

CHAPTER SIX

THE DATE AND SEQUENCE OF THE POTTERY INDUSTRIES

INTRODUCTION

The establishment of a relative and absolute chronology of the wares of the study region was by far the most arduous part of this thesis. This was because evidence had to be drawn together from all possible sources, from stratigraphy to association with dated artefacts. In other areas, such as the City of London, these methods are not always needed, since large independently-dated groups exist (Vince, 1982 c).

Despite the uneven nature of the data, there is now a secure relative chronology for the region. Problems still exist within the framework but they are mainly due to the slow rate of change in pottery forms and fabrics at certain periods and are unlikely to be solved by more fieldwork or a more detailed examination of the pottery.

The potential for giving an absolute chronology to this relative sequence has not been altogether exhausted. This is because useful associations of pottery with other datable items are rare. Excavation, especially in deeply stratified or briefly occupied sites, would undoubtedly improve the absolute chronology. For periods earlier than the 13th century precision obtained at one site is not transferable to many other sites because of the limited amount of cross-dating between areas.

The methods used in this thesis are described below, followed by a period by period description of the results.

DATING BY STRATIGRAPHY.

The initial evidence upon which a chronology of pottery types must be based is archaeological stratigraphy. If two sealed layers are stratigraphically related then the pottery assemblages which they contain must have the same stratigraphic relationship. This does not always mean that the pottery in the later layer was made at a later date, merely that the layer containing it was deposited later. By looking at long stratigraphic sequences it is usually possible to obtain the relative starting dates of the pottery types found within them.

Despite this clear principle, the establishment of a sequence of pottery types and relating that sequence to an absolute chronology is not an easy task. Some of the problems and pitfalls have been described by Hurst in an article on the pottery from White Castle, Gwent (Hurst, 1962-3 b). Nevertheless, it is reasonable to assume that sites within any one town would obtain pottery from the same sources, although the relative frequency of the different types might vary with the wealth or status of the users of the pottery, or with the activities carried out on the site. It is possible to therefore construct a relative sequence for a town by correlating sequences from different sites and by seriating isolated assemblages.

RESIDUALITY

The problem of identifying which sherds were part of a contemporary assemblage, and which were present in the soil fraction of the deposit or were otherwise incorporated into the assemblage has exercised the author's mind considerably

during the production of this thesis.

The following criteria may be of importance:

- 1) difference in sherd size, and especially maximum sherd size;
- 2) differences in degree of weathering;
- 3) the differential presence of 'cess staining' or mineral encrustations;
- 4) differences in the dispersal of sherds from a vessel.

Because of their curvature and thinness pot sherds are susceptible to being broken under foot. Therefore when a pot is not immediately buried on breakage the mean sherd size of its fragments will tend to decrease with time. Re-excavation can also lead to further breakage and this will lead the sherd size in garden soils to decrease with time. However, there appears to be a minimum size below which sherds rarely go (even in sieved deposits where recovery is near perfect). This is probably related to the curvature and thickness of the sherds. On its own, sherd size is of little use for isolating residual pottery since some small sherds are produced immediately a vessel breaks. However, in medieval pits cut through garden soil it is often easy to pick out the residual sherds on size alone, since they are often less than c.20 mm across.

The weathering of a sherd is affected by its conditions of burial. Sherds that have been subjected to water rolling are very distinctive and are occasionally found in deposits in the City of London, perhaps having been retrieved from the foreshore in antiquity, but most signs of weathering are more subtle. Weathering is dependant on the hardness of

the fabric and takes three forms; a general abrasion of the sherd surface, often leaving inclusions standing proud of the body; leaching of unstable inclusions (such as limestone, shell, and some iron ores) and frost shattering. Sherds exposed to the elements, for example in ploughsoil or garden soil suffer from weathering much more than sherds buried at depth. Cess pit conditions however can be very severe and can certainly cause extensive leaching.

Exposure to cess gives rise to a deposit on the sherd surfaces and edges, usually of a brown to greenish hue. This deposit (probably calcium phosphate?) is occasionally found on sherds not in cess pits and it is likely that these sherds have been re-deposited from the digging out of a cess pit. It is not known how long this deposit takes to develop otherwise one might be able to speculate on whether these sherds were the result of the periodic cleaning out of cess pits or whether they were displaced by much later excavation.

Other deposits sometimes occur on sherds, for example a brown iron rich coating is quite common, due apparently to exposure to running water or ground water containing iron salts (P.Ovenden, Southampton University, pers. comm.). Such deposits can serve to identify residual pottery, if the rest of the pottery in the group does not have them.

If the sherds in a group join together, and the vessel is not found in earlier deposits on the site this may be evidence that it was freshly deposited in the context, although this is by no means proof. However, if the whole assemblage consists of smashed vessels then there is an extremely good case for the material having been deposited

as rubbish rather than in soil.

In conclusion, therefore, it is often possible to isolate residual pottery from closed groups by their physical characteristics, especially when the sherds are derived from garden soil, which tends to degrade potsherds quite quickly. When the residual pottery is added to a group through disturbance of deeply buried deposits, for example upcast from pit-digging or cellaring, there is much more problem and one has to use knowledge of the expected associations of pottery types.

SERIATION.

Seriation is an established technique for ordering assemblages, usually pottery assemblages, on the assumption that the pottery types found in them vary chronologically in occurrence; first being absent, then present in small quantities, reaching a peak and then finally dying away (Dunnell, 1970). It is common to find a very slow tail-off of frequency due to the re-cycling of residual pottery by pit-digging and the spreading of make-up layers over the site.

The procedure is as follows:

- 1) The assemblages are analysed into 'types' using an objective classification.
- 2) The frequency of different types is recorded for each assemblage.
- 3) The data for each assemblage is compared and the assemblages sorted into an order, minimising the difference between the frequencies of types.

4) The resulting order is then interpreted as a chronological order and the direction of the chronology can usually be obtained by external evidence.

Despite the simplicity of the technique there is considerable mystique surrounding its use. This is probably due to the association of the technique with the New Archaeology and Computer Archaeology of the 1960's and 1970's (Clarke, 1968). One drawback to seriation is that it forces data into a single order even in cases where one might imagine that four or five independent factors were actually responsible for the variation between groups. If one was to take grave-goods as an example then age, sex, rank and chronology might all be expected to influence the composition of an assemblage. With pottery assemblages the potential factors are less easy to enumerate but would clearly include site function and status as well as chronology. However, as with most techniques in archaeology the important point is that if the data can easily be sorted into an order then there is a pattern in the data which can then be examined and perhaps explained, even if it is actually explained as being the result of independent factors which happen to operate in the same direction. The chronological explanation is the most commonly used but the method is not invalid if the order is not a chronological one. It is merely the explanation that is wrong. The one time in which the method should not be used is when the data do not naturally collapse into a one-dimensional order but such data would fail to produce satisfactory results probably leading to the method being abandoned.

Clarke illustrates some of the potential errors of the method, such as the use of assemblages from geographically distant sites, where marketing patterns can lead to contemporary sites having large differences in the relative frequencies of pottery types (Clarke, 1968).

Seriation is one of a family of techniques known as Multivariate analyses. All the members are concerned with the classification, grouping or expression of relationships between items, whether they are soil profiles, pottery assemblages or beetles (Orton, 1980). Most of these techniques differ from seriation in that they do not expect a single order to result from the analysis but produce a mathematical expression of the similarity between items or groups of items. As a group these techniques have the advantage of being explicit, repeatable and objective. Most require the calculation of similarity coefficients between pairs of items, followed by ordering of the data using a set of rules. It is possible to use such techniques manually but they are much quicker using a computer. Access to a computer was possible during the fieldwork for this thesis but too little of the data was of sufficient 'quality' to make use of the techniques as serious research tools.

In practice most elements of the site pottery chronologies produced here were based on stratigraphic relationships and it was only for small problems that unrelated assemblages had to be compared. A good example of the use of seriation in this thesis is that of a group of late 12th to early 13th century contexts from Hereford, almost all of which were from different sites. Each group

was chosen on the basis of the size of the assemblage, and an assessment of the quality of residual or intrusive pottery present. When sufficient independent evidence existed to be sure that certain types were intrusive or residual in a group they could be excluded from the calculations but where doubt existed they were incorporated into the figures, although the presence of large quantities of definite non-contemporary sherds casts doubt on the contemporaneity of the remainder of the assemblage and would tend to exclude it from analysis. The Hereford groups were quantified by sherd count and the data for each assemblage, expressed as a percentage of the total group, was recorded. These were then shuffled manually until groups with similar frequencies of each common type were adjoining. It was then observed that the less common wares, whose frequencies could not be used for sorting, had also been sorted into a coherent order (see table 6.5). This rough and ready method could not of course show the degree of similarity between groups, nor the 'strain' imposed upon the data by forcing it into one dimension.

COIN-DATING.

Providing an absolute time-scale for a sequence is achieved by finding other datable artefacts in association with groups of pottery or stratigraphically related to them. In this study such artefacts are principally coins (table 6.1). Late Saxon coins have been found in stratigraphic relationship to pottery at Cheddar, Wedmore and Hereford. They have the advantage for the archaeologist

that they were withdrawn from circulation a short time after minting and that this withdrawal can be seen from hoards to have been very effective. The date of loss of a 10th to mid - 11th century coin can be estimated with some precision.

Single coins of William the Conqueror have been found with pit groups at Gloucester and Old Sarum but, by themselves, do not prove that the associated pottery was not residual pottery of the mid-11th century or that the coin was not deposited in the early 12th century. At Berrington Street Period 3, Hereford, a late 12th century coin was found in a pit immediately below a smashed cooking pot of Malvern Chase ware so that at least it is certain that this vessel was discarded later than 1170.

Early 13th century coins were found in a looser association with pottery at Bewell House, Hereford, Period 3. All that is certain about this association is that both the coins and the pottery were deposited prior to the sealing of the ground surface by mid-13th century clay and gravel spreads.

Late 13th century coins were found in a floor sequence at the Telephone Exchange site, Gloucester, but only a small quantity of pottery was associated with them. Mid-14th century coins at Bartholomew Street, Newbury, 1979 Period 4, were found within a closely stratified sequence, associated with large quantities of pottery.

Late 14th or 15th century coins or Jettons are rarely found in excavated sequences of the region, although they are occasionally found unstratified.

Late 15th to 16th century coin-dated pottery is also scarce but from the late 16th century onwards Nuremberg tokens are quite common, although they are rarely closely datable. The small bronze coinage of the mid-17th century is also commonly found in archaeological excavations and is of more use for pottery-dating, for example at Gloucester, Eastgate site period 11a (Heighway et al., forthcoming). From the mid-17th century onwards trade tokens are found, but these are outside the range of this thesis.

In several cases numismatists have suggested the likely date of loss for coins used in this study but, strictly speaking, the T.P.Q. is given by the first minting of the coin type. Even coins cannot give infallible dating and at Oxford, St. Aldates Durham had to disregard some of the coin dating evidence since it conflicted with other evidence from the site (Durham, 1977, 192-3).

TABLE 6.1

CHRONOLOGICAL CATALOGUE OF COIN-DATED POTTERY ASSEMBLAGES.

Cheddar Palace Period 1. Two coins, of Aethelwulf of Wessex (minted 839+, lost c.845) and Burgred of Mercia (minted c.865+, lost c.865-875). Found in the filling of a stormwater ditch filled with several hundredweights of domestic refuse but no pot sherds. (Dolley, 1979, S.C. 1, S.C. 2; Rahtz, 1979).

Hereford, Berrington Street Period 1 (layer 60). A coin of Alfred (minted 871+, lost c.925) found in a cultivation level at the tail of the town rampart containing animal bone but no potsherds and overlying the remains of burnt-down timber buildings (Shoesmith, 1982, 48-49).

Cheddar Palace Period 1-2. A coin of Athelstan (minted 924+, lost c. 930) was found in the top fill of the period 1 ditch and possibly immediately pre-dated the digging of the period 2 ditch which replaced it. No pot-sherds were associated with the top fill of the period 1 ditch (Dolley, 1979, S.C.4; Rahtz, 1979).

Cheddar Palace, Period 2. A coin of Edmund (minted 939+, lost c.945) was found in association with Cheddar E ware

cooking pot sherds (Dolley, 1979, S.C. 5; Rahtz, 1979).

Cheddar Palace, Periods 2-3. Two coins, of Ethelred II (S.C. 6 minted 991+, lost c.991-997; S.C. 7 minted 997+, lost c.997-1003) found in association with pottery of Cheddar fabrics E, B and C (Dolley 1979; Rahtz, 1979).

Hereford Brewery Site Period 2c (layer 7). Silver penny of Cnut, minted 1029+, lost c.1030. Found in a soil level containing a mixed pottery assemblage, the latest types being dated to the late 11th to early 12th century.

Wedmore, Coin Hoard. A hoard, exact composition unknown but containing coins of Aethelred II, Cnut, Harold I and Harthacnut, deposited c.1042 (Rahtz, 1974, 117) or c.1050 (Thompson, 1956, 145) in a spouted bowl, identified by Rahtz as Cheddar fabric C (Thompson, 1957, No.374, Plate IV; Rahtz, 1974, 117).

Gloucester, Telephone Exchange (site 77/69). A coin of William I (minted 1068+, date of loss unknown) found in a pit containing cooking pots of Gloucester TF41B (unpublished).

Old Sarum. A coin of William I (minted c.1068+, lost while unworn) found in a pit containing S. E. Wiltshire cooking pots and tripod pitchers, together with a crucible (Stone and Charlton, 1935).

Cheddar Palace, Period 4. Two coins of Henry I (S.C. 9, minted 1124+, lost c.1124-1135; S.C. 10, minted 1128+, lost c.1128-1135) found with Bath Fabric A (Dolley, 1979; Rahtz, 1979).

Hereford, Berrington Street, Period 4a. A silver penny of Henry II ('Tealby' type, bust F, minted c.1170+, lost c.1170-1183) found in pit 103 with a smashed cooking pot of Malvern Chase ware (Shoesmith, 1982, 53).

Hereford, Bewell House, Period 3. A silver penny of Henry I (type x, minted c.1120+, lost before c.1130) and a silver penny of Henry II (minted c.1180+, lost c.1185-1205). Soil levels and features of this period were sealed in the early to mid-13th century by clay and gravel spreads associated with a grain-drying oven and timber building (Shoesmith, 1982, 56-60).

Gloucester, Telephone Exchange (site 77/69). Coins of Henry III in a sequence of floor levels containing Malvern Chase wheelthrown cooking pots and jugs (minted c.1250-1270, lost pre-1279, unpublished).

Barrow Mead, Avon. A coin of Henry III (minted c.1258-72, lost pre-1279) was found in the yard of a building with stone footings and therefore in loose association with the pottery from the site (Rahtz, 1960-1, 68).

Newbury, Bartholomew Street 1979 Period 4. Two coins, a continental copy of a coin of Edward I (minted c.1310+,

lost c.1350) and a coin of Edward III (minted 1327+, lost c.1350) associated with Newbury B and C cooking pots and jugs but no Coarse Border ware, which appears in the succeeding period 5 (Archibald, forthcoming; Vince, forthcoming b).

Chepstow Site 6 Period 2c (layer L2A). A groat of Edward III (minted c.1351+, date of loss unknown). This coin was found in an unsealed soil horizon containing a mixture of late 13th to 14th century and a small quantity of post-medieval pottery.

Chepstow Site 1 Period 3 (layer L22). A demi-blanc of John IV of Brittany (minted 1345+, date of loss unknown). This coin was found in a level associated with the use of a large barn, built in the 13th century but remaining in use until the dissolution.

Chepstow Site 11 Period 3c (layer L35). A French 14th century jetton. This coin was found in the floor levels of a range of buildings built in the late 12th to 13th century but still in use at the dissolution.

Barrow Mead, Avon. A jetton (minted c.1370-1400, date of loss unknown) was found in a hearth, F46, predating the demolition of a building from which, *inter alia*, a Ninety cistern, Bath A cooking pots and Bristol jugs were recovered (Rahtz, 1960-1, 69).

Wyre Piddle, Coin Hoard. A coin hoard deposited c.1470 found in a small jug of Malvern Chase ware (Archibald, 1970).

Hereford, Berrington Street, Period 6. A coin of Henry VII (minted c.1490+, lost before the mid-1540's) was found in pit 730 in association with Malvern Chase ware, Tudor Green ware, Cistercian-type ware and a single three-handled cup of Hereford A7b fabric (Shoesmith, 1982, 53).

STRUCTURES AND DOCUMENTS.

The other major type of dating evidence used is that provided by dated structures. This can take the form of contexts pre-dating a structure or post-dating it. In either case the value of the dating evidence rests on the interpretation of the archaeological sequence and in particular the amount of time thought to have elapsed between the deposition of the group and the construction of the structure.

Late Saxon 'burh' defenses can be used to give a rough date to pottery from Cricklade and Hereford since it is possible to tentatively correlate the sequence of defenses with the recorded work of Alfred, Edward and Aethelflaed (Ralegh Radford, 1972; Shoesmith, 1982). Indeed Ralegh Radford has suggested that the erection of a stone wall around Hereford can be dated to c.914 and that it was a response to a severe Danish raid of that date (Ralegh Radford, 1978).

These late Saxon dates are not incontrovertable and the first absolute dating is provided by the castle mottes at Bristol and Oxford, both of which sealed Late Saxon occupation layers that probably immediately preceded the construction of the castles, c.1070 (Ponsford, 1974; Jope, 1952-3). Pottery at Castle Neroche was found sealed below a probable 12th century rampart and is thought to have been used in the short-lived construction and occupation of the Castle, c.1067-9 (Davison, 1972).

A small but important group of pottery was sealed in the construction trench of the precinct wall of St. Peters Abbey, Gloucester. This is dated to c.1104-13 (Heighway et al., forthcoming). A mid-12th century date can be assigned to the pottery from the construction levels of Ascot Doilly Castle (Jope, 1959). Several other Adulterine castles have been excavated and the pottery found dated to the mid-12th Century, for example at Lydney Castle (Casey, 1932) and several unstratified collections such as that from Great Somerford, Wiltshire, in Devizes Museum or that from Hamstead Marshall, Berkshire, in Newbury Museum. However, in most cases there is no evidence to show that the castles

were not occupied after the Anarchy nor that the pottery was not found, as at Hinton Waldrist in Oxfordshire, below the motte (Jope, 1947). These groups cannot be considered as primary dating evidence unless recovered from controlled excavations.

A large group of pottery from Cheddar Palace is dated by Rahtz to c.1209-1213 (Rahtz, 1979, MP138-203, figs.105-7). The reasoning used is tenuous and should be examined in detail (Rahtz, 1979, 63-64). The period 5 East Hall at Cheddar is identified by Rahtz on architectural grounds as being likely to be the work of King John, who is recorded as having paid for building work at Cheddar c.1209-11. Since the site was not in Royal hands after 1213, Rahtz then assumes that the hall fell out of use at this date. The pottery assemblage was not recovered from the floor levels of this hall however but from the backfill of the robbed post-holes of two arcades. This could have happened at any time up to the start of period 6, in the late 13th century. Despite the weak links in the argument the assemblage does appear to be of very early 13th century date, since it contains little glazed ware, mainly Ham Green type 'A' jugs.

A sequence of occupation layers in the wooden kitchen of Wooley Castle can be dated by a combination of coins and documentary evidence to the early to mid-13th century, pre-1264-80 (Oswald, 1962-3). Later 13th to early 15th century associations are absent from the study region, although in Wales this is a well-dated period at some sites because of the foundation of many castles and monastic sites at this

time and the short period of occupation of many of these sites (Davey, 1977, 5-7; Butler, 1974). The unsuccessful campaigns of Henry III provide remarkable assemblages, for example from Dyserth Castle, which was built 1241 and completely destroyed in 1263 (Davey, 1977, 34-41). The Edwardian campaigns are not so useful, in that they provide only a T.P.Q. not a T.A.Q. The pottery from Beaumaris Castle, for example, includes two types found in the study region, a possible Bristol face-jug and Saintonge mottled green glazed and polychrome jugs. The construction of the Castle began in 1295, so that these wares must have arrived at the site after this date (O'Neil, 1935b; Davey, 1977, 8-9).

A sequence at Northgate Street, Gloucester, (Site 26/73), includes groups immediately pre-dating and post-dating the construction of a timber house dated stylistically to the early 16th century (Hurst, H., 1974, 34-38). This dating is not sufficiently secure to be of great use in supplying an absolute chronology but is in fact the only sequence in which late 15th century pottery can be recognised except by the use of potentially circular typological arguments.

A group at East Gate, Gloucester, period 10A, can be dated to the mid-16th century or earlier since it is in the construction levels of a structure identified as the 'Horsepool', first mentioned in Council minutes of 1540 (Heighway et al., forthcoming).

Groups dating to the 1530's or earlier have been recovered from monastic sites in the region, for example Bristol Greyfriars, Chepstow Priory, and Hailes Abbey. At

the East Gate, Gloucester, period 11A, two groups of pottery were recovered from soil levels in front of the East Gate. They were separated by a spread of rubble reliably associated with the bombardment of the gate in the Civil War. This attribution is confirmed by the discovery of a cannon ball within the rubble (Vince, forthcoming F). Even here, none of the pottery found was actually discarded at the time of bombardment and one still has to exercise judgement over the likely time-span covered by the two groups.

RADIOCARBON DATING.

Radiocarbon dating has been used to date samples from a number of sites of mid to late Saxon date and has yielded dates with a standard deviation c.±70 years. In other words there is a 68% chance that the true date of the sample lies within a bracket of 140 years. Where these dates can be compared with those derived from other methods, such as coins, they show that single dates would be extremely misleading and for the mid to late 10th century onwards pottery styles and fabrics change too quickly for a 140 year date range to be of much use. The method is therefore too imprecise to be of any use in dating pottery and if contemporary pottery of the late 10th century or later is present in a context there is little point in using radiocarbon dating.

Table 6.2

CATALOGUE OF RADIO-CARBON DATED CONTEXTS.

Tamworth Mill. The initial backfill of the mill-pond and leat contained no locally made pottery. The C14 dates were obtained from twigs and branches and consistently indicate an 8th century date for the first period of mill use but dendrochronology shows that the actual date of construction of the mill must be in the late 9th century (BIRM 291 ad 710+110, BIRM 289 ad 730+100, BIRM 292 ad 755+90, BIRM 290 ad 788+100; Sheridan and Rahtz, 1972; Rahtz, 1981).

Hereford Victoria Street Period 1. A carbonised stake found in the demolition debris of a corn-drying oven. No associated pottery was found but several possible clay 'baking trays' were found used as packing in the post-holes of a superseding building. (BIRM 111 ad 760+85; Shoesmith, 1982, 70-71).

Hereford Victoria Street Period 5a. Two samples from the timber lacing of the late 9th century turf and timber rampart. No Saxon pottery was found in this rampart. One sample was split into two, the carbonised wood and the soil surrounding it. All three results are anomalous. (BIRM 110 ad 615+67; BIRM 159 ad 1250+220 (wood), BIRM 159 ad 620+200 (humate); Shoesmith, 1982, 70-71).

Hereford, Berrington Street, Period 1. Sample of burnt charcoal and daub from the destruction of the period 1 buildings. No pottery was associated with their use. Shoesmith argues that this sample was contaminated by modern rootlets (HAR 1375 ad 960+70; Shoesmith, 1982, 70-71).

Gloucester Southgate Street, site 85/68 II. An alder tree stump, found in situ pre-dated the construction of timber buildings, from which two results were obtained. As a group all of these dates appear to be much too old, since pottery evidence suggests that the buildings were constructed and the tree died in the mid-10th century at the earliest (HAR 1636 ad 790+70; HAR 1443 ad 710+70; HAR 1446 ad 650+70; HAR 1444 ad 790+Ph_80).

Hereford, Cantilupe Street, Period 2a/2b. A date was obtained from a collection of animal bone from the berm of the town ditch contemporary with the construction and use of the stone defensive wall, defensive stage 3. A single sherd of Chester-type ware was found in this build up (HAR 1620 ad 1000+70; Shoesmith 1982, 40, 70-71).

Hereford, Bewell House, Period 1. A date was obtained from a collection of animal bone from the silting of a ditch which predated the construction of the northern gravel rampart, defensive stage 5. This was one of a series of parallel ditches, none of which had much associated pottery. The little pottery that was present in these ditches was of Chester-type ware (HAR 1260 ad 1080+80; Shoesmith, 1982, 56, 70-72).

Gloucester, 1 Westgate Street, Period 4. Two stakes from the same wooden fence were radiocarbon dated. Because of a discrepancy between the two dates further measurements were made on the same samples. The excavators accepted a median date of $872+80$. (HAR 1658 ad $930+70$; HAR 1787 $970+80$; HAR 1655 ad $780+80$; HAR 1788 ad $810+90$; Otlet, 1979).

Gloucester, 1 Westgate Street, period 5. A post from a timber-lined cellar or undercroft was radiocarbon dated. The filling of the cellar contained sherds of Gloucester TF41A alone, including glass-working crucibles (HAR 3140 ad $1020+80$; Otlet, 1979).

Gloucester, 1 Westgate Street, Period 6. A hawthorn type stake from the filling of pit 21, which contained a complete Gloucester TF41B club-rimmed cooking pot (HAR 1657 ad $1060+70$; Otlet, 1979).

Fladbury. Charred wood from the floor of an oven (BIRM 36 ad $851+81$, Peacock, 1967-8, 123-4; Radiocarbon 10, 1968, 204).

Hatton Rock, Warwickshire. Charcoal from the upper layer of a sunken hut? (BIRM 255 ad $906+88$; Hirst and Rahtz, 1973).

Ramsbury, Periods 2 and 3. Six dates were obtained from charcoal associated with two phases of iron-working. Chaff-tempered pottery was associated with each phase. Otlet has taken the weighted mean of these determinations to calculate the 'central activity date', which he gives as ad $820+45$ (HAR 1606 ad $810+75$; HAR 1704 ad $905+75$; HAR 1609 ad $800+75$; HAR 1626 ad $845+75$; HAR 1607 ad $660+75$; HAR 1608 ad $885+85$; Otlet, 1980).

Hen Domen. Charcoal from a soil layer sealed under the castle rampart of c.1070 and overlying the floor of a pre-rampart building. No pottery was found under the rampart (BIRM 133 ad $980+290$; Radiocarbon 12, 1970, 395).

Winchcombe, North Street. A single date was obtained from animal bone from the earliest late Saxon pit on the site, containing only North Cotswolds I cylindrical club-rimmed cooking pots (HAR 4262 ad $1020+80$, Vince, forthcoming d).

DENDROCHRONOLOGY.

In theory the application of dendrochronology should be able to solve all chronological problems in the Saxon and medieval archaeology of the study region. By cross-dating different timbers, usually oak, which have a distinctive pattern of wide and narrow rings it is possible to build master curves extending back from the present day. Several

problems exist however, the most inhibitive of these being that most of the Saxon and medieval settlements of the study region do not have the type of soil conditions in which timber readily survives. Timbers do sometimes survive in the lining of wells and cess-pits but rarely in the quantity needed to build up a reference curve. At Tamworth, the Saxon mill structure has been dated by dendrochronology to 846 or later, so that the almost aceramic mill pond fill must be late 9th or 10th century in date (Rahtz, 1981, 13).

At Gloucester, 1 Westgate Street, a large quantity of timber was kept for analysis but only six samples were of oak with sufficient rings left to make analysis profitable. A single dendrochronological date was obtained from Gloucester, 1 Westgate Street, giving a date of c.1110 or later to the deposition of an almost complete Gloucester TF41B cooking pot (Morgan, 1979; Vince, 1979, No. 107). Attempts to provide a dendrochronological date for period 4 at the same site failed, due to the close-grown nature of the timber and the absence of a local reference curve (Morgan, 1979).

ARCHAEMAGNETISM.

When clay is heated the iron particles within it, on cooling, align themselves with the Earth's magnetic field. Both the declination and dip of the magnetic field change with time in a regular manner and it is therefore possible to build up a master curve to reconstruct the relative movement of magnetic north. It appears that the declination changes by about 2 degrees every 12 years and therefore if enough measurements are taken with sufficient accuracy then a very accurate date could be obtained.

Archaeomagnetic dating was obtained for one of the Laverstock kilns (Musty et al. 1969, 93) and samples have been taken from the Langley Burrell kiln site and from a series of late and early post-medieval hearths from Newbury, Bartholomew Street (Clarke, forthcoming).

The measurements obtained from the Laverstock kilns included several which had to be discounted altogether whilst the remaining measurements gave dates in the mid- to late 13th century, in agreement with the archaeological dating of the Laverstock products.

The Langley Burrell measurements gave a coherent result which would suggest a last firing date for the Langley Burrell kiln in the late 14th century (A. Clarke, pers. comm.). This is much earlier than the accepted archaeological date of late 15th to 16th century but is not outside the bounds of possibility. Langley Burrell ware has not been found in stratified groups and the range of forms produced is similar to that found in Coarse Border ware in the late 14th century.

Five Newbury hearths produced archaeomagnetic measurements of varying reliability and one hearth failed to produce any clear measurement (A. Clarke, pers. comm.). In each case other dating evidence is available and this shows without doubt that the archaeomagnetic dates are not as accurate as is claimed but that they do give results which tally with other methods of dating within an error range of c.50 years. The context and phase numbers of the Newbury features are those published in the 1980 interim report (Vince, 1980).

Hearth [518] is dated post-c.1350 by stratigraphic and coin evidence and produced a poor archaeomagnetic date of c.1400-70 with a mean date of c.1430. An early 15th century date is just possible but considering the lack of Coarse Border ware sherds from the surrounding occupation deposits is perhaps unlikely.

Oven [2442] was in use at the beginning of phase 5a and was replaced by a hearth [2397] which was cut by the construction of a well in phase 5b. The archaeomagnetic measurements for these hearths give dates in reverse of their stratigraphic order, c.1340-50 for the earlier oven and c.1310-30 for the later hearth. One would therefore suggest an early to mid- 14th century date for phase 5a. This is earlier than the suggested archaeological dating, which places the end of phase 5a at c.1390.

Two measurements were taken from hearths thought to have been used at the end of phase 6a, which on pottery dating should be later than c.1500. One of these, a small hearth [2215] was dated to c.1450-1500 and the other, a clay repair patch [2239] to hearth [2290] was dated c.1500-30. Together both these measurements favour a demolition date for the phase 6a building earlier rather than later in the 16th century.

In general, it appears that archaeomagnetic dates are affected by numerous factors which introduce a wide degree of error. Such factors include subsidence of the burnt surface after firing and local magnetic effects, such as the presence of iron artefacts close to the sample during burial (Clarke, pers. comm.). Despite these problems, and the considerable amount of work needed to produce good

results, the method is definitely worth using and would be especially useful for the later medieval and late Saxon periods, where other dating methods are not often available.

CLAY TOBACCO PIPES.

For the early 17th century clay pipes provide another source of dating evidence, although in this region they were rare until the latter part of the 17th century, and are thus mainly outside the scope of this study. Two characteristics of clay pipes vary with time. The bowl forms are the most useful, although there is no proven chronological difference in the pipe bowls of the region between c.1600 and c.1640. Most of the pipes of this date would have been made in London and therefore it is possible that work on pipes from outside the region will eventually lead to a more precise chronology within it. The other trait which can be used is the stem bore (measured in 1/64ths of an inch). Several studies have shown that there is a gradual change in the average stem bore diameter during the 17th and 18th centuries and this change can be seen and used by eye in order to give a more precise date to a context containing pipe stems but no bowls. The evidence of stem bore diameters can also contradict that of the bowls when for example an assemblage contains early bowl forms but some narrow-bore stems, giving a later date. Most of the clay pipe dates used here are given by Peacey (Peacey, 1979 & forthcoming).

DATING BY EXTRAPOLATION.

These independent methods of dating provide mutually supporting results for the late 9th to mid-14th centuries and again for the 16th and 17th centuries. However, between the late 14th century and the late 15th century there is no dating evidence except that provided by stratigraphy and pottery.

It is possible to extrapolate dates for groups within a sequence which has some external dating evidence by estimation of the duration of each phase of activity. This has been attempted at Gloucester and Newbury for timber building sequences and a result of 20-30 years for each phase has been obtained. This rule of thumb apparently also works well for the City of London, (G.Milne, pers. comm.). However, with the adoption of stone foundations for timber buildings during the late 13th century, the regular replacement of timber buildings or at least the archaeological evidence for such replacement ceased. There is also the problem that the latest deposits on a site are the most likely to be disturbed by later activity. Ground level in Gloucester, for example, in general has not risen since the mid-13th century. At Newbury the insertion of a timber floor in the front rooms of Nos. 143-5 Bartholomew Street in the late 19th century removed all stratigraphy later than the mid-14th century and yet the cavity dug below the floor was less than 0.3m deep (Vince, 1980, period 8).

POTTERY DATING.

Using pottery to date pottery sequences is often a circular argument and should only be done explicitly and with great caution. Until the 17th century it is not possible to use imported continental pottery to provide a framework for this region, as it may be for the South Coast and for Eastern England, because continental imports are so scarce. However, the occurrence of Stamford ware types in the study region enables the sequence between the 10th and the early 13th century to be correlated with that constructed by Kilmurry for the east Midlands (Kilmurry, 1980).

Dating sequences by the local pottery within them is possible for sites within a single settlement but attempts to correlate the introduction of wares at different sites may be made only after considering the possibility of the ware reaching the sites at different dates. If more than one ware is involved more confidence may be attached to the cross-dating.

In the following sections the evidence for the relative and absolute dating of the late Saxon and medieval pottery is set out. Details of the stratigraphy of the sites mentioned can be found in the relevant excavation reports (and references to these can be found in the Gazetteer, Appendix Two).

THE 10TH CENTURY.

For the 10th century two wares provide cross-dating links between stratified sites. In the Severn Valley, the presence of sherds of Gloucester TF41A links Gloucester, Hereford, Worcester and Winchcombe while in the West Country the presence of Cheddar E ware links Cheddar, Bath, Trowbridge, and Avebury.

In both cases the dating is supplied simply by the appearance of the same ware in both sequences. This is sufficient evidence to transfer dating from one site to another because both wares have evidence to suggest that they started production in the mid- to late 10th century and finished early in the following century. Gloucester TF41A may have survived into the mid-11th century but Cheddar E ware may actually have ceased production by the first decade of the 11th century.

Figs 6.3 and 6.4 show diagrammatically the links between sequences at different sites. In the Severn Valley, Hereford provides the fullest and most datable sequence (Shoesmith, 1982). At Victoria Street a long sequence of activity was demonstrated, extending perhaps from the mid-7th to 8th centuries through to the construction of the turf and clay rampart in the late 9th to early 10th centuries (Shoesmith, 1982, 30). No pottery was found and probably the settlement was aceramic. Initial activity within the turf and timber rampart consisted of cultivation over the area occupied in the 8th or 9th centuries by timber buildings of period 1. This cultivation level was also aceramic and produced a coin of Alfred probably lost c.925. This activity was superseded by buildings fronting

onto Berrington Street, associated with Chester-type ware and a little pottery of Gloucester TF41A (period 2a). In one place a group of pottery of this type overlay a secondary path cut into the tail of the rampart and sealed with soil eroded from the rampart (Victoria Street period 5c). The gravelled path was suggested by Shoesmith to be contemporary with the insertion of stone walls at the front and back of the clay and turf rampart and is thought to date from the early 10th century. Over the top of this deposit were the sherds of a smashed red-painted Stamford ware pitcher, the production of which was dated by Dr. K. Kilmurry to the early 10th century (Kilmurry, 1977b, 183). Both Chester-type ware and Gloucester TF41A must therefore have arrived in Hereford later than c.925 but still within the 10th century.

At Berrington Street site 4, a vertical sequence of building levels was found, the earliest being of period 1 and containing no pottery. The three subsequent phases, periods 2a to c, contained pottery assemblages dated to the mid- to late 10th century, the early to mid-11th century and the late 11th to early 12th centuries respectively. Period 2a was dated by the similarity to the assemblage from Victoria Street period 5c and the subsequent phase contained sherds of glazed Stamford ware, Hereford glazed ware and a higher proportion of Gloucester TF41A cooking pots. No typological differences were found between the mid- to late 10th and early to mid- 11th century Chester-type and Gloucester TF41A wares.

Two sequences at Gloucester produced TF41A, namely Southgate Street and 1 Westgate Street (Hurst, H., 1972; Heighway et. al., 1979). At the latter, it was not in association with any other wares and post-dated timber buildings and a possible dung heap containing two sherds of a North French Greyware cooking pot but no other pottery (period 4). The timber buildings produced C14 dates centred in the late 9th century (see above, Radiocarbon dating). Possible Oxford Fabric B sherds and cooking pots in a flint-tempered ware were found in features cutting through the period 4 deposits. These features contained no TF41A and may possibly pre-date its use. The sherds of TF41A were found in pits cut through the possible dung heap and in the layer above the heap, which was composed of similar material to the pit fills (period 5). This layer was cut by a pit, dated by radiocarbon and dendrochronology to the early 12th century or later.

A stratigraphically unrelated cellar on the same site had a timber lining from which a C14 date of 1020 ± 80 was obtained. The cellar fill contained only sherds of Gloucester TF41A vessels, but included handmade and wheelthrown cooking pots and small glass-working crucibles (Vince, 1979a).

At Southgate Street, the first post-Roman deposits was a soil level in which was an in situ alder tree-stump, C14 dated to the late 8th or 9th century (see above). This soil contained two sherds of TF41A (period 6). Timber building deposits overlay the soil (periods 7 and 8). The first building was definitely associated with TF41A and the first also produced a glazed Stamford ware base, of 10th

century type, and a sherd of a decorated Winchester ware pitcher which should date to the late 10th century at the earliest. Other sherds found include single examples of flint-tempered and chaff-tempered wares. The second building phase is probably disturbed and contains some late 11th to early 12th century sherds, including a body sherd of Stamford ware pitcher. However, the second building is covered by a loam deposit, possibly representing a long period of abandonment, and this loam is cut by pits which are themselves of late 11th or early 12th century date (period 9).

TF41A was also found at Worcester, Sidbury, where it was associated with St. Neots ware, Stamford ware, Oxford Fabric E and Chester-type ware and at Winchcombe where it was associated with N. Cots. 1 ware.

If the Hereford evidence is accepted then Gloucester TF41A was reaching that town by the mid- to late 10th century. However, the evidence that Gloucester TF41A was not being made at an earlier date is not so secure. There are only two arguments. Firstly, if the ware was being made it should have been present at Hereford, for example in the turf and clay rampart of the late 9th century or in the cultivation layer at the rampart tail, which is probably of early 10th century date. A single sherd of Gloucester TF41A was in fact found in this soil (Vince, forthcoming a). The second argument is that at one site in Gloucester, in Lower Westgate Street, a single undecorated body sherd has been identified as Chester-type ware and is stratified earlier than Gloucester TF41A sherds, including a

substantial fragment of wheelthrown cooking pot (site 15/73). If this relationship is correct then it is less likely that Gloucester TF41A has an early 10th century or earlier origin.

In the West Country (fig 6.4) the master sequence is that of Cheddar Palace (Rahtz, 1979). Pottery was absent from a large deposit coin-dated from the late 9th century to c.930 but Cheddar Fabric E was associated with a coin lost c.945 in an overlying deposit. The ware was joined by Cheddar Fabrics B and C by c.1000.

Cheddar E ware was found in the earliest stratified contexts at Bath Citizen House and in a context at Trowbridge Castle post-dating a phase characterised by the use of chaff-tempered pottery. Cheddar E ware was found in a possibly stratified context at Avebury School associated with black handmade cooking pots of Dunning's group 1 (Vatcher, unpub.). It seems reasonable to assign a 10th century date to the other wares associated with Cheddar Fabric E at Bath and Trowbridge but unfortunately these wares have not yet been found at other sites. A possible confirmation of the short life-time of Cheddar Fabric E is to be found at Silbury Hill. This site is only a few miles from Avebury and consists of a scatter of pottery dated by the excavator to the early 11th century (see below, 11th century). This collection contains no sherds of Cheddar E.

Netherton in Northern Hampshire has produced occupation levels which must be of 9th or early 10th century date. Flint and chalk tempered pottery of Netherton fabric S/N was found in these levels. In the mid- late 10th century small cooking pots of Netherton fabrics A6 and A8 were in

use. None of these wares has yet been found elsewhere (Fairbrother, forthcoming).

Transferring the dating evidence from Cheddar and Hereford to the other sites where Gloucester TF41A and Cheddar E have been found one can show that, other than chaff-tempered wares, there is no pottery produced in the study region which can be dated to the early 10th century or earlier.

THE 11TH CENTURY.

As in the 10th Century, two almost unrelated series of cross-dating correlations can be made; one in the Severn Valley links Gloucester, Hereford, Winchcombe, Droitwich and Worcester with Dublin, principally by the presence of Gloucester TF41B, and one in the West Country links, by a series of wares, Bristol, Chepstow, Bath, Silbury Hill, Newbury and Netherton with Dublin.

There are many more cross-links than in the 10th century and more sites are included. Conversely, there is little change in the character of the pottery used in some areas from the early 11th century to the mid- 12th century. It is therefore not possible to subdivide the period in any way.

At Bristol, a group of pottery was sealed below the castle motte and can therefore be dated pre-1070. The excavator distinguished three phases of timber buildings below the motte and if the occupation continued until the construction of the castle then the pottery probably belongs to the period c. 1010-1070. From this collection, it is clear that early to mid-eleventh century Bristol

pottery cannot be distinguished from late eleventh century Bristol pottery by either fabric or form (Ponsford, 1974).

A further group of pre-Conquest pottery was found in the silting of a hollow-way at Mary-le-Port Street, Bristol, the upper filling of which produced a coin of Harold II. Unfortunately, is not now known which pottery came from this context. Fragments of stamped, spouted pitchers in four fabrics, Bristol A, B and C and Bath Fabric A, are present at this site while no spouted pitcher sherds are known from the pre-motte collection (Watts, forthcoming b).

Bristol wares were found at Chepstow Priory (site XI) in a ditch, which pre-dated 12th century priory buildings, but on historical grounds is likely to be of post-Conquest date. Apart from sherds of Bristol A/B and C, a few sherds of Bath Fabric A and Gloucester TF41B were found. All were from cooking pots and none were stamped (Chepstow XI period 1).

Bristol Wares and Gloucester TF41B are also found at Dublin, Christchurch Place, in eleventh century levels together with North French greywares. Their first appearance is provisionally dated c.1040 by B. O'Riordain.

11th-century assemblages are common at Gloucester, where the arrival of Malvern Chase ware c.1100 makes their identification easy. Datable groups come from the occupation of the first castle (sites 23/72 and 9/75); two pits earlier than this occupation (site 23/72); a late floor level at St. Oswald's Priory (site 49/75) and the robbing of the Roman North Wall of Gloucester (site 27/73).

Each group has a T.A.C. in the early 12th century. The first castle was probably abandoned in the early years of the reign of Henry I (Hurst, forthcoming a); the St. Oswald's floor sequence is cut by the insertion of a Norman Arcade, stylistically dated to c.1120 and the robber trench of the Roman City Wall is overlain by the precinct wall of St. Peter's Abbey which was constructed between 1104 and 1113. Most groups contain only TF41B vessels, either just cooking pots or a mixture of cooking pots and spouted pitchers. There is one useful typological feature, in that there are no club-rimmed cooking pots in these possibly pre-Conquest groups. This form had its floruit before Malvern Chase cooking pots became common early in the 12th century. There is sufficient evidence to show that Gloucester TF41B was in production prior to the Norman Conquest but few indications that there was a long pre-Conquest period of use, for example extending back to c.1000. If the Dublin evidence for the presence of Gloucester TF41B by c.1040 is confirmed it will be the earliest secure dating known for this ware.

It is uncertain how much of an overlap there was between TF41A and TF41B. There is little or no vertical sequence of 11th century levels and therefore no stratigraphic subdivision of the period is possible. A few contexts have produced both wares, for example St. Oswald's Priory, and there are some vessels in either ware which have typological features more common in the other.

Alongside TF41B in small quantities are Bath Fabric A cooking pots and Stamford Ware pitchers. Although both types were produced throughout the century, it is possible

that they had a more limited range in Gloucester and the Stamford vessels are consistently of the drab glazed late 11th to 12th century type.

The earliest pits at Friar Street, Droitwich, contained Gloucester TF41B cooking pots, spouted pitchers in Stamford Ware and Bath Fabric A and St. Neots-type ware cooking pots and bowls. The absence of Worcester-type cooking pots from the earliest pits, given the proximity of Worcester to Droitwich, suggests that the Droitwich pits date to the late 11th century rather than the early 12th centuries since Worcester-type ware was definitely reaching Hereford at the same time as Malvern Chase ware and the latter ware is known to be in production by c.1100 (see below, 12th Century).

A single late-11th-century assemblage was found at Hereford, perhaps a reflection of the devastation of the town by the Welsh in 1055. It contained only Gloucester TF41B and Stamford Ware and was found in the filling of a palisade trench revealed by trial excavations at Trinity Almshouses directed by J. Sawle. Earlier 11th century pottery is known from Berrington Street site 4, period 2, but this cannot be later than c.1040 if Gloucester TF41B was already present in Dublin by that time (see above, 10th Century).

The one ware linking these Severn Valley sites with the West Country is Bath Fabric A. At Citizen House, Bath, 11th century pits can be recognised by their stratigraphic position since they cut 10th century pits containing Cheddar E, Bath A and Bath B/D wares and were cut by 12th

century pits containing, amongst others, Ninety tripod pitcher sherds. They differ from the 10th century pits in having a higher proportion of Bath Fabric A and in the presence of small quantities of Winchester-type ware pitchers. The other ware found at Bath in 11th century contexts is Bath Fabric B/D, which has a very local distribution. Both the Fabric A and Fabric B/D wares include spouted pitchers with stamped decoration which are absent from the earlier pits.

Winchester-type ware and Bath Fabric A were found together at Silbury Hill together with a few sherds of an oolitic limestone tempered ware (which may be Gt. Somerford type ware), Newbury Group A and a possibly local chalk and flint tempered ware. It is tempting to accept the excavator's interpretation of this assemblage as the result of a short-lived fortification of the hill-top during the English campaigns against the Danes (Atkinson, 1978). Such an interpretation may also explain the wide area from which the site was receiving pottery.

Silbury Hill forms the only link between the 11th century wares of the Severn Valley and those of Berkshire and Northern Hampshire. At Netherton, Newbury Group A wares are present in small quantities throughout the 11th century, although the main ware is North Hampshire Flint-tempered (Netherton fabric I), which was absent from below a bank which sealed a coin lost c.990 (Fairbrother, forthcoming). In pre-urban contexts at Newbury, which are probably pre-1080's since that is the earliest reference to the town, Newbury Group A cooking pots were the major type found, together with a few quartz sand tempered cooking

pots of Newbury Group C.

Winchester-type ware is found at Netherton, Bath and Silbury Hill, and at both Netherton and Winchester it is dated to c.980 and later but is most frequent during the late 11th century, when it was in use alongside South-east Wiltshire tripod pitchers (Fairbrother, forthcoming; Biddle and Barclay, 1974; Biddle and Quirk, 1962).

Two other wares can be demonstrated to be of 11th century date and, some wares known by the 12th century occur in regions with no known 11th century pottery or stratified 11th century groups. The latter wares may therefore also have an 11th century origin.

At Cheddar, Fabric E was joined early in the century by the wheelthrown Cheddar Fabric B, which has not yet been recognised at other sites, and Cheddar fabric C, which Rahtz identifies as the fabric of the Wedmore hoard bowl (see above, Coin-dating). There need not be a conflict in the evidence for the end date of Cheddar E ware since Cheddar period 2-3 is coin-dated to c.1000 whilst the Silbury Hill occupation is perhaps a decade later.

In south-east Wiltshire, a single vessel was found in the upper fill of a gravel pit whose lower fill contained only chaff-tempered ware. In form it is similar to South-east Wiltshire scratch-marked cooking pots but in fabric is much coarser with flint temper (Rahtz, 1964).

Limited excavation has taken place at Wilton, and has produced residual sherds of Cheddar E ware. However, the Wilton mint was transferred to Old Sarum in the reign of Aethelred II, from which time there was continuous minting

at Salisbury (Old Sarum) even though the Wilton mint restarted soon afterwards. At the Conquest, Old Sarum was made a centre of a Bishopric. It is therefore very likely that the many collections of unstratified pottery from Old Sarum contain pre-Conquest sherds. However, no Cheddar E ware has been found and the only possible candidate for a pre-Conquest ware in these collections is South-east Wiltshire scratch-marked ware. A pit from the eastern suburb of the town contained cooking pots of this type, glazed tripod pitchers from the same source and a coin of William the Conqueror (Stone and Charlton, 1935). 11th century pottery has also been identified at Ilchester in South Somerset (Pearson, forthcoming) and an assemblage from Castle Neroche includes storage jars and cooking pots with apparent typological links with Normandy and is tentatively dated to the period 1067-9 (Davison, 1972).

THE 12TH CENTURY.

There is a strong degree of continuity between the wares of the 11th century and those of the early to mid-12th century. South-east Wiltshire cooking pots and tripod pitchers, Bath Fabric A, Newbury Group A (with a minor difference in firing and forms), N. Cotswolds I and Gloucester TF41B (also with minor typological differences, such as the club rim) all continued in use. In areas where these wares form the majority of the pottery it is difficult to distinguish even quite large 11th from 12th century assemblages.

In the western fringes of the region, however, there were major changes in the supply of pottery. Four wares can be shown stratigraphically to have started production in the early 12th century, or later. These are Malvern Chase ware, Worcester-type ware, Forest of Dean ware and Chepstow Fabric HA (Penhow Ware). Together with Hen Domen sandstone tempered ware these wares supplied areas of the Welsh border which until then had relied on non-local pottery.

The introduction of Malvern Chase ware c.1100 is dated by comparing two groups at Gloucester, one a coin-dated pit of c.1068-71 or later and the other the construction trench of the wall of St. Peters Abbey, dated by documentary evidence to c.1104-13.

At Winchcombe, North Street, there is no vertical sequence but a series of interrelated pits has been excavated. These can be ordered by using their interrelationships and by seriation giving the results shown in table 6.5. Malvern Chase and Worcester-type cooking pots appear together, presumably in the early 12th century but, as at Gloucester, the majority of the pottery found continued to be local, N. Cotswolds I cooking pots.

Table 6.5

10TH TO 12TH CENTURY POTTERY AT WINCHCOMBE.

Type	a	b	c	d	e
N. Cots. I	99	94	69	63	87
Gloucester TF41A	1	2	-	-	-
Hereford Glazed ware	-	1	-	-	-
Winchester ware	-	0	-	-	-
Bath A cp	-	2	10	-	0
Gloucester TF41B	-	-	4	-	0
Wheelthrown E. Midlands	-	-	18	12	-
Malvern Chase cp	-	-	-	23	2
Worcester-type cp	-	-	-	2	1
Minety tripod pitchers	-	-	-	-	8
Gravel-tempered cp	-	-	-	-	1
Limestone & quartz tempered cp	-	-	-	-	0
Total in grams.	790	1780	255	285	2640

Key:

- a. Pits F1, F28, F34. late 10th to early 11th century.
- b. Pits F4, F25, F26. early 11th century.
- c. Pit F35. Late 11th century.
- d. Pits F29, F30, F40. Early 12th century.
- e. Soil build-up F24. Mid-late 12th century (with a high proportion of residual pottery).

At Hereford, Malvern Chase ware first occurs in the same contexts as Worcester-type ware for which a starting date of c.1100 is also suggested. A very late 11th or early 12th century starting date would accord well with the evidence from Worcester and Droitwich.

The starting date for Forest of Dean sandstone-tempered wares is given by its absence from late 11th century contexts at Chepstow and its presence at Chepstow, Bledisloe Tump, Lydney Castle and St. Briavel's Castle all in contexts which must date to the mid-late 12th century.

Bristol A/B and C wares were joined in the early 12th century by a quartz sand-tempered ware, Proto-Ham Green ware, which is also found at Chepstow. Proto-Ham Green ware probably ousted the earlier wares completely during the century (M. Ponsford, pers. comm.). Since all 12th century contexts in Chepstow include Bristol A/B and C wares they

must therefore include residual material spanning the whole of the 12th century.

At Cheddar Palace, there is a new fabric found in the early 12th century, Cheddar Fabric H. This is a quartz and sandstone-tempered ware, the description of which is very similar to that of Proto-Ham Green ware (Rahtz, 1979, period 4, 60-62).

Chepstow fabric HA, Penhow ware, is found in the same contexts as Proto-Ham Green ware, despite its more advanced technique and appearance. It too must have started production some time in the 12th century but can only be shown to pre-date the use of Ham Green jugs.

Four wares are first recorded in the 12th century but may have an 11th century ancestry, namely Chew Valley Lake-type ware, Cirencester-type ware, Box Fabric B and Great Somerford-type ware. Cirencester-type ware is first recorded at Ewen in the filling of a quarry. The assemblage contains no glazed wares and since Minety is very close to Ewen this probably indicates that the collection is earlier than c. 1120, since Minety tripod pitchers are found in the filling of the motte ditch at Bristol Castle, dated to c.1120 by the identification of a masonry building constructed over the ditch (Ponsford pers. comm.). The dating for Cirencester-type ware agrees well with the discovery of the ware in the construction levels of the abbey at Cirencester, which are likely to be of early 12th century date.

Box B and Great Somerford wares are both found in pit groups associated with 12th century type Ninety tripod pitchers and therefore had started production by the late 12th century at the latest.

Although the above-mentioned wares can be definitely dated to the 12th century, few sites have produced sequences giving more precise information about the chronology of the wares.

At Gloucester, various sites have revealed a steady increase in the proportion of Malvern Chase cooking pots to Gloucester TF41B vessels during the century, and a similar gradual increase in the frequency of tripod pitchers of Malvern Chase and Minety types. A change in the typology and firing of the Malvern Chase wares occurred later in the century (see below, Late 12th century to early to mid-13th century).

At Hereford, early to mid-12th century features sealed below the Northern Rampart of the town show an increase in the frequency of Malvern Chase and Worcester type cooking pots at the expense of Gloucester TF41B vessels (Shoesmith, 1982, Brewery Site). Seriation of five groups of contexts from the City shows that late Saxon types, Gloucester TF41a cooking pots and Chester-type cooking pots, are found in small quantities in association with late 11th to 12th century assemblages but that other 12th century assemblages contain none of these types (Table 6.6). It is unlikely that either type was still in use in the late 11th to 12th century.

Table 6.6

POTTERY FROM HEREFORD, 111TH TO 12TH CENTURY.

Type	a	b	c	d	e
Malvern Chase cps	-	20	17	46	80
Gloucester TF41b cps	74	38	46	46	15
Worcester-type cps	6	11	13	5	4
Malvern Chase early tps	-	-	2	3	-
Hereford-type glazed	-	4	-	-	-
Gloucester TF41a (resid.?)	3	13	6	-	-
Chester-type cps (resid.?)	14	13	13	-	-
Stamford pitchers	3	2	2	-	-

Key:

- a. Trinity Almshouses, Commercial Street (1976). context 1152. Late 11th C.
- b. Brewery Site, Phase 2d. 12th C.
- c. Brewery Site, Phase 2e. 12th C.
- d. Victoria Street pits. 12th C.
- e. Castle Green post-graveyard occupation, period 5a. (Shoesmith, 1980), 12th C.

Netherton has produced the only dated sequence covering the century. The dating is provided by a large number of coins and structures dated by documentary evidence, both associated with sealed groups of pottery. Early in the 12th century North Hampshire Flint-tempered ware (Netherton I) was totally replaced by Newbury Group A, Netherton A7, but this was itself rapidly replaced by Newbury group B sometime before c.1180. The excavator estimates that the latter change took place c.1160 (J. Fairbrother, pers. comm.). Tripod pitchers of Newbury Group C first appeared at Netherton before this change, probably c.1150.

The sequence of events at Netherton is repeated at Newbury and the suggested chronology of the Netherton sequence agrees with that constructed at Bartholomew Street, Newbury, worked out by estimation of the duration of building phases (Newbury Period 2 phases a, b, and c and Period 3 phase a).

LATE 12TH TO MID-13TH CENTURIES.

There are several noticeable changes in the ceramics of the second half of the 12th century, principally changes in the quality of production, such as firing and finishing, and some changes in typology. There are, however, relatively few new wares. Not all of these changes took place at the same time so that there is a useful relative chronology.

At Hereford, six groups of pottery covering this period have been analysed. Two are related to the Northern Rampart, which is possibly connected with the movement of the market, in the 1180's, to a position outside the original defences of the Town (Shoesmith, 1982, defensive stage 5). The remaining four groups were isolated pits, or, in one instance a series of pits all containing similar assemblages.

These six groups can be ordered by seriation to give three horizons: The first horizon is characterised by Malvern Chase, Worcester-type and Gloucester TF4lb cooking pots together with the first cooking pots in two local Hereford fabrics, A2 and A3. The glazed wares are mainly Malvern Chase early tripod pitchers with a few Minety-type vessels and A2 and A3 vessels. It includes three assemblages; one from the soil immediately below the Northern Rampart, one from soil eroded from the rampart and one from a series of pits from Berrington Street. The second horizon is represented by a single pit containing an assemblage similar to the previous horizon but with the addition of Malvern Chase late tripod pitchers and a single

sherd of Ham Green Ware (a type B jug). The third horizon consists of two pit groups which also contain Ham Green type B jugs and late Malvern Chase tripod pitchers together with sherds of Worcester jugs.

The relative frequencies of the various wares also change systematically, as shown in Table 6.7.

Table 6.7

POTTERY FROM HEREFORD, 112TH TO M 13TH CENTURY.

