

POTTERY FROM THE MEDIEVAL IRON SMELTING SITE AT STANLEY GRANGE, DERBYSHIRE

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SUMMARY

Rescue excavation by Trent & Peak Archaeological Unit on behalf of RJB Mining (UK) Ltd has recorded the remains of part of an extensive medieval iron smelting site at Stanley Grange, Derbyshire (Fig. 1; SK 427406). This paper reports on the medieval pottery from the excavation. The pottery is significant as it adds a further stratified collection of medieval ceramics to the limited overall assemblage from Derbyshire. Further, the notional dating framework for the pottery may be compared with that from archaeomagnetic dates gained from the iron-smelting furnaces. It is presented for publication as a contribution to the ongoing study of medieval ceramics from Derbyshire.

INTRODUCTION

Stanley Grange lies on the south side of the valley of Stanley Brook, a tributary of the River Erewash, and is surrounded by low undulating hills, which rise to c. 120m OD (Fig. 1). The Grange formed part of extensive estates within Stanley and Dale Abbey parishes granted to Dale Abbey during the twelfth and thirteenth centuries AD. An historical context for the grange is provided by numerous thirteenth century grants of land in and around Stanley, which are recorded in the Dale Abbey cartulary (Saltman 1966, 45–62: the first 28 charters essentially relate to land in Stanley granted to Dale Abbey by various individuals). The first unambiguous mention of the grange was in the fourteenth century during the rule of William Horsley, Abbot from 1332–1352, when the *Chronicle of Dale* records the addition of a stone chamber to the buildings of Stanley Grange (Saltman 1967).

Although medieval documentary sources relating to Dale Abbey make no direct reference to iron working at Stanley Grange or at any other of the abbey's properties, there are references to activities and resources associated with iron working in the cartulary. These include numerous references to woodland (often for fuel), a single mention of charcoal burning at Stanton, south-east of Ilkeston, in the 1240s (Charter 226: Saltman 1966, 175) and a reference to mining at Little Hallam in the 1250s (Charter 488: Saltman 1966, 331). A separate grant of c. 1275 refers to ironstone mining near 'Brokeshale Yard' in Cossall (Whyld 1987, 8) and the cartulary records grants of land in this same area to Dale Abbey in the thirteenth century (Charter 59: Saltman 1966, 76), perhaps indicating that Cossall may have provided one source of iron ore for smelting at

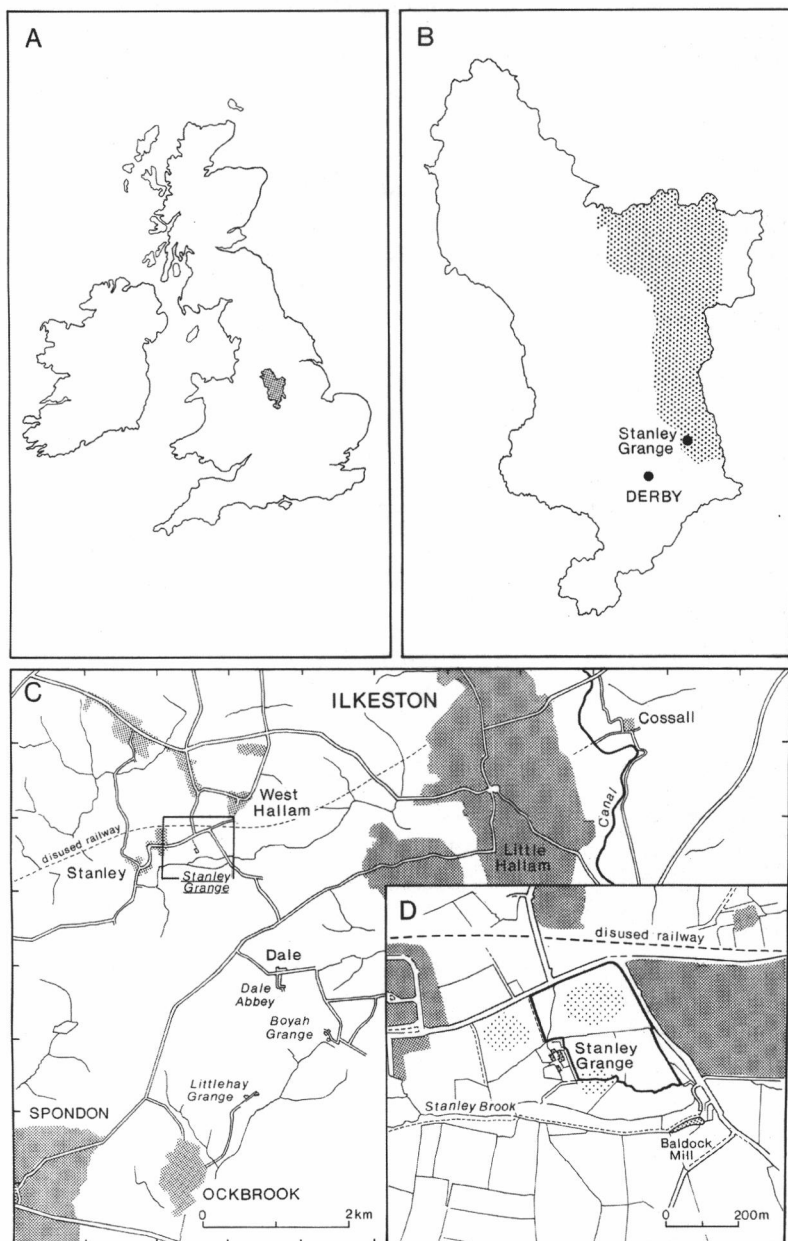


Fig. 1: Stanley Grange location plan. A: British Isles showing the location of Derbyshire; B: Derbyshire showing the location of Stanley Grange and the extent of the Coal Measures within the county; C: Stanley Grange and surrounding area showing other sites mentioned in text; D: Stanley Grange, boundary of the open-cast area, stipple indicates the extent of surface indication of iron working.

