

Urban Geology in St Pancras Church



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St Pancras Church sits on the busy corner of Euston Road and Upper Woburn Place. It is hard to imagine today that when it was built two hundred years ago, it sat on the edge of town in what was becoming the fashionable suburb of Bloomsbury. The Church was designed by architect and surveyor William Inwood (1771-1843) and his son Henry William Inwood (1794-1843). They were awarded the contract in 1819 after submitting a Greek- revival design for the building. Henry soon left for Athens to further his research on the classical style and specifically 'for the express purpose of making drawings from the Erectheum and the Temple of the Winds to complete the design of St Pancras Church'.¹ The fruits of this trip to Athens can be seen in the octagonal tower reminiscent of the Tower of the Winds and in other architectural details observed in the interior of the church. Most famously of course, St Pancras Church has not one, but two Caryatid Porticos, direct copies of the original on the Erectheion on the Acropolis. No expense was spared in decoration of the church (although it seems subsequently that corners were cut in its basic construction) and the total cost of the building was close to £90,000. The church was consecrated on 7th May 1822 by the Bishop of London William Howley.

Although running repairs were carried out throughout the 19th Century, the fabric of the church deteriorated badly over the late 19th Century and the early 20th Century. In 1936 it was discovered that the tower was in a delicate state and shocks from bomb-blasts in the vicinity during World War II did nothing to improve things. During the blitz in January and May 1941, the church roof was severely damaged and then the windows were blown out. Piecemeal repairs were made but funds were not enough for full restoration and this cumulated in the church being closed on 18th May 1951 on the grounds that it was a dangerous structure. A major fund raising initiative was put in motion by the Vicar, Rev. W.P. Baddeley. Lee (1955) writes that small models of the church were made as money-boxes, and local landlords placed them on their bars to collect the loose change of their customers. Other donors contributed larger sums and restoration began. Work was largely completed by 1953 when the church was reconsecrated by the Bishop of London.



As noted above, many of the architectural features of St Pancras are modelled on the Erectheion, a temple dedicated to Athena Polias (Athena as the embodiment of the city) on the Acropolis in Athens (Camp 2001). This Temple was the latest built on the Acropolis under the temple complex's visionary, Perikles and dates from the later 5th Century BC. The Erectheion was also dedicated to and named after an archaic King of Athens, Erectheus, generally equated with the god Poseidon at the time. This temple marks the zenith of the Ionic order of architecture and was clearly an important destination for Henry Inwood who not only copied the caryatids for the decorative side porches of the church but also the columns in the interior. The church's tower was inspired by the Tower of the Winds (left) which stands in the Roman Forum of Athens, behind Hadrian's Library. This building was built in the 1st Century BC and operated as a sundial, water-clock and weather-

¹ H.W. Inwood published his findings from this trip in 1827; *The Erectheion at Athens, Fragments of Athenian Architecture, Etc. Illustrated with Thirty-nine plates.* 126 pp.

vane. It was constructed by a Syrian astronomer named Andronicus. All these original buildings in Athens were constructed from white Pentelic Marble.

Further information on the history of St Pancras Church up until the 1950s may be found in Lee (1955) and in the leaflets provided by the Church. This guide provides information about the building materials used in the Church and extends the work of Robinson (1985).

The Exterior

The west front of the church opens onto Upper Woburn Place. However it is useful to walk around the exterior of the building along Duke's Road and Euston Road. Robinson (1985) has described the exterior of St Pancras Church, in terms of its building material and geology. The church is built in brick and faced with Portland Stone. Portland Stone is the archetypal building stone of London and can be seen on a great many buildings in the capital. It comes from the Isle of Portland, beyond Weymouth in Dorset. The stone was originally championed by the architect Inigo Jones who used it for the Banqueting House on Whitehall. Following the Great Fire of London, Portland Stone became ubiquitous, not only for the construction of many churches, including St Paul's Cathedral, but for many civic buildings too. In Bloomsbury the great Victorian edifices of the British Museum and University College London are also constructed from Portland Stone.

