

Field Meeting Report: Building stones in the churches and church yards of the Stretton Hills, led by David Pannett and Andrew Jenkinson, 15th May 2004

Michael Rosenbaum¹

ROSENBAUM, M.S. (2006). Field Meeting Report: Building stones in the churches and church yards of the Stretton Hills, led by David Pannett and Andrew Jenkinson, 15th May 2004. *Proceedings of the Shropshire Geological Society*, **11**, 5-11. The field excursion which met at Craven Arms on May 15th 2004 focused on the Stretton Hills. This area is well known for its complex geology and associated landscape patterns, reflected in the choice of building stones. Geology and local history have made each of the churches different, but they nevertheless reveal some common trends. Three of them (St Laurence Church Stretton, St James Cardington, and St Peter Rushbury) still have Norman naves built of locally derived rubble, later modified by better quality stone such as that from Grinshill. Meanwhile, the church of St Margaret at Acton Scott persevered in its use of the stone won from its own local and unique outcrop of Ordovician Acton Scott Limestone.

¹Ludlow, UK. E-mail: msr@waitrose.com

1. INTRODUCTION

The field excursion led by David Pannett and Andrew Jenkinson, which met at Craven Arms on May 15th 2004, focused on churches around the Stretton Hills. This area is well known for its complex geology and associated landscape patterns, which might be expected to be reflected in the choice of building stones. The context of this field excursion is portrayed in the geological map and cross-section (Figures 1 and 2) and the more general aspects are considered in the accompanying paper by David Pannett (2006). Participants were invited to confirm their understanding of stone usage by compiling their own inventory using the *pro forma* supplied by the leaders (Figure 3).

The leaders' introduction highlighted the bridge that building stones provide between geology and archaeology, and between geology and architecture. The issues of major concern at present are **conservation** (Where did the stone come from? Can it still come from there? How will it blend into the existing fabric? How will it change with weathering?) and **observation** (How do the features characterise the local geology? What can be deduced about the local geology and the landscape?), particularly as there may no longer be any exposures of the local geological materials.

South Shropshire has a complex geology. There are varied lithologies, and tectonics has deformed and displaced them. This is therefore a good area for demonstrating the influence of geology on landscape and building stone, both church and vernacular.

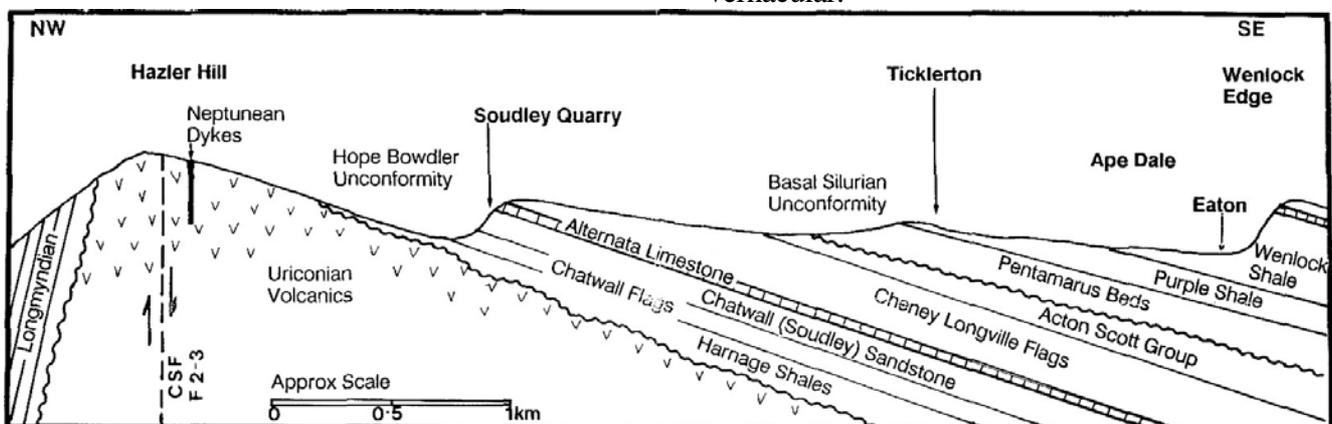


Figure 1. Geological cross-section E-W through the Stretton Hills.