Stanley Grange. The geology around Stanley Grange itself is predominantly Lower Coal Measures (Fig. 1B) and this provides a good source of iron ore in the form of Black Rake ironstone (Frost and Smart 1979).

THE EXCAVATION

The site was discovered and recorded as part of the archaeological evaluation and subsequent excavation of an area affected by opencast coal mining. Fieldwalking ploughed fields at 10m intervals recovered 42 sherds of medieval pottery, the majority in two marked clusters (Fig. 2A). The surface distribution of medieval pottery coincided with areas of dark, sandy plough soil which formed two slightly raised, irregular platforms. As well as the pottery this darker soil contained much iron working slag and these areas were further examined through geophysical survey and the excavation of nine trial trenches, numbered SGD/01 to SGD/09 in order of excavation (Fig. 2A). The geophysics highlighted furnace locations, the trenches revealed extensive deposits of slag, fuel waste, ore, an ore crushing area and two furnace bases.

A more substantial excavation was undertaken over a period of ten weeks between June and August 1997. Topsoil was machine-stripped from an area of *c.* 1ha (Fig. 2B; numbered SGD/10) and selected parts of the stripped area were then hand-cleaned and archaeological features excavated and recorded. In addition a number of smaller excavation areas (Fig. 2B; numbered SGD/11–SGD/13) were opened to examine isolated geophysical anomalies and other areas of interest. All archaeological deposits had suffered considerable damage caused by ploughing. Numerous wide, shallow plough-furrows suggest the area had been ploughed in the later Middle Ages as well as in the recent past. In addition, a network of parallel, narrow nineteenth century field drains crossed the site. As a result archaeological features were often severely truncated.

Excavation focused on recording the furnaces and other structures associated with iron production (Fig. 3). The most significant result of the programme of fieldwork at Stanley Grange was the excavation of eight medieval iron-smelting furnaces. Seven of the furnaces lay in a group at the centre of the excavated area. The eighth, of novel form, lay in isolation some 100m to the north where it had been noted as a marked geophysical anomaly (furnace 77, Fig. 2B area 11). An account of the excavation focusing on the furnaces and aspects of the iron smelting technology practiced at Stanley has been published elsewhere (Challis 2002).

None of the superstructure of the eight furnaces survived neither was there any clear evidence surviving for associated buildings or other structures although hearths, areas associated with the preparation of iron ore, extraction of clay for furnace building and the disposal of iron slag did survive. A number of shallow, steep-sided pits were sited close to the furnaces (Fig. 3; 83, 130, 146, 161). The pits probably served a primary function of providing clay for furnace construction and repair. All had undercut sides, suggesting that once a suitable clay deposit was encountered it was scooped from the pit sides, in preference to enlarging the surface opening of the pit. One larger pit (160) had penetrated below the subsoil to the top of the underlying Coal Measures clay. This dense grey clay has excellent refractory properties (Hains and Horton 1969, 105) and may have provided the material for the inner lining of the furnaces. All of the pits served the



Fig. 2: Stanley Grange, the excavated areas. A: shows the extent and results of fieldwalking, extent of gradiometer survey and locations of evaluation trenches; B shows the locations of the main excavated areas.

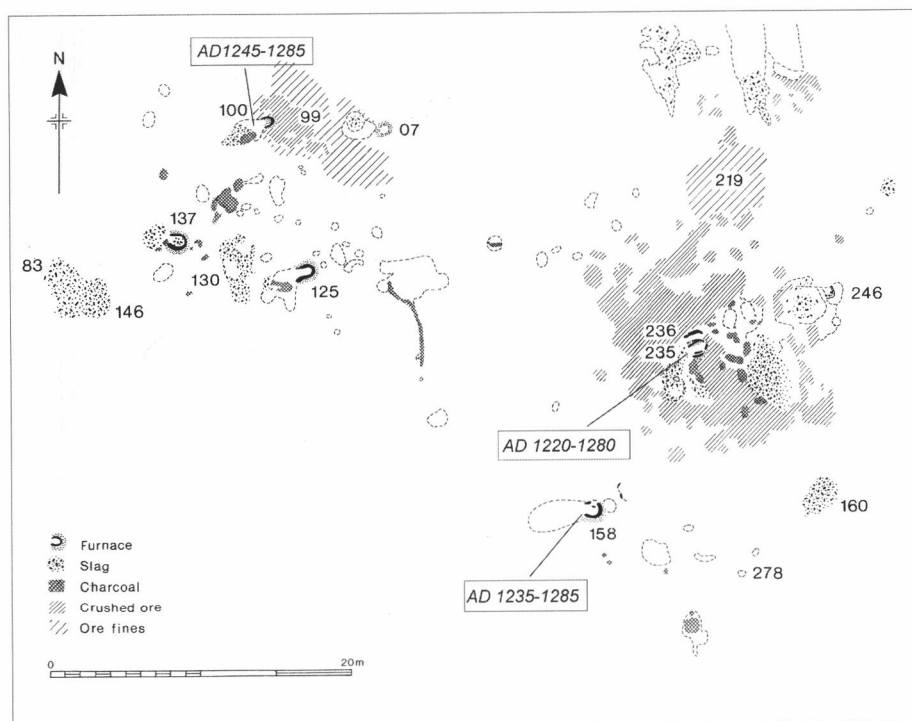


Fig. 3: Stanley Grange, overall plan of area 10, the main excavation area, showing the locations of the excavated furnaces and other features. The sample locations and date ranges of the archaeomagnetic dates are also shown. Ridge and furrow, land drains and other modern intrusive features have been omitted for clarity.

secondary function of disposing of furnace and tap slag, which formed the greater part of their fill; the majority of the stratified pottery was recovered from these pits.

