

TWO EARLY MILLSTEADS, POLEGATE, EAST SUSSEX

by Lawrence Stevens

This paper outlines a rescue excavation of the remains of two post mill trestles at Polegate, East Sussex, after part of a post mill centre post had been discovered in June 1987. The excavated timbers were those of a medieval trestle type not previously excavated in this country and the remains provided evidence for the existence of not only double quarterbars but also intermediate pseudo crosstrees.

INTRODUCTION

The following description is intended to assist the reader to understand the substructure of a post mill, a three-dimensional drawing of which appears elsewhere (Stevens 1982).

The capability of turning the sweeps of a windmill into the wind was probably developed either before or during the 12th century when a box-like body containing the machinery and carrying the sweeps was set on a central post upon which it could be winded. Thus, this type of mill became known as a post mill and over several centuries the method of supporting and stabilising its centre post changed greatly. At first, this centre post was buried in the ground for stability, but later it was supported by a trestle which itself was covered by soil in the early stages of its development. Later the trestle was built 'open' and free-standing as in the case of the Sussex example at Nutley.

This trestle substructure of the post mill, perhaps supporting as much as 18 tonnes, consisted of two long timbers called crosstrees laid on the ground to form a cross. At their intersection there was sometimes a halving joint and over this was inserted the centre post which had four projecting horns which fitted into the angles of the cross. The centre post was supported by four diagonal timbers, known as quarterbars, each morticed at their lower end into the end of a crosstree while the upper end

was morticed into the centre post two or three metres above ground.

LOCATION

The site is situated in School Lane (TQ 58280510), on Weald clay just above the 15 m. contour, to the north of the (A27) Polegate to Westham Road (Fig. 1A–1C). A house, formerly No. 3, School Lane, had occupied the site which was being redeveloped by A. J. Hassell Ltd. of Stone Cross, East Sussex. During trenching the remains of the lower portion of a post windmill was uncovered, which led to archaeological excavation.

DOCUMENTARY EVIDENCE

There are numerous references to lands called Milllands and more specifically Little Milllands and Great Milllands from the mid-16th century onwards. It would appear that the lands were held in 1567–68 by the one-time Premonstratensian Grange of Otham (Salzmann 1901) and there are fairly continuous references to the holders of the Milllands well into the 19th century. Some references to the Milllands described them as close to Swines Hill which is the area of the site of the mills under discussion. Swines Hill Farm became known as Millfields Farm at the turn of the century and though the

