

SOME NOTABLE CORNISH BUILDING AND DECORATIVE STONES

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Arising mainly from its exceptionally varied suites of intrusive igneous rocks, Cornwall has a rich variety of building and decorative stones which were extensively exploited, both for local and export use, before concrete and brick came to dominate construction in the 20th century. Basic igneous rocks include a metabasic rock at Cataclews Point, west of Padstow, which provided the extremely durable Cataclews Stone from Norman times onwards; this was used extensively for medieval fonts and church carvings in North Cornwall. Polyphant Stone, formed by carbonatization of an ultrabasic intrusion, is composed of a mixture of talc, chlorite and various calcium and magnesium carbonates and the Polyphant quarry was recently reopened to supply stone for the rebuilding of Newquay parish church. Allied to Polyphant Stone is Duporth Stone, worked from the cliffs of Duporth Bay, south of St. Austell and used extensively in the pillars of Truro Cathedral.

Granites were notably worked in the eastern part of the Carnmenellis Granite (mainly in Mabe parish), in the St. Austell Granite (Luxulyan, Carn Grey and the china stone areas) and on Bodmin Moor (De Lank, Hantergantick, Cheesewring, etc). A significant industry developed in the 19th and early 20th centuries, employing large numbers of skilled quarrymen, with granite exported worldwide. A tourmalinized granite, luxullianite, was an important decorative stone, used for example in the Duke of Wellington's sarcophagus in St. Paul's cathedral.

Allied to the granites are the fine-grained elvans of granitic composition, usually emplaced as dykes. These have yielded durable freestones used in the construction of buildings such as St. Austell church tower, Place (Fowey) and the Georgian buildings of Lemon Street in Truro. The best known elvan quarries were at Pentewan, but not all buildings described by architectural historians as being of Pentewan Stone came from Pentewan. Another important elvan building stone was Newham Stone, widely used in the older buildings in Truro. Tremore elvan was also used, together with luxullianite, as a decorative stone, to line Porphyry Hall at Place in Fowey.

Sedimentary and metasedimentary rocks have also been used as building materials in Cornwall. Slates and sandstones of Devonian and Carboniferous age are extensively used for traditional buildings throughout Cornwall, and are widely used in the construction of Cornish hedges alongside road developments. The geologically youngest building stone, seen in the Newquay and Padstow areas, is a cemented bioclastic beach sand (locally known as "sandrock") and used, for example, in the construction of St. Carantoc's church at Crantock.

In terms of maintaining Cornwall's heritage, there is a long overdue need to identify and conserve the sources of Cornish building and decorative stones, such as those mentioned above, which give the local built environment so much of its character.

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INTRODUCTION

Cornwall has a rich variety of building and decorative stones which were extensively exploited, both for local use and export, before concrete and brick dominated construction in the 20th century. The GCR review of the Igneous Rocks of south-west England showed how significant they are in Cornish geology (Floyd *et al.*, 1993), and it is unsurprising therefore that most of the important and geologically interesting building and decorative stones are of igneous origin. These include Devonian/Lower Carboniferous basic and ultrabasic intrusions, lavas and volcanics, Late Carboniferous/Early Permian granites, felsitic elvans and lavas. These can be relatively unaltered, or altered by various processes. Veinstones from post-Variscan mineralization have also been used as building materials. The Devonian and Carboniferous sedimentary successions include slates and sandstones, which have been, and are still, exploited. Even the Quaternary sediments have yielded some building stone. The aim of this paper is to document significant building and decorative stones used in Cornwall with an emphasis on those from mid-Cornwall. A simple classification of the building and decorative stones is given in Table 1.

The geology of the stone, the locations where it was extracted and some examples of the buildings using the stone are described, together with some of the characteristics of the stone and their locations (Figure 1).

