NON-DATING USES OF MEDIEVAL POTTERY

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Summary

This paper examines some of the many non-dating uses of medieval pottery on site. It is argued that the traditional role of medieval pottery as a dating media is its least reliable quality. The different aspects of pottery distribution on site are considered, including the dispersal of sherds from the same vessel, distribution of forms, evidence for use (including wear marks, sooting, residues and secondary holes), patterns of dumping, residual material, pots found in situ and the relevance of excavated groups of artefacts. Much of the discussion is based on the material from the extensively excavated Sandal Castle (West Yorkshire). Evidence is also produced to show that similar results can be obtained from sites where excavation has been much more limited. The conclusions reached have far reaching implications for the way in which sites are excavated and, more significantly, for the way in which the finds from them are interpreted. Perhaps most importantly, a number of techniques allow the residual element to be identified, which on many types of site is very high, suggesting that not only should we be much more critical about the validity of groups as excavated, but also about the way in which we publish the material.

Introduction

The traditional role of medieval pottery has been as a dating medium. The developing knowledge of the subject over the past few decades has meant that its value as a dating tool has diminished, and today dating is the most unreliable quality of medieval pottery. This is not to say that in the future developing techniques will not allow local medieval pottery to be used for close dating (Moorhouse 1983a, 106). The last few decades have seen research develop along other avenues. Its value as a barometer of social change (Le Patourel 1976), the numerous contemporary uses of pottery (Moorhouse 1978; Moorhouse 1981a, 114-19) and the influences on pottery movement around the country and their significance (Moorhouse 1983b) are three areas which have been successfully explored. Its contribution to understanding patterns of commerce at both local and international level have also been examined (Davey and Hodges 1983).

Perhaps the most important contribution that pottery can make comes, surprisingly, in a field which has been little explored - its distribution on site. This general umbrella phrase covers a number of approaches which provide a unique source of information for interpreting the site on which the pottery is found. These techniques have been practised for many years in the Americas and on the European mainland. For example, Charles Redman's work at Qsar es-Seghir in Morocco (Redman 1979) and Gabrielle Demians d'Archimbaud's important work at Rougiers in southern France (d'Archimbaud 1981; d'Archimbaud 1986). With the exception of the writer's own work at Sandal Castle (Moorhouse 1974; Moorhouse 1983c), these techniques have, until recently, been restricted in England to small finds, where they have been very successfully employed. An outstanding example is John Steane's eye-opening distribution of nails on Site D at Lyveden (Northamptonshire), where not only the positions of the wooden doors and window openings in the potter's workshop were suggested, but also the different types of nails which were used on each (Bryant and Steane 1971, 32, fig. 9).

Ceramics have two almost unique qualities. Unlike most other materials, which either disintegrate or can be recycled in one form or another, pottery is generally discarded as rubbish when broken or has outlived its useful life. Secondly, a ceramic vessel or object can be broken into a number of pieces. It is this second quality which offers the most potential, for it means that sherds from the same vessel, object or tile can be recognised when dispersed around a site. However, the use of such a tool relies on the method of quantifying the pottery being based on the individual vessel, where all sherds or pieces from the same unique ceramic form are brought together (see below).

Plotting sherds as excavated

The plotting of individual sherds as excavated can have important results. The excavation of rubbish dumps can often be rewarding, not in the sense of the range of material which they produce but in the pattern of dumping revealed. A typical example is the kind of information revealed by the massive accumulation of material from the ditch around the Barbican Tower at Sandal Castle (Moorhouse 1983c). The key to the range of information which was eventually recovered lay in the method of excavation. The entire sequence was excavated in horizontal layers recovered in seventeen sectors from around the ditch (Fig. 1). It was thus possible to locate accurately all the sherds from around the tower and from the five main accumulation deposits in the sequence. Although each layer revealed its own story, one consistent picture does emerge from the sequence, and that is the absence of material in sectors K and J throughout all layers. There was possibly a succession of bridges across this part of the ditch, the existence of which should have encouraged dumping, as it did on either side of the bridge on the opposite side of the tower. A more likely explanation is that the wall on this side of the tower contained neither windows nor garderobe chute outlets.

The major concentration in the bottom of the ditch, Level 5, probably took more than a century to accumulate (Fig. 1). Throughout this period it was thought that the kitchen, in the group of buildings against the curtain wall to the south, provided most of the castle's culinary requirements. However, there was very little material in the ditch immediately opposite the kitchen, suggesting that most of its refuse was discarded either elsewhere around the ditch, or more probably outside the castle walls. This picture emerges from the site as a whole, as illustrated by some of the more easily recognisable types. One obvious type, Tudor Green, was represented by nineteen vessels from the site, most of which were represented by only a few sherds.

The technique can be put to many other uses. Some of these have been demonstrated on a deserted medievel settlement site at Hillam Burchard, north-east of Leeds (West Yorkshire). The material was recovered from ploughsoil deposits in ten metre squares in the hope that types and forms found within or around the presumed underlying buildings might determine their use. Unfortunately neither buildings nor floor surfaces survived. Work on the ploughsoil material showed that many vessels had sherds scattered some distance westwards down the valley slope, suggesting that the site had been ploughed (Fig. 8). Earthwork evidence before ploughing did not suggest ridge and furrow, yet the number of vessels involved and the distance covered by the sherds suggested intensive ploughing over many years, much more than was indicated during living memory (Moorhouse and Slowikowski 1987a). Aerial photographs taken after the site had been destroyed revealed soil marks which indicated shallow ridge and furrow running downhill in the direction of the spread of sherds, confirming the evidence from the pottery.

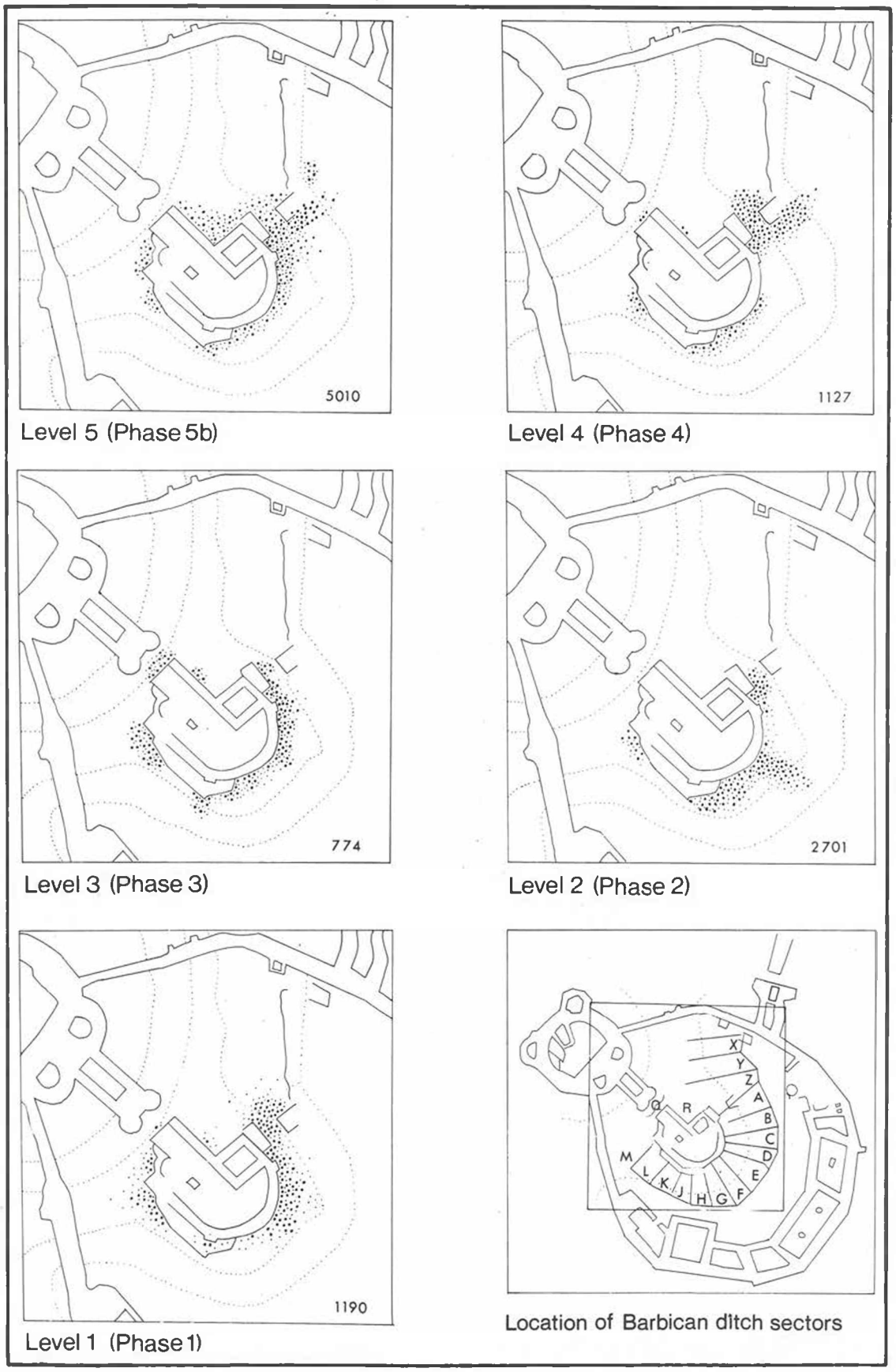


Fig. 1. Distributions of sherds as excavated in the five levels of the ditch around the Barbican Tower at Sandal Castle (West Yorkshire). The varying concentrations reflect changing patterns of dumping throughout the life of the castle. The final phase (Level 1) reflects the use of the Constable's Lodgings on the eastern curtain wall (see Fig. 9). The number in the bottom right-hand corner of each inset represents the total number of sherds from that level (modified from Moorhouse 1983c).

Another use has come from recent work on the material from the 1950-1964 excavations at Kirkstall Abbey (West Yorkshire). This has revealed a major change in the distribution of pottery between the two infirmary structures (Fig. 2). Pottery from the earliest timber building was distributed around the structure, in varying concentrations, suggesting that the internal surface had been floored. The pottery outside accumulated while the building was in use and not during its construction or earlier. The concentration of pottery along the external wall suggested an eavesdrip gulley, and the more general scatter of pottery in contemporary humic material above 'natural' suggested gardens (Moorhouse and Slowikowski 1986, fig. 59). Little of this interpretation would have been possible without the assistance of the pottery distribution.

Dispersal of sherds from the same vessel

The distribution of sherds from the same ceramic form can offer a number of sources for understanding the phasing and the uses of a site. These range from linking together archaeologically separated parts of a site to suggesting patterns of dumping. These many uses, however, require all the sherds from the same vessel to be identified.

The recently published Southampton example (Brown 1985) shows the unique qualities of pottery for suggesting associations. However, the method adopted there was to use only those sherds which physically joined each other, and not non-fitting sherds from the same vessel. It has been argued in the past that, unless pieces from common coarse ware vessels actually join, the consistency and similarity between sherds makes the identification of pieces from the same vessel impossible. Medieval pottery was fired in kilns whose temperatures and atmospheres varied throughout the oven. Most raw clay was refined in one way or another by the addition of fillers or grogs, whose size, variety and density would vary between each batch mixed. The effects that these have on the colour, hardness and texture of individual pots, produce in the majority of cases, a combination of characteristics which allow the scattered sherds from the same vessel to be recognised and brought together. It will rarely be possible to assign every sherd in a group or deposit to a vessel, and in some groups there may be many sherds left over. If such work is possible on the seemingly homogenous Northern Gritty Wares, then the same results should be possible for pots in a number of extensive traditions in the south of England whose coarse ware products are apparently indistinguishable. If only the joining sherds are examined, then a secondary effect would be to limit the number of potential drawn profiles for vessels, whose complete or near-complete outlines may only be possible through the existence of non-joining sherds. A number of the more famous drawings produced by the late Gerald Dunning were only possible because non-joining sherds from different parts of the vessel survived and were used in the drawn reconstruction.

Perhaps the most important point to bear in mind is that the wide dispersal of sherds from the same vessel is not a rare instance on a site, nor is its detection limited to fully excavated sites like Sandal Castle. Material from five sites has been examined using these techniques in Yorkshire; Sandal Castle (Moorhouse 1983c), Hillam Burchard, a deserted medieval settlement north-east of Leeds (Moorhouse and Slowikowski 1987a), Kirkstall Abbey (Moorhouse and Slowikowski 1986), Hickleton Church (Moorhouse 1986) and the manorial site at Higher Land, Gargrave (Moorhouse 1983e). They all revealed the same picture, a large number of vessels with sherds scattered widely over the site. The evidence is particularly relevant from Kirkstall Abbey where, as we have already seen, the excavations carried out between 1950 and 1964 were individually of small scale and scattered across the southern