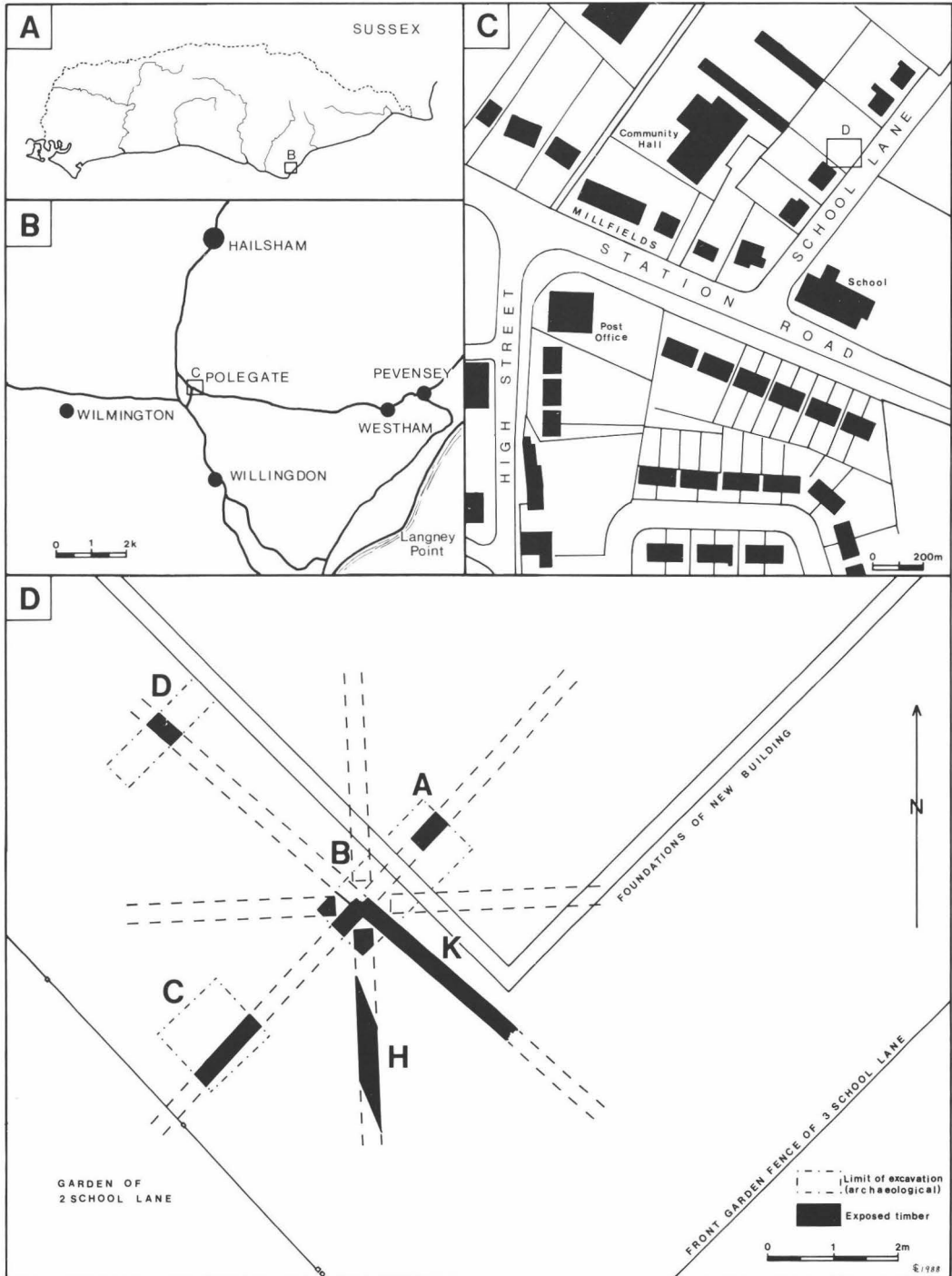


Fig. 1. A–C, Location plans showing the position of the excavation site; D, Site plan showing the position of the archaeologically excavated trenches A–D and the timbers H and K which were revealed by the contractor’s trenching.

farm no longer exists, the name Millfields survives in the name of a terrace in Station Road, Polegate. An eminence in this area is more than suggested by a trigonometric point on both the Ordnance Survey 25-inch maps of 1875 and 1899.

Two or three decades before the date of the earliest of these maps there appears to be a direct reference to the mill site in a description of the Searland (Sayerland) Estate which is described thus, '... close to the high road and to the mill field, where the mound is yet to made out on which stood—though not in living memory—the windmill; and here is Mill Lane, ...' (Gearing 1884). Later a house was built on the mound and its last inhabitant recalled 'The slope down all round the house could be felt very much when I was mowing the ground! Nos. 1, 2 and 4, were much flatter and I used to envy them ...' (Shelley pers. comm. 1987).

The writer organised a limited emergency excavation in order to locate the crosstrees of the mill trestle during the weekend 11–12 July 1987. Four trenches were cut, which revealed the position of the crosstrees aligned SE–NE, their intersection and evidence of secondary intermediate cross-members (Fig. 1D).

TRENCH A

A piece of fractured timber protruding from within the foundations of the new building, led to the first trench (A) being dug to examine it and 0.4 m into the clay, the splintered remains of a waterlogged timber measuring 254 mm × 305 mm were found. This was subsequently identified as the north-eastern crosstree of the trestle, which had been cut through by a mechanical digger during the contractor's trenching (Fig. 2A).

TRENCH C

Trench C was then cut to locate the south-western arm of the crosstree, which it did with the unexpected bonus of the remains of a quarterbar. This latter was removed for preservation and is

calculated to have made an angle of approximately 35 degrees with the crosstree (Fig. 2C).

TRENCH D

Knowing that during the contractor's trenching a timber (see K, Fig. 1D) had been disturbed outside the line of the south-western line of the new foundations and assuming that this could have been the south-eastern arm of the crosstrees, trench D was cut to test the hypothesis that the north-western arm ran roughly parallel to the south-western wall of the new building. Again a waterlogged timber was revealed, measuring in section 150 mm × 200 mm and lying on a small piece of timber packing (Fig. 2D).