ARCHAEOMAGNETIC DATES

Samples of burnt clay and stone for archaeomagnetic study to assist in dating were recovered from seven different contexts. Archaeomagnetic dating relies on comparing the remnant magnetisation in an archaeological structure with a calibrated reference curve of geomagnetic variation. Commonly the technique is employed to date fired materials and structures which have acquired a strong thermoremanent magnetisation upon cooling from high temperature. Samples for dating must be from undisturbed deposits and require careful collection and complex laboratory processing and analysis. All of the samples were recovered by Dr Mark Noel of GeoQuest Associates, full details of the sampling and analysis procedures followed are contained within his report which is lodged in the excavation archive.

In the event only four of the sampled contexts proved suitable for dating (Table 1 and Fig. 4). Two of the samples (77 and 235) produced two possible dates as they coincide closely with a loop in the master calibration curve in the medieval period. The dates

Context No & Description	Earliest date	Latest Date
77, furnace lining	AD 1270–1315	AD 1405–1445
100, furnace lining	AD 1245–1288	
158, furnace lining	AD 1235–1285	
235, burnt clay surface associated with furnace	AD 1220–1280	AD 1400–1440

Table 1: Archaeomagnetic dates from Stanley Grange

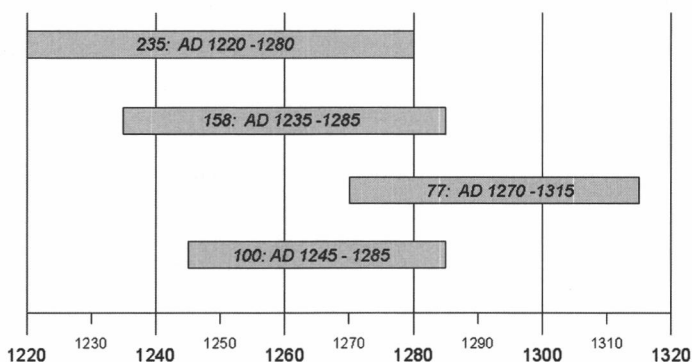


Fig. 4: Stanley Grange, horizontal bar chart showing the range of the archaeomagnetic dates.

indicate that the furnaces at Stanley may have operated between the second quarter and the end of the thirteenth century; with furnace 77, which is spatially separated from the rest and of a different form, possibly in use in the first quarter of the fourteenth century. The date ranges overlap in the last quarter of the thirteenth century which suggests that this is the most likely period of operation for the furnaces at Stanley.

This date range is supported by the accepted chronology for the pottery recovered from the excavation (see discussion below). The absence of fifteenth century sherds from the site assemblage means that the fifteenth century dates for contexts 77 and 235 can be ruled out.

THE MEDIEVAL POTTERY

The small assemblage comprises 175 sherds weighing a total of 2683g; 42 of these sherds, weighing 353g in total, were found in fieldwalking and the rest are from sealed excavated contexts. The pottery, therefore, has the potential to provide dates for activities on the site and to indicate the sources from which it was obtained. A summary of the results of the pottery analysis is presented here (Table 2) and full details are in the archive.

Table 2: Stanley Grange: summary of fabric analysis by context. Key to condition; Fs — fresh, Av — average, Ab — abraded.

Context no. & Description	Fabric	Sherd nos	Weight	Condition	Illustrated
99 ore crushing area assoc. furnace 100	3A	1	7g	Av	
101 slag tapping pit assoc. furnace 100	1A	1	5g	Av	1
	1B	1	10g	Ab	
	2B	1	17g	Ab	
	3A	5	28g	Av/Ab	
121 pit	1B	1	13g	Ab	2
131 post-hole	3A	1	3g	Av	
139 pit	?1B	1	12g	Av	3
146 deep clay pit	1B	2	228g	Av	4
	2B	1	40g	Ab	5
	3B	1	46g	Av	6
160 deep clay pit	1A	15	148g	Ab	7, 8
	1B	6	40g	Ab	0
	1A/B	3	285g	Fs	9
	1C	8	63g	Ab	10, 11
	2B	18	545g	Av/Ab	0
	3A	1	22g	Av	12
	3B	5	71g	Av/Ab	13, 14
	3C	9	130g	Ab	
161 hollow assoc. furnace 235	1B	2	18g	Av	0
	2B(1)	1	9g	Av	15
	3C	1	21g	Av	16
162 pit	1A	8	81g	Av	
	?1A/B	2	100g	Av	
	2B	2	38g	Av/Ab	
	3B	3	9	Av/Ab	
	3C	1	3	Ab	
190 pit	1A	2	17g	Av/Ab	
	1B	1	5g	Av	
193 pit assoc. furnace 100	1B	1	3g	Av/Ab	
201 clay pit assoc. furnace 125	?1A	1	6g	Ab	
218 scoop near furnace 125	3C	1	17g	Av	
227 pit cuts 229	1A	2	5g	Ab	
228 pit cuts 229	1A	1	1g	Ab	

