

STRATEGIC STONE STUDY

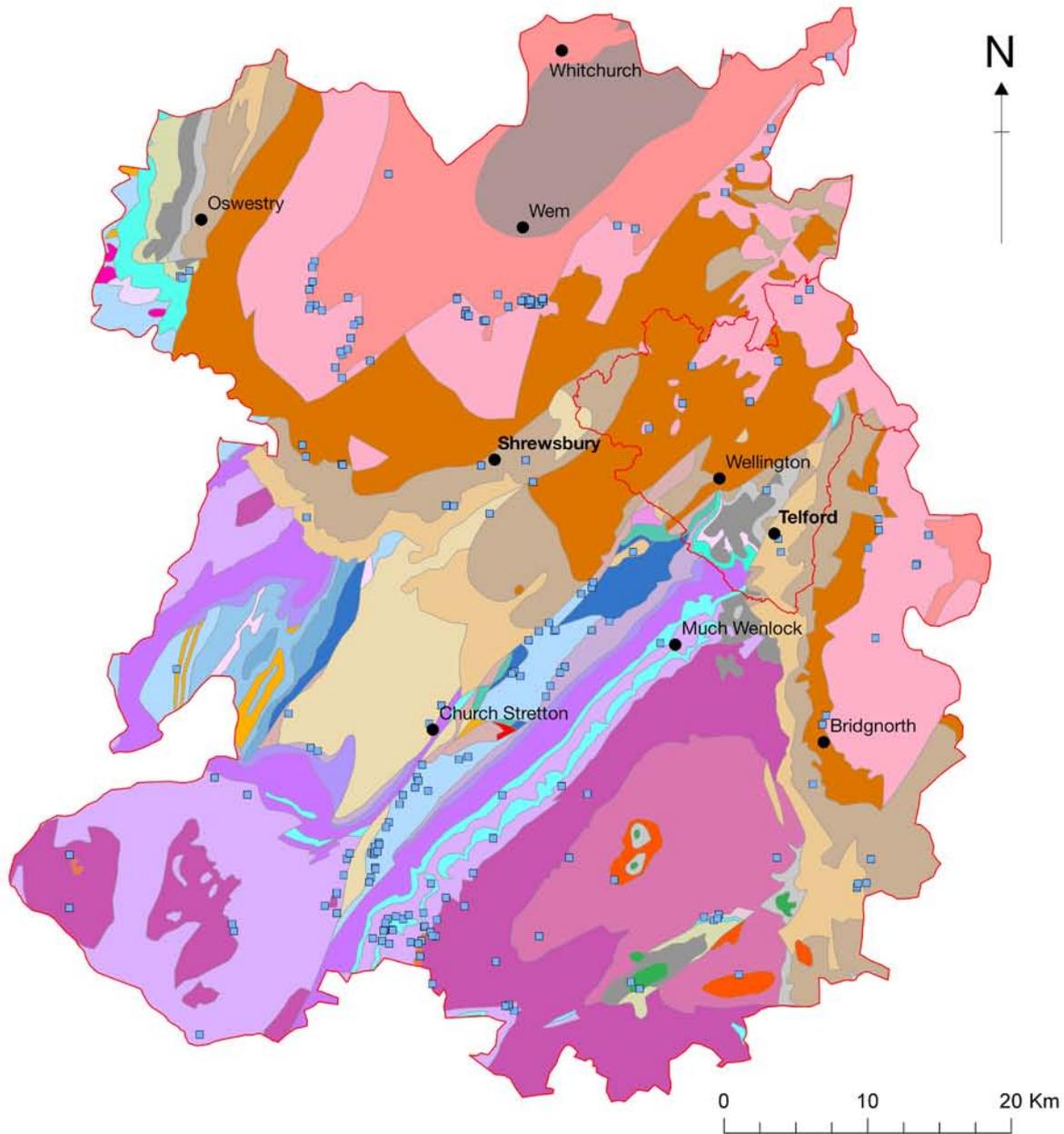
A Building Stone Atlas of
Shropshire

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ENGLISH HERITAGE

Shropshire Bedrock Geology



■ BUILDING STONE SOURCES

Bedrock Geology

- LIAS GROUP - MUDSTONE, SILTSTONE, LIMESTONE AND SANDSTONE
- TRIASSIC ROCKS - MUDSTONE, SILTSTONE AND SANDSTONE
- TRIASSIC ROCKS - SANDSTONE AND CONGLOMERATE, INTERBEDDED
- PERMIAN ROCKS - SANDSTONE AND CONGLOMERATE, INTERBEDDED
- WARWICKSHIRE GROUP - MUDSTONE, SILTSTONE, SANDSTONE, COAL, IRONSTONE AND FERRICRETE
- WARWICKSHIRE GROUP - SILTSTONE AND SANDSTONE WITH SUBORDINATE MUDSTONE
- PENNINE MIDDLE COAL MEASURES FORMATION AND SOUTH WALES MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE, SANDSTONE, COAL, IRONSTONE AND FERRICRETE
- PENNINE LOWER COAL MEASURES FORMATION AND SOUTH WALES LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE, SANDSTONE, COAL, IRONSTONE AND FERRICRETE
- UNNAMED IGNEOUS INTRUSION, WESTPHALIAN - MICROGABBRO
- MILLSTONE GRIT GROUP - MUDSTONE, SILTSTONE AND SANDSTONE
- DINANTIAN ROCKS - LIMESTONE WITH SUBORDINATE SANDSTONE AND ARGILLACEOUS ROCKS
- DINANTIAN ROCKS - SANDSTONE, LIMESTONE AND ARGILLACEOUS ROCKS
- CARBONIFEROUS EXTRUSIVE ROCKS - MAFIC LAVA
- UPPER DEVONIAN ROCKS - SANDSTONE AND CONGLOMERATE, INTERBEDDED
- LOWER DEVONIAN ROCKS - MUDSTONE, SILTSTONE AND SANDSTONE
- LOWER DEVONIAN ROCKS - SANDSTONE AND CONGLOMERATE, INTERBEDDED
- PRIDOLI ROCKS - MUDSTONE, SILTSTONE AND SANDSTONE
- PRIDOLI ROCKS - SANDSTONE AND CONGLOMERATE, INTERBEDDED
- LUDLOW ROCKS - MUDSTONE, SILTSTONE AND SANDSTONE

- WENLOCK ROCKS - MUDSTONE, SILTSTONE AND SANDSTONE
- LLANDOVERY ROCKS - MUDSTONE, SILTSTONE AND SANDSTONE
- LLANDOVERY ROCKS - SANDSTONE AND CONGLOMERATE, INTERBEDDED
- SILURIAN ROCKS - LIMESTONE, MUDSTONE AND CALCAREOUS MUDSTONE
- ASHGILL ROCKS - MUDSTONE, SILTSTONE AND SANDSTONE
- CARADOC ROCKS - MUDSTONE, SILTSTONE AND SANDSTONE
- LLANVIRN ROCKS - MUDSTONE, SILTSTONE AND SANDSTONE
- ORDOVICIAN EXTRUSIVE ROCKS - FELSIC TUFF
- ORDOVICIAN EXTRUSIVE ROCKS - MAFIC TUFF
- ARENIG ROCKS - MUDSTONE, SILTSTONE AND SANDSTONE
- TREMADOC ROCKS - MUDSTONE, SILTSTONE AND SANDSTONE
- UNNAMED IGNEOUS INTRUSION, ORDOVICIAN TO SILURIAN - FELSIC-ROCK
- LOWER CAMBRIAN ROCKS - MUDSTONE, SILTSTONE AND SANDSTONE
- NEOPROTEROZOIC EXTRUSIVE ROCKS - FELSIC LAVA
- NEOPROTEROZOIC EXTRUSIVE ROCKS - MAFIC LAVA AND MAFIC TUFF
- NEOPROTEROZOIC EXTRUSIVE ROCKS - LAVA AND TUFF
- UNNAMED IGNEOUS INTRUSION NEOPROTEROZOIC - FELSIC-ROCK
- NEOPROTEROZOIC METASEDIMENTARY ROCKS - MUDSTONE, SANDSTONE AND CONGLOMERATE
- NEOPROTEROZOIC METAMORPHIC ROCKS - METALIMESTONE

Click on this link to visit Shropshire's geology and its contribution to known building stones, stone structures and building stone quarries (Opens in new window <http://maps.bgs.ac.uk/buildingstone?County=Shropshire>)

Introduction

Many areas of Britain are characterised by their indigenous building stones, for example the Jurassic **LIMESTONE** of the Cotswolds, the **FLINT** of the **CHALK** downlands of 'The South-East', the granite of Dartmoor, and the gritstone of 'The North'. But look at a vernacular architecture map of Britain and the chances are it will show Shropshire (along with Cheshire to the north and Herefordshire to the south) as "black and white" or timber-framed country.