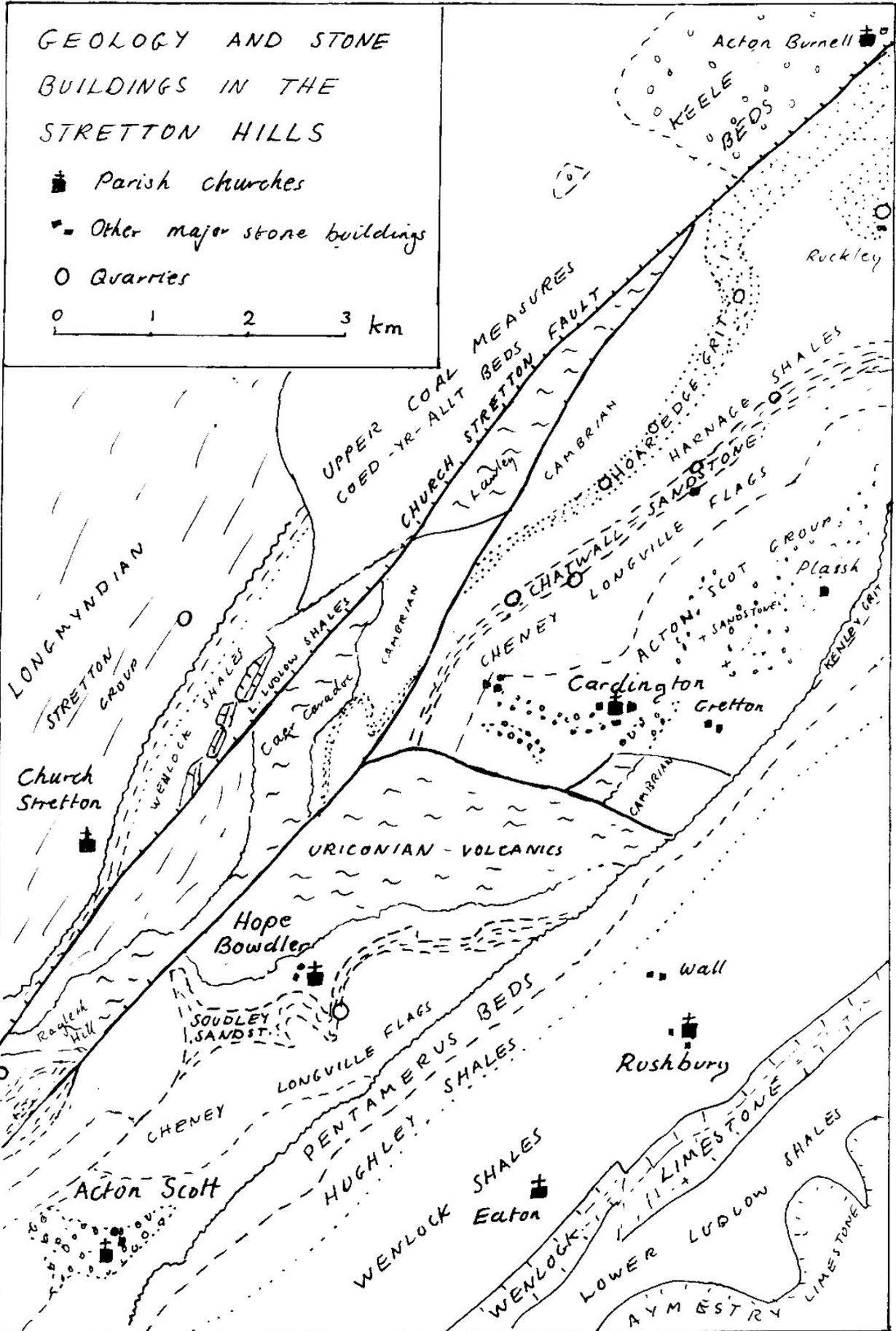


Figure 2. Geological sketch map of the Stretton Hills, showing locations of the churches mentioned in this paper.

