Strategic Stone Study
A Building Stone Atlas of Gloucestershire

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Introduction

This summary of the principal local building stones of Gloucestershire is based upon numerous works listed in the references to this document. The stones are described in chronological order, starting with those from the Palaeozoic Terrane found mainly to the west of the River Severn, progressing eastwards through the Severn Vale to the Cotswolds and the famous Jurassic age building stones of this area.

Forest of Dean and Welsh Borderland Areas

As Earp & Haines (1971) point out, in this area, “almost every rock type reasonably resistant to weathering or abrasion has been quarried locally for building, walling or road surfacing”. The following are a summary of the most important, notable or difficult to replace stones used in the area. The variety of stone available in the area means that neighbouring villages could have very different characteristics of stone use and that very often different stones are used in the same building (Price, 2002b).
Precambrian
Malverns Complex

Malverns Complex rocks form the central ridge of the Malvern Hills, and consist variably of gneiss, schist and granites. In north-west Gloucestershire the rocks crop out at Chase End Hill where an old quarry exposes both gneiss and granitic pegmatite veins. This rock is found locally in boundary walls and in some local cottages but is restricted to the immediate vicinity of Chase End Hill and Bromsberrow.

Silurian
HUNTLEY QUARRY BEDS

The Huntley Quarry Beds are an extremely rare rock, limited to just one small outcrop, now a Geology Reserve. They consist of an interbedded sequence of sandstone and fissile mudstones, with a significant proportion of volcanic glass and ash within the sandstone matrix. The rocks were mainly used as aggregate but some nearby cottages in Hinders Lane contain blocks of Huntley Quarry Beds sandstones in their walls.

May Hill Sandstone Group
Huntley Hill Formation

The Huntley Hill Formation is part of the May Hill Sandstone Group, which also includes the Yartleton Formation, which tends to be more mudstone-rich and less used as a building material than the massive conglomeratic and pebbly sandstone beds of the Huntley Hill Formation. The red coloured coarse, gritty sandstones are often used in agricultural buildings in the area around May Hill, and in some local cottages as well as being extensively used for walling. Very few available exposures of this formation remain, and even fewer of these provide access to stone suitable for use as a building material, the best exposure being that seen at May Hill Farm.

Downton Castle Sandstone Formation
(CLIFFORD MESNE BEDS)

Gorsely Stone

The Downton Castle Sandstone has been used extensively for roofing tiles, as well as for ashlar and massive freestone. The rocks are fine grained, micaceous, yellowish-buff sandstones, locally flaggy and current bedded with some fissile mudstone horizons. The rocks have been worked extensively further north-west to Herefordshire but the most notable working in north-west Gloucestershire are the former quarries at Clifford’s Mesne where a particular facies known locally as the Clifford’s Mesne Beds were worked. Unfortunately the largest quarry has been largely infilled and is now the garden of a private house. Next door is the village church (above), built of stone taken directly from the adjacent quarry. Stone from the village was used at least as far eastwards as Highnam (Newent Local History Society 2003).
Devonian
Raglan Mudstone Formation
Bishop’s Frome Limestone Member
Psammosteus Limestone

This horizon forms the boundary between the Raglan Mudstone and the St Maughans Formation of the Old Red Sandstone. It is a calcareous horizon within a sandstone sequence formed as a result of precipitation of calcium carbonate released from evaporating waters on an arid land surface. It has been used as a building stone in Naas Court and Arlingham Court, as well as an altar top in a crypt chapel at Gloucester Cathedral (Price, 2002b). It was also possibly quarried from Fairtide Rock, in the River Severn. Some stone was taken to Berkeley Castle in the 14C and in the 17C where it was known as ‘Severn Stone’ (Earl of Berkeley, 1938).

St Maughan’s Formation

Thinning bedded sandstones of the St Maughan’s Formation were not ideally suited as building materials, but have been used in the Forest of Dean area to produce roofing slates, used mainly on agricultural buildings and outbuildings. There are currently no known exposures of this formation accessible in the county.