In practice, for pre-mid C19 buildings, stone constructions are more common than timber-framed ones in several parts of the county. This is not the general perception, however, because there is no single characteristic stone. Instead, one sees extensive use of local stone mirroring the considerable variety of different rock types cropping out across the county. Shropshire, it transpires, contains rocks belonging to nine out of the eleven Phanerozoic periods of geological time, in addition to sedimentary and igneous rocks of Precambrian (Neoproterozoic) age.

The sheer diversity of rock types present within Shropshire is clearly expressed in the topographical pattern of the county. Throughout its geological history, the less resistant rocks have been 'etched out' by the forces of erosion, leaving the more resistant rocks standing proud as uplands and ridges. These upland areas have commonly provided some of the best building stones, a pattern reflected in their usage in the county's stone buildings. These patterns of stone use did not change until the coming of the railways during the C19. Prior to this, stone rarely travelled more than a couple of villages distance from its point of origin. Stone suitable for building thus became a valuable resource, and particular areas consequently assumed local importance. The best known examples are Alberbury Breccia and Acton Scott Limestone.

The presence of a wide range of lithologies within an area also meant that several different stone types were liable to occur in a single building. Nowhere is this better exemplified than in the Stretton Valley, where a number of different lithologies are brought into close proximity along the Church Stretton Fault Zone. St. Laurence's Church in Church Stretton is a case in point (see p.3).

St Laurence Church, Church Stretton

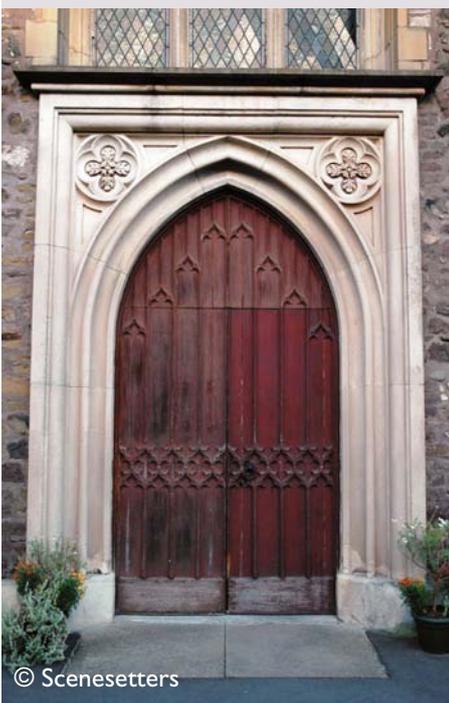
Top left image shows the south wall of the Norman nave, which is constructed of Longmyndian random **RUBBLE**, with **QUOINS** of Carboniferous and Permo-Triassic **SANDSTONE**. The west wall of the north transept, dating to c.1870, is constructed of distinctively striped Soudley Sandstone (see also p. 8).

The Norman north door (middle far left image), with a Saxon Sheila-na-gig fertility figure, is built of stone from the Longmyndian succession above the arch, with the quoins and arch itself of Carboniferous and/or Permo-Triassic sandstone.

Middle near left image shows various Longmyndian stones including fissile mudstones, blocks of Buxton Rock and a boulder of veined **DOLERITE**. Below left image shows a rubble wall in the nave comprising blocks of purple Longmyndian **CONGLOMERATE**.

Bottom left image shows the west door of c.1870 in Grinshill Stone – the almost universal choice for 'post-railway' restoration work.

The tower of c.1400, seen in the image immediately below, is constructed of Hoar Edge Grit.



STONES THROUGH THE AGES

The building stone heritage of Shropshire is most conveniently summarized by means of a chronologically ordered examination (working from oldest to youngest) of the county's **STRATIGRAPHICAL** sequence. Broadly speaking, south of Shrewsbury and west of the River Severn, the hill country rocks young away from the axial NE–SW-trending Precambrian core that runs through these hills. To the north of Shrewsbury and east of the River Severn below Ironbridge, the geology is dominated by the younger Permian and Triassic rocks, with a very small area of Jurassic strata around Prees. Much of north Shropshire is covered by glacial till, through which protrude the hills formed by outcrops of the Sherwood Sandstone Group (including Grinshill and its neighbours). These white sandstones provide the only example of a Shropshire building stone type that has been used county-wide and beyond.

THE PRECAMBRIAN Uriconian Group

The Uriconian volcanic rocks, of Precambrian (Neoproterozoic) age, underlie some of the county's most conspicuous (if not the highest) hills, forming a broken line south-westwards from The Ercall and The Wrekin, through the hills defining the east of the Stretton Valley (The Lawley, Caer Caradoc, and on to Ragleth) and then sporadically to Wart Hill. These steep 'hog's-back' hills are sparsely populated, however, and although the rock has been occasionally quarried for walls (e.g. Ragleth Tuffs are seen in Church Stretton and Little Stretton), and even less often for buildings, the Uriconian has very little impact on the built landscape. *The below image shows Ragleth Tuffs and Stretton Shale walling in Church Stretton.*



Longmyndian Supergroup

The Longmyndian **SEDIMENTARY** rocks underlie the hill from which they take their name (i.e. Long Mynd). Their outcrop continues north-eastwards from here, giving rise to an intermittent line of hills through Cothercott Hill to Lyth Hill and Bayston Hill, reappearing north of the Severn at Haughmond Hill..

Stretton Group

Burway Formation

BUXTON ROCK MEMBER

Buxton Rock

Of the eastern Longmyndian (or 'Stretton Series'), only the distinctive beds of volcanic tuff known as 'Buxton Rock' have been quarried for building – more specifically, at All Stretton (in the Batch Valley) and to a lesser extent in the lower parts of Carding Mill Valley and at Ashes Hollow. Buxton Rock is a fine-grained, greenish-grey, silicified tuff, naturally jointed such that blocks tend to break into a roughly tetrahedral shape. Joint planes are characteristically stained black. Its use is restricted to the Stretton Valley, where it is incorporated into walls and a few buildings, especially near the All Stretton quarry.

The latest recorded building employing Buxton Rock, dating to 1926, is a house adjacent to the quarry in All Stretton. *The image above shows cottages in Church Street, Church Stretton, constructed of black, angular blocks of Buxton Rock.*

Wentnor Group

Bayston-Oakwood Formation

Stanbatch Conglomerate, Darnford Conglomerate, Bayston Stone & Haughmond Stone

These coarser beds of the 'western Longmyndian', their outcrop running just west of the summit axis of the Long Mynd from Asterton through Bayston Hill to Haughmond Hill, are frequently used as a building stone. The coarse, sometimes conglomeratic, purple sandstone is used in all settlements located close to its outcrop, notably in the cluster of houses in the hamlet of Bridges, in Cothercott and Lyth Hill, and between Bayston Hill and Haughmond Abbey (at the foot of Haughmond Hill). It also features in St. Laurence's Church, Church Stretton (see pages 3 & 8). This is perhaps the result of ownership issues during medieval times when Haughmond Abbey had land at Cothercott, though the more readily accessible source may have been Lyth Hill or Haughmond itself via the Roman Road (i.e. Watling Street, which was the 'Street' upon which the village ('ton') with the church was built).

CAMBRIAN

Wrekin Quartzite & Comley Sandstone

Although very narrow outcrops of Wrekin Quartzite and Comley Sandstone occur to the east of The Wrekin and The Ercall, east of The Lawley and at Comley beneath Caer Caradoc, there are only a handful of properties in the immediate vicinity of these outcrops, and neither stone has been used for building to any significant extent. As is typical of Shropshire, however, an isolated outcrop of Wrekin Quartzite near Stone Acton, east of Cardington, has been exploited for field walls and farm buildings, as seen in the top right image of a barn at Stone Acton.

ORDOVICIAN (WESTERN OUTCROP)

ARENIG, LLANVIRN & CARADOC

Stiperstones Quartzite (Formation)

The pure white quartzitic sandstones of The Stiperstones Quartzite form the craggy ridge of The Stiperstones. The location of these very hard sandstones, so far removed from most settlements, served to restrict their use as building stone, however. Exceptions include The Bog School of c. 1870 (middle and bottom images), a few mine buildings and scattered cottages.