Context no. & Description	Fabric	Sherd nos	Weight	Condition	Illustrated
229 charcoal/ash spread assoc. furnace 235	1B	5	93g	Ab	17
	?3B	1	3g	Ab (burnt)	
241 pit near furnace 235	1B	1	106g	Av	18
247 deep pit assoc. hearth 246	1A/B	1	14g	Ab	0
	2B	1	5g	Ab	0
	3C	1	8g	Ab	19
271 pit ?hearth	1A/B	1	8g	Ab	
	2B	10	35g	Av/Ab	
	3A	1	4g	Av	
305 scoop near furnace 137	3A	1	8g	Av	
Fieldwalking	1A	11	111g	Ab	20
	1B	10	100g	Av/Ab	21, 22
	1A/B	1	35g	Ab	0
	1C	1	5g	Ab	0
	2B	3	10g	Av/Ab	0
	3A	5	34g	Av/Ab	0
	3B	7	50g	Ab	23, 24, 25
	3C	4	8g	Ab	26

Fabrics

A total of eight fabric types was identified. Quartz is the chief inclusion in all in varying sizes and quantities, and the fabrics were divided on the basis of inclusion size into three broad groups, fine (Fabric 1), sandy (Fabric 2) and coarse or gritty (Fabric 3). Note, however, that these terms are relative and that even the so-called fine fabric is coarse textured because of the quartz content. Subdivision within these groups was made on the basis of factors such as hardness, colour, glaze etc.

Most of the fabrics are closely comparable with those found recently at Thurstaston, Derbyshire, reported on by the author (Beswick 1999), and the same number/letter sequence, where appropriate, has been retained for the Stanley Grange assemblage. The only previous attempt to record medieval pottery fabrics in Derbyshire from the Full St. excavations in Derby (Coppack 1972, 45–7) lacks analytical detail in the fabric descriptions so the descriptions used for the Thurstaston assemblage are repeated here, with some amplification where considered necessary in the light of experience. In an attempt to achieve an objective analysis the descriptive methodology used is based on that recommended by the Prehistoric Ceramics Research Group (1992). There is no doubt that these fairly crude, simplified groupings mask details of sources and dating which will only become clearer when more Derbyshire medieval pottery, particularly from kiln assemblages, is published.

FINE: Fabric 1 (F1A, 1B and 1C)

Both F1A and 1B were identified at Thurstaston but F1C was not recognised there.

F1A and 1B are wheel-made, smooth fabrics with angular (particularly) and rounded quartz inclusions (mainly clear) at a frequency of around 10% but occasionally up to

25%. These are moderately sorted and less than 0.5mm in size, on average. F1A also has about 1% red iron oxide inclusions, up to 1mm in size. F1A is the oxidised version externally, but is frequently reduced internally. It is commonly softer than F1B and often has an apple green 'splashed' glaze. Recent work on 'splashed' glazes suggests that the glaze could not only be sprinkled over the pot in powdered form but could also be applied as a glaze paste by brush or by dipping (Nenck 1997, 94, 97). 'Splashed' glaze wares are common in the twelfth century and decline in the thirteenth when liquid (i.e. suspension glazes) take over (McCarthy and Brooks 1988, 35). F1B is the reduced version and is harder with green/brown suspension glazes and horizontal rilling common. F1A probably starts before 1B, however, the two overlap and both can occur in one pot (F1A/B). At Thurstaston these fabrics showed a range of applied motifs as decoration, but at Stanley Grange only one sherd with simple incised decoration occurred (22).

Fabrics F1A and 1B are principally jug fabrics (Figs 5 and 6: 1, 2, 3, 4, 7, 8, 17, 18, 20, 21, 22). This fabric is matched by 'Burley Hill-type ware', as defined by Coppack (1972, 45), and perhaps also in part, in the case of F1A, by his 'Local developed splashed ware'. Kilns producing Burley Hill-type ware have been identified both at Burley Hill and Allestree on the Darley Abbey estate to the north of Derby, and it has not been possible to attribute sherds to one individual source (Coppack 1980, 280).

F1C is a wheel-made, smooth, slightly soapy-feeling fabric with mainly rounded quartz inclusions (mixed colours) at a frequency of around 5% and poorly sorted. In size they range from less than 0.1mm to about 0.5mm. In addition there are also occasional rounded lumps of iron oxide ranging from 0.5mm to over 2mm in size and at a frequency of less than 1%. The outer surface is oxidised pink/orange and the inner surface is a light grey with the core a paler grey. Only one vessel was recognised (jug base 9) and this is unglazed and with a foot ring. This is a feature characteristic of jugs made in Nottingham (e.g. McCarthy and Brooks 1988, 278) and may be the source for this fabric.

SANDY: Fabric 2 (F2B and 2B(1))

Fabrics F2A and 2A(1), identified at Thurstaston and probably early medieval, were not found at Stanley Grange.

F2B is an oxidised fabric occurring here in wheel-made vessels, unlike Thurstaston where hand-made examples were also recognised. It is soft, sandy textured and iron rich and the quartz inclusions are well-rounded, and occur at a frequency of 15–25%, sometimes well-sorted but often poorly sorted. They average 0.25–0.5mm in size but occasionally are up to 1mm. Red iron oxide and occasionally black occur at a frequency of around 3%, in sizes averaging 0.5 to 1mm and rounded but not spherical. Lumps of grey clay over 2mm in size also occur occasionally. Glaze colours include brown, orange and yellow as well as green. Forms include a jug (11), a bowl (5) and a cooking pot (10). The colouring and general appearance resembles a 'dirty' F1A and it appears to include Coppack's fully oxidised Burley Hill-type ware.