TYPE	a	b	c	d	e	f
Malv Chase cp	44%	53%	72%	74%	77%	47%
" early tp	3%	4%		3%		
" late tp				4%	1%	3%
Worcs cp	26%	12%	4%	3%	2%	1%
Glos TF4lb cp	20%	7%	8%	-%		
Minety tp		-%	4%	1%		
Stamford ware	1%					
Her A2	6%	20%	10%	11%	5%	5%
Her A3	-%	1%	4%	-%	8%	31%
Ham Green B jug				-%	1%	1%
Worcs jug					4%	1%

Key:

- a. Brewery site, pre-rampart.
- b. Berrington Street site 1, Phase 4a.
- c. Bewell House, Phase 3 Pit 383.
- d. Trinity Almshouses, Commercial St. (1976) Pit 1152.
- e. Western Ramparts Pits 1 & 2 (Shoesmith, 1968, 63).
- f. City Arms T4 Pit 12.

cp = cooking pot

tp = tripod pitcher

Malv = Malvern

Worcs = Worcester

Glos = Gloucester

Her = Hereford

At Gloucester, likewise, three phases can be distinguished within the period, principally distinguished by the presence of Ham Green type B jugs in the second phase and both Ham Green and Worcester jugs in the second phase. This sequence can be seen, for example, in the pottery from 1 Westgate Street (Vince,

1979a). A pit and soil level contained late 12th century pottery (periods 6 and 7A), Period 7A is stratigraphically earlier than both Period 7B and Period 7C and both of these groups are stratigraphically earlier than periods 7D, 7E and 7F (table 6.8). Similar groups and sequences are present elsewhere in the town.

Table 6.8.

POTTERY AT GLOUCESTER, LATE 12TH TO MID-13TH CENTURY

TYPE	a	b	c
Malv Chase cps	23%	50%	27%
" early tp	11%	2%	7%
" late tp			
Worcs cp			3%
Gloucester TF4lb	59%	34%	24%
Minety tp	7%	7%	17%
Ham Green E jug		7%	10%
Worcs jug			11%

Key:

- a. 1 Westgate Street Periods 6 and 7a
- b. 1 Westgate Street Periods 7b and 7c
- c. 1 Westgate Street Periods 7d, 7e and 7f.

The colonisation of the area between the Foreign and Westgate Bridges in Gloucester took place in the late 12th century. By c.1230 tenements were occupied on ground which had previously been the channel of the River Severn. At a site at Westgate Bridge, the pottery from the earliest occupation levels includes Worcester jugs (site 14/73).

A third relevant sequence is that at Chepstow. Late 12th to early 13th century assemblages were found at Sites I, VI, and XI. Here too, all of the assemblages could be fitted into a single sequence by seriation and this sequence was confirmed by stratigraphy at Site XI (table 6.9).

Table 6.9.

POTTERY AT CHEPSTOW, LATE 11TH TO MID-13TH CENTURY

TYPE	a	b	c	d	e	f	g	h	i
Bristol A/B	69%	27%	13%	3%	19%	2%	7%	4%	*
Bristol C	27%	8%	2%	1%	6%	1%	3%	4%	*
Gloucester TF41B	2%	2%						1%	
Bath A	1%	1%	1%			2%		0%	
Proto-Ham Green	46%	47%	77%	66%	62%	33%	23%	33%	
Chepstow HA	13%	25%	12%	5%	14%	34%	56%	23%	
F. of Dean	2%	11%	4%	2%	6%	4%	2%	4%	
Box B tp		1%							
N. Gwent ? cp			2%						
Minety				1%				3%	4%
S. E. Wilts. tps					0%				
Malvern Chase cps				1%					
CH NC					1%	1%			2%
CH NL					1%				2%
Ham Green glazed					1%	4%	16%	4%	16%
Ham Green cps					1%	6%	1%	0%	2%
Glamorgan glazed									11%
Glamorgan, CH HH									2%
Bristol glazed						0%			2%
S. Gwent glazed								0%	
CH NO		1%							2%

Key:

- Site XI period 1 ditch fill. 11th - 12th C.
- Site VI isolated pits. 12th C.
- Site I isolated pits. 12th C.
- Site XI period 2 soil accumulation, later than period 1. 12th - 13th C.
- Site XI period 2 construction and floors of building. 12th - 13th C.
- Site XI period 3 construction and floors of building. 12th - 13th C.
- Site I early 13th C. contexts.
- Site VI Pit F1. 13th C.
- Site XI period 3 floor levels. Bristol A/B and C wares are present but discounted. 13th C.

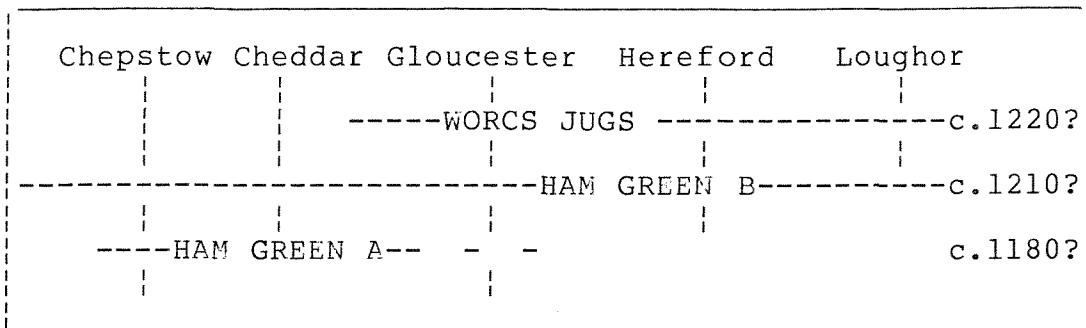
At Chepstow, although virtually all of the wares found at Gloucester and Hereford were present, only those from the Bristol region and the West Country were at all common.

The Chepstow sequence confirms Barton's suspicions that Type A jugs are earlier than Type B jugs (Barton, 1963). And, as at Hereford and Gloucester, there is a tripartite division of the period. However, the divisions are not the

same as those sites, as is shown in fig. 6.10.

Fig. 6.10.

RELATIVE CHRONOLOGY OF HAM GREEN AND WORCESTER JUGS



Two groups are important for the absolute dating of the sequence represented in fig. 6.10. At Cheddar the East Hall II group is dated c.1209-13 (see above, Structures and documents). It contains a few Ham Green 'B' jugs but most are of Ham Green 'A' type. Only 11 out of 1019 sherds, 1%, were glazed and therefore the minimum vessel count given by Rahtz shows a higher frequency of glazed wares than the figures used in the rest of this thesis (table 6.11).

Table 6.11.

CEDDAR EAST HALL II POTTERY, C.1209-13?

Bath A cps.	30	vessels	43%
Cheddar H cps.	12	vessels	17%
Cheddar M cps.	9	vessels	13%
Ham Green cps.	3	vessels	4%
Ham Green jugs.	6	vessels	9%
Misc. glazed	5	vessels	7%
Misc. unglazed	5	vessels	7%

N.B. Minimum vessel count (after Rahtz, 1979).

The other important site is at Loughor Castle, where a rebuilding of the Castle can be dated c.1220 (Lewis, 1975). Several smashed vessels were related to this structural alteration including a roller-stamped Worcester jug, Ham Green 'B' jugs and a complete Minety tripod pitcher, with

late features such as strap handle and pulled spout, with a lead plug in the lower side.

The relatively short interval between the introduction of the three types is suggested because at most sites all three appear together.

In Berkshire and north Hampshire the combination of the Newbury and Netherton sequences provides a good framework for the period. The earlier part of this framework was described above. The later groups, from c.1180 to c.1250, are all dominated by Newbury Group B ware, Netherton fabric D as also is much of eastern Wiltshire. The only differences found are in the character of the glazed wares, which are all of Newbury Group C and possibly the appearance at Netherton of Newbury Group B cisterns. Netherton was practically abandoned from c.1210 to c.1280 but it is during this period that some of the large assemblages are found at Newbury (Phases 3C to 3F). These are characterised by Newbury Group C vessels with painted slip decoration in brown and white slip. The earlier vessels are tripod pitchers and the later ones either slimmer tripod pitchers or thumbed base jugs. These types are absent from Netherton. By c.1280 white-slipped, green-glazed jugs and jugs decorated only with white slip are found and occur in Newbury Ph.4A.

Fig. 6.12.

POTTERY IN EAST BERKSHIRE AND NORTHERN HAMPSHIRE

	Netherton	Newbury
c.1280		
-- Newbury C, white slipped, green glazed jugs		-- c.1260
--- Newbury C Slip-dec. jugs		--- c.1240
--- Newbury C Slip-dec. tps		--- c.1220
c.1210		
----- Newbury B cps & unglazed pitchers		----- c.1160
----- Newbury C tps		----- c.1150

Newbury Group C vessels are found as far apart as Oxford, Reading and Winchester and this sequence is therefore very useful over a wide area of southern England. In Wiltshire, however, these is no published sequence of late 12th to 13th century assemblages, although the Ludgershall Castle sequence covers this period. It is unlikely that a sequence in Wiltshire would improve the chronology of local pottery, however since the sources supplying the county appear to be stable. In the north Minety-type tripod pitchers were in use, together with globular cooking pots ('Selsley Common' type) which may be an early 13th century introduction. In the east of the county only Newbury Group B vessels are found. In the south east scratch-marked cooking pots and tripod pitchers were used throughout the late 12th and early 13th centuries, although a type of micaceous cooking pot is a minor introduction of c.1200 (Musty et al. 1969). Only in the extreme west of the county is it possible to subdivide the period, due to the presence of Ham Green jugs. Towards the middle of the century the Laverstock kilns began operation.

The first Severn Valley, West Country and Bristol imports are found along the south Welsh Coast in the early 13th century. Although most ^{are} not stratified, unlike the Loughor examples, Ham Green B jugs, Bath Fabric A cooking pots and West Country vessels and Minety tripod pitchers occur on the same sites and it is very likely that this trade started in the early 13th century. For example, few of the Minety tripod pitchers from south Wales, excluding Gwent, have 12th century characteristics.

In the absence of large stratified assemblages from South Wales it is not possible to produce an accurate chronology for those wares not found stratified elsewhere. At Chepstow, however, the beginnings of the Glamorgan glazed ware industry can be seen. The earliest Glamorgan-type vessels there are of early 13th century date and are handmade, like Ham Green ware. In the mid-century, alongside the first Bristol wares, wheelthrown Glamorgan type wares occur (see table 6.9, group i). Other Welsh wares at Chepstow occur in later 13th century or later deposits only.

LATE 13TH TO EARLY 15TH CENTURIES.

There is an almost total lack of relative dating evidence for the later medieval pottery of the region, although pottery of this date is common. This is due to the absence of horizontal stratigraphy at many of the sites and probably also the lack of change in medieval pottery assemblages of this period.

At Gloucester, isolated pit groups and sequences have been excavated but although the range of wares found is known the relative chronology and typological progression is based on flimsy evidence. The one well-dated group is associated with coins of 1250 to 1272 and is sealed by a building phase (site 77/69). Other Gloucester groups can be recognised as later on internal evidence alone. As on many of the later medieval sites in the region, pottery was drawn from a wide variety of sources; principally Malvern Chase and Minety but with significant proportions from Herefordshire, Worcester, Bristol (and Ham Green), Nuneaton, Oxfordshire and a number of unidentified sources. Little or no pottery was made in the immediate area.

Apart from the replacement of cylindrical cooking pots by conical bowls in Malvern Chase ware there are few reliable chronological differences, although there is probably a variation in the proportion of Minety ware (see table 6.13). Although common in the 12th and early 13th centuries it is possible that there was a decline in its use in the later 13th and 14th centuries, followed by a rise again in the late 14th and 15th centuries. This pattern is repeated in several groups although the quantities of pottery involved are not large. It is even less clear whether all of the minor wares are present throughout the sequence or whether they appear in the late 13th and early 14th centuries and are then residual in later contexts. One fabric, Gloucester TF79, may be a late introduction but is in any event quite rare and not suitable to act as a chronological indicator.

A few types omitted from table 6.13 are found in some but not all of the pre-Minety groups groups. They either represent a chronological overlap with the early to mid-13th century types in Gloucester or are present as residual material. They are Malvern Chase rotary finished cooking pots, Gloucester TF41b cooking pots, Minety handmade tripod pitchers, Worcester jugs and cooking pots and Shrewsbury-type ware.

Table 6.13

Late Medieval Pottery in Gloucester.

Type	Pre-Minety	Post-Minety
Malvern Chase jugs	25	39
Malvern Chase wcp/bowls	10	16
Malvern Chase dish	1	-
Malvern Chase pipkin?	1	3
Malvern Chase Dripping dish	1	-
Hereford A7b jugs	19	11
Hereford A7b dish	1	-
Gloucester TF99 jugs	38	4
Minety jugs	-	10
Minety cooking pots	-	6
Minety lamp	-	1
Gloucester TF79	-	2
Total	96%	92%

N.B. Table 6.13 is based on amalgamated groups. The pre-wheelthrown Minety groups come from site 53/69 and the post-wheelthrown Minety groups come from a variety of other sites, principally site 74/68.

At Hereford, the number of groups datable to the late 13th to 15th centuries is limited and it may be that there is a gap in the ceramic sequence there, with no stratified late 14th to early 15th century pottery. As elsewhere, the sequence is reconstructed mainly by seriation of assemblages which are not related stratigraphically. Later 13th century groups contain the same types as those of the

early to mid-13th century with the addition of Hereford A7b jugs together with lesser quantities of jugs from other sources such as Worcester, possibly Nuneaton (Hereford G7), and local sources, Hereford A2 and A4. Later groups contain fewer cooking pots and the earliest wheelthrown Malvern Chase jugs. How much later these groups may be is conjectural. One was excavated at Hereford Blackfriars and should date to c.1319 or later since the Blackfriars was first granted land at the site at that time. The Malvern Chase jugs in these contexts are slip decorated and have rod handles. They are typologically later than late 13th century examples from Gloucester and a 14th century date is likely. However, as stated above, this implies that no later 14th to early 15th century groups have been found in Hereford.

A similar picture is found at Chepstow, where only two sites have produced stratified later medieval pottery, namely site VI and site XI. At site VI there were two phases of later medieval occupation, the first represented by pit-digging and the second a building with stone footings. Pottery in the topsoil and subsoil overlying the pits and walls was either similar to that in the features or was post-medieval and easy to distinguish. It is possible therefore that no pottery contemporary with the use of the building was found, or that the building had a short life.

Site XI produced pottery in the floor levels of a stone building associated with the Priory but only in very small quantities. Both sites VI and XI produced several sherds of

Saintonge polychrome jugs, which should date the occupation to the late 13th and early 14th centuries, or later. The most common ware at both sites was Bristol Redcliffe ware. At site VI some of the jugs were highly decorated with flaring bases, whereas those at site XI were plainer with foot-ring or flat bases. These jugs were harder fired than those at site VI. It is suggested that this difference indicates an earlier date for the majority of the site VI pottery. Local south Gwent glazed wares were present at both sites, Chepstow HA at site VI, including vessels made in Ham Green 'B' style, and Chepstow HK at site XI. Glamorgan-type glazed wares were present at both sites.

At Bristol a good sequence of later medieval pottery has been excavated but relatively little is yet published or available for study. There are small groups from Back Hall and St. Nicholas Almshouse (Barton, 1960; Barton 1964). The latter pottery is associated with the construction of a bastion on the town wall.

The pottery of Bristol is dominated first by Ham Green and then by the Bristol potteries themselves. It is thought that the second half of the 13th century was a phase of overlap between the two sources but that from c.1300 onwards only Bristol wares are found (M. Ponsford, pers. comm.). Unlike Ham Green the Bristol potteries did not produce many cooking pots and instead vessels from Minety were used. Continental imports are common in the City, mainly from south west France but also from Spain.

A group of near-complete jugs was recovered from a stone drain at Keynsham Abbey, including Saintonge jugs (unpublished). This group is potentially datable within the

late 13th to 14th centuries.

At Bath, the Citizen House pit sequence stops in the early 13th century. Later medieval pottery is represented by a collection of unstratified vessels recently published by Cunliffe (1979). Excavations in 1979 and 1980 at the Orange Grove and the North Gate have not increased our knowledge of the pottery in this period.

Outside Bath, at Barrow Mead, Englishcombe, a building in a deserted medieval village was excavated by Rahtz and published by Woodhouse (1976). The pottery from this structure could be divided into two phases on the basis of the stratigraphy but there is little visible difference between the two assemblages; both are dominated by Bath Fabric A cooking pots with possible Bristol jugs and a few minor wares, notably Minety. It is suggested that this house was abandoned in the 14th century (Woodhouse, 1976).

In Wiltshire there are two excavated kiln sites of later medieval date, namely Nash Hill, Lacock (McCarthy, 1974), and Laverstock (Musty et al. 1969) but there are few excavated settlement sites. Collections from Budbury, Bradford on Avon, and Farleigh Hungerford Castle may go some way to filling this gap but have not been examined in this study (Musty, 1970; Miles and Saunders, 1975). The latter site produced handmade cooking pots of medieval appearance in a group dated c.1430. Recent excavations in Warminster by R. Smith, only a few miles from the documented pottery at Crockerton, have produced a 13th century or later assemblage containing mainly micaceous, sand-tempered cooking pots which are probably Crockerton

products and are very similar to some later Bath Fabric A vessels, a possible Crockerton glazed ware (see Ch.2) and other wares, including some South-east Wiltshire cooking pots and Salisbury/Laverstock jugs. It is not possible to provide a close date for this assemblage. Excavations at Old Town, Swindon, in the north east of Wiltshire have produced large quantities of later medieval wares from several sites. These are mainly Minety wares but include Nash Hill and Oxfordshire jugs and Newbury group B cooking pots. However, none of this material is stratified.

The Kennet valley and north Hampshire pottery sequence is provided by excavations at Newbury and Netherton. Both show that during the late 13th and early 14th centuries the area was still served by Newbury groups B and C (fig.6.11). Netherton was abandoned c.1356, before the large-scale use of Coarse Border ware from the Surrey-Hampshire border had begun. At 143-5 Bartholomew Street, Newbury, two coins deposited in the mid-14th century were found associated with Newbury group B and C wares but without any Coarse Border ware, neither was there any from the succeeding phase, which, to judge by the wear and replacement⁴ of hearths, and archaeomagnetic dating (see above), must have lasted at least 20 years and probably longer (Vince, 1980). The introduction of Coarse Border ware is therefore dated later than c.1356 and before c.1418 (see below). A pitcher of this fabric was found in a well at Oxford alongside late 14th to early 15th century jugs of Oxford fabric AM (Haldon and Mellor, 1977, 137, Fig.24 no.1). It is not clear from the Newbury sequence whether the Coarse Border ware

completely replaced groups B and C or whether there was a phase of overlap. Coarse Border ware and East Hampshire Micaceous ware were in use during the re-occupation of the Netherton site in the early 15th century. The re-occupation is dated by documentary evidence to c.1418-24, by which time Newbury Group B was no longer used at Netherton (Fairbrother, forthcoming).

The absence of closely dated strata in the region is partly responsible for the lack of a clear sequence but this is also an outcome of the pottery industries of the time. There is too little change in sources or typology to enable a refined chronology to be developed. This is shown by comparison with the assemblages of pottery from the Trig Lane, London, excavations. The Trig Lane pottery is from closely dated contexts containing vast assemblages. Differences between these groups are subtle and do not enable individual types to be closely dated.

As indicated in figs 11.15 and 11.18, there is little suggested change in the pottery sources of the late 13th to early 14th centuries and those of the late 14th to early 15th centuries. The Nash Hill kiln site is interpreted as essentially late 13th to early 14th century in operation and no evidence is available for the later medieval pottery supply in south-east Wiltshire. At some time between the late 13th to early 14th centuries and the 17th centuries the Salisbury district ceased to supply its own pottery and started to rely on the Verwood area of Dorset. Documentary evidence shows that there was potting in Verwood by the 15th century but on what scale and how old the industry was at that time is not known (Brears, 1971, 178). There is an

apparent change in the supply of cooking pots shown on figs. 11.14 and 11.17 but most of this apparent change is the result of the removal by the author of the Nash Hill, Bath fabric A and South-east Wiltshire cooking pots. In each case the stratigraphic proof that these wares were no longer being used remains to be found and their suggested demise is based solely on analogy with another Wiltshire ware, Newbury group B.

THE LATER 15TH AND 16TH CENTURIES.

During the 15th century a change is seen in the range of ceramic products found, so that it is no longer useful to distinguish two branches of the industry, producing cooking pots and jugs. A wider variety of vessels was produced and all were wheelthrown and at least partially glazed. The most important industries were at Malvern Chase, Minety, south Somerset and the Hampshire-Surrey border. Since so much of the area is covered by their distributions it is possible to apply pottery dates from one site to another with more certainty than in earlier periods although there are few chronological indicators to be transferred.

15th century groups have been found at Wallingstones, H.&W., and at Gloucester. At both sites the pottery is predominantly from Malvern Chase with smaller quantities from Minety and Tudor Green ware from the Surrey-Hampshire border.

Two Tudor Green ware fabrics are present at Gloucester, the earlier is essentially an untempered version of Coarse Border ware and is found both as jugs and lobed cups. This ware is present from the late 14th century at Trig Lane,

London and thus could be of this date in the west of England. By c.1440 at Trig Lane a much finer fabric with abundant very fine sand or silt-sized quartz inclusions is found. This occurs both as lobed cups and as other fine wares and is the fabric most commonly found in the study region. A similar date for the introduction of Tudor Green ware is found at Westbury College, Westbury-on-Trym near Bristol (S. Moorhouse, pers. comm.). Tudor Green vessels are also found in 16th century contexts and are mainly small body sherds whose form cannot be reconstructed.

At some time in the early 16th century, Cistercian ware vessels were introduced and some were produced in the Severn Valley, at Falfield, Avon. There is a great similarity between the fabrics of the Cistercian wares from Chepstow (found in a dissolution period context at site XI), Hereford, Worcester and Gloucester. Evidence from Gloucester and Hereford suggests that this ware was present from the early 16th century until the mid to late 17th century and it can be easily distinguished from the black glazed products of the Herefordshire kilns which contain no quartz sand.

Other datable wares at this period are German stonewares. They are found intermittently but prove useful to confirm dating suggested by other means. Raeren stoneware, first imported c.1480, is found with groups at Gloucester, Bristol Greyfriars, the Minety kiln site, but not in the controlled excavation published in 1974, and Trowbridge Castle. This ware was apparently still being made in the mid-16th century and drinking jugs of Raeren stoneware were found at Old Wardour Castle in a 17th

century context (Hurst, 1967). Allowing for a time lag for the introduction and use of these vessels in the west of England, contexts producing them are probably to be dated to the early to mid 16th century. Cologne and Frechen stoneware is more common than Raeren stoneware but the highly decorated drinking jugs, which can be accurately dated, are rare in stratified contexts. Simple brown washed drinking jugs were produced from c.1550 to c.1690 whilst 'Bellarmine' bottles are present from the beginning of the 17th century and are not to be confused with drinking jugs with face masks which were produced in the late 16th century. Here too, the most distinctive parts of the bottle, the face mask and medallions, are rarely found in useful stratified contexts.

Non-local pottery can therefore be used to create a three-fold division of the period. Contexts containing Tudor Green ware without Cistercian ware are here dated to the mid to late 15th C or later, with the proviso that this needs stratigraphic confirmation. Contexts containing Tudor Green ware with Cistercian ware and Raeren Stoneware are here dated to the early 16th century, or later. Those contexts containing Cologne or Frechen stoneware drinking jugs are dated to the late 16th century, or later while contexts containing Frechen bottles are dated to the early 17th C or later.

When this scheme is applied to groups in Hereford, Bristol, Gloucester and elsewhere a rough chronology can be recognised in the local wares but very little further precision is possible. Minety ware disappeared from

Gloucester c.1500 and is replaced soon after by Ashton Keynes ware. Minety ware probably has a slightly longer life in the immediate area of north Wiltshire and Cirencester since certain forms are present there which are not found in the Severn Valley, for example conical bowls and a chafing dish. However, since Ashton Keynes is the neighbouring village to Minety and there is no evidence for an overlap in production between the two wares it is likely that Minety ware had disappeared by c.1540 when Ashton Keynes ware is first found in Gloucester.

Changes in the form of Malvern Chase vessels have been documented (Vince, 1977). The most useful seem to be the partial replacement of copper-flecked glazes by plain lead glazes during the 16th century and the evolution of thumb rimmed jars. The late 16th century jars either do not have thumbing on the rim or have widely spaced thumb impressions. None of the dissolution groups from the study region was sufficiently well stratified to show whether this change had taken place by the 1530's. For example, a single Malvern Chase jug with a clear glaze and 'late' rim form was found at Hailes Abbey in a demolition level but in virtually all instances demolition of the monasteries started almost immediately after the dissolution and was then continuous throughout the remainder of the 16th century.

One common form in many wares at this time was the Cistern, which was found in the mid to late 15th century at Gloucester but from the late 14th century in Coarse Border ware at Trig Lane, London (see Ch.7). Cisterns are present amongst the products of a pottery kiln at Langley Burrell,

near Chippenham, and date the operation of this kiln to the late 14th century or later. Archaeomagnetic dating of the kiln by A. Clarke dates its last use to the mid-late 14th century. This dating has, however, been rejected by the excavator as archaeologically unacceptable (A. Clarke, pers. comm.). Apart from the kiln waste, examples are known only at Wooton Bassett, less than 10 miles to the east, although it is probable that the Langley Burrell kilns supplied Chippenham and the surrounding district only. Another small-scale pottery is known in the Kidderminster area. Its products have been found at Kidderminster only and they copy the forms of 15th to 16th century Malvern Chase ware, mainly conical bowls. No stratified examples are known.

Other Malvern Chase copies are known from the Welsh borderland, in the fine micaceous fabric typical of later medieval and post-medieval pottery in that area. Conical bowls were recovered from Hen Gwrt, Gwent, and large jars with unthumbed rims were found unstratified in Hereford. These types could date from the late 16th century, a time when stratified assemblages from Hereford contain mainly Malvern Chase wares. There must have been potting elsewhere, however, since 'Hope-Under-Dinmore', to the north of Hereford, was temporarily known as 'Potters Hope' in the mid-16th century.

LATE 16TH TO 17TH CENTURIES.

By c.1600 there is documentary evidence for the production of pottery at Deerfold Forest in north

Herefordshire, and at Dymock and Stroat in Gloucestershire. The Deerfold Forest and Dymock wares are known archaeologically but are indistinguishable from the products of other country potteries in the Welsh borderland, for example Bacton, Monmouth, Trefaldus, Talgarth and Usk. These potteries are in some cases up to 50 miles apart yet were producing wares in fabrics identical even in thin-section (see chapter 2) and in similar forms. It is probably best to consider these wares as coming from a dispersed industry so that a group dating and distribution can be given, even if the individual kiln sites cannot be dated. This approach shows that the Herefordshire kilns were in operation during the late 16th century but on a very small scale. Their main flowering was in the period c.1600 to c.1680 and at that time the north Herefordshire kilns seem to have gone out of use completely. Two assemblages from Wigmore Abbey can be dated to the 17th century and c.1710 respectively. The later group contains virtually no local products but in their place Staffordshire coarsewares.

By c.1680 a slipware pottery was in operation at Newent, producing similar fabrics to the earlier Herefordshire kilns but with a new range of forms. Similar forms, also slip-decorated were made at Whitney-on-Wye.

The Stroat pottery was also probably in operation on a small scale in the late 16th century and its products are found in Gloucester in quantity from c.1600 to c.1680, as well as forming the majority of the unstratified post-medieval pottery at Chepstow. There is documentary evidence for potters at Stroat in 1599 and again in 1608 (V.C.H.

Glos. X, 72 & 195-6).

The Ashton Keynes potteries also extended their market area during the early 17th century, for example to Gloucester and Hailes.

Alongside this expansion, the Malvern Chase industry declined. By the first quarter of the 17th century at Gloucester Malvern Chase wares had dropped from an almost total dominance in the late 16th century to a small fraction of the assemblage. These early 17th century vessels can be distinguished from their predecessors by the fabric, which is virtually untempered with a 'pink' tinge and the use of a thin brown slip under a clear glaze. The forms too are distinctly different. These late vessels are common in south Worcestershire and are found in Hereford also. A few groups exist in Gloucester which show that the introduction of the 'pink' fabric in Malvern Chase ware predates the main importation of Ashton Keynes and Stroat wares, giving a limited horizon in the town datable perhaps to the last decade of the 16th century.

CHAPTER SEVEN

POTTERY FORMS AND TYPOLOGY

INTRODUCTION.

Pottery forms can be classified by a number of methods, principally by geometrical shape, by size, by details of construction, by the presence and type of added features, by the decoration, by intended function, by actual function, by the classification system used by the makers and/or users of the pottery (the 'mental template'). Several of these methods could be used in isolation to produce classifications of varying value.

CLASSIFICATION BY GEOMETRICAL SHAPE.

Few medieval pots were made with simple geometrical shapes and although it is possible to describe any complex curve by a mathematical formula it is not a useful method of classification (although it might be a useful method of analysis, see Orton, 1971).

Most medieval pots can however be described fairly accurately using geometrical terms by breaking the shape down into horizontal zones of simple form. The simplest shape, the cooking pot, can normally be described in three parts; the neck/rim, the body and the base.

The terminology used in this thesis is based on this method, although the terms used are not the geometrical ones but rather terms which the author has adopted from general archaeological usage. The difficulty with using this type of terminology is that there is no one agreed standard and many terms have different definitions, depending on the user.

As an attempt to produce some standardisation the main terms used are described here. Similar schemes have been used by Healey (1976) and McCarthy (1979).

The distinction between rim and neck is a conceptual one and in this these the part of the vessel above the body is referred to as the rim, if it is a simple shape, or rim and neck, if it is a complicated shape. For example, one could refer to an everted rim cooking pot or to a vessel with an everted neck and rounded rim. The former, briefer description is used in this thesis where this does not leave ambiguity.

An upright or cylindrical rim or neck has a straight profile with rim and neck diameters equal. An everted rim is also straight-profiled with a rim diameter greater than the neck diameter. Inturned rims have a convex-profile with the rim diameter greater than the neck diameter whilst flaring rims have concave profiles with a rim diameter greater than the neck diameter. Rolled-out rims have no sharp neck angle and instead have a continuous curve from the body.

The body can be cylindrical, conical (ie. straight-profiled with the neck diameter narrower than the base diameter), globular (ie. a regular, curved profile) or curved (ie. with a complex or irregular curved profile). A biconical body has a break of angle somewhere near the girth, which is defined as the widest point of the pot, rather than the position mid-way down the profile. Bases can be flat, sagging (ie. a convex-curved profile), recessed (ie. having a raised flange under the base) or foot-ring (having a moulded flange at the base). The latter

term is probably used wrongly in this study since a foot-ring on Tin glazed ware for example is the turned flange on the base.

A pedestal base has a distinct base angle and a conical shape, for example pedestal lamps, while a baluster base has a constriction between the body and the base but with no distinct angle.

CLASSIFICATION BY SIZE.

Precise size has not been used to classify pottery types in this study but for cooking pots the diameter has been used to give a rough order of size, assuming that the diameter to height ratio was constant.

Dimensions could be important in pottery analysis: both for defining ratios, such as height to girth, and because the range of values for a dimension is an indication of the amount of control over production exercised by particular groups of potters. It could also be a criterion for division of pottery into types or classes, although this has rarely been the case in practice.

Measurement of capacity is potentially a valuable method of analysis but has not been carried out on any vessel in this study. The small number of complete vessels known would make any conclusions extremely tenuous. Research on London jugs has shown less control over capacity than over dimensions, but this is only to be expected, since a slight variation in diameter can have

a noticeable effect on capacity and even if overall dimensions are the same the amount of curvature on the profile can vary.

In London capacity has been measured using rice grains. Water would give a more accurate measurement but would exert stress on the pot. It would also make many reconstructed pots difficult to measure because of holes in the sides. These holes can easily be covered whilst filling the vessel with rice. Repetition of measurement with rice has shown that the method is accurate to within 100cc. X

There are two areas of capacity studies which might be worth pursuing; firstly looking at a range of measurements to see whether or not modes exist, or whether there is a continuous range of values. This, together with calculating the spread of values around any modes is a method which might be useful to characterise the production of a group of potters. However, the number of measurements which would have to be taken is so large in comparison with the number of complete pots, or even the number of reconstructible profiles, that there are few if any groups in the Severn Valley which could be analysed in this way. There may be sufficient Ham Green, Bristol Redcliffe, and Malvern Chase jugs and Malvern Chase, Minety and Newbury Group B cooking pots. For all other types the total number of complete or reconstructable vessels is less than ten and for most there are no examples.

The other way in which capacity measurements might be used is to check whether pots were made to any agreed standards of capacity. Assuming that such standards existed over the whole of Southern and Western England and were not as regionalised as pottery styles for example, it would be possible to take measurements from all vessels in the region and to analyse them as part of a total population of

medieval pots, rather than as examples of pots from a particular production site. One could certainly see by this study whether or not the pottery from the Severn Valley was made with particular capacities in mind and could compare results for the late 13th to 14th centuries and 16th to 17th centuries. Outside of these limits even this study would be hampered by lack of data. Should such a study be carried out it would be possible to compare the results with those from a similar study of pottery from London (Pearce et al. forthcoming, Pearce and Vince, forthcoming). If it is thought that the vessel would have held a liquid then capacities slightly over the required value should be expected, since it is not practicable to fill a vessel right to the brim, although if a pot is used in a tavern or elsewhere in the retail of liquids an undersized measure might also be quite likely. Cooking pots, which may have been used as containers for commodities such as honey or butter, could be filled to the brim, although again it is likely that a gap would be left between the contents and any covering.

One result of the London study is that it is quite clear that there is little correlation between capacity and rim diameter for jugs, although there is a slightly better correlation between girth, height and capacity. It is not therefore worthwhile using jug rim diameters as a guide to capacity.

The same is probably true of Newbury B cooking pots, for which several complete profiles exist. A variety of different sizes is present and the larger vessels have

narrower rims, in relation to other dimensions.

CLASSIFICATION BY CONSTRUCTIONAL METHODS

It is useful to make a sharp distinction between vessels thrown on a fast wheel and others and this distinction is made throughout this study, wherever the relevant information is available. It may be misleading to make a judgement on constructional methods from a sample of small sherds or from single vessels.

The main reason for making this distinction is that the difference in technology might have considerable importance for the economic interpretation of the industry, although such an inference might be misleading in some cases (Nicklin, 1971).

More refined distinctions of classification, whilst important in the study of the pottery industry, are not useful in classification since they are not present or recognisable on all sherds. These techniques and their temporal and geographical distribution are discussed in chapter 5.

CLASSIFICATION BY ADDED FEATURES.

Despite the statement above that only features found on all sherds of a vessel can be used to form a working classification the presence of added features, such as handles, feet and spouts is crucially important in the classification of medieval pottery.

This means that there are two levels of classification of sherd material: a general class based on shape and method of construction, for example wheelthrown bowls or cooking pots; and a more precise level based on the presence of added features and/or certain other features

(see below), for example body sherds of a skillet would be classified as wheelthrown bowls, as would body sherds of a pipkin or cauldron.

CLASSIFICATION BY DECORATION AND STYLE

The use of particular types of decoration, or the presence of decoration is used to group pottery forms together, for example Anglo-Saxon stamped wares, Medieval Highly Decorated Jugs, Sgraffito wares, Slip-trailed wares, or Anthropomorphic jugs.

This serves to emphasise the decorative aspect of the vessel as opposed to its shape or function. For some cases this is a useful device, since if a pot was used for display, as for example Andalusian and Valencian Lustreware, then its supposed function is less important than the probable actual function. Post-medieval tin-glazed plates and dishes can be divided into two groups on the basis of decoration. Undecorated vessels were only used at table whilst most of the decorated examples have small holes piercing the foot-ring base which were used to support the vessel on the wall, showing that they had a dual function. In this study decoration is sometimes given the status of a classification sub-division but when possible the form of the vessel is also recorded.

The main use of decoration for classification is in the study of Staffordshire/Bristol finewares of the late 17th and 18th centuries. These vessels were made in innumerable shapes and sizes and many of these types merge into each other or share so many aspects of other types that they can only successfully be classified if complete (Vince,

forthcoming f). It is therefore easier to classify the vessels initially by fabric, then by type of decoration and finally by form rather than the usual way of fabric, form then decoration. For example mottled glazed light bodied vessels are grouped together irrespective of form as are light-bodied slip-trailed vessels. In many cases the vessel forms do occur with both types of decoration.

CLASSIFICATION BY INTENDED FUNCTION.

Although it is usual to refer to vessels by terms that imply a function, in many if not all cases these functions are inferred from a consideration of the shape of the vessel, traces of use found on the vessel or by guesswork.

Precise functions for medieval vessels are unlikely to be correct. The small number of forms found in comparison with the Roman or post-medieval periods suggests strongly that vessels were used for a variety of purposes. There are however four or five functional activities, one of which can with a fair degree of reliability be inferred for most vessels. These are cooking, wet storage, dry storage, liquid serving, tableware, lighting and excretion.

Cooking: The vessels grouped under this heading are cooking pots, pipkins, cauldrons, skillets, tripod pipkins, bowls, frying pans, wide dishes, dripping dishes and Dutch ovens. They can be subdivided into three groups, again with a fair degree of certainty. Cooking pots, pipkins, cauldrons, and tripod pipkins are all enclosed forms with similar capacities. It is likely that the function of these vessels would be to boil liquids, either just water or perhaps soups or stews. Skillets and bowls on the other hand are open forms (of different sizes) and if used for boiling

water would need to be covered to reduce evaporation.

Wide, shallow dishes with or without handles usually have sooting on the exterior and must therefore have been used over a fire. However, such a shape is certainly not suitable for boiling and must therefore have been used for frying or grilling.

Dripping dishes and Dutch ovens were both used for roasting. They would have sat underneath a spit and been used to collect the dripping. Both types are often encrusted with a black deposit which visually certainly seems likely to have been formed by burnt fat.

Wet storage: The identification of vessels used in storing liquids is less certain than those used in cooking. Three possible types of liquid container might exist: those that remain stationary and are filled from smaller vessels (of pottery or another material); those vessels used for transporting liquids within the household (termed by Orton 'break of bulk jugs', Orton, 1982) and those vessels used for taking liquid from storage to the table (this could be wine or ale for drinking or water for washing hands). It is uncertain whether the same vessels would have been used for 'break of bulk' and serving but considering that highly decorated jugs are often found in well-groups (for example, that at Bristol Castle, Barton, 1959) it is likely that the same vessels were used for both purposes.

Vessels whose use for wet storage is suggested include Cisterns, Tripod Pitchers and Bung-hole jugs.

A post-medieval development in liquid storage was the development of the glass or stoneware bottle. These vessels

allowed liquids such as wine, which would not previously keep except in air-tight wooden barrels, to be stored in containers that could also be used for serving. Large Frechen stoneware bottles, some standing upwards of half a metre tall, were obviously used only for storage, despite the similarity in form.

Dry storage: Vessels used for storing dry materials are Storage jars and Jars (and Lids). Butter-pots were probably also used for dry storage. Storage vessels of any kind are extremely rare in the medieval period in the region but are found more frequently in the 16th century and later. At this time a large variety of open or cylindrical forms were produced, whose functions although unknown in detail must have been for dry storage.

Liquid serving: Vessels used for the serving of liquids at table or for the temporary storage of liquid (for example in the kitchen) are termed Jugs and Pitchers. Jugs and Pitchers from London vary in capacity from c.0.75l to c.4.0l and there were probably differences in the way in which jugs of differing sizes were used. It is certainly clear that two sizes were intended, one with an average capacity of c.1.0l and the other with an average capacity of c.3.0l. Many jugs are highly decorated and there is a wide variety of forms, often made by the same potters (as for example at Laverstock, where a kiln-load from kiln 6 was preserved in-situ, Musty et al. 1969). This suggests that a subsidiary function of the jugs was simply to be observed and admired. It is therefore possible that jugs and pitchers can be divided into two groups on the basis of their decoration. In the 10th to 12th centuries the mere

presence of glaze might have been sufficient to set these vessels apart from the general run of pottery types whereas by the late 13th to 14th centuries glaze was commonplace and much more elaborate decoration was used on serving vessels.

The other class of vessels used in liquid serving are those used for drinking. These include Cups and Drinking Jugs. These vary considerably in shape and in the 18th century were joined by a whole range of vessels copied from Chinese tea-drinking vessels. Prior to this the main division is likely to have ^{been} between ale and wine drinking, the ale drinking vessels being larger than those used for wine.

Tableware: Vessels made for use at the table include Plates, Dishes (some only), Bowls (some only), Aquamaniles, Salts, Condiments, Chafing Dishes and possibly Miniature Jugs. It is noticeable that ceramic tableware is a late introduction. There are no vessels in the 10th to 12th centuries of any of these forms and some, like chafing dishes and plates are Tudor introductions.

Lighting: Lamps are a minor ceramic product from the late Saxon period into the late medieval period. They disappeared at this time to be replaced in the 17th century by candle-sticks.

Excretion: The use of urinals of pottery does not seem to have been practiced in the region during the medieval period and the earliest vessels used for excretion were Chamber-pots, of early 17th century and later date. These were joined in the mid-18th century by Stool Pans, for use

in a wooden comode. The use of these vessels illustrates the increasing standard of living during the post-medieval period.

CLASSIFICATION BY ACTUAL FUNCTION.

The actual function of any particular medieval vessel might be quite removed from what we consider to have been its intended function. The only way in which this can be tested is to analyse the contents of a vessel. On a glazed vessel these contents need to be visible to the naked eye and to form a discrete deposit inside the vessel, since the glaze prevents the vessel from absorbing any of the contents. On unglazed vessels many uses will lead to the vessel absorbing material which can often be identified by chemical analysis. This is achieved by taking a sample of the pot, including the inside surface, and crushing it to a powder. This powder is then placed in a filter paper and various solvents used to dissolve the various chemical compounds present. These can then be identified by infrared spectroscopy and gas chromatography (Evans & Hill, 1972). Despite the fact that all medieval vessels have been buried in the ground, through which groundwaters percolate, results from work by J. Evans of N. E. London Polytechnic are promising and indicate that in favourable circumstances the original contents are still intact within the surface of the pot (Evans, forthcoming).

The methods used by Evans are time-consuming, both in sample preparation time and in the subsequent analysis. For this reason they are never likely to become routinely available and therefore it is not possible to base a classification directly upon such results. If a

representative sample of vessels was analysed and a close correlation between form and contents discovered then there would be good grounds for assuming that a particular function was always associated with that form. However, many of the suggested functions of medieval pottery are not capable of proof using chemical techniques. It is also likely that the contents of a pot represent the latest use of the vessel, rather than its initial or intended function. A number of London jugs have holes cut into the sides after firing, mainly in the bases or sides. The holes can occur in otherwise complete vessels and cannot therefore be explained as holes cut as a prelude to binding a cracked vessel together. No such modifications have been recorded in the study region, although they were not specifically being sought.

CLASSIFICATION BY THE 'MENTAL TEMPLATE' OF THE POTTERS.

Differences between pottery vessels can be of two types; those that are perceived by the potters themselves and the people using the pottery and those that are not. It might be thought that a classification not based on the former criteria would be invalid, in that the types recognised are 'artificial'. Certainly, a knowledge of manufacturing methods is invaluable when examining and classifying pottery, since it is a reminder that control over certain aspects of vessel shape may have been limited. Considerable variation in the size and proportions of medieval vessels may be expected and may be purely 'random', having no information content in its variability. On the other hand there is other variation in the shape and

form of medieval vessels which results from the use of different techniques, or the same techniques in a different combination. Similarly the presence, location and type of decoration is a feature controlled by the potter. Such features are deliberate and do not normally affect the use of the vessel. The sharing of features of this type, together with similarities in fabric, has been used to group vessels together into 'wares' or 'industries'. In several cases, where the location or general area of production is known, it is possible to compare pottery forms from neighbouring centres.

For example, two industries existed in the Middle Severn valley within 10 miles of each other, at Malvern Chase and Worcester. Even comparing the handmade cooking pots from these centres it is possible to separate their products simply by examining illustrations of the vessels with almost total accuracy. This fact, and many other similar examples, has been used by the author during this study but the process which leads to this group identity has not been studied and is worthy of consideration.

If the likely size of the two industries is considered it is reasonable to assume that between 10 and 20 potters would have been working in each centre. Over the period of overlap of the two industries, from the beginning of the 12th century to the end of the 13th century, there must have been between 70 and 140 potters in the Malvern Chase area and a similar number in Worcester. Within the industries it is not possible to define typological groups, such as might arise from the presence of families of potters passing techniques from father to son, while

between the groups there is almost total separation, even when vessels of the same form were being made. Two possibilities, both perhaps capable of being tested should kiln sites or waster heaps be excavated, are that the system of apprenticeship was such that trainee potters could be apprenticed at any workshop within the community, even if the production of pottery was hereditary. The second hypothesis is that potters from neighbouring centres produced different pottery forms deliberately as a means of emphasising their products. It might follow from this that wares in direct commercial competition would have more distinctive differences than those of potteries whose market areas did not coincide. Neither hypothesis has been tested on material from the study region but the author would favour the former explanation. However, in the post-medieval period numerous potteries were operating in the Welsh borderland and in most cases the products of these industries, as revealed by collections from the kiln sites, are typologically identical. There are now so many kiln sites known that it is difficult to postulate a direct connection between all of the potteries. However, from occupation sites it appears that these potters were operating in a region in which non-local pottery, which might have lead to diversity, was not found. There may therefore have been little stimulus to produce different forms.

These two contrasting examples show that study of minor, incidental features of typology may be of value in the study of both medieval and post-medieval pottery. In

the following sections the vessel types found in the study region are discussed by broad functional group, and within these groups by subdivisions based on other characteristics, such as the shape, methods of manufacture or decoration of the vessel. It should be noted that two classes of vessel are split by this method of presentation. Bowls have been divided into those vessels used for food preparation, which are normally plain, and those used for display or serving, which can be decorated. Lids are also subdivided and occur in virtually every broad functional class.

FOOD PREPARATION VESSELS

ANGLO-SAXON JARS AND COOKING POTS

The pottery of the pagan to mid-Saxon period is extremely rare in the region and when found exhibits very few typological features which might be used to indicate date or function. The vessels are grouped together here with cooking pots simply for convenience. No doubt the vessels fulfilled a range of functions.

i) The earliest cooking pots in the region are Anglo-Saxon bag-shaped vessels with rolled-out rims. These vessels were handformed but the method of handforming unknown (although the smaller vessels were probably formed by 'pinching' up from one lump). This form is known in several fabrics in the region most of which are either chaff-tempered, or sandstone sand and chaff tempered.

It is the most common Anglo-Saxon form known and is essentially the same form as that used for decorated and funerary wares. Thus, the term 'cooking pot' should not

really be used as a generic term for the form (although some were undoubtedly used for cooking). The term 'jar' is used instead. A fifth to eighth century sequence at Old Town, Swindon, shows a progression from short, globular pots to taller, curved ones. Only two features, apart from the stubby rolled-out rims, are known; foot-rings (known from Wycomb, Gloucester) and vertical lug handles. In neither case is the size or shape of the complete vessel known.

A distinctive form of "fineware" jar of Anglo-Saxon date is the faceted and carinated jar. An example of this form from Fairford, Gloucestershire, is illustrated by Myres (Myres, 1969, Fig. 37 no. 49). This form is dated to the late 4th to 5th century by continental parallels and has not been recognised in sherd collections of chaff-tempered ware in the study region. However, the carinated form is found in the post-Roman period in the West, for example an unstratified vessel from Stanton Prior (Bennett, 1974) and a calcite-tempered vessel from Cheddar Palace (Rahtz, 1974, Fig. 4 No. 35 - published angle wrong). These examples are not faceted however and the carinated bowl form is found both in the late Roman period (for example on Oxfordshire parchment ware bowls) as well as in the pre-Roman Iron Age.

This same basic jar form is found at Saxon Southampton (Hamwih) in the 8th and 9th centuries (Hodges, 1981, 6-14, Fig. 2, 6) in several fabrics.

ii) Cylindrical, flat based cooking pots are known from Cornwall (Thomas, 1968) and Maxey (Addyman, 1964) but are not known from the study region. They were presumably made by coiling and occur in granite and shell tempered fabrics. Coil-built flat-based vessels are also found in chaff-tempered ware at Clapham (Densem & Sealey, 1982) and examples may be present at Hamwih (Hodges, 1981, 6-14, Fig.2,1,5 and Fig.2,4,6).

HANDMADE COOKING POTS

Although to some extent pottery forms are independent of the method of production, since one can use different techniques to produce the same end result, there is such a distinct difference in cooking pot form that the two groups are best dealt with separately.

With one exception all of the cooking pots made in the region have sagging bases. The exception is the Scratch-marked vessels produced in South East Wiltshire. The method of production of this type is unknown but the thickness of the neck suggests that the rim was added as a coil, irrespective of the way in which the rest of the body was made.

There are four main body forms for handmade cooking pots;

- a) Globular, with an obtuse base angle. This is typical of Cheddar E, Bath Fabric A and Gloucester TF41b.
- b) Curving, with a base angle approaching a right angle. This form, in which there is a definite constriction at the neck but which is basically cylindrical is the most common type and is found, for example, on Malvern Chase vessels.
- c) Cylindrical, in which there is no constriction at the

neck. This is an unusual form but it is found, for example, on Monmouth area cooking pots.

d) Slightly conical, This form is widest at the base and straight-sided. The form is first found in N. Cots. I ware, possibly in the 10th century and certainly by the early 11th century. In the later 11th to early 12th century it is found on some Oxford AC vessels, some Gloucester TF41b vessels, some Worcester-type cooking pots and, very rarely, on Malvern Chase cooking pots. In almost all cases the vessels have club rims. The exception is the Malvern Chase cooking pots, which have a squared cordon just below the rim.

Rim forms are largely independent of body form and can be divided into simple forms of the same thickness as the body itself and more complex forms which are formed by infolding, outfolding or squashing. There is no evidence for the use of templates in rim production and all of the forms found can be reproduced with the fingers.

Simple forms. There are three distinctive types of rim in this group; short everted rims, tall everted rims and vertical rims. Short everted rims are distinctive of Gloucester TF41b and in fact probably merge into the club-rimmed form (the only difference is one of angle; both types have the same length of rim). The majority of simple rims are in the order of 25-35mm tall. They can occur at any period from the 10th to the 17th century and in any part of the region. They are, however, particularly common in the late 11th to early 12th centuries, for example on Bath A, Gloucester TF41b and Newbury A vessels. Thumbing on

the rim is a common decorative technique.

Tall everted rims are rare but occur on some Gloucester TF41b spouted pitchers in the late 11th to early 12th centuries.

Complex forms. i) Squashed types. By squashing is meant any alteration to the rim shape which does not involve folding or otherwise thickening the rim.

A rare type, found only in the Bristol area in the 11th to early 12th centuries, is cylindrical with a slight groove and bead on the inside of the rim. This type is found on Bristol A/B and Bristol C vessels and on Hillesley-type cooking pots.

A more common form is everted, at an angle of about 45 degrees, and has a flattened top. This is often accompanied by a thickening on the outside. Such rims are found on 12th century Worcester-type cooking pots and on Hereford A3 cooking pots in the early 13th century. Within this basic type there are variations in the precise shape. Another common form has a cylindrical or slightly everted neck with a bead on the exterior. This is most likely formed by squashing rather than outfolding. The form is common on 11th to 12th century Bristol wares and on proto-Ham Green and Ham Green cooking pots. Thumbing is commonly found on this form.

Rolled-out rims, with no actual break of profile between the rim and the body, occur rarely in the region, they are found on Chepstow HA and Cirencester 201 vessels, both in the 12th century. In both cases the vessels are well-finished, probably on a turntable, but without the use of a wheel.

ii) Infolded rims. The most distinctive rim-type in the Severn Valley has a 'hook' profile formed by rolling an everted rim inwards. The earliest occurrence of the form is in the 12th century in the Forest of Dean. In the 13th century the form is found on Malvern Chase, Hereford A2 and Hereford A3 vessels as well as on some ungrouped vessels in the Welsh Marches. The same form is found on wheelthrown Malvern Chase and Hereford A7 cooking pots.

(WHEELTHROWN) COOKING POTS

The earliest wheelthrown cooking pots found in the region are of late Saxon date. Both Chester-type ware and some Gloucester TF41a vessels are wheelthrown. Apart from the Chester Hoard pot, there are no complete profiles known but in both wares it is clear that the vessels had pronounced shoulders and sagging bases, dished-out after throwing. Cylindrical necks are found on some examples of both wares but they differ in rim form. Chester-type ware rims are typically flat-topped and expanded whereas Gloucester TF41a rims are short but everted. Both wares also produced lid-seated rims. The Chester-type ware cooking pots are decorated on the shoulder with a single band of roller-stamping, whilst the Gloucester TF41a vessels are always undecorated.

There are several parallels to this basic shape, mainly in the East Midlands and East Anglia, but both the Chester-type and Gloucester types have more pronounced necks than any of these wares (cf. Hurst, 1977). Similar vessels have recently been identified at Exeter, produced in the Bedford Garage kiln.

The incidence of roller-stamping amongst these late Saxon wheelthrown wares is intermittent. It is present on Chester-type ware, some Thetford-type ware (including that produced at Ipswich, Norwich, Thetford itself - mainly in the 10th century, and Stamford). There is a suggestion that roller-stamping on late Saxon cooking pots is predominantly a tenth century feature and at both Ipswich and Thetford roller-stamping is an early feature. Later wheelthrown cooking pots from these industries having no decoration. There is little evidence however that Chester-type ware is earlier in origin than Gloucester TF41a and it is clear that in the main the two types were concurrent.

Sagging bases have also been considered to be a dating feature on the basis of the suggested sequence at Ipswich. (Hurst, 1977, 314-338). However, there is conflicting evidence from Thetford and from Langhale, both of which have flat bases showing wire removal marks in the 11th century. Stamford too produced some flat based vessels, but these belong to the very beginning of the sequence there, in the late 9th century. Thus, the fact that both Chester-type ware and Gloucester TF41a have sagging bases is probably not a useful dating factor.

Two wares whose method of production is dubious are Oxford B and Cheddar E. Both have squat but curving profiles with simple everted rims. Both have relatively thick walls but usually abundant parallel marks on the rim and body. On balance it is most likely that these types were not thrown on the wheel but were produced by hand and finished on a turntable.

The latest late Saxon wheelthrown cooking pot type is Cheddar B, not found in the region. This type has a similar form to Cheddar E but is often decorated with horizontal grooves on the shoulder. A single vessel of similar appearance was found in Gloucester but in a locally made fabric, Gloucester TF43 (Vince, forthcoming).

These wheelthrown late Saxon wares have no connection with those of the post-conquest medieval period. At least a century of hand-made production separates the two. These medieval wheelthrown cooking pots are usually partially glazed internally. The earliest definitely wheelthrown type is found in Worcester-type ware in the early 13th century. These vessels are small and globular with a short flat topped rim and no neck.

This globular, neckless form is common amongst wheelthrown cooking pots and is found for example in N. Cots. 2, Minety ware and Coarse Border ware. It is the typical wheelthrown cooking pot form in the London area (for example in Shelly-sandy ware and South Herts/Limpsfield wares) from the late 12th century onwards. There are differences in rim-form between these types, those of N. Cots. 2 and Minety wares having everted and sharply undercut rims whilst those of Coarse Border ware have wide, flat-topped or, later, lid-seated ('bifid') rims. The London area cooking pots have either wide, flat-topped or squared rims.

The other major form of wheelthrown cooking pot is roughly cylindrical, with or without a constricted neck. In several wares this form appears late in an industry which was earlier producing similar vessels by hand, for example

Malvern Chase, Hereford A2 and Hereford A3.

Similar vessels are known in Hereford A5, Hereford A7 and Gloucester TF110 wares, none of which are known to have handmade antecedents of this form. In the case of Hereford A7b the similarity with Malvern Chase cooking pots is so strong as to show that the type was being copied in Herefordshire.

The wheelthrown cooking pot disappeared during the fifteenth century and was replaced by the pipkin, the conical bowl, and the skillet.

PIPKINS

Pipkins are defined as cooking pots which have horizontal handles, that is, they were intended to be lifted by the handle rather than suspended over a fire or hung up for storage. Because of this they tend to be small to medium sized vessels in comparison to cooking pots and ceramic cauldrons.

The form is first found in the early 13th century, for example wheelthrown vessels made at Carrickfergus (Simpson et al., 1979) and in London-type ware (Pearce et al., forthcoming). There is a little evidence for the use of this form in Worcester-type ware in the early to mid-13th century and similarly there are rare horizontal handles in late 13th to 14th century Malvern Chase ware.

Metal cooking vessels made in cast bronze sometimes have horizontal handles and are known from documents and surviving examples from the 14th century (London Museum, 205, Pl.LV). When found in metal the form is usually referred to as a 'skillet'. In general the form is absent

in the region until the late 15th century, when tripod pipkins are found in Malvern Chase ware. Tripod pipkins are found amongst the products of the Post-medieval Welsh Borderland kilns.

SKILLETS

The term 'skillet' is applied by archaeologists to three quite separate forms. The first is an enclosed metal vessel with a horizontal handle. The ceramic version of this form would be termed a 'tripod pipkin' (Lewis, 1978). The second form is a shallow metal dish with a horizontal handle and three short feet, as shown by a vessel from Stanford-in-the-Vale (Goodall, 1981). No precise parallels occur in pottery but vessels without the feet do occur in a number of fabrics in the study region, principally in the south-east. The form is known in Newbury group C fabric with nicked decoration on the rim, which suggests that they were contemporary with the Newbury group C tripod pitchers in the late 12th century. This form also occurs in Coarse Border ware and Newbury group B. Dutch Red Earthenware vessels with this form are common from the late 14th century onwards but probably occur from the late 13th century onwards. This form is sometimes termed a 'skillet', 'frying pan' or 'socketed/handled dish'.

The last type ^{is a} ~~h~~ bowl form with three feet, a horizontal handle and a pulled spout. The form is found in cast bronze in the 17th century, when vessels with inscribed handles are common. The ceramic vessels are often sooted on the exterior and were probably used in the same way as present-day saucepans.

Only two wares in the region definitely produced skillets; Malvern Chase and Ashton Keynes. However, a number of post-medieval wares produced footed vessels which might either be pipkins or skillets (the distinction adopted here between the two forms is that the skillet is an open form whilst the pipkin is a hollow form). The Malvern Chase vessels are of late 15th to early 17th century date whilst the Ashton Keynes vessels are of early 17th to 18th century date.

LIDS

Pottery lids for cooking vessels can be of many forms; simple discs with a knob handle, the 'Chinamans Hat' form (the most common), a disc with a countersunk handle, and the overhanging form (meant to be used with an external flange). Although made in England from the 10th century onwards, Lids are rare in the study region until the late 15th century, from which time they form a small but regular part of the repertoire of several industries.