Mytton Flags (Formation)

Most settlements on the western flank of the Stiperstones from The Bog to Snailbeach used the well-laminated, dark grey Mytton Flags, which were more easily worked than Stiperstones Quartzite. The stone often weathers to a ferruginous brown colour.

Stapeley Volcanics, Meadowtown Beds, Spy Wood Sandstone, Weston Flags & Whittery Volcanics

Further west, in the Shelve Inlier – the semi-circular outcrop of Ordovician rocks with its base along the Stiperstones ridge – is found a sequence of **MUDSTONES**, sandstones and volcanic rocks (all now folded) that were deposited under deepening marine conditions..

The Stapeley Volcanics, Meadowtown Beds, Spy Wood Sandstone, Weston Flags and Whittery Volcanics were all put to use in the construction of local vernacular buildings and mine structures along their NE–SW-trending outcrops. In appearance, all of these medium to fine-grained, grey rocks are superficially similar and, consequently, the likely stone source is best assumed to be the closest quarry.

The Whittery Volcanics are blockier than the others, and of a more distinctive pale grey-green colour. They are used extensively in the village of Chirbury in most buildings from the church to farm outbuildings, and in field walls. Most of the stones came from a large quarry on the edge of Marrington Dingle (now in-filled), owned and operated by the Powis Castle Estate. *Images to the right show the use of Whittery Volcanics in Chirbury church (top image), a Chirbury wall (middle top image) and a Chirbury cottage (middle bottom image).*

Weston Flags were used particularly at the southern end of the Shelve Inlier around Priest Weston, where one of the largest quarries in the district was once worked. The medieval village of Shelve has employed a dark grey crystalline intrusive rock in the construction of its surviving church and a few farm buildings. *The bottom right image shows its use in the Miners Arms at Priest Weston.*

ORDOVICIAN (EASTERN OUTCROPS) CARADOC

South and east of the Long Mynd, the Ordovician sea did not transgress over the land until much later in the Ordovician. When it did so, a series of alternating shallow-water sands and muds were laid down. The resulting sandstones – which are suitable for building – form narrow ridges, separated by vales underlain by the less resistant mudstones.



Hoar Edge Grit Formation

Hoar Edge Grit

The basal bed of the Caradocian is the 'Hoar Edge Grit', which forms a prominent ridge east of The Lawley. Though coarse-grained, this sandstone was a good workable **FREESTONE** which travelled north along the Roman Road to Wroxeter (the Roman City of Uriconium), south to Church Stretton (St. Laurence's Church tower) and served the immediate surrounding area (it features, for example, in Langley Chapel). For architectural quality and strength, this stone was sometimes preferred to the nearby Chatwall Sandstone, as seen in Chatwall Hall (top right image).

Coston Grit

The Coston Grit, at the southern extremity of the Hoar Edge Grit outcrop, varies in nature between a conglomerate and a medium-grained sandstone often showing **FERRUGINOUS** weathering. It has been quarried and used locally, giving a remarkable uniformity to the buildings of the compact hamlet of Coston, and also forms much of the older part of Aston-on-Clun.



Harnage Stone 'Slate'

The uppermost beds of the Hoar Edge Grit are in places rendered fissile enough (by virtue of the presence of concentrations of a compacted brachiopod shell, *Orthis subquadrata*) to serve as a roofing material. Evidence of the use of these 'Harnage Stone Slates' (equivalents of the 'Subquadrata Limestone') has been found from Stokesay Castle to Wenlock Abbot's House, and in medieval Shrewsbury. The main quarries are in the summit of the ridge running through Lodge Hill and Bull Wood above Acton Burnell. 'Harnage Stone Slates' were most recently quarried from this area for the re-roofing of the church at Pitchford Hall (below image).



Chatwell Sandstone 'Formation'

Chatwall Flags & Chatwall Sandstone

Overlying the Hoar Edge Grit are the Harnage Shales (developing a shallow vale), which are in turn succeeded by the 'Chatwall Flags'. These yellowish-brown, medium-grained sandstones with prominent bedding planes were used in the past for roofing and flooring. They grade upwards into the 'Chatwall Sandstone', which forms another pronounced ridge. Chatwall Sandstone (and its more southerly equivalents described below) is the most widespread of the south Shropshire building stones, and one of the few that has been used beyond the area immediately surrounding its quarries. Its main and unmistakable characteristic is its striped appearance, arising from the alternation of purple and brown to olive green layers. These stripes are thought to be the result of diagenetic alteration, and generally follow the bedding. This colour-related striping is also evident in **CROSS-BEDED** sandstones, and makes it easy to detect when a block of the stone has been face-bedded. This usually leads to early **SPALLING** of the block face. Sometimes the striping is concentric, leading to curved patterns.

Slabs of Chatwall Sandstone are commonly used as grave-stones, but the characteristics of the stone almost inevitably lead to the name and other details of the deceased being erased.

Though mapped as 'Chatwall Sandstone' over the entire length of its outcrop from the Chatwall ridge south-westwards to Horderley (NW of Craven Arms), descriptions of this stone type are provided in three sections, working from north to south:

Chatwall Sandstone *sensu stricto*

This name is used for the stone originating from the more northerly part of the outcrop which forms the narrow ridge running from the hamlet of Chatwall, south through The Wilderness, and which terminates abruptly against the Hill End Fault west of Cardington. It is noticeably banded here, but tends to have green and brown as opposed to purple stripes. Use of Chatwall Sandstone from this northern outcrop is largely restricted to the few farms sitting on the Chatwall ridge itself, but it also sees mixed use in an easterly direction towards Wenlock Edge.



Soudley Sandstone

The Chatwall Sandstone appears again in a much faulted outcrop on the southern flank of the Hope Bowdler Hills, where it is known as 'Soudley Sandstone'. The proportion of green to purple stripes tends to be more equal in Soudley Sandstone, though they are not particularly even. The old quarries at Soudley are extensive, but long since abandoned. They supplied stone to most of the hamlets and small villages to the east (on the edge of Apedale), including Wall-under-Heywood, Ticklerton, Soudley itself, and just to the north at Hope Bowdler.

The sandstone was also taken west to Church Stretton, where it is noticeable in many buildings from the church (both in the C14 and C19 parts) to C18 and C19 cottages (particularly as quoins and other **DRESSING** stones), in the original Church Stretton station house of c.1865 (top image) and in the north transept of St. Laurence's Church, Church Stretton (above image; see also p. 3).

Horderley Sandstone

To the SW of the Church Stretton Fault, the Chatwall Sandstone is picked up amongst the tumble of hills flanking the south-eastern end of the Long Mynd and running down through Glenburrell to Sibdon Carwood. Here, it is called 'Horderley Sandstone', and sometimes has a higher proportion of the purple stripes, though it is still characteristically well-banded. The main quarries in this southern section were near Glenburrell (the probable source for the linear village of Wistanstow) and at Long Lane. The latter was the likely source for the hamlets of Halford and Newton, which pre-date the C19 "new town" of Craven Arms. Craven Arms itself has a few terraced houses of stone and, until recently, an extensive complex of railway warehouse buildings constructed in-part of stone. *The upper right image shows Wistanstow village. It is estimated to be about 85% Horderley Sandstone for the pre-1900 buildings, including the cottages, farms and walls, which spread out along the Roman Road.*

Alternata Limestone Formation

Alternata Limestone

In the vicinity of Soudley, and along the Wilderness ridge, the Chatwall Sandstone passes upwards into a distinctively fossiliferous limestone called the 'Alternata Limestone'. This is packed with flattened shells of the brachiopod *Heterorthis alternata*. Like the Subquadrata Limestone (Harnage Stone Slates) of the Hoar Edge Grit, the Alternata Limestone was one of the few locally produced stones used for roofing owing to its strength yet ease of splitting along the fossil-encrusted bedding planes.

Cheney Longville Formation

Cheney Longville Flags

Elsewhere, the beds above the Chatwall Sandstone are yellowish-brown **SILTSTONES** and fine-grained sandstones (sometimes with **MICACEOUS** partings), and are known as the 'Cheney Longville Flags'. As their name suggests, these were used as flooring flagstones and, less frequently, as roofing flags. Across the outcrop, they were occasionally used in farm buildings, most noticeably in the hamlet of Cheney Longville itself; but, in general, the better quality Chatwall sandstones were close at hand and were the preferred stone.