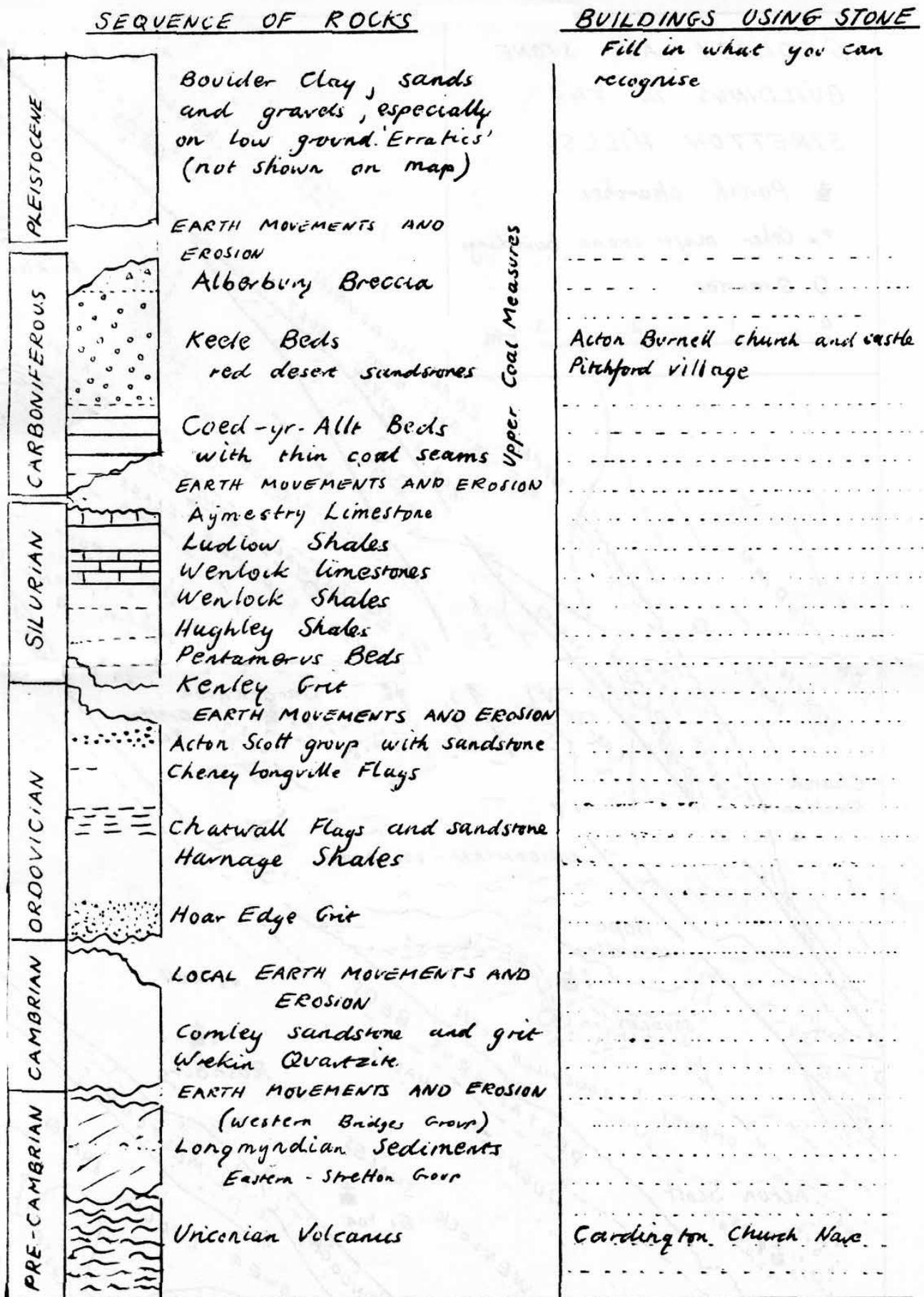


Figure 3. Pro forma for usage of building stone in churches within the Stretton Hills.

2. EXCURSION PROGRAMME

From Craven Arms the party travelled by coach, the general geological setting being explained *en route*.

LOCALITY 1: A49 lay-by east of Wistanstow [443 870]

A brief stop was made in the lay-by to view the twin escarpments to the east: of Wenlock Limestone and, behind, the Aymestry Limestone. Between lies a valley floored with Lower Ludlow Shales.

3 km to the southwest lies Wart Hill (so named because of its shape): a Precambrian inlier lying within the Church Stretton Fault zone. This is not a single fault plane but a zone of anastomosing faults and fault-bounded blocks, analogous to the present day San Andreas Fault in California.

Acton Scott Limestone forms the ridge to the north, just beyond the old railway that formerly ran between Craven Arms and Much Wenlock.

From here the coach drove northwards along the A49 towards Church Stretton, through the Marshbrook Gap through which meltwater from the southern extremity of the Irish Sea glacial ice sheet that covered much of northern Shropshire once flowed during the Devensian, some 18,000 years ago.

Entering the Stretton Valley, the flat ground between the old and the new Shrewsbury roads was noted, the floor of a former proglacial lake covered in fine silt.

LOCALITY 2: Church of St Laurence, Church Stretton [452 937]

The first task set the participants was to identify as many different building stones as possible. The basic terminology was explained: rubble (rough stone) (Figure 4), coursed (layered), ashlar (shaped, with neat faces), jamb (margin of door), pilaster (corner) and quoin (edge).

Architectural orientation pointed out the Norman northwest wall of the nave, the base of the tower and the chancel, whereas a Victorian age was ascribed to the southern transept, with the northern transept being the most recent.