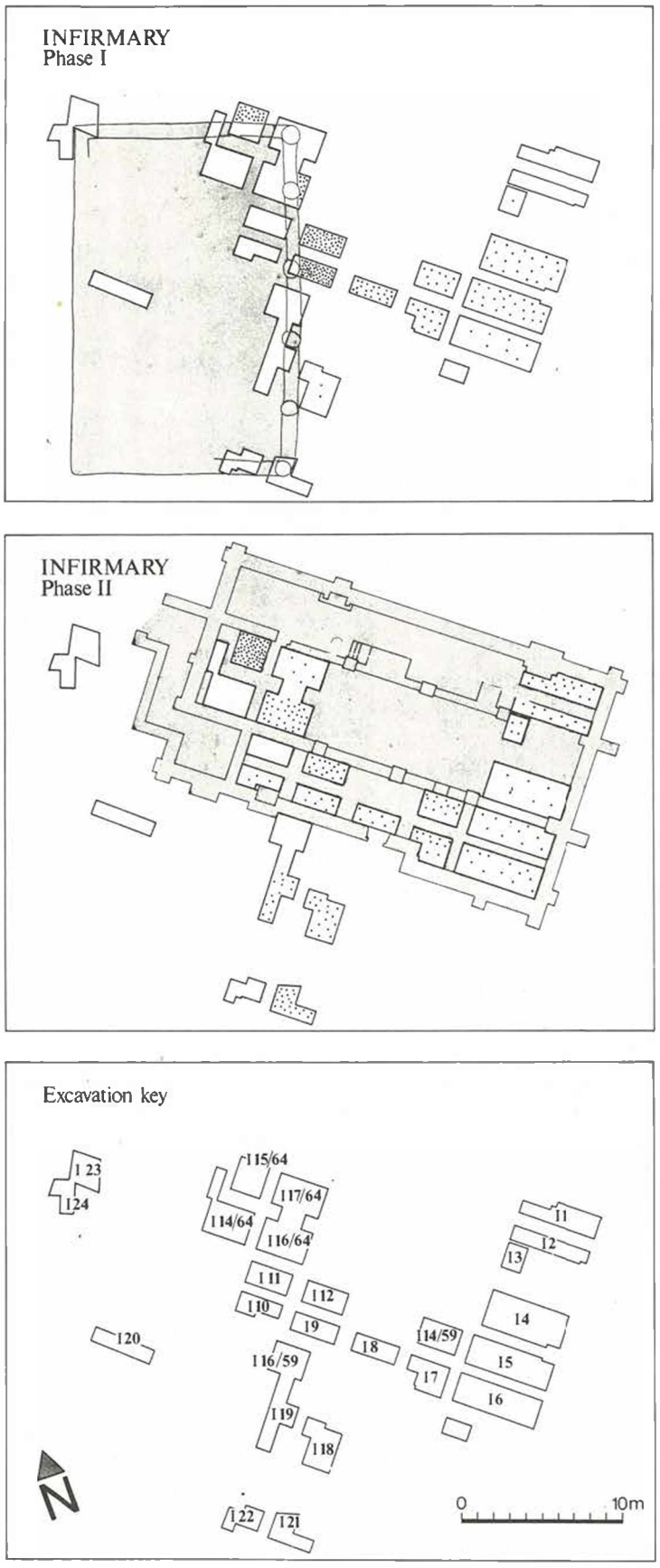


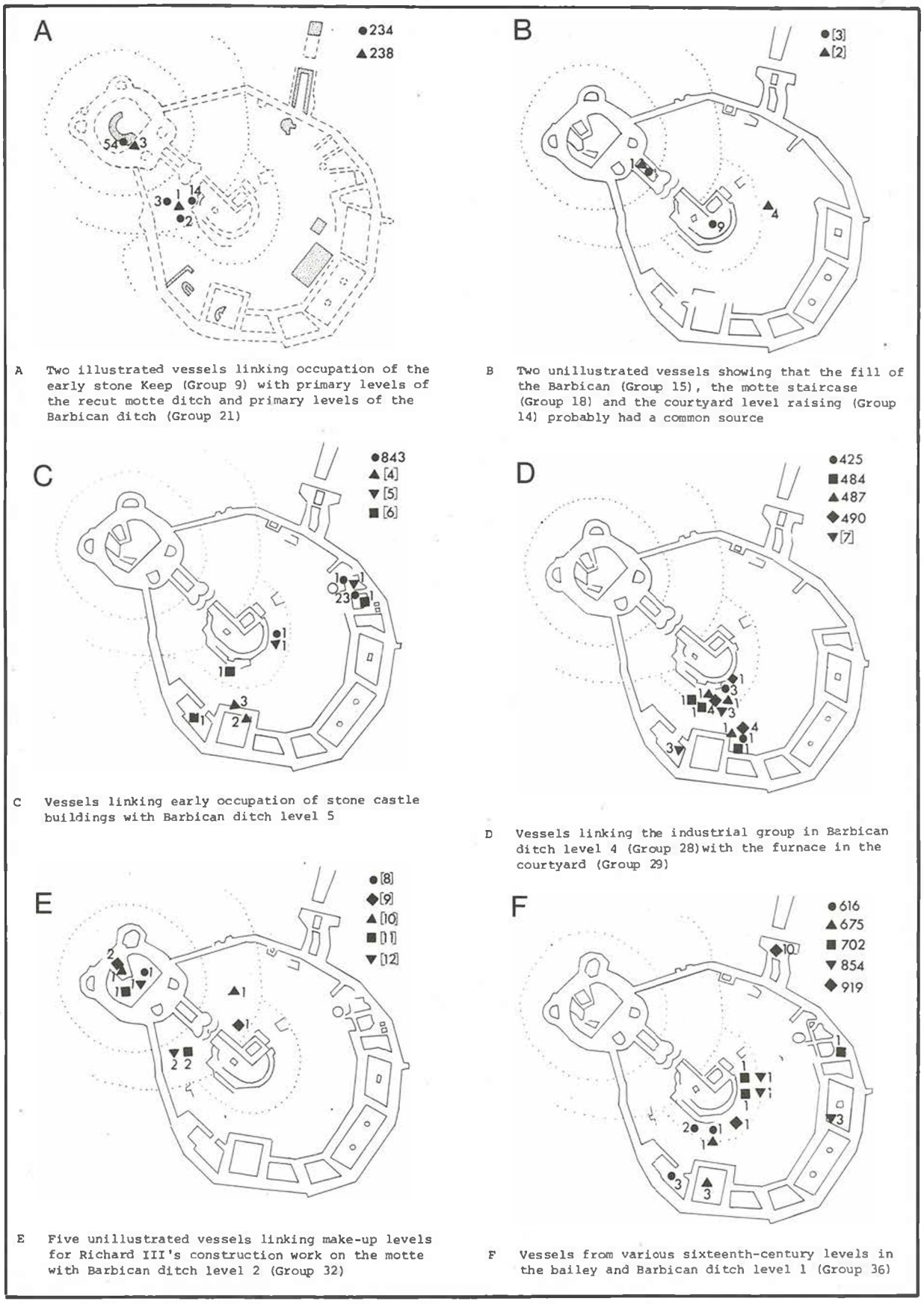
Fig. 2. Distribution of sherds as excavated from the two phases of the Infirmary at Kirkstall Abbey (West Yorkshire). The varying concentrations and extent of the material outside the Phase I building provided unique information about the use of the interior and the surrounding areas (Moorhouse and Słowikowski 1986).

part of the site (Figs. 5 and 6). Similarly at Higher Land, Gargrave, the site was sampled by a series of small trenches across the manor site (Fig. 9). The occupation of all five sites spanned the medieval period and each had a number of major rebuilding phases, which, with the exception of Sandal, completely re-planned the part of the site excavated. It seems likely, therefore, that much of this movement of pottery was caused by soil being carried around the site through building activity, a point which is developed further below.

Without the evidence from the pottery, the understanding of how Sandal Castle developed would have been far less complete and in some cases incorrect (Moorhouse 1983c). Contemporary, but archaeologically separate, areas of the site were linked by substantial parts of the same vessel being found there. For example, the sequences on the motte and those in the bailey were archaeologically divorced, but two vessels each had substantial parts in the early stone keep phase on the motte and from the lower levels of the Barbican ditch surrounding the keep, deposits which could be linked to sequences on the bailey. It was thus possible to link contemporary phases across the site (Fig. 3A). Sherds from the same vessel were found in the make-up levels between the staircase walls up the motte, forming part of the make-up within the Barbican core and from the courtyard make-up levels, all contemporary deposits from the timber to stone castle conversion phase (Fig. 3B). This and other similarly distributed vessels suggested that the material had a common origin. It was possible to show in which room or building a vessel had been used or broken. Small pieces were found trodden into floor levels or thrown down garderobes in that building around the courtyard, while larger pieces from the same vessel were found immediately opposite in the Barbican ditch (Fig. 3C, F). Perhaps the most important use of the pottery at Sandal was in unravelling the complicated conversion sequence from timber to stone, which probably took about half a century to accomplish (Moorhouse 1983c, 194, 207). This could not have been achieved without looking at the disersal of sherds from many vessels. A much simplified sequence of the conversion is shown in Fig. 4.

Detailed work on the material from excavations between 1950 and 1964 at Kirkstall Abbey has shown that pottery moved large distances around the precinct. The distribution of three such vessels is shown in Fig. 5, sherds from the main claustral range coming from the 1950-1964 excavations, the remainder from the Guest House excavations, which have been in progress since 1979. A more typical pattern is seen by the distribution of sherds from two vessels in Fig. 6, pieces scattered in a number of deposits within a localised area. The most likely interpretation for both these patterns is that pottery has moved around in soil used in the raising and levelling of areas during building activity, a suggestion supported by the archaeological evidence. It is also evident from the abrasion and size of some sherds that material had been disturbed a number of times. Work of this kind has suggested that most of the excavated deposits at Kirkstall, from both the 1950-1964 campaign and from the more recent work on the Guest House, contain mostly residual material within them. As such, only a few authenticated groups will be published as excavated, while the majority of the pottery, although most of it was well stratified, will appear as a type series (Moorhouse and Slowikowski 1986).

The reworking of the material from the 1950-1964 excavations at Kirkstall Abbey has amply demonstrated the large areas over which pottery can travel when discarded. It has also shown that assumed contemporary deposits can be supported by the localised and limited distribution of sherds from vessels in the group. The fill of the Warming House cistern contained pieces from over forty pottery vessels, most of which were substantially complete (Moorhouse and Slowikowski 1986, Fig. 61). Only four vessels had sherds from



A Two illustrated vessels linking occupation of the early stone Keep (Group 9) with primary levels of the recut motte ditch and primary levels of the Barbican ditch (Group 21)

B Two unillustrated vessels showing that the fill of the Barbican (Group 15), the motte staircase (Group 18) and the courtyard level raising (Group 14) probably had a common source

C Vessels linking early occupation of stone castle buildings with Barbican ditch level 5

D Vessels linking the industrial group in Barbican ditch level 4 (Group 28) with the furnace in the courtyard (Group 29)

E Five unillustrated vessels linking make-up levels for Richard III's construction work on the motte with Barbican ditch level 2 (Group 32)

F Vessels from various sixteenth-century levels in the bailey and Barbican ditch level 1 (Group 36)

Fig. 3. Distribution of sherds from vessels at Sandal Castle (West Yorkshire). Each symbol per drawing represents a separate vessel, with the number of sherds from each location. Three-figure numbers in the key refer to illustrations in Moorhouse 1983c, those in square bracket to unillustrated vessels (modified from Moorhouse 1983c).

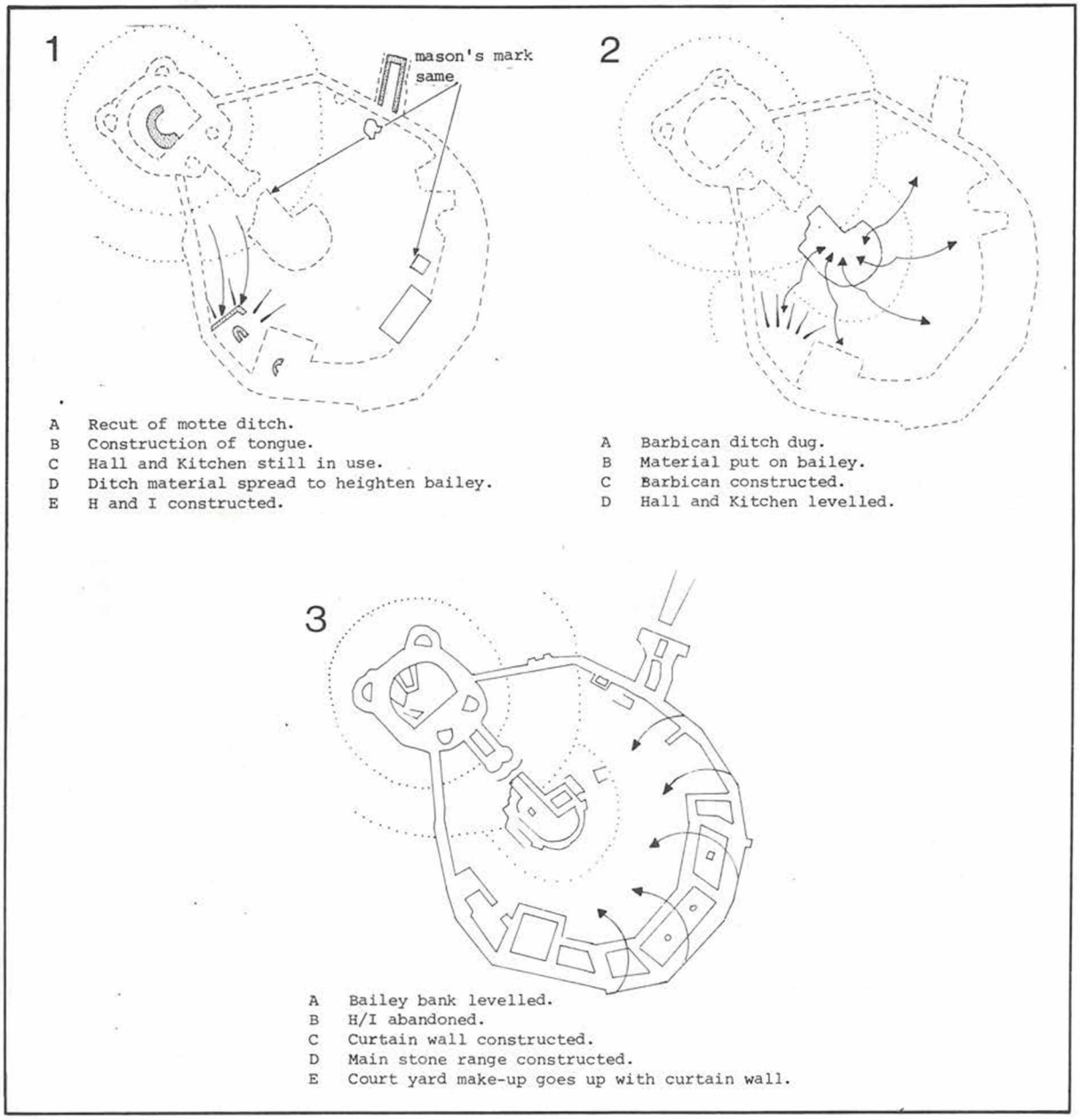


Fig. 4. Diagramatic development of the complicated conversion phase from timber to stone at Sandal Castle (West Yorkshire). An understanding of this protracted and complicated conversion sequence, much simplified here, was made possible by the distribution of sherds from many vessels (some of which are shown in Fig. 3), scattered around the site through soil movement (modified from Moorhouse 1983c).

elsewhere, and these lay close to the cistern. Unfortunately, the site records are inadequate to show whether these disturbed sherds were stratified. On sites where dispersed sherds are found in homogenous groups, such sherds might be used to suggest contemporary deposits.

The dispersal of sherds from the same vessel can have important results, even in the most unlikely of circumstances. The whole of the

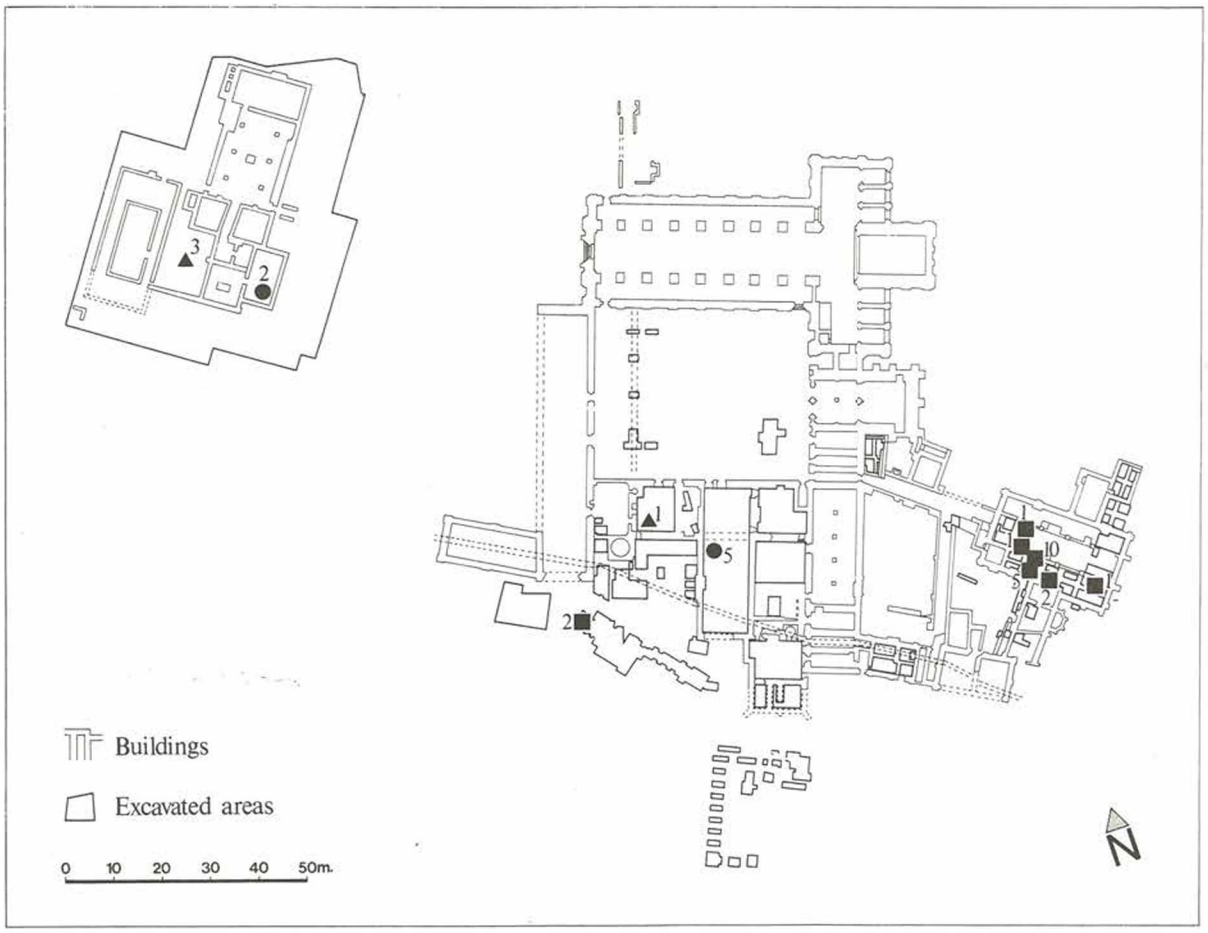


Fig. 5. The long distance distribution of sherds from three separate vessels from Kirkstall Abbey (West Yorkshire). Each symbol represents a different vessel, with the number of sherds from each location (from Moorhouse and Slowikowski 1986).

interior of St Wilfred's Church, Hickleton (South Yorkshire) has recently been excavated in advance of major restoration work precipitated by coal mining beneath the building. In keeping with most parish churches, the work produced a far more complicated development than is suggested by the standing building. However, the phasing, and hence date for the north aisle was uncertain. Both these were indicated by the unusual distribution pattern of sherds from the substantial parts of two jars (Fig. 7). It is most unlikely that the distribution pattern could have occurred had the north wall of the nave been in position along the line of the northern archade. As pieces from both jars occurred in the north aisle, it seems likely that it was in position, or being built, when the pots were deposited. It was thus possible to say in which phase the aisle was constructed, a suggestion only made possible because of the distribution of pieces from both jars. In addition, the distribution of sherds from other pots and the absence of domestic rubbish indicated that most of the pottery from within the building was a product of both the construction of the church and a physical representation of the well documented social uses of medieval churches (Moorhouse 1986).