Acton Scott Formation

Generally deeper water depositional conditions are indicated by the grey, silty mudstones of the Acton Scott Formation. There are principally two **LITHOLOGICAL** variants within this formation, both of which are of interest from the point of view of building stones viz. 'Acton Scott Limestone' and 'Cardington Stone'.

Acton Scott Limestone

This is a development of hard, calcareous siltstone and sandstone, sufficiently resistant to form a small plateau of no more than 3 km², which projects out into Apedale. This plateau is the site of a Roman estate, as indicated by the discovery of a Roman villa at its centre. The C18 Acton Scott Estate originally dominated the area of the outcrop, and many structures in the widely spread village, from the church to farm walls, make use of this locally quarried stone. *Bottom image shows Acton Scott church. It exhibits all of the variants of Acton Scott Limestone, from the brownish calcareous siltstone of the nave to squared blocks of purer limestone in the tower.*



© Scenesetters



© Scenesetters

Cardington Stone

The Acton Scott Formation also includes soft, fine-grained sandstones, which are restricted to the vicinity of Cardington. Evidence of their use comes from several buildings in Cardington itself, and the adjacent hamlet of Gretton. There is, however, no sign on the ground today of the quarry source of 'Cardington Stone'. The below image shows vernacular cottages in Cardington, built of a distinctive brown-buff to greenish, soft, fine-grained sandstone.

SILURIAN

Considerable changes have been made to the geological nomenclature applying the Silurian succession of Shropshire in recent years. The building stones are considered mostly in terms of the older terminology, but indications of the modern stratigraphical terminology are also given.

Western Outcrop

West of the Long Mynd, deeper marine depositional conditions saw the steady accumulation of fine-grained sediments. These are interspersed with coarser turbidites and, occasionally, more **CALCAREOUS** strata and thin sandstones. In SW Shropshire and on 'the Long Mountain' west of the Shelfe Inlier, the buildings certainly reflect the local geology, but they tend to be composed of indistinguishable grey mudstones and calcareous siltstones (which are often well laminated). These lithologies are, nonetheless, suitable for all types of vernacular building.

It can be safely assumed that most vernacular stone was quarried only a very short distance from its place of use. This sparsely populated area is dotted with isolated stone farmhouses and very small villages or hamlets, and quarries in the hillsides can be seen close to most of these buildings/settlements.

WENLOCK 'SERIES'

Bromleymill Shale Formation & Aston Mudstone Formation (INCLUDING EDGTON LIMESTONE MEMBER)

West of the Church Stretton Fault and south of the Long Mynd, the deep water equivalents of the Wenlock Shales and Wenlock Limestone (which are such a feature to the east of the fault) are poorly exposed shales and mudstones (now assigned to the Bromleymill Shale Formation and Aston Mudstone Formation), and rather silty limestones (the Edgton Limestone Member of the Aston Mudstone Formation). With this area being close to the outcrop of Horderley Sandstone, however, even the Edgton Limestone has been very little exploited for building purposes. More useful for their availability rather than for their intrinsic qualities, are the deeper water equivalents of these strata (Ludlow in age), which occur on the eastern side of the fault and extend westwards across the Clun Forest to the county boundary.



© Keith Hotchkiss

LUDLOW SERIES

Bailey Hill & Cefn Einion formations

As the Silurian sea deepened, so the shallow water deposits were succeeded (to the west of the Church Stretton Fault) by considerable thicknesses of assorted sediments i.e. dark grey mudstones, coarser-grained sandstones and layers of volcanic ash. This ultimately gave rise to a sequence of hard, but well-laminated mudstones and siltstones, with occasional sandstones and ash bands – the Bailey Hill and Cefn Einion formations.

These formations provided the building stone for farm buildings and cottages located on the Shropshire (i.e. SE) side of the Long Mountain Syncline between the ridge of the Long Mountain and the Shelve Inlier, and into SW Shropshire i.e. the westward bulge of the county extending towards upland Wales collectively referred to as the Clun Forest. This has resulted in a high proportion of grey stone buildings in the small hamlets and isolated farmhouses of this area, and in the older parts of Clun. *The image top right shows Clun and its remarkably uniform grey siltstone frontages.* Here, the castle ruins stand guard over a time-warped village in which about 85% of the pre-1900 houses are stone-built. The source of this can be traced to large quarries like those around the Rock of Woolbury, located within the Cefn Einion Formation – the most quarried formation in the Clun Forest area of SW Shropshire. Proximity to the nearest reasonable rock, not infrequently 'in the backyard' of the building/structure in question, serves as the best guide to building stone usage in SW Shropshire.

Eastern Outcrop

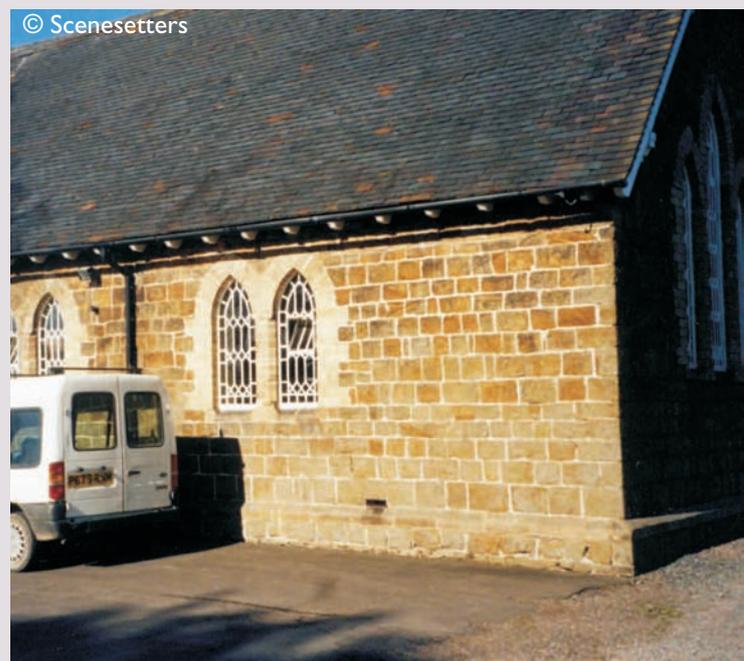
The eastern outcrop of Silurian strata is characterised by an undulating set of ridges and vales, representing very narrow outcrops of rock comprising the coarse basal Llandovery beds of 'Pentamerus Sandstone' and 'Kenley Grit', which pass upwards through the 'Wenlock Shales' into the very distinctive 'Wenlock Limestone'. Above this were deposited various formations of Ludlow age. The topographically most conspicuous of these is the Aymestry Limestone Formation, with the Lower Ludlow Shales Group below and the Upper Ludlow Shales Group above.

LLANDOVERY 'SERIES'

Pentamerus Sandstone Formation

Kenley Grit

The advancing Silurian sea firstly deposited a mixture of conglomerates, grits and sandstones, collectively referred to as the Kenley Grit Member. Both colour and texture are very variable. The appearance of the conglomerate depends partly on the nature of the contained pebbles, which vary from white quartz to purple Precambrian clasts. The grits and coarse sandstones weather to a deep orange/brown in some walls. It is used in the settlements located on or close to its narrow outcrop from Plais to Harley for buildings of all types, and frequently for boundary walls. *The bottom image shows Harley School. It is constructed of Kenley Grit, exhibiting its distinctive orange/brown weathered colour.*



Pentamerus Sandstone (Government Rock)

'Pentamerus Sandstone' is a distinctive, highly fossiliferous, grey-brown sandstone containing *Pentamerus* brachiopods. When broken, the shells reveal a broad arrow mark-like profile on the surface, which is reminiscent of the old government department logo, and hence its local name of 'Government Rock'. In terms of building stones, this formation is the most important and distinctive of those found at the SW end of the Long Mynd.

The outcrop on the flanks of the Long Mynd was easily accessible, and the stone itself found to be highly suitable for building in the villages of Norbury, Wentnor and More. The line of shallow pits marking the overgrown quarries is still noticeable, especially just to the south of Norbury, and the walls are so much a feature of the landscape in the immediate vicinity that they prompted a restoration project supported by the Shropshire Hills AONB.