Although not a comprehensive study, the following building stones were noted:



Figure 4. Mixed rubble stone. West front, St Laurence Church Stretton.

(1) *North wall of nave*

Irregular blocks with black staining are from the Longmyndian (Stretton Shale): jointed, but irregular. This is the nearest stone, outcropping in the Carding Mill Valley, but is very difficult to work as a building stone.

Buxton Rock is a thin volcanic rock from the Strettonian part of the Longmyndian.

Sandstones and grits predominate (Western Longmyndian), e.g. the Stanbatch Conglomerate (possible sources being at Picklescot, Bayston Hill, and Haughmond).

Rhyolite blocks probably came from the Ragleth Tuff, which outcrops one kilometre to the southeast.

It is possible that glacial ice passing Bayston Hill may have transported stone south from there, or possibly Haughmond Abbey stone might have been available as a source, or even perhaps a fault sliver might occur nearby, not detected during the Geological Survey mapping!

The quoins are of fine sandstone belonging to the Keele Beds from near Acton Burnell, the only local source of red stone.

(2) *Top of tower*

The tower is constructed from Hoar Edge Grit which could have been transported down the old Roman road from Hoar Edge, to the north; this is workable as ashlar.

(3) *Northern transept*

The pale grey Grinshill Sandstone is of Triassic age, but the ashlar here is predominantly of Soudley Sandstone, a distinctive banded grey/green and dark red rock of Ordovician age worked for a long time at Soudley, and

comparable to the Chatwall Flags and Sandstones which are more or less contemporary.

The characteristic banding of the Soudley Sandstone caused much discussion. The shapes of the distinctive banded grey/green and dark red alternations were reminiscent of cross-bedding (Figure 5). The red colouration appeared to be due to oxidation of iron minerals within the sandstone, which might well be diagenetic or due to groundwater migration, or might relate to bacterial attack on organic matter within the original sediment. Close examination suggested that the initial colouration may have been yellowish brown. The red brown colouration is later and appears to be associated with calcite. The green colouration may be organic-rich or clay-rich, facilitating reduction of the iron minerals, or perhaps it is just due to calcite depletion.

Some ashlar blocks are distinctly cross-bedded, enabling “way-up” criteria to be applied. This led to discussion concerning the resistance of stone to weathering; generally stone placed with the same orientation as it has within the ground prior to quarrying exhibits the greatest resistance to weathering when placed as a building stone. Stone placed with its bedding or foliation on edge suffers from stress relief, cracking and allowing ingress of water. Frost, algal and plant growth subsequently fragments the stone and leads to its premature deterioration, sometimes in as little as a century.



Figure 5. Soudley Sandstone. Northern transept, St Laurence Church Stretton.

(4) *Southern transept*

This wall was rendered early in the 20th Century, as was the common practice in the 13th Century when stone was selected for shape and efficiency of construction rather than appearance. Naked stone only became popular during the 18th Century, although well shaped stone was selected

for the construction of this church tower during the 14th Century, utilising Grinshill Sandstone from the north and Hoar Edge Grit from further south.

(5) *Church yard wall*

The church yard wall is of Soudley Sandstone.

LOCALITY 3: Hope Bowdler lay-by [474 925]

Advantage was taken in passing this classic locality to once again visit the unconformity of the Lower Ordovician Harnage Shale overlying the Precambrian Uriconian volcanics.

LOCALITY 4: Soudley Quarry [477 917]

Reflecting its local source, the building called “Stone House” opposite the entrance to the quarry is built of the Soudley Sandstone won from within.

The quarry also reveals the *Alternata* Limestone overlying the Chatwall Sandstone, the former having bedding planes covered with these flattened fossil brachiopods. Such a fabric facilitates the breakage of the stone into thin sheets, enabling it to be used as stone tiles, a good example of which is the Abbot’s House at Much Wenlock. Indeed, the shell content was sometimes so great that the rock provided a valuable source of material for lime production; kilns were once built above the quarry.

Although the quarry is now an SSSI because of its geology, English Nature will occasionally issue permits to rework the quarry for local use, this being the case at the time of this field excursion as a result of the specific request of the Local Authority Planning Officer.

LOCALITY 5: Stone Acton [503 944]

The outcrop here of Cambrian Wrekin Quartzite was visited, which occurs here due to thrusting of the Cardington Hills northwards, producing a rocky exposure on the hilltop.

LOCALITY 6: St James church, Cardington [506 952]

After lunch at the Royal Oak, an examination of St James church and the old School House next door revealed use had been made of the Ordovician sandstones from Hoar Edge and Chatwall. The red sandstone ‘tympanum’ (rounded infilling of a door head) at Cardington probably came from even further afield, from the Keele Beds at Pitchford.