Brownstones Formation

The Brownstones of the St Maughan’s Formation were also used to produce roofing slates, but the sandstones are more thickly bedded in places, allowing for a wider variety of uses including block building stone, steps, paving and for carved ornamental mouldings. They are fluvial deposits, laid down in a low sinuosity braided river system (Green, 1992), occurring in cycles of sedimentation, in typical fining upward sequences. The Brownstones are currently worked at Wilderness Quarry near Mitcheldean (commercial name ‘Red Wilderness’ Stone), and at Copes Quarry near Blakeney for roofing slates. At Wilderness Quarry, the rocks have yielded an abundant fish fauna and stone from this site was used in the City Hall in Toronto, Canada.

Quartz Conglomerate Formation

The very coarse-grained Quartz Conglomerate is particularly resistant to erosion and forms much of the rim of the Forest of Dean syncline. It ranges in thickness from between 2-30m and can include interbedded sandstones between the conglomerate bands. Large slabs of Quartz Conglomerate were used for the walls of central chambers, Long Barrows (Welch & Trotter, 1961), but a more common and recent usage has been as quern-stones and as apple cider presses. A mill stone industry developed, especially in the Wye Valley, and lost or discarded millstones can be seen along the river in places. The large pebbles in the Quartz Conglomerate can make it difficult to work and shape as a building stone, but some local cottages, such as those in the Soudley Valley have made use of it. It is also used in some of the river walls at Tintern.
**Tintern Sandstone Formation**

The Tintern Sandstone is at its best developed in the area around Tintern and a great deal of it was used in the construction of Tintern Abbey, just across the River Wye in Monmouthshire (below). The main site for its working was at Barbadoes Quarry in Monmouthshire. However a large disused quarry in the Tintern Sandstone occurs on the Gloucestershire side of the river, just several hundred metres upstream of the Abbey, which may also have supplied stone for construction of the abbey buildings. The village of Tintern is littered with Tintern Sandstone used as building blocks, much of which seems to have been reused from the Abbey building materials. The rock is typically a grey-green, red and purplish-brown, coarse conglomeratic sandstone, but some finer sandstones occur within the succession, as do red and green mudstones (Green, 1992). This was also quarried to the north as a yellowish sometimes greenish fine sandstone much used in the ancient medieval churches of the Forest, although the exact locations of these quarries remains uncertain.

**Carboniferous Avon Group**

This formation is not typically known for its building stone, but has been used where limestones predominate over shales at the top of the sequence, towards the south-west part of the Forest of Dean. The principal building stone of the formation is the coarse bioclastic and ooidal limestone, often reddened by haematite staining and containing ripple marks and current bedding in places. These limestones are often very fossiliferous. The formation is used for a variety of building purposes from block stone, to walling stone and paving, as well as being crushed for aggregate. It was also worked to make cement at a site in Mitcheldean, quarried from Stenders Quarry, now a nature reserve. It is currently worked at only one quarry in the Forest of Dean, Stowe Green Quarry, operated by Clearwell Quarries Ltd.
Late Carboniferous
Pennant Sandstone Formation
Forest of Dean Stone

The Pennant Sandstone is often known locally as Forest of Dean Blue or Forest of Dean Grey when referred to as a building stone, due to subtle differences in colour. This rock makes up the greater part of the Coal Measures of the Forest of Dean, and contains several notable coal seams within the sequence. It has been most extensively worked for building stone between the Yorkley and Whittington coal seams (Welch & Trotter, 1961), and quarries are to be found particularly where strata has a low angle of dip, within the Forest of Dean Syncline. The blue stone is most valued as a building stone, some of which is almost of a ‘gun metal blue’ colour (e.g. windows in Mitcheldean church.) Grey and green varieties are much employed as a dense heavy stone much used in engineering and construction for docks (South Wales as well as local), breakwaters, railway works, engine sheds etc. A reddened, iron-stained variety of the sandstone is quarried at Mine Train Quarry.