Lids are known amongst the products of the wheelthrown late Saxon pottery industries of eastern England and the East Midlands (Hurst, 1957, Fig.6 No.14 illustrates a Chinamans Hat form in Thetford ware) but are not known in the region, despite the presence of lid-seating on some Chester-type and Gloucester TF41a wheelthrown cooking pots. One possible medieval lid is known from the region. This is from Gloucester and is a stamped fragment of Bristol C fabric.

In the late 15th century lids are found in Malvern Chase ware and Minety ware and at an earlier date are first found in Coarse Border ware. In the late 16th to 17th

century lids are found amongst the products of the Herefordshire kilns. It is likely that these lids were meant to be used on cisterns and jars. However, there are considerably more jars, pipkins and cisterns than there are lids in any of these wares and it is likely that most lids were made of wood.

Overhanging lids are known in Border ware, probably for use on pipkins.

DRIPPING DISHES

Dripping dishes, also known as dripping pans, fish dishes or meat dishes, are oval or rectangular trays with a single handle and usually a pouring lip. They are shallow and usually heavily sooted from their use, which was either to sit under a spit-roast to catch the dripping or to cook fish.

The earliest examples known in the region are of early to mid 13th century date in Worcester-type ware and Cirencester fabric 201. There are no large fragments and thus no indication of their shape. They are, like all dripping dishes, slab-built and heavily knife-trimmed. Later medieval examples are known in Malvern Chase, Minety and Hereford A7b fabrics but they are by no means common (in comparison to the London region where they occur in several fabrics from the late 12th/early 13th century onwards). One of the Malvern Chase examples (from Holm Castle, Tewkesbury) has a small foot below the horizontal handle. This feature is found on London-type dripping dishes and is presumably to counteract the weight of the handle, which might otherwise cause the vessel to tip

backwards.

Dripping dishes are more common in the post-medieval period, being found in 16th century Malvern Chase ware (where they are definitely oval shaped) and late 16th to 17th century Stroat, Ashton Keynes and Crockerton wares. In the latter examples the dishes are actually rectangular with a pouring lip at one corner.

SPOUTED BOWLS

Spouted bowls are straight-sided, deep vessels with a tubular spout, handle or handle socket at right angles to the body. Although it has been suggested that the socket was intended to hold a wooden handle several examples have been examined with this function in mind and no evidence for wear on the inside of the socket has been noted. The bowls are often sooted externally.

In the region, single examples of this form are known or may have been present in Bath fabric B/D, Bristol fabric C and Gloucester TF4lb. They are more common in Somerset, where a group is known from sites just south of the Mendip Hills, including the Wedmore Bowl. This vessel was found with a coin hoard of c.1040. A pre-conquest 11th century date would be feasible for all three examples, although in each case the ware is also found in the later 11th and early 12th centuries.

MEDIEVAL BOWLS

Bowls are uncommon in the medieval period in the region, in contrast to several other areas, in particular East Anglia and the East Midlands. Shallow bowls or dishes, with diameters in the order of 300mm, are found in Oxford B

fabric in the 9th and 10th centuries but are not known in any of the Late Saxon wares in the region. A similar form but with curving sides and sometimes with rims thickened by folding is found in East Wiltshire and Berkshire from the late 11th to the 14th centuries (Newbury A and Newbury B). It is thought, because of the sooting of the exterior, that this form may be used for cooking but handled examples are rare, although they are known in Newbury B and Newbury C fabrics. In size and probably function these vessels are similar to the frying-pans found in Dutch Red Earthenware from the late 13th century onwards. Rare examples are found further west, there is one example in Forest of Dean sandstone-tempered ware (with an internal glaze but no handle) and one example in North Cotswolds I ware.

These wide, shallow vessels are quite distinct from another group of bowls with flaring or conical sides and, usually a flanged or otherwise moulded rim. These vessels have similar diameters to the type described above but with base diameters in the order of 150mm. This form is sometimes termed a 'pan' or 'pancheon'. This type, too, is found with sooted exterior. The form is found in Cirencester fabric 201 in the late 12th or 13th centuries, Newbury B fabric, North Cotswolds II, the Surrey/Hampshire border (Coarse Border ware) and at Kingston-on-Thames in the late 13th to 14th centuries. At about this time the form is found in Malvern Chase ware, with an infolded or more usually a hollowed rim. (These vessels are referred to in the gazetteer as wheelthrown cooking pots/bowls to distinguish them from other forms of bowl in the same fabric). This form has a definite south/easterly

distribution within the region.

POST-MEDIEVAL BOWLS

From the late 15th century onwards there is an increase in the frequency of bowls. All are wheelthrown and of roughly conical form. In Minety ware, flanged bowls with flat tops are found in the latest phase of production (the same form is present in Coarse Border ware in the late 14th to 15th centuries). Similarly, Malvern Chase conical bowls with infolded rims are one of the most common 16th to early 17th century forms. This form, together with the infolded rim, is found in fine micaceous redware fabrics in the Welsh Border (for example Hen Gwrt, Gwent) and at Kidderminster (Kidderminster-type ware). Some of the Malvern Chase vessels have two small lugs at the sides, but this is a rare feature.

'Cream pans'. A different form is found in Stroat ware, and in the Herefordshire kilns in the late 16th and 17th centuries. These vessels are possibly larger, often have 'T' rims and sometimes have wide pulled spouts. This form is sometimes known as a 'Cream pan'. Large horizontal loop handles are sometimes found. The Stroat examples sometimes have white slipped interiors. This form is also known in Ashton Keynes ware in the 17th century and Newent Glasshouse in the late 17th to 18th centuries. It is also known in Ashton Keynes ware in the 17th century and Newent Glasshouse in the late 17th to 18th centuries. It has been suggested that the occasional sooting found on these vessels is due to their use in making cream (Marshall, 1948, terms these vessels 'milk steens').

Deep bowls. A quite separate form of bowl is termed for convenience a 'deep bowl' and has a form not unlike a flowerpot. This form is known in Ashton Keynes and Newent Glasshouse wares in the 17th and 18th centuries. Unlike the conical bowls there is never any evidence for sooting. The Ashton Keynes and Newent Glasshouse vessels differ somewhat in overall profile and in rim form but are quite similar in the range of sizes. Both types are internally glazed only and rarely if ever have handles.

Large deep bowls. The same form but in a much larger version is known in Newent Glasshouse ware. This type has two lug handles. A similar form is produced in Staffordshire in the late 18th to 19th centuries, if not earlier.

Small straight-sided bowls. Another type of bowl is completely, or almost, cylindrical and is usually wider than it is tall. These small straight-sided bowls are found in Ashton Keynes ware and Newent Glasshouse ware and are probably a late 17th century innovation.

COLLANDER

Sieves or collanders formed from bowls with square or round holes pushed through the walls are found, rarely, in a number of post-medieval wares, including Border ware, South Somerset ware, Stroat ware and Ashton Keynes ware. In all cases these collanders could be of 17th century date. Their absence from Malvern Chase ware might suggest that the form was introduced in the mid-century. It may be that their apparent absence from later 17th and 18th century wares (for example, none are known in Newent Glasshouse ware) might mean that they were superseded by metal

vessels.

LIQUID SERVING AND STORAGE VESSELS

SPOUTED PITCHERS

Spouted pitchers are of the same form as cooking pots but with a tubular spout and an opposing handle. They have no feet or base decoration. Body sherds can only be tentatively identified unless the fabric is limestone-tempered. In this case the internal inclusions are always noticeably more heavily leached than the external ones. The outside of the vessels is never sooted and decoration is more often found (although many spouted pitchers are undecorated). Although all of the spouted pitchers found in the region are handmade the same form is found in the wheelthrown Saxo-Norman wares of East Anglia and the East Midlands (but not in Chester-type ware nor in Gloucester TF41a). It is thought that the type is 'late' in the Saxo-Norman pottery sequence, that is, 11th century rather than 10th (Hurst, 1977, Jennings, 1981).

It is likely, though still open to doubt, that spouted pitchers are a pre-Norman innovation. They occur at Bath Citizen House in contexts associated with Winchester-type ware but no locally made glazed wares but are not found at Silbury Hill in an early 11th century context.

Spouted pitchers are known in Bath fabrics A and B/D, Bristol fabrics A/B and C, and Gloucester TF41b. In all but the latter type the vessels are commonly stamped on the shoulder. Stamped pitchers are also found on Gloucester TF41b but are uncommon. Bristol A/B vessels are also decorated with grooving. It is thought possible, from

evidence at Gloucester, that there is an overlap in date between spouted pitchers of Gloucester TF41b and glazed tripod pitchers of Minety and Malvern Chase wares. Spouted pitchers are not found in South Wales or the Welsh Marches. This might be an indication of the end date for the type, since local pottery production did not get underway until the 12th century in these areas.

GLAZED SPOUTED PITCHERS

These are small vessels with a wide neck and jar form with a handle and a tubular spout. All are wheelthrown. Only three types are known in the region of which by far the most common is Stamford ware. Winchester-type ware has a similar wide distribution whereas Hereford A7a pitchers are known from less than a dozen fragments.

All types have features in common: firstly the presence of tubular spouts (not known from Hereford A7a); secondly, the strap handle joins the rim at the rim top not, as in later jugs, just below the rim; thirdly, the lower handle join is always luted and thumbed and fourthly, all types have sagging bases with no decoration around the base angle. The types differ in decoration: Winchester-type vessels are often highly decorated whilst Stamford ware pitchers are usually plain. Hereford A7a pitchers are also plain except for bands of wheelthrown grooves on the body.

The introduction of glazed spouted pitchers is earliest in Stamford ware, in which late 9th and early 10th century vessels are known, although most of the examples in the region are 11th and early 12th century in date. Winchester-type ware pitchers are thought to have been introduced

c.950 and are certainly pre-980, although again the majority of finds are in much later contexts both in Winchester itself (Biddle and Barclay, 1974, fig.2) and in the region as a whole. The introduction of Hereford A7a vessels is not so precisely dated but they are definitely contemporary with Chester-type ware, Gloucester TF41a and late 10th to early 11th century Stamford ware and are not therefore necessarily later than the Winchester-type ware vessels.

There are no known successors to the Hereford A7a vessels in the same fabric, nor is there any good evidence for the development of tripod pitchers from Winchester-type vessels (but see Biddle and Barclay, 1974, 152-4). Only at Stamford does an industry start off producing spouted pitchers and then switch over to jugs. The main difference between the spouted pitcher and the jug is in the rim and neck. Spouted pitchers appear to be essentially jars to which spouts and handles have been added whereas jugs have a shape of their own with a tall neck and relatively narrow rim (see below).

There is therefore a parallelism between the replacement of the glazed spouted pitcher by the early standard jug in the east and the replacement of the unglazed spouted pitcher by the glazed tripod pitcher in the west and south. In both cases the earlier type is similar in size and shape to the contemporary cooking vessels with the addition of a spout and handle whilst the later vessels have similar bodies to the contemporary cooking vessels but are larger and have relatively narrow

necks. This difference in size suggests that the later vessels are not simply a development in the form of one type or class of vessel but fulfill a different function. There are no late 12th century serving vessels of comparable size to the spouted pitchers in any fabric.

TRIPOD PITCHERS

Tripod pitchers are large three-footed vessels with a narrow neck and either a single handle or sometimes three handles. All have a spout or lip of some kind and all are glazed. They were first discussed as a type by Bruce-Mitford (1940). They must have been used for storing liquid, a full tripod pitcher would certainly be too heavy to carry and the handle and neck might well not have stood the strain of being lifted. The three feet would have allowed the vessel to tip forward for pouring and would enable the pot to sit on an uneven surface, such as an earthen floor. In terms of size tripod pitchers overlap with other glazed jugs of the 13th century and later but are larger than the glazed and unglazed spouted pitchers of the 11th and early 12th centuries. Three main shapes of tripod pitcher are found, differing mainly in the shape of the base and the lower part of the body. All tripod pitchers in the region are handmade and it is likely that this form division parallels that found in the contemporary cooking pots because the two vessel types were produced by the same potters. There appears to be no functional difference between the types nor any obvious advantage in one form over another.

ROUND BASED TRIPOD PITCHERS

Only one type of round based tripod pitcher is found, that of S.E. Wilts. There is no good evidence for the starting date for this type. It might be of late 11th century date (and is taken in Winchester to mark the Norman conquest in the Winchester pottery sequence, pers. comm. K. Barclay) and is certainly found in the 12th and early 13th centuries. The origins of the type are completely unknown.

SAGGING BASED TRIPOD PITCHERS

The most common tripod pitchr type has a sagging base and a globular body. There is a division between those vessels with a cylindrical or slightly flaring neck and those with a curving neck. Sometimes, as in Minety, Malvern Chase and Newbury C, the two types are both found in the same fabric and in all three examples the sharp necked type can be demonstrated to be earlier.

It is likely that this type originated in the early to mid-12th century, certainly Minety tripod pitchers of curved neck form were present in Bristol by c.1125, although the Malvern Chase curving necked tripod pitchers do not appear until the begining of the 13th century. More use is made of applied thumbed strips on the sharp-necked types than on their successors, especially around the neck and used on the girth and shoulder to divide the upper half of the vessels into triangular zones.

The curving necked types tend to have more use of combing and of small triangular-sectioned strips, often as horizontal bands of straight and wavy combing or as slanting vertical lines.

In many cases there is a progression from tripod pitchers to frilled-base jugs in the same fabric, although in most cases the frilled-base jugs are rare. In one case, Newbury C, there is a vessel which combines feet with a thumbed base. In this particular case there is a true transformation from a tripod pitcher producing industry to one producing jugs. In Minety, with the exception of one bridge-spouted sherd and one complete thumbed base jug, there is a gap between the production of tripod pitchers and the later production of wheelthrown jugs. Similarly there is a change in fabric as well as firing and method of manufacture in Malvern Chase between the production of late tripod pitchers and the first wheelthrown jugs with only a few thumb-frilled jugs known in the earlier fabric.

STRAIGHT-SIDED TRIPOD PITCHERS

Only two types of straight-sided tripod pitchers are known in the region; Shrewsbury-type and Hereford A4. Neither is known from complete vessels nor is either very common as sherd material because of the lack of excavation in their respective production areas (Shrewsbury? and North Herefordshire). Shrewsbury-type ware first appears in Gloucester in the early to mid-13th century and a similar starting date, (that is, later than Hereford A2 and Hereford A3 tripod pitchers) is found for Hereford A4. This might suggest that straight-sided tripod pitchers are much later than globular tripod pitchers, a conclusion which fits all of the available evidence (including Hen Domen, Barker, 1970, 33-34, where both short and long chronologies are possible) with the exception of evidence from Haughmond Abbey, Salop, where sherds of Shrewsbury-type tripod

pitchers occur in contexts dated by the excavator to the early 12th century (pers. comm. Duncan Wilson).

The type of transition from tripod pitcher to jug production in these industries (if present) is not known. The Richards Castle wheelthrown jugs are in a similar fabric to Hereford A4 but with fewer inclusions whilst wheelthrown jugs in Shrewsbury are in a more heavily sand-tempered fabric. At Montgomery Castle however some wheelthrown roller-stamped jug sherds were found in a finer version of the Hen Domen siltstone-tempered ware.

A few wheelthrown tripod pitchers of this form occur in Developed Stamford Ware in the late 12th century. Like the Shropshire examples they have rectangular feet (termed 'ledge feet'). The relationship between this form and the Shropshire type is not known.

UNGLAZED PITCHERS

This type of jug is distinctive because of the absence of glaze and the fact that it always occurs in a ware producing mainly cooking pots. The body form is always globular with a sagging base. Some vessels, for example Newbury B, typically have no base decoration whilst others have thumbbed bases (either regular or in groups, for example Hertfordshire Reduced Ware). A single unglazed handmade jug is known in North Cots. I fabric, found at Winchcombe in a 12th to 13th century context. This vessel has a rod handle and is decorated on the rim and handle with finger-nail nicking.

In other fabrics however the type is common. In Chepstow HA unglazed pitchers decorated with single square-tooth roller-stamping or combing are found from the 12th century into the late 13th century. The latest examples from Chepstow (site VI, late 13th to early 14th century) have a patchy glaze. These vessels are handmade but regularly wiped, perhaps on a turntable.

The jugs found at Awre, Gloucestershire, in Forest of Dean Sandstone-tempered ware are similar to these later Chepstow HA vessels. They too have a sparse plain glaze and are handmade. *sf*

In Newbury fabric B unglazed handmade pitchers are found from the late 12th century to the mid-14th century, if not later (at 83 St. Aldates, Oxford a smashed vessel of this type was found in a well, F45, with a late 14th to early 15th century Oxford AM jug, Haldon and Mellor, 1977, 137, fig. 24 No. 1).

Deritend greyware pitchers can only be dated from a single example from Hereford (from an early 13th century context) and from the timber kitchen at Weoley Castle, West Midlands, where they occur in an early to mid-13th century sequence. It is quite possible that the type has an origin in the late 12th century. In terms of the origin of the type it is interesting to note the similarity in decoration between the Deritend slipware and that of London-type ware of the early to mid-13th century. Possibly the Deritend potter(s) originated in the London area, where unglazed pitchers from two sources were common.

In Hertfordshire, Hertfordshire reduced ware pitchers are found from the late 12th century to the late 13th century. They differ from those described above in being wheelthrown. They are usually plain except for the handles which are often highly decorated with deep thumb impressions and stabbing. The bases are usually sagging and often but not always thumbed.

Similar vessels are known from Limpsfield (Prendergast, 1974) and the Norwich area (Jennings, 1981, 48-50, Fig.17) whilst Grimston software jugs have a similar form but are often splash-glazed (Clarke and Carter, 1977, fig.78). The latter type is present in late 12th century contexts at Baker Lane, Kings Lynn, and is interpreted by Clarke and Carter as being an intermediate development between the Saxo-Norman spouted pitchers and the 13th century Grimston jugs.

There is an undoubted family resemblance between some of the essentially unglazed jug types and in fact little to show any descent from the spouted pitcher (for example, whilst late 12th century tripod pitchers often still had tubular spouts all of the present vessels have pulled spouts). The type is consistently later than tripod pitchers in the same areas and seems to appear over a wide area of the country at about the same time in the late twelfth century.

There is also abundant evidence that the type continued to thrive alongside glazed jugs in several areas. Indeed, Low Countries Greyware pitchers are unglazed with a similar shape to these vessels although they are not found in this country until the end of the 14th century. The demise in

the later 14th century of the English unglazed pitcher is probably more to do with the end of the unglazed cooking pot industry in general than with any replacement of this form by a more suitable successor.

Being essentially unglazed, these vessels would not have held liquid for any length of time without leakage. However, this feature might actually have been put to some advantage in that evaporation of liquid from the surface of the vessel would serve to keep the contents cool. It is likely therefore that they were used essentially for some contents that were used up quickly and were not so valuable that loss by evaporation and seepage would be a problem. Their most likely function would be to fetch and temporarily store water.

EARLY ROUNDED JUGS

There is a distinctive shape to the earliest wheelthrown jugs, typified by Developed Stamford Ware vessels. The lower half of the vessel is similar or identical to that of spouted pitchers and cooking pots (ie. plain sagging bases and gently curving or straight walls). The neck however always gently curves into the body and is usually nearly cylindrical. The rim forms differ from type to type. Two handle forms are found; rod and rectangular and there are two methods of handle attachment; luting (eg. Dev. Stamford) and pushing through the body (eg. London-type). The spouts are pulled. A few Developed Stamford ware examples have recessed bases but these may be of thirteenth century date (Simpson, 1982, Fig.74 No.21).

To date, four production areas are known, all in the East of England. These are Stamford, the London area, Sible Hedingham and the East Midlands (St. Neots-type jugs). Sherds of this type were found at Newbury in the late 12th century levels of 143-5 Bartholomew Street. They were thought at the time to be the same fabric as Newbury C handmade tripod pitchers but may well have been from some other source, perhaps London-type ware. The only other examples of this form to occur in the region are rare sherds of Developed Stamford ware and St. Neots-type jugs.

The form appears in the mid-12th century (a date confirmed by dendrochronology in London for both London-type ware and Developed Stamford ware) but whereas in London the form has a short life, being replaced c.1200, it appears to be a standard Medieval form in other areas, for example northern and eastern England, throughout the Medieval period. Early standard wheelthrown jugs occur at the same time as the rise in the use of tripod pitchers in southern and western England and the two forms are also similar in size. Whereas tripod pitchers replace, but are larger than, unglazed spouted pitchers early standard wheelthrown jugs replace, but are larger than, glazed spouted pitchers.

TUBULAR-SPOUTED JUGS

A rare but distinct type was produced in Developed Stamford. It has three handles, all of full-size, and a free-standing tubular spout, supported by a clay bridge to the rim (Simpson, 1982, 162-4). This form is also found in the Nottingham, Grimston and Scarborough industries, where the vessels are often covered with modelled knights in

relief (Clarke and Carter, 1977, 206, fig.91 No.12). A few examples of this type are known in the region, for example in Hereford A7b, but none are complete. A single sherd of a tubular spouted pitcher with a flaring rim and incised and stabbed decoration on the body is known in Hereford A3. This must therefore date to the first half of the 13th century.

A few lids are known in Stamford, Grimston and Scarborough wares. These are flanged with a locking device and are meant to fit onto these highly decorated tubular-spouted jugs. No examples have been found in the study region (Kings Lynn - Stamford ware: Clarke and Carter, 1977, 219, Fig.97, No.6-7; Norwich - Grimston ware: Jennings, 1981, Fig.23, No.385; Farmer, 1979, Kilmurry, 1980).

ANTHROPOMORPHIC AND FACE JUGS

Jugs made in the form of human beings are rare in the region. They are however known from the late 12th century onwards (for example in London-type ware). The type has received considerable attention from Musty, who has produced a classification used to describe the material from Laverstock (Musty et al. 1969. 126-132). Those jugs in which the arms and perhaps details of dress are shown are termed by him Anthropomorphic jugs, whilst those in which the face is shown are termed Face-decorated jugs. These are further divided into Type I: Face-on-spout jugs, Type II: Face-on-rim jugs, Type IIA: Stylized Face-on-rim Jugs in which crude faces surround the rim, which is usually of the grooved collar type. Type III: Face-on-body jugs have one

or more plastic clay faces around the girth. Type IV have stamped faces on the body or rim. It appears from the illustrations that the Laverstock vessels have stamped applied pads rather than stamped bosses but the text does not make this clear (Musty et al. 1969, 130-1).

Anthropomorphic jugs: i.

The Laverstock anthropomorphic jugs were a rare product, occurring in only one kiln, kiln 5. They are either spoutless or have a small tubular spout forming the nose of the jug. The hands are either folded on the chest or grasp the spout. All of the Laverstock vessels have a distinctive heart-shaped face with nicking around the edges representing the hair and beard.

The form is also found, rarely, at Kingston-on-Thames (Spencer, 1969, 388) which also produced a few examples with a Ram's head instead of a human one. Parts of one vessel were found at Berrington Street, site IV, Hereford in Hereford A7b. It is likely that a few examples were also produced in Bristol Redcliffe ware, (for example, Ponsford, 1979, Fig.23, from the Pithay, Bristol). Two sherds from the Nash Hill kiln site may be of this type or might be from 'Knight jugs' (Mc Carthy, 1974, Fig.20 Nos.270-1).

It is likely that most of the examples of this type are of late 13th century to early 14th century date but a degenerate version is known on Coarse Border Ware (for example MOL Accn. No. 5628) and Border Ware (London Museum Catalogue, Pl.LXIV) and so may well survive into the late 15th or 16th century (No examples were found at Trig Lane in a large group of c.1440).

Anthropomorphic jugs: ii

A distinct variation of the anthropomorphic jug has the figure represented on the side of the jug with the beard extended from the rim to join the body on the shoulder. This form occurs on Yorkshire jugs (Clarke and Carter, 1977, 212, Fig.94 Nos. 1, 2, 4 & 6) and possibly on Grimston ware (Clarke and Carter, 1977, 206-8, Fig.91, No.8). No examples are known from the region.

Anthropomorphic jugs: iii

Another variant type is distinguished by its miniature size. The form is known in Kingston ware, where some vessels have moulded faces (Hinton, 1980; London Museum, 1954, Pl.LXIII No.4) and in Mill Green Ware. As on the full-scale vessels a rams head sometimes replaces the human one. No examples of these miniature jugs are known from the region.

Face-on-spout jugs.

This form, in which no details of the body or hands are shown, is frequently found in Bristol Redcliffe ware (Ponsford, 1979, 49-55). It may be that in Bristol this type is a simplification of the Anthropomorphic jug since one complete example is a flat-based standard jug thought to date from the 14th century (Ponsford, 1979, 54, Fig.22 No.2).

In both Bristol and Laverstock wares the treatment of the face on Anthropomorphic and Face-on-Spout jugs is very similar but the two groups differ considerably. Only one Bristol vessel has a beard (Ponsford, 1979, Fig.22 No.1).

Face-on-rim jugs.

The distinction between face-on-spout and face-on-rim jugs is that there is no attempt to represent a single individual, more than one face can be used on a vessel. The type is known from Laverstock (Musty et al. 1969, Fig.19 Nos.149-150) and from Nash Hill (Mc Carthy, 1974, Fig.20 Nos. 263-4). The Nash Hill faces are very similar to those from Laverstock in having a heart-shape and nicked beards, but not however nicked hair.

A single example of this type is known in Bristol Redcliffe ware (Ponsford, 1979, Fig.22 No.1). The type is also known in Grimston-type ware (Clarke and Carter, 1977, 206-8, Fig. 91 Nos. 4, 6-9).

Stylized Face-on-rim jugs.

The stylized face was made from a small lump of clay, attached usually to a grooved collar rim. First the lump was squeezed from the sides and then often the chin and mouth were formed by pushing the lump up. Eyes were often added with a round point or ring and dot stamp and the mouth, if indicated, was formed with a single groove. This type was used at Ham Green, for example surrounding the rim of the Wharton Street, Cardiff jug (Lewis, 1978, 10, No.11 where the eyes are represented by ring stamps) but was also used on Bristol Redcliffe jugs (Ponsford, 1979, Fig.22 No.3). A single example is known on a Worcester-type ware jug from Hereford (Vince, forthcoming a). It was the earliest type of face-decoration used at Laverstock (Musty et al. 196^a, 127, Fig.19 Nos.151, 158-160) and is also present at Nash Hill (Mc Carthy, 1974, Fig.20 Nos. 266-7). The type is also apparently quite common around Oxford in

the late 13th century (fabric AM? Hinton, 1973 Nos.11 and 12). Quite often, on all these types, the human aspect is completely lost (for example Nash Hill, Mc Carthy, 1974, Fig.19 Nos. 250, 252).

This type is related to other jugs where applied pads around the rim have either no decoration, combed lines, vertical grooved lines, ring and dot stamps or more complicated stamps. All these variations are present at Laverstock, the ring and dot stamped pads are present at Nash Hill and the combed pads are found, rarely, on London-type ware of the first half of the 13th century. These pads, and the stylized faces, are a thirteenth century feature first appearing no later than c.1250 since they are found on Ham Green and Worcester-type jugs but continuing into the second half of the century.

Face-on-body jugs.

This form, in which the body of the jug is turned into a representation of one or more large faces by a mixture of applied features and grooved decoration is found at Laverstock, where a number of sherds of smaller faces are also included. It is possible that the latter might better fit into the class of 'Knight jugs' since they may be parts of jugs decorated with scenes. Laverstock is the only source in the region for face-on-body jugs but Musty quotes an example, which might or might not be a Laverstock product, from Winchester. A single sherd of a very similar jug in London-type ware is in the Museum of London (MOL Accn. No.11529). The face is over 150mm tall and the nose is applied whilst the rest of the features are shown by

sgraffito lines and the eyes, like the Laverstock examples, are shown by ring and dot stamps.

An early to mid-thirteenth century date is likely for both the London-type jug and the Laverstock examples.

Stamped Face jugs.

Stamped faces are only known on Laverstock jugs (Musty et al. 1969, Fig.20 Nos.161-5). As Musty states, these vessels are best considered as part of a wider group of stamped pellet jugs, examples of which were found in the latest phase at Laverstock.

'Knight jugs'

Jugs decorated with applied figures or animals are here grouped together as Knight jugs, although not all the representations are of knights. The type is known in the region in Ham Green ware, including a few complete vessels where the composition of the scene can be discerned. One of these is a hunting scene with a man armed with bow and arrow, a dog and a stag (from St. Peters, Bristol with an almost identical fragment from the Ham Green kiln site, Barton, 1963). Another consists of a frieze of women holding hands (Lewis, 1978, No.11).

At a later date the type is known in Bristol Redcliffe ware, although it is not common. Two large fragments are known: one from Dublin (N.M.I., 1973, Pl.18) and the other from the Pithay, Bristol (Ponsford, 1979). Fragments of similar jugs are known from the Nash Hill kiln site. Representational decoration is much rarer on other wares in the region, although occasional examples do occur, for example an animal on a fragment of Newbury C jug from Newbury (Vince, forthcoming). This example is probably

contemporary with the Ham Green ware vessels and emphasises the point that there is probably not a single highly-decorated phase in Medieval pottery. The earliest examples of highly-decorated jugs were produced in Developed Stamford ware and thus might be late 12th century in date, although it is possible that they were amongst the later products of the industry. Nevertheless, a date in the first half of the 13th century is certain for the Developed Stamford ware vessels, the Ham Green vessels and the Newbury C sherd.

STANDARD JUGS

The most common jug form in the 13th century and later is termed here a 'standard' form. Other possible names are 'rounded' and 'bulbous'. All these names indicate a vessel that is taller than it is wide with a neck that curves into the body and a base that is just narrower than the girth and a base angle that is roughly a right angle, sometimes more and sometimes less. The standard jug has one handle leaving the neck just below the rim and joining the body at or slightly above the girth. The earliest jugs of this form are handmade and of early to mid-13th century date and in this region are sometimes extremely similar in shape, fabric and method of manufacture to the tripod pitchers, for example Malvern Chase jugs, Ham Green jugs (especially type 'A'), Oxford fabric Y jugs (for example Hinton, 1973 No.8) and Minety jugs. At the same time, or perhaps slightly later, Worcester-type jugs first appear. Although of a very similar form to the standard jugs mentioned above, they are wheelthrown and tend to be narrower on

average. In many respects Ham Green and Worcester-type jugs are very similar: they both have flat-topped rims with a stepped profile on the exterior; they both have strap handles with a sub-rectangular profile (compared with the broad U-shape of Minety handles for example). To counteract this similarity however there are significant differences in decoration and most importantly the difference in manufacturing method. This form remains the most common throughout the medieval period. The only changes of any importance are in decoration (vessels of 13th century date are usually decorated in some way, even if only by horizontal grooving, whereas 14th and 15th century standard jugs are plain, or at least plainer) and in the form of the base. 13th to early 14th century bases are sagging with a thumbed frill or thumbing whilst later 14th to 15th century jugs have flat bases. Although rare, standard jugs are still found in the late 15th to 16th century, for example in Malvern Chase ware, but become less common, if found at all, in late 16th to 17th century wares. In their place are found smaller, squat vessels with a wide neck and pulled spout.

BALUSTER JUGS

Baluster jugs are distinguished by their great height in relation to their width. Most baluster jugs are substantially taller than contemporary standard jugs but there has been no comparison made of their capacities (within the region). The baluster jug is a phenomenon of the late 13th to 14th century in the region although in London-type ware it is known, but extremely rare, from the late 12th century and is common from the mid-13th to the

mid-14th century.

The other distinguishing feature of the baluster jug is the presence of a constriction just above the base, giving rise to a sharply acute base angle. This is often the only distinguishing feature of the form in sherd collections. It is probable that this feature, which can occur on shorter vessels as well, is partly functional in that such a tall vessel would need to be supported with two hands whilst pouring and the constriction would give a better grip than any other base form. Illustrations of medieval jugs in use show clearly that two hands were used (Hartley and Eliot, 1931, pl.39). The baluster form occurs in all of the major late 13th to 14th century potteries of the region and is often, as at Laverstock, highly decorated. At Laverstock the form occurs in the earliest kilns alongside standard jugs and is the predominant form in the later kiln groups.

A distinct variant occurs in Oxford AM and in the London area (London-type and Kingston wares). This form is very tall with a curving body divided into three zones for decoration. This type is termed in the Oxford region the 'triple decker' (Hinton, 1973, No.13). Later Oxford AM vessels are less highly decorated and narrower (Hinton, 1973, No.14).

The Malvern Chase baluster jugs are known mainly from sherds but two complete examples are known (Vince, 1977, pl.5 nos.2 & 3). They differ markedly in shape, one being essentially cylindrical with a slight bulge at the girth whilst the other has a 'top heavy' appearance with a narrow constriction above the base and a wide base flange. The

latter form is known in Kingston ware, where the upper part of the vessel is covered in rilling and the base is often heavily knife-trimmed. Neither feature is found on the Malvern Chase example. The wide flanged baluster base is known on Saintonge green-glazed baluster jugs and on a few Minety jugs. The only highly decorated Minety jugs known are of baluster form and come from Cirencester Abbey.

It is unlikely that the baluster form survived in the region later than the mid-14th century but it is found (though rarely) in Coarse Border Ware in London (often with a rudimentary face and hands and the use of both plain and green glaze to emphasise the decoration. This type could be as early as c.1340 but it has not been found at Trig Lane, suggesting a later 15th or even 16th century date.

SMALL ROUNDED JUGS

A distinctive type of jug is found in late medieval Minety Ware. This type is small, has little or no decoration and has a globular body and cylindrical neck. The form is not dissimilar to that of 16th century Cologne and Frechen drinking jugs but is undoubtedly earlier, being found in the late 13th century at Laverstock (Musty et al. 1969, Fig.15 No.108). These small jugs are known in Kingston ware, where they are one of the latest products of the industry and in Minety ware, where they were a regular product. A single example has been noted in Bristol Redcliffe ware (unstratified, Bristol City Museum) but the type may well be more common. Having no distinctive features except its shape and size it is difficult to identify from sherd collections. Despite the similarity to Rhenish drinking vessels in form these small rounded jugs

have a greater capacity and sometimes a pulled spout. They were probably used for serving liquids.

BICONICAL JUGS

The term 'Biconical jugs' has been applied to two quite different forms: firstly to late medieval jugs in Oxford AM fabric which are of the same size as 'standard' jugs with no sharp neck angle and a very sharp angle at the girth (Hinton, 1973, No.15). This form always has a pulled spout and is usually decorated with vertical applied strips. The type is first found in the 14th century. A few body sherds in Newbury fabric C may also be from vessels of this form but otherwise the type was not produced elsewhere in the region. It is likely that the form imitates a metal original, the sharp angle is not a natural shape for pottery.

The other form is found at Cheam in the late 14th and 15th centuries (Orton, 1982, Fig. Nos.24-30). It is small and narrow with no pouring lip and a distinct neck angle. The sharp angle is again at the girth but the girth is much higher on the body on the Cheam vessels than on the Oxford AM ones. Orton suggests that these vessels are actually drinking jugs (1982, 80-81). The form is also known in Coarse Border Ware and from a dump of whiteware wasters from Southwark (Orton, 1982, 85) but does not appear to have been traded to or produced in the region.

STANDING COSTRELS

The term standing costrel is given by Hurst to vessels with two suspension lugs at the neck, a restricted neck and a flat base. The form is known in Iberian red micaceous ware from the 14th century onwards but is not made locally until the 16th century. A single example in a slightly sandy, micaceous fabric, thought to be Hereford A6 was found in a late 16th to early 17th century context at Berrington Street, Hereford. The form is also found in Border ware of late 16th or 17th century date (Holling, 1971, 79, type K2).

A large number of light-bodied yellow glazed standing costrels were produced in the Verwood potteries but their absence from archaeological collections suggests a very late date for this type (Brears, 1971, 178).

BOTTLES

The earliest ceramic bottles known, excluding those of the 6th and 7th centuries imported from Northern France (Evison, 1974), are of the late 13th century. They can be very difficult to identify in sherd material because of the overlap in size and shape with 'drinking jugs'.

Bottles are defined as vessels with a very constricted neck (suitable for corking) and, possibly, no handle. The form is very rare in the region but is known in the late medieval period in Bristol Redcliffe and Oxford AM wares. These vessels sometimes have an internal glaze. In both wares the form is tall and thin with a flat base and simple, slightly everted rim. Examples found on the Laverstock kiln site were unglazed and were considered by Musty to have been used for containing oily materials of

low vapour pressure and high viscosity (Musty et al. 1969, 134, fig.22 nos. 179-180). Two examples are published by Barker from Petton and Shrewsbury (Shropshire) (Barker, 1970, fig.23). Similar shaped vessels are known from Cheam (Surrey) in the late 14th or 15th centuries and were considered by Marshall to be measures (Marshall, 1924, 86, fig.8).

A few vessels in Malvern Chase ware have similarly been termed bottles. They are of late 15th to 16th century date (one coming from a 16th century pit) and are handled. Similar small jugs/bottles have been discussed by Dunning, who suggested that they were cruets, though probably not all for religious use (Dunning, 1969, Lewis, 1968). Thorn has published a medieval illustration showing similar small jugs in use in food preparation (Thorn, 1973) and Henisch has reproduced an illustration which shows such vessels being used to garnish roast meat with sauces immediately prior to it being served at table (Henisch, 1976, 140, Fig.25).

AQUAMANILES

Aquamaniles were, as the name suggests, used to wash the hands at table and are also found in copper alloy (Nelson, 1932). No substantial part of an aquamanile has been found in the region, although one exists in Shrewsbury (Barker, 1970, fig.29, plate I). This vessel, which has no rider is thought by Barker to represent a boar. Part of an aquamanile in the form of a mounted knight in Bristol Redcliffe ware has been found in the St. Peter's excavation at Bristol and the leg of an aquamanile, heavily knife-

trimmed, was found in Hereford in Hereford A7b fabric.

Four aquamaniles were found in the kiln excavations at Laverstock (Musty et al. 1969, 132-3, fig.22 nos.174-6). Two were definitely representations of horses but none had any evidence for a rider, indeed one (no.174) was complete enough to show that it was riderless.

FOOD SERVING VESSELS

DISHES

Two late 13th to early 15th century wares produced small dishes with straight, slightly everted walls and simple rims; Malvern Chase and Hereford A7b. In both fabrics the form is a rarity. An example is published from a late 13th to early 14th century pit group in Winchester (Cunliffe, 1964, Fig.32, No.6).

It is more common in the London area, where it is present in Kingston ware and, rarely, in London-type ware. A late 13th to 14th century date can be assigned to the London examples.

It is possible that these dishes are saucers, in the original sense of the word, ie. small vessels used to serve sauces at table (Henisch, 1976, 169 & 174). Small vessels of this shape can be seen in several medieval illustrations but it is not possible to say that they were made of pottery.

CHAFING DISHES

The Chafing dish is an open vessel liberally perforated to allow air to circulate over hot coals or charcoal. It was used to warm a tray of food and therefore normally has projections around the rim both to support the tray and to

keep up the circulation of air. Chafing dishes first appear in metal in the late 15th century and were very soon copied in pottery (Lewis, 1973, 59-69). There are in fact some pottery chafing dishes, in Tudor Green ware for example, which are earlier than this, perhaps late 14th century. There are two main methods of producing a chafing dish in pottery. One is to throw a pedestalled bowl and to insert a base into it and the other is to throw two separate pieces, the bowl and the foot and to lute them together. The latter method exclusively was used to produce Malvern Chase chafing dishes. There is abundant evidence for their presence early in the 16th century but little to confirm a late 15th century starting date (but mainly through lack of datable contexts). The Malvern Chase chafing dishes closely copy the metal form (Lewis's Type B1). In this type the vessels have added projections along the rim, two opposing handles (which on the metal vessels are drop handles) and circular holes through the sides and base of the bowl and usually in the sides of the foot. The foot has a solid base. A single chafing dish is known in Minety ware, also probably of this form although only the rim remains. It is unlikely that the Minety industry lasted much beyond 1500 and the findspot, Cirencester Abbey, also suggests a pre-dissolution date. Rare examples of Saintonge ware chafing dishes are found in the region in late 16th century contexts. In these vessels the projections are elaborated into applied panels covering the whole wall of the bowl. These are either roughly moulded into a human face or bust or occasionally much more complex moulded panels are found. The latter type is known from Bristol but not elsewhere in

the region. The Stroat industry also produced chafing dishes of this type but with triangular holes cut out of the base rather than small circular ones. The use of pottery chafing dishes does not seem to have lasted into the late 17th century as they were not produced in the Staffordshire/Bristol industries nor at Newent Glasshouse. They are however present in a Civil War group found at Westbury College, Westbury-on-Trym (pers. comm. M. Ponsford).

POST-MEDIEVAL PLATES, DISHES AND BOWLS.

Plates are normally defined as vessels with a height less than one seventh of their height (taller vessels being termed dishes). In functional terms the difference if any between a plate and a dish (the term dish is used for vessels with widely differing sizes but the same basic shape) would be that a plate could be used for a solid meal whereas a dish could be used for more liquid food or for serving a meal which would then be shared between diners.

Two basic shapes of plate/dish exist: those with a flat base, flat flange rim and a sharp angled wall between the two (for example found in Border ware in the late 15th to 17th centuries) and those with a foot-ring base and a continuously curving profile to the rim (for example tin-glazed ware, and, without the foot-ring, Staffordshire - Bristol moulded plates). There is large range of shapes and width/height ratios between different vessels in the first group and in many cases no obvious break between 'plates' and 'dishes' or 'bowls'. Many of these vessels are highly decorated and have holes pierced in the foot-ring bases.

This suggests that they were displayed when not in use by being hung on the wall. Valencian Lustreware was actually displayed on a cup-board during feasts (as can be seen in contemporary illustrations, for example a painting of a Court Feast attributed to Apollonio di Giovanni (Italian, 15th C.) reproduced by Husband, 1970, Pl.5).

Large plates/dishes of Valencian Lustreware were found at the Pithay, Bristol and are of 15th century date and examples of other imported plates and dishes are occasionally found in the region (Beauvais Sgraffitto ware - 16th Century, Werra ware - late 16th to 17th C.) and in the early 17th century these are joined by locally produced vessels (Border ware and the Post-medieval Welsh borderland kilns, including rare slip-trailed vessels from the North Herefordshire kilns (for example, a vessel from Wigmore Abbey, Smith, forthcoming). However, the main use of these decorated plates and dishes began quite suddenly in the third quarter of the 17th century, for example Newent Glasshouse (probably c.1670 onwards) and the Staffordshire/Bristol embossed moulded slipware plates (first found apparently at St. Nicholas Almshouse, Bristol, Barton, 1964, Fig.67 No.24, in a pre-1650 context. However, the type is predominantly found in groups dated by clay pipes to c.1670 or later; eg. Gloucester Eastgate).

Plates of similar appearance to those used today first appeared during the last quarter of the 17th century in tin-glazed ware. They were made by press-moulding and have turned bases, sometimes with a low foot-ring but often completely flat-based.

CONDIMENTS

Condiments are small open multi-compartmental vessels which are presumed to have been used for serving condiments at table. They are of two forms: the first is slab-built and has two or more rectangular compartments. The second is formed from a wheelthrown dish by adding a central division. Neither type is very common. A fragmentary example is published from a late 13th to early 14th century pit group from Winchester (Cunliffe, 1964, Fig.32, No.7).

SALTS

Salts are vessels, often quite elaborate, which were used to serve salt at table. The salt was a centre for the ritual of dining and the richest households would have had extremely ingenious vessels made of precious metals (Henisch, 1976, 164). In pottery, salts are a Tudor development of the condiment and have a small bowl which could be supported either by a stemmed foot or could be part of a figurine. Both types are found in the region but neither is common. The cup type was made in Cistercian-type ware (Brears, 1971, 23 Type 16) and the former is known in a fine Cistercian-type ware from Hereford (Hereford A7c) whilst the latter is known from two vessels from Cardiff, a Saintonge figurine of an angel and a Cistercian-type ware female. The precise date of either type is uncertain although it is most likely that they are of 16th century date. No examples in 17th or 18th century fabrics are known.

LIQUID STORAGE VESSELS

CISTERNS

Cisterns are large jar-shaped vessels with three feet, two handles and a rim which could take a lid. This either takes the form of a lid-seating (as on Coarse Border ware, and less well-pronounced on Malvern Chase ware) or sometimes an external flange (as on some Minety vessels). The form is introduced to the region in the late 15th century but was certainly produced in Coarse Border ware in the late 14th century. Three centres are known to have produced cisterns; Langley Burrell, Malvern Chase and Minety.

BUNG-HOLE JUGS

Bung-hole jugs, as the name implies have a jug form (ie. a narrow neck, one handle and no feet) but have a bung-hole in the side just above the base. There is little apparent difference in capacity between these jugs and Cisterns and it may be that both forms performed the same function.

The bung-hole jug is not produced in the region, although it is found in Coarse Border ware (for example, a complete vessel from Abingdon). This form is more common in the north and east of the country.

LIGHTING VESSELS

LAMPS

The first systematic study of medieval ceramic lamps is that of Jope (1952-3). In Jope's typology a development is shown from simple hanging lamps with pointed bases to vessels with pedestals and a splayed foot, 'double-shell' vessels with a hollow foot that could be used either way up

and finally to lamps which have an outer tray to catch drips.

The incidence of lamps in the study region is limited and can be divided into two groups, an early handmade pedestal-based group and a later wheelthrown group. Precisely how early the pedestal-based lamps are in the region is difficult to tell. A chaff-tempered lamp was one of the earliest stratified sherds found in the excavation at Cheddar Palace, dating to the late 9th or 10th centuries. There is a single example from Gloucester in Gloucester TF41a, and single-shell pedestal-based lamps are known in Oxford Fabric B, although found outside the study region in the City of London. These vessels should therefore date at the latest to the late 10th or early 11th centuries.

The majority of pedestal-based lamps are probably of post-conquest date. A large collection of lamps was found at Cheddar Palace, all in a locally made limestone-tempered fabric (Rahtz, 1979, 321-2, Fig.100 Nos.33-54). Pedestal-based handmade lamps are more common in the south and east of the region than in the north and west. There are very few known from Hereford for example. In this, the lamps are similar to the Spouted Pitchers. In addition to those noted above, examples are known in Newbury A, Bristol A/B, Bristol C and Bath A fabrics.

Later, wheelthrown lamps are extremely rare. Examples of double-shell lamps are known in Malvern Chase and Minety wares, of late 13th to 15th century date, and 'double-shell' lamps were amongst the products of the Laverstock

kilns in the mid-late 13th century.

CANDLESTICKS

Pottery candlesticks are a late 16th or 17th century introduction but are rare. They are known in two wares: Staffordshire - Bristol slipware (red-bodied, with white slip-trailing and light-bodied with red slip-trailing), and Hampshire - Surrey Border ware (undecorated). In all three fabrics the vessels have a socket into which to fit the candle and a flange to catch the drips.

DRY STORAGE VESSELS

STORAGE JARS

Wheelthrown storage jars are a distinctive feature of the late saxon pottery of Eastern England, for example the vessels made in Thetford-type wares (Hurst, 1976, fig.7.14 no.5). They usually have a tubular spout and three handles and are often decorated or reinforced with applied, thumbed strips.

Handmade spouted storage jars

Similar large, handmade, three handled vessels, decorated with individual stamps and with a tubular spout are found in a handmade, flint-tempered ware in southern Hampshire (for example, a complete example from Winchester, Cunliffe, 1964, Fig.34, No.1). However, this form is completely unknown in the region, with the exception of a single glazed Stamford ware vessel from Hereford.

Two two-handled glazed jars exist in Minety ware, of 12th or 13th century date. There is no evidence that either had a spout.

Given the size of some of these vessels it is highly unlikely that the spout could be functional, nor is it likely that the handles could be used for suspension when the vessel was full. It is possible that some fragments of this type could be mistaken for spouted pitchers (the difference in form being that the pitchers have a single handle and have a smaller body).

Rare comb-decorated sherds in Newbury A fabric from mid-12th century and later contexts at Bartholomew Street, Newbury, might be from storage jars and were certainly from large vessels. No handles or spouted examples were found.

Large vessels of cooking pot form

It is possible that some of the larger vessels of cooking pot form were actually made and used for storage. For example, a few vessels in Hereford A2 fabric must have been very large and a complete very large wheelthrown vessel of cooking pot form exists in Minety ware at Cirencester. Such vessels have been recognised as a class by Dunning, who published illustrations of a series of complete examples from south-eastern England (Andrews and Dunning, 1939). It appears that most of his examples could be of late 12th or 13th century date, as could those from the study region. A few of the examples published by Dunning had thickened, recessed bases, sometimes thumb-frilled. This is a feature not found in the study region.

Most of the jars in post-medieval wares in the region are of a smaller size than the medieval vessels described above but large storage jars are known in the London area, for example from Woolwich, in the 17th century (Pryor and Blockley, 1978). Such large storage jars may have been made

in Stroat ware, although no complete examples are known.

JARS

Although it is likely that some vessels of cooking pot shape were actually used for dry storage rather than cooking there is no indication of a separate form for storage with the exception of the few Saxo-Norman Storage Jars (described above) until the 15th century. They are first found in Malvern Chase ware in the late 15th century and it is not often possible to distinguish even quite large fragments from those of pipkins. The incidence of jars in Malvern Chase ware certainly increased during the 16th century and in particular in the second half of the century. At this time the tall form with sharp shoulder and everted rim became recognisable. The vessels usually have some strengthening around the rim, normally in the form of an applied strip, with or without thumb impressions. A few complete profiles are known and these indicate a moderate size, about 300-400mm tall. The same form has been found in Hereford A7d fabric (but has not yet been recognised on the Post-medieval Welsh borderland kiln-sites). Similar vessels are known in Stroat and Ashton Keynes wares.

A different form of jar is known from the Post-medieval Welsh borderland kiln-sites and in Staffordshire coarseware. This is a cylindrical vessel with or without a handle and often with internal glaze. The type is often known as a 'butter-pot' and is remarkable in the region for its rarity. There is a possibility that the Post-medieval Welsh borderland examples are actually saggars, although some of the PMWB kilnsites also produce thicker walled

vessels with thumbed holes in the side and no glaze which are recognisably saggars.

LIDS

Lids for jars and cisterns are found in the late 15th century and later. They are mainly of the 'Chinamans hat' form which has a flat top and gently flaring sides.

In the late 15th century lids are found in Malvern Chase ware and Minety ware and at an earlier date are first found in Coarse Border ware. In the late 16th to 17th century lids are found amongst the products of the Herefordshire kilns. It is likely that these lids were meant to be used on cisterns and jars. However, there are considerably more jars and cisterns than there are lids in any of these wares and it is likely that most lids were made of wood.

DRINKING VESSELS

CUPS

The term cup is used here to denote any vessel with one or more handles used for drinking. This is an extremely broad category and encompasses several quite distinct types: lobed cups; Cistercian ware types (see Brears, 1971, 19-23); Tall flaring cups with two or more handles (also known as tygs); Short mugs with one handle and a curving body and cylindrical tankards. Quite often these vessels break into small fragments and cannot be reconstructed. Thus this account is based on a very small number of complete profiles and large fragments even though, from the late 15th century onwards cups of various types formed an increasingly large and important class of pottery.

Lobed Cups.

A discussion of the origins of the lobed cup can be found in Hurst (1974) where two basic types are distinguished, those with a handle joining the body at the side and those with a handle joining the body at the base. The latter type is said to be of Northern French origin and is not found in the region.

The most common type found in the region is the Tudor Green type in which the cup is short and wide with five to seven lobes. This type is also found in Malvern Chase ware, often with a white slip and green glaze (a good series is known from Hereford).

A lobed cup has also been found at the Nash Hill kiln site (Mc Carthy, 1974), suggesting that local production of the type began in the 14th century. They were certainly being produced in Coarse Border ware from the late 14th century, but are extremely rare.

Cistercian ware types

The published type series of Cistercian-type wares produced by Brears (1971, 19-23) shows a much greater variety than that found in the Severn Valley. The main forms found are a globular bodied cup with a tall flaring rim and two or three handles and a globular-bodied cup with a short cylindrical rim and two or three handles. The first form is found in Cistercian-type ware, Malvern Chase ware and (one example) Hereford A7b in the 16th century. The latter form is only known in Cistercian-type ware, including material from the Falfield waster dump.

Tall flaring cups

A distinctive form of cup has a solid moulded base and

a tall, flaring body with relatively small handles (often two set close together). It is found in two wares in the region: Staffordshire black-glazed redware and 'Post-medieval blackglazed ware' a type thought to have been produced in the Harlow area. The latter type certainly appears earlier than the Staffordshire one at Gloucester Eastgate, although the more ornate flaring cups produced in Staffordshire are not found in the region (and are probably earlier in date).

Short single-handled mugs

This type is hardly ever found in the region and consists of a small globular or curving body, a short cylindrical neck with a single handle. The form is closely allied to the Cistercian ware type (see above) but only has the one handle. Examples are known in Border ware and tin-glazed ware in the early to mid-17th century (Haslam, 1975, discusses this type in relation to the kiln site at Cove).

Flanged lids are known in both Border ware and the Staffordshire/Bristol industries, probably for use on cups and mugs. The Staffordshire/Bristol lids are likely to be of late 17th to 18th century date but the Border ware examples may be earlier.

Tankards

Tankards are defined here as cylindrical vessels with a single handle. The form is known in metal, for example silver (Oman, 1965, plates 45, 54, 87). Examples are also known in Frechen and Siegburg stoneware, dating from the second half of the 16th century. Tankards appear to fall into two groups, one tall with a marked tapering from bottom to top and the other squatter and more nearly

cylindrical. The taller type includes the Rhenish stoneware vessels and some silverware vessels and appears to be of late 16th to mid-17th century date. The squatter type is found in Cistercian-type ware in the late 16th century and in the Herefordshire kilns and Late Worcester sandy ware in the 17th century. These types commonly have bands of horizontal decoration (normally wheel-thrown grooving, but in the case of the Cistercian-type ware corrugations). This suggests that they might have been imitating wooden vessels with horizontal binding. A similar impression is obtained from the Staffordshire mottled-glazed tankards of the early 18th century which have raised bands of ribbing at the rim, girth and base. The incidence of tankards certainly increased during the late 17th and particularly the early 18th centuries when they are found in Westerwald stoneware, tin-glazed ware and a variety of Staffordshire and Bristol stonewares and earthenwares.

DRINKING JUGS

The term drinking jug is used to refer to a vessel of jug form (that is, a globular or curving body, a roughly cylindrical neck and a single handle) which is of small size, that is, a capacity of less than a quart and which does not have a spout. Such vessels are present in Rhenish stoneware from at least the early fourteenth century, for example the 'Jacoba' form of Siegburg ware, and the tradition continued there throughout the later middle ages and into the 18th century (Westerwald stoneware). Similar vessels have been identified in the London area, for example in London-type ware from the late 13th century

onwards and at Cheam in the late 14th and 15th centuries (Orton, 1982, Fig.17 Nos. 24-30) but they are not produced in the region at all in the medieval period. A few copies of the Rhenish form are known in the region in the late 16th or 17th century, for example in Hereford A7d and Malvern Chase.

Drinking jugs often had lids, especially Frechen and Westerwald vessels, but these lids were always made of metal rather than pottery.

MISCELLANEOUS FORMS

CURFEWS

Curfews are large hemispherical vessels with a loop handle at the top which were used to cover an open hearth at night. A discussion of the typology of the curfew can be found in Hurst, 1964. Amongst the distinguishing features, Hurst notes soot blackening of the interior, a thumbed band at the junction of the sides and top (not always present), a strap handle at the top, pierced holes at either end of the handle (not always present) and pierced holes in the sides (not always present).

Most known examples are unglazed and hand-made, although an internally glazed example is known from Gloucester in Malvern Chase ware. Most examples have some piercing of the body, either a central hole in the top, holes at either end of the strap handle or holes in the body. Without some ventilation the Curfew would simply smother the fire. The only positive proof that a vessel is a Curfew is the presence of the handle. Therefore, it is quite possible that the frequency of curfews has been underestimated. However, even taking this into account

ceramic curfews cannot have been very common and were certainly not present in every household which had an open hearth.

There are two basic curfew shapes: completely hemispherical (as found at Norwich, Jennings, 1981, 42, Fig.13) and inverted bowl shape (as found at Winchester, Cunliffe, 1964, 126, Fig.45, Nos.1 & 2). Curfews are found in Malvern Chase ware in the early and later 13th century and are known in the late 13th to early 14th century in Laverstock ware (Musty, Algar and Ewence, 1969, 138-9), Newbury Group B (a suspect identification from one sherd) and Minety. The Minety group comes exclusively from Cirencester Abbey in a late 13th to early 14th century context and contains fragments of several vessels. This preponderance of curfew fragments at one site is unusual but cannot be explained.

CHAMBER POTS

The evolution of the chamber pot is illustrated by Amis (1968). Medieval vessels are not known but there is a variety of ceramic urinals, of which the most common form is a squat, flat-based vessel with an inverted rim and a horizontal loop handle. This form is not known in any of the local wares in the region, although examples are known from Shropshire.

In the early 17th century vessels with a similar form to the later chamber pots (that is, a flat base, globular body, single vertical handle and wide neck) are found in the Herefordshire kilns. A white-slipped example is known from Gloucester from an early 17th century context.

However, these vessels have rounded, beaded rims rather than the flat or sharply everted rims of the later vessels. That they are in fact chamber pots is suggested by the typical light brown deposit on the inside of the vessels. The same form, together with an everted rim form, is found in the last quarter of the 17th century in Newent Glasshouse ware.

More typical chamber pots are found in the later 17th century in Staffordshire black-glazed redware and light-bodied slipware. These were complemented by locally made, undecorated, tin-glazed ware vessels, mainly in the early to mid-18th century. White Staffordshire salt-glazed stoneware chamber pots were produced in the mid-18th century.

Towards the middle of the 18th century a new form appeared, the stool pan. This was intended to be used in a wooden comode and thus has a conical body and a flat-topped rim. This form occurs locally in white Staffordshire salt-glazed stoneware and in locally made, undecorated, tin-glazed ware.

