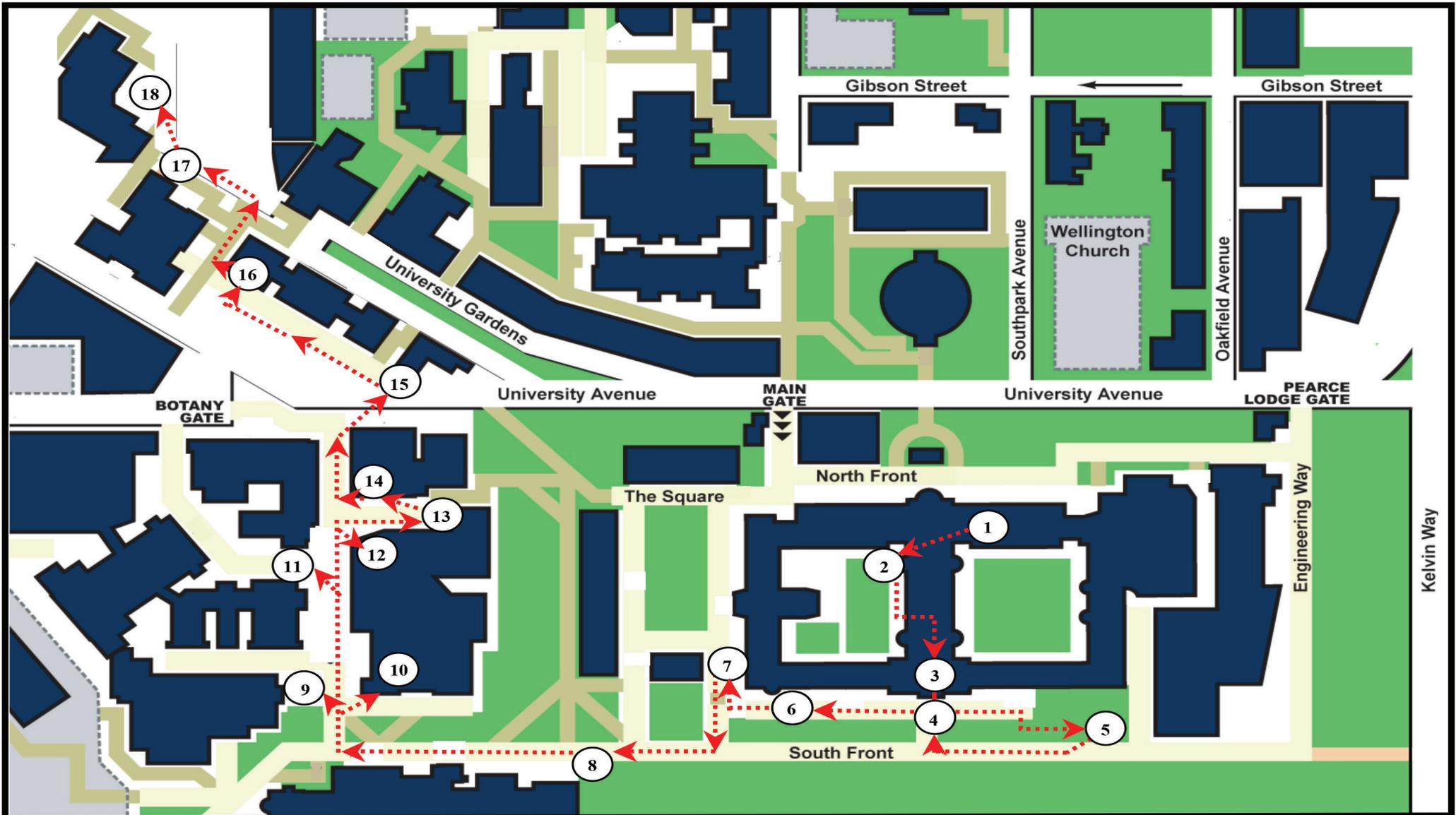


*Descend the granite steps and turn right.*

7. **The Lion and Unicorn Staircase**. This staircase and the statues are the oldest structures in the University, dating from 1690, and they came from the Old College at High Street, the former buildings of Glasgow University.



Moved to their present site in 1872, they are made of a pale Carboniferous sandstone, probably quarried in the city centre. The sandstone shows signs of ripple marks, having been deposited in shallow water.



- 1. Visitors Centre
- 2. Entrance to Quad.
- 3. Cloisters
- 4. Doorway
- 5. Lord Kelvin's Sundial
- 6. Gilbert Scott Building

- 7. The Lion & Unicorn Staircase
- 8. Davidson Building Biochemistry
- 9. Graham Kerr Building
- 10. Kelvin Building
- 11. Joseph Black Building
- 12. Kelvin Building

- 13. Kelvin Building
- 14. Bower Building
- 15. George Service House
- 16. Mathematics
- 17. Boyd Orr Building
- 18. Gregory Building

*Go back to the road junction and, turning right, walk 100 metres to the Davidson Building.*

8. **Davidson Building Biochemistry.** (1963) The gable, door area and the wall of the garden are concrete clad in thin slabs of fine yellow sandstone of Permian age, the **Springwell Sandstone** from **Gateshead**, (Tyne and Wear). The Davidson Building is a late addition, but is connected to the original Wolfson Building.

