

NORTHAMPTONSHIRE SLATESTONES,

Dr D.S. Sutherland, Geology Department, University of Leicester.

In central England there is little metamorphic slate of the type found in say, the Cambrian tectonically cleaved mudstones of Wales; the small inliers of late Precambrian Swithland Slate in Leicestershire are the nearest. But certain fissile sedimentary rocks from the Mesozoic outcrops have been selected and trimmed for roofing material since the Middle Ages.

The calcareous, sandy "slates" of Collyweston, from the Lincolnshire Limestone Formation, are well known. However, the succession of Middle Jurassic rocks in Northamptonshire (see Fig.1) includes other horizons of sandy limestones and calcareous sandstones of relatively fissile character, and also flaggy limestones perhaps from near-surface outcrops, which have been used as slates in the past, and can turn up in archaeological contexts.

Great Oolite Group	Oxford Clay Kellaways sand and clay Cornbrash Blisworth Clay Blisworth Limestone Rutland Formation (Upper Estuarine Series)
Lincolnshire Limestone Formation	Upper Lower: Collyweston Grantham Formation (Lower Estuarine Series)
Northampton Sand Formation	Variable Beds Ironstone
Lias	Upper Middle - Marlstone Rock Bed

Figure 1: The Middle and Lower Jurassic Succession in Northampton.

1. BLISWORTH (GREAT OOLITE) LIMESTONE

This limestone, of Bathonian age, is younger than the Lincolnshire Limestone. There is little geological information regarding slates from this formation, which has a wide outcrop in eastern and southern Northamptonshire, but fissile rock was locally available, as "paving" beds within the succession, or as frosted rock near the surface.

Thompson (1927) quotes Sharp, describing a quarry west of Oundle where "Pendle" - the quarrymen's term for any fissile limestone - occurs at the top of the section, and "splits into thin flags or slates". Certainly the Blisworth Limestone provided a source of slates on a local basis, and perhaps in the past certain sources were better known. Kerr, for example (1925, p.106) records the use of "slatstone" from "Jerdele", (which archaeologist John Williams suggests would be Yardley Chase), in rebuilding the Middle Gatehouse of Higham Ferrers castle in 1431. (The castle no longer exists; some stone is believed to have gone to Kimbolton). Blisworth Limestone in Northamptonshire is cream-coloured, including micritic and biosparite varieties, seldom oolitic, and weathering grey; it commonly contains oysters in flat pieces, which would contribute to a fissile character.

2 UPPER ESTUARINE LIMESTONE

Morton (1712) mentions that slates from "Pichely" [Pytchley] were used for the roof of the vicarage in that village, and geologically it is likely that the source here was the Upper Estuarine Limestone. This limestone, again geologically younger than the "Collyweston" of the Lincolnshire Limestone, occurs as a rib, on average about 5 feet thick, within the clays below the Blisworth (Great Oolite) Limestone. Locally it can be sandy and flaggy, but also shelly limestones occur, and fissile rock from this geological horizon is often found to contain many small round bivalves (*Placunopsis*), as well as oysters and echinoid debris. Slates of this type are recorded from various archaeological sites, in Northampton for instance (Williams, 1979, p.327; Williams et al., 1985, p.71). Richardson (1925, p.143) lists a section in the Limekiln Quarry on Hopping Hill, near Duston, west of Northampton, where a "Slate Bed" of calcareous sandstone occurs in the Upper Estuarine beds below the Great Oolite Limestone. The outcrop, though thin, occurs around Kettering, Wellingborough and Northampton (including Duston), and thickens south-west of Towcester towards Helmdon, where, still including laminated limestone, it was also used as a building stone. Thompson (1906, p.298) noted that the Manor at Sulgrave was roofed with stone slates, "probably supplied from Helmdon".

3 LINCOLNSHIRE LIMESTONE FORMATION - COLLYWESTON SLATES

The best-known source of slatestone in the county is Collyweston, where a sandy limestone or calcareous sandstone from the basal beds of the Lincolnshire Limestone has been mined for centuries.