Portland Stone is a freestone of Upper Jurassic (Tithonian) Age. The geological and mason's name for the lower section of this strata exposed on the Isle of Portland, is the Whitbed or 'Best Bed' and this is from where much of the classic Portland Stone was derived, including the material used at St Pancras Church. This is a thickly bedded, pale grey, oolitic limestone with a few sparse shell fossils. The ooliths, spherical particles of calcite, are about 0.5-1 mm diameter and are just visible to the naked eye on close inspection of the stone. The rock is dissected by widely spaced joints allowing blocks approximately 3 m square to be extracted, making it excellent for ashlar masonry or for column drums. The Base Bed, is very similar to the Whitbed in appearance, but does not contain the fossils.

Euston Road



From Euston Road there is a good view of the Portico, supported by four Caryatids (left). The Caryatids are load bearing but they are not stone. They are made in sections of an architectural ceramic and are hollow, with a cast-iron core inside. Although not part of the original design for the church, the Inwoods commissioned John Charles Felix Rossi (1762-1839), known as Charles Rossi, to model them. Charles Rossi was a sculptor of Italian descent who was apprenticed to an Italian Sculptor in London before becoming employed at Eleanor Coade's artificial stone manufactory in Lambeth. By 1800, Rossi had his own firm and had modified Coade's recipe. The exact composition of these ceramics is unknown but it is likely to be a high-fired stoneware tempered with waste

ceramic material ('grog'), quartz sand and flint. The Caryatids were made too tall for the St Pancras porticos and had to be cut down by slicing away some of their mid-sections. The result is of a row

of rather dumpy matrons rather than the elegant Greek originals. The 'terracotta work' completed in 1822 cost a staggering £6,248 19s 10d.

Follow the Euston Road west and turn left into Upper Woburn Place and the west front of St Pancras Church.

Upper Woburn Place

The Portico to the Church is supported by six ionic columns in Portland Stone. Surrounding the doorway is a scheme of elaborate mouldings and rosettes. It is noticeable that the finish on these is remarkably crisp and they have a weathered patina somewhat different from the Portland Stone cladding and column drums. They are in fact fake Portland Stone, made from crushed limestone and cement and moulded into shape. These were probably made by local architectural sculptors Brown & Young who also contributed artificial stone to the interior of the church.



Stone paste decorative mouldings in the front portico

The steps to the Church are made from granite. They are much weathered, but large white 'megacrysts' of feldspar stand out. These are particularly obvious after rain. Their presence allowed Robinson (1985) to assume that these were therefore Cornish Granite, such large feldspar crystals being a feature of this lithology.



Turn now to the columns supporting the pediment. These too are Portland Stone and this is a good place to get a good look at the textures in this limestone. The oolites are just visible to the naked eye and clear with a hand lens. Broken fossil fragments are also not uncommon in the column drums. They are comminuted pieces of shell, mainly oysters.

Left; fossil fragments in the Portland Stone column drums.

Before entering the church, walk to the churchyard to the south, on Upper Woburn Place, is a sculpture of the face of the *Archangel Michael – The Protector* (2004) by sculptor Emily Young. It is

carved from onyx. Although a little weather beaten now, the vertical banding can still be discerned.



Archangel Michael – The Protector (2004), Emily Young.

The Interior

Please remember that St Pancras is a working church and worshippers using the building should be treated with respect and not be disturbed. Please do not access the chancel and apse without prior permission from a member of staff.

a. The Apse at the East End.