Only one small example of F2B(1) was found at Stanley Grange, but based on the examples from Thurstaston this is a wheel-made, hard, white/cream coloured, smooth and well-made sandy fabric, usually with a pale grey core. The quartz inclusions occur at a frequency of around 20%, well-sorted, well-rounded and average size 0.25–0.5mm. In addition there is black iron oxide at around 1% frequency, rounded but not spherical and averaging the same size as the quartz, although it can go up to 2.5mm. Glaze is often

patchy and clear or yellow/green. This fabric equates generally with Coppack's 'cream sandy ware' (1972, 45) and he is of the opinion that it was made in the Derby area (1980, 280). The sherd from Stanley Grange is from a cooking pot rim (15) but is too small to determine the nature and range of inclusions. However, there are probable mica flecks and/or very fine quartz in the clay, a feature not noted at Thurstaston, and this could imply a Brackenfield kiln source (see below), where cooking pots with identical rims occur.

COARSE or GRITTY: Fabric 3 (F3A, 3B and 3C)

F3A is the hard version of 3B and both have in common coarse quartz (mainly clear) inclusions of 20–25% frequency, well-sorted, well-rounded and averaging 0.5 to 1mm in size. Red and black iron oxide is also present in frequencies of 1 to 5%, moderately sorted, well-rounded and a similar size to the quartz. Surfaces are usually pimply textured and colours range from oxidised buff/pink/oranges to reduced pale and dark greys and are usually consistent through the sherd, especially in 3A. Occasionally 3A sherds are extra hard-fired but 3A sherds are less common at Stanley Grange than at Thurstaston and none of the near vitrified sherds with purple overtones found at Thurstaston were identified. Glaze is rare and patchy on 3A and more common on 3B. Cooking pots are the principal form (6, 12, 24) and bowls also occur (23, 25). There is an overlap between the two fabrics and on occasion both 3A and 3B characteristics can occur in the same vessel.

These fabrics are similar to Coppack's 'grey' and 'orange gritty wares' which he describes as apparently of local manufacture (1972, 73). A scan of the Burley Hill kiln material in Derby Museum by the author looking for sources for the Thurstaston pottery, indicated that both 3A and 3B type wares were being produced there and because of its close proximity (*c.* 8km) this and the Allestree kilns are the most likely sources for the Stanley Grange sherds. The distinctive pink/cream colour and pink quartz inclusions noted in some of the Thurstaston sherds was recognised in only two sherds from Stanley Grange, a cooking pot rim from context 160 (12) and a bowl rim from fieldwalking (25). On the basis of a sherd from Full St. Derby (Coppack 1972, 61: sherd 194), it was suggested in the Thurstaston report (Beswick 1999, 000) that these could be products from kilns at Brackenfield, near Alfreton (Webster and Cherry 1973, 184), *c.* 16km to the north of Stanley Grange. However, the author has subsequently had opportunity to examine some of the Brackenfield kiln material, now housed in Chesterfield Museum, and can report that this fabric was not made at Brackenfield. The Brackenfield pink and cream coloured fabrics have less quartz and a higher iron content, and the clay is flecked with probable mica and/or very fine quartz particles.

Fabric 3C is a soft, oxidised fabric characterised by coarse quartz (mixed colours) inclusions of 10–15% frequency, poorly sorted and both rounded and angular with low sphericity, and averaging 0.5 to 1mm in size. In addition iron oxides (usually red) are present at about 1% frequency and 1–3mm in size, and occasionally white clay lumps at 1–2% frequency and up to 4mm in size. At Thurstaston vessels in this fabric appear to have been hand-made but this does not appear to be exclusively the case at Stanley Grange. Most of those recognised are cooking pots (13, 14, 16, 19), apart from one bowl (26). It has been suggested (Beswick 1999, 237) that this fabric may have been produced near to Thurstaston but the occurrence of similar material at Stanley Grange some 20km

away suggests that there might be another explanation. Possibly this is a coarse, cheap fabric originating from one source somewhere in the region yet to be identified, or possibly it was made in several different places from local clays with little or no preparation and represents a 'vernacular' tradition of pottery making. Clearly more work is needed to clarify this issue.

In conclusion most of the fine and coarse wares at Stanley Grange in fabrics F1A, 1B, 3A and 3B, and at least some of 2B, are likely to have been produced at kilns on the outskirts of Derby at Burley Hill or Allestree. Also a nearby kiln excavated close to Duffield Castle may have been another source of coarse wares (McCarthy and Brooks 1988, 279–80). Fabric F1C could be a Nottingham product and the F2B(1) rim may have been produced at Brackenfield near Alfreton. A source or sources for F3C have yet to be identified.