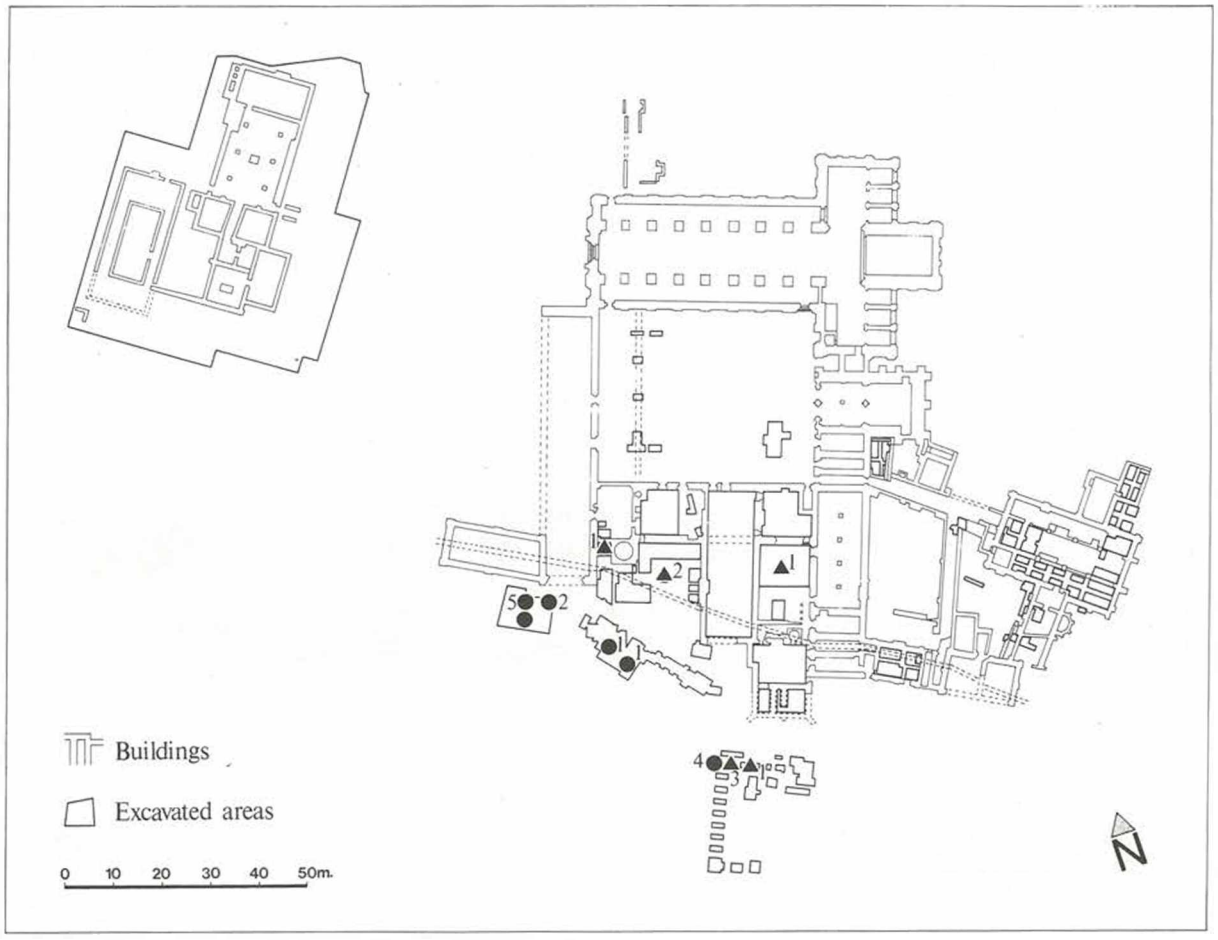


Fig. 6. The localised distribution of sherds from two vessels at Kirkstall Abbey (West Yorkshire). Many more vessels have a similar distribution, a scatter resulting from the disturbance of earlier ground and soil, and the rubbish which it contains, being moved around the site in building activity. Each symbol represents a different vessel, with the number of sherds from each location (from Moorhouse and Slowikowski 1986).

The distribution of sherds from the same vessel has provided the only evidence for the late medieval phasing on the deserted medieval settlement at Hillam Burchard (West Yorkshire). The site revealed little evidence of structures or stratigraphy, most of which had been destroyed by either ploughing or natural erosion. The features which did survive were seldom inter-cut. A number of features were likely to be late medieval in date because of the pottery associated with them. The pottery was of the same type, suggesting that all features were of the same date. However, the distribution of sherds from vessels associated with the major features suggested that they were all filled in at different times (Fig. 8), as none contained sherds from vessels found in the fill of the other two features. The pottery suggests that at least three, and probably more phases of late medieval industrial occupation took place on the site (Moorhouse and Slowikowski 1987a).

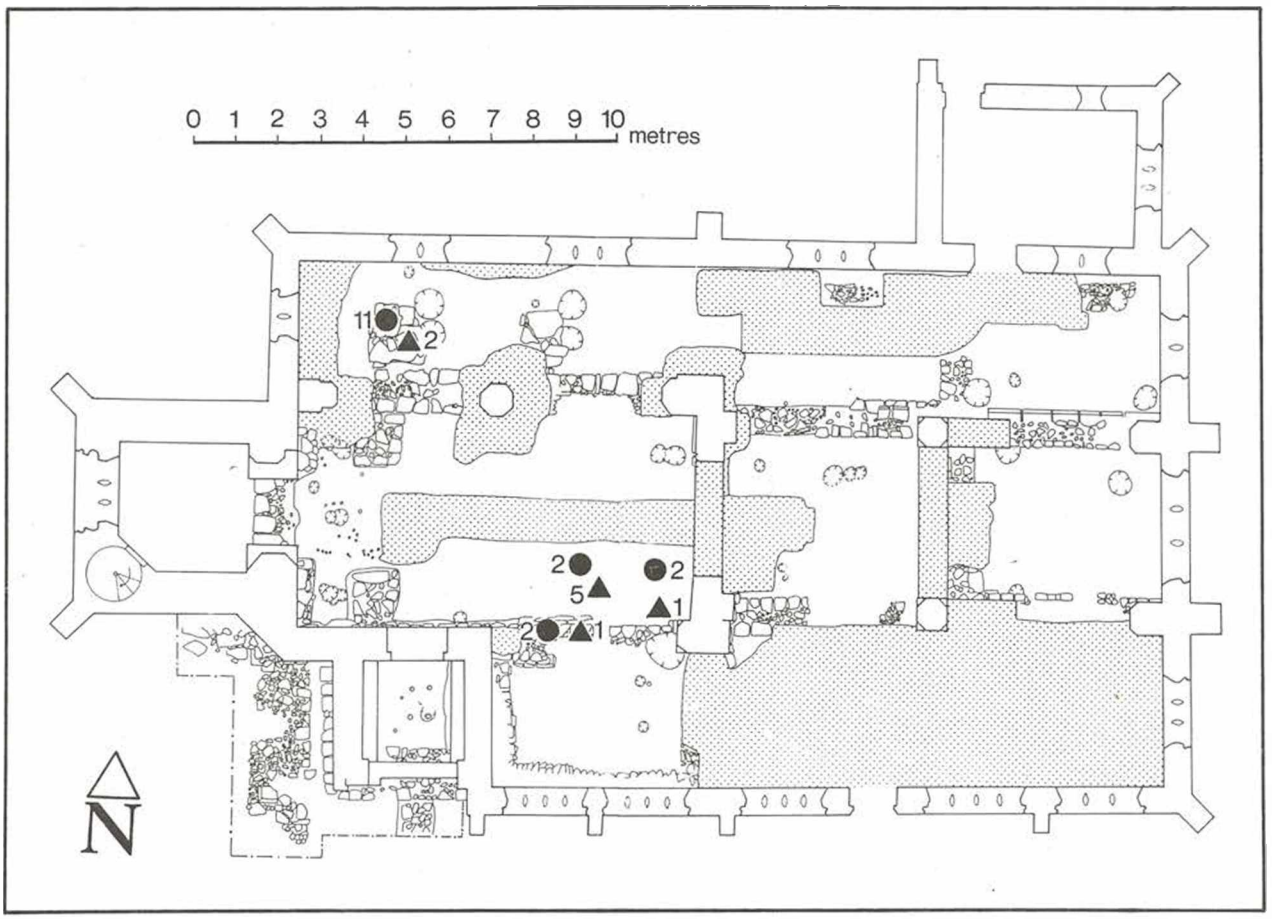


Fig. 7. Distribution of sherds from two vessels at Hickleton Church (South Yorkshire), showing the number of sherds from each location. The distribution of the sherds allowed the otherwise floating north aisle to be placed in the chronological development of the church. Stippling indicates unexcavated areas (from Moorhouse 1986).

To save time and money, the topsoil from many rural excavations is removed mechanically, down to the archaeological deposits. The evidence from Hillam Burchard suggests that much of the ceramic evidence is contained in the ploughsoil, even though, as on this site, material had been moved around by medieval and later ploughing. Much of the evidence for sherds outside the three main deposits shown in Fig. 8 came from the ploughsoil. Had the topsoil from the site been machined away, then the three 15th century phases would not have been identified.

Commonsense supports archaeological evidence for the medieval householder keeping their living areas clean, with rubbish often being used for some specific use around the house. These included material being used to create soak-aways, eavesdrips to roof lines or level raisers in cattle-disturbed yard areas. The recovery of topsoil material by grid square could have great potential on sites of short-lived duration or where the plan has remained static throughout its long life. Not only could building sites be suggested where the building technique left little archaeological evidence, but uses could be suggested for them by material found either around or within them.

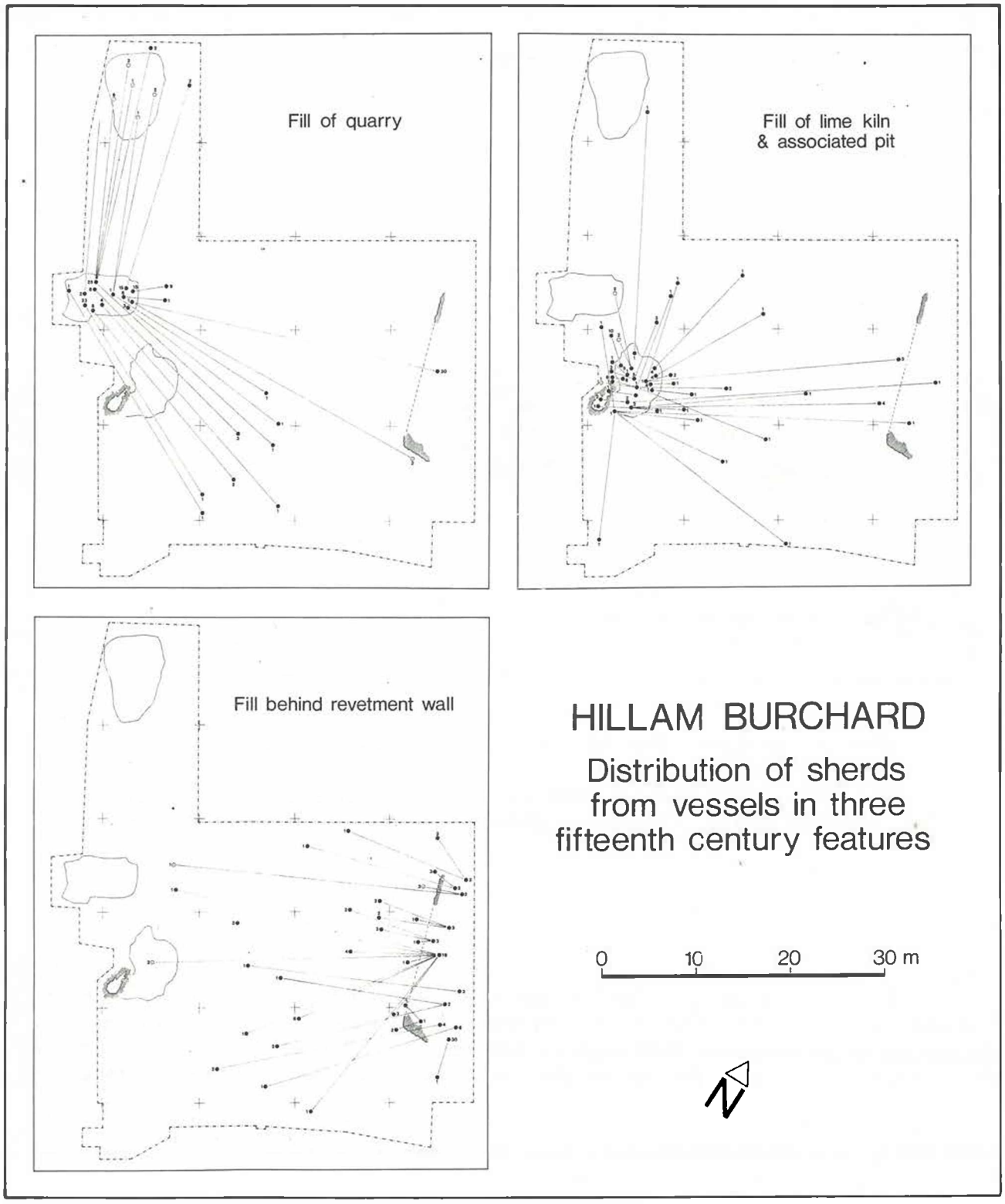


Fig. 8. Distribution of sherds from vessels found in three late medieval deposits at Hillam Burchard (West Yorkshire). The absence of sherds from the other two features suggests that all three were either created or filled in at different times, and therefore not contemporary, as was initially suggested by the similarity of material associated with each. The numbers show the sherd of that vessel from each location (from Moorhouse and Slowikowski 1987a).

The value of dispersed sherds is not restricted to pottery vessels, as demonstrated recently by work on the medieval roof tiles from Lurk Lane, Beverley (Humberside). By bringing together all the pieces from the same ridge tile, and plotting their distribution, it was found that parts of a number lay either side of a substantial timber building. They lay along the walls of the structure within a slot which ran along the length of the building. It appears that the ridge tiles had broken in position on the crest and the pieces fallen down each part of the roof into the eavesdrip gully down either side. The distribution of the tiles assisted in the phasing of the site, linked together contemporary features and helped support the suggestion that the slots were eavesdrip gullies (Moorhouse 1987a).

In the last volume of Medieval Ceramics, Duncan Brown discussed an important, but hitherto little explored aspect of medieval pottery studies, the vertical distribution of sherds from the same vessel (Brown 1985). He showed, by using a pit group from Southampton, that, although the fill was made up from seven visually different deposits, suggesting that each may have been deposited at different times, joining sherds from a number of vessels were dispersed throughout the stratigraphy. This suggested that the garderobe was probably filled at one time. In introducing the article he referred to my own work at Sandal Castle where he says, quite rightly, that most of the evidence for dispersed sherds was presented in plan form. However, much of the material was dispersed between phases and between deposits in the same feature. Most of the garderobes had sherds from the same vessel scattered throughout their fills, a not uncommon feature elsewhere. Similarly, the complicated filling sequence of Room MH on the motte had pieces from the same vessel scattered throughout the dozens of lenses in the fill, as well as from similar deposits from the same building operations scattered across the top of the motte. Because of the range of information being presented in the report, the results rather than the methods of obtaining them were presented, hence the emphasis on plans rather than sections. A detailed discussion of the methodology adopted for the Sandal pottery appeared some years ago (Moorhouse 1974).

Patterns of dumping

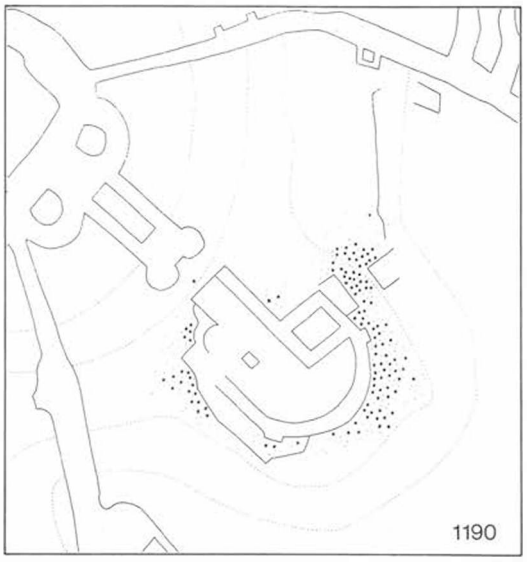
Apart from dispersed sherds from the same vessel being used to understand the development of a site, they can also reveal patterns of dumping and the disposal of rubbish. The material from Sandal Castle demonstrates the potential of this work and highlights the dangers of taking associated pottery as excavated at its face value (Moorhouse 1983c). The plotting of sherds as recovered from the Barbican Tower ditch has already been discussed. The sequence also reveals other evidence for dumping the material. In the earliest deposits, the two main concentrations lay on opposite sides of the tower in positions which would be difficult to explain if it was assumed that the material was dumped from the bailey (Fig. 1). Examination of the individual vessels from Level 5 shows that over thirty decorated jugs had pieces, some substantial proportions, from either side of the causeway giving access up the Keep staircase (Moorhouse 1983c, 106; nos. 253, 258, 263, 270, 271, 283, 285, 295, 298, 302, 303, 310, 311, 322, 323, 326, for illustrated vessels only; many more exist amongst the unillustrated material). This implies that, in keeping with later deposits in the ditch, material had not been thrown in from the bailey, but discarded from the Barbican Tower. In the absence of documentary evidence, the pottery and other finds from the ditch suggest that at least during the later 13th and 14th centuries the Barbican Tower housed the high class residential accommodation in the castle.

Vessels with sherds from the opposite side of the tower continue into Level 2. Significantly in Levels 4, 3 and 2, all vessels are fine wares. For example, two fine white-slipped Humber ware table vessels and a Siegburg drinking jug from Level 2 (Moorhouse 1983c, 107, nos. 595-97) suggest that the tower may have been used for residential purposes until just before c. 1483, when conversion work started in the castle for Richard III's ill-fated attempt to turn Sandal into his northern residence. Despite the large quantity of pottery from Level 1, no vessel has sherds from opposite sides of the ditch, suggesting that the tower was no longer used after 1484, when Richard's untimely death at Bosworth Field halted conversion work. Significantly the 1538 survey of the castle shows that both the floors and the roof of the Barbican Tower were in need of repair, suggesting that it was no longer in regular use.