Pentamerus Sandstone can also be found in a few isolated outcrops on the Ordovician rocks located west of The Stiperstones, notably close to the hamlet known as The Bog and further north on Venus Bank near Minsterley. Both sources, though very small, have been preferentially quarried for the stone.



At The Bog, the stone was used for many cottages around the school (most now demolished, but Welsh Row remains). East of the Long Mynd, in Apedale, the Pentamerus Sandstone overlies the Ordovician rocks, but is very poorly exposed today. It has been identified in a few older buildings such as Rushbury church, however, but like the sandy Acton Scott Formation 'Cardington Stone', its quarry provenance remains a mystery. Cottages, as well as farm buildings, churches and field walls are commonly constructed of Pentamerus Sandstone in Wentnor (above and below images), Norbury and More. Inset image shows the 'broad arrow' shape of the brachiopod shells.



WENLOCK 'SERIES'

Much Wenlock Limestone Formation

Wenlock Limestone

One of the best known features of the south Shropshire Hills is Wenlock Edge, a clearly defined escarpment marking the gently dipping outcrop of the Wenlock Limestone. This highly fossiliferous limestone, pale grey in colour, crops out from just north of the Severn at Ironbridge on Lincoln Hill, appears south of the river on Benthall Edge, then runs south-westwards for 15 miles to Craven Arms as an almost unbroken escarpment. As a building stone, it stamps its character most firmly on the town of Much Wenlock, where it is conspicuously used for buildings ranging from the church and parts of the Priory to the humble shops and cottages. The below image shows the Holy Trinity Church, Much Wenlock. The tower and south wall of the nave are constructed mainly of Wenlock Limestone, but the large south porch and the north and east walls are predominantly of Pennine Coal Measures sandstones. The right image shows a row of buildings in the town centre, also constructed of Wenlock Limestone.



© Tarnia McAlester

Wenlock Limestone itself is a hard and rough stone, rarely used as anything other than coursed rubble, but being well-bedded, it can be split into relatively thin blocks. It nearly always requires either brick or sandstone to be used for quoins, sills and dressings. There are few settlements SW of Much Wenlock on Wenlock Edge itself, though those that there are, such as Easthope and Wilderhope Manor, use the Wenlock Limestone.



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LUDLOW 'SERIES'

Aymestry Limestone Formation

Aymestry Limestone

The outcrop of Wenlock Limestone is rarely more than half a mile wide. It dips gently beneath the Lower Ludlow Shales, and these in turn beneath a parallel ridge of the 'Aymestry Limestone'. Generally an impure limestone, the rock from this ridge and the overlying siltstones of the Upper Ludlow Shales (Group) have been quarried intermittently for buildings all the way from the outskirts of Much Wenlock, through Craven Arms and into north Herefordshire near Leintwardine; the outcrop can then be traced back northwards to Ludlow. The Aymestry Limestone is characterised by the large, almost spherical brachiopod known as *Kirkidium knightii*, which occasionally (as at the View Edge outcrop above Stokesay) occurs as solid banks of shells. The quarries here more likely provided stone for lime-burning than for building, however.

Leintwardine Group & Whitcliffe Formation

Upper Ludlow Shales (Whitcliffe Rock or Stone)

As the Aymestry Limestone outcrop is traced south-westwards, it becomes increasingly sandy and silty, passing upwards into the calcareous siltstones of the Upper Leintwardine beds (now the Leintwardine Group) and the Whitcliffe beds (now the Whitcliffe Formation of the Upper Ludlow Shales Group). The latter have been extensively quarried around Whitcliffe itself, on the banks of the Teme facing Ludlow. Many of Ludlow's older buildings (dating from the time of the Castle onwards) are built of 'Whitcliffe Stone'. Much of it is rather soft, but well-laminated, grey to light brown, and known as 'Whitcliffe Rock'. *The top right image shows Dinham chapel and adjacent walling built of Whitcliffe Stone.*

Lenses of highly fossiliferous rock, representing local accumulations of small brachiopod shells, are often present and many of these are de-calcified. The rock is fairly easily eroded, but was readily available and split easily along bedding planes to provide roughly rectangular blocks which, with appropriate selection, could be coursed.

These calcareous, pale brown siltstones also crop out on the north flank of Corvedale (the dip slope of the Aymestry Limestone), giving a remarkable consistency to the appearance of villages from Diddlebury, through Munslow, Shipton and Brockton, to Bourton. Cottages within these villages often have a quarry in their back gardens.

Old Red Sandstone Supergroup

The 'traditional' local stratigraphy recognised the Ludlow Bone Bed at the top of the Upper Ludlow Shales as the boundary between Silurian and Devonian periods. However, advancements in our knowledge have resulted in the re-assignment of a considerable thickness of rock above the Bone Bed which was previously regarded as the Devonian. The Old Red Sandstone (ORS) is now known to include significant thicknesses of Silurian strata.



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DOWNTON 'SERIES'

Downton Group

Downton Castle Sandstone Formation

The Downton Castle Sandstone Formation – comprising mainly yellow, fine-grained, cross-bedded sandstones – is succeeded in Shropshire by the Raglan Mudstone Formation, which is represented rather more by red marls, with only intermittent sandstones and cornstones (nodular limestones). These beds crop out around Brown Clee Hill, and extend up to the level of the first conspicuous platform (representing the Bishop's Frome Limestone, now the top of the Pridoli). *The top right image shows cottages at Corfton (in Corvedale) constructed of Downton Castle Sandstone, with garden walling of Aymestry Limestone.*

Raglan Mudstone Formation

HOLDGATE SANDSTONE MEMBER

Holdgate Sandstone

Around the Clee Hills, local developments of ORS sandstones (forming low topographical ridges) have been exploited e.g. the 'Holdgate Sandstone', which forms a ridge between Holdgate and Stanton Long. The sandstones are medium-grained and vary in colour from purple to red to green, depending on the extent of oxidation or oxidation state of the iron present. *The remaining tower of C14 at Holdgate Castle (bottom right image) is incorporated into the back of Holdgate Hall, and is constructed of red and green Holdgate Sandstone.*

St. Maughans Formation

Overlying the Raglan Mudstone Formation is the St. Maughans Formation – a mixture of red marls and bands of red and green sandstones; other lithologies present include thin limestone and cornstone bands. Surrounding Brown and Titterstone Clee is a broad swathe of villages, hamlets and isolated farms. Sometimes, the buildings of red to green, strongly laminated and fine-grained sandstones include a high proportion of the limestone or 'Cornstone'. Cornstones can weather badly, but have nonetheless been used around the Brown Clee at places such as Clee St Margaret and Neenton.

Farlow Sandstone Group

Farlow Sandstone

Higher in the ORS succession, the sandstones became coarser and strongly cross-bedded. Most, however, were so far removed from habitation that they were not used for building except possibly to some extent to the east of Titterstone Clee where the 'Brownstones' crop out. The Farlow Sandstone Group has an extremely restricted outcrop at the NE end of Titterstone Clee, and is used in the village of Farlow and its immediate vicinity.

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CARBONIFEROUS

Diminished relief and rising sea-levels led to a change of depositional environment during Carboniferous times.

Carboniferous Limestone

There has been very localized use of the typical white or pale grey, massive, fossiliferous Carboniferous Limestone in the area west of Oswestry, and also around Lilleshall in east Shropshire. *Llanymynech village uses Carboniferous Limestone from the adjacent quarries to build in both ASHLAR and rubblestone (top right image).*

Pembroke Limestone Group Oreton Limestone Formation

Oreton Limestone

The southern outcrop of Carboniferous Limestone, known as the 'Oreton Limestone', is found in very narrow bands at the NE and SW ends of Titterstone Clee Hill. Some of the Oreton Limestone is **OOIDAL** and was occasionally used for ornamental purposes as 'Oreton Marble'. *Farlow village buildings (middle right image) reflect their position close to the boundary between Farlow Sandstone (school left of image) and Oreton Limestone (cottage right of image).*

'Millstone Grit'

Cefn-Y-Fedw & Cornbrook Sandstone formations

The Carboniferous limestones are succeeded by sandstones broadly equivalent to those of the Millstone Grit Group. Around Oswestry, the Carboniferous Limestone of the Llanymynech area is overlain by the Cefn-y-Fedw Sandstone of Sweeney Mountain whilst around Titterstone Clee, the Oreton Limestone is overlain by developments of Cornbrook Sandstone.