Illustrated sherds (Figs 5 and 6)

- 1 Jug neck sherd with green glaze, in F1B. From context 101B, spit 3.
- 2 Jug body sherd with light rilling and green glaze, in F1B. From context 121.
- 3 Jug body sherd with light green glaze, in ?F1B. From context 139.
- 4 Jug rim and handle decorated with circular perforations and green/brown glaze, in F1B. From base of context 146.
- 5 Bowl rim with incised decoration and yellow/brown glaze, in F2B. From context 146, spit 3.
- 6 Cooking pot rim and body wall, with streaks of pale green/yellow glaze, in F3B. From context 146, spit 6.
- 7 Jug rim in F1A. From context 160.
- 8 Jug base baluster shaped, in F1A. From context 160.
- 9 Jug base with 'foot ring', in F1C. From context 160.
- 10 Cooking pot rim with incised wavy line decoration and body wall, c. 35%, in F2B. From context 160.
- 11 Jug base with dark green glaze internally, in F2B. From base of context 160 and matches a piece from upper part of same context.
- 12 Cooking pot rim decorated with combed zig-zag and spots of clear glaze on neck, in F3B. From context 160.
- 13 Cooking pot rim with traces of light brown/clear glaze on edge, in F3C. From context 160.
- 14 Cooking pot rim in F3C. From context 160.
- 15 Cooking pot rim in F2B(1). From context 161, spit 1.
- 16 Cooking pot rim decorated with combed wavy lines and patch of orange/brown glaze, in F3C. From context 161, spit 1.
- 17 Jug body sherds joining and decorated with horizontal rilling and traces of green/brown glaze, in F1B. From context 229.
- 18 Jug rim and spout with green/brown glaze, in F1B. From context 241.
- 19 Cooking pot rim with spot of clear glaze, in F3C. From context 247.
- 20 Jug rim in F1A. From fieldwalking — AAQ.
- 21 Jug handle with dark green glaze, in F1B. From fieldwalking — ACB.
- 22 Jug body sherd decorated with incised lines and green/brown glaze, in F1B. From fieldwalking — ACF.

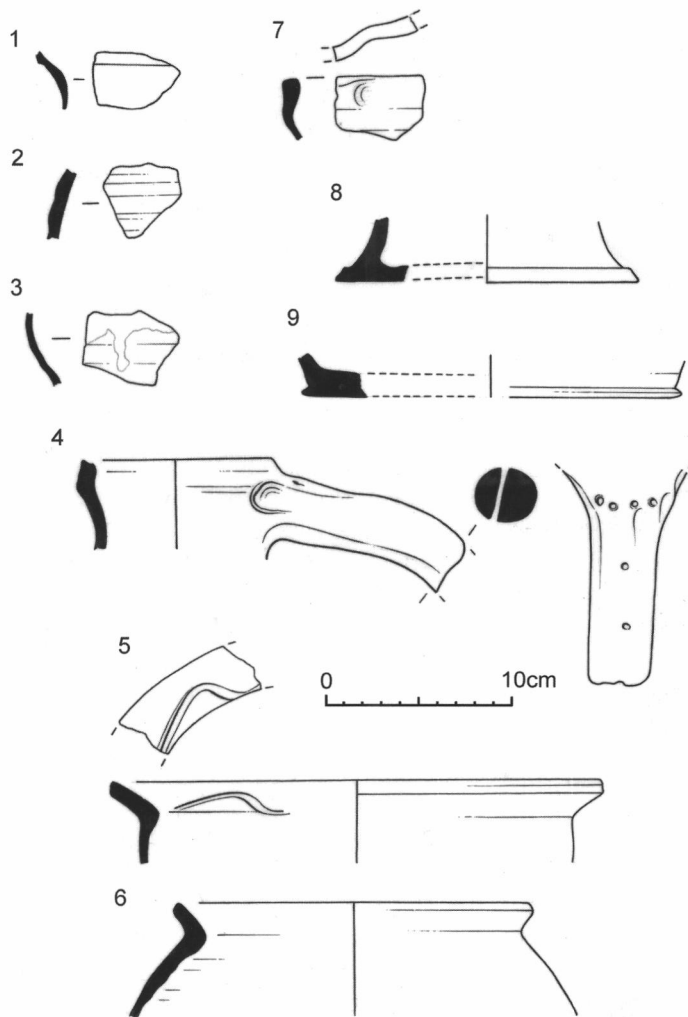


Fig. 5: Medieval pottery from Stanley Grange, sherds 1-9.

- 23 Bowl rim decorated with curved incised line and 'runs' of pale green glaze, in F3B. From fieldwalking — AAP.
- 24 Cooking pot rim in F3B. From fieldwalking — AAR.
- 25 Bowl rim decorated with incised line, in F3B. From fieldwalking — ACR.
- 26 Bowl rim in F3C. From fieldwalking — AAN.

In total there is a minimum of 13 jugs, 9 cooking pots and 4 bowls represented by the excavated and fieldwalked assemblages combined. One sherd from 229 is burnt and jug base 11 and a sherd from the base of 160 have what appear to be iron residues on the exterior but there is no obvious evidence of any of the pottery having been used deliberately in the smelting process. Burnt residues on the exterior of a jug (11) and a bowl (5), and sooting on a cooking pot (10), suggest that the pottery was mainly used for the normal functions of cooking, eating and drinking in medieval fashion.