The Pennant Sandstone is one of the regions most important building stones (Price, 2002b) and has been used in many buildings in Gloucestershire and beyond. These buildings include Thomas Telford’s bridge over the Severn at Gloucester (below), Eastnor Castle, Bristol waterworks, Several notable London Buildings and the 15C church at Ruardean in the Forest (United Stone Firms, 1913), proving a long history of the stones worth as a building material. Only a handful of quarries now remain active in the Pennant Sandstone, such as Mine Train, Bixhead and Birch Hill quarries, but the Forest of Dean Stone Firm’s works at Cannop has recently upgraded its equipment so the supply of this stone is not a problem in the medium term. So many disused or dormant quarries can be found in this formation that it should be possible to safeguard a long term supply fairly easily.
Severn Vale Area

Crossing into the Severn Vale is a giant leap, geologically, from the folded Palaeozoic rocks to the west, into an area of gently inclined Mesozoic strata. The rocks in this area are generally softer and provide fewer good building stones, however, a significant number of formations have still been utilised at various locations in the Severn Vale. For the purposes of this report, we draw a dividing line between the Severn Vale and the Cotswolds at the horizon of the Marlstone Rock Formation, which forms a distinctive platform on many places along the Cotswold Escarpment. It is also the stratigraphically highest usable building stone of the Lias Group, found beneath the typical ‘Cotswold Limestone’ rocks that characterise the majority of the Cotswolds.

Permian

Bridgnorth Sandstone Formation

This soft red sandstone, part of the sequence of the ‘New Red Sandstone’ of Permian age, formed in an arid desert as wind blown dunes. The sand grains are poorly cemented together and the rock is easily eroded and broken up, and can often be crushed between your fingers. However, this has not prevented its use as a building stone, where it was found to crop out locally, but its widest use was as a crushed stone aggregate for sand. One quarry at Bromsberrow in the north-west of the county remains active in this formation, but all their product is crushed sand and not block stone.

Triassic

Sherwood Sandstone Group

Bromsgrove Sandstone Formation

The Bromsgrove Sandstone, has been widely used as a building material. It contains deposits of red, brown and grey pebbly sandstone, siltstone and mudstone, together with more uniform red sandstones. Within the formation there are both aeolian and fluvial facies and both have been employed in the construction of buildings such as at Huntley Church, a Grade II Listed building (above), and Bromsberrow church, where it was quarried just north of the church. Some small, disused pits remain visible but there are currently no active quarries in this formation in the county.
Mercia Mudstone Group
Arden Sandstone Formation

The Arden Sandstone is a relatively thick sandstone unit occurring within the Mercia Mudstone Group. It runs from Newnham in a sinuous outcrop, northwards up the west side of the Severn towards Tewkesbury. It consists of varicoloured green/blue, brown, buff and purple sandstones, with beds of conglomerate occurring locally (BGS, 2009). It is commonly used not far from its outcrop, mostly as coursed rubble but also occasionally as ashlar, usually mixed with Lias Group calcareous mudstones. It is identified by quartz pebble content and lenticular holes caused by the weathering out of softer clay clast inclusions.

There are some ancient quarries around Corse. Price (2002b) notes that these sandstones were used from medieval times, mainly for churches and large farmhouses, and that a few isolated blocks can be found in Tewkesbury Abbey. He also states that the apparent last use of the stone was in 1829 for the R.C chapel alongside Hartpury church (below). A good quality white sandstone (with black lines of carbonaceous material useful for identification) was used as ashlar in Twynning church. This is presumed to have come from a medieval quarry as yet unidentified.

Quarries in the Arden Sandstone are mentioned by Murchison & Strickland (1837). It can be commonly mistaken for Lias limestones. No quarries remain working in the Arden Sandstone but perhaps the best site with potential for providing a source of this stone is Glebe Barn Quarry where a good section has been worked to provide stone for a nearby house. Interestingly, with reference to the use of this stone in Tewkesbury Abbey, this site is owned by the Diocese of Gloucester (Chidlaw & King, 1994).

Lilstock Formation
LANGPORT MEMBER
White Lias

The Langport Member forms the upper part of the Lilstock Formation of the Penarth Group, the bounding rock unit separating the Triassic and Jurassic periods. It dominantly consists of pale grey and cream limestones, with mudstone partings, and tend to be irregular and rubbly in their lower part, but hard and well bedded towards the top (Green, 1992). Price (2002b) notes the ‘White Lias’, being used in the south of the county in several medieval churches, intermixed with red or purple sandstone and was popular as kerbs, flags and coursed rubble.
Lower Jurassic
Blue Lias

Thinline interbedded limestones, calcareous mudstones and siltstones make up the Blue Lias, with individual beds being often no more than 0.3m thick (BGS, 2009). Price (2002b) states that Blue Lias is often mistaken for Purbeck Marble in the shafts of Gloucestershire churches and was also used for paving and gravestones. The thinly bedded nature of the strata led to numerous different characteristics of use and at Asheworth Court and church the good and less good stones have been mixed in alternate courses (Price, 2002b).