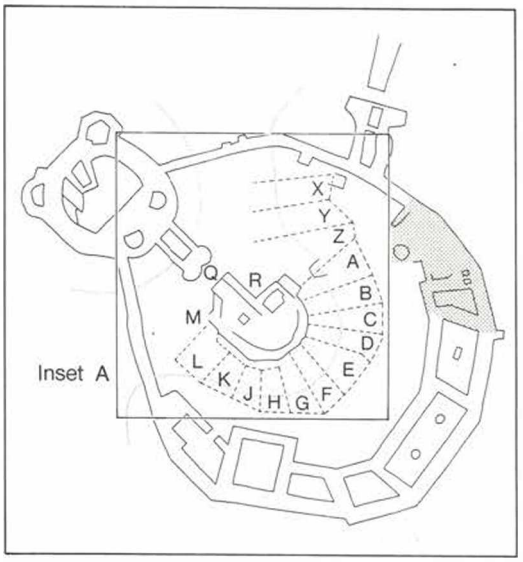
The horizontal distribution of sherds throughout all five main deposits reveal a further point. Levels 5, 4, 3 and 1 all have appreciable numbers of vessels with sherds scattered throughout a number of adjacent sectors, with the main concentration usually being in the middle of the spread; those from Level 1 are shown in Fig. 9. As suggested below, this probably implies periodic levelling of heaps, and hence long periods of dumping. In contrast nearly all the vessels from Level 2 had sherds restricted to one or two adjacent sectors. In many cases the smashed sherds from a vessel were found where the vessel had broken into smaller pieces on impact. All this suggests that Level 2 had accumulated over a very short period of time and had not been periodically levelled. It has been argued from other evidence that most of this deposit, together with a large complementary group on the motte, results from the clear-out of buildings in the castle preparatory to Richard III's conversion work - together with domestic and industrial pottery used by the workmen on the site. The evidence from the dispersal of sherds from vessels in Level 2 of the ditch supports this suggestion.

The horizontal distribution around the ditch shows that within the same level tipped mounds of material were periodically levelled. A number of vessels in Levels 5 and 1 had sherds spread around a number of adjacent sectors of the ditch, usually with the highest concentration in the centre of the scatter. The scatters of different vessels were spread around the ditch, but mostly on the courtyard side. This suggests that not only were piles levelled at intervals but that some attempt may have been made to fill in depressions created by earlier dumpings, which in turn were levelled. The illustrated vessels from Level 1 are tabulated in Fig. 9. The main concentration of material in this phase of the ditch is shown in Fig. 9; immediately opposite the only buildings occupied in that phase, the Constable's Lodgings on the curtain wall to the south of the Gatehouse. The horizontal dispersal of sherds from most vessels over a number of adjacent sectors is clearly seen. While this type of rubbish tip management is employed on commercial tips today, it is useful to demonstrate the point in an archaeological context. It also has major implications for the disturbance of material both vertically and horizontally around the ditch, and hence for the validity of the association of small sherds from individual vessels in most deposits.

The widely varying concentrations in the Barbican Tower ditch at Sandal provide a salutary warning for the interpretation of sections dug across moats, and for the sectioning of pottery waste heaps. Four equally spaced sections cut across the ditch would have produced four very different results and hence four different interpretations, none of which would have been correct. Apart from the stratigraphy being different, the periodic



A Sherd scatter around ditch in Level 1 (1485-c.1600)



B Location of Barbican ditch sectors
Buildings occupied 1485-c.1600

Illust. no. in Moorhouse 1983 c, p. 107	Sectors in sequence around the Barbican ditch														
	M	L	K	J	H	G	F	E	D	C	B	A	Z	Y	X
608										1	1				
610						1	1								
611											1	1			
621											1	7	1		
625									1		4	18	1		
626					14	2									
634								1	7		1	4		2	
635		1						1	5	3	1	3			
637									2	2	2				
648									3	1	2				
676								1	1	1		1	11		
718										3	7	11			

Sandal Castle, Barbican ditch. Examples of horizontal dispersal of sherds from same vessel in Level 1 (1485-c.1600).

Fig. 9. Horizontal scatter of sherds around Level 1 of the Barbican Tower ditch at Sandal Castle (West Yorkshire). The lettered columns represent the sectors of the ditch in plan from west to north, and are related to their position around the ditch in inset B. From the concentration opposite the Constable's Lodgings (inset A), it is clear that dumping created piles in the ditch opposite, which were levelled periodically, similar to modern methods of tip landscaping.

levelling and cleansing of the ditch created both residual and intrusive pieces in the same archaeological deposit. Parts of some levels were devoid of artefacts as dumping had taken place elsewhere around the ditch. Had a section been cut through that part, it might have been assumed that the castle was abandoned during that period on the absence of artefacts!

Distribution of ceramic forms

So far the dispersal of sherds on a site has been considered. The study of the distribution of forms or types of pottery can be equally rewarding. At Sandal Castle the distribution of pottery types and forms helped to explain the final use of the timber aisled hall in the pre-stone phase. Occupation levels of the primary building contained a high proportion of fine decorated jugs with few coarse wares, which were mainly restricted to the adjacent detached timber kitchen. Archaeological evidence suggested a typical medieval hall complex of a high-ranking seignorial lord. However, the final phase saw the insertion of a lead smelting hearth into the centre of the hall. The large quantity of associated pottery was predominantly coarse ware jar forms, many with heavy external (and some internal) sooting and some containing residues. This combined evidence suggested that the once spectacular and impressive timber hall of the mighty Warrene family had been demoted in status during the lengthy conversion phase from timber to stone, and probably used as a mason's and/or carpenter's lodge before being finally demolished (Moorhouse 1983c, 194, 207).

The distribution of forms across a site has many applications. The distribution of bowls in Phase 3 on the manorial site at Higher Land, Gargrave (North Yorkshire), showed that fifteen vesels in four pottery types were concentrated in one feature on the edge of the excavation, a section cut across the enclosing moat (Fig. 10). The rest of the site in that phase was devoid of any bowl sherds. As most of the bowls contained internal residues and were heavily sooted outside, they suggested that the group had been dumped from a building with a specialised use just outside the area of excavation, possibly a dairy (Moorhouse 1983c, 48, fig. 23). Plotting all the dripping pans from the excavations carried out between 1950 and 1964 at Kirkstall Abbey showed a concentration either in or around the principal Kitchen and the Meat Kitchen (Fig. 11), two buildings on the site in which they are most likely to have been used (Moorhouse and Slowikowski 1986, fig. 55). Plotting the find-spots of the large quantity of industrial pottery from Sandal produced a number of interesting and unexpected results (Fig. 12). The major concentration of 150 near complete, but fragmentary vessels from sector E level 4 in the Barbican ditch was matched by a lesser concentration from a furnace in the angle of two buildings on the bailey. Odd sherds from nearby bailey buildings suggested that the workshop lay in the vicinity, probably at first-floor level in the absence of industrial deposits in the ground floors of the buildings. A further smaller workshop was suggested on the other side of the site in the area of the main Gatehouse (Moorhouse 1983c, 191-94). Despite the wide range of forms, many of them unique, not a single ceramic alembic was present. These were in glass, stressing the importance of interpreting all the finds from a group together, a point to which we shall return later.

Conversely, the distribution pattern of particular forms may reveal precisely what they were used for. Urinals are a case in point, for those made from glass and pottery each had different uses. Glass urinals are usually found either in, or associated with, garderobe shafts which served overnight accommodation. This is exactly where they would be expected, for uroscopy, the art of diagnosing illness through the colour of the urine, was widely practised during the Middle Ages (Jones 1937, 555-57; Baird 1979). Glass urinals are frequently depicted in manuscript illustrations, and

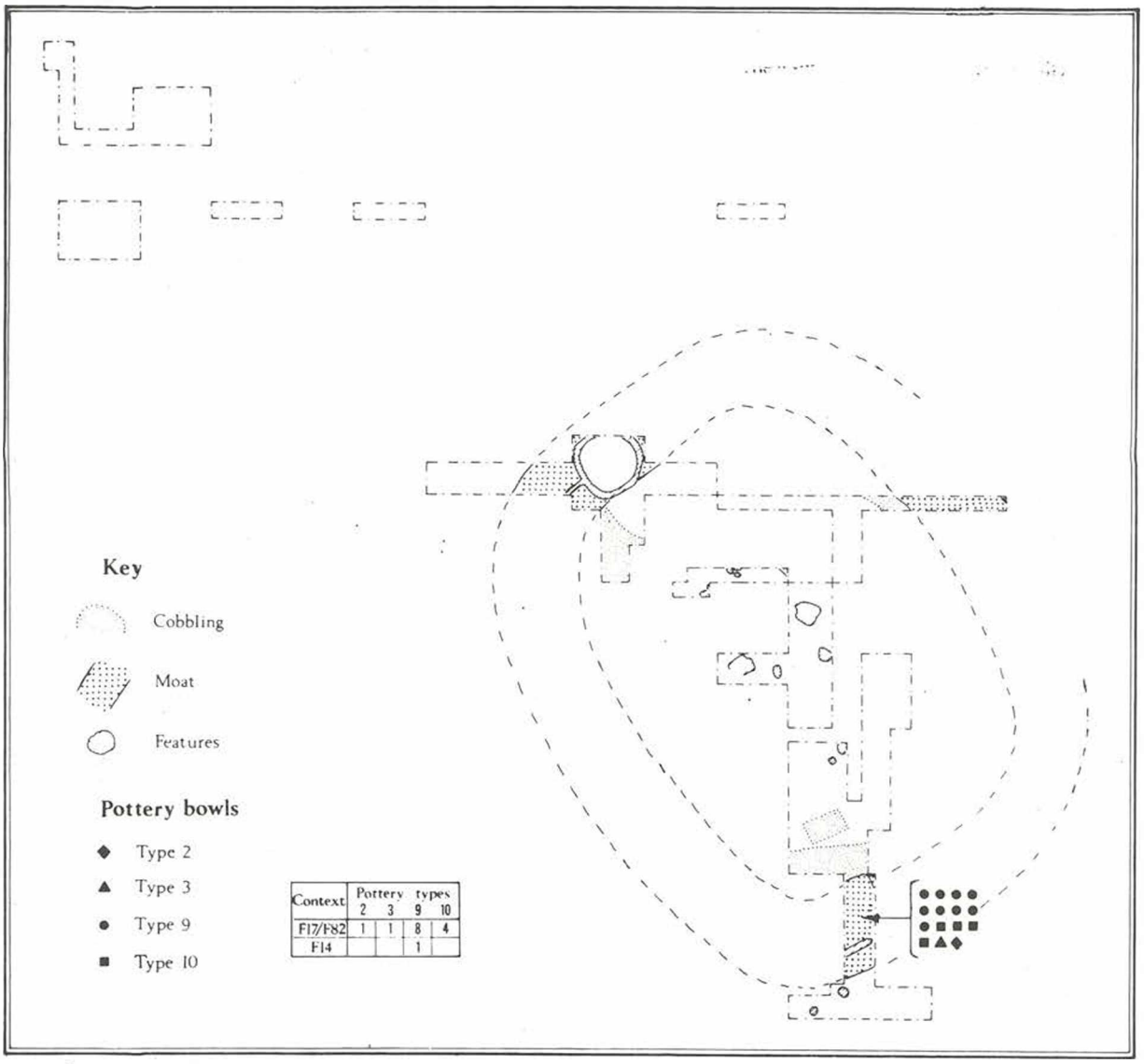


Fig. 10. Distribution of pottery bowls of all types from Phase 3 at Higher Land, Gargrave (North Yorkshire). The concentration of bowls, to their exclusion elsewhere in the phase, suggests a specialised dump from a nearby building to the south of the moat, possibly a dairy (from Moorhouse 1983e).

courtesy books speak of the lord's servant taking a sample of urine each morning in the chamber and examining it. Pottery urinals had a different function. Their opaque material, as well as their various forms, make them useless for uroscopy. They were intended as the medieval equivalent of the modern portable loo - they contained the urine until it was emptied, either immediately after use or when the container was full. They are frequently found in quantity in garderobe shafts and latrine flushing systems, and are common on both lay and monastic sites. The garderobe chute in the 15th century Latrine Tower on the southern curtain wall of Bothwell Castle contained at least five pottery urinals (Cruden 1951-52, 140, 145).

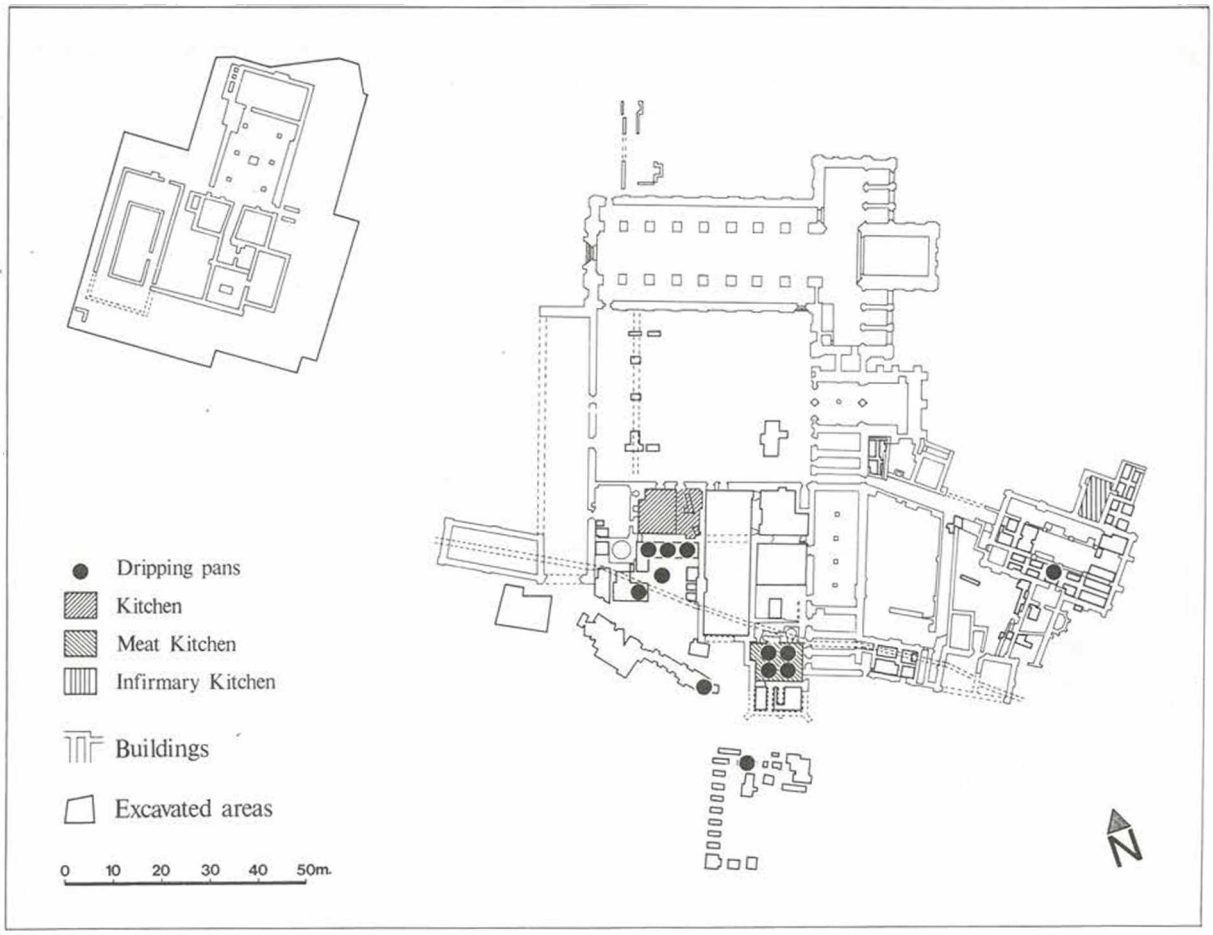


Fig. 11. Distribution of pottery dripping pans at Kirkstall Abbey (West Yorkshire). They are concentrated around the three areas of the site where they are most likely to have been used: the principal Kitchen, the late medieval Meat Kitchen, and the kitchen in the service block attached to the Infirmary (from Moorhouse and Slowikowski 1986).

Pottery urinals are, however, much more common on monastic sites. Two examples will suffice; the latrine shaft of the Monk's Reredorter at Melrose Priory contained five complete and fragments of four other urinals (Cruden 1952-53, 162), while the remains of over a dozen vessels were found in the main drain at Kirkstall Abbey immediately south of the overlying latrine tower from the hall solar attached to the Guest House. The concentration around garderobe chutes suggests that the solid and liquid waste was being separated in the latrine - the liquid being kept. The uses of urine in the Middle Ages were many and varied (for post-medieval uses see Stead 1981; Stead 1982), ranging from being a common ingredient of human and animal medical recipes, to being the principal scouring agent used in tanning and fulling. The documentary evidence for uses of urine are now being attested archaeologically. For example, most of the groups of industrial pottery apparatus have produced a number of ordinary jar forms with uric acid fermentation covering most of their insides, and clearly used for storing urine for use in industrial processes; the Pontefract Priory group is particularly relevant as it also contained four pottery urinals (Moorhouse 1987b).