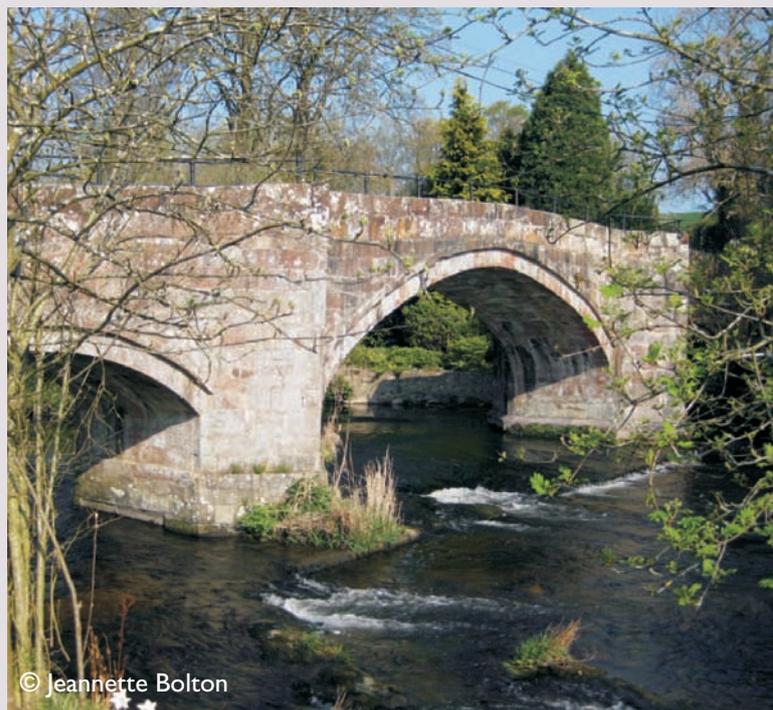
Though the outcrops are small, they have been exploited for the local vernacular architecture. They comprise pale grey to light brown coarse sandstones, sometimes weathering to a darker brown colour with ferruginous staining. *Llanyblodwell Bridge (bottom image) is built from Cefn-Y-Fedw Sandstone.*



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Pennine Coal Measures Group

Coal Measures sandstones

The Coal Measures sequence in Shropshire includes a number of beds of sandstone, which thin against the St. George's Land High. Their use as building stone, therefore, is intermittent and localised. The Anglo-Saxon chancel of Barrow church (right image) is constructed of Coal Measures Sandstone (probably Big Flint Rock).



Pennine Middle Coal Measures Formation

Big Flint Rock

In the East Shropshire Coalfield, the Pennine Middle Coal Measures Formation includes the 'Big Flint Rock'. This medium-grained sandstone has been used for buildings such as Buildwas Abbey (below image), and is suspected to be the facing stone of much of Wenlock Priory. This sandstone also crops out in the Ironbridge Gorge, and in medieval times was quarried for building stone and transported along the River Severn.

As industry developed in the Gorge, this and similar sandstones were used for many of the substantial industrial structures of the area, such as the Bedlam Furnaces. In general, however, the coalfields show few surviving vernacular buildings in stone. The occurrence of suitable mudstones and clays within the Coal Measures sequence meant that brick-making was always an industry linked to such coalfield areas. East Shropshire is no exception with distinctive, locally produced, variably coloured bricks, which date back to the earliest development of the larger industrial settlements in the coalfield.



Warwickshire Group

Halesowen Formation

Coed-Yr-Allt Sandstone

The southerly extension of the North Wales Coalfield into the area north and west of Oswestry brings in the greenish-white Coed-yr-Allt beds of the Warwickshire Group. These are also present in the Hanwood area, extending from Westbury in the west, through Pontesbury and Hanwood to Shrewsbury. The sandstones have a variable iron content, which has led to marked colour variations from greenish-white to dark brown.

The C19 tower at Pontesbury church (top right image) is constructed of variegated Halesowen Formation sandstone from the Shrewsbury Coalfield. Westbury village (below image) shows a number of distinctively rusty brown sandstone buildings constructed of stone produced from the nearby quarries which worked Halesowen Formation strata.



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Highley Sandstone

The Warwickshire Group succession extends along the Severn Valley from Bridgnorth to Highley, and at the latter locality includes the outcrop of the 'Highley Sandstone'. This greenish grey Halesowen Formation sandstone, generally medium-grained and often cross-bedded, has been extensively used for building since the Middle Ages. *Bridgnorth Bridge, rebuilt by Thomas Telford in 1796, is constructed of the green or slightly purple-tinged Highley Sandstone (top right image).* The main Stanley Quarry was close to the river (and eventually, the railway). This enabled distribution along the Severn Valley (e.g. to Worcester Cathedral).

Salop Formation

ALVELEY MEMBER

Alveley Sandstone

The Salop Formation is characterised by a change to arid, 'red-bed' sedimentation. The beds of this formation, formerly known as the Keele Formation, form a ridge down the east side of the River Severn, centred on the village of Alveley. The 'Alveley Sandstone' is mainly bright red in colour and varies in grain size from fine to coarse; some calcareous mudstone beds are present, as are some fairly micaceous, well-laminated sandstones. The most coherent beds of coarse-grained sandstone were exploited in the past for grinding stones. The Alveley Sandstone was also employed in the vicinity of the village of that name, and for building the core of the old settlement from the C17 onwards.

Keele Beds

'Keele Beds' is the traditional name given to the Upper Carboniferous sandstones showing transitional characteristics between the grey sandstones of 'Coed-yr-Allt type' and the fully continental sandstones of the Permian and Triassic. These predominantly red, sometimes tending to purple, medium to coarse-grained and well-laminated sandstones were the preferred stone for medieval Shrewsbury. *They are seen in the older religious buildings such as Shrewsbury Abbey and the churches of St. Mary's, St. Giles and St. Julian's (bottom right image).* Note the use of two sandstones of contrasting appearance: Keele Beds sandstone is seen beneath the C15 upper tower of 'Grinshill Stone'.



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These sandstones were quarried just outside the town walls (for which they were used) at The Quarry, as well as above the banks of the Severn at Belvidere and at Preston Boats. Other quarries were located SW of the town on the Longden Road at Redhill. The stone experienced a resurgence of interest during the C19 as its red colour was popular for neo-Gothic architecture, as seen for example in the chapel at Shrewsbury School. Like *St. Julian's church at Shrewsbury, Pontesbury Church* (see p. 18 and top right image) shows a complete change in stone type from its C13 red sandstone chancel to its C19 grey 'Coed-yr-Allt type' nave and tower. A similar pattern of use to Shrewsbury is seen in relation to the development of the 'Keele Beds' SE of the Bayston Hill ridge. Quarried in the vicinity of Pitchford and Acton Burnell, they were used for the C13 Acton Burnell Hall and church, and also for the even older Pitchford church. They were used once again for the Victorian estate cottages at Acton Burnell.

Dhustone (Dolerite)

Late Carboniferous times saw the onset of another mountain building phase – the Variscan Orogeny. The main tectono-magmatism associated with this was well south of Shropshire. However, it had an important effect that has a bearing on the building stones of the Cleve Hills. During the associated regional igneous activity, a dolerite sill was intruded into the Coal Measures succession. The dark blue-black coloured dolerite became known locally as the 'Dhustone'. The Dhustone, owing to its relative resistance to erosion, now caps the summits of the high level synclinal structures that form the Cleve Hills at Brown Cleve and Titterstone Cleve.

Coal mining on these highest summits since medieval times has resulted in access to, and familiarity with, the Dhustone, which had the useful property of splitting both vertically and horizontal along the joints. These natural joint systems were of particular value in the production of roadstone setts (a major late C19 and early C20 industry), but also supported a localised building stone industry using the same roughly squared stone blocks. These distinctive squared, dark stones, commonly weathering greenish-grey, are found in many buildings around the Cleve Hills. Its hard, crystalline structure makes the stone very cold and prone to condensation, however, so much so that locals say a Dhustone block in a sandstone wall can be detected by its dampness through plaster and wallpaper.



The pattern of Dhustone and Carboniferous sandstone use in the area shows subtle local variations, dependant largely on geographical and other economic factors. Around the north end of Brown Cleve, the villages like *Ditton Priors and Clebury North* show extensive use of Dhustone (above image and inset). Around Titterstone Cleve, it is much less conspicuous for building, and Farlow and Cornbrook sandstones, where available, were preferred – despite the proximity of a much more extensive and more accessible Dhustone quarrying industry.