Marlstone Rock Formation

Marlstone or Marlstone Rock Bed aka Hornton Stone outside the county. The Marlstone Rock Formation is a conspicuous feature within the mainly soft mudstones, siltstones and claystones of the Lias Group, consisting of an iron-rich, sandy, very fossiliferous impure limestone containing brachiopods, lamelibranchs, crinoids and belemnites. It passes into calcareous sandstone, which forms noticeable plateau and ledges along the western scarp of the Cotswold Escarpment. Price (2002b) notes its use “to a limited extent, wherever found”, notably between Wotton-under-Edge and Uley, extracted from The Quarry near Cam. The stone, although tough to work, is rather soft and liable to spalling and weathering, but has a pleasant rusty brown colour making it an attractive building stone. It is also found around the Moreton in Marsh area in the Lias outcrops. Fretherne church is built of Marlstone, although it has recently been repaired with Hornton Stone from Oxfordshire.

Middle Jurassic
Inferior Oolite Group
Birdlip Limestone Formation (Cotswolds Area)
Lower Inferior Oolite

This formation contains individual members that have been used widely as building stones. These are listed below, along with their previous names, which are often the names referred to when discussing their use as building stones.

CRICKLEY MEMBER
Lower Limestone

The Crickley Member consists of two distinct lithologies, formerly known as the Lower Limestone and the Pea Grit. The usefulness of the Lower Limestone as a building stone depends greatly on where it is sourced, reaching its thickest development around Frocester Hill where it consists of around 10m of unfossiliferous, current bedded ooidal limestone (Green, 1992). The Lower Limestone provides a hard, durable freestone, sometimes containing occasional small quartz pebbles. It has a variable colouring when newly worked and weathers to a silver-grey, as seen in Selsley Church (Price 2002a). It was worked in numerous quarries southwards of Crickley Hill, but northwards the limestone of the Cleeve was preferred as a building stone. Used in the older churches and farmhouses of the Vale, it is an unusual and distinctive building stone. Found within the Lower Limestone were the quartz-pebble rich Beds, worked at Hudding knoll, Selsley, Standish, and Haresfield quarries. It is best seen as isolated ashlar blocks in Standish and Haresfield churches, and was also used in Ebley Chapel (since demolished).
Pea Grit

The Pea Grit is a coarsely pisoidal unit consisting of large disc-shaped, algal-coated grains, making up a sequence of buff, marly and rubbly limestones (Green, 1992). It crops out in the area between Stroud and Cleeve Hill where numerous old quarries on the escarpment provide exposures of it. The most significant of these exposures are at Crickley and Birdlip Hills and Leckhampton Hill where the rocks are best displayed and where they were quarried until the 1920’s (Price 2002a). The Pea Grit is termed a “weatherstone” due to its resistance to erosion and was employed for many different purposes from mouldings to gateposts (Price 2002a) from north of Gloucester to Tewkesbury in the Vale. It has been used in medieval buildings in Tewkesbury, Winchcombe and Soudley, as well as at Hailes Abbey (below).

Pea Grit has recently been discovered in Gloucester Abbey (now Cathedral) where all the earliest Romanesque work is Pea Grit (from the “Peagrit (sic) Coral Bed” as described by Witchell (1882) and coming from Birdlip Hill. A medieval quarry still exists there on end of the hill, covered in ivy, but with no weathering of the face at all.

The limestone has been identified by the presence of large echinoids, but is usually indistinguishable from ‘Painswick Stone’. Other rougher, yellowish-brown, vuggy limestone beds from Upton St Leonards and Painswick were used by the Romans in Gloucester City Wall (3C) and later for the plinths of the Cathedral.