TRENCH B

Trench B cut into what was calculated to be the area in which the timbers would have intersected. The intersection had been mutilated on its north-eastern side by contractor's trenching, but evidence of the other crosstrees and vestiges of the horns of the centre post remained (Fig. 2B). Intersecting the right-angle of the surviving crosstrees were the ends of what appeared to be intermediate cross-members, evidence of which had been noted (see H, Fig. 1D), during sewer trenching, earlier.

Below the intersection, there was a water-filled cavity which it was learned, had been created when the centre post fragment had been removed by the contractor's machine during trenching. Probing located intermediate timbers 770 mm below the lower face of the crosstrees, but it was not possible to say if these belong to the recovered portion of centre post, or had sunk from the upper trestle.

THE FINDS

Stone (by C. Cartwright)

A lump of a hard compact conglomerate with siliceous matrix containing large spherical reddy-brown chert pebble inclusions. Part of the surface shows signs of having been

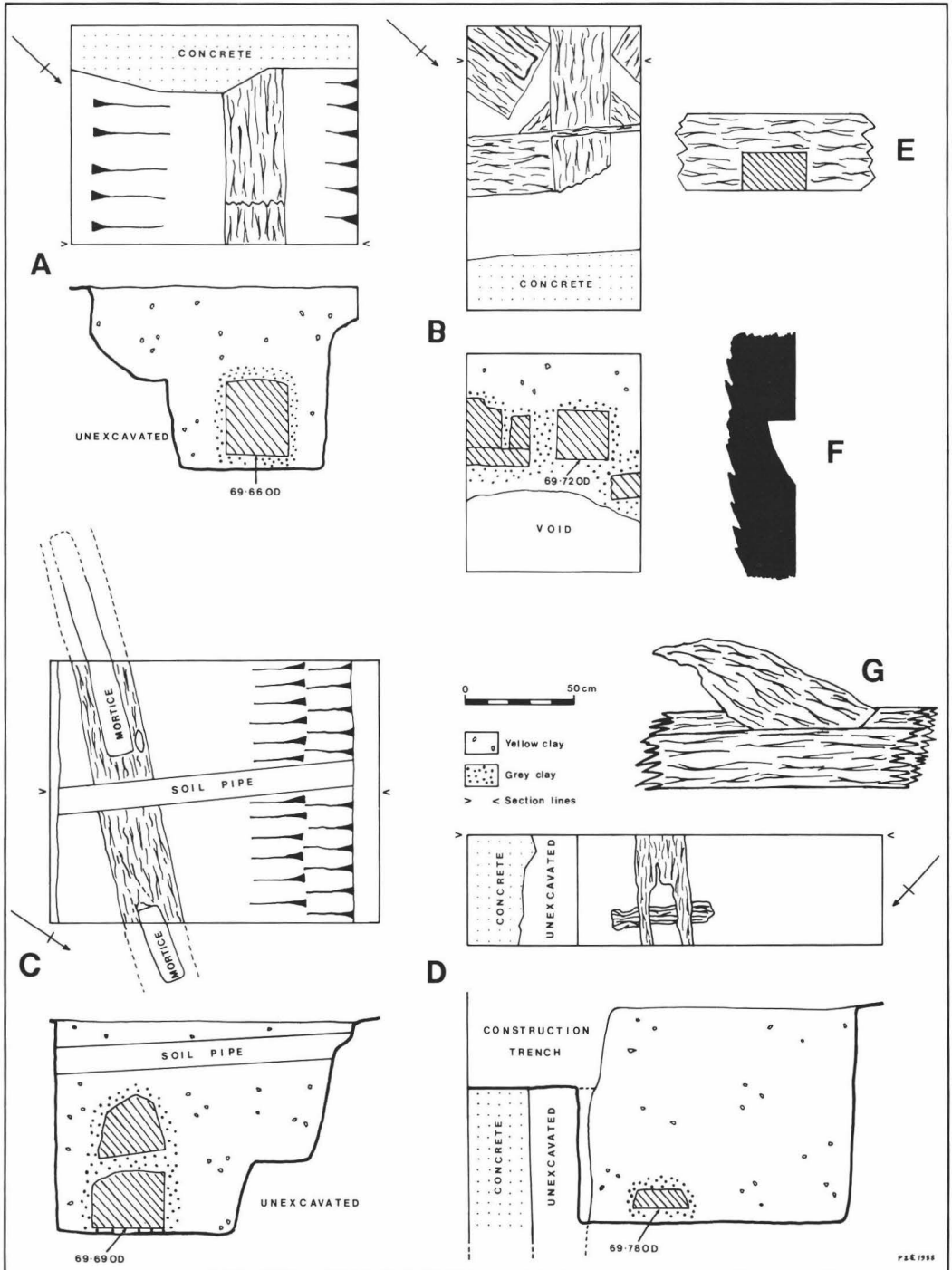


Fig. 2. A–D, Plans and sections of the planned trenches; E, Reconstructed section of the crosstree halving joint; F, Profile of the mortice in the centre post cut to take the upper quarterbar tenon; G, The remains of the quarterbar found in situ in Trench C.

water-worn. Found in trench C above the foot of the quarterbar.

Roofing Tile

A small quantity of tile was recovered from the fill above and around the timbers exposed during excavation.

The Pottery (by J. C. Dove)

All of the pottery mentioned in this report came from the excavated sections and from above or around the timbers of the trestle. In total there were 128 sherds, weighing 910 g. Most had worn edges, suggesting that they were residual when the windmill was constructed. It has not been possible to fit any of these together. It appears that all rim, handle and base sherds come from different vessels.

It was possible to distinguish six different fabrics:

Fabric A: Poorly fired. Coarse sand temper, up to 1.5 mm., with occasional grog. Generally having a grey core with red outer surfaces.

Fabric B: Medium sand temper, with sparse quartz up to 1.5 mm.

Fabric C: Fine sand temper with occasional grog. Generally having a grey core with red outer surfaces.