CRUCIBLE

Crucibles have been found in moderate quantities throughout the region. In most cases they are made in white-firing clay tempered with abundant medium quartz sand and are of hemispherical or globular form. No attempt has been made to characterise these vessels nor has the typology been studied in detail (it is better than they should be looked at as an aspect of the metallurgical industry). One type of crucible occurred in a characterised fabric, Gloucester TF41a. These vessels are very shallow

and are covered in a lead glass. Although similar Late Saxon glass-working residues are known from Coppergate, York and Flaxengate, Lincoln no vessels precisely paralleling the Gloucester crucibles are known.

'WEST COUNTRY VESSELS'

The term 'West Country Vessel' was coined by Jope in 1952 to describe a handmade vessel having a rim and body like the upper third of a cooking pot, and being of the same general diameter. They are, however, truncated and have a sagging base and typically an acute angled base. The side of the vessel is always pierced by at least one circular hole.

The true function of these vessels remains completely unknown although there are numerous suggestions in print. Amongst these are that they were the bases of bee-hives, that they were used in cheese-making and that they were used as curfews. It is likely that the form has a limited date-range in the 12th century. All of the vessels known were made in a relatively restricted area; the further north being Malvern Chase and the furthest south being South East Wiltshire. In the west, the vessels are known from sites in south Wales, although probably all were imported via Bristol. West country vessels are not found in Herefordshire or Shropshire to the north-west nor in Berkshire and Oxfordshire to the east.



INKWELL?

A single Bristol Redcliffe vessel with two square compartments, one of which is partially enclosed, is thought possibly to be an inkwell. The second compartment might then contain a powder to dust over the parchment. With this exception there are no known ceramic inkwells in the region until their mass-production in the 19th century in grey stoneware. Writing sets are known in Westerwald stoneware, in the 18th century but are rarely found in this country (Reineking-Von Boch, 1971, Nos. 719-732).

CHAPTER EIGHT CERAMIC BUILDING MATERIALS

INTRODUCTION

Building materials made out of fired clay can be divided into three classes depending on their mode of production. The first class is fired on site, often accidentally and includes daub, cob, clay floors and hearths and loom weights. The second class is fired alongside pottery vessels and includes ridge tiles, louvers and finials while the third class consists of bricks and tiles fired in kilns or clamps by specialists such as tilers, brickmakers or paviours.

The methods used to make these objects and their form and typology are described below while the historical development of the building material industry is reconstructed in chapter 9.

DOMESTICALLY PRODUCED OBJECTS.

DAUB

Very little fired daub has been found in the region, although it was probably the main walling material of the earlier middle ages. Two large collections of daub have been examined. That from 143-5 Bartholomew Street, Newbury, consisted mainly of debris from a burnt stake-built shed of medieval date while that from Victoria Street, Hereford, consisted of the collapsed superstructure of a corn-drying oven (Vince, forthcoming b; Shoesmith, 1982). In both cases the fragments were quite substantial and the Newbury daub showed sufficient impressions of the wattle framework for the size of the uprights to be calculated, 20-25mm diameter. This size was in agreement with that of the

excavated stake holes. The average thickness of the walling was also calculated at c.86mm from the centre to the outside surface. The surfaces of the daub were lime-washed. The fabric of both collections of daub was examined and included no deliberate tempering material, such as quartz sand, horse-hair or chaff. The petrological characteristics of the daub, as of other daub examined in the study region, were compatible with a local origin.

LOOM WEIGHTS

Loom weights are not common in the study region. All the known examples are likely to be of late Saxon date, probably mainly earlier rather than later in the period. A classification of loom weights by Wheeler produced two main types, the annular and the bun-shaped weight, and a third intermediate category. The bun-shaped form, which has an asymmetrical cross-section, is the most common in the study region, although an annular or intermediate weight has been found at Winchcombe.

Examples of loom weights from Hereford include some of probably late 9th to 10th century date, pre-dating the use of pottery on the site, while those from Gloucester are of later 10th to 11th century date.

The fabric of loom weights from Fladbury, Hereford and Gloucester has been examined in thin-section and in each case the petrological characteristics are in agreement with a local origin. The Fladbury and Gloucester weights are tempered, possibly naturally, with a quartz sand and a quartz and limestone sand respectively but the Hereford weights are made from an untempered silty micaceous clay.

UNFIRED CLAY

The uses of unfired clay in building were widespread and various in the medieval period. Because of its impervious nature clay was often used in the construction of wall footings and dwarf walls and clay floors are a common feature of many medieval structures. At Bartholomew Street, Newbury, they were characteristic of the later medieval period. Clay was used from an earlier period for hearths.

Few samples of clay have been retained from the study region, although their analysis would have been very rewarding. Analysis of the clays from Bartholomew Street, Newbury revealed differences in composition between those of the late 11th to early 12th century and those of the later medieval period and neither clay was precisely similar to that found in patches above the natural gravel on the site. However, it is not imagined that raw clay would have been transported more than a couple of miles from its source. The main value of analysis of clays from site is that they reveal the local sources of clay utilised at that period and form a useful comparison with the pottery fabrics.

OBJECTS MADE IN POTTERY FABRICS

RIDGE TILES

Ridge tiles are usually made on a sanded surface within a wooden mould. The dimensions of the mould govern the size and thickness of the tile. Tiles for which the length or breadth of the object can be measured are extremely rare but most have measurable thicknesses. These vary from c.8mm to c.20mm. Certain groups of ridge tiles are usually in

excess of c.15mm thick, for example Worcester-type, Ashton Keynes, Stroat and North Devon while others are usually thinner, for example Malvern Chase and Hereford A7b.

It is notable that some ridge tiles have a more heavily tempered fabric than the pottery made in the same industry and most contain sparse large inclusions absent from the pottery, for example large rounded pebbles in Worcester-type tiles and fragments of Malvernian rock in Malvern Chase tiles. Tile fabrics also often contain lenses of different textured clay, showing that they were not so well mixed and wedged as clays destined for pottery manufacture.

Certain industries produced glazed but otherwise undecorated ridge tiles, for example Gloucester TF89 in the late 12th to 13th century and the 17th century Herefordshire and Ashton Keynes centres. These tiles often have a thick glossy covering of clear lead glaze.

Most ridge tiles are decorated with applied strips along the crest. Sometimes, when the crests have fallen off, it can be seen that the surface of the tile was roughened up with the fingers to help adhesion.

Two basic groups of crests exist. In the first decoration is applied as a single strip along the crest of the tile and in the second individual knobs (usually two per tile) are added.

The most common design in the first group is when the strip is worked up into a ridge which is then cut with a knife into a coxcomb pattern (fig 8.1). This type is found, for example, at Bristol and in Hereford A7b. Sometimes one or both sides of the crest are stabbed with a knife to give

wedge-shaped holes. These may help to attach the crest to the tile as well as allowing excess water to escape on firing. A variant of this type consists of more elaborate patterns cut out of the crest (fig 8.2). These 'fretwork tiles' occur in Hampshire (Platt and Coleman-Smith, 1975) and occasionally in Berkshire (in Newbury tile fabric).

In the second group the knobs are either tall as in Worcester tiles (fig. 8.3) or short as in Malvern Chase tiles (fig. 8.4). Some tiles seen in Worcestershire and Warwickshire have knobs which fold back to touch the tile.

Another method of decorating the single strip tiles is to mould a coxcomb by hand. Such tiles often make use of thumbing to decorate the crests (fig. 8.5). The only medieval examples known are Minety tiles, which have single thumb impressions on either side of each crest. North Devon tiles in the late 17th century have shallow grooves in the same position, possibly imitating the knife-stabbing found on knife-cut coxcomb tiles. Stroat tiles have heavily thumbed crests with thumb impressions at both sides and on top of each crest.

An extremely rare type of decoration takes the form of handmoulded animals or occasionally humans. One example has been found in the region, a bear from Miserden Castle (fig. 8.6). It may be a Minety tile (Dunning, 1979).

The use of glaze on ridge tiles varies from type to type. Clear lead glaze is found on Bristol and Minety tiles while copper-flecked glaze is found on Worcester, Malvern Chase and Hereford A7b. Glaze cover is normally total except on Malvern Chase and some Hereford A7b tiles where it is restricted to streaky patches along the top of the

tiles.

Ridge tiles also occur in tile fabrics not made alongside pottery, for example Newbury tile fabric (fig. 8.20). Most of these ridge tiles are undecorated but glazed although crested tiles, both with knife-cut coxcomb and fretwork crests exist.

Decoration on the sides of the ridge tiles is rare (fig. 8.7). Bristol tiles often have applied thumbbed stips criss-crossing the sides while Minety tiles are sometimes combed or grooved. Some South Welsh tiles, for example from Caerleon, are decorated with roller-stamping (of 'complex rouletting' patterns).

FINIALS.

Two sorts of finials exist. Wheelthrown examples fitting into a hole in the ridge tile (fig. 8.8) and wheelthrown or handformed examples luted onto the ridge tile (fig. 8.11). Some finials are found with mortar around the base and were presumably permanently attached to the roof while others, including one still in use in Hanley Castle, merely sit on the roof. It has been suggested that these finials form a stopper for a simple form of ventilation, allowing smoke to disperse quickly in summer but keeping it, and the heat, in during the winter. Wheelthrown examples are known in Malvern Chase and Hereford A7b fabrics and a luted example is known in Minety ware. Ridge tiles with a shallow flange are known in Malvern Chase and Hereford A7b fabrics (fig. 8.9). One tile from Newbury is either part of a similar flanged tile or perhaps the base for an attached finial. Minety tiles often

have a circular or oval hole between two of the crests and this may perform the same function as the flanged holes, although no separately made finials are known in this ware (fig. 8.10).

LOUVERS.

Large handmade louvers are known only in Bristol and Hereford A7b wares (fig. 8.12). They acted as ventilators and would have sat in the roof above the open fire. Louvers are much larger and more impressive than finials and it is probable that their use was restricted to the houses of the upper classes.

CHIMNEYS.

Two objects in Newbury Group B fabric have been interpreted by Dunning as Chimney pots (fig. 8.13, Dunning, 1961 b). Both are cylindrical, handmade and unglazed and are decorated with stabbing and circular holes c.10mm diameter. One however has a very narrow diameter, c.40mm.

OBJECTS MADE IN TILE FABRICS.

Many roof tiles, floor tiles and bricks occur in fabrics not used for hollow ware vessels. Even allowing for differences in clay preparation, it is most likely that these objects were not made alongside pots.

The split in the ceramic industry, into hollow ware potters and brick- or tile-makers, is certainly not complete. Flat roof tiles may have been made in the Laverstock pottery kilns while floor tiles and pots were produced in the same industries, if not the same kilns, at Malvern Chase and Nash Hill. However, the division is sufficiently general to be a useful method of classification.

RIDGE TILES.

As noted above, ridge tiles were made in tile fabrics in the Kennet valley and also in the London area (Pritchard, 1982). These tiles, while glazed, are usually undecorated. However, in the Severn Valley from the late 16th century onwards ceramic flat roof tiles were made but ridge tiles continued to be made in pottery fabrics.

FLAT ROOF TILES.

Tiles used as a roof covering rather than as decorative crests are rare in the study region, occurring sporadically in the 12th and 13th centuries in the Severn Valley. Within the study region, only in Berkshire and possibly south-east Wiltshire was the use of flat roof tiles in the medieval period general. Four main types of flat tile roof were used in the study region between the late 12th and the mid-17th centuries. These are flanged and curved tiles, shouldered pegtiles, standard pegtiles and nibbed and pegged tiles.

i) FLANGED AND CURVED TILES.

Excavations at Reading Abbey revealed a collection of glazed roof tiles in the foundations of a probably 12th century outbuilding of the Abbey. Analysis of these tiles showed that they are of two types; a flat, flanged tile with glaze along the centre and a curved tile. Similar tiles have been found at Southampton (Platt and Coleman-Smith, 1975, nos. 1386-1390), Scarborough (Drury, 1981) and London (Armitage et al., 1982). The Reading examples were weighed and although there were more flat tiles than curved the proportion of one to the other makes it likely that

they were used in the Roman manner with the curved tiles locking over the flanges of adjoining flat tiles and being held in place by a slight tapering of both the flat tiles and the curved tiles, as well as by a single peg or nail at one end. No fragments from Reading were large enough to show this tapering, although it is present on a complete tile from London and on a fragment from Scarborough (Figs. 8.14 and 8.15). The Reading tiles were in a different fabric from the Newbury tile fabric pegtiles in the same contexts. A possible corner of a flanged tile was found in an early 13th century context in Hereford in Hereford A2 fabric.

ii) SHOULDERED PEGTILES.

Shouldered peg tiles were first recognised in London in 12th century material from Swan Lane (fig. 8.16). They are thick rectangular pegtiles in which the two top corners have been removed. No evidence for the use of a knife for removing the corners was found, neither are clear traces of the use of a mould present on these tiles (normally the sanded base of a moulded tile curves up into the side, which often has vertical striations where the mould has been lifted off). Instead it appears that the tiles are formed by hand on a sanded surface. Glaze is present on the lower third of the tile and mortar is used to join the middle third of an underlying tile to the bottom third of the one above. Therefore they have an overlap of two-thirds. Both one or two peg holes are found.

Only one fragment of shouldered pegtile has been recognised in the study region, in Gloucester TF89 from a late 12th century context at the Eastgate site. This was

only recognised for what it was after the London examples were identified and long after the main survey was completed. It is therefore possible that this type is more common than it now appears, although good negative evidence comes from Hereford and Chepstow where all types of 12th century roof tiles are absent.

iii) STANDARD PEGTILES.

Pegtiles are oblong tiles, between c.10 and c.20mm thick with two circular, or more rarely square, holes at one end and normally a clear glaze over the lower half of the tile (fig. 8.17). Such tiles were found in the study region only in Berkshire, at Reading and Newbury. On both sites tiles were present from the late 12th century onwards and were used in walling and hearth construction as well as for roofing. Quite wide variations were found in length, breadth and thickness within the Newbury collection but were not distinct enough to enable sub-groups to be defined. There was no apparent correlation of size with period of use. Pegtile waste was found in the foundations of a 15th to 16th century house at 143-5 Bartholomew Street, Newbury, and there is documentary evidence for the production of tiles in the area (Eames, 1980).

iv) NIBBED AND PEGTILES.

Rectangular tiles with a small rectangular nib worked up from the body at one end and sometimes a single peg hole are found in Hereford A10, Gloucester TF88 and Malvern Chase fabrics. Only the Malvern Chase tiles are sometimes glazed on the lower half (fig. 8.19). One Gloucester TF88 tile had a circular stamp, possibly a monogram 'W'.

HIP TILES.

Hip tiles were found only in Newbury-type tile fabric at Newbury. One had a peg hole at the narrower end (fig. 8.21).

HEARTH TILES.

Hearth tiles are large rectangular tiles without glaze and with moulded rather than knife-cut edges (fig. 8.22). Examples from mid-14th century contexts in Newbury are in a flint-tempered fabric and measure 310-330mm by 267-270mm by 30-1mm. An example from Upton Warren is in a sandy fabric and was found in a 13th century context and hearth tiles are both recorded amongst the products of the Laverstock kilns and from domestic buildings at Gomeldon DMV (Musty et al., 1969). With these exceptions, hearth tiles are rare in the study region. Hearth tiles were used flat to form hearths, at Newbury one hearth was formed from four tiles set in mortar.

OVEN TILES.

Oven tiles are square tiles with rows of conical or thimble-shaped scoops in the underside (fig. 8.23). Small holes are pierced through the scoops to the upper surface of the tile. No complete tiles are known and only one fabric, Ashton Keynes ware, has been identified.

Since the only examples found were in a late 18th century context, this type may be solely 18th century and thus outside the scope of this study.

19th Century moulded oven tiles of similar design are still found forming the floors of Malt Kilns in the Severn Valley but they could as easily have been used in domestic

ovens.

STOVE TILES.

Ornate moulded tiles for use in large stoves have not been found in archaeological contexts in the region. These tiles were almost certainly all imported from Germany or the Low Countries and are mainly of late 16th to early 17th century date (the latest types bear the Arms of James I). An object with similar decoration is illustrated by Rackham (1972, Pl.96). This was a cistern, decorated on one side with the Arms of Henry VII and Queen Elizabeth of York, possible from Windsor Castle, Berkshire, and of early 16th century date.

BRICKS.

Handmade, moulded bricks are not found in the region until the 16th century. With the exception of bricks from Reading Abbey, Wigmore Abbey and Thornbury Castle all of the bricks could belong to the late 16th century, post-dating the dissolution of the monasteries. The Thornbury bricks are still in situ, including some elaborate decorated chimneys. They can be dated to the second decade of the 16th century but could not unfortunately be examined. Floor tiles made for the Castle are thought from their petrology to have been produced in South Worcestershire and it would be interesting to see whether the bricks have a similar petrology or were made on site.

Most of the 16th to 17th century bricks examined were made in a coarse sandy fabric. This texture often makes thin-section preparation difficult and the results bland. At both Reading and Newbury it could be shown that

different fabrics were used for the bricks and roof tiles although no evidence for the source of the bricks was discovered.

The Wigmore Abbey bricks, however, are in a mudstone-tempered fabric identical to that of the late 15th to early 16th century floor tiles (see Ch. 3) and some are splashed with accidental lead glaze.

Brick is found in Malvern Chase, Gloucester TF88 and Hereford A10 fabrics and in each instance the same fabric was used for the production of roof tiles. Brick was being made in Worcester in the 16th century and Worcester brick was used in the construction of the Bishops Palace at Hartlebury (Dyer, 1973). Examples of brick from Sidbury, Worcester, and Evesham have been examined in thin-section and contain a coarse rounded sand, consisting mainly of quartz grains.

FLOOR TILES.

Floor tiles were made to be used in batches for paving, or in a few cases as wall-covering. Sometimes the intended function involved modification of the shape of the tile, for example the cutting of recesses in the back of tiles intended for use in steps. In the main, however, the processes used to make medieval floor tiles were quite simple and there are only minor variations used in the study region. Chronological and regional differences in tile manufacturing technique are described below, following a description of the general method of manufacture.

First of all, the raw clay was dug and prepared. The clay was then thrown into a sanded wooden mould, which after smoothing the top of the clay level with the mould was then lifted up, leaving a rough block of clay slightly larger than the required finished tile. Up to this point the method is precisely the same as that used to produce bricks and hearth tiles.

Next, the tiles would be left to dry, but before becoming leather hard would be modified in a variety of ways described below. The most common modifications were the use of contrasting coloured slip, which was usually a white-firing slip on a red-firing body, and the use of wooden dies to impress a design into the surface of the tile. At some stage in this procedure the sides and possibly also the base of the tile would be trimmed with a knife. A wooden former was used to make sure that the tile shape was precisely right. If the tiles had the same water content, the same fabric and were then fired to the same temperature then the fired tiles made with one former would have been the same size.

In most cases after decoration or trimming the tiles were glazed and then stacked into a kiln for firing. It seems that most tiles were fired on their sides, so that if the glaze ran when molten it would gather at the sharp top edges of the tile, possibly also leaving dribbles of glaze along the sides and backs of the tiles. It is quite common to find kiln scars of this type on the backs and sides of floor tiles, and they are sometimes, but more rarely, found across the upper surface of the tile.

FABRIC.

Analysis of tile fabrics can show the source of the clay, the methods of clay preparation and can reflect some aspects of the firing. Four sources of floor tiles are known within the study region. These are Great Malvern (Vince, 1977a), Malvern Chase (Vince, 1977a), Keynsham Abbey (Lowe, 1978) and Nash Hill (Eames, 1974). Furthermore, it is almost certain that the Wigmore Abbey counter-relief tiles were made on site.

Two groups of tiles are thought to have a south Worcestershire source. These are Droitwich-type tiles, for which one kiln site is known, and Canynges-type tiles, for which no archaeological production evidence exists. Two groups of tiles are of unknown Welsh borderland manufacture, namely the Bredon-type tiles, for which a source close to Hereford is likely, and Monmouth-type tiles.

The source of three groups of tiles is completely unknown. These are the Gloucester St. Bartholomew's - Cleeve Abbey type tiles, the 'stabbed Wessex' type tiles and the Halesowen-Chertsey type tiles. None of these three groups has been subjected to thin-section analysis and all three would repay analysis.

Some tiles contain large pebbles, for example rounded quartzite 'Bunter sandstone' pebbles occur in Droitwich-type tiles and large fragments of Malvernian rock occur in Malvern Chase and Great Malvern tiles. These large inclusions show that little cleaning of the clays has taken place. Laminations of clays of different colour or texture are characteristic of some tile fabrics, for example

Canynges-type tiles. In general, however, the floor tile fabrics of the study region are more homogeneous than those, for example, of south-east Wiltshire or Beaulieu Abbey. The latter tiles often split along the laminae to reveal that leaves have been incorporated into the clay (Hinton, 1978).

Where floor tiles were produced in the same area as other ceramic objects, for example at Malvern Chase and Nash Hill, the quantity of temper present is highest in the floor tiles. Reasons for requiring a high quantity of temper, especially silicious temper, are not hard to find. Firstly, the quantity of temper affects the speed and efficiency of the drying of the tile. This is an important point with a bulky product such as floor tiles and is even more obvious in 16th and 17th century brick fabrics, which often contain such a high quantity of quartz sand temper that they become friable. Secondly, quartz sand temper helps the tile to withstand thermal shock, so that control over the speed and conditions of firing need not be as secure as it would be over less heavily tempered tiles. Thirdly, a high quartz content lessens the degree of shrinkage, which can cause warping and cracking in the tile, and therefore gives more control over the shape and size of the final tile.

Within the study region deliberately tempered tile fabrics are not as common as those made with a naturally quartz-rich clay, such as Bredon-type tiles, Great Malvern tiles and Monmouth-type tiles. Canynges-type tiles have a silty, quartz-rich matrix but it is not as heavily self-

tempered as the others cited above. For this reason, the Canynges-type tiles also contain a quartz sand, which was probably deliberately added. Where silty clays were used there is little difference between the texture of floor tile fabrics and those of hollow wares made nearby. Carbonate is present in two tile fabrics, Bredon-type tiles and Canynges-type tiles. In the former the carbonate occurs as fragments of concretionary limestone, in the order of 1 to 3mm across, and is often the cause of spalling of the tile surface. In the latter the carbonate occurs as small, finely divided fragments and has no ill-effects on the firing of the tiles. It is possible that carbonate is in part responsible for the 'fried' effect found on some Canynges-type tile glazes, due to the emission of carbon dioxide during firing.

FORMERS

Where present, the 'flow' of laminae within a tile fabric and sand on the tile base, show that tiles were formed individually using formers, rather than being cut out of a large slab of clay. Since the top surface of the tile was subsequently trimmed, as also was the base in many instances, the present thickness of a tile is only a rough indication of the height of the original former, although it is not believed that more than a thin skim would have been removed from the upper surface. Variations in thickness can also be caused by the degree of clay shrinkage. The lengths and breadths of the formers are completely unknown, since trimming of these dimensions may be more extensive.

The thinnest floor tiles found are only slightly less than 20mm thick and the thickest examples are over 30mm thick. There is some relationship between quarry size and tile thickness but, for example, the full range of thickness is found in 120mm square Droitwich-type tiles from St. Oswald's Priory, Gloucester, and Holm Castle, Tewkesbury. At Tewkesbury, the thicknesses showed a bimodal frequency distribution, indicating that at least two formers had been used. This distribution was found on tiles stamped with the same die so that either tiles from different moulds were mixed together before stamping or they were made in two batches, each batch using the complete range of dies.

Given the right circumstances variations in thickness might be capable of yielding information on the internal organisation of the tileries. For example, if formers of drastically different thicknesses were used sequentially they could be used to aid relative dating of the tiles. Present experience does not suggest that this is a common practice and common sense suggests that large numbers of formers, all of approximately the same size would have been used.

Some undecorated tiles still show the original scraping marks on their upper surface and so reflect the original former thickness more closely. Scraping took place parallel to a tile side and 'drag' marks can be seen, caused by the plucking of minute inclusions from the surface of the tile.

TEMPLATES AND QUARRY SIZES

To ensure that tiles would lay correctly tiles intended for the same pavement would have to have the same dimensions or at least dimensions with a set relationship to each other. Moulding with a former cannot produce this degree of accuracy, as can be seen if the dimensions of moulded bricks from a single structure are examined. Also, the sides of a moulded tile would be vertical so that mortar used to lay them would be visible at the surface of the pavement. To counter both these problems accurately cut templates would have been used as a guide to the knife-trimming of the tile sides. The templates used in the Low Countries had nails in the corners, perhaps so that the tiles could be trimmed without actually letting the template touch the tile. No nail holes are present on tiles in the study region but it can be assumed that templates existed. It can be shown that decorated tiles, stamped with a rectangular die, were not trimmed to shape using that die as a template since the dies were quite often larger than the tiles they were used to decorate, causing the edges of the design to be lost. However, in most cases the dies are placed onto the tile squarely so that perhaps one edge of the tile was used to register the die.

Measurement of complete tile dimensions can reveal the intended quarry sizes used by the different tileries. They range from 100mm square to 220mm square but the overwhelming majority of the tiles are between 120mm and 160mm square. Within any one pavement a maximum range of 10mm is found and the mean quarry sizes for different pavements often differ by as little as 10mm. It may

therefore sometimes be difficult to determine what the intended size of a tile was. For example, in late 14th to early 15th century Droitwich-type tiles tiles occur of two sizes, 120mm and 135mm square. In some cases the same pattern is found on two dies, one intended for the smaller size and one for the larger size. However, it is not unknown to find tiles stamped with the larger die but closer to 120mm square. A large number of measurements are therefore needed to determine the quarry sizes represented in a mixed collection of tiles. There are some links in tile size between centres, possibly an attempt at standardisation. For example, Bredon-type and Malvern Chase tiles in the early 14th century share a 165mm square quarry and Great Malvern, Monmouth-type and late 15th to 16th century Malvern Chase tiles share a 135mm square quarry. In each of these instances the tiles were being stamped using shared dies. The most common quarry size was 135mm square. This was shared by six tileries. 120mm square tiles are found in four tileries but are only common on Droitwich-type and Canynges-type tiles. Evidence from Nash Hill and from the Droitwich-type tiles shows that different quarries were sometimes in use simultaneously.

Oblong tiles occur in the Great Malvern and Canynges-type tile series. These must have been made with rectangular templates. In a great many industries, however, rectangular tiles, for use in borders, were made by cutting a tile to shape with a square template but then subdividing the tile with deep vertical scoring, not quite splitting the tile completely. Such tiles could be snapped after

firing or the scored line(s) could be left on the square tile. A scored and snapped tile edge is very easy to distinguish from the slightly bevelled edge produced by a template but the information is often not included in published descriptions of floor tiles.

Table 8.29. Scored and snapped tile shapes.

Group	A	B	J	K	C	D	E	F	G	H	I
KEYNS I	*	*	*							*	
ST.BARTS	*			*		*					*
MOYNES			*	*		*					*
NASH HILL		*	*		*	*			*		
DROITWICH	*	*	*		*	*	*	*	*	*	*
OTHERS										*	

The shapes into which tiles have been scored and snapped is shown in fig.8.29. They can be divided into three groups on the basis of their method of subdivision. The simplest type is formed by division of the tile along one (H) or both (I) diagonals. This is the most common method of subdivision and is used when a pavement is laid diagonally to the walls of a structure. The triangular tiles are used to fill in the edges of the pavement. Tiles scored for snapping along one and both diagonals were found in the Gloucester Cathedral Treasury pavement (Vince, 1977a). In this instance the tiles had not been snapped and it may be that the original intention had been to lay the tiles diagonally but that this was not carried out.

The next group consists of squares (B), oblongs (A) and triangles (J and K) in which one edge of the tile is half the total length of the tile. The third group consists of squares (C), oblongs (D, E and F) and triangles (G) in which one edge of the tile is a third of the length of the complete tile. It is possible that some of the small tiles

from Nash Hill were made by subdivision of the large square tiles so that one edge of the tile is a quarter of the total tile length, however, this is not proven (Eames, 1974).

Table 8.29 shows that in tile groups in which small scored and snapped tiles occur all but the Keynsham type I tiles used both the half-tile edge and the third-tile edge. The method of use of these small tiles is shown by fragments of intact pavement (Lowe, 1978; Brak spear, 1923). In each case the small tiles are used to form a grid surrounding groups of four square tiles.

Keynsham Type I tiles include a number of rectangular tiles which have a uniform width but vary in length. The method of production of these tiles therefore probably differs slightly from that described above.

One group of tile mosaic is known from the study region and was found at Holm Castle. At least one large circular pattern must have been present. Segments of circular bands were found, together with other tile shapes which must have been 'petals' or the background between 'petals' within the circle.

Other non-rectangular tiles were made in Bredon-type tile fabric. They are circular roundels, decorated with scenes illustrating the labours of the months, and square tiles in which one corner has been cut away in a crescent shape to receive the roundel. This arrangement is a close copy of that found at Chertsey Abbey (Eames, 1980).

The Abbey Dore relief-decorated tiles are of diamond shape.

TREATMENT OF THE TILE BASE

If untrimmed, the base of a tile would retain a coating of sand, from the sanded former used in its shaping. It was common practice in several tile industries to trim the bases of the tiles with a knife. This is not a standard practice and must be a cultural trait rather than having a purely practical purpose. A trimmed base is characteristic of the St. Bartholomew's Hospital, Gloucester tiles, the Bredon-type tiles and the Malvern Chase tiles while the remaining types have sanded bases.

Keying is found in the bases of several groups of tiles. The two forms found are conical 'shells', cut with a twisting action using a knife, and rectangular-sectioned stabbing. There is a difference between the stabbed tiles in the study region and those of the Oxford region, in that those of the Oxford region have circular-sectioned stabbing. Shell keying is found on Moynes Court-type tiles, St. Bartholomew's Hospital, Gloucester, type tiles and Nash Hill tiles. The number of keys varies with the size of the tile, but four is normal. This type of keying is typical of the 'Wessex School' but is not present on Keynsham Type I tiles, which have the closest links in design with the Clarendon pavements.

The square stabbed keying is found on Bredon-type and Malvern Chase tiles. It is not found on every collection of these tiles but occurs either on all or none of the tiles in a collection. This fact may eventually lead to further precision in the dating of the tiles. It suggests that the

tiles were made in batches, rather than stock-piled. Stabbing also occurs on the Halesowen-Chertsey tiles and it is from this group that the trait probably arrived in the Severn Valley.

Although keying is predominantly an early feature, shell keys are found on mid-16th century Lacock Abbey-type tiles found at Bath Abbey. Knife-trimming of the tile base is also mainly an early feature but occurs on all Malvern Chase tiles from the 14th to the 16th centuries, even those stamped with Great Malvern dies.

TILE DECORATION

The terminology used to describe tile decoration has undergone revision, as has current thinking on the methods of manufacture (Drury and Pratt, 1975; Eames, 1980).

Relief, counter-relief and line-impressed decoration is monochrome, although it can be either plain, lead-glazed or covered with a white slip. The distinction between relief and counter-relief decoration is that on relief tiles the decoration is three-dimensional, so that detail is present on the upstanding parts of the tile, while on counter-relief tiles the decoration is two-dimensional. Counter-relief tiles can be formed using the same dies as two-colour tiles. Line-impressed tiles have not been found in the study region.

Two-colour design tiles are all decorated using a die in which the pattern is two-dimensional. Classification of the resulting tiles is based on the method of applying white clay to the impressed area. The most durable method

is to inlay the tile with plastic clay. Keynsham Type I and 'stabbed Wessex' tiles were decorated in this way and the end result retains its pattern long after the surface of the tile has been worn down. However, the method is time-consuming and uses a large amount of white clay. Inlaid tiles can be recognised because flow lines are visible in the white inlay and because of the depth of inlay.

At the other extreme are tiles which were once termed 'printed' tiles. On these tiles the design is present as a thin slip, often hardly if at all sunk below the general level of the surface. The first person to distinguish these tiles as a group was Haberley, who suggested that they were made by dipping the die into white slip and printing this slip onto the tile surface. Haberley claimed to have succeeded at producing decorated tiles using this method but Drury and Pratt have suggested two other ways in which this 'printed' effect can be achieved. In the first, which they term Stamp-on-slip, the tile is first covered by a thin layer of slip, either by dipping or painting. The tile is then stamped with the design and the upstanding surface of the tile is scraped to remove the excess slip. It can be seen that some of the Wigmore Abbey counter-relief tiles were brushed with white slip before stamping but in that case the surface was never trimmed.

In a variation of this method the slip was applied, by dipping, after the tile had been stamped and again the excess slip was removed by scraping. This method of decoration is termed slip-over-impression. This latter method is probably the one used to produce the decoration on Great Malvern and Canynges-type tiles but in these

instances, instead of a thin wash of slip, merely coating the impression, the impressions were filled to the brim with slip. This sometimes produces a slight dishing of the slip surface into which the glaze has sunk. This produces a characteristic wear pattern in which only the white slipped areas of the tile retain glaze. The only method of distinguishing the stamp-on-slip from slip-over-impression methods when a thin slip is used is to examine the surface of the slip within the impression. A sharp edge to the impression is caused by the stamp-on-slip method and a curved edge, masking a sharp impression on the underlying tile surface, is due to the slip-over-impression method.

In several instances there is some residual doubt over the method of decoration used. The Bredon-type and Malvern Chase tiles have inlaid decoration but whether it was applied as a clay or a slip is unknown. Although some Droitwich-type tiles were decorated using the 'classic' stamp-on-slip method, there are others in which the slip design is not merely level with the surface but is actually standing proud of the red-firing background.

A few tiles with free-hand painted decoration have been found at St. Bartholomew's Hospital, Gloucester, but are uncommon. No examples of stencil-applied decoration have been seen in the study region (Drury, 1980).

The scraping of excess slip from the tile surface is not often demonstrable on the actual tile surface but runnels of white slip may occur on the knife-trimmed sides of the tile.

On undecorated tiles the surface was either left plain or was covered with a white slip. Two methods of application can be demonstrated, painting and dipping or pouring. The first method is clearly to be seen on Malvern Chase tiles, where no attempt has been made to produce an even surface. Dipped slip can be seen on Droitwich-type and Canynges-type yellow-glazed tiles. In both cases the slip is thick and even and is present as runnels on the side of the tiles. On both Droitwich-type and Malvern Chase white-slipped tiles a copper-green glaze can be found, but this technique is rare on both types of tile.

GLAZING.

Tile glaze can be clear, with a yellow tinge due to iron impurities, green, due to the addition of copper or black. With one exception, no tile glazes from the study region have been analysed but at Danbury it was found that the black-glazed tiles were produced by the addition of copper to a glaze fired at a high temperature (Drury and Pratt, 1975). Droitwich-type plain tiles are often overfired with black glazes. The single analysed glaze is that used on the Canynges pavement tiles (Eames, 1972a). This glaze was found to be a lead-based glaze with a minor addition of tin. It is thought that the tin was present in sufficient quantity to cause opacity.

Changes in the method of glaze application may be responsible for the fact that late 13th to early 15th century tiles normally have glaze on the upper surface but only dribbles of glaze on the sides and none on the base while late 15th to 16th century Great Malvern and Canynges-type tiles have glaze on the sides and dribbles of glaze on

the base. It is possible that the earlier tiles have a brushed or dusted glaze whilst the later tiles have a dipped glaze.

STACKING AND FIRING.

Because most tiles had glaze on the sides as well as on their top surface they tended to stick to each other during firing. It is not uncommon to find small chips of tile stuck with glaze onto the sides or even top surface of used tiles, nor is it unusual to find chips missing from the upper edges of tiles with glaze or mortar covering the broken surface, showing that the damage took place before use.

Stacking marks on the tiles show that most were fired stacked 'herring bone' fashion with succeeding layers of the stack reversed so that the resulting stacking marks record two or three tiles almost at right angles on two opposing sides of the tile. The base is also often marked.

Without recourse to physical analysis, the duration, control and temperature of firing can only be estimated from the hardness, colour and distortions found on the used tiles. Visual estimates show a considerable range in firing between tiles in the same collection stamped with the same die. The occurrence of overfired plain black Droitwich-type tiles suggests that these tiles would have been placed at the base of the firing stack, close to the entrance of the kiln, whilst the decorated tiles would have been placed further in.

CHAPTER NINE

THE HISTORICAL DEVELOPMENT OF THE CERAMIC BUILDING MATERIAL INDUSTRY.

INTRODUCTION

The use of ceramic building materials in the medieval period was subject to even more regional variation than was the use of pottery vessels. To take one example, the areas in which flat ceramic roof tiles were used seem to have been discontinuous and quite sharply defined. Therefore, the scraps of evidence for medieval ceramic building materials cannot always be combined from different areas to produce a generalisation of the true state of affairs in the study region and there is even less likelihood that the sequence of use revealed in the study region can be transferred to other regions of the country.

Another reason for the lack of certainty about the development of the industry is that the raw data for this study have been very unevenly sampled. Only half a dozen sites have been excavated in which ceramic building materials have been adequately sampled. The reasons for this are not difficult to find. At 143-5 Bartholomew Street, Newbury, the author attempted to keep every flat tile with more than one dimension and every fragment of curved or otherwise featured tile. Even the collection of this partial sample placed a great strain on the processing of finds from the excavation. It is therefore not surprising that the collection of flat roof tile has been uneven. It is also not generally realised by excavators that the use of brick and tile varies significantly both

between areas and also with the status of the structure under excavation. There has been, therefore, no forceful argument in favour of collection to justify the amount of effort required to collect, process and store the samples.

Some types of ceramic building material have suffered more than others from this differential collection. Decorated floor tiles have been collected with the same rigour as potsherds but undecorated floor tiles, especially unglazed examples, may well be under-represented while the collection of bricks, flat roof tiles and daub is exceptional and their absence from the collection of finds from a site cannot be taken to imply that they were not used there.

With these warnings in mind it is possible to reconstruct the outlines of the history of the ceramic building material industry, which is discussed below first in chronological outline and secondly type by type.

10TH TO EARLY 12TH CENTURIES.

Until the late 12th century there is no evidence from the study region for the production for trade of ceramic building materials. Clay was utilised for walling, hearths and the production of loom weights and it is unlikely that all this clay could have been obtained from within the property of those using it. However, petrological analysis has not revealed any long-distance trade in unfired clay and it may be assumed that carting of clay over distances greater than a couple of miles would have been rare.

Preparation of clay by tempering is probable at Gloucester in the 10th century, where the same fabric was used for the daub walls of a pottery kiln and for the

manufacture of loom weights. This fabric was not used for the pottery made in the kiln, which had a limestone temper.

The evidence to date therefore shows an awareness of the properties of clay at all levels of society throughout the late Saxon and early medieval periods but no exploitation of clay pits on more than a domestic scale.

LATE 12TH TO MID-13TH CENTURIES.

During the late 12th to mid-13th centuries there is evidence for widespread but intermittent development of a ceramic building material industry. Flat roof tiles were used, albeit only occasionally, at Gloucester and Hereford, and were in general use in the Kennet valley (figs.9.8, 9.9). The fabric of tiles from Gloucester indicates that they were not made by potters experimenting with tile production but were rather the products of a specialist tiler. The only early 13th century fragment of flat roof tile from Hereford is, however, in a pottery fabric, Hereford A2.

Where flat roof tiles were made of fired clay ridge tiles would certainly also have been ceramic. In south Worcestershire, ridge tiles were produced in Worcester-type ware and are found at sites in the Severn valley from Gloucester to Droitwich (fig.9.1). Both the characteristically laminated fabric and the distinctive tall, hand formed knobs of these tiles show that these ridge tiles originated in the same centre.

The production of floor tiles in England also began in the late 12th century but no tiles of such an early date are known from the study region.

LATE 13TH TO EARLY 16TH CENTURY

The pattern of use and production of ceramic building materials seems to have stabilised at the end of the 13th century so that regional patterns of tile use developed (figs.9.2, 9.9). Flat roof tiles were used in the Kennet valley, the south-east of Wiltshire and possibly in and around Worcester (fig.9.10). This production was normally carried out by specialist tilers and the only evidence for any combination of tile and pottery manufacture comes from Laverstock. Even there, documentary evidence seems to indicate that specialist tilers were also in operation in the area although working in separate centres.

In the Severn valley, south Wales and north Wessex, excluding the Kennet valley, ridge tiles, finials and louvers were manufactured by potters and were traded over similar distances as hollow ware vessels (fig.9.2). In the Kennet valley this roof furniture seems to have been made by tilers. The general division between the manufacture of flat roof tiles and possibly undecorated ridge tiles and the manufacture of decorated ridge tiles, louvers and finials seems to be general over the whole of southern England and is illustrated by documentary evidence from Banstead, in Surrey, where in 1372/3 flat roof tiles were obtained from two sources, Ashtead and Reigate, whereas the decorated ridge tiles were obtained from the pottery at Cheam (Moorhouse, 1981, 108). This division seems to make sense from a technical standpoint, since finials are often wheelthrown and all types of roof furniture except the simplest undecorated ridge tiles require dexterity and skills alien to tile production yet commonly used in the

production of pottery vessels.

There seems to have been no major change in the mode of production of floor tiles between the late 13th and early 16th centuries. Two main types of production have been demonstrated. The first is 'factory' production in which the tiles were produced by a large stable industry, often encompassing several generations of tilers. Examples of this type of production range from the earliest tiles used in the Severn valley, the St. Bartholomew's Hospital, Gloucester, - Cleeve Abbey type, to some of the latest, produced at Malvern Chase. In three cases floor tiles were produced in the same areas as pottery vessels, at Malvern Chase, Nash Hill and in the Salisbury area. There is, however, no evidence for the production of floor tiles by potters, nor for the firing of floor tiles in the same kilns as pots. In fact, wherever evidence has come to light it seems to show the opposite, even when, as at Nash Hill, pottery and floor tiles were produced in successive kilns. There is no evidence from the study region for the production of floor tiles and flat roof tiles in the same centres, although it would not be surprising to find such evidence in the Newbury area, where both pegtiles and floor tiles were being produced in the late 14th to early 15th century (Eames, 1980, 215-8). Floor tiles and bricks were produced together at Wigmore Abbey at the beginning of the 16th century and there may be a connection between the production of Canynges-type floor tiles and that of brick and tiles at Worcester, although there is as yet no archaeological proof for this suggestion.

The distances over which ceramic building materials were travelling during the later medieval and early Tudor periods are comparable to those travelled by contemporary pottery. Both pottery and ceramic building materials produced in south Worcestershire show an increase in the distance travelled in the 15th century, especially, but not only, down river to sites in the Bristol Avon and beyond. In the late 13th to 14th centuries sites such as Chepstow and Bristol were receiving few if any ceramic goods from south Worcestershire, although manufacture of pottery, ridge tiles and floor tiles was already on a large scale there. However, in the early 15th century Droitwich-type floortiles were exported to sites in the Lower Severn, as were the later Great Malvern, Canynges-type and Malvern Chase tiles. From the late 15th century onwards there is plentiful evidence for the export down river of Malvern Chase pottery.

LATE 16TH TO MID-17TH CENTURY.

With the exception of the Worcester industry, production of bricks and flat roof tiles began in the Severn valley in the late 16th century (fig.9.11). Only three source areas have been examined in detail, Hereford, Gloucester and Malvern Chase, and of these only the Malvern Chase products have a distinctive petrology. Brick and flat roof tile from Malvern Chase has been found at Hereford, Breinton and Gloucester and there is documentary evidence for the use of Malvern Chase brick in the construction of St. Katharines Chapel, Ledbury.

The distances over which Malvern Chase brick and flat roof tile have been demonstrated to travel are much lower than those of the late 16th century pottery from the same source. However, as noted in the introduction to this chapter, there are great dangers in using negative evidence in the study of ceramic building materials and although likely it should not yet be assumed that late 16th century bricks and flat roof tiles were not being transported over similar distances to pottery vessels.

In the early 17th century there is a notable change in the location and organisation of the pottery industry, with many small potteries taking the place of the large industry based at Malvern Chase. It is possible that a similar process took place in the brick and tile industry with large industries such as those at Worcester and Malvern Chase itself being replaced by small centres. Evidence from parish registers, mainly of a slightly later period in the late 17th century, shows that brickmaking was a common occupation in most areas while the first editions of the Ordnance Survey maps of the region show that brick kilns were a regular feature of the landscape in the 19th century.

Details of the development of individual ceramic building materials are given below.

RIDGE TILES.

Ceramic ridge tiles can be used on any type of pitched roof, whether it is made of turf, thatch, wooden shingles, stone tiles or ceramic tiles.

The first archaeological evidence for the use of ceramic ridge tiles in the study region is from Gloucester in the 12th century, where they are undecorated and probably made with flat roof tiles in Gloucester TF89 (see below). Decorated ridge tiles start in the mid- 13th century. The earliest recognised are in Worcester-type ware and are probably the same date as the associated pottery (mid- to late 13th century).

In Hereford the earliest tiles were thought to be knife-cut coxcomb tiles in Hereford A7b of a type with short, stabbed crests. This type was found only at Hereford Castle. If they are the same date as the pottery in this fabric they must be mid-13th century or later. From sites in the town of Hereford itself, the earliest ridge tiles derive from late 13th to 14th century deposits and are also made in Hereford A7b fabric. A similar date is likely for the introduction of decorated ridge tiles over much of the study region. With one exception wherever a detailed petrological analysis has been made the ridge tiles are made in the same fabric as a contemporary hollow ware. This leaves little doubt that in the Severn valley and the west of England decorated ridge tiles were made by potters rather than tilers. The exception to this rule is found in Berkshire, where decorated ridge tiles are found in Newbury tile fabric. Significantly, Newbury Group C ware is the only late 13th to 14th century ware known in the study region which did not also produce ridge tiles. It is likely that in regions where flat tiles are current in the medieval period ridge tiles were made in these centres rather than with pottery.

There are several regional variations in the decoration of ridge tiles. Knife-cut coxcombs occur virtually everywhere, although there are minor variations between different centres. Fretwork ridge tiles occur in Berkshire and Hampshire (Platt and Coleman-Smith, 1975, nos.1402-3, 1406, 1411, 1415 & 1417) while knobbed ridge tiles occur in the industries of Herefordshire and Worcestershire only, although the products have a much wider distribution (figs.9.1, 9.2, 9.3).

Minety, Wiltshire, is the only centre in the region to produce handformed coxcomb tiles in the medieval period but similar tiles were made in the 17th century in North Devon and at Stroat, Gloucestershire, which also looks to the south-west in the style of its bowls and jars (see Ch.11). It is noteworthy that despite the overlap in distribution found in the products of different centres there is little borrowing of decorative styles. Malvern Chase produced a few knife-cut coxcomb tiles and Hereford A7b produced a few knobbed tiles but in general once a style was established in an area it continued to be produced there.

Finials and louvers, although rare, were produced in the same fabrics as decorated ridge tiles, so that those in Berkshire were made in tile fabrics and those in the rest of the region were made in pottery fabrics. In London, however, ridge tiles were made in tile fabrics but louvers are made in pottery fabrics, perhaps because the forming techniques used are the same as those used in making hollow wares. No louvers are known from Berkshire, but possibly in their place one finds vessels which may be chimney pots

made in a pottery fabric (Newbury Group B).

The distribution of decorated ridge tiles is shown in figs. 9.1 to 9.3. For the late 14th century onwards much of the dating is based on knowledge of the history of the contemporary pottery industries rather than on stratigraphic evidence. It is very difficult to date the end of production of a ridge tile type since the tiles could have such a long life. One mid-18th century pit group from Gloucester contains Gloucester TF88 flat tiles and an almost complete two-knobbed Malvern Chase ridge tile which must have been made in the early 17th century at the very latest.

There is little difference between the distribution of ridge tiles and that of the associated pottery with a few minor exceptions. Ninety ridge tiles are not found in Gloucester to any great extent although Malvern Chase and Hereford A7b tiles are. There are also no known Gloucester TF99 ridge tiles found in the study area.

This general similarity in distribution areas is despite a difference in the method of marketing. Ridge tiles are often itemised on building accounts and sometimes the potter or tiler involved is mentioned by name. Elsewhere it is recorded that the mason in charge of the building went to the pottery to bargain for tiles. In only two cases do we have any documentary evidence for the source of tiles; firstly at Newport Castle in 1448, where a Cardiff potter provided them (Pugh, 1963). "et solutum Johanni Croker de Kaerdyffe pro ij duodenis de crestis de eodem emptis pro coopertura summitatis camera predicte ij s." (Item, paid to John Croker of Kaerdyffe for two dozen

ridge tiles, purchased for covering the roof of the said chamber, 3s. 0d). Secondly at Ledbury in the late 16th century ridge tiles were obtained from Hanley Castle, the main manor in Malvern Chase (Morgan, 1955).

Salzman (1952) quotes the price of ridge tiles at 1.5d each at Moor End, in 1366 and 36 crests at 6s 2d in 1432 at Kings Hall. An exceptionally expensive purchase was 2s for 2 crests made in the fashion of mounted knights at Banstead Manor, Surrey, in 1373. The fact that only two were bought may indicate that they were replacements for an earlier roof or that they were used as finials at either end of the ridge. Salzman also notes references to 'Holtill' (hollow tile) and 'fyneax' or 'festeaux' which may be finials and louvers. Ridge tiles were on average 30 or 40 times as expensive as contemporary flat tiles, while the Banstead Manor tiles were between 200 and 250 times as expensive (see below).

The building accounts for St. Katharine's Hospital, Ledbury between 1584 and 1595 show us the sort of demand for Malvern Chase tiles that may have been typical.

Table 9.4. Extract from the building accounts of St. Katharine's Hospital, Ledbury. (Morgan, 1955, 88-131).

1587 Dec. 8th item for viij crests	viijd
1591 May 21st item twoe crests	ijd
1591 August item iiij crests	iijd
1593 July 28th item vi crests	vjd
1593 Sept. item two dussen of crests for the same house [a mill house]	ijs
1595 July item for xvij crests	xvjd

Thus over a period of 8 years only 58 ridge tiles were purchased at a cost of 4s 10d compared with over 13s 4d spent on c.1400 Malvern Chase bricks (the buildings were timber-framed and stone tiles were used for the roofs).

The decline in production of decorated ridge tiles began in the early 17th century with the production of plain ridge tiles by the Herefordshire kilns and Ashton Keynes, Wilts. However, Stroat, Gloucestershire, was still producing decorated ridge tiles and in the late 17th to early 18th century North Devon decorated ridge tiles were imported to Gloucester. The longevity of this tradition is such that there are still medieval or early post-medieval decorated ridge tiles to be seen on roofs in Worcestershire and Gloucestershire to the present day.

There are also at least two Malvern Chase finials still in use on houses in Hanley Castle but it is likely that their production ceased when brick chimneystacks were introduced during the late 16th century. Ceramic chimney pots are not found until the late 18th century in the region, with the exception of the two Newbury Group B examples from Berkshire (see ch.2).

In the distribution maps (figs.9.1-3, 9.7) only Malvern Chase tiles can be securely split into chronological groups, and these of only the broadest nature: In the late 16th to 17th centuries these tiles have a clear glaze and are higher fired than in the previous periods (fig.9.7). The remaining maps are based on the earliest occurrences and analogy from pottery made in the same industry.

FLAT ROOF TILES.

The earliest documentary reference to tile manufacture in the study region is in a Saxon Land Charter for Wooton-under-Edge (Grundy, 1935-6, 282).

"These are the bounds of Wooton: First from the ash tree along the top of the ridge slope to the lea where the tiles are made..."

Grundy identifies this locality as 'Tyley' but nothing is known of the type of tiles produced. They were most likely stone tiles and could as easily have been used for walling or flooring as for roofing. The term 'brick' although used on the continent from the 13th century is first found in this country in the 15th century (Salzman, 1952).

The earliest evidence for the use of ceramic flat roof tiles comes from Eastern England, including Berkshire. At Newbury and Reading Abbey there is evidence for the use of pegtiles from the second half of the 12th century onwards, while at Reading Abbey flanged and curved tiles were also found in the late 12th century, but in a different fabric from the peg tiles. Other evidence for tile production in Berkshire comes from place-names. Both 'the Tiley' in Windsor and 'Tilehurst', to the west of Reading are first

recorded as place-names in the late 12th century. Archaeological evidence for 12th century pegtile use comes from London (where they are found in waterfront deposits dated pre-c.1170 by dendrochronology) and Essex, where pegtiles are visible in the fabric of several mid-12th century churches examined by Messrs. P. Drury and W. Rodwell (Drury, 1980). Shouldered pegtiles are known at present only from London and a single example from Gloucester (fig.9.8). Although other fragments of Gloucester TF89 tile may be of shouldered pegtiles most are from curved tiles, presumably ridge tiles. Flanged and curved tiles are known from Reading Abbey, London, Southampton and Bayham Abbey but a single fragment from Bewell House, Hereford may be either from a flanged tile or just possibly a ridge tile with a flange at the base. In either case it is the earliest glazed roof tile from the town and was found in an early 13th century context. The fabric, Hereford A2, is first found in the late 12th century.

Occurrences of these three types of flat roof tile are extensive and it would not be surprising to find further instances of their use at this time, probably on buildings of high quality employing non-local craftsmen (for example abbeys and castles). It appears that the shouldered pegtiles and flanged and curved tiles, were unsuccessful experiments and are not found after the early 13th century.

Pegtiles were not generally adopted in any part of the study region in the medieval period except the Kennet valley (fig.9.9). Pegtiles alone are found in the late 12th

century at Newbury. They were used in large quantities on the Bartholomew Street sites from the late 13th century onwards, both for walling and set on edge as hearths. During the late 14th century, and possibly later, floor tiles were also produced in Newbury tile fabric. There is a documentary reference to the use of pegtiles at Marlborough in the mid-13th century (see below).

Worcester is the only site in the study region outside Berkshire which might have ^{had} a medieval flat roof tile industry. There are references to tilers in Worcester in the 13th, 14th and 15th centuries (1299AD Northwich and Whitestones, Johannes tegulator quoted in Hollings, 1950, 7) and although expressly forbidden to form a guild by the Kalendar of Ordinances of 1467 (Toulmin Smith, 1870) which were re-enforced in 1497 (V.C.H. Worcs. II, 275) there was a building outside St. Martin's Gate known as the Tilehouse (Habington, ed. Amphlett, 1899, 45). Study of the floor tile industry suggests that only two possible floor tile groups could have been made in the town; the Droitwich-type tile group and the Canynges-type tile group. The first is known to have been produced at Droitwich, but could also have been made in Worcester (the towns are only c.6 miles apart and would probably have access to petrologically identical sands and clays) and the second is first produced in the late 15th century and is thus too late to be responsible for all of the documentary references. It is therefore most likely that some of the nibbed and pegged tiles found in Worcester are of late medieval date. By the 16th century bricks were being made by Worcester tilers (Dyer, 1973) and it is also possible that some of the late

medieval tilers were making 'wall-tile' or bricks. Evidence for the Worcester tile industry is summarised by Carver (1980).

A flat roof tile industry is known from documentary evidence at Alderbury, near Salisbury. This industry was supplying Clarendon Palace with large quantities of tile between 1354 and 1388. These tiles included crest tiles (Musty et al., 1969, 83).

Salzman quotes several prices for roof tiles taken from contemporary documents (Table 9.5). Although it is sometimes not clear whether bricks or flat roof tiles were being referred to there are several which from their location must refer to flat roof tiles.

Table 9.5. Price of Flat Roof Tiles in Southern England

Site	Date	Price per 1000
Marlborough	1237	3s
London	1258	3s
London	1278	3s
Guildford	1291	2s **
London	1350	5s
Clarendon Palace	1354	4s @@
Battle Abbey	1355	2s 6d
General	14th C	4s to 5s 6d

** plus 3d for carriage

All data from Salzman (1952) except @@ (Clarendon Works Accts. PRO E 101/459/29).

An Act passed in 1477 states that tiles were then lasting only 4 or 5 years instead of the expected 40 to 50 years and regulates the manufacturing processes and the sizes of tiles. Peg tiles were to be 10.5" by 6.25" by at least 5/8" thick, Ridge tiles were to be 13.5" by 6.25" and gutter tiles were to be 10.5" long (Celoria & West, 1967)

Drury and Pratt (1975) have published the excavation of a tile kiln from Danbury in Essex which, from its range of products, is probably comparable with the Newbury industry. Floor tiles, glazed pegtiles and ridge tiles were produced at Danbury in a rectangular, tile-built kiln.

BRICKS.

From Wigmore Abbey comes evidence for the manufacture of brick in the late 15th or early 16th centuries alongside floor tiles, a combination not yet found elsewhere in the study region but which might be expected at Worcester. Although the kiln was not found it is likely that the Wigmore tiles were made on the site of the Abbey for use there, perhaps because of the remoteness of the site.

At Reading and Newbury too brick was a 16th century introduction, predating the Dissolution at Reading Abbey, and at both sites was made in a sandier fabric than the peg tiles.

Elsewhere in the study region there is no certain evidence for the use of brick before the Dissolution of the Monasteries. At Malvern Chase, Hereford and Gloucester both bricks and nibbed tiles were introduced together in the late 16th centuries. Since both Hereford and Gloucester received some Malvern Chase bricks and flat tiles it is possible that production in Malvern Chase began earlier than at Hereford and Gloucester but there is no stratigraphic evidence for this. The building accounts of St. Katharine's Hospital, Ledbury show the quantities of brick used in the late 16th century at a time when most buildings were timber-framed (Morgan, 1955, 88-131).

Table 9.6. Extract from the building accounts of St. Katharine's Hospital, Ledbury.

1587	Sept.	17th	item to Grundie [John Grundy, Mason] for going to Hanley to bargayne for brick and for half a days work	viijd
1588	Sept.	9th	item for brick	iijs viijd
1588	Nov.	25th	item for 100 of brick	xvjd
1593	July	17th	it. a thousand of brick for the same [2 new houses and renewing a furnace]	viij iiijd

The latest evidence for brick production in the Chase is from 1637 when Edmond Thold and Edmond Sacrament, brickmakers, of Castlemorton are recorded (Q.S.R. part ii, 625). By the late 17th century brickmaking had moved to the side of the River Severn, exploiting the silty alluvial clays rather than the keuper marls of the Malvern Chase. Hanley Castle church was rebuilt in silty brick in c.1674 and an agreement of 1684 records the setting up of a brickworks at Upton-on-Severn by Edward Addis. A member of the Addis family was recorded as a potter in Hanley Castle in the late 16th century.

Although not studied in detail, as it is outside the scope of this study, it appears that references to late 17th century brickmakers are so numerous as to suggest a very local distribution of their products. There may in fact be a change in the organisation of the industry from the late 16th to 17th century, when the demand was for brick as a minor element in timber-framed structures to the late 17th century when brick was increasingly being used on its own.