PERMO-TRIASSIC (NEW RED SANDSTONE)

The Permo-Triassic strata of Shropshire accumulated under desert and semi-arid conditions. The former gave rise to Shropshire's best building sandstone – 'Grinshill Stone' – and, elsewhere, other suitable sandstones in the belt of low hills now protruding through the glacial overburden of the north Shropshire plain.

PERMIAN

Alberbury Breccia (Cardeston Stone)

The very distinctive 'Alberbury Breccia' was intensively studied by students at Preston Montford Field Centre during the late 1950s. The results were written up in Volume I of the Field Studies, and subsequently made available as an offprint (Mercer, 1959). The outcrop of this rock forms a roughly crescentic topographic feature of about five kilometres long by a little more than one kilometre wide, which runs from Wattlesborough Heath, through Alberbury, to Cardeston. It comprises reworked angular to sub-rounded fragments of Carboniferous Limestone set within a red sandstone matrix. The overall effect, when seen in a building wall, is one of a striking, salmon pink coloured rock.

The oldest known example of Alberbury Breccia use is the medieval castle, said to have been derelict by 1226. Thereafter, it seems to have been used for all local vernacular building and boundary wall construction prior to about 1900. Encouragingly, it was recently (in 2001) used to form the entire outer skin of the new Alberbury Village Hall.

Alberbury Breccia can be regarded as an 'estate stone', quarried and used predominantly on the Loton Park Estate of the Leighton family (top right image). Its appearance obviously did not appeal to the restorers of Alberbury's St. Michael's Church in 1845 and 1902, however. The oldest parts, dating back to the C13 tower; were constructed of Alberbury Breccia, but the more recent work was in Triassic 'New Red Sandstone' (middle right image). The inset shows in detail the mixture of Carboniferous Limestone fragments set within in Permian red sandstone.

Bridgnorth Sandstone Formation

Bridgnorth Sandstone

The 'Bridgnorth Sandstone', best seen in the area from which it takes its name, is an aeolian sandstone of strong red colour (see bottom right image of Dudmaston Gate Lodge). It crops out along a corridor extending down the River Severn almost to Alveley and in a swathe east of Shrewsbury, running north-eastwards between High Ercall and Telford, with occasional outcrops as far north as Market Drayton. The outcrop overall is characterised by the man-made caves cut into it. Bridgnorth Sandstone was commonly used for buildings constructed in a 'Gothick' architectural style. Blocks of the sandstone are often affected by miner bee borings.



TRIASSIC

Kidderminster Formation

Kidderminster Conglomerate

Unconformably overlying the Bridgnorth Sandstone, the Kidderminster Formation continues the red-bed succession. The 'Kidderminster Conglomerate', however, is a much coarser-grained rock, representing flash-flood deposition within a semi-arid sandy desert. It varies considerably in its make-up, depending on the exact conditions of deposition. Although it forms a conspicuous ridge east of the Severn Valley downstream of Bridgnorth, other local stones limited its use here. North of Telford, however, its patchy outcrop is marked by small quarries at places such as Waters Upton, further east at Edgmond, and towards Market Drayton at Hinstock and Goldstone. The top right image shows the variable colour and texture of the Kidderminster Formation at Quarry Woods, Hinstock – a source of stone for Hinstock village. In the vicinity of these outcrops, it has been used for churches, local walling and some cottages.

Wilmslow Sandstone Formation

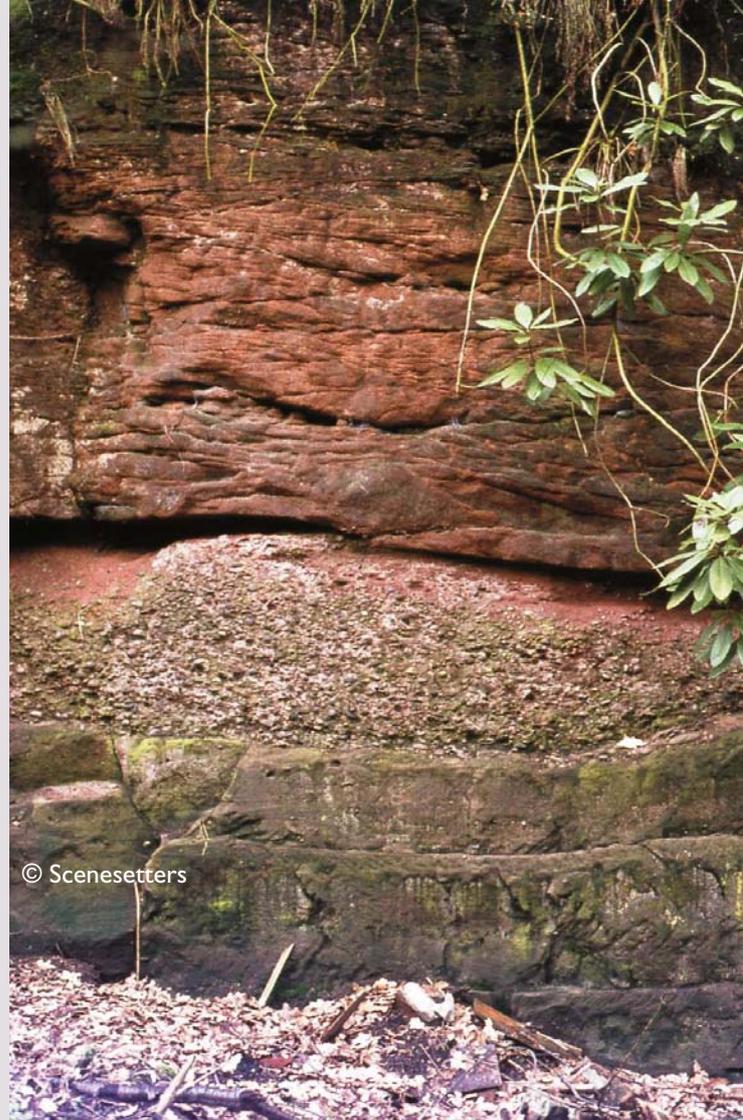
Wilmslow Sandstone

This is a bright red to dull red-brown, cross-bedded sandstone which has been quarried around the villages of Harmer Hill, Myddle (bottom right image), Nesscliffe and Grinshill. Wilmslow Sandstone did not travel very far from its source, but it does feature significantly within buildings of the aforementioned villages. It is not always easy to distinguish, when seen in buildings, from the overlying red sandstones of Grinshill and Ryton (which are now referred to as the Helsby Sandstone Formation).

Helsby Sandstone Formation

Helsby Sandstone (Keuper Sandstone)

There is a certain irony in the fact that central north Shropshire, containing the best of the Permo-Triassic building stones, is certainly not 'stone building country'. The reason for this is easy to understand when looking at the geological drift map of the area. More than 70% of the map shows a glacial covering of boulder clay, sand and gravel. Breaking through this superficial cover, however, in a broken line of hills, from Nesscliffe and Ruyton-XI-Towns in the west, through Clive and Grinshill, to Hawkstone and Hodnet in the east, are discontinuous and faulted outcrops of the Helsby Sandstone Formation.