BASIC INTRUSIONS

Greenstone is a colloquial term for a variety of basic igneous rocks, although quarryworkers particularly in West Cornwall, sometimes call a dark greenish-blue basic igneous rock a 'blue elvan'. All pre-Variscan basic igneous rocks in Cornwall have been subjected to low grade regional metamorphism, which has resulted in the development of hydrous phyllosilicates such as chlorite and illite, together with minerals such as prehnite, epidote and pumpellyite (Robinson, 1998). Spilitization is also widespread and olivines are usually altered. Despite these mineralogical changes, most of the basic rocks do not weather rapidly. In fact, metabasites affected by contact metamorphism around the granites are extremely durable. A separate phase of hydrothermal alteration, carbonatization, has been responsible for forming some talc-containing decorative stones, but these are soft and unsuitable for exterior use.

Relatively unaltered basic intrusions

These have been extensively quarried for building stone and aggregate. One of the best known examples is Cataclews Stone, which was worked from medieval times onwards in a quarry at Cataclews Point (SW 873 761). This dark green rock is a hydrous alkali dolerite (Selwood *et al.*, 1998) intruded into Upper Devonian slates. In the older literature this rock type was referred to as

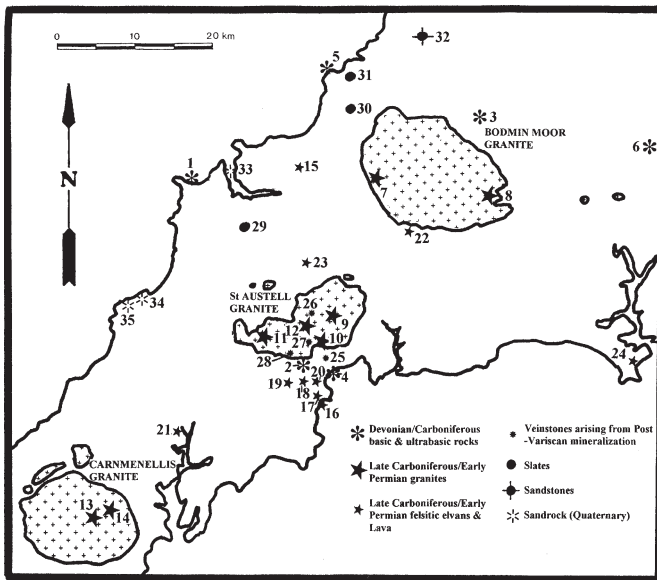


Figure 1. Location map for the building and decorative stones mentioned in the text. Devonian/Carboniferous basic and ultrabasic rocks: (1) Cataclews point, (2) Tregongeeves, (3) Polyphant, (4) Duporth, (5) Tintagel, (6) Hurdwick. Late Carboniferous/Early Permian granites: (7) De Lank quarry, (8) Cheesewring quarry, (9) Luxulyan, (10) Carn Grey quarry, (11) Nanpean china stone area, (12) Hensbarrow/Stenalees area, (13) Polkanuggo quarry, (14) Carnsew quarry. Late Carboniferous/Early Permian felsitic lavas and lava: (15) St Kew quarry, (16) Polrudden Cove, (17) Pentewan Valley quarry, (18) Polgooth quarry, (19) Sticker quarry, (20) Penrice quarries, (21) Newbam quarry, (22) Warleggan quarry, (23) Tremore quarries, (24) Kingsand/Causand. Veinstones arising from post Variscan mineralisation: (25) Charlestown United Mine, Sandy Bottom, (26) Rocks China Clay Pit, (27) Carclaze, (28) St. Mewan Beacon. Slates: (29) St Issey Stone, Tredinnick quarry, (30) Delabole slate quarry, (31) Trevillet slate quarry. Sandstone: (32) Cansford quarry. Sandrock (Quaternary): (33) Camel Estuary, Padstow, (34) North Side of Fistral Bay, Newquay, (35) Crantock Bay.

‘proterobase’ or ‘minverite’. The grain size is variable, the Medieval masons seem to have preferred the finer grained variety. It has been used in a number of churches, such as St. Merryn and St. Petroc, Padstow. Many of the medieval carvings in this area, such as the font at Padstow, appear to be by the same person, referred to by architectural historians as ‘*The Master of St Endellion*’. Where 14th/15th century carvings in this stone have been exposed to the weather in external work, this stone seems to have survived extremely well. A series of dolerite intrusions in the Pentewan valley were quarried (e.g. Tregongeeves, SX000 515), mainly for aggregate and some buildings such as the Public Rooms (now Courts Furnishers) in Truro Road, St. Austell were constructed from this material.