FLOOR TILES

Since Floor tiles are more closely datable than pottery or other ceramic building material and it is also possible to describe for each tile group six variable characteristics, it is possible to recover more information about the origin, development and organisation of the floor tile industry than it is for other ceramic industries.

The variable characteristics for each tile group are:

- 1) the method of keying
- 2) the size of the tile
- 3) the presence and type of small, scored and snapped tiles
- 4) the die used to stamp the decoration
- 5) the design
- 6) the fabric.

All six characteristics can be used to relate one group of tiles to another. These give five main sorts of relationships. Firstly, two groups of tiles can be made in the same 'factory'; secondly, they can be made using the same dies; thirdly, they can be made with the same designs but different dies; and fourthly, they can be made with similar techniques and fifthly, they can share the same method of use (ie. the type of border tiles present).

Details of these relationships can be found in chapter 3 but are summarised in figs.9.20. The relationships found are complex, for example the Malvern Chase tilery started in the early 14th century using dies from the Bredon-type industry. Later, techniques and designs from the Droitwich-type tilery were acquired and c.1480 dies from the Great

Malvern tilery were re-used at Malvern Chase.

Such detailed relationships are not found, or at least not recognisable, in the contemporary pottery industries and we are therefore much better informed about some aspects of the technical development of the industry.

FLOOR TILE DISTRIBUTION

From the evidence presented in chapter 3, it is possible to identify three types of tile distribution. In the first the kiln is set up in the grounds of the establishment which it is supplying. Examples of this type range from the mid-13th century at Clarendon Palace and Keynsham Abbey to the late 15th to early 16th century at Wigmore Abbey, where the floor tiles may have been associated with brick production. The best known tilery of this sort was at Great Malvern Priory in the 1450's and, with a possible break, in the 1470's to 1480's. The latter example shows conclusively that even though the tilery was only temporary it did not solely supply the Priory but also provided tiles for a wide area.

In the second type of distribution, tiles were made at a factory at some distance from their place of use but are decorated with specially produced dies. Examples of this type can only be identified by petrological analysis since a study of the distribution of tiles made with these dies would suggest that they were locally produced. For example, the pavement in front of the High Altar at St. Peter's Abbey, Gloucester, was made at the Great Malvern tilery but specially cut dies, not represented on the surviving tiles at Great Malvern, were used. Similar processes may be suggested for the Carew tiles, made for use at Carew

Castle, Dyfed, and only found at sites in Dyfed, with the exception of one tile from Bath Abbey. Petrological analysis of these tiles suggests that they were products of the Canynges-type industry. The same industry was probably responsible for the manufacture of the Thornbury Castle tiles, the Llanthony Priory, Gloucester, series which are found mainly at sites in Gloucester, the Stafford Melton tiles, found only at Hailes Abbey and the Heytesbury and St. Augustine's Abbey, Bristol, series. The last two series differ from the previous examples in that the designs are found over as wide an area as any tiles from that industry. This may be because they were produced earlier, so that there was time for the dies to be re-used or more probably it is because they were of the standard quarry size, whereas the other tiles were all of atypical sizes and could not easily be re-used. It is suspected that the production of series of dies for a special commission occurred throughout the history of the floor tile industry but the evidence is best for the late 15th to early 16th centuries.

The third type of distribution was of 'off the shelf' tiles, which may have been produced in large quantities and stock-piled awaiting a purchaser. This is by far the most common pattern from the 14th century onwards, and it is suspected that it is also the standard late 13th century method of production, for example on the Gloucester St. Bartholomew's-type tiles. Even in the late 15th to early 16th century the majority of parish churches in Gloucestershire and Worcestershire have collections of

Canynges-type and Great Malvern tiles which share dies with numerous other collections. These sites differ from those receiving the commissioned tiles in status. They are typically parish churches, or the less important precincts of monasteries or, rarely, private houses, such as Canynges House in Bristol.

THE STATUS OF FLOOR TILES

There is a clear chronological pattern in the type of site supplied with tiles, on the basis of the surviving evidence. In the mid- to late 13th century only rich monasteries and Royal palaces were using decorated floor tiles, for example Gloucester Blackfriars, and the abbeys at Hailes, Evesham, Bath, Cirencester and Keynsham. In the early 14th century this clientele was enlarged to encompass parish churches and smaller monasteries, for example Bredon Church, Abbey Dore Priory, Little Malvern Priory. There is still little evidence for the use of decorated floor tiles at secular sites, with the exception of the Royal Hunting Lodge at Holm Castle, Tewkesbury.

In the late 14th to 15th century there was a widening of the type of sites receiving floor tiles. many of the parish churches of Herefordshire, Gloucestershire and Worcestershire have collections of Droitwich-type tiles of late 14th to 15th century date together with Great Malvern and Canynges-type tiles of late 15th to early 16th century date, whereas earlier types are extremely rare.

The excavations in Hereford, Gloucester and Newbury have revealed numerous floor tile fragments on secular occupation sites, and some of these are of late 13th to 14th century tiles. However, if only examples stratified in

medieval contexts are examined then it is clear that most of the early floor tiles are present only in post-dissolution contexts. At Berrington Street site 4, Hereford, a collection of 14th century tiles was recovered from a modern drainpipe trench and no examples were found in earlier levels. Late 14th to 15th century or later tiles were definitely present in late 15th to 16th century contexts at all three towns. The mortar base for a late 14th to 15th century tile floor was found in tenement excavations at the Market Place, Newbury (Ford, 1976). In all other examples the tiles were only loose fragments, indicating the presence of tile floors in the area.

A magisterial survey of the origins and development of the medieval decorated floor tile industry has recently been published by Eames (1980). There is, therefore, less need than with pottery to place the industries supplying the study region into their national setting. There are, however, several minor differences in interpretation between the classification devised by the author on petrological grounds and that used by Eames. A concordance between the terminology used by Eames and that used here is given where appropriate in the text below, together with a description of the development of the industry.

MID-THIRTEENTH CENTURY

The earliest use of glazed floor tiles in this country is of 11th century date. Examples of polychrome relief tiles, for use on walling, have been found at a number of monastic sites, of which the best known to date is

Winchester Cathedral. There is no evidence for the use of such tiles in the study region but the largest pre-Conquest abbeys of the West Country have either been excavated without the benefit of modern excavation techniques, for example the churches at Muchelney, Glastonbury or Old Sarum, or have yet to be archaeologically investigated on any scale, for example the Cathedrals at Hereford and Gloucester.

The use of mosaic tiles using slip and glaze to achieve a range of colours is attested in the late 12th or early 13th century. Surviving tiles are mainly from Yorkshire but examples are also known from Canterbury, Rochester and possibly Westminster (Eames, 1980, chapter 4). No examples are known from the study region, even though a number of 12th to 13th century monasteries in the study region, which might have been expected to produce the tiles, have been excavated.

Tiles decorated in relief have a wide occurrence in this country and it is suspected from their decoration that many are of 13th century date. The British Museum collection includes three such groups from western Britain: Whitland Abbey in Dyfed, Bardsey Abbey in Gwynedd, and Buckfast Abbey in Devon (Eames, 1980, 108). These large tiles, decorated in well-rounded relief, are similar in style, though not precisely in design, to a small collection of lozenge-shaped tiles from Abbey Dore Priory, Hereford and Worcester. They were all stamped with the same design and are now relaid in Abbey Dore church (Ward-Perkins, 1937). A 13th century date is likely for these tiles, but no further comment is possible until either

their fabric is examined or tiles are found decorated with the same die.

A single group of tiles in the study region can be dated to the mid-13th century, since it belongs to an early stage of the 'Wessex School'. This group is Keynsham Type I. The designs used at Keynsham, published by Lowe (1978), are similar in most respects to those used at Clarendon Palace in the 1250's (Eames, 1957-8, 1963). It is suggested by Norton that one of the Keynsham tiles is stamped with the same die as one used at Clarendon (C. Norton, pers. comm.). Petrological analysis of the Keynsham tiles and the discovery of wasters on the site show that the Keynsham type I tiles were made at Keynsham Abbey. Many of the designs used there were to be used throughout the remainder of the 13th century and into the first half of the 14th century, if not longer. A distinctive type found at both Clarendon and Keynsham is the rectangular tile decorated with equestrians or other figures. Some of those from Clarendon have a rebate on the undersurface indicating that they were used as the risers on steps (BM design 1298, which also has a considerable blank area at the bottom of the design which would probably have been buried in the body of the steps, Eames, 1980). The Clarendon tiles have shell keying on the base but those from Keynsham have plain bases. This difference might argue against the Clarendon tilers personally being responsible for the manufacture of the Keynsham tiles.

LATE 13TH TO 14TH CENTURIES.

Tiles of the 'Wessex School' occur in three fabrics in

the study region and in addition are known at various sites in southern England and south Wales.

The St. Bartholomew's, Gloucester - Cleeve Abbey type tiles have a coastal distribution which probably implies redistribution through Bristol. Thin-section analysis of one tile from Gloucester, and visual examination of tiles from Gloucester, Bath and Tintern shows that they contain no diagnostic inclusions. However, since they are found at only one town in the Severn Valley, Gloucester, it is unlikely to be their source. Despite the bland nature of the fabric, tiles of this type have such a wide distribution that a full programme of thin-section analysis would be worthwhile (Eames, 1980, 193-6).

Nash Hill tiles are widely distributed from their source near Lacock in west Wiltshire. In north Wiltshire they appear to have had a large market solely to themselves, limited to the south by a Salisbury area industry, also using Wessex School designs, and to the north by the 'stabbed Wessex' tiles, examples of which have been found at Hailes Abbey, Evesham Abbey and sites in Oxfordshire, Bedfordshire, Buckinghamshire, Northamptonshire, Leicestershire and Warwickshire (Eames, 1980, 202-6). Of particular interest is the evidence for Nash Hill tiles being distributed along the Avon valley to Bristol and, from there, being re-distributed to Tintern Abbey and possibly to other sites in south Wales.

The Moynes Court-type tiles have a limited distribution in south Wales, from Newport to Moynes Court. Petrological analysis of the fabric suggests that they have a local origin while their designs and methods of manufacture show

that they too belong to the 'Wessex School'.

The Bredon-type tiles occur at a number of sites in the middle Severn Valley, of which only the pavement on the chancel steps at Bredon Church survives relatively intact. Together with the designs used on early 14th Malvern Chase tiles, most of which were originally used on Bredon-type tiles, these Bredon-type tiles form a large collection with a dual stylistic origin. The heraldic tiles appear to be a local invention, probably commemorating the major families of the land in the early 14th century, especially those related or allied to the Mortimers. Once produced, these dies were used on a number of sites with no special connection with the Mortimers and some of the coats of arms are present on two dies, due to the replacement of worn dies. New dies were also made after the dies were moved to Malvern Chase, since they do not occur on Bredon-type tiles and are of noticeably lower quality workmanship.

The other design series used on Bredon-type, and subsequently on Malvern Chase tiles, is based on designs first used at Chertsey (Eames, 1980, 154-167). Amongst the Bredon-type series are several large tiles decorated with well-cut dies, sufficiently similar to the Chertsey tiles to be classed as part of the 'Chertsey-Halesowen school'. Tiles of this type have been found only at Leominster and Hereford and it is likely that they pre-date the smaller tiles and were proto-types for several of the designs. However, no large heraldic tiles are known, and therefore the heraldic tiles may have been introduced after the manufacture of the large tiles had ceased. A feature found

on all the Bredon-type tiles, and intermittently on the Malvern Chase tiles, is the use of a square-sectioned tool to stab the knife-trimmed base. Therefore, these two tile industries share both the manufacturing techniques and the same dies. This suggests that the tilers themselves moved to Malvern Chase.

Distribution of both Bredon-type and Malvern Chase tiles is extensive and, since the die evidence shows that the Malvern Chase tilery took over from the Bredon-type industry, based in Herefordshire, it is not surprising that there is considerable overlap in their distributions. It does not appear, however, that the Malvern Chase tilery existed merely to supply replacements to the Bredon-type pavements. It is much more common to find collections entirely composed of one type of tile rather than a collection consisting mainly of Bredon-type tiles with a few tiles from Malvern Chase used as replacements.

A third group of tiles, namely the Droitwich-type tiles, may have a pre-Black Death origin. The method of decoration of these tiles used to be termed 'printing' after experimental work by Haberley (1937). However, further experimental tile production, by Drury and Pratt, suggests that the method described by Haberley would not work and that several different techniques might be used to create the same finished product, which is a countersunk design filled with a thin coating of slip (Drury and Pratt, 1975). Drury and Pratt devised a terminology to describe the methods of manufacture but in practice it is normally not clear which of these methods was used. Therefore, they will all be described here as 'slip-decorated' as opposed

to tiles 'inlaid' with plastic clay. A third method, in which a deep inlay is present which was probably introduced as a slip, will be described as 'slip-inlay'.

The use of slip-decoration is apparently of late 13th century origin, and is used on the 'Westminster' group of late 13th to 14th century tiles in the London area (Eames, 1980, 207-8). The technique was also used in the late 13th to early 14th century at Danbury, Essex. However, the best-known of the slip-decorated tile groups was that at Penn, in Buckinghamshire, which started production in the second quarter of the 14th century (Hohler, 1942).

LATER 14TH TO 15TH CENTURIES.

A group of slip-decorated tiles using designs of the Westminster tiler school was produced in the Coventry area (Eames, 1980, 208). The designs used on the Coventry tiles form part of the repertoire of the Droitwich-type tiler. On stylistic grounds, therefore, the Droitwich-type tile industry could date from the late 13th to early 14th century. Another possible indication of an early starting date for the industry is the presence of tiles of this type at Holm Castle, Tewkesbury, together with mosaic tiles, some of which are slip-decorated with fleur-de-lys. The use of tile mosaic is thought to have died out by the late 14th century (Eames, 1980, 140). Another possible early pavement of Droitwich-type tiles is that surrounding the monument to Edward II at Gloucester Cathedral constructed after his death in 1327, although all that is certain is that this pavement post-dates the monument. However, it is unlikely that the Droitwich-type tile industry was in co-existance

with those based at Malvern Chase or Herefordshire (Bredon-type tiles). The Bredon-type industry was in operation in 1328, the date of construction of St. Peter's Church, Ludlow, and it is inconceivable that the Droitwich-type tilery can have been in operation before c.1330 since the industry at Malvern Chase cannot have begun until this date. On balance, a mid- to late 14th century starting date for the Droitwich-type industry is suggested.

Droitwich-type tiles are found in Herefordshire and throughout the Severn Valley from south Worcestershire down to the Bristol Avon. It is probable that this distribution can be divided into two regions; an area of the middle Severn valley, supplied overland from the production site and a lower Severn area supplied through Bristol. The tiles were probably supplied to the latter area at least partially by water transport.

Dataable pavements exist at Worcester Cathedral and Tewkesbury Abbey, the latest being that in the Beauchamp Chapel at Tewkesbury Abbey, dated c.1430. A stylistic development is evident in the designs used in the Droitwich-type tilery. The most developed designs are those used at Keynsham Abbey, which include a number of 9- and 16-tile patterns and heraldic designs. They include versions of designs used at Worcester Cathedral in the late 14th century but probably not tiles made with the dies used for the Worcester tiles.

No Droitwich-type tiles have been recognised amongst designs published from Warwickshire (Chatwin, 1936). In northern Worcestershire, Halesowen and Bordesley Abbey seem

to have had separate sources of tile supply. A single church in Shropshire has a Droitwich-type tile pavement recorded by Compton (unpublished notes in the Soc. of Antiquaries library). However, the extent and distribution of Droitwich-tiles in Shropshire has not been fully explored. They occur throughout Herefordshire.

Some of the Keynsham Abbey tiles are of a larger size than the earlier tiles, 135mm square instead of 120mm square. The larger tiles are in some cases stamped with dies cut with larger versions of the same patterns as used on the smaller tiles. Other collections with late tiles are Little Malvern Priory, Fladbury Church and Hailes Abbey.

It is possible that the Nash Hill industry continued to supply northern Wiltshire into the second half of the 14th century but by the early 15th century Malmesbury was being supplied by a separate source of floor tiles, namely Malmesbury-type tiles. Some of these tiles have patterns designed especially for the abbey. The designs are slip-decorated and include 9- and 16-tile patterns.

Similar slip-decorated tiles were used in east Wiltshire and Berkshire (the Newbury-type tiles; Eames, 1980, 218) and in Oxfordshire, eastern Berkshire and the lower Thames valley (Penn tiles; Eames, 1980, 221-6).

LATE 15TH TO 16TH CENTURIES.

In the 1450's a new industry was started in the Severn Valley, at Great Malvern. Although principally a high status industry, supplying Great Malvern and Gloucester Cathedral, this industry also supplied much of Worcestershire and sites in the Severn valley. This local

distribution suggests that the tilery producing Droitwich-type tiles was no longer in operation, or was at least suffering severely from the competition.

The manufacturing technique used to achieve decoration on the Great Malvern tiles was a variant of the slip-decoration technique in which liquid slip was used to completely fill the die impression. Excess slip was scraped off the tile and in some cases has run down the knife-trimmed tile edges.

The Great Malvern tile industry gave rise to many subsidiary industries, using dies first used at Great Malvern or new dies cut in the same precise style as Great Malvern dies. Of these industries the furthest from Great Malvern was that at Lenton Priory, Nottinghamshire (Swinnerton, 1955). The Monmouth-type industry is one identified by the author on the basis of petrological analysis. Only two sites have been shown to have Monmouth-type tiles but is it suspected that a number of the Herefordshire findspots of Great Malvern tiles are of this fabric.

The relative date of these subsidiary industries can be seen by examining the dies used. The Monmouth-type tiles include tiles stamped with dies incorporating the date '1456' but not any tiles stamped with dies used in the Gloucester Cathedral Lady Chapel pavement, which must have been constructed in the 1460's or 1470's. The tiles from a tile kiln at Lenton Priory in Nottinghamshire were also struck with Great Malvern dies, including some which were used on the Monmouth-type tiles and some which occur in Great Malvern fabric with cracks. The relative date of the

two subsidiary industries is not known but both should date to the 1460's or 1470's, prior to the construction of the Lady Chapel pavement at Gloucester Cathedral.

The collection of Great Malvern tiles from Bath Abbey is of uniformly poor firing, and therefore probably represents a single batch of tiles. It includes some tiles stamped with dies that had been used on the Monmouth-type tiles as well as some tiles stamped with dies used on the Gloucester Cathedral Lady Chapel pavement. Therefore some at least of the Great Malvern dies were in use long enough to travel from Great Malvern to the Welsh borderland and back again.

Some Great Malvern dies were re-used at Malvern Chase. This movement of dies took place after the construction of the Gloucester Cathedral Lady Chapel pavement, since dies first used on tiles in this pavement were used on the Malvern Chase tiles.

The Monmouth-type tiles are extremely similar in appearance to the Great Malvern tiles and were almost certainly made by the same tilers. The Malvern Chase tiles, on the other hand, have knife-trimmed bases. This technique was used on the early 14th century Malvern Chase tiles and would suggest that there were tilers at Malvern Chase continuously from the early 14th century to the late 15th century. There are some Malvern Chase tiles which, from their design and size could be copies of Droitwich-type tiles of the late 14th to early 15th centuries. It is also possible that plain and white-slipped floor tiles were produced continuously throughout this period.

The only way of determining the origin of tiles of the Great Malvern School is by petrological analysis, since surface appearance is often the same. This is not the case with the other demonstrated instance of the same dies being used at two centres, since the fabric variations between Bredon-type and Malvern Chase tiles are so great that they give a totally different surface texture to the tile. Therefore the elucidation of the distribution of these groups depends on the discovery of fragmentary tiles which can be examined by binocular microscope and thin-section analysis.

Large tiles decorated with Great Malvern style dies were being made at Malvern Chase in the very late 15th or early 16th century. Only four collections with these large tiles are known; Little Malvern Priory, Ewenny Priory, Acton Court, Iron Acton, and Abbot Parker's memorial at Gloucester Cathedral. Two of these collections must be pre-dissolution in date whilst the other two may be slightly later.

The Canynges-type tile group is extremely complex and the conclusions reached here on its source, date and connections vary from those reached by Eames (1980, 239-248). The Canynges-type tile group is defined by fabric analysis but the individual tiles so grouped also have similarities in manufacturing method, they all use the slip-inlay technique introduced at Great Malvern in the 1450's, and have a common style of die-cutting. All Canynges-type tiles have the untrimmed, sanded bases characteristic of both Great Malvern and Droitwich-type tiles. In size, however, they have more similarity to the

Droitwich-type tiles, most of which average 120mm square. A few of the Canynges-type 16-tile designs are very similar to those used on the Droitwich-type tiles and may even be made with the same dies. However, the difficulty of die-analysis of slip-decorated tiles has already been alluded to and it is impossible to be certain on this point.

The author would see the Canynges-type industry as the product of a single 'factory', succeeding that of the Droitwich-type industry, and possibly even based in the same centre. Although Eames suggests a Bristol origin for the Canynges-type tiles, a conclusion which is not refuted by the petrological analysis, it seems more likely that the source is in south Worcestershire, since it is in this area that there is a dense distribution to parish churches. It is likely that the preponderance of finds in and around Bristol, and the presence of Canynges-type tiles on sites in south Wales, is due to redistribution through Bristol.

In the very late 15th to early 16th centuries, the Canynges-type industry produced a series of special orders for customers in south Worcestershire, Bristol, the Lower Severn and further afield, in Dyfed. In this respect the industry is the successor of the Great Malvern industry rather than the Droitwich-type industry, in which stock patterns were used to supply all classes of site.

The distribution of most Canynges-type tiles, as mentioned above, is extensive. In most cases the tiles could have been transported by water and finds in Herefordshire and Gloucestershire east of the Cotswold scarp are scarce. However, various sites in Wiltshire have

produced Canynges-type tiles. These are accessible to south Worcestershire either overland, or via the Bristol Avon. The latter route is the more likely.

Several other late 15th to early 16th century tile industries are known, for example that supplying Wigmore Abbey with relief tiles (Wigmore-type tiles), that supplying Fordington and other sites in Somerset and Dorset (Fordington-type tiles) and further afield at Little Brickhill and Great Sarendon (Eames, 1980, 267-9; 738). The Fordington-type tiles have a slight connection with the Severn valley in that two of the dies used there are very similar in style to those used on the late 15th to early 16th century Malvern Chase and Canynges-type tiles.

MID-16TH CENTURY.

Only a few groups of tiles are proven to post-date the dissolution of the monasteries in the 1530's. The best known is the group used at Lacock Abbey between 1550 and 1553. These tiles have a limited distribution and used some Canynges-type or Great Malvern designs. However, in manufacture the group is not linked to the Severn valley tiles, in that the tiles have sharply bevelled edges and shell keying.

In Somerset tile making of a similar date is proven since heraldic tiles are known from the parish church at Ilton from the surround of the tomb of Dame Joan Wadham, who died on 20th August 1557 (Lyte, 1931, 119) and at the parish church at Martin tiles are known with the arms of John Lyte. These are probably later than 1521 and earlier than 1566 (Lyte, 1931, 120).

A similar late date is suggested by the some tiles at Little Malvern Church which have been stamped with a poorly cut die showing the arms of the Russell family. The Russells were a Strencham family who acquired Little Malvern Priory after the dissolution. These tiles were possibly made in the Great Malvern fabric, although it might have been the same Malvern Chase fabric as was used for the Ewenny Priory tiles, which is of the same composition as that used for 16th century Malvern Chase pottery.

Another group of 16th century tiles from the study region is that used to pave the Lord Mayor's Chapel at Bristol. These tiles are of south-western Spanish origin, and were decorated by the Cuenca method, in which different coloured glazes are used to fill the impressions left by a wooden die.

17TH CENTURY FLOOR TILE PRODUCTION.

An early antiquary, Cole, recorded a 17th century tomb composed of tiles in Great Malvern Priory, situated under the window nearest the east end of the South Aisle (VCH Worcs. 2, 276). Nichols, quoting Cole, gives the following transcription "HERE LYETH THE BODY OF EDMUND REA LATE VICAR OF MUCH MALVERNE DECEASED THE 23 OF DEC. ANNO DO. 1640" (Cole's MSS vol.x, 126). Cole's visit took place on June 25, 1746. Nichols also states that two letters ':BO' still existed in his time and that they were 'large Roman capitals, impressed on the clay, and filled with white earth, precisely according to the ancient method of fabrication' (Nichols, 1845, xiv). It is possible that these tiles were reused medieval inlaid tiles, although the

use of Roman capitals, rather than Lombardic or Black-letter script suggests that they were contemporary. This would place their manufacture later than the enclosure of Malvern Chase and the probable end of the local pottery industry.

Inlaid floor tiles were found amongst the 17th century pottery waste at Upton Bishop, Hereford and Worcester. No examples have yet been found on an occupation site, nor are any tiles found in churches thought to be of this late date. It is possible that the use of floor tiles was more common in the post-medieval period than is so far indicated since only a small amount of excavation has taken place on post-medieval occupation sites, except for urban tenements.

There is no evidence from the study region for the use of tin-glazed floor tiles of Dutch or English origin in the late 16th or 17th centuries. These tiles occur with some regularity on sites in London and on sites of high status further to the west, such as Basing House, Hampshire, where they must be earlier than the Civil War (Moorhouse, 1970, 87). There is no evidence that they were manufactured in the Bristol area tin-glazed ware industry although tin-glazed wall tiles were produced there in the later 17th and 18th centuries and are found on local sites (Ray, 1973, 39-40).

Relief-decorated floor tiles made in North Devon are found at sites in the study region, for example Bristol Cathedral, Bitton and Keynsham Abbey, but although their production started in the early or mid-17th century there is no evidence that those found in the study region predate

the importation of pottery from north Devon, which started in the 1680's (Keen, 1969).

CHAPTER TEN.

DISTRIBUTION ANALYSIS.

INTRODUCTION

The analysis of distribution maps is a field in respect of which there has been both considerable work and controversy. This is because on the one hand the location of artefacts and settlement types is often the main type of information available for a period while on the other many interpretive difficulties are encountered. The central problems appear to be three-fold.

Firstly, many types of distribution analysis will not work on archaeological data because they assume that the data are a representative sample of the total population. If this was so for the data in this study then the heavy concentration of findspots in and around Stroud would imply a dense settlement of the Stroudwater valley. This is not correct. Rather, it is a combination of the enlightened policy of the local museum towards collection of unstratified medieval pottery and the enthusiasm of local fieldworkers.

Methods of analysis are available which can account for differential fieldwork and retention. For example, the ratio between types of artefact, or types of pottery, may be independent of the actual density of find-spots, especially if they look equally 'antique'.

The assumption that certain late and post-medieval pottery types are 'modern' is probably responsible for 17th and 18th century coarsewares being better represented in fieldwalking collections and chance discoveries than they are in controlled excavation. If the true age of North

Devon Gravel-tempered ware was realised by fieldworkers it is likely that it would not be as well represented in unstratified museum collections as it is, since, within the study region, the ware is mainly of 18th century date. At least two provincial museums have North Devon vessels on display to the public labelled as being of medieval date.

The retention ratio of decorated to undecorated and glazed to unglazed sherds may also be biased but if a collection contains undecorated body sherds it is probably representative, a conclusion reached from a similar study of Romano-british pottery (Hodder and Orton, 1976, 104).

The second problem in the application of distribution analysis concerns the validity of using mathematical models and techniques on archaeological data. Such techniques were developed by geographers for the analysis of present-day data, where a total pattern exists which can be sampled, according to the rules of sampling theory. Archaeologists rarely have the opportunity to sample data, in that sense. Time and again certain problems have been isolated in this study which could not be pursued through lack of randomly distributed findspots of the appropriate density. However, the principles of distribution analysis seem to be that a pattern is sought in the data and that patterning contains potential information. Therefore, if a method reveals a pattern then, providing the method is statistically sound, it is valid to use it.

The third and final cause for concern is the relationship between any pattern found and the process which caused it. Modern geographical studies have taken place in societies which have developed under similar

social and economic conditions and certain concepts which are built into settlement models, such as those of Christaller and Von Thunen, may not be applicable to earlier societies (Chisholm, 1968). This criticism has been directed, in particular, at attempts to use central place theory to investigate settlement and economy in prehistoric societies. There is little reason why such models should not be used for the late Saxon and medieval periods, since their structure has largely shaped the present day settlement pattern, which central place theories set out to model. However, if criticism of the method is valid in any instance then it must mean that there is no one-to-one relationship between process and pattern and, if so, then the use of geographical models for interpretation, rather than analysis, may produce circular reasoning.

METHODS.

In order to discuss the scale and type of a pottery industry in this study, an arbitrary 10% relative frequency contour has been used. This is a simple and effective method of portraying complex information on a single map and numerous observations on the relative size of industries have been made using these data (Ch.11, Ch.12).

The presence of a pottery type at a lesser frequency has also been discussed and the author has attempted in each case to undertake a synthesis of the information from occurrences of the pottery type; the relative frequency of the type in stratified deposits and the location of 'negative' sites, that is, sites where a pottery type would have been expected if the decline in its frequency was regular around its source (Ch.12).

However, subjective analyses of this sort are notoriously open to misinterpretation, in particular identification of 'patterning' within a distribution which is actually a product of differential fieldwork or accidents of recovery (Hodder and Orton, 1976, 1-8).

Regression analysis and trend-surface analysis were the two principal methods of distribution analysis used by Hodder and Orton. The data used in each case were either the relative frequencies of pottery types in an assemblage or the number of sites with a pottery type in concentric bands around the source.

Apart from a single analysis, undertaken by Hodder at the request of the author, on Malvern Chase cooking pots of late 12th to 13th century date, regression analysis using relative frequency data was not attempted because insufficient data satisfied the criteria put forward by Hodder and Orton (1976, 104-117). Their criteria are, firstly, that the pottery assemblage must be of a single period, or capable of being wholly split into such groups; secondly, that it must be larger than 30 sherds (Orton has since decided that 100 sherds should be a minimum size) and thirdly, that there must have been no differentiation in the retention of the pottery.

It was felt, however, that considerable potential information was present in the distribution evidence collected here that might be relevant to the central themes of the research. For instance, are there three distinct types of distribution corresponding to the terms 'early medieval', 'medieval' and 'regional' industries which are used by the author as a subjective classification, or is there a continuum of scale between all three types?

In order to investigate the potential of this data for more objective analysis, the distribution maps of all the characterised types were examined and several were then discarded. There were three circumstances in which a set of data was discarded, namely, if the density of sites in the area where the pottery type was found was too low; or if the distribution was centred outside of the study region or if there was a probability that the plotted type included pottery from more than one centre, such as the Post-medieval Welsh Borderland wares.

After selection, the number of sites on which the ware had been found was counted for 5-mile wide, concentric bands around the known or assumed production site. In many cases the bands contained very few sites, so that the presence of a single sherd at one site could make a large difference to the frequency fall-off. As an example, table 10.1 shows the number of sites producing Malvern Chase cooking pots in the 12th century by 5-mile wide bands; the total number of sites in each band; the raw frequencies and the percentage frequencies.

Table 10.1. Analysis of Malvern Chase cooking pot distribution in the 12th century.

POSITIVE SITES	2	2	2	4	3	0
TOTAL SITES	2	2	3	6	6	9
FREQUENCY	2/2	2/2	2/3	4/6	3/6	0/9
FREQUENCY (%)	100	100	67	67	50	0

INTERPRETATION.

The nature of the decline in frequency from the source may contain information about the type of process involved. Distributions with a steep fall-off gradient such as that

in table 10.1 are thought to be those of low-value, bulk goods. Their distribution may be governed by the cost of transporting finished pots compared with the effort involved in local production. Several distributions of this form are present. They vary in size from the extremely small-scale distributions of some 12th century wares to that of Malvern Chase ware in the late 15th and 16th centuries which, despite the presence of 'outliers' to the main distribution in the Bristol Avon and south Wales, still approximates best to this pattern (fig.10.2).

The other extreme of this range of fall-off curves is characterised by a very sharp, immediate drop followed by a gentle tailing away. The best examples of this type of distribution pattern are those of the 12th century glazed wares and that of early 13th century Ham Green jugs (fig.10.3). The interpretation of this type of fall-off is that the goods being transported have a high value, low bulk and were required with less frequency than the high bulk products that characterise the first group.

However, when all the distribution fall-off frequencies were plotted onto a single graph there appeared to be no sharp cut-off between these two extremes. This information can be summarised by taking just two features on each distribution; the radius of the band within which over half of the sites have produced the pottery type and the radius of the band within which one in ten of the sites have produced the pottery type. The frequency of these bands is show in figs 10.4 and 10.5.

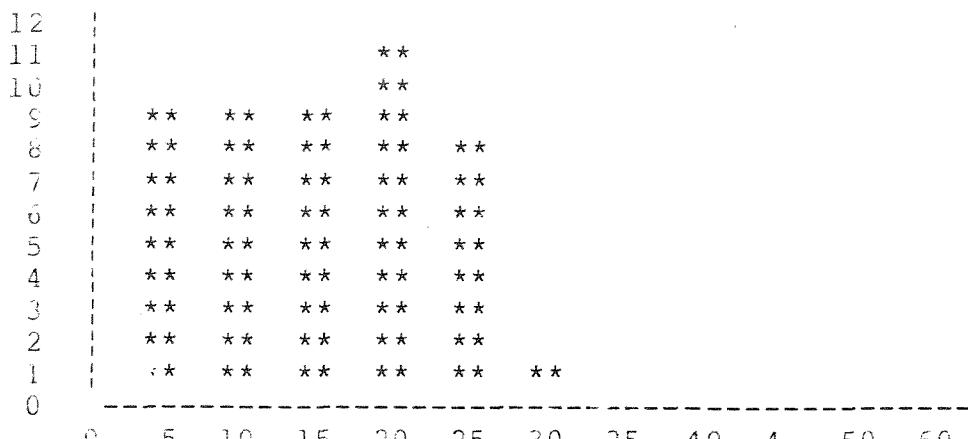


Fig. 10.4. Distance of bands enclosing 50% frequencies.

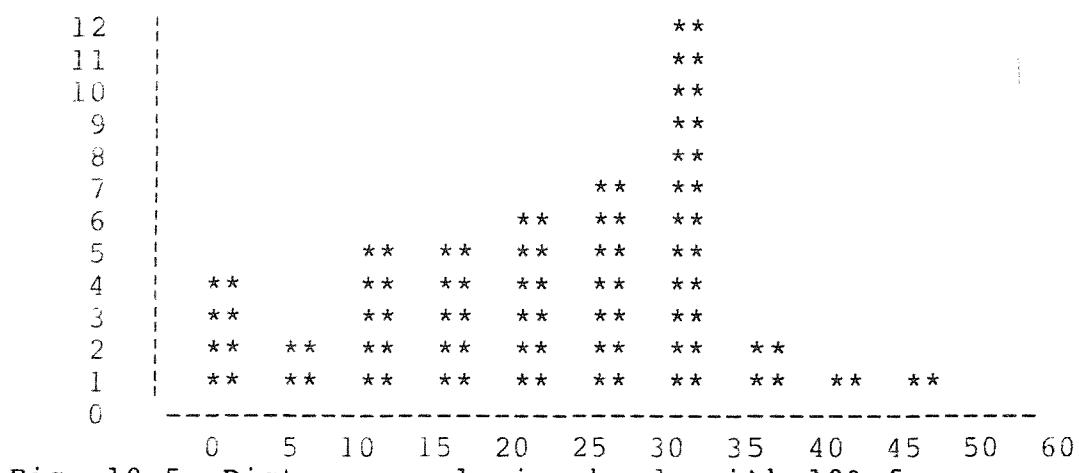


Fig. 10.5. Distance enclosing bands with 10% frequency.

As can be seen there is a double peak to the curve in fig. 10.5. This suggests that two groups of distributions are enclosed. The small distributions, with less than 10% of finds outside of a 5-mile wide band, are all 11th to 12th century industries. Gloucester TF43 and Great Somerford-type produced only cooking wares but tripod pitchers were produced in Chew Valley Sandstone-tempered ware as well as cooking pots. Chepstow HA (Penhow) ware produced good-quality, kiln-fired vessels, including unglazed jugs. The distance between Penhow and Chepstow, the two extremes of the distribution, is 7 miles. The inland distribution of Bristol A/E ware is of similar size, although the ware is also found at Chepstow, accessible by ship from Bristol. It may be that these five distributions are actually representative of a larger class which is not

normally discernible because of the low density of sample sites in the 11th to 12th centuries. Some potentially similar wares could not be included in this analysis because there was insufficient 'negative' data from surrounding sites. These included Hillesley-type ware, Gloucester-type ware, Hen Domen Sandstone-tempered ware, Hereford A3 ware and a 'local' ware in Pershore. All these wares have been found only at one site.

Similar small-scale distributions are probably present in the later medieval period, for example Gloucester TF79 jugs are only known from Gloucester and Langley Burrell ware must also have a limited distribution. In both instances, however, there is insufficient 'negative' evidence from surrounding sites to prove the point.

The larger group of distributions include some of 11th and 12th century date and all the later medieval and post-medieval pottery distributions that were analysed. In fig.10.4 the largest 50% frequency radius is that surrounding late 15th to 16th century Malvern Chase ware, which from its relative frequency in stratified groups is known to be the most widely distributed 'coarseware' made within the study region. The largest 10% frequency radii on fig.10.5, however, belong to early 13th century glazed wares, namely Ham Green ware, Newbury C ware and Minety ware.

NATIONALLY AND INTERNATIONALLY DISTRIBUTED WARES.

Tudor Green ware and imported Rhenish stonewares, although not included in figs.10.4 and 10.5, can be seen to have a different type of distribution. Taking their presence or absence at a site regardless of relative frequency at the site, 5-mile wide strips can be examined

from east to west (assuming overland distribution) and south to north (assuming distribution by sea). In neither case do the imported stoneware distributions show any trend.

The distribution of Tudor Green ware within the study region also shows no decrease in frequency from its Surrey-Hampshire source. It can be concluded that the frequency of these types is not related to distance from their respective sources and that Tudor Green ware and late 15th and later Rhenish stonewares were reaching every settlement in the study region, regardless of its location.

Parallels for these distributions can be found in the Roman period, for example for Samian ware and to a lesser extend Oxfordshire colour-coated ware (Hodder and Orton, 1976). In the post-medieval period one has to look to the mid-18th century Staffordshire white saltglazed wares to find the earliest comparable pottery distribution. These wares have at least one factor in common, they were types which were not, or could not, be manufactured within the study region and for which no serious competitors existed.

MAXIMUM DISTANCE TRAVELED BY LOCALLY PRODUCED WARES.

Both figs. 10.4 and 10.5 show sharp declines in frequency at certain distances, 25 miles for the 50% band and 35 miles for the 10% band. If the data for cooking wares and glazed wares is treated separately and divided into century-wide groups then significant changes through time can be seen (fig. 10.6 and 10.7).

The 50% frequency in the case of 11th and 12th century cooking pots occurs at less than 10 miles from the source whereas for the late 12th to early 15th century cooking

pots it occurs between 12 and 15 miles. The 10% frequency occurs at c.30 miles from the source for the late 11th to mid-14th centuries. The 11th century data however is inflated by two wares, Gloucester TF41B and Bath Fabric A. Without these wares the 11th century 10% frequency would be found much closer to 20 miles from the source. For the late 14th to early 15th century cooking pots the 10% frequency is found between 35 and 40 miles from the source. The shape of the 13th century and later cooking pot fall-off curves show secondary peaks and plateaux. These are features simulated by Hodder and Orton by random walks from a point in which the length of step is noticeable. This may be an indication that pottery was being carried in single movements of significant length rather than by a larger series of smaller steps.

The fall-off data for glazed wares is quite distinct from that for cooking pots in the 12th century, the earliest period for which data exist, and would have been even more distinct for the 11th century, if one were to plot the frequency of sites producing Stamford ware and Winchester ware. The 50% frequency occurs between 5 and 10 miles from the source for the 12th century glazed wares while the 10% frequency is between 35 and 40 miles from the source.

From the late 12th to the early 15th centuries the fall-off curves for glazed wares are similar to those of contemporary cooking pot types. Here too, a difference is found between the late 13th to 14th century curve and that of the succeeding century.

The overall pattern of the late 15th to 16th century fall-off curve, in which the distinction between cooking

wares and fineware is impossible to make, is very similar to those from the late 14th to 15th centuries. However the 'tail' of the curve shows a distinct secondary peak between 40 and 50 miles from the source. This is found not only in the Malvern Chase data, where it is caused by the cluster of sites around Bristol, but also in the Minety data.

There are no differences between the patterns found in the Severn Valley, where the use of water transport and riverside routeways might have been expected to lead to extended distribution to the north and south; the pattern found in the Upper Thames gravels of north Wiltshire and the pattern found in the Kennet Valley, where again local topography, for example the Kennet Valley and the Forest of Savernake, might have been expected to have an effect on transport.

INTERPRETATION.

The data portrayed graphically in this chapter show considerable regularity in the rate of frequency decline from the source. They suggest that there is some underlying principle which is determining the maximum distance travelled by medieval pottery, although below these maxima there is a continuum of distribution types and sizes. It should also be borne in mind that the 'tails' of these distributions are in some cases the result of finding a single sherd at a site and that the curves do not portray the relative frequency of a pottery type as a percentage of all pottery from that site. The fall-off curves show that there is a 50% chance that the site within 20 miles of the source will produce at least one sherd of the ware and not that such sites are likely to have less than 50% of that

pottery type in an assemblage.

A factor which must have an effect on the data is sample size. For any period at a settlement the total pottery present is usually limited to a maximum of 200 - 300 sherds and for most groups the sample size is closer to 100 sherds. Only the urban sites regularly exceed this figure. Therefore any ware found as 0.01% of the total assemblage or less is likely to be missed in these groups and more likely to be found in urban assemblages. This might lead to unjustified correlation of the occurrence of imported and non-local pottery types and large towns.

MARKETING.

A study, by Bush and Bracey, of the marketing settlement hierarchy for southern England, which is essentially unchanged since the medieval period, has shown that three orders of settlement are found, covering the country with a network of marketing centres (Hodder and Orton, 1976,58). The lowest order centres are at a distance of 4 to 6 miles apart, the middle order settlements are at distances of 8 to 10 miles apart and the highest order centres are 20.5 miles apart.

If this system was used for marketing pottery then it can be shown that the smallest pottery distributions could have been accomplished by the use by a potter of a first-order settlement (ie. rural market or large village) or by direct supply by the potter to each settlement within his distribution area. Distribution may have been on foot or horse-back with a pack-animal.

The use of a single second order settlement (ie. small market town) by a potter would theoretically make a further area of radius c.10 miles accessible. Some

confirmation of this distance is given by a study of immigration into Stratford upon Avon in 1251 (show as a distribution map by Darby, 1973, Fig. 33, based on Carus-Wilson, 1965, 51).

Immigration into a small town is likely to be undertaken mainly by peasants who know the town already and therefore the map presented by Darby may be taken as representative of the distances which peasants normally travelled to the market. The density of manors decreases rapidly with distance from Stratford, so that 45% of all immigrants had lived within 5 miles of the town and 73% had lived within 10 miles of the town. Portrayed as a fall-off curve, this data shows a sharper decline than that of many of the pottery types, especially if it is adjusted for the greater area covered by the bands further from the town. This adjustment is necessary because each successive band contains a larger area, in the ratio $1:n^{2}-(n-1)^{2}$, where n is the interval between the bands.

Table 10.8. Distance travelled by immigrants to Stratford upon Avon up to 1252.

Distance	5m	10m	15m	20m	25m	30m	35m	40m	45m
No. of immigrants	20	12	7	1	2	0	0	1	1
adjusted for area	4	1.4	0.1	0.2	0	0	0	0	0
expressed as a percentage	100	20	7	0.7	0.1	0	0	0	0

The use of a single minor town market for distributing pottery should therefore give rise to a distribution pattern with a sharp fall-off gradient, such as that in Table 10.8, if plotted by distance from the town. However,

many of the pottery types, even coarseware cooking pots, have much larger distributions. These could be accomplished by carriage of the pottery to a small number of markets, from which it could then be carried to the homestead by the people who had purchased it.

Data on the distances over which agricultural produce was carried are difficult to find. Most documentary evidence is concerned with the distribution of goods over long distances, for example for the construction of major buildings. There is one class of information which would appear to hold information on the transportation of agricultural produce, the location of rural manors which in the 11th century held property in the larger boroughs and markets. The reasons for rural manors having these urban properties are not known but suggestions put forward for the Winchester examples are, firstly, that the system related to the use of the burhs by the surrounding countryside for defence; secondly, that they provided storage space and accommodation for those bringing goods for sale at market or, thirdly, that they were used as a mechanism for acquiring burghal privileges by the owners of rural manors, who could then trade in the town without paying dues (Biddle, 1976, 382, Fig.20).

Whatever their origins, there must have been regular travel between these manors and the towns. Therefore, their distance from the town is a measure of the distances found acceptable for travel to market. In the Oxford region, Jope has plotted the rural manors attached to Oxford, Wallingford, Cricklade and Winchcombe in the late 11th century (Jope, 1956, Fig.54). There is no way of telling what proportion of the original number of attached manors

have been recorded in the Domesday Book or other sources but there is no reason to suppose that the recorded examples are not a representative sample.

If the data are recorded by 5-mile wide concentric bands and then adjusted for the area covered then a distance-decay graph can be constructed (fig. 10.9). This graph shows a curve comparable in many ways, for example, to that found for immigrants into Stratford. However, there is definitely a slightly higher number of points in the 10 to 20 mile range of the graph. This might suggest that carting of produce to town was not as restricted by distance as was the use of the town's services. Even here, however, there are no manors further than 25 miles from their towns.

Table 10.10. Distance of attached manors from Domesday towns.

Distance	5	10	15	20	25	30
No. of manors	19	20	8	8	2	0
adjusted for area	19	6.6	1.6	1.1	0.2	0
expressed as %	100	35	8	6	1	0

Tables 10.8 and 10.10 therefore suggest that 25 miles was an effective cut-off point both for peasants walking to market and for the carting of agricultural produce to market, but that the rate of fall-off was lower in the case of carting than it was for walking or horse-riding. If a potter was to transport his goods to a small number of markets then, using the data in table 10.8, we may suggest that there is a 100% chance that he would visit sites within 5 miles, 35% chance of his visiting sites within 10

miles of his kiln and so on. If at each of these markets the pottery was purchased by the habitual users of that market then, from table 10.8, we may suggest that there is a 100% chance that they come from sites within 5 miles of the market, a 20% chance that they come from sites between 5 and 10 miles from the market and so on. A combination of a limited number of moderate length trips by the potter and a large number of short trips by the purchasers could lead to distribution patterns of the type found in this study, both for cooking pots and similar coarsewares and for most 13th to early 15th century glazed 'finewares'. Only the late Saxon and 12th century glazed wares, Ham Green ware and the late 15th to 16th century Tudor Green and stoneware types could not have been distributed overland by this simple mechanism.

The fall-off of pottery distributed by water transport, either riverine or seaborne, does not conform with this model but it is clear from the distribution maps that this mode of transport was relatively unimportant for the distribution of locally made pottery, even when this pottery was made close to a river, such as at Malvern Chase or Worcester.

Although there is good evidence for the use of water transport in the distribution of pottery from the 11th century onwards, the decline in frequency of these wares from the coast is sharp. This shows that there was no redistribution of pottery from riverine or coastal ports. This is shown very clearly by the late 15th to 16th century importation of Malvern Chase wares to Bristol. They form a high proportion of the pottery used in the City itself but are not found further than 10 miles inland (fig.10.2).

DEVIATION FROM A REGULAR FALL-OFF.

There are some sites which receive less pottery from a source than one would predict from their distance from it. This is much clearer using relative frequency data, since occasional sherds at a site are given the same weight in the present method as a ware which accounts for 90% of the pottery. Nevertheless some deviations from a regular fall-off can be proven using the presence or absence data. The clearest of these involve the distribution of pottery from a source in one direction. Examples of this are the distribution of Bath fabric A cooking pots in the Severn valley to Droitwich.

THE DISTRIBUTION OF STONE MORTARS.

A good comparison with the distribution of pottery is provided by that of stone mortars. Using data provided by Dunning in his discussion of the King's Lynn mortars, one can calculate, firstly, the the distance of finds of Purbeck 'marble' and Caen mortars from their sources and, secondly, the distance of these finds from the coast (Dunning, 1977, Figs. 146 and 152). It can be shown that both Purbeck and Caen mortars have much greater distributions than those of the locally produced pottery examined here (table 10.11, fig.10.12), that there is no sharp concentration of finds around the sources and that both types occur over similar distances from their sources. However, if distance is calculated from the coast rather than from the source then the two types of mortar show quite distinct patterns. Both show a sharp decline in frequency from the coast but the Caen mortars, of which 24 findspots were known to Dunning, occur mainly within 12

miles from the coast whereas the Purbeck mortars, recovered from some 61 sites, although still declining in frequency, are found up to 50 miles from the coast.

These two types of distribution may correspond to two of the patterns noted here for medieval pottery. The Caen mortars could have either been traded directly from the ports or through the local market while the Purbeck mortars could have been traded through the markets and fairs.

Although obviously more expensive than pottery and required in much smaller quantities there is still a noticeable decline in the distribution of mortars inland. This is probably due to their bulk. Similar patterns can be seen in the distribution of fine building stone, which again would be only needed rarely in a settlement.

THE DISTRIBUTION OF NORWEGIAN HONESTONES.

One type of stone artefact does not appear to show a decline in frequency with distance from the coast, Norwegian schist honestones. Work on the petrology of Saxon and medieval honestones has been carried out by various members of the British Museum (Natural History) and the Institute of Geological Sciences (Ellis, 1969; Sanderson, forthcoming). This has shown that there are numerous potential local sources of honestones, for example the micaceous sandstones of the West country, yet virtually every medieval excavation produces some honestones of Norwegian Ragstone, a distinctive schist from quarries in the Eidsborg district of Telemark, central southern Norway. There is a decline in the relative frequency of Norwegian to other honestones but by counting only their presence or absence, the method of analysis used for the mortars, there is virtually no decline in frequency. This is probably

because of the small size of these stones in comparison with mortars and presumably their quality compared to local alternatives.

CONCLUSION.

Distribution analysis has shown that three basic forms of pottery distributions are found. The first is extremely local and may be the result of direct movement from potter to purchasers or vice versa. This is the most common form found in the 11th to 12th centuries. The second form is limited to a 30 to 35 mile radius from the kiln site and is probably the result of the movement of pottery by cart or pack-horse and redistribution from markets. It is the most common form of distribution from the 12th to the 17th centuries. The third form is much more widespread and involves the movement of small quantities of pottery over considerable distances. Some pottery types which have a main distribution of the second form have an additional 'tail' of the last form and in these instances the long-distance distribution was accomplished by the use of water transport.

The analysis of imported stone artefacts from three sources has shown that the inland distribution of artefacts arriving at the coast can produce any of the three forms of distribution pattern, depending perhaps on the bulk of the product. Since Caen and Purbeck mortars are of similar bulk, there must be some other factor which differentiated the two types so that in one case they were redistributed inland and in the other were only sold locally. This same dual pattern is found in the distribution of continental medieval and post-medieval pottery types in this country.

Medieval types, such as Saintonge ware, can be common at coastal sites yet absent from sites more than 10 miles inland whereas by the 17th century the frequency of imported Rhenish stonewares at the coast is not much higher than on inland sites and the wares are found on all sites, irrespective of distance from the coast.

CHAPTER ELEVEN

THE HISTORICAL DEVELOPMENT OF THE POTTERY INDUSTRY

INTRODUCTION

In this chapter all available knowledge is used to produce a history of the fortunes of the major pottery industries operating in the study region from the late Saxon period to the early 17th century. The contribution of smaller-scaled industries to the pottery supply of the region is also considered, although many of these industries must await recognition, since their productions have either not yet been recovered or are not characterised.

Pottery collections of all sizes have been examined and assigned to broad periods using the framework described in chapter six. On sites with no stratification, or with a large quantity of residual pottery, the division into periods is bound to be inaccurate and imprecise. Some pottery types had a short period of use and can consequently be dated in unstratified collections whilst others can only be dated by their context. It is not therefore claimed that the following synthesis has any finality, rather it should be seen as a series of hypotheses to be modified or overthrown as further information becomes available.

Pottery of the pre-10th century period is least capable of independent dating and individual sherds and collections may range from the 5th century to the 10th century, possibly even overlapping in use with some of the pottery of the 10th to early 11th century (fig.11.1).

Pottery of the 10th century is more distinctive, although relatively rare (fig.11.2). This paucity is probably due to the short period of use of this pottery within the study region. It is suggested below that the first use of distinctively late Saxon pottery types did not begin in the study region until the mid-10th century and that it was replaced in some areas very early in the 11th century.

No attempt is made to plot separately the pottery of the pre-Conquest 11th century from that of the late 11th to early 12th century. The pottery is in all respects identical and in many areas the exact date of changeover from late Saxon to early medieval pottery types is unknown. It is to be expected that many industries, at present known to have begun as early as the late 11th to early 12th centuries actually began at the turn of the 11th century although wares with an identical appearance, which are definitely post-Conquest in origin are known, for example Malvern Chase and Worcester-type ware. This must refute any suggestion that all 'early medieval' pottery industries had an early 11th century origin.

The earliest rural pottery collections, larger than a few sherds, date to this 11th to early 12th century period (fig.11.6). Pottery collections of this date are still relatively uncommon.

Pottery of the later 12th to mid-13th century is the most common in the study region. Collections from both excavation and fieldwalking confirm this fact (fig.11.9). The recognition of pottery of this date is easier than previously, particularly the glazed wares. However, when, as on the Berkshire Downs, a major change in pottery fabric

occurred c.1150, it is clear that little of the pottery from these sites is earlier than the late 12th century. The increase in the number of sites mapped from the late 11th to early 12th centuries is therefore a reflection of the true date of the assemblages.

It is possible to date some pottery types more narrowly within this late 12th to mid-13th century period. Sufficient differences exist between the pottery industries of the late 12th and the early 13th centuries to warrant their being discussed separately below. They are, however, mapped together on figs. 11.9 to 11.12.

Pottery collections of the late 13th to early 14th centuries are almost as common as those of the previous century (fig.11.13). There is, however, no reliable method of distinguishing most unstratified collections of this period from those of the succeeding century. Only in Berkshire is there a marked change in pottery supply during this 200 year long period, when Coarse Border ware replaced Newbury group B ware. A few possibly diagnostic types do occur in the late 14th century but not before and there are general trends, such as the amount and type of decoration, which can be used to differentiate large groups of late medieval pottery. These features have been used to produce a map of the occurrence of late 14th to early 15th century pottery (fig.11.16). It can be seen from this map that late medieval pottery collections appear to be much less common than those of the preceding century. In Berkshire, where this can be reliably tested, this trend is confirmed. The large number of collections from the Berkshire Downs containing late 12th to mid-13th century and late 13th to

14th century types contain no examples of Coarse Border ware. Depopulation of the chalk downlands must have started in Berkshire soon after the Black Death and was more complete than is suggested for sites in the midlands (Dyer, 1982). Sites such as Elmont in Hereford and Worcester, Upton in Gloucestershire and Barrow Head in Avon contain some pottery types of late 14th to early 15th century date and this does suggest that the pattern found on the chalk downland may not be universal.

Pottery of the later 15th to mid-16th century and of the succeeding century is common (figs. 11.19, 11.21). There are, however, regional differences in the ability to distinguish unstratified pottery of these two periods.

In the counties of Hereford and Worcester and Gloucestershire there is a marked change during the late 16th century with the appearance of Malvern Chase 'pink' fabric, Post-Medieval Welsh Borderland and Ashton Keynes wares. To the south and east there appears to be less difference between late 15th to 16th and late 16th to 17th century wares and recent work in Exeter suggests there that a major change took place in the late 15th to 16th century but that there was little subsequent change in pottery fabrics or appearance (J. Allen, pers. comm.).

In Berkshire, as further to the south and east, Border ware from the Surrey-Hampshire border appeared towards the end of the 16th century, alongside coarse redwares, such as that produced at Inkpen. It is not known when these redwares first appeared although they are absent from early 16th century contexts at 143-5 Bartholomew Street, Newbury.

Apparent regional differences in the intensity of pottery finds in the late 15th to early 17th centuries are therefore due to the lack of change in pottery sources over parts of the study region in the post-medieval period.

PAGAN TO MID-SAXON POTTERY

At the end of the Roman occupation in the early 5th century the whole of lowland Britain was supplied with pottery by a number of large 'factories' or regional-scale industries. Gloucester, for example, was supplied by industries in Oxfordshire, the East Midlands and two more local industries (Gloucester TF5 and Gloucester TF11, Vince & Goudge, 1980). With their demise the study region entered a period in which pottery-making, when practiced, was only on a domestic scale.

From the late 4th century onwards new pottery types are found, some of which were definitely produced by Anglo-Saxon immigrants (Myres, 1969). The range of vessel forms is limited to three: large storage jars, small cups or bowls and the ubiquitous 'jar'. Of these, only the latter is at all common and although possessing several varying typological features cannot easily be sub-divided. Indeed most fragments cannot be assigned to any of these three main vessel classes with certainty.

A small proportion of Anglo-Saxon vessels was decorated by burnishing, grooving or stamping and it is normally only these decorated wares which can be studied morphologically with any useful results. Fabric analysis of vessels from the North East Midlands has shown that there

was some distribution of plain vessels in the 5th and 6th centuries in Northamptonshire and Leicestershire (Walker, 1978; Gryspeerdt, 1981), while a study of the stamps used has shown some contact between settlements in East Anglia and Yorkshire. Whether this was a movement of potters or pots has not yet been proven (Myres, 1969). Even if a trade in these stamped vessels is proven then it still has to be shown that plain vessels were also involved.

The area in which Anglo-Saxon pottery is found is quite clearly defined. It approximates to that shown by Myres in his distribution map of pots from graves (Myres, 1969, Map 1). The addition of sherd material from settlement sites simply fills in the gaps, especially in areas where inhumation was the main burial rite so that pottery is less commonly found. The study region lies on the border of this Anglo-Saxon pot-using zone. In the east of Gloucestershire cremation was practiced and urns are known from burials at Beckford (Meaney, 1964) and Burn Ground Hampnett (Grimes, 1960). In Wiltshire inhumation was the rule and complete vessels are therefore much rarer. The cemeteries at Camerton, Cannington and Portishead, which are thought to be 'sub-Roman' include no grave-goods at all (Rahtz, 1968).