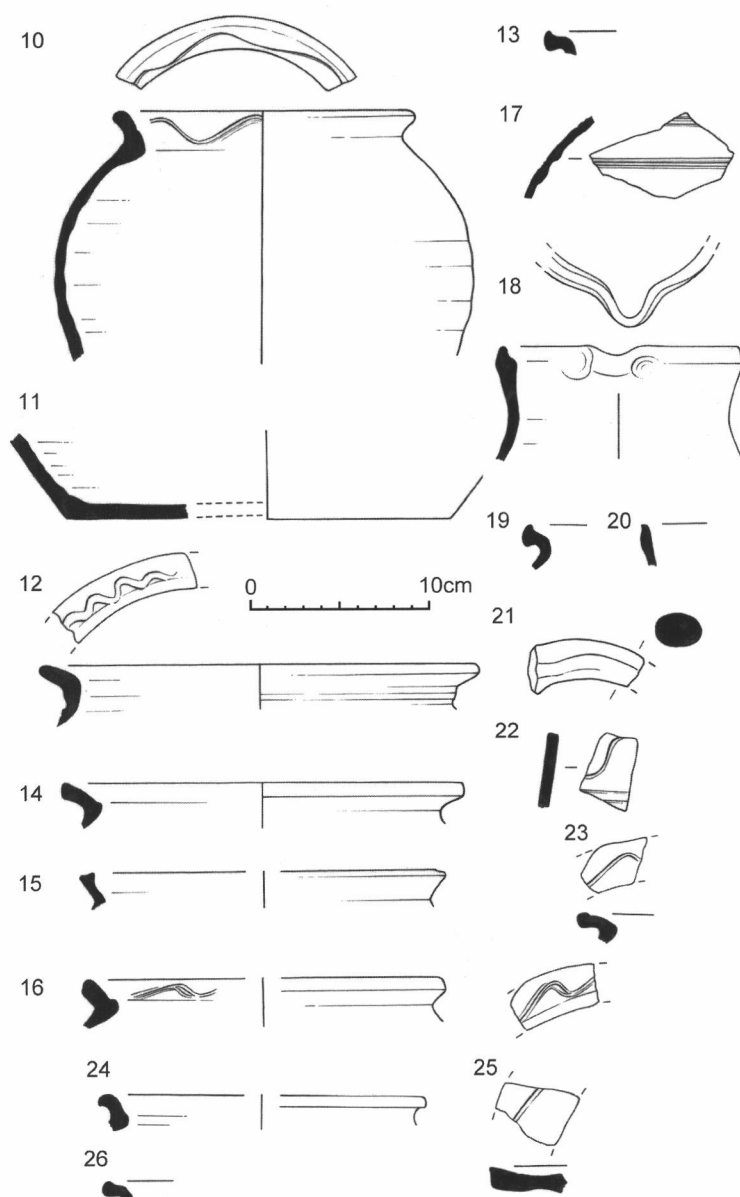


Fig. 6: Medieval pottery from Stanley Grange, sherds 10-26.

Pottery occurred in 20 sealed contexts but only in two was there a significant quantity of diagnostic material. Both these contexts were deep clay extraction pits (146 and 160) and both were half-sectioned. Pit 146 produced large sherds of a jug (4), bowl (5) and cooking pot (6), weighing in total 314g. In Pit 160 there were sherds of 4 jugs (7, 8, 9, 11)

and 4 cooking pots (10, 12, 13, 14), weighing in total 1304g. The larger part of jug 11 was found at the base of the feature but one sherd occurred higher up in the fill. Abraded sherds possibly from pots 8 and 13 occurred in the fill and a base sherd in F3C (not illustrated) matched one found in surface cleaning. The majority of the sherds are small to medium in size and abraded except for cooking pot 10, jug base 11 and body sherds in F1A/B, which are in average (10, 11) and fresh condition respectively, suggesting that they were deposited in the pit's final phase. The rest are likely to have been incorporated from surface scatter during backfilling. This is the most likely scenario with most of the sherds from the site, apart from those in Pit 146 and perhaps the large sherds of jugs 17 and 18 from contexts 229 and 241 respectively.

The amount of pottery found in fieldwalking (353g), representative of all fabric types, suggests that the excavated material forms only a reduced portion of the pottery once used on the site. However, the mixed nature of the pottery in the fill of Pit 160 and its likely depositional history implies that the excavated material is likely to provide a fairly accurate cross-section of the pottery used throughout the site's history.

Tiles

A total of 7 tile fragments was found, 2 in the excavated contexts (50g) and 5 (15g) in the fieldwalking. All are in quartz tempered fabrics with oxidised surfaces variably fired. Four of the fieldwalked samples (AAC, ABM, ACI, ACW) are hard-fired (ACI is vitrified), 15–16mm thick with flat surfaces and are probably parts of plain floor tiles. One example from context 146 is slightly curved and around 11mm thick, and could be from a roofing tile. The remaining 2 examples (271 — unstratified; ACH fieldwalked) are too small for further identification. Their presence implies the probability that buildings were connected with the furnace operations.

Dating

None of the known Derbyshire kiln sites has been adequately published or dated and in Coppack's analysis (1972) of rubbish pits in Full St., Derby, dating is based on typological comparisons with material from Nottingham and Lincoln and a few continental imports. In the absence of anything more suitable, the Full St. sequence was used as a starting point in analysis and dating of the Thurstaston assemblage (Beswick 1999) and despite its shortcomings produced a convincing sequence which matched the stratigraphic evidence and provided relative but not firm dating. At Stanley Grange this typological approach can be tested for the first time in the region against independent dating sequences provided by archaeomagnetic dates. The archaeomagnetic dates (Fig. 4) suggest activity concentrated in the second and third quarters of the thirteenth century (furnaces 100, 235, 158) with the possibility of furnace 77 operating in the last quarter of the century and continuing into the early years of the fourteenth century. Unfortunately none of the archaeomagnetically dated furnaces have produced pottery but the likely history of pottery deposition outlined above should result in the pottery fairly accurately representing the date range of site activity.