Cleeve Cloud Member

The Cleeve Cloud Member (formerly the Lower Freestone) is by far the most important unit used for building stone in the Cotswolds. It consists of a thick succession of massive, uniform oolite, strongly current bedded with very little fossil content. It achieves a thickness in excess of 50m around Cleeve Hill and Leckhampton Hill. The last quarry supplying this stone closed at Painswick in 1962, but it has been worked in numerous quarries along the Cotswold Escarpment, as well as from numerous underground galleries in the Chalford and Nailsworth Valleys to Horsley, where it was all marketed as ‘Painswick Stone’; from in the south to Whittington and Westington Hill in the north (Price, 2002a). It is not identifiable as a building stone south of the Woodchester Valley.

Hailes Abbey
It was the most widely used and versatile of the Cotswold Limestones, perhaps the only one to reach the national markets. It has been used since the Roman period, and widely exported since medieval times to various abbeys, cathedrals and other notable buildings. Brewer (1825) remarks “Considerable quantities of this stone are sent to various places, but chiefly to London, where it finds a ready market, … and it may be remarked that some has been used in the alterations now being made at Windsor Castle”. With the coming of the canals and railways it was exported all across southern England, some areas of the Midlands and used especially for decorative carving and internal church work of all descriptions. The intricate fan vaulting inside St John the Baptist Church in Cirencester was constructed from large single sections of Cotswold Limestone (below). It has also been used as paving in Tewkesbury and Gloucester Abbeys, and at Windsor Castle. Used in conjunction with Minchinhampton Weatherstone, it creates some of Gloucestershire's best table-top tomb stones, for example, those in Elmore and Painswick churchyards and Pitteville Pump Room (right).

The ‘grits’ of the Aston Limestone Formation consist variably of rubbly, commonly iron-shot and often conglomeratic limestones, crowded with fossils which lend their names to the various units, depending on their type and relative abundance (i.e. Gryphaea sp. = Gryphite Grit; Trigonia costata = Trigonia Grit; Lobotyris buckmani = Buckmani Grit). Despite being resistant to weathering, their hard, rubbly and fossiliferous nature makes them difficult to work. Price (2002) states that they were used for field walls, foundations, and occasional ornamental rustic work and for rockeries. These rocks are found throughout the Cotswolds area and show varying thicknesses within the sequence, most notably along the ridge of the Cotswold Escarpment and in several disused railway cutting further to the east.

The Notgrove Member is a hard, white, fine textured ooidal limestone (Green, 1992), which was difficult to work and therefore used in small sizes for random or coursed walling (Price, 2002).
Great Oolite Group
Chipping Norton Limestone Formation

An extremely variable unit from the Great Oolite Group, ranging from fawn-coloured to white, shelly ooidal limestone (some 2 to 5 metres thick), to buff, hard, sandy and splintery ooidal limestone, sometimes flaggy. Decalcification has in some cases reduced it to sand. Outcropping around the north-east of the Gloucestershire Cotswolds, it has been worked at sites such as Hornesleasow Quarry and New Park Quarry, but is limited to just seven known quarry sites in total, although several are working or dormant quarries (Owen et al, 2005). Records of its use as a building stone in Gloucestershire seem limited to the flaggy beds being utilised as ‘paving’ (Green, 1992).

EYFORD MEMBER
Fuller’s Earth Formation
Cotswold Slates, Pendle

The Eyford Member is the Gloucestershire equivalent of the famous ‘Stonesfield Slate’ of Oxfordshire. It is a varied sequence of strata consisting of fissile, sandy, shelly and ooidal limestones, which has been worked for roofing slates from an impersistent bed near the base of the member (Green, 1992). Former quarries occur at Eyford Hill Farm, near Bourton-on-the-Water, and the member is still worked and producing stone roofing slates at nearby Huntsmans Quarry.