At present the author would see a sharp boundary between the pottery-using Anglo-Saxon settlement area and the aceramic Celtic area. This line runs north along the western boundary of Wiltshire then extends westwards to the River Severn. Isolated finds of pottery have been made in Worcestershire east of the Severn, for example at Droitwich and Kidderminster, but none are known from Herefordshire or Shropshire. This line does not coincide in detail with the

boundaries of the earliest Saxon kingdoms known, for example the Haegonsaeton or the Hwicce (Hill, 1981), although there is some evidence that the people west of the Severn were considered a separate group in the 8th century (Shoesmith, 1982, 90). There may be a closer connection with the incidence of early Saxon place-names, although these too extend further to the west (Gelling, 1978; Smith, 1965, 25-40).

In both Hereford and Gloucester there are occupation deposits thought to date to the 9th century but these contain no pottery. At Hereford these deposits have been found on four separate excavations at Berrington Street. The total excavated area of these deposits is substantial and they are sealed from later contamination by the tail of the late 9th century town bank (Shoesmith, 1982, 49). The pottery from below the defensive bank at Cricklade in Wiltshire, identified as being of late 9th or early 10th century date, is entirely chaff-tempered ware (Jope, 1972 b). It is thought in the East and South of the country that this technique was going out of use in the early 8th century (Hodges, 1981) but the continuation of the technique in Wiltshire, at least, is certain from the association at Ramsbury of chaff-tempered pottery with bun-shaped loom weights, a bronze strap end dated to the 8th or 9th century and a series of radiocarbon dates which give an overall value of 820 ± 45 AD (Haslam, 1980). It is possible that there was no contemporary pottery below the Cricklade bank but it is more likely that the chaff-tempered potsherds there date to the late 9th century.

Even more interesting is the evidence from Cheddar Palace. This Royal palace was occupied in the 9th and 10th centuries and a large ditch excavated by Prof. P. Rahtz contained a huge assemblage of animal bone, three coins ranging from c.845 to c.930 but no potsherds (Rahtz, 1974). A few chaff-tempered potsherds were found at Cheddar Palace in contexts dated pre-c.930 by the excavator (Rahtz, 1974).

Two other areas of pottery use are known, both within the Celtic West. In Northern Ireland a coarse granite-tempered ware is found, known as Souterrain Ware (Ryan, 1973) while in Cornwall another granite-tempered ware is known, termed 'Grass-marked Ware' because of the grass-impressions found on its base (Thomas, 1968). With these exceptions pottery is not known in Ireland or the South West peninsula and is not known at all, except for Mediterranean imported wares in Wales (Alcock, 1963).

It is not therefore surprising to find two zones in the 5th to 9th centuries, one ceramic and one virtually aceramic. It is unexpected that these zones do not correspond to the political or racial boundaries of the time and that areas presumably inhabited by Saxons and under Saxon rule should vary so much in material culture.

POTTERY FABRICS

In the study region there are only two distinctive fabric groups present: the Warwickshire / N. E. Gloucestershire sandstone-sand tempered ware and chaff-tempered wares. A few vessels have neither chaff nor sandstone-sand temper, most of these vessels are friable and tempered with medium quartz sand. There is no evidence from any two sites that the chaff-tempered vessels have a

common origin and indeed plentiful minor differences exist between the various collections (see Ch.2). This contrasts with the evidence from East Anglia for the movement of stamped vessels. However, the Warwickshire / N. E. Gloucestershire fabric is certainly not local to Hampnett or Cirencester and thus indicates a southerly movement of pottery from Warwickshire to the Cotswold dipslope, although insufficient similarities are present to show that the vessels come from a single source.

Only one excavation has produced a datable sequence, namely Swindon Old Town. Here the sequence apparently extends from the late 5th century to the 8th century. There is very little difference between the earliest and latest vessels from the site, they occur in the same fabric but have a slight change in profile from short angular vessels in the late 5th century to taller, baggy vessels in the early 8th century. Such differences would not be recognisable from most of the collections in the region. It therefore appears that one could not expect to distinguish pottery of the 5th to 6th centuries from that in use afterwards.

Fowler dates the Westbury, Ogbourne and by analogy the Frocester Court chaff-tempered pottery to the 7th to 8th centuries (Fowler, 1966, 1970). The evidence for this dating seems to be only historical - that Saxon occupation should not be expected in this region until that date.

All discussions of pottery dating not based on historical premises rest on the following points: firstly, the context from which the pottery has been found; secondly, the presence of chaff-tempering; thirdly, the

presence of distinctive typological features, namely the pedestal base, the lugged handle and the presence of stamping.

Chaff-tempered pottery has been found in a few contexts in Wiltshire and Gloucestershire in apparent association with Late Roman pottery. In one of these, Wycombe in Gloucestershire the chaff-tempered sherds were found with unabraded Roman pottery in a boundary ditch. One would be tempted to assign a late 4th to 5th century date to such sherds. The chaff-tempered sherds from Barnsley Park Roman Villa are also thought to be contemporary with the Roman occupation of the Villa. The sherds are not found in the Villa buildings but occur in the excavation of the contemporary field system (Webster, 1979).

In the majority of cases the pottery is found without any datable associated finds. Associations of any kind are rare, but those from Hampnett would date to the 6th to 7th centuries (Grimes, 1960). The associated finds at Bourton-on-the-Water can merely be dated as 'Pagan Saxon' (Dunning, 1932). The latest associations are at Ramsbury in the Upper Kennet valley where an 8th to 9th century date is suggested although the evidence could even support a date in the late 9th century (Haslam, 1980).

The technique of chaff-tempering is found in many places at different times but it is likely that in the study region the origin of the technique should be sought in the Low Countries in the 4th century AD. A few examples of Iron Age chaff-tempering are found in the study region. It is just possible that the technique continued in use through the Roman period but it is unlikely that if this was the case sherds would not have been discovered in early

Roman contexts rather than only in the Late Roman ones. In several areas of the country some of the Anglo-Saxon pottery used was chaff-tempered. In virtually every case where a sequence is found chaff-tempering is an early feature and is replaced by quartz-sand or shell-tempering. End-dates for the use of chaff-tempering in these cases are usually within the 7th to 8th centuries. The evidence from Wiltshire and the surrounding counties is sufficient to show that these areas were archaic in the type of pottery used but there is no definite proof as yet that chaff-tempered wares were produced into the late 9th and 10th centuries, nor for an overlap in their use with that of the succeeding Late Saxon wares.

There are three typological features of note on Anglo-Saxon vessels: the pedestal foot, the lugged handle and the use of stamps. Of these the first two are apparently found not only throughout the Pagan Saxon period but also in the late Iron Age. Therefore, only the presence of a stamped sherd is absolutely incontrovertible evidence that a particular sherd is not of Iron Age date. However, in an assemblage of any size this possibility can be disregarded if no other Iron Age fabrics are present, since in no case is chaff-tempering the sole form of tempering used in the Iron Age of the study region. Stamped sherds are known from Hampnett, Cirencester, Laverstock and Black Patch. This should date those sherds to the 6th to 7th centuries, as should in three cases the pagan burial rite. Mid-Saxon stamped wares are known from sites on the south coast (Cunliffe, 1974).

THE USE OF POTTERY

Whatever the final conclusions about the dating or affinities of the Pagan-Mid. Saxon pottery of the region (and even this term would be disputed by some since it implies that the users were not Celtic), it is clear that locally-made pottery was not in use in the west. This must imply a difference between the two areas in basic patterns of behaviour.

No complete house-plans are available for the 'aceramic' zone to show whether the cooking areas were organised differently but cooking pots are only needed to boil food and even in late medieval cookery boiling played only a small part in cooking (Henisch, 1976). Meat was probably always mainly roasted over the fire, cereals may have been eaten mainly as bread so that only legumes would have needed boiling.

Archaeological evidence for metal vessels in either pottery using or non-pottery using areas is very limited. Sheet metal cauldrons are known from the Welsh oral tradition in which the cauldron is seen as the giver of life. The use of this vessel in such symbolism shows its importance in the society. Cauldrons and pot-hooks also occur in Anglo-Saxon contexts. There is a considerable difference in size between metal cauldrons and Pagan to Mid-Saxon pottery cooking pots which would imply a difference in their function.

There is little archaeological evidence for any difference in diet between pottery-using and non-pottery using communities. Animal bone reports are available for mid-Saxon assemblages from Hamwih (Saxon Southampton), Ramsbury, Gloucester, and Cheddar. There are some

significant differences between the assemblages, showing that most meat was obtained from local livestock. There are also few differences between the Saxon and Medieval assemblages, where present and this must imply little change in the balance of livestock.

Several collections of animal bone of early 10th century or earlier date have been analysed (for example, Coy (1980) and Maltby (1979)). The major difference between the animal bone from Ramsbury in Wiltshire and 1, Westgate Street, Gloucester, is the higher quantity of horse bones at Ramsbury in all periods from the 8th/8th century to the 12th century. The ratios of sheep/goat to cattle to pig do not differ greatly either between the sites or with time. No details of butchery were present on the Gloucester sample and those noted on the Ramsbury bones were not described in detail. It is likely that at all periods the majority of the meat eaten was roast on a spit, although this cannot be inferred from the data presented by Coy and Maltby.

Cereal remains were found in abundance at 1 Westgate Street, Gloucester in a 9th century context (Green, 1979, 186-190). These included spelt wheat, a form which had gone out of use in Winchester before the 9th century. Green noted also a general lack of barley, which is generally considered to have been the major cultivated cereal of the post-Roman period in southern England. It was used both for bread making and for brewing. Vetches or Broad Bean (*Vicia* sp.) and Pea were also represented in 9th century Gloucester and would have required a container for boiling. However, little evidence for root crops and legumes was

recovered in comparison with that for cereals and arable weeds. This may of course be a factor of preservation or the conditions of burial since Green suggests that the deposit is mainly composed of straw and animal dung. Another reason for dismissing this evidence as an indication of the changes brought about through the lack of pottery vessels is that these species were also absent from 10th and 11th century deposits on the site (Green, 1979, fig.12).

It is known from the historical evidence that the Welsh in the early Medieval period had a predominantly pastoral economy. However, by this time they had lost the rich agricultural lands of South Wales and the Welsh Borderland to the English. There is also evidence from Hen Domen for ridge and furrow agriculture and aceramic occupation preceding the construction of the Castle in the late 11th century (Barker, 1969). Thus cereals were being grown, presumably for human consumption, and were somehow being cooked. It is likely therefore that bread and roast meat were staple foods in the aceramic west.

TOPICS FOR FUTURE RESEARCH

Very little can be learnt about the culture of the region in the 5th to 9th centuries on the basis of current evidence. More excavation is needed to provide house plans (to investigate cooking areas); rubbish deposits (to investigate the types of meat eaten and how the carcasses were butchered which may show differences in cooking practice) and environmental evidence (to show what types of cereal and edible plants were available and whether or not they were utilised).

the main problems with retrieving this evidence are that if pottery is scarce it is difficult to find the sites in the first place. Excavation in the centre of later Saxon towns, such as Hereford and Gloucester has provided some evidence but with all the problems attendant upon excavating the lower levels of deeply stratified towns. It is, for instance, impossible to excavate the sites in plan and quite often the relevant levels are disturbed by later intrusions. On rural sites the main problem is to find the site but when, as for example at Chalton, Hampshire (Addyman & Leigh, 1973), the sites have been located there is usually no vertical stratigraphy and no occupation surfaces survive. Therefore, any opportunity to examine in plan sites where vertical stratigraphy is likely to survive should be considered a high priority.

LATE SAXON POTTERY - MID-10TH TO EARLY 11TH CENTURIES

Terminology for the pottery of the 9th to 11th centuries is confused. In 1959 Dunning proposed a fourteen-fold division of the Late Saxon pottery found in England, of which the first six groups are insular (Dunning et al., 1959, 31-78). Dunning's Group 1 is technologically similar, if not identical, to the domestic pottery of the mid-Saxon period. Stylistically it is characterised by the presence of everted or rolled-out rims and rounded bases. Dunning's group 2 is also known as the 'Saxo-Norman' group. The latter name is particularly unfortunate for the study region since the wares of this type in the study region fell out of use before the Norman conquest and were replaced by wares of Dunning's group 5, which, to confuse matters further, has been referred to as Saxo-Norman ware

by Rahtz (1974, 105, Group 9). Further confusion is caused by the attempt by Carter and Rahtz to introduce the term 'Early Medieval ware' to refer to the wheelthrown, oxidized pottery made at Stafford. This term was coined by Dunning to distinguish a group of hand-made, poorly fired wares whose main form was the sagging-based, squat cooking pot (Dunning, 1959, Group 5). Dunning's Group 3, the Late Saxon pottery of London, is not a cohesive group and he includes both wheelthrown Thetford-type pitchers (Dunning, 1959, fig.18 no.3) and Oxford B vessels. Dunning classed the latter type with the handmade group 1 pottery of the south of England, on the grounds of shape, rather than the wheelthrown pottery of group 2. Study of fragmentary Oxford B vessels at Oxford and London has suggested that two methods of manufacture were used; the wheel and a hand-building technique (Haldon and Mellor, 1977). Despite the presence of parallel throwing marks on the inside of the vessels the ware is noticeably thicker than the majority of wheelthrown wares and in the opinion of the author their method of manufacture has not yet been satisfactorily proved. It is difficult to see any difference between the pottery of Dunning's groups 2 and 4, which are 'derivatives of group 2'. The division apparently is an attempt to indicate the earlier date of group 2 wares but neither the techniques of manufacture nor the range of forms present are different. The last of Dunning's insular groups is bar-lip pottery. It is possible that Dunning here amalgamated three quite separate groups of pottery together, on the basis of a shared feature, the bar-lip.

"The discontinuous distribution of bar-lip pottery in England indicates that it is a sea-borne group brought from Frisia in the course of trade. In East Anglia a Frisian element is already present in the eighth century in the pitchers with peaked lugs; the bar-lip pottery in Eastern England suggests the presence of Frisian merchants also in the ninth century, if not later. A special reason is to be sought for the massing of bar-lip pottery in Cornwall; the most convincing explanation is that it was introduced by Frisian merchants engaged in the trade in Cornish tin to the continent. " (Dunning, 1959, 49).

Bar-lips are added spouts of clay which are thought to have been intended to protect opposing openings below the rim so that the vessel can be suspended over a fire. As such it is quite a simple idea, although not to the author's knowledge used on other Saxon or medieval pottery. Without other evidence it is not very good evidence for Frisian contact.

Late Saxon pottery is now recognised on several sites in the region (fig.11.2). Of Dunning's six groups, three are found in the study region. There is such a variety in the fabric and form of the vessels found that it is not always possible to identify unstratified late Saxon pottery, unless examples of the type are known from datable contexts.

Two late Saxon pottery fabrics have been characterised: Cheddar E and Gloucester TF41a. The former contains a distinctive silicified sandstone and burnt-out limestone while the latter contains a mixture of limestones, sandstones and quartz. Other, less satisfactorily characterised late Saxon fabrics are found at Bath (early

Bath A, Bath B/D), Trowbridge (Smith, forthcoming a) and at Oxford (Oxford B). All three contain rock or mineral fragments which indicate a local origin but with no distinct inclusions or combination of inclusions which would enable one to say categorically that examples from different sites ~~came~~ from the same production site. For many purposes this does not matter, for example it is still extremely useful to show that the Cheddar E ware at Cheddar is not locally made and that the Late Saxon shelly ware used in London is identical in fabric to that used in Oxford, and must have been imported from the Oxford area.

Even less certainty exists ^{concerning} _h the source of Chester-type ware. This ware is found over a wide area of the Welsh Marches (fig.11.3). A kiln site and a separate waster dump have been found at Stafford and it is suggested that Stafford is the source of all Chester-type ware. There is nothing inherently unlikely about such a large distribution, in comparison for instance with that of the contemporary Stamford ware, but thin-section evidence cannot be used to prove the point. There is however no obvious difference in the tempering of Chester-type ware from Hereford, Shrewsbury, Worcester or Gloucester (1 sherd) and Dublin (1 thin-sectioned sherd). Indeed, the Dublin section contained a small rounded quartzite fragment containing minute greenish inclusions. This probably shows the origin of the quartzite as a metamorphosed fine sedimentary rock and is typical of many of the quartzites found in West Midlands and Welsh Border glacial sands.

The fabric of the Stamford ware in the region has been checked visually under the binocular microscope by Kilmurry and no difference exists between the glazed wares found in the region and the fabrics isolated in Stamford. However, the unglazed light grey wheelthrown cooking pots from Winchcombe and Hereford thought to be Stamford ware are not accepted by Kilmurry, who suggests that they may be from other Midlands sources, for example Northampton and Leicester have both produced evidence for late Saxon greyware production (Williams, 1974; Hebditch, 1967-8). This point may be elucidated by a grain-size analysis of samples in thin-section but a more promising solution would be to analyse a series of samples using Neutron Activation. This technique has been used to confirm the source of a red painted jug from Hereford claimed both as Stamford ware, by Kilmurry, and as a French import, by Dr. R. Hodges (Hodges, forthcoming).

The few sherds of Winchester-type ware from the region (Bath, Silbury Hill, Hereford, Gloucester) have been examined by K. Barclay of the Winchester Research Unit. The Silbury Hill sherd was thought by Ms. Barclay to be a related type but not necessarily from the same source as that supplying Winchester while the other sherds were thought to be identical to the ware found in Winchester. Similarly, the Michelmersh-type jar or pitcher from Swindon was thought to be from the same source as that supplying Winchester while not being visually identical to material seen by Ms. Barclay from the Michelmersh kiln. The Avebury Michelmersh-type sherd has been identified visually by the writer. A few other Saxo-Norman glazed ware sherds have been identified on sites in the region but have not been

examined by the writer, nor to the writer's knowledge, by Kilmurry or Barclay. These are: a few sherds from Cheddar Palace (Rahtz, 1979, NP211); a few sherds from Mary-Le-Port Street, Bristol (pers. comm. D. Fowler and Prof. P. Rahtz) and three sherds from a 12th century pit at Laverstock (Hasty et al. 1969, 101).

None of these wares are amenable to thin-section analysis, nor is there normally sufficient material for a thin-section sample to be taken. Consequently, their precise characterisation will have to wait for a non-destructive method of analysis.

THE INTRODUCTION OF LATE SAXON POTTERY TO THE STUDY REGION

At three sites the change-over from aceramic mid-Saxon to ceramic Late Saxon culture is revealed in archaeological sequences, namely Cheddar Palace, Hereford and Gloucester. At all three the change is sudden, although what this means in terms of years is unknown. At Gloucester it is possible but not proven that a brief phase existed in which coarsewares from other parts of the country were in use prior to the introduction of Gloucester TF41a. The reasons for stating this are that in several instances non-local sherds have been found in contexts earlier than the late 11th century but without Gloucester TF41a, for example a sherd of Chester-type ware was recovered from a site in Lower Westgate Street (15/73), a shell-tempered cooking pot rim from a pit at the Northgate site (1/74) and a number of flint and shell tempered sherds from 1 Westgate Street from what might have been pits cutting the period 4 occupation deposits (Vince, 1979).

Similar evidence is present at Hereford, where it is unlikely that any of the pottery was locally made until the very end of the 12th century and for Cheddar Palace, where the earliest ware found contains minerals of Cretaceous origin, contrasting with the Carboniferous limestone inclusions of Cheddar fabric B, which succeeded it in the 11th century. Surprisingly the same seems to be true for London in the 10th century, and possibly earlier (Late Saxon Shelly ware, equating with Oxford Fabric B, is the only ware to be found in the earliest contexts on Peninsular House, for example, see Milne, 1980).

The picture seems to be different in Wiltshire. At Trowbridge, for example, a variety of wares are found in a late Saxon context at the Castle site, including Cheddar E. There is similar evidence from Bath that Cheddar E, Bath A and Bath B/D are all present in the earliest Late Saxon contexts. Although the source of none of these wares is known it is likely that they ^{were} produced relatively nearby. In such areas there is evidence for the use of chaff-tempered pottery in the Mid-Saxon period. It may be therefore that there were different sequences of development in previously aceramic areas in contrast to previously ceramic ones.

The exact date at which pottery is introduced to the various sites is also not precisely known. At Hereford it is later than the insertion of a stone wall into the town defences, an event suggested by Shoesmith to be some time in the early 10th century. Pottery was not found in a widely excavated assemblage at Berrington Street from which a coin of Alfred probably lost c.925 was recovered (see ch.6). At Cheddar pottery is also introduced post-c.930 and is associated with a coin of c.945 (see Ch.6). Gloucester

TF41a is found in all contexts in Hereford containing Chester-type ware, although it is less common in earlier contexts. There is slight evidence that Chester-type ware was present in Gloucester prior to the use of Gloucester TF41a. This would give a starting date for Gloucester TF41a too in the mid- to late 10th century. If Cheddar B ware can be dated to the mid- late 10th century then the ceramic sequences at Trowbridge and Bath cannot begin before this date. Only in north and west Wiltshire is there any Late Saxon pottery which may have an earlier inception, and this is quite possibly due to the fact that there is no stratigraphic evidence to show when the wares begin.

In contrast, evidence from St. Aldates, Oxford shows that wheelfinished pots in Oxford B fabric were being used in the town no later than the early 9th century (Durham, 1977) and possibly as early as the late 8th century. The excavations at Netherton show that in northern Hampshire too wheelthrown pottery was produced in the 9th century (Fairbrother, forthcoming).

There is a great deal of difference between the ceramic development of the study region and the area immediately to the east in the Mid to Late Saxon period but all of the sites examined could have claims to be special cases. Cheddar was a Royal Palace and "perhaps on a Royal site wood or metal vessels were preferable to the pottery available" (Rahtz, 1974, 104). The remaining sites were all towns where one would imagine that new ideas would take root first. It is therefore not likely that rural sites in the study region will prove to have used pottery extensively.

THE AFFINITIES OF THE LATE SAXON POTTERY

Three quite different types of cooking pot were in use in the region in the mid- to late 10th century. Similarities between the types produced in different areas might show the way in which pottery types were introduced to the region, since it can be shown that none of these types appears to develop out of the baggy, chaff-tempered pottery which is the only pottery type that can be identified from the immediately preceding period, with the exception of a single North French Greyware cooking pot from Gloucester.

Another important point for the interpretation of the diffusion of pottery traits is whether there is a gradual shift in similarity from site to site, which would indicate a regular 'diffusion field' or whether the distribution is discontinuous, a 'jump distribution'. The former is more likely to occur when a large number of people are involved in the process, each taking an idea and passing it onto their neighbours while the latter is more likely to occur when a limited number of individuals are involved who actually move from one place to another.

It would certainly appear that the jump distribution model fits the diffusion of pottery traits in the 10th century better than the continuous distribution. The wheelthrown jar-shaped cooking pots of Gloucester TF41b, Exeter Bedford Garage ware and Chester-type ware are related firstly to the wheelthrown cooking pots of the Thetford-type industries but also perhaps to the wheelthrown greywares of Northern France (Hurst, 1977). The lid-seated rim form is the only type to be found in both Chester-type ware and Gloucester TF41a.

The handmade Gloucester 1F41a cooking pots have a completely different series of relationships. The closest parallels come from North and East Wiltshire (Swindon, Ogbourne) and from Northern Hampshire (Silchester, Brown Candover). These vessels, all of which are represented by rim and body sherds only, are made in at least two fabrics: a limestone-tempered ware and a chalk and flint-tempered ware and none come from stratified contexts. The Swindon sherds come from levels overlying the 5th to 8th century huts and must therefore be of 8th century or later date. Netherton in North Hampshire, which has a late Saxon to early medieval sequence, does not have vessels of this type. Instead, the late Saxon ware is a wheel-turned or wheel-finished ware with simple everted rims and probably a squat sagging based form. This type is apparently dated at Netherton to the late 9th century (Netherton S/N). There is a strong resemblance between the baggy type cooking pots and those of Saxon Southampton (Hamwih) of the 8th and 9th centuries although the rims of the earlier vessels are not so pronounced and were possibly constructed in a different manner (Hedges, 1981).

The Cheddar E vessels, as mentioned above, have the typical 'early medieval' form; a distinct sagging base and a squat profile, substantially the same girth as height or even wider together with a simple everted rim. They are handmade and have distinctive wipe marks over the exterior of the vessel. This same shape is found on Portchester ware, Cheddar B, Oxford B and Netherton S/N cooking pots. In each instance it is likely that the vessels were thrown on a fast wheel. The throwing marks are certainly more regular

than those found on wheel-finished cooking pots in the late 12th to 13th centuries. The earliest of these types on present evidence is the Oxford ware.

Thus there are four quite separate 'styles' or 'traditions' of manufacturing cooking pots co-existing in the same general area during the 10th and into the early 11th century. In one case, Gloucester, the two traditions exist side by side in the same town, where the same fabric was used for both, although it is not yet proven that they were made by the same potters. This is good evidence for the rapid diffusion of the ideas, probably through the movement of potters.

TRADE IN LATE SAXON POTTERY

There is ample evidence for the distribution of pottery over long distances at this period (fig.11.3). Little of this evidence can be quantified because of the nature of late Saxon archaeology in the region. However, relatively large samples of late Saxon pottery have been collected from Gloucester, Hereford, Worcester, Bath and Trowbridge. In addition, there are large collections published from Oxford and Cheddar. These may be compared for three characteristics, firstly the distance over which the 'local wares' travelled, secondly, the sources and quantities of 'non-local wares' and thirdly, the directions from which pottery was obtained.

LOCAL WARES

The source of the Chester-type ware at Hereford is now thought to be Stafford, although this is not petrologically proven. Virtually the only ware found at Gloucester is Gloucester TF41a, which is definitely made within the town.

From the excavations at Sidbury, in Worcester, there appears to be no one dominant supply centre for the town and approximately equal amounts of pottery were imported from the Oxford area, Gloucester, Stafford? (Chester-type ware) and the East Midlands (St. Neots-type ware) (Morris, 1980).

The three dominant wares at Bath could be made within c.20 miles of the town. Bath B/D was made from a clay containing a mixture of Jurassic rocks; possibly from the Bath Avon valley, except that those clays examined in the valley contain large quantities of fine and very fine sand and white mica. Cheddar E has a probable source in central Wiltshire and Bath A, which, although it has a matrix which could be obtained from local clays derived from the Upper Lias sands, has inclusions of rounded and polished quartz sand more likely to derive from the greensand or gault. Although only limited quantities of pre-11th century pottery were found it is possible to distinguish two phases, one in which Cheddar E and Bath B/D wares occur alone and a later one in which Bath A vessels make their appearance.

In Trowbridge, as in Worcester, no one dominant fabric was found but unlike Worcester all fabrics found contain rock and mineral fragments of Jurassic and Cretaceous origin which can be found locally.

The only mid to late 10th century ware found at Cheddar is Cheddar E, which should have an origin in central Wiltshire. The succeeding ware, Cheddar B, contains fragments of Carboniferous limestone, including an oolitic variety comparable with samples from the Mendip Hills

immediately to the north. Cheddar Ware could therefore be extremely local to Cheddar.

The precise source of the shelly limestone from which the major fabric at Oxford, Oxford B, was made is unknown. It is undoubtedly a Jurassic limestone and thus more likely to come from the Oxford region than the London area, where it is also the dominant fabric throughout the 10th century. At London it was gradually supplemented by what is likely to be a local ware, Early Medieval Sandy Ware.

From this evidence it is clear that by the mid-late 10th century the boundary between pottery-making and non-pottery-making areas had moved to the west so that Gloucester, Bath, Trowbridge and Oxford were within the pottery-making region whereas Cheddar, Hereford and Worcester were still outside it. However, whereas in the 9th century it seems that the latter areas simply did not use pottery at all, in the 10th century they imported pottery from further east and north. This process obviously distorts the evidence of distribution to show that sites in the west were obtaining pottery from further afield than those in Wiltshire and the Thames Valley. Otherwise it might be argued that sites in the west placed more reliance on long-distance trade and that they were in some way advanced over their eastern neighbours. However, even if the reason for this trade is accepted it remains the fact that pottery, a utilitarian commodity, could travel over these large distances.

NON-LOCAL WARES

Although of minimal importance to the economy of the late Saxon pottery industry 'non-local' sherds nevertheless do demonstrate contacts between different areas. It is not

possible with the present evidence to distinguish 'down the line' distribution, in which pottery is passed from site to site with little movement of people, from 'directional trade', in which pottery is carried by a few people from one place to another so that there are areas in between the source and the receiving sites where no examples are found.

At Hereford, non-local wares in the 10th century consist of a single Stamford Ware red-painted vessel and sherds of Gloucester TF41a. The latter, however, could be considered as a secondary 'local source', by the early 11th century, since by this time the proportion of Gloucester TF41a had risen from c.5% to c.20%. Other early 11th century wares include Stamford Glazed Ware pitchers and a storage jar, sherds of greyware cooking pots, possibly of East Midlands origin and a few sherds of Hereford Glazed ware, which may be locally produced.

At Gloucester very few non-local sherds have been found associated with Gloucester TF41a. They come exclusively from one site, 85/68, the Bell Hotel in Southgate Street. They are a single sherd of Winchester-type ware pitcher (now lost), a Stamford ware glazed vessel with flat base, a sherd of Oxford fabric B cooking pot and a sherd of chaff-tempered cooking pot. It is uncertain whether the latter sherd is contemporary. If it is then it calls for a re-interpretation of the evidence for Anglo-Saxon pottery in the area. Chester-type ware is represented only by one sherd, not associated with Gloucester TF41a.

At Bath and Trowbridge the only non-local ware associated with the 10th century pottery is Cheddar E. The comparable pottery from Cheddar contains no non-local wares

and at St. Aldates, Oxford there are a few non-local and imported sherds in the 10th century sequence. The same apparently is true for London where the only wares other than Oxford S and Early Medieval Sandy Ware are rare sherds of Thetford-type ware (PEN79 area E, Milne, 1980).

There appears to be no overall pattern in the quantity of non-local wares, nor in the distance travelled by such wares nor is there much relationship with 'natural routeways' or between quantity and distance. For example, Hereford is much closer to Gloucester than it is to Stafford yet it obtained a much higher quantity of pottery from the latter. This may either reflect the relative output of the two industries, since Chester-type ware is invariably found further from its source than Gloucester TF41a or it may be a true reflection of the outside contacts of Hereford, more with the north than the East.

The direction of pottery trade is interesting since it shows the interconnections between different areas. There is of course no corollary that the absence of pottery from a particular direction means that the two areas had no contact. The absence, for example, of pottery from the south and west in Hereford probably means simply that there was no pottery made in those areas. It is highly likely that the trade passing through the town included, as in the later medieval period, a high proportion of trade with Wales. However, this was probably in organic goods, items such as leather which leave little archaeological trace (Clarkson, 1960, 1966). The other important caveat is that a comparison of different sites using this information is misleading because of the overriding effect of local pottery industries. Using this data Worcester and

Gloucester would appear to be quite different in the extent to which they indulged in inter-regional trade. This is almost certainly quite wrong. Using the number of moneymasters known from their respective mints as indicators of interregional trade one finds that in the reign of Aethelred II Worcester had eleven moneymasters, Gloucester four, Winchcombe four and Hereford twelve (North, 1963). The relatively low figure for Gloucester may be an effect of the Winchcombe mint, since the area supplied by these two mints together would be comparable with that of Hereford or Worcester.

It is quite clear that pottery was being produced in the mid- to late tenth century in a small number of centres, whose products were being distributed over large distances. These distances were greater than those covered by any Mid-Saxon pottery industry, with the possible exception of Ipswich ware.

THE PRODUCTION OF LATE SAXON POTTERY: TECHNOLOGY

There is evidence for the use of several quite separate technologies in the 10th century pottery industries. Firstly, there is the use of the potters wheel, which was definitely used to produce all of the Chester-type ware and some of the Gloucester TF4la and Oxford B vessels. On these types the bases were either added or dished out after throwing. Some of the ungrouped Trowbridge wares also appear to have been wheelthrown.

Other Oxford B ware vessels, and less convincingly Cheddar E ware, show evidence for rotary motion, parallel lines are present not only around the rim and shoulder but also on the lower half of the interior but from their squat

shape and thick walls they seem more likely to have been made by coil-building and then finished on a turntable.

Gloucester TF41a handmade vessels have no evidence for turntable finishing, instead, the surfaces are covered with wipe marks in all directions. They were probably made by a technique similar or identical to that used for the mid-Saxon baggy cooking pots, the very slight flattening of the otherwise curved base is an indication that they were not made in the same way as the Cheddar and Oxford B vessels, which probably started with a flat base to which coils were added. It is still possible that coils were added to a base made by some other method - either handforming or moulding. The rims of the Gloucester vessels were added and the method of rim attachment is the same as in the mid-Saxon period.

The firing pattern also differs considerably, and possibly relates to the type of 'kiln' structure used. Chester-type ware is invariably oxidized, usually throughout and is fired a brown to red colour. This firing pattern suggests good control over firing and the ability to reach a temperature in excess of 900 degrees. This is a higher firing with more complete oxidation than is found on most high medieval pottery. A kiln would be a prerequisite to the manufacture of this pottery and one has been found at Stafford (E. Morris, pers. comm.).

The remaining wares are invariably either black-cored with black or brown surfaces or grey cored with black, brown or reddish brown surfaces. These patterns are obtainable from much shorter firings at lower temperatures. Similar effects have been seen on bonfire-fired pottery and on clamp-fired pottery. However black-cored sherds

predominate at Gloucester and one might suspect the use of bonfires for firing and yet remains of a kiln dome have been found in the 1, Westgate Street waster pit. The kiln would have been hemispherical with a framework of wattle plastered with daub on the inside. After the first firing the wattle would have been charred and if the structure was used more than once it would have had to be supported by the fired daub alone. Many reconstructions of medieval kilns show cylindrical ovens with a temporary roof. The Gloucester structure on the other hand probably had a permanent roof. Therefore, although a kiln was used its full potential for control of firing conditions was not tapped. Oxford B, Cheddar E and Bath A wares are usually grey-cored, and usually have completely oxidized surfaces. This firing pattern is typical of the 'early medieval' wares which came into prominence in the following century, although the end result is probably better than on many of the later wares.

On the basis of the Gloucester evidence one would hesitate to guess whether a permanent kiln was used in the case of Oxford B or Cheddar E wares but it is likely that the use of a kiln by the Gloucester potters was a cultural trait rather than an economic necessity and owes its origin to the same source as the use of the wheel.

The few known sherds of Hereford Late Saxon Glazed ware show that the method of production was the same as that of Stamford Ware and Winchester Ware and therefore it is likely that the ware was made by potters trained at one or other of these centres or an as yet unknown off-shoot, for example in the Midlands. The Hereford glazed ware would

undoubtedly have been made in a permanent kiln. The glaze was made from lead without added colouring and was applied by 'splashing'.

LOCATION OF POTTERY PRODUCTION

The location of the pottery industries of the 10th century is still imperfectly known (fig.11.3). Chester-type ware and Gloucester 1F41a are both the products of urban industries, but even in these towns there is no indication of how widespread the industry was, nor of the actual location of the Gloucester kiln or kilns. It is unlikely that wasters would have been brought into the town at this date solely for use as pit filling and therefore pottery production probably took place in the centre of the walled town at Gloucester. At Stafford two areas of pottery waste have been found, one a kiln site and the other a dump of pottery waste used to fill in a marsh (E. Morris, pers. comm.).

For the remaining wares only the rough source area is known and even correlation with known later pottery production sites is not possible, although there is a suggestion that Bath A ware might have been produced at Crockerton, Westbury or Potterne.

Crockerton was definitely the centre of a medieval pottery industry by the 13th century (Ch.2, Crockerton wares) but cannot be shown by documentary evidence to be any earlier, although there is a large degree of similarity between the fabric and form of the medieval products of this industry and those of the late 10th century ware.

Westbury is known as a large potting centre from the Domesday survey but there is no evidence of a later medieval pottery industry (Le Patourel, 1968). No products

of the Domesday industry are known and so one cannot compare the fabrics of these wares. There is no objection to Westbury as a source for Bath fabric A on petrological grounds since both Crockerton and Westbury lie on the Gault clay with access to the chert, greensand, chalk and flint sands and gravels used to temper the ware. Potterne however is suggested as a potting source solely on the basis of the place-name (Mawer and Stenton, 1927).

There is no suggested source for Cheddar E except that given by petrology and confirmed by distribution - South or Central Wiltshire. On analogy with other Late Saxon pottery industries it is possible that it was town-based. However, the only major late Saxon towns within the distribution area are Wilton, which has produced only a few sherds of Cheddar E, and Warminster, which has produced a coarse quartz-tempered Early Medieval ware which may be of 11th century date, if not earlier, and just one sherd of Cheddar E. Analogy with the town-based industries is probably erroneous since in shape and techniques the ware is ancestral to the rural early medieval cooking pot industries of the late 11th to early 13th centuries.

The excavations at Hereford, Worcester, Gloucester, and Winchcombe show that there are no other large-scale pottery production sites in that area otherwise stray sherds would have been found. However, there may have been small-scale or domestic production, although this is unlikely.

In Wiltshire and Bath it is possible that the tradition of small-scale production has its origins in the 10th century, for example Bath fabric B/D, the Trowbridge wares, the Swindon wares and some vessels of Dunning's Group 1,

found in a pit at Avebury associated with a Cheddar L cooking pot all have limited known distributions. With the exception of Cheddar E, the Bath wares of the 10th century continue into the 11th and 12th centuries so that Wiltshire is the only part of the study area to show continuity in pottery fabrics from the 10th century to the post-conquest medieval period.

THE SCALE OF LATE SAXON POTTERY PRODUCTION

Estimations of output for each industry, the number of potters involved, the amount of pottery 'consumed' by a household and the organisation of the pottery production (for example the amount of time spent potting and the number of individuals involved in the potting and firing of each 'kiln' load) are impossible to make for this period. Firstly, as has been shown there is considerable variation between each industry so that data missing from one industry cannot be assumed from evidence in another. Secondly, there is no useful data on the population to be expected at each site. Thirdly, the

capacity of the kilns is not known, although their ground area is considerably less than some medieval kilns (compare Musty's type 1 and type 2 kiln plans, Musty, 1974, fig.1). There is also the possibility, suggested by the Gloucester evidence that the late Saxon kilns were domed whereas later medieval kilns are often reconstructed as having cylindrical sides and a temporary dome. Thus, even if the ground plans were of the same area the capacity of the medieval kilns may have been greater.

In comparison with middle-Saxon pottery late Saxon pottery is abundant on the sites where late Saxon occupation has been found. The frequency of pot sherds to other occupation debris is lower, but in the same order of magnitude as that found in later medieval deposits, although unfortunately the late Saxon deposits cannot usually be excavated on the same scale due to later disturbance and the logistics of excavation on deeply stratified sites (Vince, 1977 c). The relative abundance of late Saxon pottery suggests that pottery was being broken and discarded in a similar manner to that of later medieval times and thus that it was as freely available.

Further conclusions are not possible without further excavation, both on the same sites as have already produced pottery, in order to increase the size of the sample and to produce evidence for their duration of use, and also on other sites, particularly rural settlements, to compare their use of pottery.

EARLY 11TH TO MID-12TH CENTURY POTTERY

Perhaps the most distinctive characteristic of the later 11th century and earlier 12th century pottery of the region is the total absence of the wheel and, to judge by the overall shape and sagging base, the use of coiling in its place. Such vessels belong to Dunning's Group 5, Early Medieval ware.

Except at Cheddar, where the succeeding ware was wheelthrown, a change-over to thinner-walled but less regularly finished vessels takes place in all areas. Even at Cheddar it is likely that this wheelthrown ware was itself replaced before the Norman Conquest by cruder handmade wares (Cheddar fabrics C and H, Rahtz, 1979). This

fall-off in pottery quality took place in London during the late 10th century, where Oxford I ware was supplemented by London Early Medieval Sandy ware. It is probably more accurate to see Cheddar E ware, like London Early Medieval Sandy ware as an early example of this Early Medieval ware, although it is better made than most of its successors. The dating evidence for the inception of this ware is that it was introduced to Cheddar later than c.930 and is found associated with a coin of c.945. At Silbury Hill, Bath A, Newbury C and various ungrouped cooking pots, all of which are 'early medieval wares', were found in an apparently early 11th century context without Cheddar E ware although this ware was present at Avebury, alongside handmade vessels of Dunning's Group 1 (see Ch.6). The change was therefore complete in this area by the first quarter of the 11th century.

A similar date is likely for the inception of North Cotswolds I ware at Winchcombe which is dated by a radiocarbon date of 1020 ± 70 AD (see Ch.6) and is earlier than contexts containing Stamford jug sherds, late Saxon wheelthrown greyware, Gloucester TF41a cooking pots and Hereford Glazed ware.

Elsewhere, for example at Gloucester, Hereford and Bristol it is difficult to find evidence for the use of this type of cooking pot much before the Norman Conquest and it is probable that the types introduced in the mid- to late 10th century continued later than in Wiltshire.

At Gloucester, there is evidence for the use of TF41b cooking pots and Bath A cooking pots together in levels associated with the first timber castle and predating the

inception of Malvern Chase cooking pots, which must be sometime before c.1107-14 (see Ch.6). Despite several sequences covering the 11th to 12th centuries there is very little evidence for pre-conquest use of the type nor for an overlap with Gloucester TF4la. The only two examples of overlap known at present are a small group from St. Oswalds Priory (Vince, 1978) and a series of contexts from 1 Westgate Street (Vince, 1979). Both of these groups contain a mixture of Gloucester TF4la and Gloucester TF4lb but in the latter group the forms of the Gloucester TF4la are more akin to those of Gloucester TF4lb and include club-rimmed cooking pots. There are also a few examples from various sites in Gloucester of Gloucester TF4lb vessels with thickened necks and simple everted rims, more typical in the earlier fabric.

At Hereford, the period of change-over is not present in the archaeological record, probably due to disruption following the sacking of the town by the Welsh in 1055, the evidence for which is summarised by Whitehead (1982, 15). Early 11th C. assemblages from Hereford contain mainly Gloucester TF4la and Chester-type ware with rare sherds of Stamford ware and Hereford Glazed ware while the only late 11th century group of any size known contains only Gloucester TF4lb and Stamford ware (from trial excavations by J. Sawle at the Trinity Almshouses site).

At Bristol no late Saxon wheelthrown ware, nor any baggy handmade cooking pots are known. This agrees with what is known of the town's development. It was comparatively late in obtaining a mint, in the reign of Aethelred or early in the reign of Cnut (Dolley, 1970) and seems to have developed at the expense of Bath. Therefore

in the Bristol area early medieval industries must have supplanted any Late Saxon wares by the early 11th century.

Not only is there a general similarity in the methods of manufacture used for all these early medieval industries there is also a high degree of similarity in the range of forms produced. Only two basic cooking pot forms were used; the slightly conical form and the globular to curving form. The conical form usually occurs with a club rim, although this rim form also occurs on some globular-bodied vessels, for example Gloucester TF41b.

In all cases the majority of vessels produced were plain cooking pots but in many industries other types are found, albeit rarely (table 11.23). Of these types, spouted pitchers are the most common, followed by spouted or socketed bowls. The latter form was definitely of pre-conquest origin and was used as a container for a coin hoard at Wedmore in c.1040 (see Chapter 6). Large, handled storage jars are a type that is rare or absent from the region itself while wide, shallow dishes are found on the eastern fringes of the region only. Individual stamping is found on the spouted pitchers, spouted/socketed bowls and on the handled storage jars but not on the dishes. In addition, short pedestal based lamps are a minor type found in many of the wares.

Table 11.23 The incidence of pottery types in 11th to early 12th Century pottery industries.

WARE NAME	a.	b.	c.	d.	e.	f.
1. Gloucester TF41b	Y	Y	-	-	Y	-
2. Worcester-type	-	-	-	-	-	-
3. N. Cots. I	Y	-	-	Y	Y	-
4. Cirencester 202	-	-	-	-	-	-
5. Hillesley-type	?	-	-	-	?	-
6. Bristol A to C	Y	Y	-	-	Y	Y
7. Bath A	Y	Y	-	-	Y	Y
8. Newbury A	-	-	?	Y	-	Y
9. N. Hants flint-tempered	-	-	-	-	-	-
10. Cheddar B	-	-	-	-	-	-
11. S.E. Wilts.	-	-	-	-	-	-
12. Ilchester-type	Y	?	Y	-	Y	?
13. Frocester-type	?	?	?	?	?	?
14. Castle Neroche-type	-	-	Y	-	Y	?
15. Oxford AC	-	-	-	Y	Y	?

Key.

a. Spouted pitchers	d. Wide shallow dishes
b. Spouted bowls	e. individual stamping
c. Large, handled storage jars	f. pedestal lamps

There is considerable difference between the frequency of these vessel types in different wares. In Gloucester TF41b, for example, stamping is rare, although spouted pitchers are quite common but spouted bowls are represented by a single example. There is also considerably more known about some wares than others. Frocester-type ware, for example, is known as a distinctive fabric, distinguishable, for instance, from Gloucester TF41b, but the range of forms

made is unknown.

If only the better-known wares are considered then one finds that the various forms and techniques are not evenly distributed over the region, nor is the discontinuous distribution of traits found in the mid- to late 10th century repeated. Instead, the distribution of forms and techniques is regional. Spouted pitchers and socketed bowls seem to have the same distribution and are often decorated with stamping. This distribution is essentially south-westerly, covering Somerset, Wiltshire and Hampshire with Gloucestershire being on the north-westerly border and Oxfordshire/Berkshire being essentially outside of the distribution area, a point noted by Mellor at Oxford (1980). Large, handled spouted storage jars have a slightly more restricted distribution which omits Wiltshire and North Somerset but stretches from South Somerset to Southern Hampshire. Shallow Dishes likewise have a regional distribution, being essentially limited to the Thames and Kennet valleys. They were in use in the Thames valley in the 10th century in two wares.

Although the distribution of the products of several of these industries overlap there is quite a sharp distinction between their minor products. Bath A and Newbury A wares, for example, were probably made within 30 miles of each other and are found together on several Wiltshire sites yet while stamped spouted pitchers are found in Bath A ware they are absent in Newbury A ware, in which shallow dishes were made. The distribution of the different cooking pot forms is also regional. The conical form is only common in one ware - North Cots. I, where it is possibly present by

the early 11th century or earlier. It is also found in four other 11th to early 12th century wares: Worcester-type ware, Gloucester TF41b, Oxford AC and Malvern Chase. All these production areas border the North Cotswolds and in all four the form is greatly outnumbered by the globular form. It is definitely a late 11th century, probably post-conquest, introduction in three wares and in Malvern Chase ware is probably of early 12th century date.

There are two possible explanations for these observed differences. Firstly it is possible that they reflect differences in the requirements of the populations of the areas, the shallow dishes, for example, are usually sooted and always undecorated. They may therefore be related to regional differences in cooking, as may the distribution of storage jars. Other features, such as the use of stamping or the use of conical versus globular cooking pots, are more likely to reflect the preferences of their makers rather than their users.

Since the distribution of these forms is less clearly defined than that of their sources this also suggests that the potters were not tailoring their production to the demands of their customers. If they were, one might expect those wares which supplied areas on the boundaries of the distributions of the various types to produce a wider range of products, supplying each area with its preferred types.

THE POTTERY INDUSTRY AND MILITARY EVENTS

Although the wheelthrown 'Saxo-Norman' pottery industries had disappeared by the mid-11th century in the west they apparently continued much later in the east and in the Midlands. The change to early medieval wares had already taken place before the Norman Conquest and there is

no other feature in the development of the pottery industry which can be assigned to precisely this period. Many of the excavated sites in Wales and the Welsh Marches owe their existance to the Normans, for example Chepstow and Hen Domen but it would seem that the potters supplying these settlements were Saxons supplying a Saxon-dominated market. Only in one instance is there any possible Northern French influence on pottery manufacture. At Castle Neroche a series of collared rim cooking pots were found, made in the standard South Somerset quartz and chert-tempered fabric. Davison has argued that these were made locally and distinguished two groups, one made by an immigrant Norman potter and the other by a local potter "working under the direction of someone more versed in the traditions of Northern France" (Davison, 1972, 42-50).

The evidence presented by Davison is convincing. The Castle Neroche cooking pots are wheelthrown with collared rims and applied thumbed strips. They also have pronounced rilling on the body (known in France as *décor anneau*). This was probably a decorative effect rather than an accidental by-product of wheelthrowing. Davison also identified a type of storage jar as being of Northern French type, and the thin strap handles and applied thumbed strips are indeed very similar to those found on Normandy Gritty vessels (Davison, 1972, Fig. 20 No. 19). Other features of contemporary Norman pottery are the use of a white-firing clay, clear glaze, copper-flecked glaze, a zone of cross-hatched roller-stamping on the shoulders of cooking pots and vertical stripes of red paint (Platt and Coleman-Smith, 1977, Figs. 175-6). None of these features nor those used

on the Castle Neroche vessels, are known in other contemporary English industries.

The 'Northern French' type pottery at Castle Neroche was not accompanied by any other local wares and is dated by Davison to the period c.1067-9, or just possibly as late as c.1140. Davison infers from this that there was no local pottery industry at this time but that by the time the ramparts were extended, probably in the early 12th century, local pottery was available. Whilst this may conflict with the chronologies at present being constructed for Taunton and Ilchester (Pearson, forthcoming), this interpretation is certainly in agreement with what is now known of the remainder of the South West. The earliest pottery known from Lydford and Oakhampton Castles and from Exeter, except for Exeter Bedford Garage ware, is a handmade chert-tempered ware extremely similar to that found at Castle Neroche in the early 12th century. Before the use of this pottery Devon must have been almost aceramic.

Hurst has suggested that the final disappearance of 'Saxo-Norman' pottery may have been due to the upheaval of the mid-12th century Anarchy and it is worthwhile considering not only whether this is tenable but also whether any other changes may have resulted from this unrest (Hurst, 1976). During the Anarchy many of the towns included in this study were besieged and many minor motte and bailey castles were built, for example Lydney Castle and the Mottes at Woodhey, Berks. Despite the amount of historical documentation for this period it is still not possible to point to more than a handful of archaeological contexts of mid-12th century date. Neither is it possible

to indentify any specific ceramic change at this precise period.

Immediately following the Anarchy there is a general increase in the number of glazed-ware production sites in operation, the relative amount of glazed ware found at most sites and therefore an increase in glazed ware production. There is no reason, however, why this should necessarily be a result of the cessation of the Anarchy. So far as one can tell, glazed wares were not more common in the early 12th century than they were at the Anarchy. It is suggested at Stafford that the production of Chester-type ware continued into the post-conquest period and possibly into the 12th century but the evidence for this is unknown (pers. comm. M. Carver, E. Morris). There is also evidence from Droitwich for the use of St. Neots-type wheelthown cooking pots and bowls associated with the use of Gloucester TF41b and Bath A, a little Worcester-type ware but no Malvern Chase ware. A late 11th century date might be suggested for this phase on pottery evidence. This is the only evidence from the study region for the end-date for the late Saxon industries.

At both London and Stamford a significant change in the form of the glazed wares took place around the middle of the 12th century. At Stamford the clear glazed spouted pitchers were replaced by green-glazed jugs while at London the same form of jug appears in London-type ware around the middle of the 12th century, but possibly as early as c.1140 at Seal House Waterfront I. A few unstratified examples of London-type ware spouted pitchers are known which may date to the early 12th century or earlier.

In conclusion, there is no evidence from this study either to confirm or to refute the suggestion that the late Saxon industries finally disappeared at the Anarchy. Nevertheless, soon afterwards glazed vessels became much more common, a change which occurs synchronously throughout the study region, the East Midlands and the London area.

POTTERY AND THE NORMAN LORDSHIPS

Jeremy Knight has suggested that in Wales the most likely organisation for the potting industry in the late 11th and early 12th centuries would be by Lordship, since there is documentary evidence for the area being settled by groups of peasants under the control of a Lord (Knight, 1977). This is also the implication of the Northern French type pottery at Castle Neroche. The distribution of pottery might be totally non-market orientated and correspond more closely to the distribution of lands held by the Lord. Since the distribution of the lands held by each Lord is known in detail for the Domesday period, there is the possibility of testing this theory by intensive study of the distribution of pottery fabrics and types.

For Wales itself there is little evidence for the type of pottery being made in the Early Norman period if any, but in England, however, there are several known examples where this model does not hold true, for example Gloucester TF41b and Bath A wares both have wide distributions that cross the lands of several Lords. These cases are exceptional, however, and most of the pottery types discussed here have quite small distributions. The overlapping of distributions in towns should not affect this model since it is known that properties in towns were attached to rural manors. If pottery was not traded in the

towns one would expect to find considerable variation between assemblages from different properties but this is not the case.

The presence of pottery from more than one source on rural sites is much more damaging to the theory. There are several rural sites where there is evidence for the use predominantly of one pottery fabric and the non-local cooking ware is mainly of two fabrics: Bath fabric A and Gloucester TF4lb. Le Patourel has suggested that the Westbury, Bladon and Haresfield potters, who may have been responsible for the manufacture of, respectively, Bath A ware, Oxford AC ware and Gloucester TF4lb ware, were already organised commercially by Domesday (Le Patourel, 1968). Excluding these wares it is quite possible that the non-commercial Lordship-based model may fit much of the available data as it seems to be the case that for every 11th to 12th century site investigated another 11th to 12th century ware is recognised.

There are at least some exceptions to the model but for many areas the evidence not only supports such an interpretation but also the possibility that pottery was made on an even more localised scale. It would certainly be worthwhile testing this model in an area where the local geology was variable enough for minor differences in fabric to be distinguished.

TRADE IN POTTERY IN THE EARLY 11TH TO MID-12TH CENTURIES.

Many late 11th to mid-12th century pottery industries have been defined in this thesis (fig.11.5). With three exceptions their products have a limited distribution. In some cases the distribution area was so small that the

products of the industry are known from a single site, for example Hillesley-type ware, Chew Valley Sandstone-tempered ware and Gloucester TF43.

These very small industries were exceptional however and the more normal pattern is shown by wares such as Great Somerford-type ware, Box fabric B ware, Bath fabric B/D ware and Cirencester-type ware. These wares are known from several sites, up to 10 miles apart.

Larger industries also existed in the study region, for example North Cotswolds I ware, North Hampshire Flinty ware, Newbury Group A ware, Malvern Chase ware and Worcester ware.

The wares with the largest distributions were made in Gloucester TF41b, Bristol fabrics A/B and C and Bath fabric A. All three wares are found in sparse to moderate quantities more than 30 miles from their suggested places of origin. It is suggested here that one reason for the large size of these distribution areas is not the scale of production but the fact that the vessels were involved in trade in some other items, for which no archaeological trace has been found.

DROITWICH AND THE SALT TRADE

The Friar Street 1974 excavations at Droitwich produced a series of pit groups of late 11th century date. The pottery from these groups came from a variety of sources. Stamford pitchers and cooking pots, St. Neots-type cooking pots and bowls came from the east Midlands and formed c.50% of the total assemblage. The remainder of the assemblage consisted of Gloucester TF41b and Bath Fabric A cooking pots and spouted pitchers with very small quantities of ungrouped wares.

This association of types not normally found together is extremely useful in confirming the relative date of the types. Because Droitwich was obviously obtaining pottery from a wide surrounding area the absence of certain wares is also of interest. No Late Saxon types, such as Chester-type ware or Gloucester TF4lb were present but neither was Malvern Chase ware present. Only a few sherds of Worcester-type cooking pots were found. This is important confirmation of the late starting date of Malvern Chase and Worcester-type wares, c.1100 whilst the type of Stamford ware found suggests a late 11th century date.

The quantities of non-local wares at Droitwich are much higher than in any other site in the study region. With no industry at Malvern Chase and only a minor one at Worcester, Gloucester TF4lb might be considered the obvious pottery source for people living in Droitwich. No such assumption can explain the presence of Bath Fabric A vessels at Droitwich. Bath Fabric A vessels are known from other sites in the Severn Valley, for example Pershore and Gloucester, but never in large quantities.

The evidence from Droitwich Friar Street suggests that there was a direct trade between Droitwich and west Wiltshire. This is confirmed by the Domesday Book, which documents the trade in salt from Droitwich to a wide hinterland and by the preservation of place-names such as Saltford, in Avon, which demonstrate the antiquity of the carting routes from Droitwich to the west country.

Subsequent excavations in Droitwich have produced very similar assemblages, proving that the Friar Street pottery was typical of that used in Droitwich in the late 11th

century. By the early 12th century, however, large assemblages from Droitwich contained virtually no Gloucester or Bath wares but were instead dominated by handmade cooking pots of Worcester ware. There is some evidence from Gloucester that the importation of Bath fabric A vessels, although it continued into the 12th and even 13th centuries was also at its height in the late 11th century.

THE BRISTOL - DUBLIN TRADE

Excavations at Christchurch Place, Dublin, by the National Museum of Ireland produced a sequence of timber buildings and associated deposits beginning in the late 10th century and ending early in the 13th century. An analysis of the pottery from one grid-square of this excavation showed that pottery from the Severn Valley and the west country was an important constituent of all the pottery assemblages from the mid-11th century until the end of the excavated sequence. The earliest contexts on the site produced no pottery at all.

Alongside northern French greyware cooking pots were plentiful examples of Gloucester TF41b and Bristol A/B and C cooking pots and spouted pitchers. A few examples of Bath fabric A cooking pots were also found. Thin-section analysis confirmed the identity of these wares but unfortunately detailed analysis of the stratigraphy of the site has yet to take place. It is not therefore possible to consider any of these imports in stratified assemblages to see whether there are any changes in their relative proportions during the 11th and 12th centuries.

Other excavations in Dublin have confirmed that Bristol and Gloucester wares are regularly found in early medieval contexts in the City (P. Wallace, pers. comm.). To date,

however, no other site in Ireland has produced these early English imports, although 12th and 13th century west country wares are common finds at all coastal sites from Cork to Dublin.

The presence in Dublin in the 11th century of Bristol wares, and wares transported to Dublin through Bristol, is not a surprise. There is plentiful documentary evidence for regular contact between Bristol and Dublin, through trade, the movement of people, and through warfare. There is not, however, any evidence for direct contact between the vale of Gloucester and Dublin. Gloucester TF41b vessels do not occur in any quantity at Bristol, nor at Chepstow, although they are present in small quantities at both sites. It is fair to assume that they will not be found in larger quantities at any other site in the lower Severn valley. Therefore the contact between the Gloucester area and Dublin, like that between west Wiltshire and Droitwich, must have been direct.