*After the Davidson Building and before the Wolfson Building, there is the Wolfson Link Building, where during term time, there is a small café. Here you can gaze at sandstone in comfort! There are also toilets here.*

*Cross the road and go down the walkway to reach:*

9. **Graham Kerr Building**, which contains the Zoology Museum. This was the last building on the campus to be constructed of stone, completed in 1923. It is built of a Carboniferous sandstone, probably from the North East of England, with large, well-cut, smooth identical blocks (ashlar) in a rusticated pattern (joint inset in slots).

*Facing the Graham Kerr Building is the Kelvin Building*

10. **Kelvin Building.** This part is the oldest section built to house Physics and Astronomy in 1907. Note the fine carving of a massive, compact sandstone from **Northumberland**. This is the Carboniferous **Fell Sandstone** from the quarries around **Blaxter** and **Bellingham**, the sandstone being deposit of a very large, ancient river.

*Now go to the entrance of the small road to the left between the Graham Kerr Building and the Joseph Black Building*

11. **Joseph Black Building.** This is the Chemistry building, built in 1939. It is a typical prewar building, constructed, after stone became too expensive, of brick dressed with concrete. It is unremarkable, except for the wall facing the Graham Kerr Building, on which is a frieze depicting grazing deer. It is claimed that the professor of Zoology caused it to be cut to compensate for the loss of his view!

*Return to the main road and, passing the no-entry sign climb the steps to the platform outside the front door of:*

12. **Kelvin Building.** This second section, built in 1954, is a concrete building clad, eclectically, in natural stone. Examine the door case, made of pale brown, fossiliferous Carboniferous limestone from **Derbyshire, Hadene Stone**. The building itself is clad in another kind of **Portland Stone** (limestone) from **Dorset** called **Brown Whitbed**. The columns, one of which can be examined at the end of the platform, are of greenish slate of Ordovician age from the English Lake District. To the right hand side of the door is a curious sandstone slab on which is carved a snake encircling a triangle within which is a six-pointed star. The symbol is of eternity and the carving came from the house of Lord Kelvin's father and is of a local Carboniferous sandstone.



*Descend the steps and, turning right, walk up the small lane between the Kelvin Building and the Bower Building.*

13. **Kelvin Building.** The newest part of the Physics building (1966) is to the right, clad in slabs of white **Portland Stone**. Notice the beds of fossil shells (bivalve seashells) being eroded out of the stone by the acidity of the rain. The best examples are at the goods entrance.



*Descend to the main road and turn right, walking towards the gate.*

14. **Bower Building.** At the corner turn right, and with the Kelvin Building behind you, face the Bower Building, built in 1901 to house Botany. This is constructed of a fine Carboniferous sandstone from **Hunterhill in Bishopbriggs** (N Glasgow), where the stone was mined not quarried, The stone is massive and assembled as a base of smooth ashlar, on which rest blocks with pecked surfaces arranged in a snecked pattern (small blocks interspaced among larger blocks).

*Walk out of the gate and cross University Avenue via the pedestrian crossing, then along the pavement to the car park approach road.*

15. **George Service House.** The building illustrates well the uses of various grades of stone. For the public face of the building (in University Gardens/ University Avenue) fine ashlar is used, for the rear (Ashton Lane), seen only by the servants, rubblestone is used (squared, not finely finished and of irregular shapes). For the wall of the yard (seen only by tradesmen!) irregular unfinished quarry-rubbish was used. However this poor stone does show ripples in cross-section and cross-bedding, showing that the sands were deposited by running water.



*Walk along the road past the car park towards the Boyd Orr Building, turning right up the steps to the back door of the Mathematics Building.*

16. **Mathematics.** A modern building, constructed on pillars, the open area under which is cobbled. Examine a few of the cobbles. These are metamorphic rocks (formed by heat and pressure deep within the Earth), now eroded and forming beaches in the W Highlands, from which they came. **Schist** pebbles have folded stripes and **Quartz** pebbles look milky. Note the occasional marble pebbles with holes bored in them by molluscs.



*Go up the steps to the entrance of the Boyd Orr Building*

17. **Boyd Orr Building.** A rather grim concrete-framed building (1972) clad in huge decorated concrete slabs. Look at the slab near the pillar to the right of the door. The surface is made of flakes and pebbles of **flint**. The pebbles are water-worn, having “chatter” marks (small semicircular cracks) on their surfaces, and are beach pebbles, probably from beaches in **Devon** or **Dorset**.



*Now walk the few yards along to the Gregory Building.*

18. **Gregory Building.** At present it houses the School of Geographical and Earth Sciences, but it was originally built to house Geology and Applied Geology in 1976. It is, ironically, constructed of brick. However in front of the building is a strange monument, originally part of a culvert on the West Highland Railway, recut for its present use. The stone is a grey granodiorite from **Ballachulish** and contains xenoliths of dark **Ballachulish Slate** which is the same **slate** which forms the roof of the **Computing Science** building opposite.



Go into the hall of the Gregory Building and examine the mural close up (by George Garson, 1977) on the rear wall. The artist used local rocks, plus many fossils and minerals in this abstract allegory of Geology.

*Make your way back to the Visitor Centre via the sandstone terraces of University Gardens.*

## WHERE

The Visitors' Centre of the University of Glasgow is situated just within the Main Gate of the University on University Avenue, Glasgow G12 8QQ.

## TRANSPORT

There is a regular bus service which stops in University Avenue opposite the Main Gate and the City Sightseeing buses also stop there.

The nearest Glasgow Underground station is Hillhead and the nearest railway station is at Partick, both less than 10 minutes walk away.

**Parking** - Areas nearby are metered and are usually busy.

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