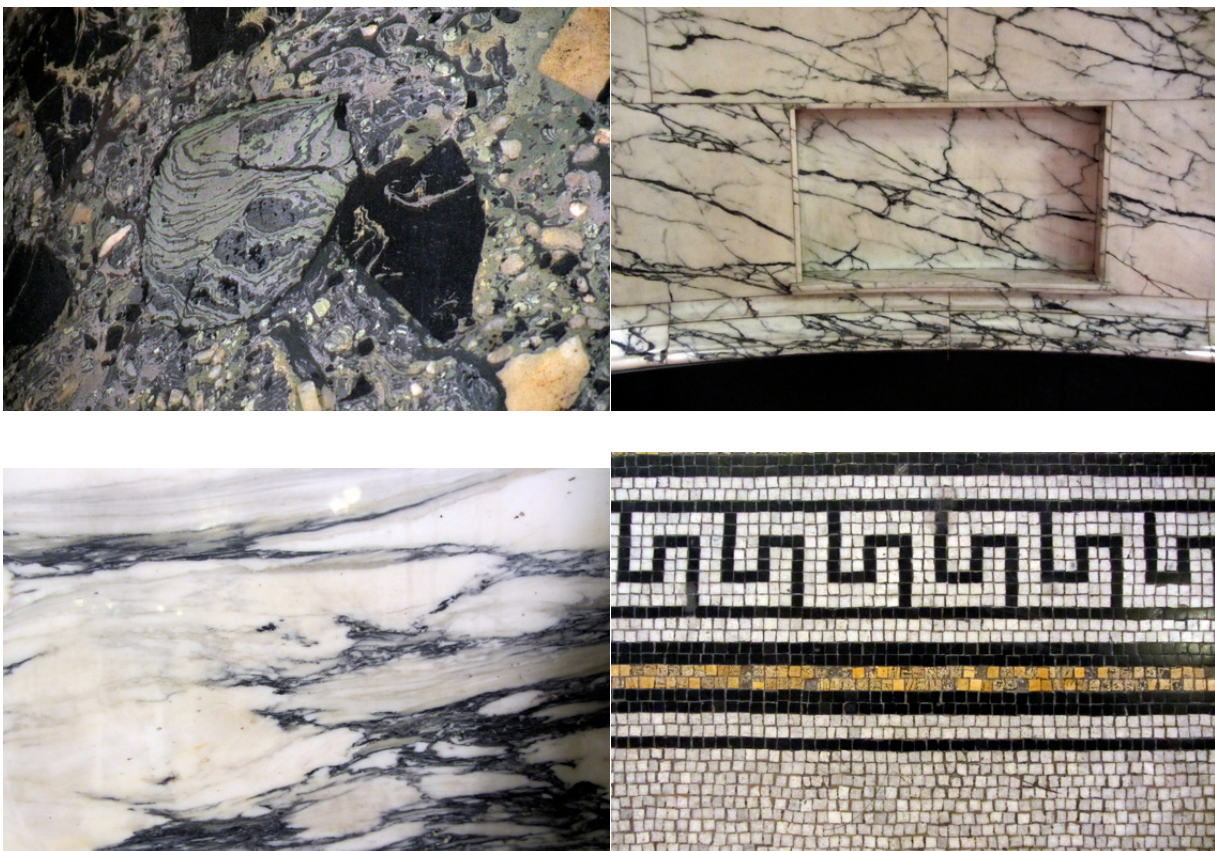
The East end of St Pancras Church has a semi-circular apse surmounted by six columns. Bases and capitals were copied by the Architect's son Henry W. Inwood from the Erechtheion. From a distance the columns may at first appear to be a brecciated serpentinite such as the famous *Verde Antico* from Thessaly in Greece. However look closely and there is something too regular about the spacing of the clusters of white stones. These columns are in fact not stone but a clever fake imitating the appearance of the precious Greek stone known as *Verde Antico*. The material used here is *scagliola*, a form of synthetic stone. It is made from a mixture of stone fragments (*scaglia* is Italian for 'chippings'), plaster of Paris, pigments and glue, which is applied to a surface, allowed to set hard and then polished, carved or even turned on a lathe to produce the desired surface effect. *Scagliola* can be very convincing and has fooled many geologists and from a distance this material certainly resembles stone. Close inspection of the St Pancras columns is not normally possible, but thanks to the assistance of Reverend Jenny Welsh and a stepladder, it was possible to view the *scagliola* columns in detail. Along with chips of alabaster, composite 'stone' clasts had been reproduced by layering up the plaster and pigments like plasticene to produce a variety of effects. A knock on the columns proved them to ring hollow.