No examples of definitely 12th century wares from the Gloucester region, nor wares made elsewhere but used in Gloucester at that time, have been found in Dublin. It therefore appears that, like the Droitwich-west Wiltshire trade, the Gloucester area - Dublin trade had a short duration in the late 11th century and ended in the 12th century.

NON-LOCAL AND IMPORTED POTTERY

Glazed and unglazed pottery from Stamford and the east midlands is found in small quantities at most sites in the 11th to mid-12th centuries and Winchester-type ware is present at sites in the southern part of the study region.

There are, however, no examples of continental imports from the study region, although such imports are known from other regions of the country. Unglazed red-painted ware and Andenne-type glazed pitchers, from the Rhineland and the Low Countries, are common in 11th to 12th century contexts in London (Dunning, 1959). Normandy Gritty cooking pots are present at a number of sites along the south coast, from Exeter to Pevensey. All these types are distinctive and would have been identified if present in the study region. It must be concluded that despite exporting pottery to Dublin the study region was not receiving any pottery by sea.

THE LATE TWELFTH CENTURY

During the later part of the 12th century the predominant pottery type in use in the area was still the handmade cooking pot. Numerous wares are known (see figs.11.10 - 11) and some of these were not present in the 11th or early 12th centuries. There was a general development in fabric type; wares with mixed coarse inclusions over 1mm across, such as Chew Valley Sandstone-tempered ware and Bristol A/B were replaced by medium-grained quartz-sand tempered wares such as Bath A and Proto-Ham Green ware.

The period also saw a massive increase in production of handmade tripod pitchers, which were produced in few centres. Consequently they have a larger distribution than the contemporary cooking pots, although they are much bulkier vessels. The exact date of introduction of the so-called 'West Country Vessels' is unknown. They were in use in the late 12th century, but may have been first produced

as early as the late 11th century. It is also not certain when the more unusual vessel types of the 11th to 12th centuries disappeared since there may have been an overlap between the use of spouted pitchers and that of their larger, glazed successors.

In the East Midlands and East Anglia wheelthrown Early Standard Jugs were introduced in a variety of wares. Both the handmade tripod pitchers and Early Standard Jugs were made in wares in which jugs were the predominant product, although cooking pots and other types were also produced. The circumstances of production of these vessels and that of the spouted pitchers of the 11th to 12th centuries is therefore quite different.

THE SEQUENCE: QUALITY OF THE EVIDENCE

The evidence for the date of later 12th century to early 13th century pottery is very poor for the study region (see Chapter 6) although in London assemblages dated by coins and dendrochronology to the late 12th century are now common (Pearce et al., forthcoming). The crucial points that need to be defined are: the inception of glazed tripod pitchers, the inception of wheelthrown jugs and whether or not these changes are synchronous or diachronous. The earliest tripod pitcher source was in South East Wiltshire and manufacture spread from there to North Wiltshire (Minety-type ware), the Oxford region (Oxford Y) and the Malvern Chase. The tripod pitchers of Herefordshire and the Welsh Marches are considerably later and were introduced either in the early 13th or very late in the 12th century.

The earliest wheelthrown jugs in the region probably date from the early 13th century but in the east of England their inception must be dated to the mid-12th century.

Developed Stamford ware jugs started c.1150 and quickly superseded the clear-glazed Stamford ware spouted pitchers. London-type jugs were definitely at the height of production by c.1170 and may well have been produced from c.1140 (Pearce et al., forthcoming). 91

There are more subtle changes in the fabric and type of cooking pots. A change from mixed gravel to sand-tempered wares took place in the Bristol area. The sandy ware is absent from the earliest medieval contexts at Chepstow, which must be of post-Conquest 11th century or early 12th century date. The change in Malvern Chase ware from a soot-blackened ware to a reduced grey ware took place during the 12th century but here too the exact date is not known. Some wares continued throughout the 12th century with little or no difference in fabric or form, for example Gloucester TF41b.

It is likely that the changes in manufacturing technique and firing are the result of improved technical skills and understanding. Deliberately reduced grey wares have been favoured for cooking since the Roman period and presumably there is a sound reason for this preference, possibly they facilitate heat transfer, although deliberately oxidized cooking wares also occur. It is perhaps more pertinent to question why there was such a slow transfer of knowledge between the potters working in the study region and those working in the 'Saxon-Norman' wheelthrown tradition, to whom this knowledge and more was available, rather than query why the medieval potters should have developed these skills at all.

The introduction of handmade tripod pitchers implies not only a technical change in the use of glaze but also some change in the demand for pottery vessels. There are considerable differences between these vessels and their equivalents in the 11th to 12th centuries. It is possible that the increase in size of the tripod pitchers over the spouted pitchers is merely the result of the increased technical skill of the potters and does not reflect any change in the needs of the population as a whole at all. However, the presence of these large, glazed and decorated vessels often found traded over a wide area must show that the population had the means to acquire such vessels, either in surplus goods for barter or in cash. The increasing quantities in which these vessels were found throughout the century must also have a general economic implication and is discussed further in chapter 12.

CHANGES IN POTTERY FORMS

The range of forms produced in the study region during the later 12th century was very similar to that of the previous century. Handmade cooking pots continued to be the most common form made. In most industries there was little change in the shape of the cooking pot, although some minor typological changes occur. Club-rimmed cooking pots were almost certainly no longer produced in Gloucester TF41b and their place was taken by two new forms, the flat-topped everted-rimmed cooking pot and the cylindrical inturned rimmed type. Both of these forms were made in the previous half-century in other wares, the former in Worcester-type ware and the latter in Forest of Dean sandstone-tempered ware.

The shallow dish, sometimes with a socketed handle, was produced in the 11th to early 12th centuries but became more common in the late 12th century. This is due mainly to the emergence of the Newbury B and C industries, whose products had a wider distribution than those of Newbury Group A. The area in which the type was produced did not expand.

Tripod Pitchers were certainly produced in the study region before the late 12th century but there was a marked increase at this period both in the area in which they were produced and in their frequency at all sites.

'West Country Vessels' are the only other common pottery form present in the late 12th century. It is clear from finds in south Wales that the form was produced in Bath Fabric A in the late 12th century but it is likely in many other wares that the form was introduced in the early 12th century. Examples in Malvern Chase ware were made in the poorly finished black-fired fabric typical of the earliest products of the industry and have a very limited distribution in southern Worcestershire. Examples in Gloucester TF43, Gloucester TF41b and Box fabric B have all been found in contexts in which glazed tripod pitchers are present but not common, suggesting an early to mid-12th century date.

Large bowls or 'pans' occur in Newbury B ware in the late 12th century but are extremely rare both in this industry and in the remainder of the study region.

In the East Midlands, East Anglia and the London region wheelthrowing was the standard method of manufacture in the later 12th century and in London this was the first period since the Norman conquest in which wheelthrowing was

common. This is true not only for the possibly urban-based industry producing London-type ware but also the rural South Hertfordshire reduced ware industries. This should imply that pottery was being manufactured on a commercial basis by this date, since the use of the wheel involves an investment in equipment and space not likely to be found with domestic production (Nicklin, 1971).

Despite this difference between regions in the way in which pottery was being made and the obvious differences in form there are broader parallels in the pottery of the two areas during the 11th century. In both regions glazed wares were produced on a large scale for the first time and the new types were substantially larger than the previous pitchers. In social terms the pottery development of the two areas has more in common than would be supposed from the technological or typological standpoint.

TRADE IN POTTERY

Fig.11.10 shows the generalised distribution of the main cooking wares in the study region and fig.11.11 shows that of the glazed tripod pitchers. In some cases there is a considerable difference between the two. As an exception to this one can cite the Chew Valley Sandstone-tempered wares, where both the cooking pottery and the glazed wares have the same limited distribution. In general, there is little overlapping of the distribution areas of cooking pot or tripod pitcher types except at Hereford, which did not have a 'local' pottery industry and relied on Malvern Chase and to a lesser extent Worcester and the Vale of Gloucester for its pottery.

Pottery distribution was on a larger scale than in the early 12th century and Malvern Chase ware and Newbury Group B ware in particular are distributed over a much wider area than any previous ware. Stamford ware is found in the study region but is less common than in the previous period. This is probably due to the competition of the new glazed ware industries. Similarly, few 'stray' cooking pots occur although there is slightly more evidence for the long-distance trade of tripod pitchers.

Imported wares are completely absent from the study region. Red-painted spouted pitchers and Blue-Grey ware ladles and cooking pots from the Rhineland, together with Andenne ware pitchers from the Limburg are found in many of the larger towns of eastern England, for example King's Lynn and Norwich, and in London they are quite common (Dunning, 1959).

It is likely that some Rouen ware jugs are of late 12th century date and they are found all along the south and east coasts and are common in Dublin. Despite this they are absent from the study region, as are Normandy gritty and glazed wares.

POTTERY IN THE EARLY TO MID-13TH CENTURY

There are few differences between the sources and types of pottery used in the late 12th century and those of the early to mid-13th century. Generally the same wares were still in use but in most cases their distribution was on a larger scale and it is during this period that some of the widest distributions of medieval pottery in the study region occur. The main addition to the ceramic assemblages of the period is a series of new glazed ware types, all but

one of which were handmade. At the outset of the period these glazed types are not very common and there is thus difficulty in distinguishing late 12th and early 13th century groups when only of small or moderate size. By the mid-century, however, the new glazed wares form a sizable proportion of the pottery found.

THE RE-INTRODUCTION OF THE WHEEL

The most noticeable technical innovation of the late 12th to early 13th century in the study region was the introduction of wheelthrowing. Only one locally produced ware was wheelthrown, Worcester-type ware, and vessels made in this fabric exhibit a number of other innovative features, in addition to their method of manufacture. It is clear that the industry was introduced from outside the region. For a short period, possibly c.1220-1260, Worcester-type ware was the only wheelthrown ware found in the study region. There then followed a period during which Worcester-type ware was found alongside other wheelthrown wares, gradually leading to its total replacement.

CHANGES IN VESSEL FORM

The major new type of the early 13th century was the jug, which was distinguished from the tripod pitcher by the absence of feet but was otherwise initially very similar both in size and other features. New traits found on these jugs include the strap handle, the bridge spout and the thumb-frilled base. It appears that the earliest jugs in the region were of Ham Green ware, the introduction of which may predate Worcester-type ware (see Ch.6). These jugs have sub-rectangular rather than true strap handles and were handmade.

Worcester-type jugs share several features with Ham Green jugs, including the bridge spout, the thumb-frilled base and the sub-rectangular handle but in addition they use white slip around the rim; complex roller-stamping and are wheelthrown. It is likely that both industries adopted these characteristics from the wheelthrown industries to the East, for example London-type ware. Vessels with thumbed (but not thumb-frilled) bases, and bridge spouts occur in London-type ware by c.1210 and are associated there with decoration and other features which must have a Northern French origin (Pearce et al., forthcoming). Alternatively, it is possible that the local industries obtained these traits directly from Northern France rather than at second hand.

Dripping dishes first appeared in the region at this time but only in Worcester-type ware. These vessels too were found in London-type ware by c.1210.

A few small globular cooking pots, or possibly pipkins, were made in Worcester-type ware. They differ from earlier cooking pots in their method of construction, the use of glaze and the use of roller-stamping for decoration.

THE EMERGENCE OF NEW INDUSTRIES

The Worcester-type Ware pottery industry shows many new features although there is evidence for a pottery industry in the Worcester area in the 12th century, making handmade cooking pots. Glazed Ham Green ware is a very late 12th or early 13th century introduction, see Chapter 6, but here too there is evidence for the production of handmade cooking pots during the 12th century ('proto-Ham Green ware'). At Hereford, however, there is evidence for at least three new industries operating in the surrounding

area, one of which, Hereford A2, has a temper which matches samples of the gravel upon which the town is situated. Hereford A3 is less common and has a distinctive sand temper composed of small fragments of fine-grained sandstones while Hereford A4 is rare at this period but contained inclusions similar to those found in later century wares from Richards Castle, suggesting a North Herefordshire source. Previously there was no local pottery production and all of the 12th century pottery at Hereford originated outside the county.

A similar picture is true in the Montgomery area of the Welsh border, where Hen Domen sandstone-tempered ware, a distinctive local ware which produced handmade cooking pots and glazed, handmade tripod pitchers, superseded a sand-tempered ware sometime in the later 12th or 13th century. Excavations at Montgomery Castle show that a wheelthrown, roller-stamped version of Hen Domen Sandstone-tempered ware was present by c.1225, thus providing a t.a.q. for the main use of the handmade ware (inf. ex. J. Knight).

All the known late 12th century production centres, however, continued in operation into the early to mid-13th century producing mainly cooking pots. The production of Gloucester TF41b definitely continued into the mid-13th century, since internally glazed cooking pots with inturned rims and cylindrical bodies like the contemporary Malvern Chase vessels occur in Gloucester only in contexts associated with Worcester-type ware. The contemporary tripod pitchers show some characteristics which were probably adopted from the jugs: Minety-type tripod pitchers had pulled spouts and occasional bridge spouts while Malvern Chase vessels have pulled spouts. In most respects

however the 13th century tripod pitchers of these industries are indistinguishable from those of the late 12th century. Partially glazed cooking pots, the 'Selsley Common' type, were produced in this ware for the first time. Nevertheless the majority of vessel forms hardly changed at all and recognised changes are mainly minor differences of typology. For example, it is possible to distinguish late 12th century from early to mid-13th century Malvern Chase cooking pots by their rims alone.

TRADE IN POTTERY

There is a noticeable increase in overlap of pottery distributions at this time, especially with Malvern Chase cooking pots which are found over a wider area than at any time until the 16th century (figs.11.10 to 11). The increase in production in the Malvern Chase industry is noted at Hereford, where the ware became the primary source for cooking pots and at sites such as Shrewsbury, where they form a small but consistent part of assemblages. Even at Chepstow the few Malvern Chase cooking pots found may be assigned to this period, both on stratigraphic and typological grounds.

On a smaller scale the same widespread distribution pattern is present for other cooking wares but is especially evident for glazed wares. Worcester-type jugs and Ham Green jugs have an extremely wide distribution (figs.2.66 and 2.18). Neither has a completely regular decline in frequency from the source and both are situated, like Malvern Chase, very close to the Severn (see below). Minety tripod pitchers have a similar wide distribution (fig.2.83) but here the production area is not close to a

navigable waterway. This implies a considerably increased distribution of pottery from the late 12th to the early to mid-13th century.

A number of early to mid- 13th century wares have no known source. Most are glazed wares, but unglazed cooking pot types are also known. One such ware, Shrewsbury-type ware, is thought to originate in the Shrewsbury area because of its frequency in assemblages there. Sherds of handmade tripod pitchers in the ware are found for the first time in early to mid-13th century contexts in Gloucester. The examples recognised in unstratified collections from Worcester are therefore also assumed to be of this date. Other wares are completely unprovenanced, for example Glos TF110. It is therefore likely that the wide distributions found for the distinctive wares included in this study are not unusual.

Continental imports continued to be rare and were limited to sites on the coast or the banks of the Severn. Rouen jugs are known only from Chepstow and Bristol, North French Monochrome jugs are known from Chepstow, Bristol and one vessel from Gloucester while Normandy Gritty ware is known only from Gloucester, a single vessel was recovered from the same context as the North French Monochrome ware. Spanish, Low Countries and Rhenish wares were completely absent, although all areas were represented amongst early 13th century imports on the East Coast of England.

THE BRISTOL - IRELAND TRADE ROUTE

The first conclusive evidence for a coastal trade between Dublin and Bristol dates from 13th century, although there may have been a continuous trade between the two ports from the early 11th century. Moderate quantities of wares which either originated in the Bristol area or could have been traded via Bristol are found all along the Southern Coast of Wales and the South-East coast of Ireland.

The main ware is Ham Green ware. Both the glazed jugs and the unglazed cooking pots are found. At Chepstow it was possible, due to the use of the binocular microscope, to distinguish reliably the cooking pots of Ham Green ware from those of 'proto-Ham Green ware', which also probably have a Bristol source but which are not definitely from the same kilns. The Ham Green cooking pots were greatly outnumbered by the glazed jugs and by the 'proto-Ham Green ware'. In contrast, there was virtually no long-distance trade in either type of cooking pot inland from Bristol, nor up the Severn Valley.

The second most common ware involved in this trade was Minety type ware. The most common form found is the tripod pitcher which, when typological features exist, is usually of the latest type, with pulled spout and strap handle. One double-handled storage jar is known from Dublin and a few handmade cooking pots of 'Selsley Common type'.

Thirdly, vessels of Bath Fabric A are found. These are predominantly cooking pots, with the characteristic everted neck and squared rim, which is a late feature, although the finds include some 'West Country Vessels'.

Other wares recognised include S.E. Wilts tripod pitchers, including a complete vessel and several large fragments from Dublin.

It is informative to examine the type of site on which these imports are found. The wares were found at minor ports such as Caerwent, which was designated a 'creek' in the 16th century reorganisation of the Welsh coastal trade (Lewis, 1927), as well as at the major ports of Chepstow and Cardiff. Their scarcity at many Castle sites in South Wales, for example Kenfig and Llansteffan, may be due to the main occupation of these Castles being in the Edwardian period. The wares are however found at Kidwelly Castle. Other find-spots are on less prestigious sites but directly on the coast, for example Laugharne Burrows, Barry and Barry Island. They include the Bishop's Palace site at Llantwit Major, which is unlikely to have any connection with either fishing or coastal trade.

As noted above there is very little pottery on these sites from continental sources, although in Dublin itself Rouen ware jugs are still common at this time, as are various Northern French coarsewares. The implication of this is that, although the Merchants of Bristol had a monopoly on trade with Dublin from England, there was a direct trade between Dublin and Northern France, in contrast with South Wales and Bristol.

The interpretation of this coastal trade seems to be that ships were loaded with cargo in Bristol itself, rather than coming downriver to Pill to pick up solely Ham Green wares, as has been suggested by Barton (1963, 1967). All of the wares involved in this trade are found in Bristol itself, a factor which distinguishes this trade from that

of the pre-Conquest 11th century.

THE RIVER SEVERN TRADE

Complementary to this evidence for coastal trade is that for the use of the River Severn for pottery distribution, presumably as a minor part of a river trade in other items. The main wares involved are Ham Green ware, which is found on sites on either side of the Severn from its mouth as far north as Droitwich but in progressively smaller quantities as one goes north; Malvern Chase wares which at this time were predominantly unglazed cooking pots but also late tripod pitchers which are found as far south as Bristol and Chepstow and as far north as Shrewsbury and possibly even further to Loppington (Barker, 1970, fig.5, LO24); Worcester-type jugs which are found as far south as Loughor Castle and as far north as Shrewsbury and lastly Shrewsbury-type ware, which is found from Shrewsbury down to Gloucester.

Minety-type tripod pitchers are common on sites on the east side of the lower Severn, from Bristol to Gloucester, and may well have been traded overland to these sites. From Gloucester up to Shrewsbury the type is found rarely (for example, Shrewsbury has produced only a single example, while Droitwich, Worcester and Tewkesbury have produced several examples), but it is nevertheless present. In contrast, it is definitely absent from sites not on the river in Worcestershire and Shropshire.

Certain wares are known to have been in current use but did not participate in this trade. They included Forest of Dean Sandstone-tempered ware, producing both handmade cooking pots and rare, glazed jugs and Gloucester TF41b,

producing mainly unglazed handmade cooking pots, but also rare, internally glazed, cooking pots.

There are a few differences between this trade and that between Bristol and Dublin. Firstly the fall-off of each ware seems to be constant from the source whereas along the Bristol-Dublin route the frequency of these wares is irregular. Secondly, the relative frequency of the wares changes from site to site, depending on the distance from the source, whereas that of exported wares along the Bristol-Dublin route shows no such trends.

To explain these constraints is it suggested that the Severn trade, as in the post-medieval period, was centred on several towns, for example Shrewsbury, Worcester, Tewkesbury, Gloucester and Bristol and that boats would set out from these places on journeys of irregular length, some going merely to the next large market town and others on more lengthy routes, for example Worcester to Bristol and back. The Bristol-Dublin route, on the other hand, would have been traversed mainly by ships travelling the whole route although there is a higher quantity of Bristol-hinterland pottery at Chepstow than elsewhere along the route, suggesting possibly a Bristol-Chepstow trade.

OVERLAND POTTERY TRADE

Trade in pottery without the use of water transport is exemplified by the distribution of Minety-type ware (fig.2.87) and Newbury Group B ware (fig.2.101). Both of these wares have very wide distributions, even discounting that part of the Minety-type ware distribution which is probably explicable by water transport (see above). Neither of these wares occurs in an area where stratified sequences are common and it is therefore difficult to produce data on

the difference between these distributions and those for the same wares in the late 12th century. At Newbury there was an increase in the quantity of Newbury Group B present in the early 13th century (phase 3a vs. phase 3b). There is evidence throughout Herefordshire for the distribution overland of Worcester-type jugs and in particular for their transport along the Middle Wye valley. This has been noted at sites such as Wallingstones, Tretire, Monmouth and Hen Gwyrt in Gwent.

Other overland pottery distributions are on a more restricted scale. These include both cooking wares and glazed wares (see figs.11.10 to 11).

LATER 13TH AND EARLY 14TH CENTURY POTTERY

The pottery of the later 13th and early 14th centuries is perhaps the best known pottery of the medieval period due both to the large quantities in which it is found in excavations and especially the number of complete vessels, mainly jugs, which have been discovered (fig.11.13). In the country as a whole it is common for this period to be referred to as the 'Highly Decorated' period, for example by the designers of the Medieval Pottery Research Group bibliography form, but for this region the term is a misnomer. There is highly decorated pottery made during this period, probably mainly in the earlier part, but the Ham Green and Worcester jugs which precede them were more highly decorated and with less standardisation of design. Similarly, Saintonge Polychrome jugs, which are often taken as the type fossil of assemblages of c.1300, can certainly not be used in the study region to define the period since they are so rare.

During the later 13th there was a gradual change in the type and source of pottery used in the study region. There is unfortunately little external dating evidence for this period (see Chapter 6), but the two main changes noted, both discussed below, are the apparent disappearance of the majority of the handmade cooking pot industries and the widespread introduction of the potter's wheel, principally for the manufacture of glazed jugs. Other technical innovations include the use of contrasting slips, both as an overall coating and for decoration, and the use of copper in lead-based glazes to give a green colour. Taken together these features suggest a radical reorganisation of the pottery industry. On excavations, this is reflected in a substantial increase in the quantity of glazed wares present. However, not all of the pottery industries of this period were new and in several one can distinguish the changeover from an industry using handforming methods to one using the wheel. The first conclusive evidence for the emergence of separate communities of potters dates to this period, although there is little doubt that the tendency had begun much earlier.

The analysis of pottery trade is confused to some extent by the changes in the types of vessel produced but there is less evidence for long-distance water transport of pottery, either from Bristol to Dublin or along the Severn. On the other hand there is good evidence for the distribution of glazed jugs over considerable distances inland. Continental pottery is more common at this period than before, and the principal source is South Western France.

HANDMADE COOKING POTS

There are a number of problems surrounding the evidence for the disappearance of handmade cooking pots. The most outstanding is the dearth of late 13th to 14th century assemblages from contexts where the possibility of residual pottery is minimal. This is itself a function of the settlement pattern, which undergoes no drastic change at this time. Thus, it is possible to interpret most assemblages in two ways, either as a single contemporary assemblage or as a mixture of late 13th to 14th century wares (predominantly glazed jugs) and unglazed, residual handmade wares (predominantly cooking pots). This problem is especially notable where the evidence for the later medieval periods is scarce and contemporary assemblages from the same site are not available.

Further north, it is certain that Malvern Chase and the Minety-type industry were producing wheelthrown cooking pots with splashes of glaze on the interior but few if any of the remaining industries of the earlier 13th century seem to have been still producing cooking pots. One cellar group from Gloucester (site 53/69) contained a large collection of decorated jugs of Malvern Chase, Worcester, Bristol, Hereford A7b and other wares but only a few wheelthrown Malvern Chase cooking pots. It is possible that this is a functional difference but the more likely inference is that the handmade wares were no longer in use.

The general absence of cooking pots is hinted at by their rarity in Bristol Redcliffe ware and Hereford A7b fabric. At Weobley, in Hereford and Worcester, a kiln waster heap has been partially excavated. Amongst the collection of glazed jug sherds, in a version of Hereford

A7b fabric, was a number of sherds of Malvern Chase cooking pots, some of which were partially glazed through refiring in contact with glazed vessels. There is no doubt that these vessels were produced in the Malvern Chase potteries rather than at Weobley but without their distinctive inclusions they would certainly have been attributed to the Weobley pottery. Similarly, 'wasters' of Minety-type wheelthrown cooking pots have been found at Bristol Redcliffe and were at one time claimed as kiln products by the excavators.

In parts of Wiltshire and Berkshire there is little doubt that Newbury Group B handmade cooking pots of very similar form to those of the late 12th and 13th centuries were produced throughout the late 13th and early 14th centuries. At Netherton, Hampshire, the excavator, J. Fairbrother, has recognised slight typological differences between the cooking pots in this fabric used up to the early 13th century from those used after the 1280's. The site was abandoned in the intervening years and without this gap in occupation it is unlikely that even these minor differences would have been recognised, since there is most likely a gradual progression from one form to the other.

In some regions, therefore, there is no change in the use of ceramic cooking pots between the earlier 13th century and the mid-14th century. These include the area supplied by Newbury Group B ware and, outside the study region, the London area, where there is good evidence for the continued use of Kingston ware, Hertfordshire Reduced ware and Coarse Border ware cooking pots. To the west, however, the evidence is equivocal and in some instances one must conclude that ceramic cooking pots were scarcely

used. This evidence is strongest in the towns, for example Bristol, Gloucester and Hereford. One could also similarly argue for the minimal use of ceramic cooking pots in Wales, although it is impossible to be certain without more stratified pottery of this date from the Principality. The most obvious explanation for this pattern would be that ceramic cooking pots were replaced by metal vessels. Another possible explanation, which is only tenable because of the extreme paucity of stratified material, is that ceramic cooking pots continued in use in the same quantities as previously but that there was more differentiation in their disposal than before, a factor which may be due to the emergence of the kitchen as a separate room rather than part of an open hall.

If this sudden decline in frequency of the ceramic cooking pot is due to increased competition with metal vessels then there should be evidence for an upsurge in production of these vessels. This might be found in three sources; firstly documentary evidence, secondly stratified finds of metal vessel fragments and thirdly finds of production waste. In all three types of evidence there is a definite increase in the late medieval period, although nowhere is it clear that the increase is ~~as~~ sharp as one would expect to account for the pottery decline, nor is there yet sufficient evidence to show that the availability of metal vessels varied between regions.

It appears that copper-alloy vessel casting was often a subsidiary activity of bell-founders, and indeed the laver (a metal water jug) was often the sign of a bell founder (Walters, 1912). Therefore the presence of factories of

bell-founders should be good evidence for the production of cast metal vessels. From a combined documentary and artefactual survey carried out by Walters, it is clear that a number of factories emerged in the second half of the thirteenth century (Walters, 1893-4, 1895-7, 1911, 1912, 1918-9). Previous bell-founding seems to have been carried out by travelling craftsmen. Amongst the known foundries were those at Bristol, Gloucester, Salisbury, Exeter and London and bell-founders were also recorded at Hereford and Worcester. Of these, it seems that those at Bristol, Exeter and London were on a larger scale than the others, which were probably mainly in existence to service the churches and abbeys of the town and its immediate hinterland.

If one was to ignore London then it could be claimed that the distribution of ceramic cooking pots and bell-foundries was mutually exclusive. However, when London is included the pattern is less convincing. The Wiltshire - Berkshire border is an area that would not have been well-served by bell-foundries and no examples of cast metal vessels were found in the late 13th to 14th century levels at Bartholomew Street, Newbury in contexts in which a high proportion of Newbury B cooking pots were found, although a complete sheet metal bowl was present. Cast metal vessel fragments were relatively common in the late 14th to 15th century levels on the site from which no definite fragments of ceramic cooking pot were recovered. The evidence from Newbury would support the model of the replacement of ceramic cooking pots by metal ones but cannot be part of a general trend since the same ware, Coarse Border ware, was supplying Newbury, where cooking pots are not known after the mid-14th century and London, where cooking pots were

common.

Production waste from cauldron manufacture consists of sherds of dung-tempered clay mould but it is virtually impossible to distinguish most sherds of cauldron mould from those of medium to small bell moulds and the distinguishing factor in the end is the context in which the fragments were found. Mould fragments have been found at Hereford including a pit group in a late 13th to 14th century phase at Berrington Street, Site IV and fragments from two sites on the outskirts of the town at Bewell Street and the Brewery site and at Gloucester from a pit group at Northgate Street, site 74/68, with small quantities from other sites. Both archaeological and documentary evidence show that large bells were usually cast on site but in none of these examples was the site part of a religious precinct and there is therefore no reason for the assemblages to have been debris from bell-casting.

THE SPREAD OF WHEELTHROWING

In the early to mid-13th century Worcester-type ware was the only wheelthrown ware made in the region but after an interval of c.20 to 40 years wheelthrowing was introduced in various other parts of the region. In some areas this was accomplished by new industries superseding old ones while in other areas existing industries changed from hand production to wheelthrowing.

The cooking pots at Malvern Chase gradually progressed from completely handmade examples to vessels which were probably hand-formed but with considerable rotary smoothing on the walls and rim and finally to vessels which were

thrown on a wheel and afterwards had the sagging base pushed out. The Malvern Chase jugs have a different sequence. In the early to mid-13th century late tripod pitchers were produced, together with a few vessels in the same sandy fabric and clear glaze with 'jug features' such as the bridge spout and thumbed base. These handmade vessels were quickly replaced by wheelthrown jugs made in a finer fabric, with a different firing pattern (total oxidation in contrast to the reduced firing of the tripod pitchers) and, often, copper added to the glaze to give a green colour.

In Hereford a few wheelthrown vessels are known in Hereford A2 fabric. Some are cooking pots and others jugs, including a roller-stamped vessel from Bewell House from a mid-13th century context. The ware is very rarely found in late 13th to 14th century contexts, for example, Berrington Street Site IV and Blackfriars, and may be residual. In the mid- to late 13th century another locally produced ware was introduced, Hereford A7b. This ware differs from Hereford A2 in the firing, as a much greater degree of control over firing is evident, with either completely oxidized or reduced wares with a thin oxidized skin being produced; in the invariable use of the wheel; and in the occasional use of copper to colour the lead glaze. It is possible that the same potters were producing both wares and that the change in fabric was a result of the use of the wheel and a kiln technology where random inclusions of limestone, present in Hereford A2, would have been a disadvantage. Alternatively, it might be that the adoption of new technology by the makers of Hereford A2 was not successful.

N. Cotswolds II is very similar to N. Cotswolds I, the major differences being in the use of the wheel and the range of forms. The date of production of neither ware is precisely known, but it is possible that the changeover took place between the mid- and the late 13th century. The evidence suggests that in this case an industry producing handmade wares adopted the wheel and a new range of forms with little apparent change in fabric.

At Minety, in North Wiltshire, there was also a changeover from handmade to wheelthrown wares, and in this case the date is more precisely known. Highly decorated Minety baluster jugs have been found at Cirencester Abbey. This form of jug is unlikely to be later than the mid-14th century and the vessels are wheelthrown. At Gloucester, Minety ware is absent from late 13th to 14th century contexts, suggesting a decline in output at this time. By the time that Minety wares again became common the range of forms was quite different from that of the handmade vessels of the early to mid-13th century, although the basic shape of the cooking pots, with highly everted rims, is the same.

In the Bristol area the Ham Green industry may continue to the end of the 13th century, (pers. comm. M. Ponsford) although the evidence for this longevity is lacking in the Severn Valley. There is no evidence for the use of the wheel in the Ham Green industry and no wheelthrown sherds have been found at the kiln site. There are a few late 13th century locally made vessels with similar forms which were wheelthrown, made in the suburbs of Bristol, at Redcliffe (and possibly elsewhere, Price, 1979). Some aspects of the decoration are paralleled on Ham Green vessels, for example

small faces around the rims of the jugs, but the majority of late 13th century Bristol wares differ in form and decorative technique (see chapter 2). The date of introduction of Bristol wares is uncertain but is unlikely to have been much earlier than c.1270 since a knight jug from Dublin has figures with armour of this date portrayed on it (N.M.I., 1973, Plate 18). The relationship between Bristol wares and Ham Green wares is uncertain since there are more features in common between Bristol jugs and those of Nash Hill, Lacock and Laverstock than there are between Bristol and Ham Green.

There is no evidence yet for any pre-late 13th century pottery production at Nash Hill, an industry in which the wheel and copper-green glaze were used. Instead, there are typological links between the Nash Hill vessels and those of Laverstock. The latter may well be of mid-13th century date and could form a source for the introduction of the new technology into Wiltshire and Avon.

There was an industry in S. E. Wiltshire in the early to mid- 13th century producing mainly coarse scratch-marked cooking pots and glazed tripod pitchers. Handmade cooking pots of this type, only distinguishable from their predecessors by minor details, were made alongside the glazed jugs at Laverstock. This suggests some continuity of production between the previous S. E. Wiltshire industry and that at Laverstock. There is a progression in the glazed wares produced at Laverstock from rounded jugs, similar to the tripod pitchers in form but in a finer fabric, to the highly decorated baluster jugs which form the most distinctive products of the industry and finally to a standardised version of these vessels (Musty et al., 1969).

In the Oxford area the change from handmade to wheelthrown industries coincides with a change in fabric and therefore possibly source. Oxford fabric Y vessels are mainly handmade tripod pitchers whereas Oxford fabric AM jugs are wheelthrown and, usually of baluster form. As in Bristol ware it is thought that the earliest vessels are the most highly decorated and it seems, from the Hamil, Oxford, sequence (Mellor, 1980 b), that these vessels were introduced during the mid-13th century. In Newbury C ware wheelthrowing was introduced in an established industry. The highly decorated jugs of the early to mid-13th century, which themselves superseded tripod pitchers, were replaced during the mid-13th century by less highly decorated vessels which were wheelthrown. This change was complete by c.1280 when the site at Netherton, Hampshire, was re-occupied (Fairbrother, forthcoming). A new technique was employed on these jugs, a total external white slip under a copper-green glaze. No copper was used on the glaze of the mid-13th century jugs.

Over the whole region there is considerable variation in the exact way in which the technique of wheelthrowing was introduced. In most cases the glazed jugs were the first vessels to be wheelthrown and it is in industries concentrating on their production that the techniques were first used. More often than not there was an accompanying change in fabric and in several instances, but certainly not all, these new wares were decorated with copper-green lead glaze. There is also a correlation between wheelthrowing and the control of firing, especially the adoption of completely oxidized firing.

Outside of the region, to the east, the wheel was in general use from the late 12th century, both for glazed wares and for unglazed cooking wares and there are no changes in technology corresponding to those described above in the late 13th century (Pearce et al., forthcoming).

There are some hints at the routes by which the techniques were transmitted but when the forms are examined in detail there are usually features in common between several centres and no evidence of a single source from which all of the traits could be derived. For example, there are similarities between the jug forms and decoration of Laverstock, Nash Hill, Newbury C, Oxford AM and Bristol wares but in no instance can one say that the jug forms are so similar that the vessels in one ware must have been made by potters trained in the centre which produced another (unlike the situation with Floor Tiles, where there is a definite link between several late 13th to early 14th century industries, see Ch.9). The earliest jugs in Hereford A7b fabric, on the other hand, are more similar to those in Worcester-type ware. There too not all of the features of the later jugs can be found in the earlier industry.

There is quite good evidence to show that wheelthrowing started in the east and was gradually adopted further west, although E. Berkshire lagged somewhat behind the neighbouring areas and certainly, as will be shown below, the Upper Kennet valley continued to be a technological backwater as far as ceramics were concerned throughout the 14th Century.

Elsewhere the evidence suggests a West Midlands / N. W. Midlands centre of diffusion (Worcester-type, Hen Domen type & Runcorn Priory type, the first two with good evidence for an early 13th century inception) from which the makers of Hereford A7b and the Malvern Chase potters might have obtained technological expertise in the mid-13th century.

Once the sequence of events has been established, the factors affecting the diffusion can be studied. Three factors govern the acceptance of new ceramic technology. One is the availability of the knowledge of the new ideas to the receiving potters. This itself can be divided into two parts; the distance from centres where the new technology is in use and the amount of interaction between the two areas. With a firm chronological framework the first part can be quantified, assuming a complete knowledge of the medieval pottery industries of the area. Interaction can be estimated by various means, for example, looking at the network of roads and markets linking areas together.

The second factor is the ability to pay for the equipment and to spare the space to erect it. A study of present day peasant pottery production shows that the potter's wheel is only adopted by professional full-time potters because of the investment needed (Nicklin, 1971) and that part-time potters using hand-forming techniques are unlikely to adopt the wheel even if it is available.

The third factor is the advantages of the new over the old technology. Amongst the new methods available to West Country potters were the use of a permanent kiln, with subsequent control over firing; the use of the potters wheel to 'fast throw' a pot; the use of copper in a lead

glaze to give a green colour and the use of white slip to cover vessels, mainly to emphasise the green glaze.

All four of these techniques required either new equipment or materials. If there was no need to make different wares, or to improve efficiency, then there would have been no advantage in adoption. However, the use of the kiln made possible the firing of fine-textured fabrics, which could otherwise probably explode during firing, and the use of light-bodied wares. The latter require higher firing temperatures to 'mature' than red-bodied wares, for which iron acts as a flux to lower the maturing point.

Similarly, the wheel is of more use with sparsely-tempered fabrics than with those containing large, especially jagged, inclusions. Not only could these inclusions tear out of the vessel during throwing, causing holes in the wall, but also they could rip the skin. There may be restrictions in firing brought about by the use of copper and it is certainly true of the study region, and all other areas known to the author, that copper-green glazes are only found on wheelthrown wares with evidence for control over firing. The use of a total external white slip is linked with the use of copper-green glaze. This combination is first found in the early to mid- 13th century on Worcester-type jugs, where white slip only covers the rim and inside of the neck.

There is just one industry which definitely continued to produce handmade wares throughout the century, producing Newbury Group B fabric. Both cooking pots and unglazed jugs were produced and over much of the distribution area in E. Wilts and the Kennet Valley these unglazed jugs

successfully excluded most wheelthrown glazed wares. It is thought that this industry finally ceased production in the late 14th or early 15th century.

With the disappearance of most of the handmade cooking pot wares there was a dramatic decrease in the total number of industries. Those that remained can certainly be termed potting communities. In each case where the source is known or suspected, there is evidence for a single centre, either one settlement or a more dispersed community.

At Minety there is a separate potting hamlet, known through fieldwork and the excavation of a waster heap (Musty, 1974; recent work by M. Stone). This is quite distinct from the Domesday centre.

At Malvern Chase there is an area of pottery production at Gilbert's End, well away from the presumed Domesday village surrounding the church and castle. This potting area would have been at this time a clearing within the Chase.

At Bristol, the evidence for potting concentrates on the suburb of Redcliffe, on the south bank of the River Avon, where waster pits have been found on a site at Redcliffe Hill (Price, 1979).

In Herefordshire, there is some circumstantial evidence for pottery production in Hereford or its suburbs. This consists of some sandstone kiln spacers with green glazed jug rim scars in Hereford Museum. These were found at Victoria Bridge, Hereford. A kiln-site has been identified at Weobley 10 miles to the north-west of Hereford and a waster heap from this kiln has been excavated by Ms. A. Sandford. There are some differences between the typology of the Weobley jug waste and that of Hereford A7b jugs.

There are also differences between both and the jugs, in a similar fabric, found on sites in the south-west of Herefordshire and in the Monmouth district, termed 'complex-rouletted wares' (Hurst, 1960). The source of Hereford A4 jugs is unknown but must also have operated on a relatively small scale. It may be that a more dispersed network of production sites supplied the Welsh borderland than that supplying the Severn Valley and the south-east Midlands.

The suggested source for Newbury Group B ware is a potting hamlet on the outskirts of Marlborough, just on the northern fringe of Savernake Forest. This is the only site with any evidence for pottery manufacture in the area covered by the Newbury Group B distribution.

At Nash Hill in Wiltshire there is a wide spread of potting debris in addition to the kiln site excavated in 1971. At Crockerton there is documentary evidence that the potting industry was in existence in the mid- to late 13th century and potting is known to have been practiced at Crockerton in the post-medieval period (Le Patourel, 1968). There is no direct archaeological evidence for the products of the medieval industry, although a fine micaceous glazed ware is thought to have been produced there (Ch.2).

In South East Wiltshire there are excavated kilns at Laverstock and in the town at Salisbury. The two sites are very close and there is little distinction between the fabrics of their wares. The latter site has not been published and the author has not examined the typology of the products.

In South Wales two possible sources exist for the Glamorgan-type jugs; one of these is Ewenny, a known post-medieval potting centre where 15th century references to potters exist. The other is Cardiff, where the eastern suburb was known as Crockerton in 1348 and Crokerstrete in 1399 (Charles, 1938, 162). There is documentary evidence that ridge tiles used at Newport Castle were obtained from a Cardiff potter in 1448 (Pugh, 1963, 229) and the fabric of ridge tiles from sites along the Gwent coast is similar but coarser than that of the Glamorgan-type jugs. The possibility exists that there was an urban or sub-urban industry at Cardiff although no proof exists to show that this industry produced Glamorgan-type ware. Only the similarity of the fabric and typology of these jugs indicates production in a single centre.

Although the approximate location of most of the late 13th to early 14th century industries is known we know little about the internal organisation of the industries of the study region although most of the excavated pottery production sites in the country as a whole belong to this period.

In none of these cases has there been an intensive archaeological/historical survey of one of these centres, such as has taken place at Chilvers Coton (W. Midlands) or Lyveden (Northants.). It is therefore not possible to say anything new about the internal organisation of such industries, nor in any instance can the exact extent of the potting activity be defined. Only in the Malvern Chase is the fabric sufficiently distinctive to show that there is only one potting centre.

There is plentiful evidence to show that potting was now segregated from other activities, presumably because of the unsocial hours needed to fire a kiln, not a problem with bonfire-fired wares, whose firing can take as little as half an hour, and the danger of accidental fire.

In some cases this trend led to a change in place-name, for example the name 'Cock-a-troop Cottages' outside Marlborough derived from 'Crockers Thorpe' (Potters Hamlet). Hanley Castle was alternatively known as 'Potters Hanley' at a later date. The reason for this name change may be that the pottery industry was sufficiently important to lead to the manor being renamed or that Potters Hanley was to be distinguished from Hanley Childe, also in Worcestershire, or that two separate settlements were present within the manor, Hanley Castle and Potters Hanley. The latter explanation has been advanced for the name 'Crockerton', which was part of the manor of Longbridge Deverill (Le Patourel, 1968).

Although there is more variety in the type of pottery produced by these industries than previously, especially in jug shapes, there is still a definite 'group identity' to the wares of each centre. This is expressed in their choice of fabric, which is only partly explained by the availability of clays and tempers, and their peculiarities of shape and decoration. This might suggest that the makers of this pottery thought of themselves as belonging to groups of potters making similar products, but paradoxically they were quick to adopt certain aspects of decorative styles.

To study the relationship between different groups of potters more closely would require a detailed analysis of the methods of construction, rather than the decorative methods and designs used. The former are unlikely to have been adopted by copying finished products and therefore are more likely to imply a close connection between the industries, for example movement of master potters or the training of a potter in one centre and his or her later movement to another area. The latter on the other hand is quite possibly the result of indirect contact, either by a potter examining the products of another centre or even by the pottery being described to the potter without his or her having seen it. Unfortunately, although it is known that these distinctive manufacturing techniques exist, for example methods of applying handles, bases or slip, their distribution in the study region will have to be the subject of further research (see chapter 5).

TRADE IN POTTERY

The main difference between the pottery distributions of this and previous periods is the absence of the small-scale industries producing mainly handmade cooking pots (fig.11.14). Thus, on average, pottery was distributed over greater distances than before. This is however a very misleading statement and in fact most of the early to mid-13th century glazed ware industries were distributing pottery over greater distances than their successors. Worcester-type jugs have a wider distribution than Malvern Chase jugs, their successors. Similarly Ham Green jugs have a wider distribution than Bristol jugs. Even within the same industry, at Minety, the late 13th to 14th century wares have a narrower distribution than their early to mid-

13th century counterparts. However, in each case the general character of the distribution is quite different between the two periods. In the earlier period the proportion of glazed ware in an assemblage is always small whereas in this period glazed ware may form the whole assemblage. The total production of the industries cannot be compared this simply, especially since there was probably a higher population in the late 13th to 14th century as well.

A few continental wares are found in the study region, predominantly at coastal sites. Of these the most common is Saintonge ware green-glazed jugs. Saintonge Polychrome jugs are much less common and, apart from at certain sites on the South Welsh and Bristol Channel coast, they are present as single sherds in total collections of several thousand sherds. Sherds of alkaline glazed ware from Syria or Egypt are also known. These do not come mainly from coastal sites but their occurrence is too sparse for generalisations on their findspots to be made (see chapter 2). Andalusian Lustreware is found in London at this date but apart from a dubious find in Cirencester Museum, which may be an antiquarian import, there are no finds from the study region, apparently including Bristol. This is in contrast with the known trade connections between Bristol and the Iberian peninsula which are eloquently demonstrated for the 15th century by the evidence of port books (Carus-Wilson, 1933). Iberian Red Micaceous ware is also known to have been imported to England during this period, for example sherds are known from Trig Lane and Custom House in the City of London (Hurst, 1977; Vince, 1982). A few sherds are

known from Chepstow but they are likely to be post-medieval. Two types of Rhenish stoneware are known at this period; a coarse sand-tempered type with a brown ash glaze, found in London by the 1260's (Early German Stoneware, Biddle, 1962-3) and untempered unglazed Siegburg ware which is present in London from the early 14th century. Neither ware is known from the study region in contexts of this period.

Sherds of non-local English wares are sometimes found in the study region. The most common ware is undoubtedly Oxford AM, probably produced to the east of Oxford in Buckinghamshire, for example at Brill and Boarstal. This ware is found throughout the study region but in decreasing quantities from east to west. A few sherds are even known from Chepstow and its appearance on other sites on the Bristol-Dublin route should therefore be expected. The second most common ware is Nuneaton-type ware. Only a small proportion of the output of the Nuneaton kilns has been identified in the study region, principally jugs with a glossy green glaze on a white body, decorated with combing. Other Nuneaton products await characterisation and have been noted in this thesis as 'misc. jug' sherds. There is considerable confusion between the fabric of Nuneaton and Bristol wares, North Welsh white wares and the white wares of the North East of England, all of which were produced using coal-measure white-firing clays.

London-type ware, Kingston ware and Mill Green ware, all of which are very common in the Lower Thames valley are not found in the study region while Lyveden-type ware, found mainly in the East Midlands, is represented by sherds of a single vessel from Holm Castle, Tewkesbury.

THE BRISTOL - IRELAND TRADE ROUTE

Pottery from the Bristol hinterland is still found along the South Welsh coast and on some sites on South East Ireland, predominantly in Dublin itself, but there is a very sharp drop in its frequency from the early to mid-13th century. There is also less variety than previously, most sherds being Bristol ware jugs. A few wheelthrown Ninety ware cooking pots may actually belong to the late 14th to early 15th century. The main reason for this decrease would seem to be the emergence of local glazed ware industries in both south Wales and south-east Ireland.

THE RIVER SEVERN TRADE ROUTE

Trade up and down the Severn in pottery also seems to have declined. There is, for example, no Malvern Chase ware of this date in Shrewsbury, nor in Chepstow or Bristol. Similarly, although Bristol ware is present in Gloucester it is less common than Ham Green ware and it is not found further north.

OVERLAND POTTERY TRADE

Trade overland in pottery seems to have been more limited than in the early to mid 13th century. There is less of an overlap between glazed ware distributions but within their market areas the glazed ware potteries supplied a high proportion of the pottery used (fig.11.15). The exception is in the Upper Kennet valley, where unglazed Newbury group B cooking pots and jugs were found. In Newbury itself very small quantities of Saintonge ware and Oxford fabric AII jugs occurred together with higher quantities of Newbury group C vessels. Even there the impression is of a market dominated by locally produced

pottery from a single source.

LATE 14TH TO 15TH CENTURY POTTERY

The pottery of the later 14th and 15th centuries is generally less decorative and innovative than that of the late 13th to 14th centuries. This is probably as true of the study region as it is for the rest of the country. Within the study region there is little absolute dating for the period but in London the period is represented by very large assemblages from Trig Lane and elsewhere. The Trig Lane groups are dated by a variety of methods, including dendrochronology, to c.1360 (TL G10), c.1380 (TL G11), c.1430 (TL G12) and c.1440 (TL G15), (Milne and Milne, 1983). There is a dichotomy between the forms found at Trig Lane and those dated to the same period in the study region which raises considerable doubt as to what types were being used in the study region during this century. The possibility exists that many of the types dated in this thesis to the late 15th century are actually a century earlier. The main difference is the absence of drinking jugs, cisterns and 'Tudor Green' lobed cups. Orton, in his discussion of the Cheam kiln has suggested that the late 14th to early 15th centuries in the London area was a period of transition between 'medieval' and 'post-medieval' potting styles (Orton, 1982). At Cheam, for example, it is possible to distinguish quite clearly a 'medieval' white ware industry from a 'post-medieval' redware industry, yet there is no reason to suggest that the two are different in date. The former is characterised by jugs and cooking pots and the latter by open wares, cisterns and similar wares.

Only in Berkshire is a major change in pottery types in the region noted. The local wares, Newbury groups B and C, supplied the Kennet Valley and East Berkshire respectively in the late 13th to early 14th centuries but were replaced by Coarse Border ware in the late 14th century. This change was quite sudden and at Newbury certainly took place after the mid-14th century. Two coins, lost c.1350 were associated only with Newbury B and C wares (see Chapter 6).

There is a little evidence to suggest that pottery production at Nash Hill might have ceased at this period, mainly the high proportion of Minety wares at Bath, Bristol and other sites in the Avon valley. If Nash Hill was still in operation its wares too should be found at these sites since Minety wares would have had to be carried past Nash Hill to reach the Avon valley. This argument is by no means proof and is contradicted by the discovery at Trowbridge Castle of a smashed Nash Hill jug in association with late 15th to early 16th century wares (Smith, forthcoming b). Similarly, there is some evidence to show that both Malvern Chase and Minety wares were more common at this period than before. With these possible exceptions, and the possibility that Tudor Green lobed cups were being imported to the region from the Surrey/Hants border, there are remarkably few changes in the patterns of pottery supply and the types of pottery in use over a period of c.200 years, c.1250 to c.1450 (figs.11.17 to 18).

Given the difficulty in recognising pottery of this date and the absence of large closed groups, it is not possible to discuss further the trade of locally produced pottery. On the east coast of England, Siegburg and Langerwehe stonewares are found in the late 14th to early

15th centuries, together with plain Saintonge jugs and pegaux and unglazed greywares and clear-glazed redwares from the Low countries. With the exception of isolated examples of Siegburg stoneware from the north of the region; Shrewsbury, Birmingham and Hereford, and possibly odd sherds of Saintonge Ware there is a total absence of such wares within the study region.

LATE FIFTEENTH TO SIXTEENTH CENTURY POTTERY

Evidence for pottery of the later 15th and early 16th centuries is more common than for the previous century (fig.11.19). Recognition of pottery of this date is easier than previously because of the presence of Tudor Green cups and jugs, Raeren Stoneware drinking jugs and South Netherlands maiolica, although of these only Tudor Green ware is common. There seems to be ^a big difference between the pottery types present at this period and those of the later 14th to 15th centuries, although the absence of the earlier material in any quantity and the tentative nature of the dating evidence may make the change seem more sudden than it was in reality.

Open vessels, such as conical bowls, jars?, pipkins, cisterns and ceramic drinking vessels are all much more common, although all of these types were present in the London area by the late 14th century. Alongside these changes in typology there is a major decrease in the number of pottery sources supplying the study region and an increase in the distance travelled by pottery (fig.11.20).

The successful industries were Malvern Chase and Minety but a handful of smaller contemporary industries are known, an unlocated industry in the Welsh Borderland producing copies of Malvern Chase coarsewares; a similar industry in the Kidderminster area and a small or unsuccessful industry at Langley Burrell in Wiltshire.

Outside the region a similar pattern of large-scale production is found, with centres in South Somerset, North Devon and the Surrey-Hampshire border. In the south and east of England several white-painted red earthenware industries are found at this time, for example at St. Germans in Cornwall and at Cheam, near London, but the technique was not used in the study region.

CHANGES IN POTTERY FORMS

The most common new form was undoubtedly the conical bowl. Examples in Malvern Chase ware vary in size and include both wide bowls with infolded rims and smaller simple-rimmed vessels. Similar forms, with flat flanged rims, are found at Minety. These vessels have almost straight or slightly flaring walls and a flat base. Rarer new types include Malvern Chase skillets, tentatively identified in late 15th century to early 16th century contexts in Gloucester although more common in the later 16th and 17th centuries.

The presence of jars in the late 15th to early 16th centuries is also suspect. Body sherds of this type have been tentatively identified by the author at Gloucester (Vince, 1977 a). Re-examination of some of the material in 1981 suggests that some, if not all, of these sherds were actually from tripod pipkins. The tripod pipkin, although

rare, is probably present in Malvern Chase ware in the later 14th to 15th century, whereas the jar, as a separate form, taller than the globular cooking pot, is not. Pipkins are also present at Ninety in late 15th to early 16th century kiln waste (Hasty, 1974).

The most distinctive form to be found, although not usually in large quantities, is the cistern. Body sherds of the cistern cannot be distinguished from those of large jugs or cooking pots but the bung hole set just above the base is immediately recognisable. Two-handled tripod-footed cisterns are present in Coarse Border ware, Malvern Chase ware and Ninety-type ware. There is no evidence for the presence of this form in the study region in the previous century, although they were definitely being produced in Coarse Border ware for distribution in the London area at that time.

Drinking vessels and their associated small jugs are found mainly in Tudor Green ware from the Surrey / Hampshire border. They are also found in Malvern Chase ware, although they are not common. It is clear from the use of the lobed cup form, and the presence of white slip on some examples that the Malvern Chase vessels were made to imitate the Tudor Green vessels. Imported Raeren drinking jugs are rare in the study region, although they do occur.

CISTERCIAN WARE

Slightly later, probably in the first half of the sixteenth century, thin-walled black-glazed cups are found. This type is known generically as 'Cistercian ware'. One source for this type is known in the region, at Falfield in Avon. The fabric of this ware is fine-textured and overfired and is therefore difficult to characterise using standard petrological techniques.

Some examples of Cistercian ware from Chepstow, Gloucester, Worcester and Hereford have been thin-sectioned and show the same range of well-rounded quartzose inclusions. Together with similarities in shape this suggests that there was one source supplying all four places. However, the Falfield material is apparently finer textured than these examples, although parallels have been noted in Gloucester and Bristol (M. Ponsford, pers. comm.).

A further group of Cistercian ware vessels has been seen at Keynsham Abbey and Bristol. The fabric has not been examined but the glaze is notably blotchy, having the appearance of glassy slag. It is likely that these vessels have a separate source from the first two mentioned groups. Few examples of Cistercian ware have been seen in Wiltshire and Berkshire and the type is likely to have a northerly origin and distribution (fig.2.14).

The earliest dated Cistercian ware in the country is apparently from Kirkstall Abbey, Yorkshire although Holdsworth is of the opinion that it is not present until c.1500 or later at York (Le Patourel, 1967; Holdsworth, 1978). A similar date is suggested from the excavations at Sandal Castle, Yorkshire, where a large assemblage

associated with the refurbishment of the castle in c.1484-5 contained no Cistercian ware sherds (Butler et al., 1983, 28-9).

LOCAL POTTERY TRADE

The largest pottery industries in the late 15th to early 16th centuries were those of Malvern Chase and the Surrey - Hampshire border. The former supplied most of the study region, from northern Worcestershire to the Welsh borderland. A substantial proportion of the late 15th to 16th century pottery from Llanthony Prima, Gwent is from the Malvern Chase and this site is extremely remote. Similarly a collection of pottery from Ludlow comprises mainly Malvern Chase ware. Bristol too was supplied mainly by Malvern Chase while inland at Chew Valley Lake and St. Loe Castle, Newton St. Loe, the majority of the pottery is of South Somerset ware. Bristol was therefore not acting as an entrepôt for the supply of pottery to sites less than 10 miles away (fig.2.62).

The use of Malvern Chase pottery at Bristol in preference to south Somerset wares is an illustration of the importance of the River Severn at this time. In 1429 the use of the Severn is said to be 'for to carye, recarye and lede in boteis, trowes and otherwise alle manner of marchaundise and other godes and catelles to Bristowe' (Salzman, 1964, 213). By 1467 it is recorded that a tow-path existed on the Severn, although it was in ill-repair while the use of the river in the early 16th century is illustrated by a dispute about the charging of tolls by Gloucester and Worcester for boatmen passing under the bridges of the towns (Salzman, 1964, 214).

At sites along the South Welsh coast as far west as Glamorgan it appears that Malvern Chase ware was an important constituent of the pottery assemblages, although only at Coity Castle was a large collection present and even there the pottery was not stratified. Further west scattered sherds have been found and it is likely that the local Dyfed Gravel Tempered wares were still used, together perhaps with the earliest post-medieval North Devon wares. Isolated sherds of Malvern Chase ware have been found as far afield as south-east Ireland, and Trowbridge and Snap D.M.V. in Wiltshire. These show that while the Malvern Chase potters undoubtedly relied on water transport for the distribution of much of their pottery there was also overland transport of pottery surpassing in scale anything found in the preceding medieval period.

A similar picture is found when one examines the distribution of Coarse Border ware, from the Surrey - Hampshire border, and the associated Tudor Green fineware. Coarse Border ware is ubiquitous throughout Berkshire, East Wiltshire and Hampshire and isolated sherds are found throughout the region. The most remote recognised to date are from Haughmond Abbey in Shropshire. In the case of Coarse Border ware it might be argued that the coarseware was only travelling as a by-product of the fineware trade. Tudor Green ware of probable Surrey / Hampshire origin has been found throughout the region and beyond and is the first post-Roman ware in the British Isle which can claim to have been produced and distributed on a national scale.