Fabric D: Well-fired. Fine sand temper with sparse quartz up to 1.5 mm. Generally having a grey core with grey outer surfaces.

Fabric E: Well-fired. Fine sand temper. Generally having a grey core with buff/red outer surfaces.

Fabric F: Very fine sand temper. Grey core with buff inner surface and olive-green glazed outer surface.

Brief examination showed that the pottery was medieval. Since a date sequence of medieval pottery has yet to be found in the Eastbourne area, dating must continue to be suggested by sequences from other areas (Down 1978; Rigold 1971; Vince 1985).

stabbed strap jug handles in Fabric E and a thumbled jug base in Fabric F. No sherds were considered to be later than the mid-14th century.

The pottery was divided into two groups and tabulated accordingly. The number of sherds are shown first, followed, in brackets, by the total weight in grammes and finally the fabric type. Thus 5 (50) C/D indicates that there are 5 sherds with a total weight of 50 g. in Fabrics C and D.

Wood

1. Lower portion of a centre post found below the later trestle in an excellent state of preservation, measuring 0.63 m. × 0.60 m. × 1.79 m. overall and weighing approximately 500 kg. All four horns are present and measured 175 mm × 200 mm × 115 mm. long. The distance between the horns is 260 mm. and indicates such a width to the crosstrees. A mortice had been cut on each face, 0.78 m. from the upper face of the crosstrees. Each mortice was approximately 300 mm. high and 180 mm. wide, and had a curved sloping bed (see profile F, Fig. 2).
2. Section of crosstree sawn from the north-eastern end of the south-western crosstree, approximately 250 mm. long for dendrochronology and subsequently found to be of insufficient width for such analysis.
3. The residual wood of two horns removed from the intersection of the south-western crosstree with the north-western to south-eastern crosstree.
4. Lower portion of the south-western quarterbar in an advanced state of decay (Fig. 2G). This surviving timber was 1.00 m. long and at its greatest, 260 mm. wide by 275 mm. thick. The tenon measured 135 mm deep, by 51 mm. at its widest and at least 340 mm. long. It had a well defined shoulder from which it was calculated that the angle between the crosstree and quarterbar was 35 degrees.

All the above timbers are being conserved at Polegate Windmill Milling Museum, Polegate, East Sussex.