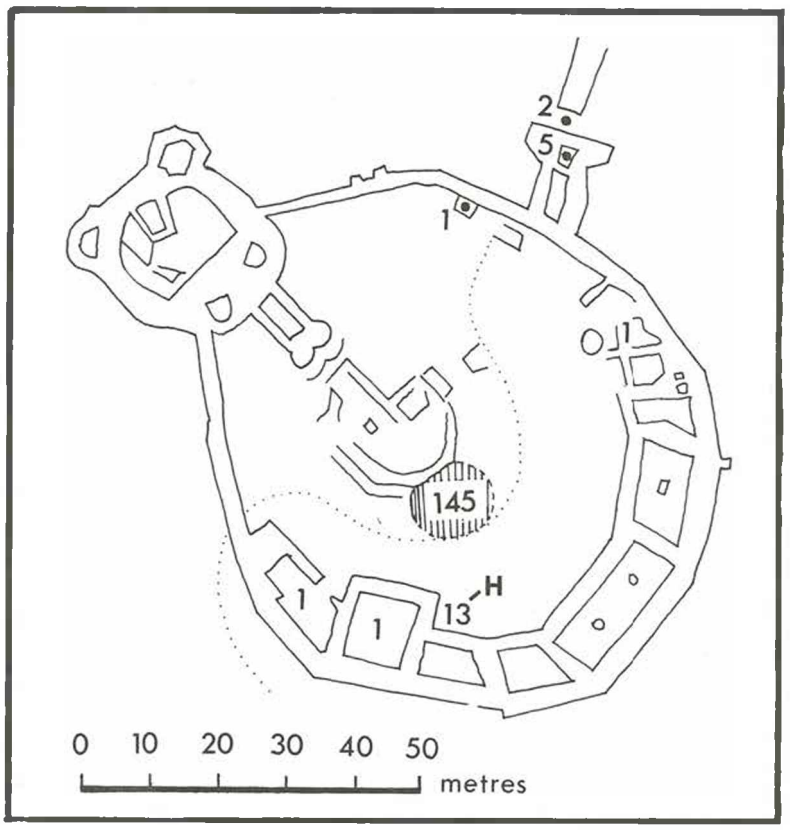


Fig. 12. Distribution of industrial pottery forms from Sandal Castle (West Yorkshire), suggesting the function of a hearth (H), the probable location of the laboratory at first floor level in one of the buildings on the southern curtain wall, and the presence of another workshop either in or adjacent to the main gatehouse. Figures represent the number of vessels from that location (from Moorhouse 1983c).

Such results are only possible if the material has remained relatively undisturbed, as with the moat deposits from Higher Land (Gargrave) and Sandal Castle. Other instances occur where the occupation of a site has ended abruptly. The isolated longhouse at Dinna Clerks on the eastern fringes of Dartmoor (Devon) was destroyed by fire some time during the late 13th or early 14th century. Excavation revealed a number of complete pottery vessels and two wooden bowls in the positions in which they had been last used or left by the occupants immediately before the fire (Fig. 13). The association of vessels in the inner room suggested to Guy Beresford that it may have served as a dairy (Beresford 1979, 135-36).

Occasionally such sites may reveal more detailed information. Recently a small timber building of probable 13th century date has been excavated at Pennard on the Gower penninsula in south-west Wales. The building was destroyed by fire and the contents were preserved beneath a large sand dune. When excavated a number of burnt and blistered pottery vessels were found either complete or smashed on the floor of the building (Fig. 14).

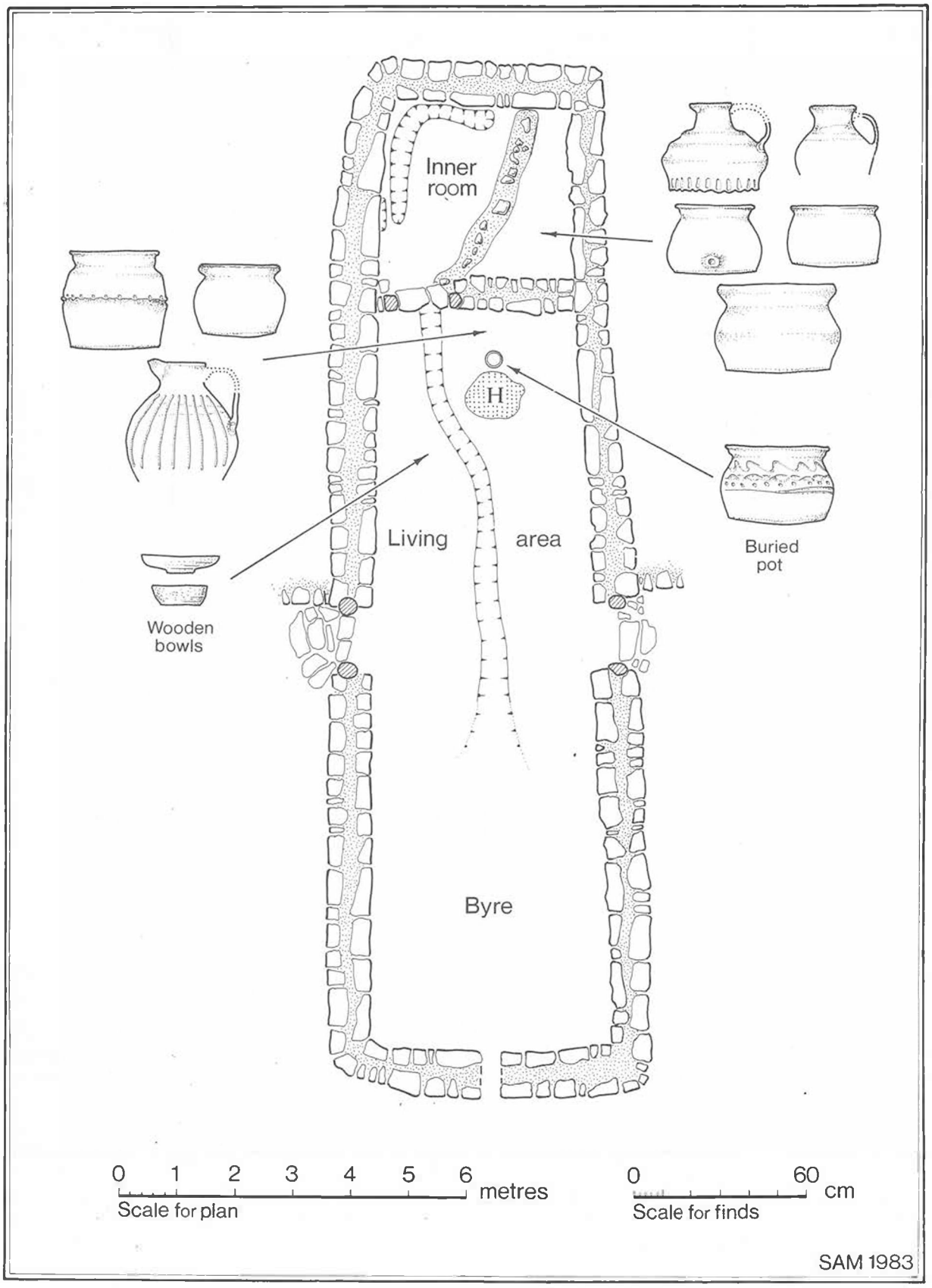


Fig. 13. Distribution of wooden and pottery vessels, found *in situ* beneath fire debris in a late 13th or early 4th century longhouse at Dinna Clerks, Dartmoor (Devon).

Two ordinary cooking pot forms were found: one was set in the floor adjacent to a stone-set hearth, and the other, unsooted and probably a storage vessel, was found crushed on the floor and may have been trodden into the surface and therefore may pre-date the fire. More significantly, two jugs had their sherds scattered each in different, but very localised, areas of the floor, suggesting that they had fallen and shattered there. Each vessel had a number of both burnt and unburnt sherds. These two factors suggest that the jugs fell onto the floor during the fire and that they may have stood on furniture against the wall or, perhaps more likely, on wall shelving (Moorhouse 1985).

Various events throughout the Middle Ages created a number of sites which were abandoned or destroyed about the same time. Where the sites have remained unoccupied the material found on them provides not only the range of pottery types then current, but also their distribution across a site might show how they were used and for what. The suppression of the Knight's Templars in 1312 meant that some of their preceptories were abandoned, never to be reoccupied. One such site is South Witham (Lincolnshire). Here excavation revealed that many of the buildings and rooms within them were left as abandoned: decorated jugs predominated in the hall; unsooted 'cooking pot' forms were found in buildings used for storage; and bowls were the dominant form in the dairy (information from P. Mayes and S. Johnson).

Slightly outside our period, but relevant for this theme, the English Civil War of the mid 17th century produced a number of fossilised sites, particularly where the occupation has been covered by the subsequently undisturbed slighted walls of the buildings. At Sandal Castle a distribution of the pottery revealed a number of obvious human events which would not otherwise be documented (Fig. 15). For example, most of the rooms occupied during the siege contained a chamber pot, and, along with other evidence, suggested that the Royalists carried out all their duties where they were stationed around the castle! The range of pottery forms and glassware found in the re-used medieval kitchen building suggested that it had been used either as a surgery or a dispensary during the two-month siege in 1645 (Moorhouse 1983d, 226).

Most sites, however, were occupied for long periods of time with successive phases of building activity, with the resulting upheaval and movement of material. Despite these obvious difficulties, much can be gleaned from the spatial analysis of forms on a site, as has been demonstrated at Kirkstall Abbey and Sandal Castle. Kirkstall not only saw many changes throughout its 370-year history, but the material was recovered by excavation techniques which were current in the 1950s and early 1960s.

Recent work at Tanner's Row, Pontefract (West Yorkshire), by the West Yorkshire Archaeology Service, produced a large quantity of pottery from the floor level of a timber building dating to the late 12th or early 13th century. Work on the pottery has shown that a small number of near complete vessels were involved, with the inevitable handful of mostly small single sherds from separate vessels. While it could be assumed that the group was all contemporary, the near complete vessels confirmed this view, whilst also identifying the residual element.

While in this case the work on the pottery confirmed an assumption, in many cases the pottery can augment the purely archaeological evidence. At Hickleton the pottery allowed the north aisle to be correctly phased, at Hillam Burchard a series of late medieval phases were identified purely on the

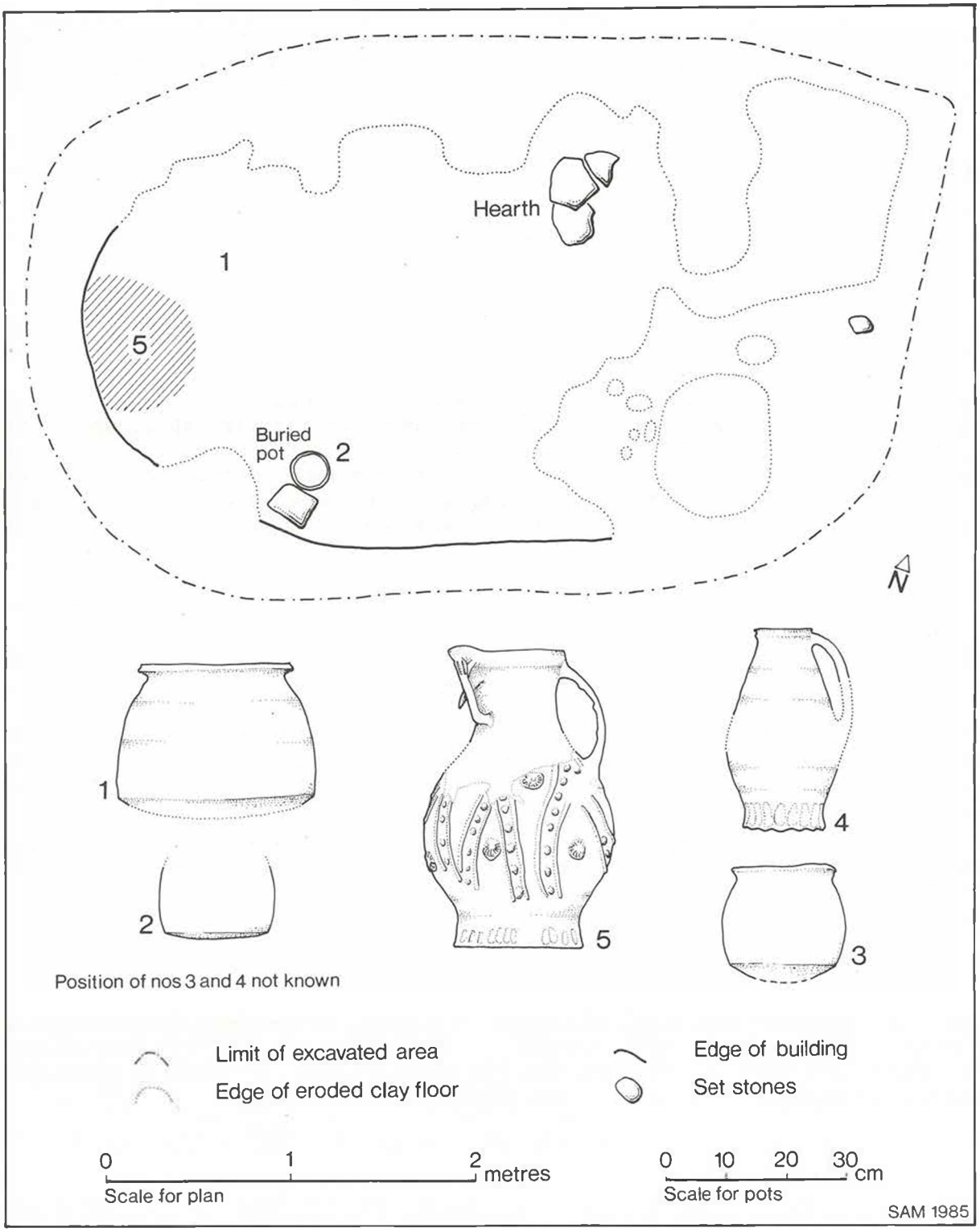


Fig. 14. Pottery vessel found on the floor of a timber building destroyed by fire during the late 13th century at Pennard, Gower (Glamorgan). The distribution of sherds from no. 3 suggested that the pot may have stood on shelving or furniture placed against the wall of the building (from Moorhouse 1985).

pottery evidence, while at Sandal Castle, the complex development of the timber to stone phase could not have been unravelled without the help of the pottery. Perhaps the greatest contribution that dispersed sherds from the same vessel can make, is in the identification of the residual element in a deposit, through the proportion of each vessel represented, the number of sherds per vessel, their size and abrasion on them, a theme taken up below.

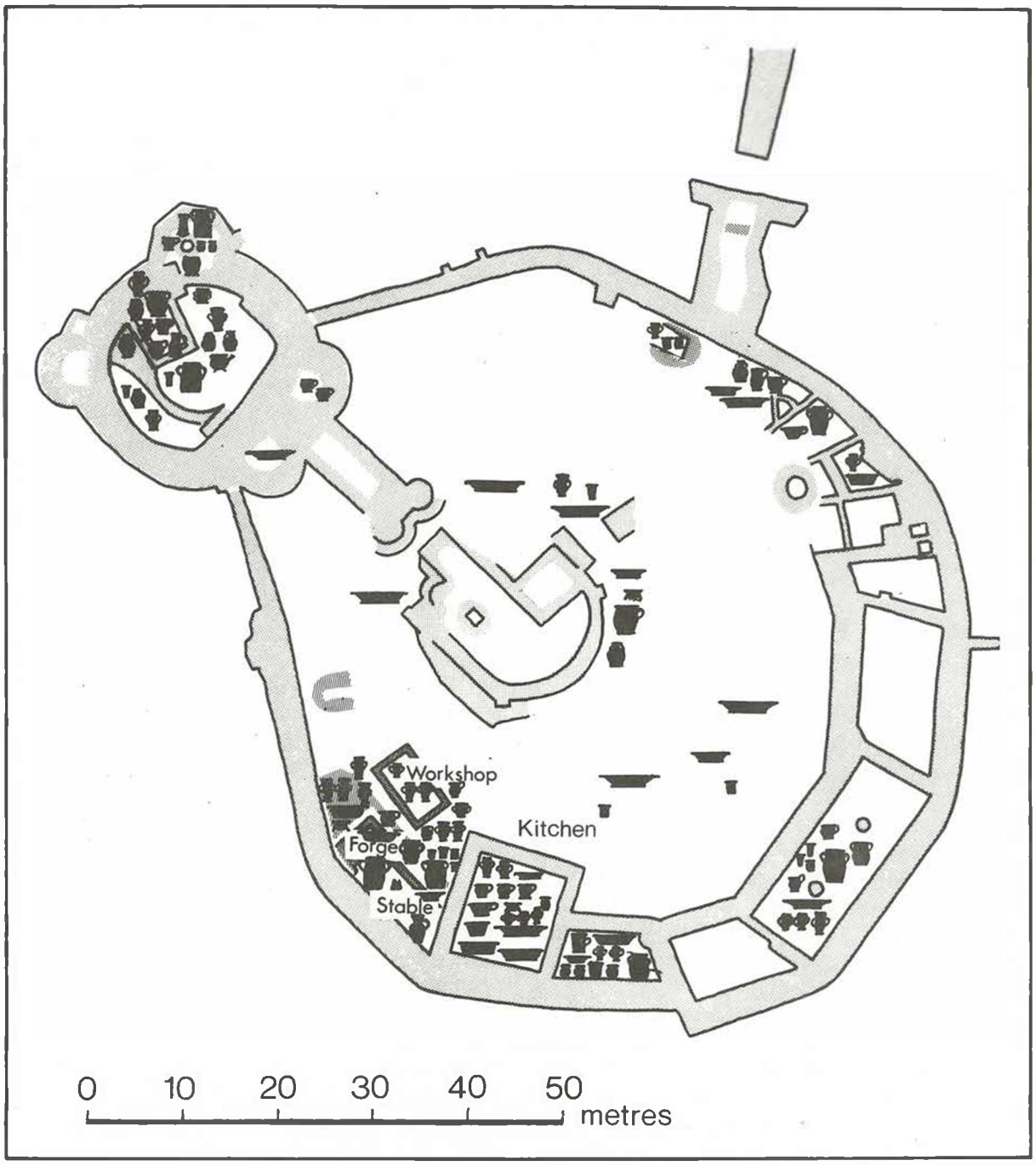


Fig. 15. Distribution of pottery vessels from the two-month Civil War siege at Sandal Castle (West Yorkshire) in 1645. The distribution of pottery and glass shows that the Royalist defenders fought, ate and slept at their stations around the castle, and that the Kitchen may have served as a make-shift surgery during the siege (modified from Mayes and Butler 1983).