Scagliola work was developed in northern Italy in the 17th Century and by the early 19th Century it had become very popular as a stone substitute worldwide. Nevertheless it was still expensive and a luxury product. The columns at St Pancras was supplied by a local firm of architectural sculptors and *scagliola* manufacturers, Messrs. Brown & Young of Euston Square, at a cost of £897 8s 0d.

We now move to the semi-circular wall at the back of the apse upon which the columns rest. The wall is faced with black veined, white marbles. These were fitted in 1911, replacing the original facing of the apse which had been a scheme in terracotta tiles. The then vicar of St. Pancras, Rev. Edmund Lionel Metcalfe, launched a scheme of restoration and redecoration to commemorate the coronation year of George V, and the marble was part of this, purchased at a cost of £228 7s 0d.

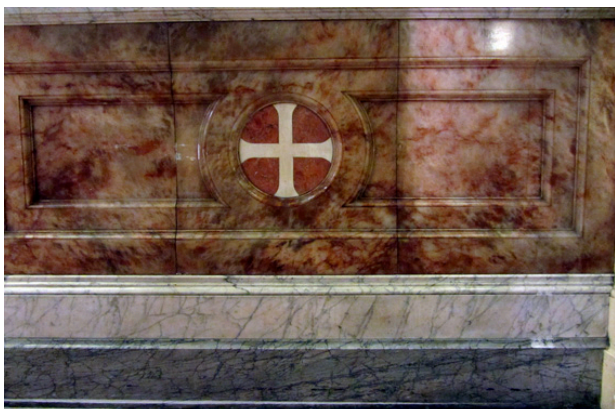
Two different marbles appear on the apse. Though superficially similar, one variety white, with a reticulated pattern of thin black veins, faces the curved wall and the niches set within this, whereas another variety with much thicker black veins and the texture of a breccia clads the two end walls of the apse which directly face the congregation. Both marbles are almost certainly Italian in origin and derived from the Alpi Apuane (Carrara) region of Tuscany. The first variety is a form of 'Pavonazzetto' with distinct black veins cross-cutting a partially brecciated white marble. The second variety has thicker, dark-grey to black veins and clear brecciated clasts and a strongly deformed fabric. It is *Breccia di Capraia* from Massa, Carrara.

Stepping down from the apse, we find ourselves in the chancel. Much of the floor is carpeted, but glimpses of mosaic pavement are seen directly below the step on both sides of the altar. The mosaic was laid in 1889 and is composed of black, white and yellow stone tesserae. Sure identification of such small pieces of stone is almost impossible macroscopically, especially for white marbles. However the black is probably Belgian Black Marble (actually a limestone rich in organic matter) and the yellow is probably *Giallo Reale*, a yellow limestone from Verona, Italy.



Clockwise from top left: detail of the scagliola faux stone on the apse columns; white and black pavonazzetto marble on the apse; revetment of Breccia di Capraia on the ends of the apse; black, white and yellow mosaics in the chancel.

b. Screen at the front of the chancel



The screens in front of the chancel in marble and alabaster were erected in 1913 (left). Five different stones are used in their construction. The main section of the screens is made from a cloudy, pink veined alabaster of unknown origin. In the centres of the screens is a roundel featuring a white marble Maltese cross set in red *Rosso di Verona* 'marble'. This stone is in fact a limestone and not a marble. It is coloured red by the iron oxide mineral hematite, but otherwise it is a nodular limestone. In larger slabs of this rock

fossils of ammonites are common, as well as other shells and shell fragments. The geological name for this rock is the *ammonitico rosso* and it is a Jurassic limestone from the Appennine hills around Lake Garda in northern Italy.

Above and below the alabaster panel is grey veined, white *Calacatta* marble from Carrara, and below that forming the base of the screen is a dove-grey marble, finely veined with black. This is *Bardiglio*. The name is generically applied to grey veined and banded marbles, but this variety with its fine and sometimes squiggly veins comes from Massa, near Carrara.