Carbonatized basic and ultrabasic intrusions

A carbonatized ultrabasic intrusion has been worked at Polyphant, near Launceston (SX 256 826 and 260 826) since Norman times. This ultrabasic rock was intruded and subsequently the olivines and other minerals were altered by carbon dioxide containing fluids to a mixture of talc, chlorite and various carbonates (Power and Scott, 1995). The resulting rock is quite soft, but is a superb medium for carving and can be polished to give a dark green shiny surface. Many churches in Cornwall have interior features made of Polyphant stone. The Boer War Memorial, part of which is shown in Figure 2, adjacent to the West Door of Truro Cathedral, is a fine example (Cartwright, 1997).

Newquay Parish Church was seriously damaged in an arson attack a few years ago and the Polyphant stone used for the pillars had to be renewed. The quarry at Polyphant was re-



Figure 2. Part of the Boer War Memorial in Truro Cathedral, carved from Polyphant stone.

opened and sufficient stone for the restoration work obtained. This showed that the small-scale reopening of quarries to supply stone for restoration and special projects is a realistic proposition and need not involve maintaining any permanent facilities at the quarry. All that is needed is the face in the quarry to enable a team of quarry workers with mobile plant to come in and extract whatever stone is needed.

Polyphant stone does not weather well in exterior use, because it is too soft, as can be seen at Launceston Castle and Priory. Care must also be taken to exclude any stone which has been slightly weathered, even imperceptibly. Reid *et al.* (1911) report that spheroidal masses of Polyphant stone were used to make a font at Launceston Roman Catholic Church; recent reports say that this font is showing signs of disintegration. Polyphant stone has been extensively exported out of Cornwall, particularly for use in churches, for example the tomb of Archbishop Temple in Canterbury Cathedral.

Another carbonatized basic igneous rock which has been used is Duporth Stone (Power and Scott, 1995). This occurs in the cliffs of Duporth Bay, near St. Austell (SX 036 513) and forms a sill-like feature in the Lower Devonian Meadfoot Group slates. It appears to have originally been intruded as a dolerite and has then been carbonatized to a mixture of talc, chlorite and various carbonates. Duporth Stone is pale greyish-green and often has a coarse speckled texture. It has been used in some of the pillars of Truro Cathedral (Thomas, 1889, also see the cover of Cartwright, 1997), and has also been used in St Paul’s, Charlestown and Holy Trinity, St. Austell.

Volcaniclastic rocks

Lower Carboniferous basic volcaniclastic rocks were some of the earliest building stones used in Cornwall and can be seen in North Cornwall in the Tintagel and Launceston areas in medieval structures such as Tintagel Castle. Whether these rocks originated as tuffs or some form of submarine pyroclastic flow is not clear. Because they occur in the Tintagel high strain zone, they have a strong structural fabric. They weather well and were presumably obtained from coastal exposures. In the Tavistock area, the similar Hurdwick stone was extensively used from medieval times onwards.

Rock type	Age	Lithologies	
Igneous rocks	Devonian - Lower Carboniferous	(1) basic intrusions	
		(2) basic/ultrabasic intrusions	
		(3) volcaniclastic rocks	
Post Variscan mineralisation	Late Carboniferous - Early Permian	(1) granites	
		(2) elvans	
		(3) lavas	
Metasedimentary and sedimentary rocks	Early Permian - Triassic	(1) veinstones	
		Devonian - Carboniferous Quaternary	(1) slates
			(2) sandstones
(3) beachrock			

Table 1. Building and decorative stones used in mid-Cornwall

LATE CARBONIFEROUS/EARLY PERMIAN GRANITIC ROCKS

Granite

Granite has been extensively used for building in Cornwall since Neolithic times, when megaliths and hut circles were erected in, and around, the granite uplands. Prehistoric working involved retrieving large blocks of loose granite lying on the surface, known as 'moorstone' and then using them with only minor shaping. In medieval times techniques for cutting and shaping moorstone were developed. Only much later, in the 19th century, were quarries opened to provide granite building stone. Granite dimension stone production was an important industry during the 19th and early 20th centuries in Cornwall. Stanier (1999) provides a detailed account of the history of the granite industry in Cornwall and Devon.