	<i>Mid-12th to 13th century</i>	<i>Mid-13th to Mid-14th century</i>
JUGS		
Strap Handles	1 (25) B	2 (40) E
Rims	1 (10) B	2 (10) C
Spouted Lip	—	1 (30) C
Thumbled Base	—	1 (25) F
COOKING POTS		
Rims	6 (60) A/B	5 (50) C/D
Bases	4 (40) A/B	3 (30) C/D
Glazed	—	6 (40) C/D
Other	40 (260) A/B	56 (290) C/D
TOTAL	52 (395)	76 (515)

The flat-topped cooking pot rims in Fabrics A and B indicate a late 12th- to 13th-century date while the wide flat-topped cooking pot rims in Fabric D indicate a late 13th- to early 14th-century date. This date is also confirmed by

DISCUSSION

The commercial codes of practice, emanating from the Ile d'Oleron in the Bay of Biscay, which had their roots in classical antiquity, encompassed not only maritime customs and practices but matters relating to the removal of mills. Early in the 15th century these codes, known as the laws of Oleron were adopted in Britain and they note the diversity of millsteads, observing that 'Some windmills are altogether held above the ground, and have a high ladder; some have their foot fixed in the ground, being as people say, well-affixed' (Bennett & Elton 1899).

The Polegate site provided evidence of two such mill trestles in that the first mill trestle was

buried below ground level and therefore 'had its foot fixed in the ground'. The second was built above the first trestle and approximately on ground level, having a mound thrown up over its timbers for stability.

First trestle

No observation was possible when the centre post was excavated by the contractors but it is clear that it came from below the subsequently discovered crosstrees. It must be concluded that it originally lay below the crosstrees and may reasonably be interpreted as part of a buried trestle. The relatively short horns suggest that the trestle to which it belonged had crosstrees that were morticed at their intersection with a halving joint. Post-medieval crosstrees tend not to be morticed at their intersection but are generally laid one above the other and supported on plinths. However, what might be described as notched halving joints were in use and still exist at the 17th-century mills at Bourn Mill, Cambridgeshire and Outwood Mill, Surrey. Although both these examples exist in conjunction with plinths, it must be observed that the practice of morticing at the intersection of crosstrees creates unnecessary weakness at a most important point and it follows that a full halving joint would be doubly impracticable and would point to being laid on levelled ground.

The position of the quarterbar mortices less than a metre above the foot of the centre post suggests that the trestle was not only short by modern comparisons but if the quarterbars were of a reasonable length the angle between the quarterbar and the crosstree would be very low and the trestle would probably have in consequence been rather squat.

Examples of such buried trestles have been excavated and include Mucking, Essex (Jones 1975) and Sandon Mount, Hertfordshire (Westall 1934).

Second Trestle

The second trestle was laid on what was probably a levelled surface, for there was no sign

of a buried soil horizon. The impression of wood slivers interpreted as the shavings from trimming the timbers perhaps with an adze or draw knife, were found on the levelled surface. Clay had been cast over the whole, forming a mound and thus stabilising the trestle. A nearby pond may possibly have been the quarry for the clay or it may have been scraped up from the surface around the mill. Stability is of the utmost importance to mill trestles (Jarvis 1981) and it is noteworthy that one crosstree lays south-west to north-east, thus presenting the strongest alignment against the prevailing south-westerly winds.

Excavation did not determine the length of the crosstrees but the minimum length of 4.62 m. represents a common enough figure for such mills when crosstrees are lying on the ground. At the intersection of the crosstrees there was a halving joint (see section, Fig. 2E), which allowed the lower surfaces of all the crosstrees to lay flat on the ground, except where minor undulations necessitated the use of small pieces of wood packing under the crosstrees as was found in trench D. In the right-angle between the south-eastern and the south-western arms and the north-western and south-western arms were the decayed remains of what can be interpreted as the vestiges of the horns of a centre post.