Old shafts remain in the village of Collyweston and near Easton-on-the-Hill. John Morton's *Natural History of Northamptonshire* (1712, p.109) gives one of the earliest descriptions of the method of obtaining the slates "which being sprinkled with Water and exposed to Frosts, do readily cleave into thin and even Plates as are fit for covering the Roofs of Houses". The sandy limestone is underlain by soft sands which could be dug away along underground galleries or "foxholes", enabling the removal of the overlying blocks. A geological section at a Collyweston Slate-mine is given by Woodward (1894, p.197; see also Sharp, 1873), the slate bed being quoted as 3 feet 3 inches thick.

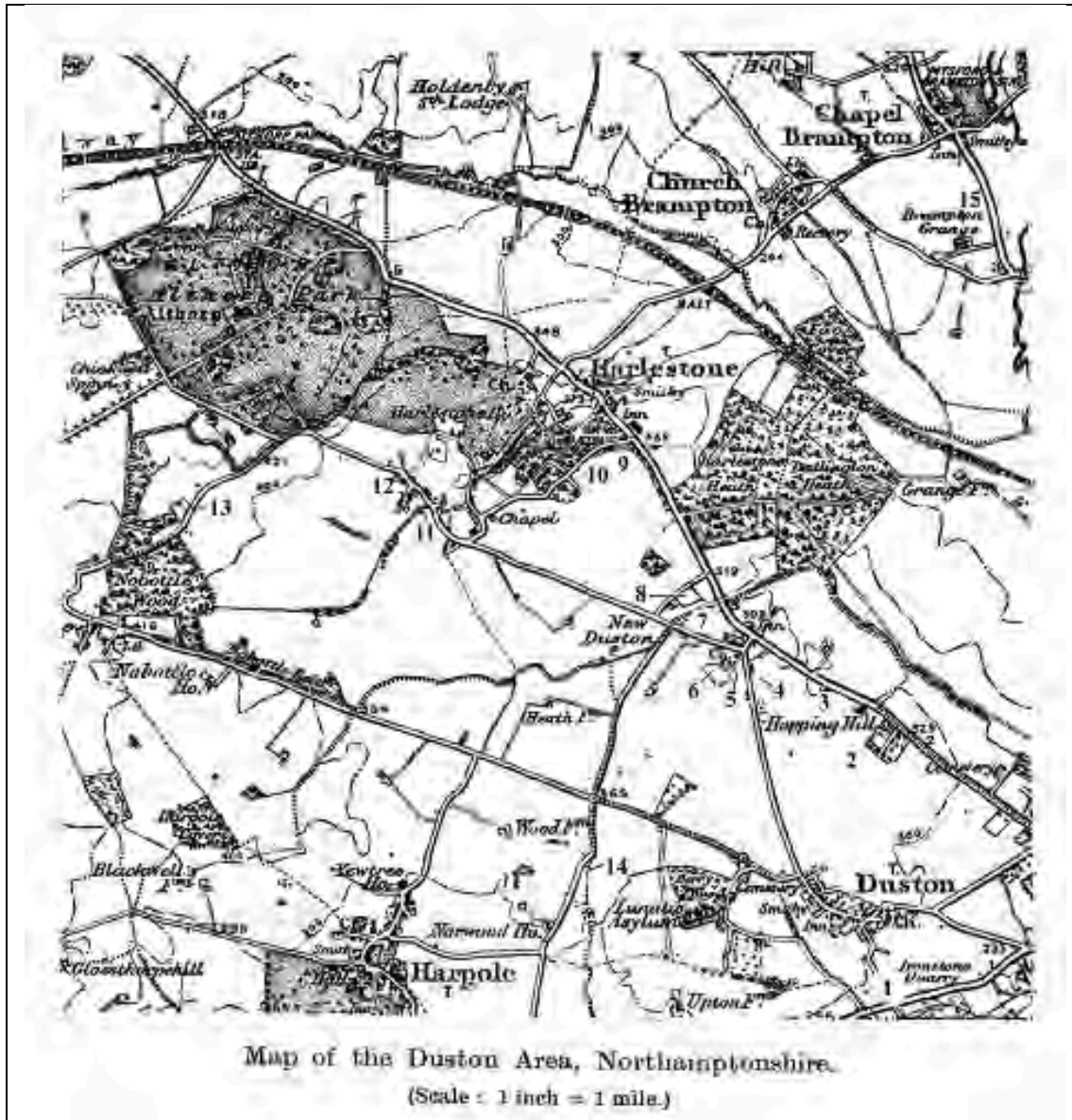
Woodward also describes the working of Jurassic slates for roofing (op. cit., p.482-485), but for the Collyweston Slates he is quoting an earlier account by Judd (1875). The rock was also worked near Kirby Lodge, Deene (Taylor, 1963, p.64). Kerr (1925), for instance, records the use of 11,000 "stone slattes" from "Kyraby" for Higham Ferrers castle in 1462. At the old Collyweston Slate Pits west-north-west of Kirby Lodge the pale brown sandy limestone is 3 feet 6 inches (just over a metre) thick (Taylor, op. cit., p.64). Typically the rock in the ground is cross-bedded, and fissile along the cross-bedding. Taylor (op. cit., p.43) describes the rock as containing "30 per cent or more of quartz grains and sparse flakes of white mica", with shell fragments, and cemented by calcite.