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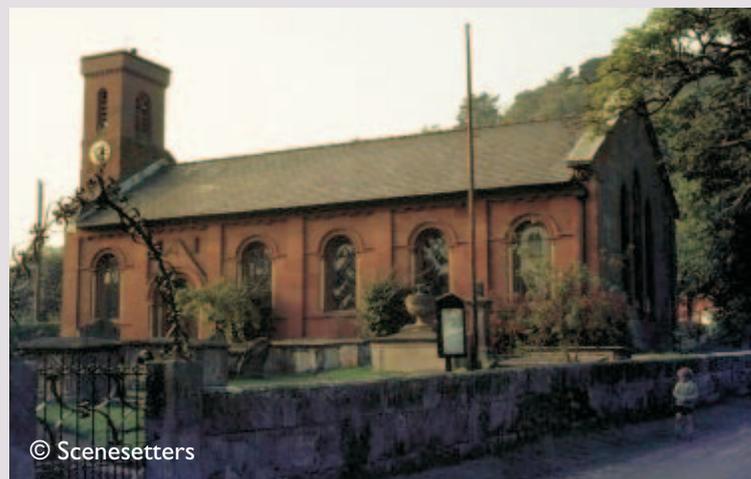
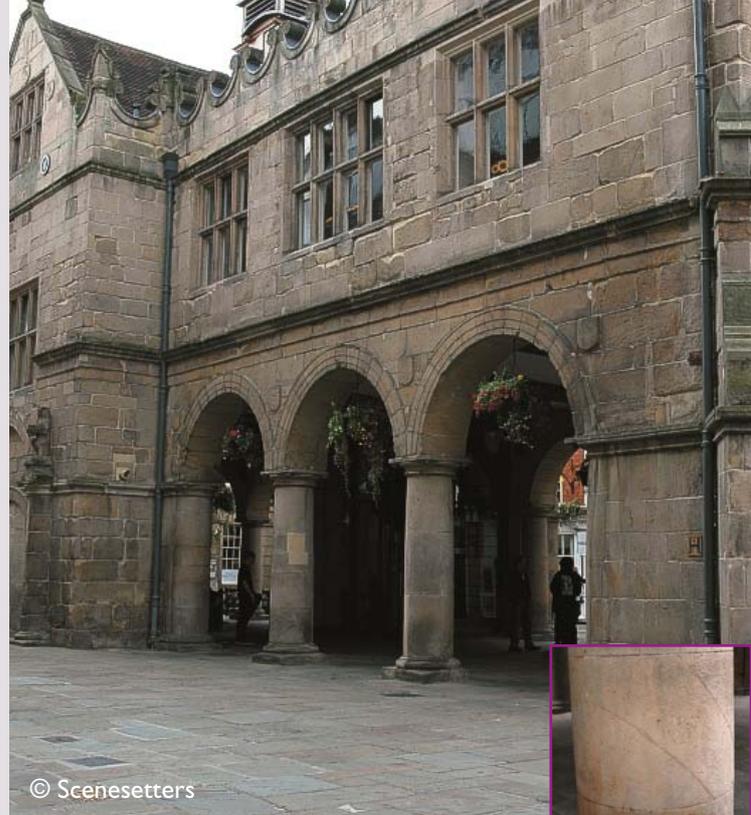


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Always used in the immediate vicinity of its many quarries, it gives a distinctive character to the villages mentioned above. Elsewhere, the area was well enough served by brick production (from the boulder clay), and too far removed from the sandstone sources to make its use economic.

Grinshill Stone

Probably the best known and most thoroughly researched of the 'white sandstones', are those quarried at Grinshill and Clive. 'Grinshill Stone' is a fine to medium-grained, massive sandstone, well-cemented with quartz, and virtually iron-free. From medieval times onwards it has been the preferred material for high status buildings, and has gained a national reputation since. Large column sections could be carved from its thick beds for architecture with classical pretensions, such as Attingham Hall or the Lord Hill monument in Shrewsbury. Earlier (in the late 16C), it had been brought into the county town for Shrewsbury School (now the library) and the Old Market Hall (top right image), and subsequently for the railway station (of 1848; image below). The inset shows the veining present in Grinshill Stone. Despite repeated references to the effect, it was not in fact used by the Romans at Wroxeter, but it was used extensively in medieval Haughmond Abbey. Its heyday, however, was from the mid-C19 to the early C20. Rail transport (sidings were specifically built for the sandstone trade at Yorton) put it firmly on the county and national map. Most C19 church restorations in the county include Grinshill door and window mouldings. Grinshill Stone is perhaps the only Shropshire building stone that has been quarried commercially over a period of several hundred years (and the trade continues present day). This is described by David Thompson (1995) in "A Guide to the history and geology of quarrying at localities along the natural history trail in Corbet Wood, Grinshill, north Shropshire". Not all of the Grinshill-produced sandstones are 'white'. The red ashlar of Grinshill church (right image) was quarried nearby, but was likely worked from the underlying Wilmslow Sandstone Formation (see p.22).



Nesscliffe & Shelvock Stones

Moving west away from Grinshill, towards Nesscliffe and Ruyton-XI-Towns, the sandstones become distinctly red. 'Nesscliffe Stone' was used by Thomas Telford to restore Shrewsbury Castle in the 1790s, but it is clearly less resistant to erosion than either the red sandstones of the Salop Formation used originally or the hard white Grinshill Stone. The top right image shows a wall of Shrewsbury Castle with purple/red sandstones lower down (probably Salop Formation sandstones from The Quarry), grey/white sandstone blocks (more likely 'Coed-yr-Allt type' than Grinshill sandstone) and badly decayed red Nesscliffe Stone on the 18C battlements. The image below is of Shrewsbury Castle. A sandstone from the same stratigraphic interval at the significant Shelvock Quarry (north of Nesscliffe and west of Ruyton) is more variable in colour, being sometimes red and sometimes white. This was the source for much of the pink and red stone in Shrewsbury Abbey, and a number of north Shropshire country houses. It was also popular with Victorian church restorers for new "Gothick" windows.

Similar colour variability is seen eastwards along the broken line of hills to Hawkstone and Hodnet. The grounds of Hawkstone Park include high, white and pale pink cliffs of sandstone, but they were little quarried for building. Nearby Weston-under-Redcastle, however, boasts some buildings of very red, locally produced sandstone. In the field, it has proved very difficult to distinguish with certainty between all the various red and grey sandstones worked from the Upper Carboniferous and Permo-Triassic successions.



The most reliable guide remains the location of the nearest likely source quarry. However, it has been shown that land-ownership played a considerable part in determining the source of stone for the medieval abbeys in the Shrewsbury area (D. Pannett, pers. comm.).

JURASSIC Lias Group

A small outcrop of Lower Jurassic (Middle Lias) mudstones and thin limestones is found around Prees. These were the basis of an important brick-making industry centred on the middle of the north Shropshire basin, but there is no evidence of these sediments having been used as building stone.



QUATERNARY

Tufa

Deposits of limestone developed in the vicinity of springs carrying lime-rich water are known as tufa. The tufa is formed as the lime-laden water evaporates, often encapsulating plant material and other debris. It produces a very hard, but porous, lightweight stone, and these properties were the key to its use – it was ideal for the vaulting of church roofs and other early stone buildings. In Shropshire, its use is known for certain at Wroxeter and, in later times, in the walls of churches of the Severn Valley around Quatford. [Quatford church \(below image\)](#) has a Norman chancel constructed of tufa blocks. The C18 nave and tower are probably Alveley Sandstone. The inset shows a close-up of the tufa. Its source is unknown, but the concentration of use in that area suggests that there was a local tufa deposit that is now obscured or was totally worked out. Alternatively, as all known use is close to the River Severn, it could have travelled up the river from known sources in the Teme Valley, or even Gloucestershire.

Recent Erratics

In south Shropshire, many of the early settlement sites were on river terraces or areas covered with glacial boulder clay (till). Much of the apparently random variation in stone type seen in some older churches, as well as in field walls, results from the gathering up of the largest boulders from the river or boulder clay deposits. [Classic boulder construction was shown in a now demolished cottage located near the county boundary at White Grit \(below image\)](#). Other squatters' cottages were doubtless built in a similar way during the heyday of lead mining.



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.

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

Chalk: A very fine-grained white limestone composed principally of microscopic skeletal remnants known as coccoliths.

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

Cross-bedding: A feature principally of sandstones reflecting the movement of sand grains in currents, often producing a layering oblique to the margins of the beds.

Dressings: To say a building is constructed of brick with stone dressings means that worked stone frames the corners and openings of the structure.

Dolerite: A medium-grained basic igneous rock often found as small to medium sized intrusions.

Ferruginous: Containing iron minerals usually in the form of an iron oxide which gives the rock a 'rusty' stain.

Flint (or Chert): Hard, resistant beds or nodules composed of cryptocrystalline silica. The use of the term flint is restricted to nodules and beds that occur only in Chalk (Upper Cretaceous) rocks.

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.

Limestone: A sedimentary rock consisting mainly of calcium carbonate (Ca CO₃) 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: Applied to a rock which contains a significant proportion of mica, usually 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.

Quoin: The external angle of a building. The dressed alternate header and stretcher stones at the corners of buildings.

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).

Sedimentary rock: A rock that is commonly formed by the binding together (lithification) of sediment particles (e.g. sandstone, siltstone, mudstone, limestone).

Siltstone: A sedimentary rock composed of silt-sized grains (i.e. only just visible to the eye).

Spalling: Deterioration in the form of detaching flakes, scales or lens-shaped fragments from a generally sound surface.

Stratigraphy: Branch of geoscience dealing with stratified rocks (generally of sedimentary origin) in terms of time and space, and their organisation into distinctive, generally mappable units.

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