In trench C, and in better condition, were the remains of the lower end of a quarterbar whose tenon was still *in situ* in the mortice of the crosstree. Measurements taken after its removal confirm an angle of 35 degrees between the quarterbar and the crosstree. Although this seems low compared with the two more modern Sussex examples of Nutley, 42 degrees (Wright 1987) and High Salvington, 47 degrees (Norwood 1976). The absence of a dowel to secure the tenon of the quarterbar further suggests considerable confidence in the stability of the structure so dependent on gravity. Evidence of ancient mill trestles is scarce and confined to a few illustrations. The low angle of 35 degrees is considered to be a good design feature (Jarvis pers. comm.) and would be

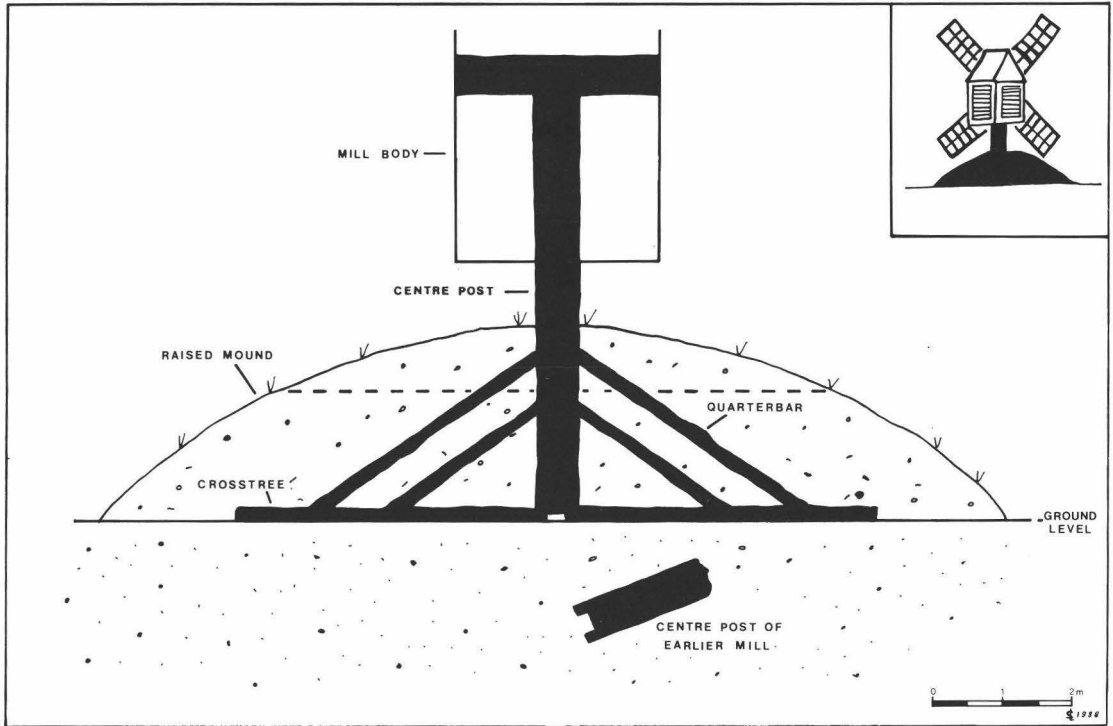


Fig. 3. Sectional reconstruction of the millsteads based on the recovered evidence. The broken line indicates a hypothetical line for the mound after settlement. (Inset) Typical postmill and mound in profile.

especially suited to the lighter and smaller mill body depicted in the early illustrations. The reconstruction (Fig. 3) shows that with an angle of 35 degrees the quarterbars would meet the centre post a little less than two metres above the top surface of the crosstrees. A mound of around two metres in height can be conjectured from these figures, but also shown is the broken line of the profile of the more commonly recorded flat topped mound.

Also in trench C there was a clay-filled second mortice in the crosstree further to the north-east which in spite of some rotting can be interpreted as the mortice for a second quarterbar. Although no previous archaeological evidence existed for double quarterbars in England, their existence in the medieval period is confirmed by their depiction

in the 14th-century Luttrell Psalter (British Library, Add. MS 42130, f. 158) and a 16th-century Flemish brass in St. Margaret's church, Walsoken, Norfolk. More recent Continental examples of double quarterbars are to be found in a painting of Moulin Cherrir, Bollezele, Nord, France (Wailes 1979) and another of the windmill at Montreuil-sur-Mer, south of Boulogne, Artois, France (Brangwyn 1923).