A thin section of Collyweston Slate at Leicester University (LEIUG 119511) is more sandy (a fine-grained calcareous sandstone, rather than a sandy limestone), the sand grains being angular and 0.1 mm in size. Muscovite flakes, and shell fragments, are dispersed but lie flat on the bedding and cause the rock to split along this direction. The Lincolnshire Limestone as a whole has a restricted distribution in Northamptonshire, occurring only in the north-east (and not everywhere are the basal beds suitable for slates); it becomes thinner southwards, and is not present south of Kettering (Sylvester-Bradley and Ford, 1968).

4 NORTHAMPTON SAND FORMATION - DUSTON SLATES

The Northampton Sand Formation has been quarried or mined for stone slates since at least 1712 at Duston and Harleston Heath, to the west of Northampton, Pitsford and Weston Favell, the latter probably near surface rather than underground, to the north and east respectively. In 1870, the Duston Stonepit was described as 'very ancient and large some 40 feet deep, in which two beds of "white pendle", each two or three feet thick occur between upper and lower sandstones' (Sharp 1870, 370). It is not known when they ceased working but by 1906 they were no longer used (Thompson 1906).

In the Duston area, several quarries, delves and mines were in existence, working a variety of building stones. The lower Pendle bed was called (incorrectly) Collyweston Slate by the quarrymen and was mined in a similar way (Sharp 1870, 370), although it is not clear whether it was a frosting slate. There is some confusion about the names and locations of the various workings but the correct situation is shown in the map. At Pitsford and Weston Flavell, the slates were suitable for use straight from the ground without frost treatment (Morton 1712, 109). It seems that in the East Midlands only here and at Duston was the Northampton Sand sufficiently sandy and fissile to be useful as slates.



DUSTON QUARRIES MAP

- 1 Duston Ironstone Quarry
- 2 Limekiln Quarry. Slate is in the Upper Estuarine Limestone
- 3 Hopping Hill Brickworks
- 4
- 5 Field Pit
- 6 Top Pit New Duston, Old Duston Pit (Sharp)
- 7 Tennant's Quarry = Sharp's Old Slate Quarry Close. Northampton Sand formation
- 8 Richardson's Slate Pit Plantation. Northampton Sand formation
- 9 Cotter Quarry, Harlestone (The quarry is a quarter mile further south than shown.)
- 10 Larger Quarry
- 11
- 12
- 13
- 14
- 15 Harpole Sandpit