Return to the entrance of the Church and pause at the font at the south west end of the nave.

c. The Font



The age of the font is unknown but it is almost certainly a late Victorian or Edwardian addition to the church. It appears in a photograph of the nave taken in 1922 (Lee, 1955). Like the chancel screens, it is constructed from 'marbles' and alabaster, but they are of very different origins and so it is unlikely that the construction of the font is contemporary with the screens.

The font is octagonal in shape and made of a brown-red alabaster. The origin of this stone is unknown. Each face is set with a small glass mosaic. The pedestal of the font is a green serpentinite. Serpentinities are highly altered and deformed remnants of the ocean floor. They become emplaced on the continental crust as a result of mountain

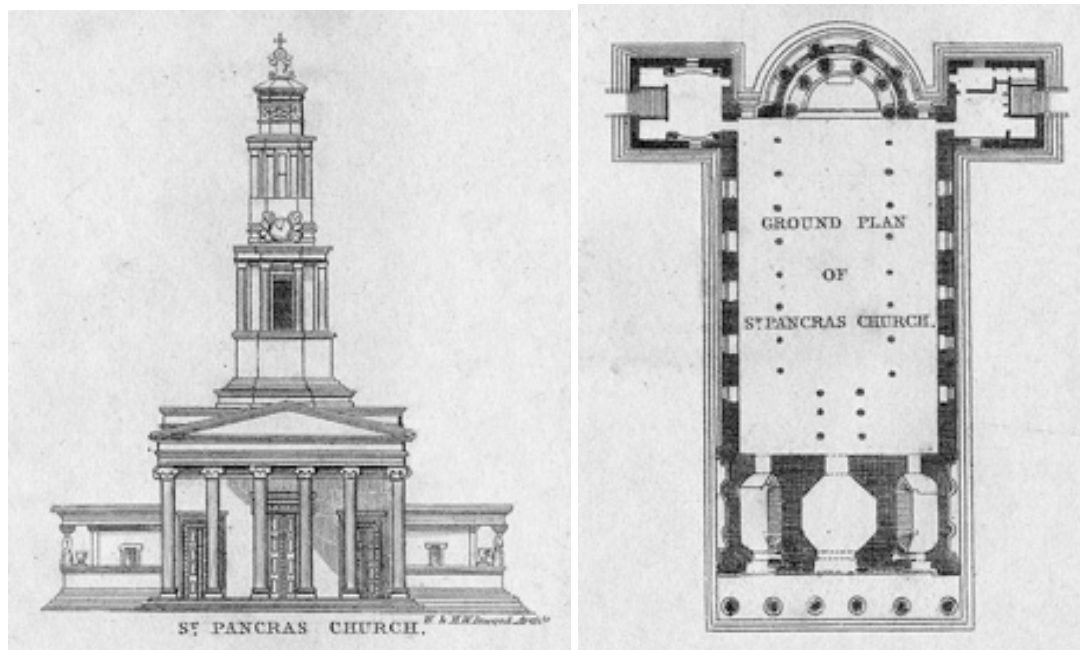
building processes. This variety is bright green and composed of a mass of fibrous veinlets composed of the serpentine group minerals, probably the mineral chrysotile, and the mass is criss-crossed by further veins. The appearance of serpentinites can be highly variable, even locally and they are often difficult to identify to source. Textures within the rock can be useful characteristics

and this variety with chrysotile veinlets probably comes from the island of Corsica. However it could equally have come from the equivalents of the Corsican serpentine units, the 'schistes lustres' on the French and Italian Alpine mainland.

The base of the font sits on a red, nodular, tectonised and brecciated marble called *Breccia Rossa Apenninica* from La Spezia in Liguria, Italy. This is a nodular red limestone, which has been tectonised (deformed and brecciated) and also contains clumps of white-pink limestone. The red colour is imparted by the iron oxide mineral hematite.

The whole structure rests on a dais with a slab of a variety of *Bardiglio* grey marble from Carrara, similar to that seen on the chancel screens. The footing of this is a finely brecciated pavonazzetto.

The End



The author would like to thank Reverend Jenny Welsh for facilitating access to St Pancras Church.

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