Througham Tilestone Formation
Througham Tilestone

These mainly fissile, sandy limestones occur at the top of the Fuller’s Earth around Minchinhampton where it forms a transitional unit between the Fuller’s Earth to the south and west, and the ooidal Taynton Limestone to the north and east. Their ease of splitting made them useful as roofing slates, and they were widely exploited where they were available (Green, 1992).
Taynton Limestone Formation

Taynton Stone

In the north-central part of the Cotswolds this rock consists of cross-bedded ooidal limestone with abundant and characteristic seams and wisps of shell detritus (Green, 1992), passing into the Hampen Formation. In the Stroud area it passes westwards into finer grained limestones of the Througham Member. The stone typically weathers golden-brown, with contrasting white shell fragments within it where protected, but grey in colour in more exposed locations (Price 2002). It was widely worked for building stone throughout the area, but in Gloucestershire the main working site is at Farmington Quarry (Owen et al, 2005) where it is used for intricate mouldings, carvings and ornaments, as well as for block stone. The Farmington Natural Stone website (2009) lists its recent use in Highgrove House and at Oxford University, among other sites. Price (2002) notes its use extensively in the Churn and Coln Valleys and extraction from the Windrush Valley for transport to Oxford, Windsor and London. He goes on to say that at several sites the stone was worked underground and was easy to work into mouldings when ‘fresh’.

MINCHINHAMPTON LIMESTONE MEMBER

Minchinhampton Weatherstone

The Minchinhampton Weatherstone is one of the oddities of Jurassic geology in Gloucestershire. It occupies a unique position on Minchinhampton Common, where it forms a transitional lithology between the typical ‘Shelly Beds’ to the south, and the finer grained limestones of the Dodington Ash Rock Member to the north, with the transition between the two facies occurring at the common. It comprises around 7m of cream, cross-bedded, re-cemented ooidal limestones, and it is the re-cementation (The initial sedimentary rock has formed and then at a later date crystalline calcite has filled the void spaces and made it much harder) which has produced the exceptional hardness of these rocks (Green, 1992; Campbell, 2009). Quarrying is recorded from the 14C and used for table, tombs, ledgers and slabs (Price, 2002) and is found in the doorway of Minchinhampton church, as well as being used in parts of Gloucester Cathedral.

The Hartpury Bee Shelter, constructed from Minchinhampton Weatherstone.
**Athelstan Oolite Formation**

**Planking, Chinastone**

The Athelstan Oolite consists mainly of white to pale yellow fossiliferous ooidal limestones, changing from well sorted and massive in the southwest of the area, to a more bioclastic, coarser cross-bedded unit in the north-east, where they pass laterally into the White Limestone Formation (Green, 1992; BGS, 2009). At the base of the formation is an impersistent oyster bed, sometimes referred to as the ‘Scroff’, with the harder limestones known as the ‘Planking’ or Planking Beds (Green, 1992). Price (2002) states that the ‘Planking’ was used to build Neolithic long barrows and later for stiles, copings, flagstones and steps, numerous old quarries can be found on the commons around Quarhouse. He also notes its use in the rebuilding of the spires of Notgrove and Painswick churches.

**White Limestone Formation**

**Dagham Stone**

Another oddity of the Great Oolite in Gloucestershire is the occurrence of ‘Dagham Stone’. This is not a particular geological formation, but rather a feature found within the White Limestone Formation. The stone is characterised by tubular cavities in recrystallised limestone, 1-2cm across, formed by burrowing organisms, and usually filled with calcareous sands. The name comes from Dagham Down, north of Cirencester, and examples in section can be seen at Foss Cross and Daglingworth quarries. Dagham stone was used as an ornamental stone often in rockeries, but also in walls and as gateposts, as can be seen in the gates to Cirencester Park. (McCall & Copestake, 2008).

**Forest Marble Formation**

**KEMBLE BEDS**

**Poulton Slates**

The term ‘Forest Marble’ was originally restricted to the distinctive shell detrital limestone between the Great Oolite and the Cornbrash, but was later extended to include all rocks in this stratigraphical position, leading to an extremely variable succession of rocks (Green, 1992). The formation dominantly consists of very fine greenish-grey silicate-mudstone with notable siliciclastic sandy and calcareous facies occurring throughout, including gradation from pure shelly ooidal limestones to sands with concretionary ‘doggers’ (Green, 1992; BGS, 2009). Between Cirencester and Fairford the Forest Marble has provided slates, known locally as ‘Poulton Slates’ (Green, 1992). Price (2002) states that it was also used for flagstones, with upright slabs being used as fences (above), walls and Barron et al (2000) also cite its use for roofing slates.
**Cornbrash Formation**

The Cornbrash in Gloucestershire is typically a pale grey/purple/olive-brown, marly, fossiliferous, non-ooidal, rubbly limestone and crops out between Cirencester and Fairford in the southeastern part of Gloucestershire. The rock weathers to a golden brown colour. The Cornbrash limestone was used as a building stone in the area of Siddington until the early 19C, and at Fairford (Hollingworth, 2006).