The 13th Century building showed that whatever material was to hand was employed

(Figure 6); examples included: Uriconian volcanics, Cambrian Wrekin Quartzite, Ordovician Hoar Edge Grit (yellowish coarse grit stone) and Cheney Longville Flags (grey sandstone), Silurian *Pentamerus* Beds (shelly limestone), and various glacial erratics (mostly dolerite, but one piece of red granophyre was observed, probably Eskdale "Granite"). Jambs and quoins are predominantly made of Hoar Edge Grit (white sandstone). The 13th Century chancel to the west is more uniform, predominantly Hoar Edge Grit (Figure 7). However, restoration has employed Grinshill Sandstone, especially notable in the windows.



Figure 6. Geological mixture in Norman wall, Cardington Church.



Figure 7. Predominantly Hoar Edge Grit. Norman nave left, 13th Century Chancel right; Cardington Church.

LOCALITY 7: St Peter's church, Rushbury [515 918]

This church is situated in Ape Dale, on a slight ridge (possibly of harder rock such as silty mudstone or sandstone) with Wenlock Limestone outcropping close by.

Examination of the west wall of the church tower revealed that the jambs and quoins were made of Chatwall Sandstone, not of the nearby Wenlock Limestone. This suggests that stone from

a Roman villa known to have been situated some 100 m to the north might have been recycled in preference to quarrying new stone. The herringbone pattern of stone in the north wall of the nave is likely to be pre-Norman; indeed, the thin stone slabs (possibly of Cheney Longville Flags) may be recycled stone tiles from the roof of the Roman villa. The rubble wall also revealed much thinly bedded siltstone and *Pentamerus* Limestone (recognisable by the mollusc having a characteristic reinforcing septum in the middle). The latter may have come from just behind the east wall where the old field boundaries are suggestive of a small quarry.

Other building stones include the basal Silurian Kenley Grit (coarse ferruginous sandstone with quartz pebbles), Hoar Edge Grit, a bedded limestone, and a silty shale. The latter is strongly laminated and reveals occasional sedimentary slumps; it is probably the local stone forming the ridge upon which the church and village are situated. The Kenley Grit has also been used for the 1860s vestry.



Figure 8. Rushbury Church, revealing Soudley Sandstone, Wenlock Limestone and possibly Hoar Edge Grit.



Figure 9. Rushbury Church, revealing Soudley Sandstone with 19th Century tool marks - 'rustication'.

LOCALITY 8: St Margaret's church, Acton Scott [453 895]

The porch is made of Soudley Sandstone: well bedded but the blocks have not been laid with favourable orientations and are thus disintegrating. Just to the right of the entrance are examples of *Tentaculites*, *Orthis* brachiopods and the trilobite *Trinucleus*. Such a fauna makes splendid sight, but **please respect this location – it is a sacred site and should be treated with the respect that it deserves.**

The Acton Scott Limestone outcrops hereabouts. Whilst much of the Acton Scott Group comprises shales, the eastward protrusion into Ape Dale includes this very localised limestone that has determined the location of the village from Roman times. The majority of the church is built from this limestone. However, its calcite content is somewhat variable and some is very iron stained. This is a typical example of an “estate rock”, i.e. its characteristics are perhaps not ideal, but it occurs within the estate and has thus been extensively utilised, giving the location a special character.

At least two quarries of the Acton Scott Limestone have been identified. One is now the car park for the church, but note that this is now floored with the much younger Wenlock Limestone! The other is in the woodland nearby [449 896].

From Acton Scott the coach returned to Craven Arms and the party dispersed having expressed its

appreciation to the leadership in the traditional manner.

ACKNOWLEDGEMENTS

This field meeting report has been based on the notes taken by the author during the joint field excursion, led by David Pannett and Andrew Jenkinson on May 15th 2004, between the Shropshire Geological Society, the Shropshire Archaeological Society and the Woolhope Naturalists' Field Club Geology Section, supported by the Hereford Diocese Caring for God's Acre charity.

Disclaimer - The information contained in this account has been prepared following a summary of the geological literature of the area and visits to all the locations described. Its sole aim is to provide a record of what was seen and provide an insight into its geology. It should not be used for any other purpose, or construed as permission or an invitation to visit the sites or localities mentioned. Access to private property should always be arranged in advance. Please respect the Country Code and the Fieldwork Code published by the Geologists' Association, available on-line at:

<http://www.bbc.co.uk/education/rocks/code.shtml>.

REFERENCES

Pannett, D. (2006). Building stones in the churches and church yards of the Stretton Hills. *Proceedings of the Shropshire Geological Society*, **11**, 2-4.