Granite is still worked in De Lank Quarry on the west side of the Bodmin Moor Granite (Floyd *et al.*, 1993; Selwood *et al.*, 1998; Figure 3). This is a hard non-porphyrific medium grained biotite granite, often with a slight foliation, which was used in



Figure 3. De Lank granite quarry in the western part of the Bodmin Moor Granite, still actively producing dimension stone.

many famous lighthouses, such as Eddystone, Bishop Rock and Beachy Head and in bridges such as Tower and Blackfriars in London. A recent contract supplied part of the granite paving for the courtyard at Burlington House, Piccadilly (Robinson, 2000). On the southeast side of Bodmin Moor, a large quarry below the Cheesewring, was worked for high quality granite which was taken for shipment at Looe via the Caradon railway. There were several other quarries in the same area.

The eastern part of the St. Austell Granite is a coarse grained biotite granite with large megacrysts of orthoclase and was formerly extensively quarried around Luxulyan, in Tregarden, Carbean and Colcerrow quarries, and many famous buildings and engineering structures such as the old London Bridge and Plymouth Breakwater were constructed from it. The exterior of Porphyry Hall and the Tower at Place, Fowey are built of Luxulyan granite.

A striking variant of this granite is 'luxullianite', which consists of black tourmaline and pink orthoclase feldspar; recently obtained samples from Tregarden quarry also contain masses of pyrite. Luxullianite can be cut and polished, and some of the slabs used to line the interior walls of Porphyry Hall, Fowey (Figure 4) are of polished luxullianite. Porphyry Hall was the creation of the great mine owner and quarrymaster, Joseph Treffry, and was built around 1840. It is a magnificent *tour de force* of the mason's art and displays many rare granitic rocks which it is difficult to see in the field nowadays. The slabs were cut and polished at 'The Porphyry Works', at Fowey Consols mine, where water power to drive the equipment was available.

Further to the west in the St. Austell Granite, are a series of

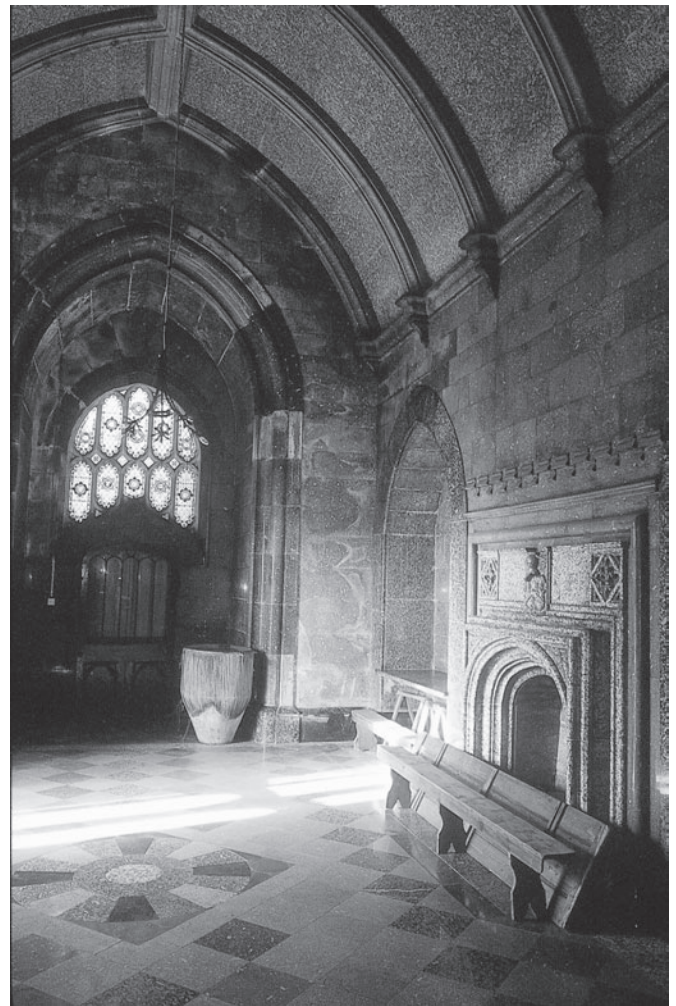


Figure 4. The interior of Porphyry Hall, Place, Fowey, constructed by Joseph Treffry in the 1840s. Lined with slabs of red Tremore elvan and luxullianite, with many other interesting stones from the vicinity of the St. Austell Granite.