The excavated pottery falls into two groups; firstly large unabraded sherds which are probably contemporary with the last phase of their individual contexts and secondly smaller abraded sherds which probably relate generally to earlier use of the site (Table 2). The first group is the most significant and will be dealt with first.

Pit 146 produced a classic Burley Hill-type jug (4) with decorated handle which has parallels from Full St. for the rim (Pit 51, 124; Coppack 1972, 56, 70) at the earliest at the end of the third quarter of the thirteenth century, and for the handle in a plain version (Pit 26, 161; Coppack 1972, 58, 70) in the last quarter of the thirteenth century, although a decorated version (Pit 1, 188; Coppack 1972, 70) is from the mid fourteenth century. In general, jugs in Burley Hill-type ware are thought to first appear in the late twelfth century, to become common in the early thirteenth century and to continue into the fifteenth century (Coppack 1972, 74–5). The most elaborately decorated ‘Knight Jugs’ are thought likely to date from the late thirteenth century. On stylistic grounds the decorated bowl rim (5) is most likely to fall within the second half of the thirteenth century with similar, but not identical, examples in pits 20 and 26 at Full St. dated to the last quarter of the century (Coppack 1972, 57, 59, 70). The cooking pot (6) from Pit 146 is in a form which occurs at Full St. in the early thirteenth century (Pit 46, 94; Coppack 1972, 54, 70) and also in the mid fourteenth century (Pit 1, 195; Coppack 1972, 61, 70). On balance it would appear that pit 146 is likely to have been filled sometime in the late thirteenth century.

The cooking pot (10), which is likely to have been deposited in the final phases of Pit 160, is similar, but not identical, to one from Full St. (Pit 20, 155; Coppack 1972, 56, 70) dated to the last quarter of the thirteenth century, and the jug base (11) and F1A/B body sherds from the base of 160 would not be out of place during the same period. Again the late thirteenth century is the most likely time for the pit to have been filled.

Jug 17 is from context 229, a charcoal and ash spread associated with furnace 235 which has an archaeomagnetic date of AD 1220–1280, or AD 1400–1440. Rilled decoration occurs at Full St. on Burley Hill-type ware from the early thirteenth century (Pit 44, 77; 46, 90; Coppack 1972, 52, 54, 70) but continues as a decorative trait throughout the production period so cannot be used for closer typological dating. Jug 18 from context 241, a pit near furnace 235, has a rim form found generally from the late thirteenth century into the fifteenth century (Coppack 1980, 314, 316–18), so again cannot be used for close typological dating.

The second group of pottery, the smaller abraded sherds, includes a number of other jugs. A concave, well-made, jug neck sherd (1) from context 101 is a form found through the twelfth and thirteen centuries (Coppack 1980, 308, 310, 312, 314), but no later. Jug rims (7 and 20) compare with early thirteenth century examples from Full St. (Pit 46, 86, 87, 88; Coppack 1972, 54, 70), and jug base (8) is similar in shape to a Nottingham ware example from Full St. (Pit 51, 133; Coppack 1972, 56, 70) dated to the end of the third quarter of the thirteenth century. The jug handle (21) and decorated sherd (22) are generally of thirteenth or fourteenth century date. Besides the bowl (5) from Pit 146, the only other three bowls (23, 25, 26) were found as rim sherds in fieldwalking. Rim 23 is similar to early thirteenth century forms from Full St. (Pit 46, 78; Coppack 1972, 54, 70) and 26 could be of a similar date. Rim 25 compares with an example from Full St. (Pit 20, 154; Coppack 1972, 56, 70) dated to the last quarter of the thirteenth century. Cooking pot rims 13 and 19 are similar in shape to Stamford-type ware rims from Full St. of the late twelfth century (e.g. Pit 21, 26, 28; Coppack 1972, 48, 70), a form however, which continues into the late thirteenth century (e.g. Pit 20, 134, 5, 7; Coppack 1972, 56, 70). Rim 14 appears to be a form which develops in the thirteenth century and continues in the fourteenth through to the fifteenth century (Coppack 1980, 313, 315, 317, 318).

Rim 12, with a slight neck and combed decoration appears to be a thirteenth century type similar to cooking pot rims from Full St. of the early to late thirteenth century (e.g. Pit 24, 109; Pit 20, 136; Coppack 1972, 54, 56, 70). Rim 16 is similar to a rim dated to the last quarter of the thirteenth century from Full St. (Pit 20, 155; Coppack 1972, 56, 70). Rim 15 in fabric F2B(1), a 'cream sandy ware', is similar to Stamford-type ware rims from Full St. (Pit 2, 60, 61; Coppack 1972, 51, 70) dated to the end of the twelfth century. However, 'cream sandy ware' is thought to continue during the thirteenth century and has also been found at Barton Blount, Repton and Chesterfield (Coppack 1980, 280). A similar rim form in this fabric occurred at Thurvaston (Beswick 1999, fig. 13: 80) but in plough soils and, therefore, undated. If rim 15 is a Brackenfield product, as suggested above, these analogies would imply that the Brackenfield kilns were operating by the thirteenth century, and are therefore considerably earlier than the c. 1400 date originally put forward (Webster and Cherry 1973, 184).

In conclusion the abraded pottery from the site indicates activity generally during the thirteenth century, probably beginning in the first half of the century, and the evidence from the pits suggests that most activity ceased in the late thirteenth century, corroborating the archaeomagnetic dates. It is impossible, however, to be certain on the basis of the pottery alone that no activity continued into the early fourteenth century, but there is an absence of any diagnostic fifteenth century material.

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