

Building and decorative stones: heritage as a teaching and learning resource

At the December meeting of the Earth Science Education Forum for England and Wales, the aims of which are to:

- ≡ promote earth science in education at all levels; and
- ≡ bring together all relevant organisations in pursuit of the above,

Ruth Siddall of University College London gave an interesting presentation on building and decorative stones. This ties in to the work she has done on building stone walks in London, which are highlighted in *Building London* on the London Geodiversity Partnership's website (<http://www.londongeopartnership.org.uk/buildinglondon.html>).

Cities and their buildings provide an important teaching and learning resource for education from primary to tertiary level, for recording and archiving cultural heritage, for conservation and restoration and for leisure activities promoting life-long learning and continuous professional development.

Stone in education

At school level, building stones provide opportunities to study fossils, minerals, textures, structures, rocks and the interpretation of environments. At university level they enable studies of provenance and the study of outcrops, which would otherwise be difficult to access, in cheap and safe field trips.



Fossils in Portland Stone, Green Park Station



Feldspar, Quartz, Hornblende, Peterhead Granite



Folding in Connemara Marble



Actinolite & texture, Otta Schist

For example, to see the 2 billion year-old rocks of the Bushveld complex, one would normally have to travel to the Transvaal, South Africa, but one of those rocks, the Rustenburg gabbros, can be seen at many places in London, eg Whittington House just off Tottenham Court Road and Euston Station. At Irongate House on Houndsditch, an otherwise unremarkable building is the only one known in the UK to have granitic gneiss from the Vredefort Dome, which results from meteorite impact and showing the melt structures – pseudotachylites - associated with that event.



**Rustenburg Gabbro,
Whittington House**



Irongate House, Houndsditch



Pseudotachylites, Irongate House

Stone as cultural heritage

The use of stone can be symbolic of a country or place, can reflect choice over historical time and can be an important feature of industrial archaeology. For example, the statue in Parliament Square of David Lloyd George has a plinth of purple Nantlle slate from a quarry only a few miles from his birthplace in North Wales. Similarly, the statue of Christian Smuts, a past premier of South Africa has a plinth of Rustenburg gabbro. The memorial to the siege of Malta outside the Church of All Hallows by the Tower, Byward Street, EC3, is from the 23 million-year old Scutella Bed of the Lower Coralline Limestone from the island of Gozo.



Scutella Bed in Malta Memorial



Foyer of Hotel Russell

The façade of many Victorian pubs in London reflect the wish to make them attractive to working people and particularly not to appear too posh. This is reflected in the use of limestone and granite rather than the use of marble, which was regarded as being for the rich. There was a boom in the use of stone in the 1880s, reflected in the use of stone in the foyer of the Hotel Russell, Russell Square by the architect Charles Fitzroy Doll (from whom the term 'dolloped up' is derived).

Conservation and restoration

When conserving and restoring important buildings, it is important to identify the specific stone and determine its provenance. This assists in answering archaeological and historical questions related to trade, technology, artefact provenance and the use of spolia (recycled stone from earlier buildings). It is not a simple task since it requires knowledge, experience and connoisseurship and scientific sampling is often precluded.

Stone as a leisure activity

Guided and self-guided walks and earth-caching are examples of such leisure activities. They are always well attended, give a new view of the cityscape with fresh air and good exercise in almost any weather conditions and provide an experience for both specialists and non-specialists.

Challenges

Using stone as a teaching and leisure resource does have its challenges. Principal among these is obtaining information from architects and stone contractors, who are often unaware of the precise nature and provenance of the stone they are using. There is a need for sound, deep and broad knowledge from geologists and, sadly, a general lack of interest in this field in Earth science teaching and research.

Further information can be obtained on building stone walks in London in *Building London*, from <http://londonpavementgeology.co.uk> and from the Facebook page of Cultural and urban geology.