Figure 5. The elvan dyke in the cliffs at Polrudden Cove, just north of Pentewan.

granite quarries around the tor at Carn Grey, which yielded a granite intermediate in character between the biotite granites of the eastern part of the St. Austell pluton and the more exotic types of the western part of the granite (Floyd *et al.*, 1993). Carn Grey is the main building stone used in the older buildings of St. Austell as, for example, in the Market House, built in 1844.

The lithium mica granites of the Nanpean and Hensbarrow areas, in the western part of the St. Austell Granite, which have been exploited for their china stones, can also be good building stones. Architectural historians refer to this type of granite as 'St Stephen's stone'. It is the palest coloured granite in Cornwall, some variants are almost white. It is non-porphyrific, comparatively fine grained and slightly softer than most other granites, which make it easier to work. St Stephen's church tower is made of this granite and the interior of Truro Cathedral is made lighter by the use of this type of granite, from Cathedral quarry, Nanpean, to line the interior. Some of the older houses in Lemon Street, Truro, were also constructed from this type of granite.

St Paul's Church at Charlestown used lithium-mica granite from a quarry between Hensbarrow Beacon and Stenalees; a small patch of turquoise seen in the granite of the east window proves that this must be the source, as this is the only area where turquoise is found in any quantity.

Granite has also been extensively quarried in the south-eastern part of the Carnmenellis Granite, notably in the parish of Mabe. The granite includes coarse and medium grained varieties, usually with abundant megacrysts, occasionally it shows foliation, particularly near the eastern margin. Proximity to loading wharves in the Fal Estuary led to a substantial dimension stone industry in the nineteenth century (Stanier, 1999). There are still several active quarries, now only producing crushed aggregate for general construction work. The largest block of granite ever extracted in south-west England, came from Polkanuggo Quarry, weighing in at a claimed 2738 tons. Carnsew Quarry, near Mabe, provided the stone for the exterior of Truro Cathedral. Granite has also been quarried in the Land's End Granite at Lamorna Cove and several other locations.

Elvans

The felsitic 'elvans' can be considered to be Cornwall's finest building stones. Some are also true freestones, as they can be readily carved into intricate shapes and are probably superior in durability to most of the Mesozoic limestones used as freestones in England. The felsitic elvans have a similar chemical composition to the granites but are much finer-grained. Originally many may have been glass, particularly at the margins, which has subsequently devitrified. They can be porphyritic, with phenocrysts of feldspar and/or quartz; the non-porphyrific varieties are preferred for finer carved work. In some cases the more massive elvans become coarser grained in the centre, with the texture of a microgranite. Generally, the elvans post-date the main stage mineralization, but not always. They can also be greisenized and/or kaolinized, although this may not always be apparent to the eye. Greisenizing will tend to improve the quality

of the stone, whilst kaolinization will render the stone suspect. Tourmalinization and reddening due to impregnation with iron oxides produce some attractive varieties. The usual form of an elvan is as a dyke, although sills are also known. Elvan dykes are remarkably persistent and may be traceable for many miles, so elvans may not always be related to the granite they are closest to. They have been worked in many different parts of the county, commonly along the strike length resulting in an elongate excavation, as at near St. Kew (SX015 768). Currently none are worked in Cornwall.

The most famous is Pentewan Stone which occurs as a dyke of non-porphyrific elvan, exposed in the cliffs about a quarter of a mile northeast of Pentewan, at Polrudden Cove (Figure 5). This stone was obtained in medieval times from quarries at the top of the cliff (SX026 475). The elvan exposed in the cliffs at Polrudden can be traced inland for about half a mile to a largish overgrown quarry in the valley behind Pentewan Village (SX022 478), which is probably where most of the extraction of stone in the 18th and 19th centuries took place.