Evidence of use

Various features on the pot can reveal what it had been used for and how. Wear marks, sooting characteristics, residues and secondary holes are considered.

Wear marks

Earthenware is a naturally abrasive material. When a similar or harder material is brought into contact with it, the surface is rubbed away. Many uses of medieval pottery would leave wear marks (Moorhouse 1983c, 185). Lids are the most obvious, but whether the inside or external angle of the rim is worn would reveal whether an internal or external lid seating was used. Some of the more obvious wear marks noted on British medieval pottery are shown in Fig. 16. Many uses can only be determined by having a substantial part of the vessel. For example, the base angle of a large jug that had been rocked forward to pour out its contents would be worn only beneath the pouring lip or diametrically opposite the main handle. Similarly, medieval pots are seldom perfectly symmetrical in plan. Light wear may therefore occur only on the few points where the two surfaces were in contact. As with other aspects of pottery distribution, many of the wear marks would go unnoticed, unless all available sherds from the same vessel are brought together during the initial sorting.

Sooting characteristics

Apart from the form, the sooting characteristics have perhaps the widest application for determining the uses of medieval pottery (Moorhouse 1983c, 182-84; Moorhouse 1983e, 45-46, fig. 22, table 3). They can reveal what the vessel was used for (in conjunction with residue analysis), how it was heated, and, in exceptional circumstances, the type of fuel used. A large proportion of coarse earthenware vessels are sooted in one way or another, usually externally on the lower half. Their general form, with a rim diameter the same, or slightly less than that of the base with slightly rounded or vertical sides and of general squarish outline, is termed as a 'cooking pot' by students of medieval pottery. Documentary evidence and residue analysis is now suggesting that this utilitarian form had many other non-domestic or culinary uses, invariably being used for storage (Moorhouse 1978; Moorhouse 1981a, 114-19).

A careful examination of areas of sooting over a pot's surface can reveal how the vessel was heated. In most cases a particular method can only be identified by looking at a large proportion of the vessel, stressing the need to bring together all surviving sherds from a vessel. Sooting is produced by carbon from a coal or wood fire, being carried upwards with the flame, depositing particles along its path. Figure 16 shows some of the more common sooting characteristics found on medieval pottery. Some of these result from a vessel being heated with a lid in position (1-3, 5), flames licking the underside of a rim from a vessel suspended in boiling water contained in a cauldron (4) and a vessel heated on its side. Internally heavily sooted pots (18, 19) are particularly common. Documented uses are varied, ranging fronm containers used to transport fire around, to a receptacle for a common medieval cure for piles which involved placing burning coals and herbs in the pot on which the ailing person sat over a stool (Moorhouse 1983c, 184). Charcoal is one of the best documented household and craft fuels. It had different heating properties to both coal and wood, producing a slow intense and direct heat. It also left a different sooting

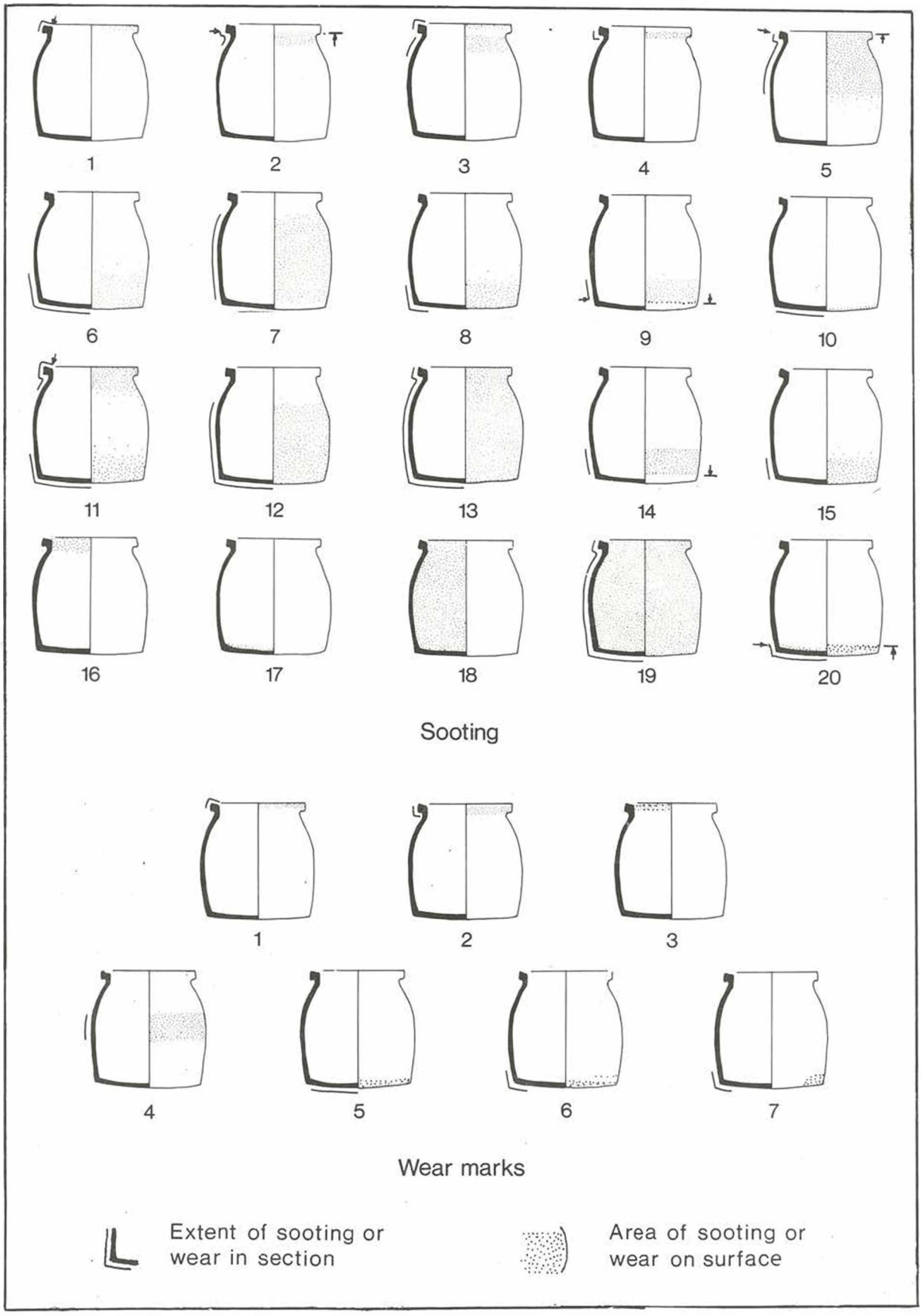


Fig. 16. Some of the more common sooting characteristics and wear marks found on pottery. Many of the characteristics are partial around the circumference, while other vessels were used at an angle or on their side. An arrow indicates a well defined line of sooting, caused by something covering the surface of the pot.

impression on the vessel, in that the only part discoloured was the part which came into contact with the charcoal. The effect is a very well defined crisp narrow band of sooting immediately above the base angle (20). Conversely, pots have been found where the band immediately above the base is clean and sooted above (9). Two explanations are possible: either the vessel had sat upon the rim of another pot, a not uncommon method of heating, or its base had sat within a hole in a large griddle plate, as seen in late medieval illustrations (Moorhouse 1983c, 184).

Sooting characteristics are indicative of how some vessels were heated. Pipkins are small vessels of 'cooking pot' form with a straight handle springing from the shoulder, and a pouring lip at right angles to the handle, positioned so that when held in the right hand the contents can be emptied by pouring inwards towards the body; the writer has noted only one left-handed pipkin! When sooted they are usually covered on the lower body opposite the handle and pouring lip, showing that care was taken not to get the handle hot nor the lip sooted. Dripping pans also have restrictive sooting. They were used under the spit to catch the juices, against and not over the fire. This explains why most dripping pans have handles down one of the long sides or on one of the narrow ends while the only sooted side is the opposing long side which has been against the fire.

One application of the study of sooting is in determining the type of lid used on a pot. A number of distinctive sooting marks on rims betray the use of either on internal or external cover during a heating process (Fig. 16, nos. 1-3, 5). A number of jar forms from Berwick-upon-Tweed had been heated with a lid in position, but the only pottery lids from the assemblage were for jugs (Moorhouse 1981b, 108), thus complementing the abundant documentary evidence for lids made in a variety of materials which were used on earthenware pots (Moorhouse 1978, 14-15).

Sooting features have perhaps more potential than any other single piece of evidence for the uses of pottery vessels. It is probable that through a combination of forms, wear marks, sooting characteristics and residue analysis that regional characteristics in using and heating ceramic forms will be identified.

Residues

Many processes in which pottery was used would leave a residue or stain on the surface. The same applies to vessels used simply for storage. Residue is often obvious as deposits on the surface, but recent work by Dr John Evans at the North London Polytechnic has developed techniques which will identify elements invisible to the naked eye which have penetrated into the body of the pot. A vessel from Northampton with no visible remains of residue was found to have contained wax and may have been used in candle making.

The position of the residue on the pot is also important. Most residues are found within the vessel, being the remains of its contents or the extract of what was produced in it. Organic looking residues are occasionally found on the outside of rims. Some of these are probably the remains of well-documented sealing agents used to create an air tight vessel, especially when they were to be baked in an oven. Dough made from eggs and flour was used in cookery, a mixture of clay and horse dung was used for medical recipes, and in alchemy a matrix called lutum sapientum, made from flour, white of egg, chalk and clay, sealed the vessel (Moorhouse 1978, 14-15).

It cannot always be assumed that sherds with residue running over the fracture acquired the deposit while being buried. The documents speak frequently of ingredients in recipes being mixed, ground or heated on a 'pot sherd' or 'tile sherd' (Moorhouse 1978, 12). A number were found in the large industrial deposit from Sandal Castle. The group was the clear-out from a nearby laboratory and comprised nearly complete pots. Most of the sherds with deposits on their edges were the only pieces from the vessel, strengthening the suggestion that they were palettes used in the preparation of ingredients.

Statistical work on relating either visually different or chemically analysed residues to where they occur on the body and on what types or forms of pottery can often be useful. The significance that this had for suggesting which vessels made up chemical units in the large industrial deposit from Sandal Castle has already been discussed above. Tabulating visual descriptions of residues against pottery forms at Berwick-on-Tweed showed that an internal white powdery deposit (not yet analysed) was restricted to a particular type and form of jug throughout the entire sequence, which spanned probably more than two hundred years (Moorhouse 1981b, 109). Even where the significance of residue deposits is not apparent, it is helpful to tabulate the information (Moorhouse 1983e, 45-47, fig. 22, tables 3, 4; Moorhouse 1986; Moorhouse and Slowikowski 1987a; Moorhouse and Slowikowski 1987b, table 14). It is only by building up corpuses of information about residue deposits, sooting characteristics, and wear marks that their significance will become apparent in the future. It is already becoming clear that some of these features have a regional distribution, emphasising not only the regional character of medieval pottery forms throughout the Middle Ages, but also their many uses.

Secondary holes in pots

Many different forms of pottery vessels were made with holes piercing their sides as part of their intended function, such as bung-holes in cisterns and ventilation holes in curfews. Many other vessels had holes pierced through either body or base after firing, changing the original function of the vessel. It is often difficult to detect them, for when a pot breaks it invariably fractures between the weakest points, through the bored or chipped hole. This often gives the impression that when excavated the edge of the sherd has been caught with the point of either pick or trowel. Genuine holes are clearly bored with bevels on one or both surfaces and, unlike freshly gouged pot, which is clean, the surfaces of the hole and bevel(s) are usually smooth, discoloured and ingrained with soil. Holes of various sizes, though usually less than 1cm diameter, can occur on any part of the body or base, and are found in a wide range of vessel forms. Their symmetry and smooth surfaces suggest that drilling was the commonest means of piercing the pot. They can occur as single holes or as regular groups around the body and obviously represent a very wide range of uses. Some of these can be suggested, such as a series of holes bored through the lower body of a jug from Chester; the inside is sooted and the secondary use may have been as some form of brazier. (I am grateful to Janet Rutter for showing me this vessel.) The uses of many of the vessels with secondary holes are, however, uncertain. A cooking-pot-form from Southwark (London) for example, has five holes bored in the form of a square with one in the centre, through the central part of the body (Thorn 1978, 136, fig. 53, no. 35). Many of the vessels occur as odd sherds, while some vessels have been published in the past where secondary holes have not been shown on the drawing.

Irregularly chipped openings are even more difficult to detect, for often these can only be recognised by reconstructing sherds surrounding the opening. A rare example comes from a large pre-Dissolution deposit at St Leonard's Priory in Stamford (Lincolnshire). A large jar has two rows of holes chipped around the shoulder (Fig. 17). This vessel is so far unique in that the arrangement of the holes fit a description of a pottery vessel used in a very common late medieval recipe for making white lead (Moorhouse 1981a, 117-18). A large cooking pot form with seven large irregular openings in the shoulder and central part of the body comes from Southampton (information from Duncan Brown). The interior is sooted and it may have served as a lantern.

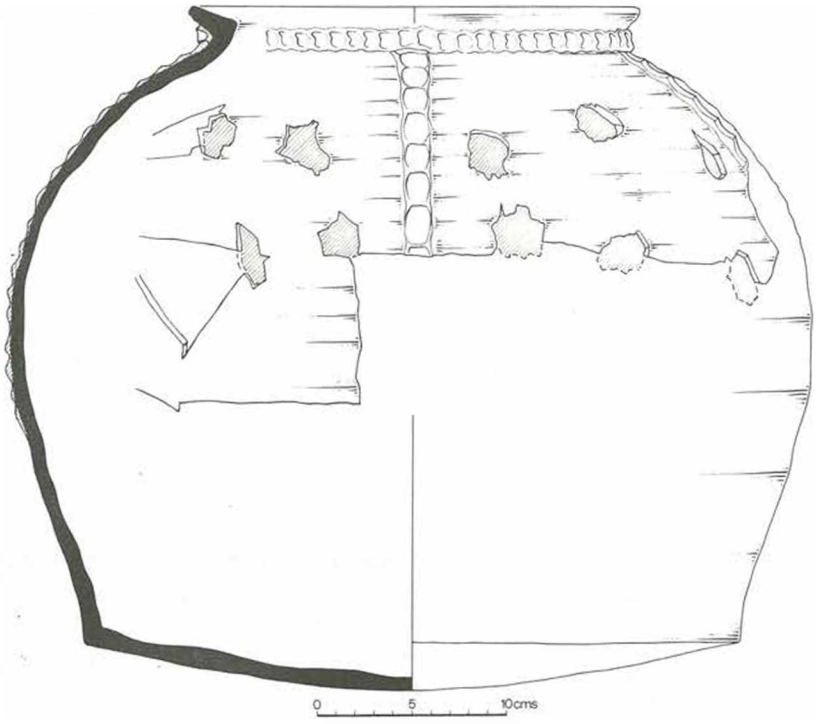


Fig. 17. Near complete late medieval pot from St Leonard's Priory, Stamford (Lincolnshire), with two rows of secondary holes chipped horizontally around the shoulder. A 15th century recipe for producing white lead describes using an earthen pot with two sets of holes in exactly these positions (see text).

Residual material

Any site that has had a long life and seen a number of major building changes is bound to contain disturbed ground and the disturbed material. This can occur directly through the digging of, for example, foundation trenches, or through the importing of material to raise the level of the ground. Both these have a profound effect on the secondary movement of artefacts, and pottery in particular. The levelling of rubbish accumulations in antiquity can seriously confuse earlier stratified sequences (see above). Ceramic objects can play a unique role in determining residuality. Perhaps the most obvious way is the presence of small abraded single sherds in a group which contains otherwise near complete vessels. The residual element can also be hinted at by quantifying all the material on a site in the form of a histogram, producing proportions for such type of pottery in each excavated group or phase and set them against the chronology of the site and the sequence in which the pottery types appear in that chronology. At Sandal such a diagram (Moorhouse 1983c, 102, fig. 2) hinted at phases during which the currency or floruit of types occurred, residual elements in succeeding phases, and anomalies created by insufficient material (Fig. 18). The currency of Type 10 vessels is clear, restricted to the later phases of the early timber hall, after which it occurs as small numbers of sherds mostly from separate vessels. A sudden increase in Tyne 10 vessels in Group 23a is explained by there being only five sherds representing four vessels in the deposit. This anomaly was identified because the histogram contains the number of sherds and vessels represented by them for each group. It is clear from work carried out on the five sites in Yorkshire that material was being moved around the site, as sherds from the same vessel had often a very wide circulation. The problems of residuality within an urban tenement must be very great, for most urban landscapes were raised by the constant digging of pits and other features within the same tenement boundary (Addyman and Biddle 1985, 100-03). The subject of medieval urban rubbish disposal is both fascinating and problematical and poses many other problems for identifying residuality, but is beyond the scope of this present paper. Suffice it to say that there is ample documentary evidence for the movement of rubbish around medieval towns, and even moving it outside the urban area (e.g. Sabine 1937, 21).