Observed during the contractor's trenching were the remains of a timber (see H, Fig. 1D), aligned north to south and bisecting the right-angle of the south-western and south-eastern crosstrees. Trench B revealed the end of this timber and the end of a second that would almost certainly bisect the right-angle between the south-western and north-western crosstrees in an east-west direction. Assuming that there were

four and that in part they supported the centre post, even though they would have a tendency to slide away from the centre at which they do not seem to have been attached, one can perhaps see them as intermediate pseudo-crosstrees. Such an arrangement has previously been postulated at Pashley Down post mill, Eastbourne (Stevens 1982) and can be seen in the painting of the windmill at Montreuil-sur-Mer, and present day examples can be found in Danish mills. Support between the main crosstrees would be most valuable, for it will be seen that the trestle is at its most vulnerable in terms of trestle destruction when the wind direction bisects the angle between the crosstrees. It is assumed that these pseudo-crosstrees are contemporary with the timber structure for there was no stratigraphic evidence to suggest that they were a later addition.

Examination of contemporary illustrations and reports of excavated post mill sites show many shared features with the site under discussion. A number of illustrations of medieval post mill mounds and trestles exist both in manuscripts and in carvings, an example of the latter being a pew-end at Bishop Lydeard, Somerset, where a mill is depicted on a mound. Most of the illustrations show the tops of the quarterbars showing, but in the reconstruction (Fig. 3) it has been tentatively assumed that the mound initially covered the whole trestle which became exposed during settlement.

Excavations of medieval millsteads are not numerous and those where timber remains have been recorded are few. At Butcombe, Somerset, timber fragments were found in a 1.2 m. deep cruciform trench below a mound 1.3 m. high and believed to be a flat-topped barrow (Rahtz 1958), but the lengths of the crosstrees were not determined. There are a number of multiple millstead sites as at Strixton, Northamptonshire, where a sequence of three phases produced evidence of a 13th-century 0.6 m.-high, rubble covered mound over two millsteadings (Hall 1973). Another similar two-phase site at Bridlington, Yorkshire, under a 1.37 m.-high

rectangular mound in a local park revealed a 5.18 m. \times 0.45 m. diameter centre post of one phase while the second phase millstead had unequal crosstrees of 8.53 m. and 7.0 m. respectively (Earnshaw 1973).

The most complete preserved trestle seems to be the one removed during the excavation of a millstead site at Bridgewater Without, Somerset, where a 21 m. diameter mound 1.8 m. high was excavated (Fowler 1972). The general description is similar to those of the Polegate trestle for not only were the crosstrees located and found to be 6.06 m. long and of roughly hewn timber with a halving-joint in the centre, but three quarterbars were discovered with pegged mortice and tenons. With the exception of the use of pegs (dowels) the trestle would appear similar in construction to the ones under discussion. The timbers have been preserved and are stored at Blaise Castle House Museum, Henbury, Bristol.

CONCLUSION

The earliest recorded windmill in England so far discovered is Wigston Parva, Leicestershire, 1137 and the earliest for Sussex may be any of three, *viz.* Amberley 1180–85; Boxgrove *c.* 1180; Ecclesdon 1183 (Kealey 1987). Nothing is known of the technology of any of the fifty or so 12th-century windmills known in England. No contemporary illustrations survive from this century and there are only a few for the two subsequent centuries and most of these are little more than thumb-nail sketches on manuscripts. There is therefore little to throw light on trestle technology.

The millwrights response to weather conditions are bound to be reflected in trestle construction, not the least of which in Sussex would have been the south-westerlies. Trestle typology must therefore incorporate elements of regional modification and tradition and it may be misleading to compare trestle construction from different parts of the country and arrange them in a chronological typology.

However, at present we are limited to a few comparisons and in particular the 15th-century Bridgewater Without trestle which although of apparent inferior design to the second trestle at Polegate, may in part at least have been contemporary with it. The presence of abraded pottery which was not later than the mid-14th century, would not challenge the hypothesis that the second trestle may be late 14th or 15th century. If we take the hypothetical life of a post-mill in South-east England to be a century, it would further be reasonable to suggest that the first trestle was laid down during the late 13th or 14th century.

While this site is believed to be the first excavated millstead in England where the existence of either double quarterbars or pseudo-crossrees have been recorded, the evidence confirms what some molinologists have thought for some years and it must only be a matter of

time before more sites are excavated and recognised.

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