Figure 6. 15th century carvings in Pentewan Stone on St. Austell Church tower.

St. Austell Church tower, with its famous 15th century carvings (Figure 6), and the exterior of Place, Fowey, are composed of this stone. It is usually a pale straw or yellow colour, often with tinges of brown and pink, and stands up to weathering well. Prolonged exposure to the weather, over many centuries, as can be seen at the base of St. Austell church tower, can lead to the surface layer of the stone developing a honeycomb texture. Interestingly, a recent study by Mottershead (2000) showed that Pentewan Stone used in old buildings, when subjected to XRD examination, was solely composed of quartz and mica, suggesting it had been greisenized. Flett (in Ussher *et al.*, 1909) commented on the extensive greisenizing of the elvans as well, based on thin section examination. With no feldspar left to alter, greisenizing may be the explanation for this stone's durability.



Figure 7. *Pentewan Church. Note the repair on the right hand side, which has probably been carried out with an atypical Pentewan-type stone, which may not have come from Pentewan.*

Many buildings described by architectural historians as being built of 'Pentewan Stone' are built of similar stone from locations such as Polgooth, Sticker, Penrice, etc. An example of this is St. Levan's church at Porthpean, near St. Austell; the elvan here superficially looks similar to Pentewan Stone, but closer inspection shows phenocrysts of feldspar, and it was eventually traced to a small quarry nearby in Penrice Woods (SX 023 505). Another example is Pentewan church which, not surprisingly, is built of the local Pentewan Stone. A recent attempt to repair the church has, however, been made with a stone which, no doubt, the restorers thought was Pentewan Stone, but it is doubtful that this is Pentewan Stone from Pentewan, so the repair, on the right side of the building, stands out clearly (Figure 7). Not far away, near Porthpean, is the Georgian Penrice House, which is built of a Pentewan-type stone, this time a very fine grained whitish variant. Investigation revealed that it is likely that this stone came from a pair of infilled quarries less than half a mile away (SX 027 498). When it was proposed that a conservatory be added to the house, the Planning Authority required that it be constructed from Pentewan Stone. So a Pentewan-type stone recovered from an old barn was used, but it does not match the original and probably did not come from the quarries at Polrudden Cove, Pentewan or Penrice.

These occurrences have been detailed because it is an object lesson to planners and bodies such as English Heritage that, before they insist on conditions about the kind of stone to be used, they must fully understand the geological occurrences of the stones concerned and respect local knowledge in this respect.

Another important source of building stone was the Newham elvan, which was worked in a quarry about a kilometre south of Truro. This is similar to Pentewan, but is often foliated, with quartz veins in it, so that on casual examination it can superficially look like a siltstone from the Portscatho Formation. The dominant stone used in the Georgian buildings of Lemon Street, much praised by Pevsner (1951), is Newham elvan. It does not appear to carve so well as Pentewan-type stone. This can be seen in the early 16th century St. Mary's Church, now incorporated into the Cathedral, which is a wonderful hotch-potch of Newham Stone, Pentewan-type Stone and Bath Stone. Nineteenth century accounts (Thomas, 1889) record that an additional elvan-type stone used in St. Mary's is called 'Wild Duck', but the source of that stone is unknown.

An example of the local use of elvan is seen at St. Bartholemew's Church and in the village of Warleggan, where a porphyritic elvan is extensively used. Most of the medieval building would have used locally derived 'moorstone', but a quarry was opened later (SX 152 697).