The lessons to be learnt from sites like Sandal on the residuality question are salutary. Material can be disturbed in many ways. Some, such as levelling rubbish dumps, are not obvious and would not be detected by using small scale sampling strategy. Material from dumps accumulated over a long period of time, such as these in the fill of moats or pottery waste dumps has to be treated with the utmost caution. Such evidence provides a warning about using the existence of a small sherd from a 'type fossil' such as Saintonge Polychrome, Cistercian ware or Raeren stoneware to date the deposit in which it is found. Such dangers were highlighted over twenty years ago by John Hurst in his classic paper on the dating of medieval pottery (Hurst 1962-63), a paper which should be a compulsory annual read for every post-Roman archaeologist who handles pottery and, more importantly, for those who ask questions of it. Not only the small sherd can be considered as residual. Some groups at Sandal contained large proportions of vessels which the archaeological evidence suggested were re-deposited. Some types of site are likely to produce more residual material than others, sites where occupation was long-lived, saw a number of major building places and occupation was restricted within confined, well-defined boundaries. These include the residential islands of moated sites and urban tenements. Material from such sites should be scrutinised for the level of residuality, before material is published in groups simply because it was excavated together.

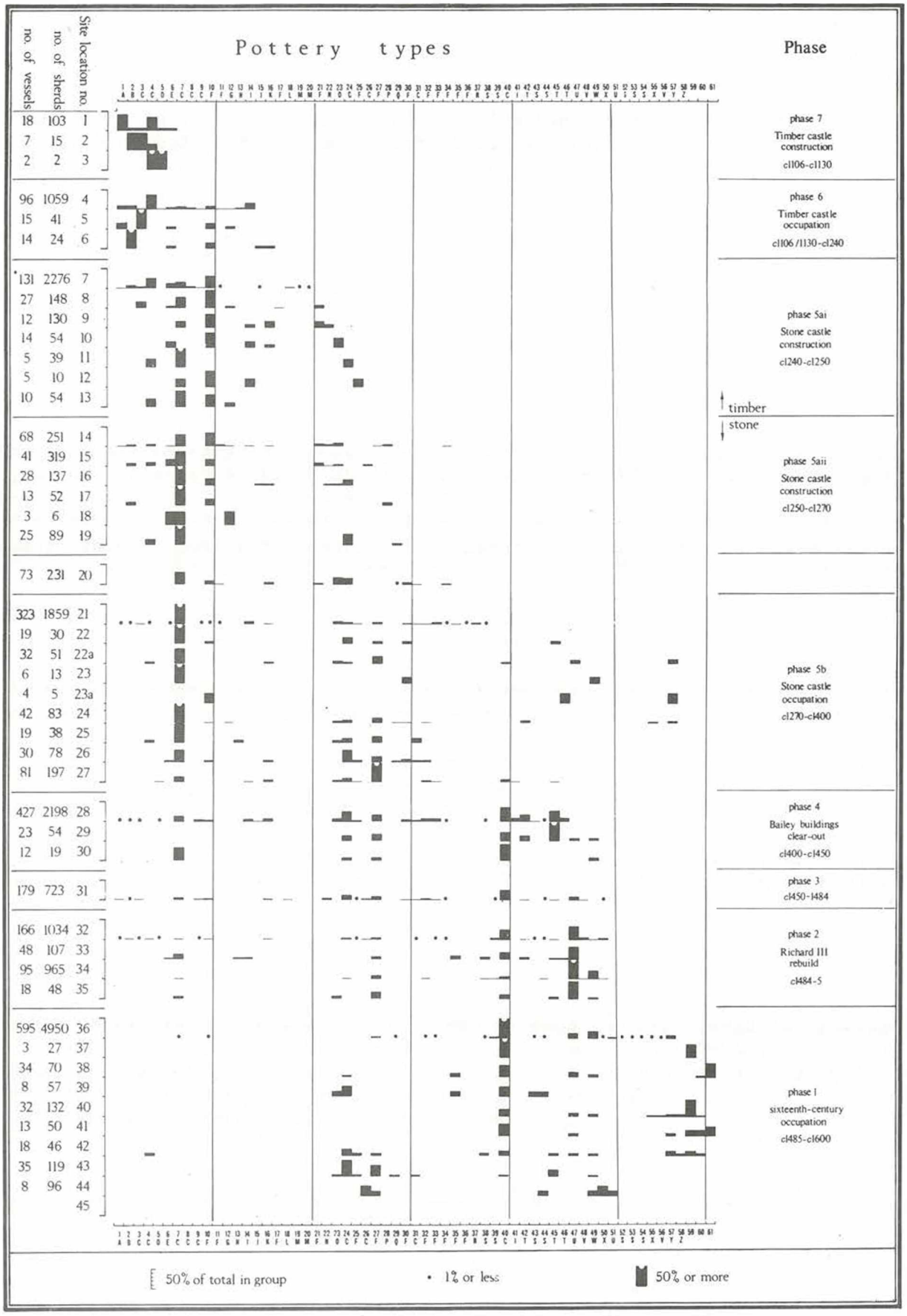


Fig. 18. Histogram of the medieval pottery from Sandal Castle (West Yorkshire), arranged by type and phase, and the quantification given in minimum number of vessels and the sherds representing them. Of little use for detailed work, such diagrams illustrate the currency of types throughout stratified sequences and highlight the residual element. The residual element for Type 10 is clearly visible after Phase 5aii. The anomaly in Group 23a is caused by there being only five sherds representing four vessels in the deposit (from Moorhouse 1983c).

The identification of the residual element in well-stratified sequences can have important implications. Although outside our period, the results from recent work on an early 17th century potting tenement at Wrenthorpe (West Yorkshire) are relevant for medieval assemblages. The rear of a tenement produced a complicated sequence of eighteen phases spanning the first half of the 17th century, and a large quantity of well stratified waste material. A large number of vessels had scattered sherds. However, in all but two phases, the dispersal was within the same phase. The two phases which contained earlier material were, significantly, the only two phases which had features which subsantially cut through earlier deposits. It was thus possible to suggest that in the other phases, the pottery recovered in them was likely to be products of that phase. It was also possible to suggest that other associated finds were also contemporary and not likely to be residual (Moorhouse and Slowikowski 1987b). As pottery is the only type of find that can produce this kind of information, it can help identify homogenous deposits and assemblages within which other types of finds are likely to be contemporary, and thus play a vital role in helping to establish sound chronological developments for other medieval artefacts.

Pots found in position

The original position of a pot can often be revealing. Those found in situ under the debris of destroyed buildings have already been mentioned above. Vessels are often found either sitting on or buried within the ground. Documentary sources, coupled with archaeological evidence can reveal their many and varied uses (Moorhouse 1978, 12-13). This evidence is to be discussed in detail elsewhere and only a summary of it is given here (Moorhouse, in preparation). The pots can be divided into roughly two groups: those which sit on or slightly within the ground and those which are completely buried.

Of the first group documentary evidence suggests that fermentation units should be the most common. Late medieval medical (human and veterinary) and craft recipes often describe a variety of earthenware fermentation units where one vessel is placed on the rim of another buried in the ground (Fig. 19). Where the distillate was required, the lower vessel would presumably be dug up, but where the residue was needed, then the lower vessel and its contents might be left. It is likely that some of the many buried vessels noted in the literature formed part of one of these units, but no analysis of their interiors has yet been carried out. Vessels either placed on the ground or, more commonly, buried to their rim have been found adjacent to hearths. Some have been full of charcoal and are almost certainly the equivalent of the cooking pot, used to heat, not necessarily cook food (e.g. Fig. 13). Partially buried pots have been used as sumps in yard areas to collect drain water, as at Writtle (Essex) and Kent's Moat (Warwickshire) (Moorhouse 1983a, 107). Occasional rare finds have been made where earthen vessels used in cooking have been destroyed or abandoned in situ. Two vessels of cooking pot form were found at Elstow Priory (Bedfordshire), one sitting upon the other containing oyster shells, and interpreted as an oyster boiler (information from Evelyn Baker and Georgie Byrns). Excavation of a medieval tenement in Bridlington (North Humberside) revealed the remains of two vessels which had clearly been shattered while in situ. Placed on a packing of pebbles and charcoal within a shallow ditch, the lower Staxton ware vessel contained fish bones, while the upper vessel comprised the carefully separated upper half of a Scarborough ware jug which sat neatly on the shoulder of the lower pot (Earnshaw and Watkins 1984, 13). Significantly the composite profile of these two vessels is exactly the same shape as vessels from Lincolnshire and elsewhere which have been interpreted as fish smokers (Moorhouse 1983c, 105; White 1985, 33, fig. 6).

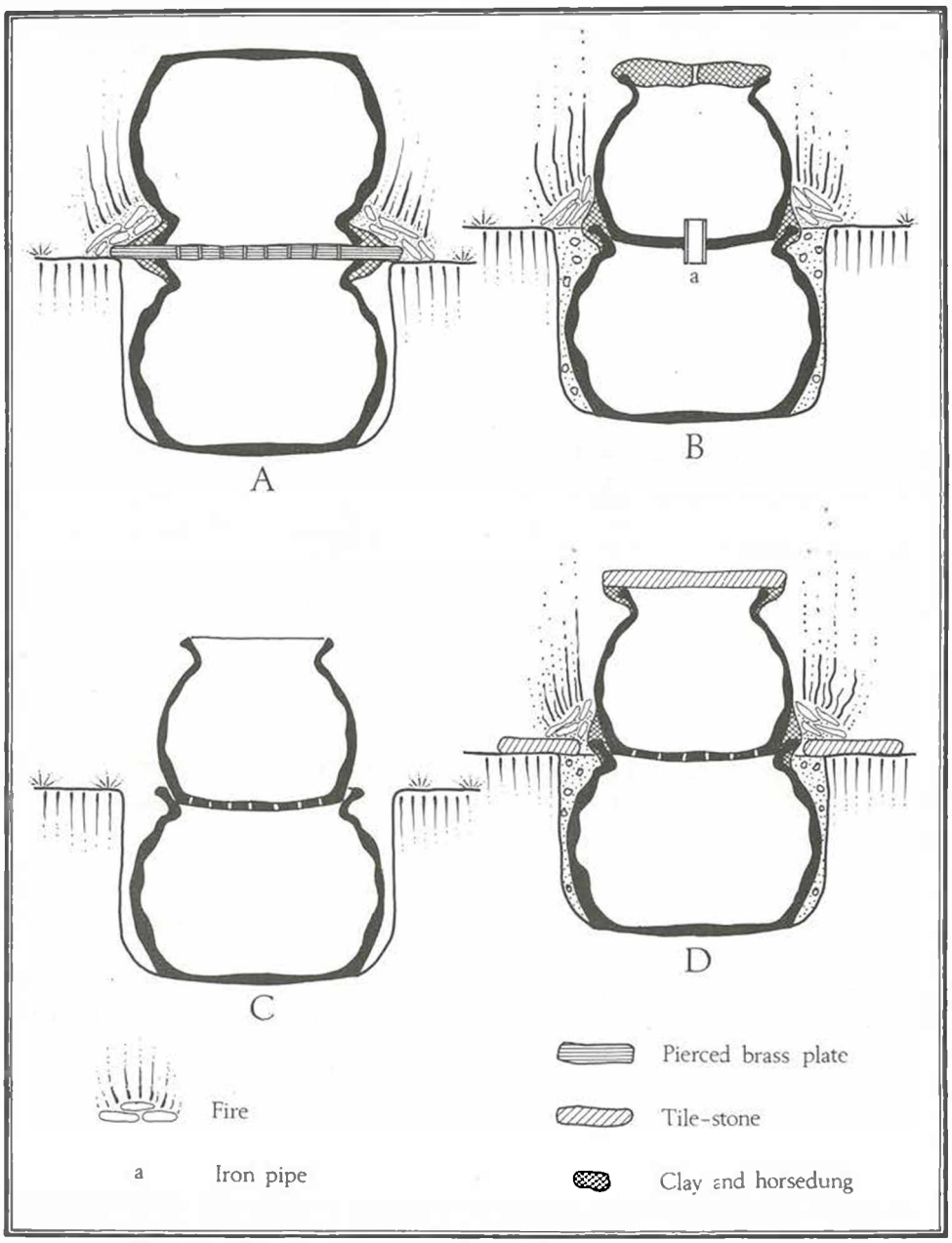


Fig. 19. Reconstruction of buried pottery fermentation units described in late medieval craft and medicinal recipes. The method of constructing the unit, the form of the vessels and their materials, sealing agents and their composition, and, occasionally, the nature of the packing around the lower pot are described. The sources for the recipes are: A, Fleischhakker 1894, 194, lines 6-16; B, Power 1910, 96, lines 3-15; C, Ogden 1971, 425, lines 13-26; D, Ogden 1938, 64, lines 16-26 (from Moorhouse 1981a).

A potentially much wider range of uses are found in the second group, those buried in the ground. Perhaps the most common were pots used as foundation burials to ward off evil spirits. Over thirty examples are known from beneath both secular and religious buildings (Moorhouse, in prepartion). A not uncommon use of buried pots was, quite literally, in association with both human and animal burial. There are many examples of pots being buried as grave goods in medieval Scotland (Laing 1973, 197; Robertson 1974), a reflection of both the political and social links with France during the period, where pottery is also found associated with human burials (Cochet 1857a, 351-96; Cochet 1857b, 416-23, pl. XI; Delmaire 1969). Pots as containers for both human (Stenton 1937a, 344, no. 943) and animal (Leicester Jewry Wall Museum, acc. no. 49.1870) burials are also known.

Association with other artefacts

The function of a particular vessel may be apparent from the vessel itself, either through its form or the type of evidence discussed above. The association of pottery with other artefacts is also important - an obvious point, but one which, through the traditional way of reporting finds, sometimes gets overlooked. Finds are often reported on by specialists who study only raw material. All of the common medieval forms, the bowl, jug and, in particular, the 'cooking pot' form, were ubiquitous. The absence of drinking forms, the cup and hand bowl, in the medieval potters' repertoire is explained by their manufacture in wood by the turner. Ceramic cups appear in the early 15th century but it is not until the 18th century that treen ones are superseded. A wide range of otherwise domestic-looking pottery was used in the large industrial deposit dumped in the Barbican ditch at Sandal Castle. The 16th century garderobes at Sandal, serving first-floor accommodation, contained glass urinals and beakers and ceramic bowls, cups and cisterns, exactly what contemporary books of etiquette tell us were used in bed chambers (Moorhouse 1983d, 226). However, pottery is the most durable of all archaeological materials, as it can be used for little else other than rubbish and, therefore, is the most common artefact to survive. In contrast the various metals and wooden objects rarely survive, the former because they are often melted down and the latter because they are either burnt or decay; neither was present in the otherwise complete set of bed-chamber utensils in the Sandal garderobes.

Perhaps the best example of the need to examine material as it was excavated is in the numerous industrial or alchemical groups which are now known (Moorhouse 1972; Moorhouse 1987b). The largest comes from Sandal Castle (Moorhouse 1983c, 191-194, figs. 38-41; Moorhouse 1983d). From nearly 150 near complete industrial ceramic forms, there were no alembics present. These were all in glass. Documentary evidence for the equipment used in such processes shows that vessels of pottery, glass, a variety of metals and even treen were all used together, often vessels made exclusively in one material being used together in the same unit (Moorhouse 1983c, 194; Moorhouse 1987b). Glass alembics were often seated on earthen bases, as demonstrated in the Sandal group.

Vessels used together but made in different materials are not restricted to industrial or craft processes. Logic, supported by ample documentary evidence, shows that vessels in a variety of materials were used together in the medieval kitchen and on the medieval table. Well documented changing social needs and eating habits, through a variety of influences, dictated the repertoire of the potter. We have seen that some forms, absent in the potter's range, were produced by the wood turner during the Middle Ages, cups being the prime example. The decline of the pottery cooking vessel

during the medieval period was caused by the gradual introduction of the metal cauldron, while the rapid increase in the use of the cistern in the later medieval period was probably created by the introduction of beer drinking, the drink being fermented in the cisterns. These various influences and their effect on the pottery produced have been little explored in the past. Although peripheral to the subject of this paper, they are important as they govern the range of pottery forms found, the significance of which cannot be understood by examining the pottery alone. Some case studies, which examine the use of pottery vessels in association with vessels in other materials and documentary evidence, are discussed elsewhere (Moorhouse 1987c).