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**Pleistocene**

**TUFA**

**Puff Stone**

Tufa is a relatively recent deposit, formed by precipitation of lime from water saturated with calcium carbonate. In this area it forms generally where water has passed through the overlying ooidal limestones on the escarpment edge and has been forced to the surface by the Lias clays. Price (2002b) records a deposit of tufa from Dursley being over 7m deep, and says that the rock type was used extensively by the Romans for bath vaults, and that it is well displayed in Uley, Nympsfield, Ashleworth (below) and Newington Bagpath churches. No workable deposits are known to survive in the area.

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The use of Puff Stone in the church porch at Ashleworth.
Glossary

Ashlar: Stone masonry comprising blocks with carefully worked beds and joints, finely jointed (generally under 6mm) and set in horizontal courses. Stones within each course are of the same height, though successive courses may be of different heights. ‘Ashlar’ is often wrongly used as a synonym for facing stone.

Bioclastic limestone: A limestone composed of fragments of calcareous organisms.

Calcareaous: A rock which contains significant (10-50%) calcium carbonate principally in the form of a cement or matrix.

Carbonaceous: Consisting of, containing, relating to, or yielding carbon.

Cemented: The materials which bind the grains and/or fossil components together to form a rock.

Conglomerate: A sedimentary rock made up of rounded pebbles (>2mm), cobbles and boulders of rock in a finer-grained matrix.

Facies: A term describing the principal characteristics of a sedimentary rock that help describe its mode of genesis e.g. dune sandstone facies, marine mudstone facies.

Fossiliferous: Bearing or containing fossils.

Freestone: Term used by masons to describe a rock that can be cut and shaped in any direction without splitting or failing.

Gneiss: A coarse-grained, foliated metamorphic rock that commonly has alternating bands of light and dark coloured minerals.

Granite: Coarsely crystalline igneous rock, composed primarily of quartz, feldspars and micas, with crystal sizes greater than 3 mm.

Interbedded: Occurs when beds (layers or rock) of a particular lithology lie between or alternate with beds of a different lithology. For example, sedimentary rocks may be interbedded if there were sea level variations in their sedimentary depositional environment.

Limestone: A sedimentary rock consisting mainly of calcium carbonate (CaCO₃) grains such as ooids, shell and coral fragments and lime mud. Often highly fossiliferous.

Lithology: The description of a rock based on its mineralogical composition and grain-size e.g. sandstone, limestone, mudstone etc.

Micaceous: A rock which contains a high proportion of the platey micaceous minerals muscovite and/or biotite.

Mudstone: A fine-grained sedimentary rock composed of a mixture of clay and silt-sized particles.

Ooid: A spheroidal grain of calcium carbonate formed by precipitation (by algae) of calcium carbonate in concentric layers.

Pisoid: A carbonate coated grain over 2mm in diameter, with an origin similar to an ooid.

Rubble: Rough, undressed or roughly dressed building stones typically laid uncoursed (random rubble) or brought to courses at intervals. In squared rubble, the stones are dressed roughly square, and typically laid in courses (coursed squared rubble).

Sandstone: A sedimentary rock composed of sand-sized grains (i.e. generally visible to the eye, but less than 2 mm in size).

Schists: Metamorphic rock usually derived from fine-grained sedimentary rock such as shale. Individual minerals in schist have grown during metamorphism so that they are easily visible to the naked eye. Schists are named for their mineral constituents.

Sedimentation: Process whereby loose and weathered material is transported (by water, wind, ice, volcanic eruption etc) and then deposited as layers of sediment.
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Further Reading


Campbell, M (2009) Personal communication on Minchinhampton Weatherstone.