The Tremore elvan has prominent phenocrysts of white orthoclase feldspar and quartz set in a red, pink or grey fine grained matrix with spherulitic growths of black tourmaline (see Barrow and Flett, in Ussher *et al.*, 1909). It should be regarded as both a decorative stone and a building stone and was extensively

quarried at Tremore (SX 010 648), near Withiel. Joseph Treffry used polished slabs of the blood-red iron-stained Tremore elvan to line the interior of Porphyry Hall (Figure 4). Queen Victoria and Prince Albert so admired the stone on a visit to Cornwall in 1846 that they used a polished slab of Tremore elvan for alcoves in Osborne House on the Isle of Wight. Two locations where polished Tremore elvan can be readily seen are as tiles in the floor of the Baptistry in St. Austell Parish Church and as a large slab forming a table at the rear of Lanlivery Church. An example of Tremore used as a building stone is the front of West Hill Baptist Church, St. Austell.

VEINSTONES ARISING FROM POST-VARISCAN MINERALIZATION

A significant amount of the stone used in older buildings in the mineralized areas has come from metalliferous workings. Early medieval buildings often use stones which look as if they have come from tin streaming and 18th and 19th century buildings often use stone which came from underground mining. A wall made of veinstone from Charlestown United mine is shown in Figure 8.

Porphyry Hall used some of this type of material, the skirting is made of schorl - a mixture of tourmaline and quartz. Exactly where Joseph Treffry obtained this from is not recorded; there is similar material in Rocks and Carclaze china clay pits, so early 19th century tin mines at these locations are possible sources. The central floor rose at Porphyry Hall (Figure 4) also contains panels of schorl and the topazfels from St. Mewan Beacon (SW 985 535), which is a high temperature hydrothermal veinstone from the contact between the granite and Devonian metasediments just south of Blackpool china clay pit (Floyd *et al.*, 1993). Typically containing 25% topaz, this rock has been used elsewhere in Place for flooring, presumably because the topaz and quartz make a hardwearing combination. Collins and Coon (1914) reported that the St. Mewan topazfels was used for the wearing floor of mills used to grind china stone because of its hardness.

White quartz stone is often used in building in Cornwall north of the Camel Estuary and southwest of Truro in the Kea area. Some of this may be true veinstone, but some could possibly be a form of silcrete developed during deep chemical weathering in early Tertiary times.



Figure 8. *A rough wall made of angular blocks of veinstone and tourmalinized killas, Sandy Hill, near St. Austell. This veinstone probably came from Charlestown United mine, which is only a few hundred metres away. The tourmalinized killas may have come from stream tin workings in the Sandy valley.*

SLATES

Large quantities of slate have been, and are being, used for building purposes in Cornwall. A group of quarries in the Wadebridge area yield large quantities of Middle Devonian slate,

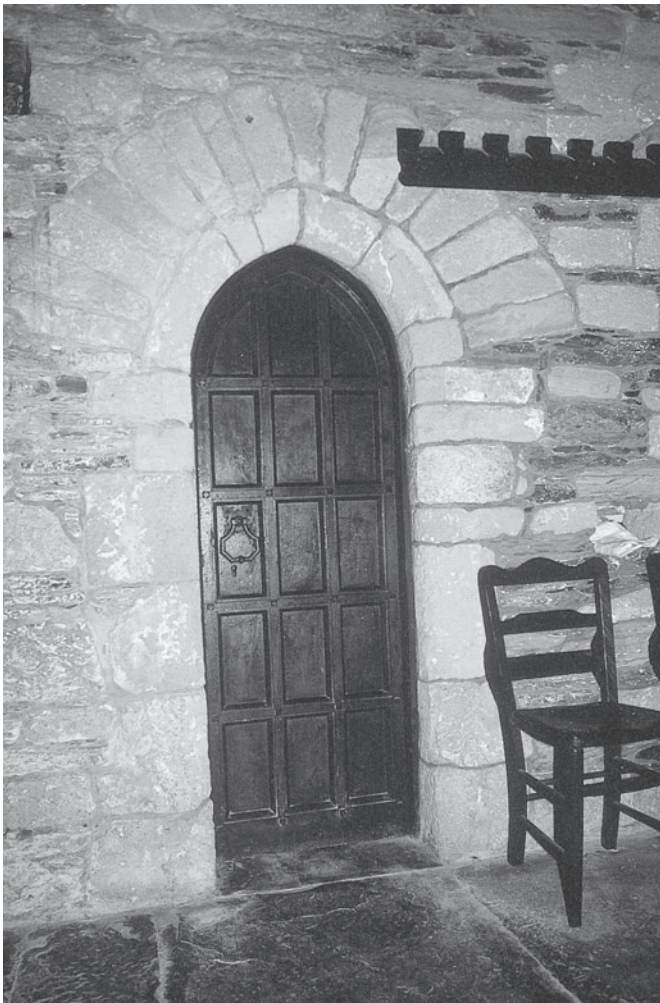


Figure 9. An arch in the 14th century St. Carantoc's Church, Crantock, built from 'sandrock', the source of which may lie under the dunes to the northwest of the Church.