Presenting the results

Having obtained a mass of results for most of the techniques discussed here, the difficulty is often how to present them in a meaningful and an easily understood way. Various methods have been used in the figures illustrating this paper, some of which are more successful than others. In some, not all the information has been presented, just sufficient to illustrate the point being made. This is the case which the widely distributed and more localised dispersal of sherds from Kirkstall Abbey (Figs. 5 and 6). Had all the vessels with scattered sherds from them been plotted on Fig. 6, then the point of the figure would have been lost. However, in some cases this is necessary. Terry Pearsen has tried to illustrate a very complicated sequence of movement for sherds from a number of pottery vessels found on the grange site at Gorefields, Stoke Goldington (Buckinghamshire). The result of a lengthy analysis of the material from the site is that much of it is residual in the deposit in which it was found, and therefore associations are of little value (information from T. Pearson). Work on the large collection of pottery from the deserted medieval settlement at Faxton (Northamptonshire) has shown a similar picture. Because of the similarity of the bulk of the material, and the apparent disturbance of it, evident amongst other things, through the size and abrasion of the pieces, more distinct types were looked at. Potterspury wares and Lyveden/Stanion type jugs had sherds covering often large distances and occurring in different tenements. As the results from such work often affect the interpretation of the site, the evidence will have to be reported. While there are bound to be many difficulties in presenting the evidence clearly and concisely, it is probably through presenting this type of information, and its relevance to site interpretation, that those involved in excavating medieval sites will become aware of the true value of pottery.

Conclusions

This paper has examined some of the more obvious ways in which pottery can be used to help interpret the site on which it is found. Some of the techniques provide a unique source of information. Many of those discussed rely on the method of quantification being based on the individual vessel, where all sherds from the same pot, whether they join or not, are brought together. The use and significance of pottery vessels cannot be fully understood unless looked at with objects in other materials from the same deposit, phase or site. The traditional method of reporting finds by material, without combining the results of work on each type and feeding them back into the site interpretation, has hampered our awareness of the true value of pottery for site interpretation. All too often finds reports are seen as appendages to excavation reports, and the results of work on both treated separately.

Perhaps the most critical lesson to be learnt from the techniques discussed here is the high degree of residuality present in most assemblages. It has often been said that residual pieces are difficult to detect. This is perhaps the case with most methods of quantification currently in use. The recognition of sherds from the same vessel (minimum number of vessels) opens

up many avenues for pottery study which are not possible using other methods of quantification. It is these very techniques which can determine the level of residuality. It has also been said that identifying the residual element is time consuming, and, as there are few direct results from the work, it is not cost effective. Looking at the problem in the long-term, if large groups of material from major urban excavations continue to be published in groups as excavated, and, more importantly, material found together be assumed to be of the same date without any critical assessment of its validity, then the problems of applying realistic dates to pottery chronologies will only grow, instead of being resolved. Failure to recognise earlier material in later groups has, in the past, almost certainly distorted our picture of the true currency of pottery types.

The problems of disturbed groups, or deposits containing earlier material are not restricted to pottery. They also apply to other material, whose residuality cannot be so easily determined as with pottery. This is particularly true of domestic bone waste, on some domestic sites the largest group of material excavated. For convenience bone is often presented in report form in tables with types set against the sequence as excavated, with deductions drawn from varying percentages throughout the phases. What effect has the residual factor on our understanding of the range and types of animals present in medieval Britain?

Apart from studying the material itself, students of medieval pottery should be asking themselves how did they get into the ground and what caused it to be found there? The salutary lessons to be learnt from the sequence of material found in the ditch around the Barbican Tower at Sandal Castle cannot be over emphasised. The logical assumption would be that, in the absence of other major rubbish deposits from within the castle walls, the ditch served as the only rubbish dump, most of which should have come from directly in front of the kitchen block, which was in use throughout the life of the castle. Nothing could be further from the truth. Varying patterns of disposal were recognised throughout the five phases, with vessels coming from both the courtyard side and from the tower which the ditch surrounds. The type of vessel from the latter suggested that the tower was used for high class residential accommodation during part of its life. There was considerable horizontal and vertical movement of material, mainly through the periodic levelling of piles of rubbish which had accumulated in the ditch, at different points in different phases. Sections through the ditch would have produced different results, none of which could have given an accurate picture of the site, other than giving a profile of the ditch at that point - and even these varied considerably! The interpretation of sections through large deposits of rubbish or waste, such as pottery waste heaps, should be made with extreme caution.

The analysis of pottery and finds in general is seen as post-excavation work. However, it can be used to much advantage if carried out while the excavation is in progress. At Kirkstall Abbey work on the pottery and small finds has progressed in tandem with the excavations, the work on both the finds and the excavation being carefully dovetailed together, so that information from the finds work can be fed back into the site. There have been many advantages, even to the point of altering the excavation strategy. How often does post-excavation work lead you to ask 'If only I had known this while the excavation was still in progress' or 'I wish I could go back and check this'. In effect the pottery is being used as a working tool to help understand the chronology of the site and its uses, and the work is carried out when the results can be used to their best advantage.

The traditional role of medieval pottery as a dating medium has tended to overshadow its full potential. The fact that medieval pottery cannot be closely dated has tended to bring it into disrepute amongst excavators in recent years. The development and wider application of the techniques discussed in this paper, and many others which are not, should place medieval pottery studies on a much firmer footing in the future as a unique source of information for site interpretation.

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THE NATIONAL REFERENCE COLLECTION OF MEDIEVAL POTTERY

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Summary

In March 1986 a seminar held at the British Museum discussed whether a centralised representative archaeological sherd reference collection for Britain was possible. The paper here printed is an amended version of a lecture which set out the history, aims, problems, and possible future for the medieval reference collections in the British Museum.

In 1983 the Medieval Pottery Research Group published a directory of areas of research interest of the Group in Medieval Ceramics Vol 7 (1983). These ranged widely from general subjects such as fabric analysis or kilns and workshops, to the detail of specific pottery forms such as acoustic jars or sugar refining pottery. Only one member of the group was interested in the formation of reference collections. Reference collections are clearly not popular and by many they are dismissed as a waste of time. This article will describe the medieval pottery reference collection in the British Museum, assess its present value, and then, in the light of recent changes in the study of medieval pottery, suggest what sort of reference collection is necessary today and what it can achieve.

The origins of the reference collection of medieval pottery lay in the suggestions put forward by the CBA's Medieval Research Committee in the early 1960s. The establishment of the collection in the British Museum was due to the efforts of Dr Rupert Bruce-Mitford who in 1964 indicated that it was proposed to set up a national reference collection of medieval pottery to cover the period from the end of the pagan Saxon phase i.e. about AD 700, to the end of the 15th century (Bruce-Mitford, 1964). It would be essentially a sherd collection and would be divided into three sections:

1 a representative collection of sherds from closely and soundly dated deposits, to form a permanent reference framework for the dating of medieval pottery;

2 a representative collection of sherds from every known kiln or group of kilns;

3 a collection of sherds, built up on a geographical basis, illustrating in a fully representative way, regional variations and conformities.

In addition there was to be a reference library of offprints dealing with the sites represented and of articles and books of general relevance to the study of medieval ceramics. There was also to be a collection of foreign sherds for comparison.

By 1986 sherds from 196 sites in Britain had been acquired and sherds from some 69 sites on the continent of Europe. The British sherds are mainly from England; sherds representing kilns in Wales and Scotland have been acquired through the kind co-operation of the national museums in these countries. It is therefore worth examining how far these acquisition have met the aims indicated in 1964.

One of the sources for the idea of the reference collection is the collection of coins where all the variations of types, mints, and moneyers can be represented and their chronology clearly worked out. This lay behind the idea that a series of well-dated groups could be established so that the student could simply pull out a drawer and recognise the type of pottery being used in a particular area between, say, 1290 and 1300. The difficulties of dating medieval pottery were examined by John Hurst in 1962-3 (Hurst 1963). He examined the various ways in which medieval pottery was to be dated by coins, small finds, architectural evidence, comparison with dated sequences elsewhere and typology. He finally concluded "Whereas the basic succession of medieval pottery is secure the complexities resulting from regional variations and the long survival of many individual types of ware and decoration have not been sufficiently realised and allowed for recently. The fact must be faced that, although we may be able to date precisely certain types of pottery, we may never be able to date some types more closely than within 50 or in some cases 100 years." (op cit, p. 149). In a sense, therefore, the premise that a permanent reference framework for the dating of medieval pottery could be created had been undermined before the reference collection had ever been started. Curiously enough waterfront archaeology in London (by the discovery of a series of oak revetments of the Thames foreshore which can be securely dated by dendrochonology) may provide clearer dating for many types of pottery (Vince 1985). The reference collection does contain some sherds from well dated groups of pottery, notably from Bungay Castle (Suffolk) and from the Manor of the More (Hertfordshire); but generally speaking this original aim has not been pursued.

In contrast the aim of building a collection of sherds from continental sources has been more successful. There are now some 69 sites represented from countries ranging from Belgium to Poland. It has enormously benefitted from the gift of the collections built up by two of the leading students of continental medieval pottery - Ken Barton and the late Dr Gerald Dunning. It is worth pointing out that one minor advantage of a national reference collection is that it does provide a home for this type of collection. These two groups, together with some of the imports already existing in the collections, do provide a reasonable introduction to those who wish to examine some of the different types of pottery used on the continent. It is fair to say that the quality of this collection is uneven.

The third aim was to build up a collection of sherds on a geographical basis, illustrating in a fully representative way regional variations and conformities. The medieval reference collection has gone some way to meet this hope though perhaps not far enough. Through the building up of series from kilns, for areas where kilns are plentiful, a reasonable picture of fabrics can be achieved. Otherwise series of fabrics have been provided by many local units such as Oxford, Bedford, Lincoln, Hartlepool, Hereford, Gloucester and Newcastle. Yet it is fair to say that these only scratch the surface of the problem. It is clear from many recent publications such as the Norwich pottery catalogue, the Sandal Castle excavations report (Mayes & Butler 1983), or the Exeter finds report (Allan 1984) that the study of regional variations is far beyond the range at present included in the British Museum sherd collection. This is primarily because of the wide range of work on medieval pottery carried out on a regional basis in the expansion of rescue archaeology in the late 1970s and early 1980s.

It is in the area of kilns that the most effective progress has been made. There are now 56 kilns represented in the British material. The study of the material from kilns is particularly important since these are the places at which the pottery was made and it therefore gives, or at least appears to give, a firm point in this uncertain world. It also provides a link with studies of clay and petrology.

The sherd series that have been selected as representative from kiln sites attempt to show the fabric or fabrics of the pottery produced, and to give some indication of the features of the vessel produced i.e. the rims, bases, handles and if possible the decorative techniques used. Fabrics are relatively easy; the rest was increasingly difficult. At first 30 sherds were the representative aim though later this was almost invariably exceeded.

It is perhaps worth dwelling for a moment on this word 'representative' for it is quite fundamental. At Brill, an important 14th century kiln site in Buckinghamshire, Professor Jope guessed that the total production in less than a century might be as much as 250,000 vessels. He suggested that 5% of the production might have been damaged in the kiln and 5% in subsequent handling in or near the kiln. If totally excavated, therefore, the waster heaps may have produced as many as 25,000 vessels or their sherd equivalent. Assuming that any excavator of a kiln site, it he has any sense at all, will concentrate on the kilns, the associated buildings and the features associated with pottery production and will ignore as far as possible the waster heaps, then one wonders what value the excavated pottery from a kiln site really has as a representative sample of the total production of the medieval period. If one is then going to draw conclusions about the nature of marketing or distribution patterns it is important to remember this limitation. But, of course, 'representative' when applied to sherd collections is simply being used to state the small sample in the collection is representative of the material retained from the excavations. The quality of this representation depends on the quality of the post-excavation work or indeed occasionally whether it has taken place at all. For a single country kiln producing in a uniform fabric a series of 30 sherds may be quite sufficient. If there is a large number of kiln structures operating over a long period such as was found at Chilvers Coton, Nuneaton, (Mayes & Scott 1984), then a much larger representative series is clearly needed. If the excavator had not fully worked through the material the selection of a representative series, whether large or small, resembles a lucky dip in a village fair. The difficulties inherent in selecting an accurate representative make it unwise to think of a representative collection as a support for advanced ceramic research at PhD and post-doctoral level.

Another advantage of the concentration on the production sites is that it offers the opportunity of relating the study of pottery production to the study of clay sources. Indeed the petrology of medieval pottery has become an important element in assigning both sherds and pots to kiln sources even when the actual kiln structures are unknown. The recent study of London type ware (Pearce, Vince and Jenner 1985) is an excellent example of this. Petrological analysis has set the study of kilns and hence the varying distribution of their products through time on a firmer foundation. Some younger scholars, notably Grenville Astill, (Astill 1983) have used this information to discuss the pottery market in later medieval England. At the moment thin sections are kept distinct from the sherd collections. This may be the best solution but there is a need to examine the best way for the information concerning the existence of the thin section to be related to the organisation of the sherd collection.

The reference collection is kept in wooden drawers in a geographical order arranged alphabetically under post-1974 counties. The advantage of this arrangement is that it enables sherds from a particular area to be kept together. The disadvantage is that it is not easy for the student with a particular sherd who has no idea where it comes from to identify it other than by going through the whole collection. It is essentially a geographically arranged reference collection rather than a diagnostically organised reference

collection - i.e. a reference collection organised by fabric through which one can identify sherds by the petrological inclusions in the fabric. The reference collection is housed in one of the basements and can be consulted from Monday to Friday by prior arrangement with the Department.

This leads us into the use of the sherd collection. A reference collection can never be a substitute for the fundamental progress in scholarship that can be made by a wide-ranging and detailed study of a particular type of pottery, or pottery from a particular site, or of a particular production centre.

A sherd collection cannot advance our understanding in the way that Kathy Kilmurry's study of Stamford ware (Kilmurry 1981), Steven Moorhouse's study of the pottery from Sandal Castle (Mayes & Butler 1983) or the study of London type ware has (Pearce, Vince and Jenner 1985). The people who use the sherd collection fall into two groups - individuals, both British and foreign, and groups of students.

One of the principal types of individuals who come to look at the sherd collection is the medieval pottery reseacher, particularly at the beginning of their work or if they have changed from one unit to another since it is useful for them to be able to see a wide range of material from all over the country. Such researchers may know the pottery in their own region well but have to rely on printed reports to know the material from other places. The ability to visit a central collection to handle and compare material can be a valuable asset for such people who are rarely in a position to persuade their employing institutions to pay them travelling expenses to travel all over the country to visit all the other collections of medieval pottery before they write the report. Some areas of the country have effective local research groups which play a most useful part in organising seminars and meetings for medieval pottery researchers but others do not. One way to help this group of people, some of whose work may eventually result in major contributions to the subject, is by the provision of a central reference collection which they can visit to compare sherds.

Such a collection is also useful to a foreign visitor who wishes in a limited time to have a sight of the different types of pottery that they may have only heard of from the printed material. The converse of this is that it may be useful for English pottery specialists to be able to see a collection of foreign pottery sherds which may help in the identification of imports. The number of individual visits, both English and foreign, is about twelve a year.

The collection is also visited by groups of students. These are almost entirely from the south-east of England, Southampton, Leicester and Reading. University College, London, uses the collections in this way most frequently. Occasionally groups have come from Durham University. It is clear that there are considerable advantages for this use in having the collection in London, which is easily accessible from many other places. On the other hand, it is clear that the distance to London means that this facility is not used by student groups from, say, Exeter, Llandaff, or Liverpool. The number of group visits is about three a year.

As a teaching collection the reference collection is only effectively functioning for the south-east of England, and it is arguable that there should be regional teaching collections. The increasing regional emphasis in medieval pottery studies also suggests that while the British Museum collection should continue there should also be the active development of reference collections in regional centres.

It is perhaps appropriate to go back to the directory of interests of the members of the Medieval Pottery Research Group (Medieval Ceramics Vol 7, 1983) to see what type of problems they are interested in. We have already noted their lack of interest in reference collections. They are most interested in fabric analysis, computing, and kilns in that order, with general methodology, study of typology, study of function and study of excavated groups all running way behind. If the regional interests of members are considered, most areas of the country were the subject of someone's interest, but the areas that excited most interest were London, Hampshire, and Essex each with six and seven specialists, Wales with six, and Yorkshire with seven. This might suggest regional reference collections in London, Yorkshire, and Wales. The changing nature of pottery specialists is no real basis on which to plan collections but in view of the south-eastern bias of the use of the London collection there is an argument for a number of reference collections arranged on a regional basis used not only for local reference but for instruction, lecturing, and visual comparison. It may be that major provincial museums rather than archaeological units are the best places to develop them.

The aim of the recent seminar, to discuss a centralised, representative archaeological sherd reference collection for Britain, suggests the possibility of a sherd collection that covers all periods from the prehistoric to the post medieval. There are considerable advantages within the British Museum of having the sherd collection in close relation to the reserve collections of whole pots from the period. It is more useful to have a medieval sherd collection where it can be used in connection with a medieval pottery collection than to have a medieval sherd collection together with a Roman and prehistoric sherd collection all divorced from the rest of the pottery collections.

In conclusion, I do think that the sherd collection can make a contribution to the development of students and other members of the public recognition and study of medieval pottery. There is certainly the possibility of improvement of the medieval pottery reference collection and we are endeavouring all the time to make it more effective. Its present value owes much to the past generosity of individuals, excavators, and provincial museums and a similar attitude of co-operation will help in developing a more useful collection in the future.

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