known as 'St. Issey Stone', which is used for a variety of purposes where a natural stone finish is desired, notably for constructing the familiar 'Cornish hedges' alongside new road schemes. There are a large number of other small quarries throughout Cornwall which yield slate which is used locally, most of these quarries are in Devonian slate, a few are in Carboniferous slate.

Besides the well-known Delabole slate quarry, there is the lesser known active quarry in Upper Devonian slates at Trevillet, near Tintagel, which yields paving, cut slabs and other building products, which can be used for decorative purposes such as the construction of fireplaces, patios, etc.

Where a slate with a high pyrite content is used, as with the Meadfoot Group slates in the St. Austell Bay area, problems can occur as the pyrite slowly oxidises during weathering. The oxidation of this pyrite creates acidic conditions which cause the stone to deteriorate, hence it is best avoided for external walls of buildings.

SANDSTONE

Sandstone has been worked on a small scale from a few quarries in the Portsatho and Grampound formations in south Cornwall and the Staddon Grits in southeast Cornwall; its main use is as a general purpose building stone. In a recent study of the durability of building stones used in South Cornwall in coastal locations, Mottershead (2000) showed that the sandstones of the Portsatho Formation, used in the 16th century St. Mawes Castle are, somewhat surprisingly, the most durable. In North Cornwall, there are several active quarries exploiting the Upper Carboniferous sandstones. Much of the stone is now used as a

crushed aggregate, as at Cansford Quarry (SX 168 931) in Crackington Formation sandstones, but most traditional building in this area used these sandstones.

LIMESTONE

Middle Devonian limestone from Plymouth occurs quite frequently as a building stone in the vicinity of limekilns, as can be seen at Charlestown. Evidently, limestone being imported into Cornwall, ostensibly for limeburning, was also a convenient source of building stone. Limestone had to be brought in from Devon because it is almost absent from Cornwall, apart from a few pockets in the Launceston area, around Veryan and near Trevone. The Launceston occurrences, which are well away from the coast, were probably of more value for limeburning than they were for building.

This deficiency in lime-bearing rocks was overcome, notably near the north coast, by using beach sands which have a high bioclastic content. Sometimes these Quaternary sands, particularly where they form a raised beach, are cemented, for example at Godrevy Point near Hayle, in the Padstow Estuary and on the north side of Fistrall Bay. This 'sandrock', as it is known, is just about hard enough to be used as a building stone.

Sandrock has been used in some of the older churches, as at Padstow and for the font at St. Enodoc and, as in Figure 9, in St. Carantoc's church at Crantock. It is possible that the source of the sandrock for this church may lie behind Crantock beach, having been covered with blown sand since it was worked in medieval times. Crantock church once had a tower, but it collapsed shortly after it was built in the 14th century, suggesting that there are probably structural limitations with sandrock. However, it must be one of the geologically youngest building stones to be used anywhere in Britain, probably having been laid down as a raised beach during the last interglacial.

CONCLUSIONS

(1) Cornwall has a rich heritage of good quality and distinctive building stones which deserve to be better known and the use of these stones in restoration and contemporary building in the appropriate settings is strongly advocated.

(2) There are, however, pitfalls in using these rocks, because terms such as 'Pentewan Stone' may include stone from many different locations, which may differ in their appearance.

(3) There is a need to draw up an inventory of the sources of the more important building and decorative stones.

(4) Some thought needs to be given to the means to enable small quantities of stone for restoration and new projects in sensitive locations to be extracted, in order to conserve the character of the local built environment.

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