The overseas trade of Bristol in the late 15th century was on a considerable scale, which may have led to the trading of Severn Valley pottery over much wider areas than

are covered by the fieldwork for this thesis. As an example, one can cite two records from the port books of Bristol which show trade in manufactured goods, fulls of cooking pots. A 'full' is a set, for example of kettles or pots and the quantity involved is not known. It is likely that in this case the vessels recorded were of metal, part of the output of the Bristol bronze foundry.

"12th February 1480 'The Leonard' of Bristol sailing to Iceland with 4 fulls cooking pots worth 13s 4d" (Carus-Wilson, 1937, 252).

"14th February 1480 'The Christopher' of Bristol sailing to Iceland with 6 fulls cooking pots worth 1 pound" (Carus-Wilson, 1937, 253).

A small collection of pottery from Iceland was examined as part of this thesis but was apparently of 16th to 17th century date. At that time Denmark had a monopoly of trade with Iceland and therefore wares from the Bristol region would not have been expected.

CONTINENTAL POTTERY

The late 15th to early sixteenth century is the first period in which imported continental pottery is regularly found but even at this time the quantities involved are extremely small by later standards. Raeren stoneware was available in every town in the study region, although its presence outside them appears to be restricted to the monasteries, for example Hailes Abbey (fig.2.188). This may be a false impression, however, since rural collections of any size are rare.

Other imported wares are even rarer. South Netherlands Maiolica has been found at Friar Street, Droitwich. Beauvais Sgraffito ware is represented by a single vessel from Lydney, and two sherds from an excavation at Commercial Street, Hereford, in 1982 (fig.2.176). Valencian Lustreware has been found at three sites in Gloucester, at the 1982 Commercial Street site in Hereford and is present at the Pithay, Bristol (fig.2.185). The latter collection is probably of 15th century date, while the Gloucester sherds are from small cups with horizontal moulded handles, a form which probably continued into the late 16th century. One of these was found in association with Malvern Chase wares and Cistercian ware at the New Market Hall site and should therefore be of 16th century date. A similar date can be assigned to the Worcester Sidbury pit group which also contained a Valencian Lustreware vessel (Morris, 1980). The only coarseware import known from the region is the neck of a Spanish Amphora of Goggin's Early Style. This should date to the first half of the 16th century (Goggin, 1960).

From this evidence, one can suggest considerable differences from the late 14th to 15th century pattern. These may have an economic basis and must imply a difference in the social organisation of the industry and a trend towards nucleation.

It has been suggested that the decline and eventual disappearance of the floor tile industry was due to the absence of monastic customers after the dissolution, a suggestion which fits the facts in the study region, where Hailes Abbey, Llanthony Priory and St. Augustine's Abbey were all receiving commissioned tile pavements in the early

16th century. The effect on the pottery industry is unlikely to have been so straightforward. The actual numbers of monks displaced cannot have been large enough to seriously affect the pottery industry but Smith suggests that there may well have been an indirect affect in the case of the Minety industry (Smith, forthcoming a).

Minety is situated close to Malmesbury and Cirencester, both towns dominated by abbeys. A considerable number of people were probably employed directly or indirectly servicing these institutions. At the dissolution many of these jobs may have been lost, perhaps leading to the decline of the pottery industry (Smith, forthcoming).

However, although the Minety industry did decline rapidly at this time we do not know precisely when it disappeared and it may well have been earlier than the dissolution. Furthermore, the Ashton Keynes industry immediately took over, although it was not operating on a large scale until the early 17th century. It may be that the change from Minety to Ashton Keynes wares was due more to a development in technology, in that the earlier ware is limestone-tempered whereas the later one is quartz-sand-tempered. There is also no apparent change in the fortunes of the Malvern Chase industry, except for an expansion to fill the vacuum left by Ninety ware (figs.2.61, 2.62).

LATE SIXTEENTH AND EARLY 17TH CENTURY POTTERY

It is relatively easy to isolate pottery of the late sixteenth and seventeenth centuries because for the first time since the end of the Roman period one can expect to find the same pottery type from one end of the country to the other, namely Frechen stoneware. In the study region the type is ubiquitous although not as common as in London. Considerable variety in form and decoration exists, the dating of which is often well-established (Reineking von-Boch, 1971; Holmes, 1951). Between c.1590 and c.1640 London was the main supplier of clay pipes in the country and therefore, again, one chronology can be used nationwide. In any sizeable collection Frechen stoneware and clay pipes should enable a late 16th to 17th century group to be dated within c.50 years.

The main characteristics of the pottery of the period are the variety of forms produced, often variations on one basic shape in different sizes and a considerable variation in scale of production.

In the late 16th century the largest pottery industries operating in southern England were those of North Devon, South Somerset, Malvern Chase and the Surrey - Hampshire Border (fig.11.22). All were in existence in the late 15th to early 16th centuries on a smaller scale and all but one continued to grow in the 17th century, in some cases reaching a peak of production in the late 17th to 18th centuries. The exception is Malvern Chase, which documentary and archaeological evidence combine to show was at its peak in the late 16th century. It was, however, in serious decline in the early 17th century and was extinct

by the time of the Civil War. The possible reasons for this rapid decline are discussed below.

Working on a lesser scale than these regionally distributing industries were locally important centres such as Ashton Keynes, in north Wiltshire, which supplied most of east Gloucestershire and north Wiltshire as well as those parts of south Oxfordshire, north of the Berkshire Downs (fig. 2.71). Inkpen in Berkshire likewise apparently had a substantial local distribution but the fabric is difficult to characterise and therefore the distribution cannot be plotted accurately. Distinctive light-bodied sand tempered wares from the Verwood potteries of North Dorset are found over a wide area of South Wiltshire, Dorset and East Somerset and occasionally further afield. Most of these local industries seem to have survived well into the 18th century, if not later, and had their origins in the late 15th to early 16th centuries.

Contemporary with these industries but apparently operating on an even smaller scale there were numerous 'cottage industries'. Throughout the Welsh Borderland isolated pottery kilns probably each representing the activities of one or two potters have been found. In most cases the fabrics produced are identical. They have abundant silt-sized angular quartz and white mica inclusions and are covered internally with a clear, brown lead glaze. The pottery produced at Stroat, near Tidenham, in the Forest of Dean contains more distinctive inclusions and has been identified at Hailes Abbey and Tewkesbury although it is extremely rare at both places. At Gloucester, it forms about a third of the early to mid-17th century pottery used and in the Monmouth area, it is found

but rare (fig.2.36). It is only common at Chepstow, which is the nearest town to Stroat. The near absence of the Post-medieval Welsh Borderland ware from Worcester, Gloucestershire east of the Severn, but excluding Gloucester, and South Shropshire must indicate a similarly restricted distribution for the rest of the kilns.

Although it might appear that these small industries were restricted to the Welsh borderland and to South Wales, there is similar evidence from further east. Alongside the main concentration of potteries in south Somerset, at Donyatt, there are several smaller centres known, for example Nether Stowey, Wiveliscombe and Wanstrow. Samples of definite waste from the latter kiln site have been examined and do not appear to be petrologically distinct from those of mid - to late seventeenth century slip-decorated South Somerset ware from sites in the study region. A kiln base of 16th century date has been excavated at Crockerton, near Warminster. The products of this kiln were not seen by the author but later wasters, probably of late 17th to 18th century date have been thin-sectioned. They show that a distinctive iron-rich quartz sand was present in the fabric. Few sherds with this fabric have been seen during the fieldwork for this thesis and it is likely that the pottery at Crockerton too was operating on a very limited scale.

A factor which is probably linked with the changes outlined above is the range of pottery vessels produced (table 11.24). All of the industries of the time produced a range of coarseware vessels, for kitchen use, but there are differences in the output of tablewares and drinking

vessels and in the use of slip-decoration.

Table 11.24. The incidence of pottery types in late 16th to early 17th century pottery industries.

Ware	a.	b.	c.	d.	e.	f.	g.	h.	i.	j.
Malv.	**	*?	**	no	*	no	no	no	oval	*
Stroat	**	*?	**	*	no	no?	no?	no	no	*
Ashton Keynes	**	*?	**	*	*	?	no?	no	rect	no?
Inkpen	*	*?	*	*	*	?	no	no	?	no?
S. Som	**	*	**	*	?	*	**	no	no?	*
N. Dev	**	*	**	*	no	?	**	no	no	*
Border	no	*	no	*	*	*	no	no	no	*
Mets.	**	*	*	*	no	*	**	**	no	no?
PMWB	*	*	*	*	no	?	no?	**	rect	no?

Key. * = present ** = a major product

a. storage jars

f. chamber pots

b. pipkins

g. slip-decoration

c. conical bowls

h. black-glazed cups

d. plain plates/dishes

i. dripping dishes

e. cups or mugs

j. chafing dishes

The differences between the output of these industries may not be apparent from the table above, which records the presence or absence of a type in the repertoire of a pottery but is quite clear when the relative frequency of the forms is taken into account. Several of the industries specialised in particular classes of pottery. Malvern Chase, in particular, produced virtually no 'fineware' during the later 16th to 17th centuries, with the exception of chafing dishes, most of which are plain and crudely finished. Ashton Keynes and Inkpen had a very similar range of products, although typologically quite distinct.

Little has been published on the range of vessels produced at Verwood in the late 16th to 17th centuries, nor those of Crockerton. No tablewares, slip-decorated vessels or black-glazed cups have been seen in either ware.

The Surrey-Hampshire border industry concentrated on the production of tablewares; mainly open cups, plates, dishes and bowls but it also produced pipkins. It is perhaps remarkable that collections of borderware from sites as far from Surrey as Gloucester include both classes of vessel. The Border ware industry is one of the few known not to produce storage jars or coarseware bowls as a major product.

The Post-Medieval Welsh Borderland kilns (PMWB for short) produced black-glazed cups as one of their main products, although never without accompanying kitchen wares. Black-glazed cups were also produced in Staffordshire, although they were not at this time traded to the study region, and Harlow (whence came a few cups found at Gloucester).

None of these industries apparently originated with the production of Cistercian ware forms in the 16th century, despite the obvious similarity in forms, glaze and presumably method of firing (to an extremely high temperature in saggars). Although pottery manufacture is implied at Hope-under-Dinmore in the mid-16th century and a copper-green glazed cup in a probably local fabric has been found at Hereford in ^a mid-late 16th century context, the majority of these industries did not get underway until the very end of the century. In 1608 a potter was recorded at Dymock, Gloucestershire, and a kiln and waster heap have been excavated at Haind Park Wood, Dymock (Coleman-Smith

and Rhodes, forthcoming). At a slightly later date potters were evicted from the forest of Deerfold, Lingen on the Herefordshire-Shropshire border (Marshall, 1948), although it is likely from the archaeological record that they soon resumed their activity (Vince, forthcoming a). In Hereford closed groups of 17th century finds are rare, despite the vast quantities of unstratified PMWB wares found in the City. What groups exist indicate that this ware appeared quite suddenly, almost completely ousting Malvern Chase wares.

The use of slip for decoration does not have any local ancestry. It was used at Stroat, as an overall cover on the inside of bowls and sometimes storage jars, and in the South Somerset and North Devon industries and is part of a nationwide trend.

Dutch Redwares of the late 15th and 16th centuries frequently have a dipped slip under a clear or copper-green glaze. By the early 16th century they were being copied in the London area, where the copies are known collectively as 'Guy's Hospital ware' after the site at which they were first defined and their likely prototypes suggested (Dawson, 1979). In both the Low Countries and the London area, one the main forms found covered in slip is the wide bowl, often with loop handles and thumbed-down feet. Wide bowls are also found in the slip-using industries in the West Country but the similarity with Dutch prototypes is not as strong as at London.

Slip-trailing is not found in the study region at this time, although it was in use at Harlow, Essex on Metropolitan Slipware as early as c.1630 (Hodgkin &

Hodgkin, 1973, 7). Very few slip-trailed dishes are known from the North Herefordshire kilns and an example was found at Wigmore Abbey in a post-dissolution but pre-late 17th century context. Such dishes may be quite late since the North Herefordshire industry continued to the end of the 17th century.

Slip-trailing did occur on locally made wares but not until the last quarter of the century, at Whitney-on-Wye and at Newent. A discussion of these wares and their relationships is outside the scope of this thesis.

Sgraffitto decoration has a long continental history and is known in several areas of the continent by the late 16th century; for example Werra ware from the Rhineland; Beauvais Sgraffitto ware from Northern France and North Italian Sgraffitto ware. The technique was occasionally used in England in the medieval period, for example Cambridge Sgraffitto ware (Dunning, 1950; Bushnell & Hurst, 1952). Rare examples are present amongst late 15th to 16th century redware waste from Kingston-upon-Thames, where it was used on bowls and dishes. However, the earliest use of the technique on wares found in the study region is during the early 17th century, when South Somerset bowls and dishes were decorated with a distinctive variation of the technique. While the slip was still wet it was swirled into a spiral pattern over which was a flower or star. North Devon Sgraffito dishes and bowls were made by the mid-17th century, by which time they were being exported to the Eastern seaboard of North America (Watkins, 1960). They are decorated in a more precise style, the slip being cut when leather hard. This ware is hardly found in the study region, except along the Bristol Channel coast, until the

late 17th century.

It would be fair to assume, both from the number of production sites known and the increased variety of pottery in use, that more pottery was in use at this period than previously, rather than merely a change in the relative proportions of types in a static quantity of pottery. This point is of paramount importance when considering why there should be a change from the limited number of production centres of the 16th century to the much larger number of the 17th century. An increase in the demand for pottery, together with the fashion started by Cistercian ware for high-fired vessels requiring saggars, would have placed a strain upon the local resources of fuel. When this increase co-incided with a perceived national shortage of fuel it could create a crisis, especially in large production centres where the consumption of fuel would be more noticeable. Complaints about the Malvern Chase potters were made by John Hornyold of Blakemore Park to the Lord Treasurer as early as 1573 (P.R.O. State Papers Dom Series Eliz vol.93, no.2).

Possible response to this late 16th to 17th century fuel crisis might include the use of coal in place of wood; the use of more efficient kilns; the dispersal of large industries and a movement away from the production of high-fired vessels. Coal was locally available in the Forest of Dean, in the Somerset-Bristol Coalfield and in South Shropshire. There is no evidence that any of these areas supported coal-using potteries at this early date, although it is certain that those in Staffordshire would have done so. Brears makes the point that those industries which grew

in the 17th and 18th centuries were all close to coalfields (Brears, 1974).

Large multi-flued kilns were available in the 16th century, and before (Hasty, 1974, type 3) but there is no evidence for their use in the study region at any time, although so few kiln sites have been excavated that this need not mean that they were not used.

The dispersal of the large industries is really only seen at Malvern Chase, although one could argue that industries like that in South Somerset, which had offshoots at Nether Stowey, Wiveliscombe and Wanstrow, or like the Surrey-Hampshire border industry with centres at Farnham, Cove, Ash, Farnborough Hill might have become more dispersed during this period. The evidence, however, is not very convincing.

This leaves the fourth possibility, namely, movement away from the production of high-fired wares. In the London area there was a movement away from the white-fired Surrey wares of Cheam, Kingston and the Surrey - Hampshire border towards red-fired wares, sometimes, as at Cheam and Kingston produced in the same area (Orton, 1982). However, this change did not take place in the early 17th century but at least a century earlier.

It is just possible that the sloth with which England adopted tin-glazing, which required a double firing of the pottery, and the manufacture of stoneware, which was also highly consumptive of fuel, was due to fuel scarcity. The small villages which make up the Somerset coalfield all experienced an upsurge in mining c.1600 and the consumption of that coalfield rose tenfold from c.10,000 tons in the mid-16th century to the late 17th century (Down &

NST
Bettar

Warrington, 1973, 17). It is, however, unlikely that a national fuel shortage was the reason for the decline of the Malvern Chase industry. If it were, then the industry should have been superseded by coal-fired industries at Bristol and Staffordshire but these did not make any impact on the study region until the second half of the century. Nor, if fuel was a problem, would the succeeding industries have produced so many black-glazed cups since these would have been more costly in fuel than low-fired earthenware vessels. Therefore no general conclusions can be reached by a consideration of the end of the Malvern Chase industry, even though this was a major event in the local pottery sequence.

Malvern Chase potters were probably involved in the foundation of the Post Medieval Welsh Borderland industries and the Kiddermister-type industry. Some conical bowls and jars produced by these industries are identical in method of manufacture to those of Malvern Chase. However, by the early 17th century this influence had been overlain by a separate group identity. The conical bowls of the Welsh Borderland kilns at this time do not have the infolded Malvern Chase type of rim but either a "T" rim or a flat-topped flange rim. The former type is found on late 16th century bowls of Werra ware and Beauvais Sgraffitto ware but this may be a coincidence. The jars similarly abandon the narrow-based form with a lid-seated rim in favour of a cylindrical form, often with a handle. The occurrence of these three forms on kiln-site after kiln-site suggests that their makers had very close connections, otherwise the potters at Trefaldu and Monmouth should have

been 'influenced' by the wares being produced less than 20 miles away at Stroat, which have none of these forms.

TRADE IN POTTERY

There are two contrasting features of pottery trade at this time. Firstly, there is generally a greater quantity of continental imported pottery found, of which most is Frechen Stoneware. Other imports include South Netherlands maiolica, grey stoneware Martincamp flasks, which occur throughout the region even into the remotest areas; Spanish Olive jars, which are rare except at the coast (although examples are known from Hereford and Gloucester); and Spanish Red Micaceous ware ('Merida ware'). The latter is found as isolated vessels at Hereford, Worcester and Gloucester but is surprisingly common at Chepstow and along the South Welsh coast. A complete Spanish Red Micaceous ware costrel is known from Tintern Abbey from the Great Drain (Lewis, 1978). Since it was found with two Malvern Chase jugs it is likely to be of late 16th to 17th century date (Vince, 1977).

The second feature is that the average distance travelled by pottery was at its highest ever in the late 16th century but probably at its lowest since the 12th century in the early 17th century, after the decline of the Malvern Chase industry. It is impossible to calculate a precise figure for any site because of the impossibility of characterising the Post Medieval Welsh Borderland wares.

Stray non-local wares are remarkable for their absence both in the late 16th and early 17th centuries. As mentioned above distinctive slipwares were being made in the South West but these are hardly ever found in the study region. The only ware made outside the region to be

regularly found within it was that from the Surrey - Hampshire border. In the 16th century the main types found are small cups and jugs but c.1600 these were replaced by the slightly coarser loop-handled cups and distinctive ribbed pipkins of post-medieval 'Border ware'. Since the latter types are first found in Surrey in the late 16th century there is probably a break in the distribution during which neither 'Tudor Green' nor 'Border ware' vessels were imported (Holling, 1971, 1977). The distinctive 'Midlands Yellow' ware, which might be of Staffordshire or Nuneaton manufacture, is found rarely in the region in the early 17th century and is perhaps more common at Worcester than at Hereford or Gloucester, as one might expect given its Midlands source (Woodfield, 1966).

The cruder 'Midlands purple' ware with its semi-stoneware body and cooking pot or jar forms is remarkably rare in the study region. There is a single cooking pot from a mid - late 16th century group from Gloucester. Staffordshire coarseware, with its mixed clay body and thick purple-black glaze is also rare in most of the study region but is probably present in Worcestershire by the early 17th century. It is surprising that this ware is not found at sites alongside the River Severn until the late 18th century although it was being transported overland to London before 1666, since it is a common find in 'Great Fire' groups in the City.

CHAPTER TWELVE

SOCIAL AND ECONOMIC INTERPRETATION

Pottery did not exist in a void and the medieval pottery industry must therefore have been affected by changes in the culture and economy of its users.

The three main changes are the spread of pottery use from central England to the Severn Valley and beyond; the sudden replacement of 10th century pottery types by early medieval wares in the 11th century and the growth of the large industries of the later medieval and Tudor period from such humble origins.

The results of this thesis can make some contribution to each of these areas of knowledge since for the first time the date-range and origin of much of the pottery in the study region is known.

THE SPREAD OF POTTERY MAKING

As shown in chapter 11, industrial pottery-making in the 8th to 9th century was limited to Oxfordshire and then spread in the mid-to late 10th century to Wiltshire, Gloucestershire and Avon. In the 11th century it spread into northern Somerset (Cheddar B) and by the early 12th century it had spread to Worcestershire, the Forest of Dean and southern Gwent. Pottery-making was still uncommon in Wales, the South-West of England and Ireland in the early 13th century. It is for this reason than sites in southern Wales and south east Ireland at that time had a higher quantity of Bristol region pottery than English sites within 20 miles of the town. The same pattern is found in eastern Scotland in the late 12th to early 13th centuries. Pottery-making was not practiced in the area and London-

type glazed jugs were imported to ports such as Perth and Aberdeen (Pearce et al., forthcoming). It is not until the late 13th century that a regular network of industrial potteries supplied the whole of England, Wales and south east Ireland (fig.11.15). Even at that date there were areas of northern Ireland where pottery of prehistoric appearance was in general use and there were areas of the Western Isles of Scotland which were still making pottery of this type into recent times (Crawford, 1967, 88).

The distinction between pottery-using and non-pottery using cultures was present in the pre-Roman Iron Age, where the division approximated to that between highland and lowland Britain. The reasons for this difference in culture are therefore not of relatively recent, post-Roman, origin operating over a relatively short period of time, the 'dark ages', but have been operating in the same area for at least 2,000 years.

The absence of local pottery industries is not even an insular characteristic. Scandinavia in the Viking period produced no pottery so that sites such as Trondheim and Bergen were receiving pottery exclusively from overseas throughout the medieval period (Long, 1975, 21).

There is an obvious correlation between these intermittently aceramic regions and the availability of raw materials. Brushwood in mountainous areas would be needed for cooking and heating, especially in cold climates and in many regions would have been in short supply. This may have constrained the production of pottery on an industrial scale but is not likely to have prohibited its production completely. Indeed, the fact that industries did eventually

develop in these places proves this point.

There is also a possible correlation between the local production of pottery and the cultivation of cereals and root crops, which would need to be boiled to make them edible. However, even without the use of pottery it is possible to cook cereals by baking while metal cooking vessels which could be used for boiling stews, large cauldrons, were present in all regions from the Iron Age onwards. Since there may also have been differences in eating habits at this time, such as eating communally rather than in nuclear family groups, the absence of pottery may have been a feature of little importance to the inhabitants of the aceramic regions. It is against this background that the evidence from the study region should be seen.

A survey of the use of coinage for exchange may be important in the study of the spread of pottery-making, both because coinage provided a medium for exchange and because it implies that the population were producing a surplus which could be exchanged commercially for pottery. The best evidence for mid-Saxon economy is undoubtedly to be gained from a study of the coinage since settlement archaeology of the period is extremely limited and usually uninformative. In the 8th century the Kingdoms of Wessex, Kent and possibly Mercia produced silver coins, known as sceattas. Coin hoards of the period are limited to the south-east of England, but this is not an indication of the extent of the monetary economy at this time as can be shown by the distribution of stray finds of silver sceattas. Hinton notes that this distribution does not necessarily coincide with the distribution of objects of precious

metals, notably to the south of the study region in Dorset and Hampshire, although the quantity of finds is so small that inferring a coin-less economy in that area is dubious (Hinton, 1975). It is clear, however, that the study area, up to the Welsh Border, was within the sceatta-using zone even though no sceattas have been found on excavations in the study region.

The earliest recognisable pottery industry supplying the study area was undoubtedly Oxford fabric B, which was present in Oxford by the late 8th to 9th century (Durham, 1977, 176-182). Oxford B Ware is therefore the earliest industrially produced ware known outside of East Anglia (Ipswich Ware, Hurst, 1976, 299-301) although the early date has yet to be confirmed by other sites. The same manufacturing method could have been used for both wares, the 'slow wheel'.

Elsewhere at that time pottery was either not used or was chaff-tempered pottery and probably domestically produced (Hodges, 1981, fig.6.1). Against this must be placed the evidence from Ramsbury in the Kennet valley in Wiltshire (Haslam, 1980). The remains of a late 8th or 9th century ironworking site were found together with a small amount of chaff-tempered pottery, of two fabrics (Russel, 1980). However, the site produced imported Rhenish lava quern fragments, bronze artefacts and it is implied that iron objects were produced on a large scale. "The scale and duration of the industry ... would support the contention that it must have played an important part in the economy of a comparatively wide region, and that it provided the raw material for more than merely local trade" (Haslam,

1980, 56).

Several mid-late 9th century coin hoards are known from the British Isles, reflecting the increasing menace of the Vikings. All have a similar composition and contain a mixture of pennies of Mercia, Wessex, the Archbishops of Canterbury and, quite often, foreign coins such as Carolingian deniers and Arabic dirhems. These hoards are spread throughout the country, from Cornwall (Trewhiddle) through the study region, at Sevington in Wiltshire and at Leckhampton Hill in Gloucestershire, and into the south and east. The use of coinage seems to have increased in the study region during the 9th century and was used for inter-regional and international trade, if not also for local trade.

Despite this evidence for interregional trade, the material culture of the study region still seems to have been sparse. At both Hereford and Gloucester ninth century levels have been found containing not only no pottery, except for one North French sherd from Gloucester, but also few other artefacts.

The earliest pottery industries outside of the south and east date from the mid- to late 10th century, although there are still large areas of the study region for which no data are present. Given this proviso, the data strongly suggest that Oxfordshire was far in advance of the rest of the south and west for up to a century and a half. This evidence, incomplete though it is, is worth comparing with that for Late Saxon mints (North, 1963; Dolley, 1970; Hill, 1981).

In the ninth century there were only two or three mints operating in the whole country, normally one or two per kingdom but from the reign of Alfred onwards there is evidence for a much larger number of mints, possibly to fulfill the demands of local trade. However, mint signatures are not common on the coins of Alfred or his son-in-law, Edward the Elder, although Gloucester is one of the mints known from the time of Alfred (pre-886) and a mint at Bath is known from the reign of Edward.

In the reign of Althelstan (924-939) it became the standard practice to include the mint signature and from this time we know of mints in the study region at Bath, Gloucester, and Hereford but not at Worcester, nor in Wiltshire. These mints may of course have been operating as early as the late 9th century. In the reign of Edgar (959-975) a new mint was founded at Winchcombe whilst those at Axbridge, Cricklade, and Warminster were probably also new foundations.

It has been argued by Metcalf that the foundation of a mint in the 10th century was related not to national fiscal policy but to the volume of local trade (Metcalf, 1978). An indication of the extent of this trade is shown by the Pemberton Parlour Hoard from Chester which dates from c.979-80. This hoard contains no coins more than 6 years old when buried and the mints represented cover the whole country, especially the East Midlands. This shows a high rate of circulation of the currency and indicates thriving inter-regional trade (Metcalf, 1978).

In south Wales the introduction of pottery-making in the late 11th to 12th centuries has been linked by Knight to the introduction of coinage, although pre-Norman coin

hoards and isolated finds are known from Wales (Knight, 1977). It is possible that the introduction of pottery-making is more closely correlated with the immigration into Wales of English peasants, a process which in some areas of south Wales has given rise to tracts of land in which the majority of medieval placenames are of English origin (Charles, 1938).

In Ireland it is not possible to separate the effects of economic change, following the conquest of Ireland in the late 12th century, and the subsequent movement of people to Ireland to serve the Anglo-Irish castles and abbeys. Dublin certainly had a mint in the 11th century and was coin-using from the late 9th century, to judge from the coin hoard evidence (Thompson, 1956). This would imply that the use of coin and trade were not the reasons for the introduction of pottery-making. The earliest pottery used in Dublin may be no earlier than the mid-11th century, post-dating the foundation of the local mint (pers. comm. B. O'Riordan).

The evidence for a close connection between the presence of a local mint and a local pottery industry is inconclusive. It can still be stated that a local mint was a pre-requisite for a pottery industry but there are many areas which had mints but no pottery industries, within the study region this includes the counties of Herefordshire and Worcestershire. However, none of these areas, including Wales and Dublin, used imported pottery either until the foundation of the local mint so that the transport of pottery to these areas was probably a commercial activity.

If the economy had only a limited effect on the local production of pottery then there must have been other important factors. Principal amongst these would have been the demand for pottery and in all areas the local production of pottery is probably preceded by a phase in which pottery was imported, either from neighbouring districts, as at Cheddar in the 10th century, or from overseas, as at Dublin and in south Wales. Even though precise sources are not known for the pottery used, for example, in Bath or Oxford it is possible to distinguish sites relying on importation from those within a local marketing network since the distances over which the pottery was transported are much greater in the former than in the latter areas. To take two extreme examples, Hereford in the 10th century received over 90% of the pottery from ~~Y~~ Stafford (?) and c.10% from Gloucester. Their respective distances from Hereford are 70 miles and 30 miles. Therefore, the average distance travelled by a 10th century pot in Hereford is 66 miles. This compares with Gloucester, where the average distance is less than a mile. The average for most other late Saxon sites is less than 20 miles and sites such as London (average 50 miles) and Cheddar (probable average c.30 miles) stand out. The length of time over which an area relied solely on imported pottery is extremely variable and no pattern is apparent. At Gloucester, this phase, if it exists, is likely to be of short duration, lasting perhaps 50 years. At Hereford and in Dublin the phase was much longer, probably 250 years and 150 years respectively. In this respect, the diffusion of pottery-production does not therefore agree with the laws laid down by Hagerstrand who concluded that the diffusion

of innovations depended on the distance and on the amount of interaction between the 'sending' and 'receiving' areas (Hagerstrand, 1952).

There is also no correspondence between the cost of importing pottery and the presence of local production. If there were then southern Gwent should have been one of the last areas to produce pottery since it is immediately opposite the Bristol Avon and could take advantage of cheap water transport of pottery from Bristol yet petrology shows that several local industries were present by the 12th century.

THE STATUS OF POTTING IN SOCIETY

One can gain some knowledge of the status of potters in society by an examination of their workshops, both from the location of the site and from the artefactual evidence for the standard of living in comparison with that of other members of society. However, we have very little first-hand evidence of the late Saxon potters of the study region except for the production evidence at Gloucester and Stafford. From this, one might suggest that late Saxon potters were full-time artisans, since the production sites were within a town, although throughout the medieval period many small towns were self-sufficient in agricultural produce and utilised the surrounding plough and meadow land. At Gloucester the potters may also have been involved in glass-manufacture, and were certainly producing glass-working crucibles. Throughout the midlands there is evidence that the normal workplace for a 10th century potter was within a town. 11th century potters, even making wheelthrown vessels similar to those of the previous

century, were as likely to be working in the countryside (Hurst, 1976, 345).

By later medieval standards the pottery of the Late Saxon period was very well-made and was distributed over considerable distances. Within the region, the average distance travelled from source to place of use by a pot must be over 20 miles. This is too great a distance to be travelled on foot twice in a single day and therefore direct distribution by the potter to the user or vice versa is unlikely to have been the only method of distribution. The probability is that pottery distribution took place through the Burhs using the period market system or that the potter operated a circular tour of his hinterland when sufficient pots had been made (see below, Marketing of Pottery). However, so little data are present from rural sites in, say, Herefordshire, Gloucestershire or Worcestershire, that it might be argued that the only distribution of Late Saxon pottery in the west was to and from the Burhs. This is not very likely and the evidence from Wiltshire and Avon for the distribution of Cheddar E cooking pots to rural settlements should be sufficient to show that rural pottery use is to be expected further to the north-west (ch.2).

The replacement of the Late Saxon industries by the Early Medieval Industries was quite sudden. The Early Medieval industries are first found in the mid- to late 10th century, for example in London and possibly in Wiltshire (Cheddar E). However, the majority of these industries probably started in the early 11th century, for example supplying Bristol and Old Sarum, both of which were probably large towns at this date. At the latest,

Gloucester TF41b, an early medieval ware, had replaced the Late Saxon industry in Gloucester before the Norman Conquest and the change may have occurred much earlier in the century. By contrast, there was a long phase of overlap between the two types of industry in East Anglia, lasting into the 12th century.

Although there are some exceptions, the distances travelled by Early Medieval wares were much smaller than those travelled by the Late Saxon wares. However, this is probably not related to the type of production or style of vessel but is a function of date, since Cheddar E ware is typologically an Early Medieval ware yet still had the wide distribution characteristic of the Late Saxon wares.

There is no evidence for the domestic production of Early Medieval pottery, and many instances where it can positively be disproved by petrological evidence (Chapter 2). If Early Medieval pottery was industrially produced then two questions arise. Firstly, what caused the apparent decline in technical skill and secondly, what caused the decline in distribution?

It is tempting to see the Early Medieval wares as the products of rural peasant potters, since this is what their successors definitely were, yet one of the apparent features of the Late Saxon pottery in East Anglia is a movement in the 11th century from urban to rural production, yet the rurally-produced wares, such as Grimston-Thetford and Langhale-Thetford wares, were wheelthrown and definitely related in technology and typology to the urban wares (Hurst, 1976, 320). Cheddar E ware might therefore be either an urban product, on account

of its date, or a rural product, on account of its style and method of manufacture.

A possible explanation for the decline in distribution distance in the early 11th century is that it reflects the unsettled period at the end of the reign of Ethelred II and that established trade routes were interrupted by marauding Danes. However, if that was the case, it would not explain how certain industries in East Anglia, for example at Stamford, survived unscathed. It would also imply that the political and economic upheaval of the early 11th century was much greater than that of the Norman Conquest, the 12th century Anarchy, the Wars of the Roses or the English Civil War all of which came and went without permanently affecting the pottery industry. Even the Black Death, which temporarily wiped out the potters of Malvern Chase, did not affect the type of pottery made by their successors in the late 14th century, nor did it significantly alter the distribution network. One can only imagine in that case that apprentice potters survived the plague or that the information given in the Inquisitions Post Mortem was not completely truthful.

Even if the appearance of smaller scale industries was a reflection of troubled times there remain two problems, namely the lack of influence of either the wheelthrown or handmade Late Saxon industries on the Early Medieval ones and the close similarity in form between Early Medieval wares in different parts of the country.

In the study region and in parts of East Anglia the new industries borrowed little from their predecessors, either in techniques, which might be understandable since these would be difficult to learn, or in forms. However, this

coexistence of quite separate traditions of manufacture was already present at Gloucester in the 10th century. Dunning suggested that the Early Medieval potteries were 'native' as opposed to the late Saxon industries, run by immigrant potters from the Rhineland (Dunning, 1959). While the idea that late Saxon potteries could have been run solely by immigrant potters is no longer tenable, because of the number of industries now known and their duration, the theory can be modified. If the difference between the late Saxon and 'early medieval' potters was that the former were wholly dependant on potting for their living, then they would have been more vulnerable to fluctuations in trade than the part-time 'early medieval' peasant potters who succeeded them. Full-time potters would appear to have disappeared from the study region, if not the whole country, in the 10th or early 11th centuries not to reappear until the late 16th century, with the immigration of delftware potters from the Low Countries into eastern England.

Early Medieval wares share a squat shape, mainly with a sagging or rounded base, which contrasts with the form of both the Late Saxon wheelthrown and handmade cooking pots. The similarity in form is in some cases remarkable over a wide area of the country, for example the Early Medieval wares of London are very similar to those of Bristol. Unless the form of these pots was governed by their method of use, which is unlikely, then this would imply that there was close contact between all areas. Therefore the economic explanation, which demands that communications were more difficult in the early 11th century, breaks down.

In a prehistoric context a national change such as that from Late Saxon to Early Medieval wares would be taken to imply an important development in the society using the pottery. The whole reconstruction of Late Neolithic to Early Bronze Age society revolves around a discussion of pottery styles, for example the Beaker pottery (Clarke, 1970), as does Cunliffe's interpretation of the Late Iron Age (Cunliffe, 1974 a). The fact that in this instance one can precisely document this change yet still be unable to explain it, even with much greater knowledge of the social and political history of the period, is an indication of how little is known of the relationship of material culture to social history. However, if, as suggested above, the change was also that of full-time specialisation to part-time peasant production then it may well be an indication that fundamental changes were taking place in society during the last century of Saxon rule, even if we are at present ignorant of their precise nature.

The distribution methods used by the Early Medieval potters may have been different from those of the Late Saxon potters. With few exceptions, the Early Medieval fabrics have distributions limited to 20 miles radius from the source area or less. Precise measurement is normally precluded because of the limited number of sites known. Where the distribution is known more accurately it is normally one of the larger industries, and thus not typical, for example Gloucester TF41b or Bath fabric A. On present evidence Frocester-type ware, Hillesley-type ware and Chew Valley Sandstone-tempered wares could not have been distributed through known urban markets although these wares are known from single sites. On balance it is

probable that the Early Medieval pottery industries did not use the 11th century towns (which are defined as those settlements with mints or recorded as boroughs in the Domesday Book) for the distribution of their wares. However, since there is also sufficient evidence to show that most of the pottery was not domestically produced then one must look at other possible distribution mechanisms.

Non-commercial exchange of pottery might have been based on the estates owned by a single Lord so that at least one manor within his lands would produce pottery which could be supplied to the remaining manors in return for other goods or promises of future help (see Chapter 11). There is abundant evidence that the feudal dues in 11th and 12th century manors were paid in kind and there is a record of pots being given to the Bishop of Worcester as rent in c.1180 (Hollings, 1950). These do not imply that the remainder of the goods involved were not sold for cash or bartered. It would also have been possible for potters to sell or exchange their wares directly or through hawkers.

Whatever the basic means of distribution, however, there may have been some commercial exchange of pottery to account for the distribution of Gloucester and Bristol wares in Dublin. There was a trade in slaves from Bristol to Ireland but the pottery could not conceivably have arrived in Dublin as the personal possession of a Saxon serf since it is found in such high quantities on more than one site. The importance of the Bristol to Ireland sea route in the mid-11th century is shown by incidental references to travel into or out of Bristol, for example in

1051 Harold and Leofwide rode to Bristol and sailed from there to Ireland (Stenton, 1971, 565). In 1062 Bristol was the starting point for a military expedition by Earl Harold into Wales (Stenton, 1971, 576). In 1067 a raiding party sailed from Ireland to Bristol, although it was beaten off and then harried Somerset (Stenton, 1971). None of these events, however, implies commercial contact between Bristol and Ireland presumably because commercial activity would not attract the attention of chroniclers. 83

The presence of Gloucester TF4lb vessels in quantity at Hereford ought to also be due to commercial activity, although since Hereford was not in a pottery-making area this too might be an exceptional case. The presence of Gloucester and west Wiltshire wares in Droitwich and at sites en route is probably associated with the salt trade, suggesting that the salters carried manufactured goods, and probably agricultural produce, in one direction and salt in the other. The map of the Droitwich salt trade prepared from the Domesday evidence by Darby is complementary to that of the pottery distributions (Darby, 1973, 65-6, fig.9; fig.11.5). This salt trade too may have been the exception rather than the rule and the overall picture is of very little trade in pottery over distances greater than 20 miles and most probably on an even smaller scale. X

The evidence for small-scale, and therefore possibly non-market, distribution of pottery disappears during the 12th century, even though some of the same wares were present in the latter period. This would suggest that commercial distribution, probably through markets, had become the norm. Perhaps as part of this transformation, several pottery industries disappeared and their markets

were subsumed by the surviving industries.

THE LOCATION AND DURATION OF THE POTTERY INDUSTRIES

The development of the pottery industries of the later 12th century and later out of the Early Medieval ones is in accord with knowledge of the economic development, rising standard of living and other archaeological evidence for the period. The underlying factors influencing the growth of the industry are discussed below but the factors governing the development of any particular industry are ill-known, and may reflect specific circumstances which are not otherwise reflected in the archaeological record, such as changes in local land use or the patronage of an industry by a landowner.

The successful industries were almost all situated close by large tracts of woodland, whereas the unsuccessful ones were not. Only three suburban industries are known in the study region, at Worcester, Bristol and possibly Cardiff. The Bristol grew at the expense of a rural industry at Ham Green whilst the Worcester industry declined. This confounds any generalisations that might be made. The anomalous position of the Bristol industry is emphasised since raw clay as well as fuel probably had to be brought into the town.

A factor which marked out the successful industries from the rest was that they specialised earlier than their neighbours. In the 12th century a higher proportion of the industries producing glazed wares survived than of those that did not. The two late 13th to 14th century industries supplying cooking wares, Minety and Malvern Chase, survived into the late 15th century. An implication of this is that

not only was the availability of raw materials an important factor but also the presence of neighbouring industries producing similar products.

Comparison of the siting of 12th and 13th century industries producing coarsewares and finewares (figs. 11.10, 11.11) illustrates this point. In most cases the glazed ware industries are further apart than those producing only cooking pots. An exception is in South Worcestershire, where Malvern Chase and Worcester were both producing glazed wares in the 13th century, even though the sites are only 6 miles apart. The Worcester industry, although lasting for perhaps a generation, was not in the long term successful and by the late 13th to 14th century Worcester itself was using Malvern Chase wares.

FACTORS AFFECTING THE DEVELOPMENT OF THE POTTERY INDUSTRY

Since a similar sequence of development can be seen over the whole country it is likely that general processes rather than specific events are responsible for the visible changes. These processes may include the methods of transportation and marketing, the techniques of production or changes in the social organisation of potting.

SCALE OF PRODUCTION

Distribution evidence is not immediately comparable between periods because one is dealing with a relative frequency calculated from variable totals. For this reason, a site with over 10% of a pottery type in one period may have used a quite different quantity of pottery from one with the same relative frequency in another period. The population of the site, the uses to which pottery was put and the lifetime of the vessel all affect the total quantity of pottery present on a site. To investigate this

potential discrepancy, a 'standard' with which to compare the frequency of pottery is needed.

This standard could be the ratio between the quantities of pottery and some other material, also discarded at a constant rate regardless of the status or function of the settlement. Few materials are suitable. Cess, for example, is certainly regularly deposited but few deposits contain only cess, nor is it certain that the disposal of pottery in a cess pit would not vary with time. It might for example depend on whether the pit had a superstructure or not. Other materials are not useful because they are too scarce to provide a good comparison, for example metal utensils, or because their use itself varies chronologically, for example glassware or because the sample remaining in the archaeological record is less complete than that of pottery because of differential preservation or re-use.

The most suitable material is animal bone which is well-preserved, common, except on very acidic sites, and has little use after its initial function as a by-product of cooking. Atypical bone deposits, such as butchers waste or the waste from industrial bone-working, are easy to distinguish and can be omitted from any calculations. Animal bone and pottery should be discarded from a settlement at the same rate and therefore fluctuations in this ratio should correlate with their relative use. There may be differences in the role of meat in the diet, but, in most instances, these are likely to be of lesser scale than fluctuations in pottery use, since at Cheddar hundredweights of bone were found in period 1 with no potsherds (Rahtz, 1979).

Only three sites have been analysed, because of the difficulty in obtaining quantified data on the animal bone from sites often excavated many years ago when bone was discarded after osteological analysis without any record of the quantity per context. The bone was quantified by fragment count, although weight would have been a better measure. At Gloucester, M. Maltby provided figures which distinguished normal domestic refuse from butchery debris but this did not in fact greatly affect the results.

At Berrington Street site I, Hereford; 1 Westgate Street, Gloucester and in Exeter (J. Allen, pers. comm.) the ratio of pottery to bone is much higher in the 11th/12th centuries than it is in the 9th and 10th centuries. The presence of substantial quantities of bone at the first two sites, in the 9th century, with no potsherds provides convincing evidence that pottery was not then in general use there (Vince, 1977 c). No data are present for the later medieval and early post-medieval periods, although data from 18th century contexts at Hereford indicate a considerable rise in the ratio of pottery to bone.

A rise in the use of pottery is also indicated by a study of the range of forms found. In the 10th and early 11th centuries only cooking pots were used but in the late 11th century a new class of vessel, the spouted pitcher, is found. Pottery was fulfilling new functions whilst keeping the old ones. A further rise probably took place in the early 13th century, but the situation is more complicated in the late 13th century because of the possible decline in the use of ceramic cooking pots. There was a definite rise in the number of vessel types in use in the late 15th

century continuing throughout the 16th and 17th centuries.

On its own the evidence for a greater variety of vessels in use does not prove that more pottery was being made, since pottery may differ in quality and therefore fluctuate in lifespan (Vince, 1977 c). Taken together, however, the variety of vessel types and the pottery to bone ratio show that pottery was used in increasing quantities in the medieval and post-medieval periods. There was also a population increase during the medieval period and this must have affected the total quantity of pottery in use, even if the rate of use remained constant. No absolute figures for the period exist but the current view, based on the Domesday Book and Lay Subsidy rolls, is that the late 11th century population may have been c.1.5 million, that it grew to between 4.0 and 4.5 million by the early 14th century and that there was a dramatic decline, perhaps on average by c.40%, due to the Black Death. The effect of the Black Death varied from area to area and was particularly severe in the towns and ports. Little data exist for the late 14th and early 15th centuries but the current view is that population was at a constant level throughout this period, or even slightly declined. Late in the 15th century the population started to rise again and there was a rapid increase during the 16th century (Darby, 1973). By c.1600 the population is considered to have been at the same level as that of the early 14th century. These gross changes in population were not spread evenly across the country. Most of the late 11th to 14th century rise was caused by the expansion of settlement into previously sparsely occupied areas of woodland or poor soils.

Similarly, the contraction after the Black Death affected these marginal areas more than settlements on prime agricultural land. Absolute figures for the population of areas of the study region cannot be given but it is possible using a variety of sources to show the relative population density in the study region and the surrounding counties of Somerset and Oxfordshire (table 12.1). From this table one can see that Oxfordshire, consistently had the highest relative population density while Worcestershire and Herefordshire have a low relative population density.

Table 12.1 The Relative Population Density of Selected Counties.

DATE	Oxon	Glos	Berks	Som	Worcs	Her	Wilts
a 1086	H	M	H	H	L	L	H
b 1225	22.6	18.0	17.0	7.5	7.6	7.7	11.4
c 1334a	36.3	24.0	27.8	16.0	13.0	9.8	22.7
d 1334b	27.2	18.0	20.8	12.0	9.8	7.4	17.1
e 1377	H	M	H	H	L	L	H
f 1600	H	L	M	H	H	L	M

Key:

1334a = Assessment including towns

1334b = Assessment excluding towns

a = 1086 Domesday Book. Based on Darby (1973, fig.11).

b = 1225 Assessment. Based on Donkin (1973, fig.21).

c = 1334 Assessment. Based on Donkin (1973, fig.22).

d = 1334 Assessment. Based on Glasscock (1973, Table 4.1).

e = 1377 Poll Tax. Based on Baker (1973, fig.42).

f = c.1600 estimate by John Rickman in 1801. Based on Emery (1973, fig.53).

The implication of the changes in population with time and between areas for the interpretation of pottery evidence are considerable. There should have been much less pottery being made in the late 14th or 15th century than in

the late 13th to 14th century. With this exception, a slight rise in the size of an industry, measured in terms of its distribution pattern, is likely to represent a larger rise in real terms whilst a decline in distribution from one period to the next could be produced even though the industry continued operation at the same scale. The relative population densities may be slightly misleading, since some counties included large areas with low population, for example Salisbury Plain in Wiltshire, but would have had a high population density in the remainder of the county. Nevertheless, the low position of Herefordshire and Worcestershire is not in doubt. Since these two counties had a high proportion of marginal land they would have both had a high population increase between the late 11th to early 14th centuries and would have suffered most from the aftermath of the Black Death. It is most likely that the relative population densities of Herefordshire and Worcestershire were as low in the pre-conquest period and that this may explain the slow adoption of pottery-making in the two counties, since the market for pottery was too small and diffuse to support a local industry. Conversely, the high position of Oxfordshire may well explain the early start of commercial pottery manufacture in the county. It is likely that in the later medieval period the relative population densities of the counties is not responsible for any differences in pottery development, since the patterns of supply and demand were on a larger than county scale.

CARRIAGE OF POTTERY

There were few improvements in the possible means of carrying pottery during the medieval period, although there may have been changes in the methods chosen. The most basic means of carriage was on the person. Openware vessels and simple hollowware forms such as cooking pots can easily be stacked for transport. This is unlikely to have left any trace on the vessels, which are generally too rough to retain the sort of wear patterns that might occur where the vessels rubbed together. The need to stack vessels may, however, have influenced their size, leading to a greater standardization in rim diameter, for example. However, there is no evidence for the degree of standardisation in size shown by some Roman or Post-medieval vessels in the period under study.

Handled forms, such as jugs, could have been lashed together through the handles, but it is likely that this would have put too much strain on the early jugs and tripod pitchers, which are also appreciably heavier than the cooking pots. It would have been difficult to pack jugs or finewares, such as drinking vessels, for carriage on the person.

Pottery could be carried on a horse or other pack animal. The method of carrying the pottery would have been the same as for human carriage.

The use of a cart for transporting goods is well-known from contemporary documents, although the author knows of no medieval record or illustration showing pottery itself being carried. A late 12th century wooden crate was found in a pit in the City of London filled with jugs. It is possible that this was a consignment of pottery that was

broken in transit. The only other possible way of showing that carts were used instead of pack animals is that carts must run on roads or tracks whilst men and animals can travel over much rougher terrain. This could have had an effect on the distribution pattern but evidence is extremely scarce. Jope has summarised the evidence for late Saxon to 12th century carriage of goods in the Oxford region and concludes that most transport would have been by pack animals although carts and wagons were known and were used, for example, for the carriage of salt (Jope, 1956, 251).

Despite the difficulty of distinguishing methods of overland transport, the method or methods used must have made a difference to the efficiency of distribution and may have imposed effective limits on the distance that vessels could be carried given a certain means of transport. In the absence of any evidence it is only possible to speculate that the use of the cart or pack animals would be more general in periods where pottery was distributed over long distances, that is, those over c.20 miles.

Pottery could also be carried by water. This method is by far the most efficient but is also the most limited in the study region, due to the lack of suitable rivers. The Wye was probably navigable from its mouth up to Monmouth and the Severn may have been navigable at times as far north as Shrewsbury. The only other rivers which could be navigable for any distance are the Warwickshire Avon, the Bristol Avon, and the Thames. Transport along all rivers suffered because of their local use for water mills and fisheries. Evidence has been presented (in chapter 11) to

show that pottery was carried up and down the River Severn in the early 13th century and again in the 16th century. The latter resurgence of the river trade may be compared with historical evidence for the improvement of the Severn in the 16th century.

No such problems affect the sea-bourne carriage of pottery. All along the coasts of Wales, Ireland and the South West of England are found pottery types imported from neighbouring areas illustrating the ease with which goods could be carried by sea. This is as true for locally produced Welsh and English pottery as it is for imports from the Continent. Even along the coast there is still a noticeable fall-off in frequency with distance but it is not ^e anything like so steep as for wares distributed overland.

THE MARKETING OF POTTERY

The methods of marketing pottery are not fully known from documentary sources, although occasional events are recorded, such as the purchase of pottery direct from the potter by a medieval institution, such as a college or the Royal Court (Moorhouse, 1981). These references are almost certainly not typical and all deal with large orders that could not have been filled through the market.

Theoretically, there is a considerable variety of ways in which the pottery from a source could be distributed to its users. Some of these are discussed by Renfrew, with reference to the ethnological evidence that they actually took place (Renfrew, 1977). It is not certain whether any of these methods would be distinguishable archaeologically (see Ch.10).

The simplest method of distribution is direct contact between the producer and the user although even here there are numerous variations: It is possible to obtain pottery non-commercially as a gift; as a reciprocal gift; or by immediate payment in cash or kind in a commercial exchange. There is no difference in the actual procedure involved but the inferences to be drawn are quite different. In archaeological terms the only difference is likely to be one of distance. Non-commercial ties between sedentary communities are not likely to be as wide-ranging as commercial contacts, although manorial ownership may perhaps have some effect (Moorhouse, 1981). No actual cut-off point exists over which contact would be definitely commercial but when distances of over c.20 miles are regularly involved they are likely to be due to commercial exchange. If this is so then it follows than most pottery in the medieval period was commercially exchanged, except possibly in the 11th and early 12th centuries.

Direct commercial exchange itself is likely to take place over limited distances and the most economic method of direct exchange utilises the market system. In this system distance is minimised because people periodically congregate at a central place, usually once a week. This effectively doubles the distance over which pottery can be transported for the same amount of effort from the producer and user and a doubling in distance is likely to mean a four-fold increase in the number of potential customers. The medieval market system is known to have been fully developed in the 13th century, when markets were present at all medieval towns and in many rural settlements. In the larger towns two or more market days per week might be

granted and some markets became specialised in different commodities (Everitt, 1967). By using a different market on each day a trader could sell goods to a vast area without actually carrying his goods very far. To take full advantage of this system a potter would have to be centrally placed in relation to several markets. Being based at one market is not an advantage because for several days of the week it would be closed. Only the largest towns in the study region would have been big enough to sustain permanent stalls, a process fossilised by the encroachment of houses and shops into the market places at Hereford and Gloucester whilst smaller towns still have large unfilled market places.

The evidence for a deliberate location of production sites at these nodal points is slight. Rural potteries are almost by definition going to be closer to several markets than urban-based potteries and, as has been shown in chapter 11, there is evidence that since the early 11th century pottery was rurally produced. The success of the Malvern Chase pottery may be partially due to its position between Hereford, Gloucester and Worcester rather than to its position on the River Severn. It is notable that, for most of the medieval period, the distribution of its wares is not extended along the Severn Valley but does include the three market towns and sites which could have been served from them.

Fairs were held less frequently than markets, normally only once or twice a year and might last for several days. They combined trade with religion and entertainment so that the buying and selling of goods was as much an excuse to

attend as an economic decision. Most of the large towns in the study region had a fair and the attendance at these events would be much greater than at a normal weekly market (Donkin, 1973, 118-9). Fairs would give the population a chance to buy goods that were not normally available and might therefore be the medium through which fineware pottery was distributed. The largest fairs could attract merchants from all over England and abroad. In the early 13th century Bristol had one of the greatest fairs in the country and it is quite possible that this fair was used in the distribution of Ham Green ware jugs and Minety ware tripod pitchers, both of which have very extensive but diffuse distributions. In the later medieval period fairs lost much of their economic importance, due to the growth of the larger towns, which became permanent markets (Donkin, 1973, 118). There is a change in the long-distance distribution of pottery from the early-to-mid-13th century to the later medieval period which again may be related to this process. Later Bristol wares, for example, do not have as wide a distribution as their early 13th century predecessors, although within the area in which they are found they account for a higher proportion of the pottery used.

Most medieval fairs are known from their first official grant in the late 12th or 13th centuries but they may have had a much earlier origin. Since many of the traditional sites of fairs are Iron Age hillforts which probably acted as centres for exchange in the Iron Age there may actually be continuity in their use from the Iron Age to the medieval period although this cannot be proved because there are few characterisable goods in the Saxon period

which might both have been distributed through fairs and have left archaeological traces.

Together with the growth of markets and fairs went the emergence of professions removed from the actual production of goods. Such persons as carters and entrepreneurs acted as intermediaries in the distribution of goods and would have effectively made the distribution of goods overland independent of the ability of the potter to travel long distances. The only factor affecting the distance travelled using this system is the cost of the goods in relation to their bulk. The intermediaries would need to add their costs to the cost of purchasing the goods at the place of manufacture and at the other end of their journey would have had to sell them against local competition.

It may be that the wide, overlapping pottery distribution patterns found from the late 13th century onwards are due to the use of these more complicated marketing mechanisms. In the late medieval and post-medieval periods the final innovation in marketing took place; the development of retail trade. Permanent shops were operated by traders who bought goods off the manufacturers for re-sale. It is known that Malvern Chase pottery was sold at Worcester in the 16th century under this system (Dyer, 1973).

POTTERY PRODUCTION

Developments in the production of pottery have been documented in chapter 7. The main changes which affect the efficiency of the industry are the use of the potters wheel and the capacity of the kiln. The wheel was present in the 10th century industries but was then not used again until

the early 13th century and its use did not become general until the late 13th century. Developments in kiln size are not as well documented but it seems that pottery was fired in clamps or small permanent kilns until the 13th century (ch.7). Large multi-flued kilns are present in the Chilvers Coton, Nuneaton industry but are not known to have been used in the study region. For this reason it is important to excavate kilns at the two late medieval production centres of Malvern Chase and Minety, should the opportunity arise. The effect on the output of a pottery industry of such technical improvements cannot be quantified. Both changes accompany increased distribution scale, although distribution areas had also increased between the early and the later 12th centuries, before the introduction of either technique.

ORGANISATION

The organisation of the potting industry is almost unknown from historical sources. Before the 13th century virtually no evidence exists at all, although potters are recorded at Haresfield and can be inferred at Crockerton (Le Patourel 1968). We can assume that they were working independently and that they were working on the fields for part of the year. It is known that by the late 13th century potters had workshops, presumably with a kiln, a potters wheel and areas to stack pottery to dry (Le Patourel, 1968). An ancillary building has been excavated at the pottery at Laverstock but the relationship of this to the kilns is unknown. It is likely that a potter would have had an assistant or apprentice and it is possible that the 13th to early 14th century potteries producing highly decorated jugs would have had some people specialising in making the

vessel and others in decoration. A detailed analysis of the Laverstock kiln waste might be able to prove this point.

It is thought that pottery from the South Somerset kiln sites might have had a single clay source in the 17th century whereas previously the potters collected their clay from within their properties or wherever they could find it (Williams, forthcoming). The digging and cleaning of clay is therefore an area in which specialisation might have taken place, and which might have led to greater efficiency in production. Petrological analysis can demonstrate this process, providing the clay sources are sufficiently distinct.

CONCLUSION

Some of the factors which may have affected the development of the pottery industry are likely to have been of more importance than others. The available methods of carriage did not change throughout the period and the methods chosen would have depended on the resources of the potter or an intermediary. Methods of carriage are therefore more likely to be changed because of other factors rather than be a cause of change.

The techniques of production are also more likely to change as a result of previous changes in the circumstances of the potter rather than bring about this change. This is emphasised by comparison of the Newbury A and B distributions (figs.2.99, 2.101). The methods of firing and manufacture are the same in both industries yet the later industry, like other contemporary industries, operated on a larger scale than its late 11th to 12th century predecessor.

The remaining factors were probably more important for the development of the industry and include population density, the uses to which pottery was put in society and the organisation of production and marketing. All three factors are likely to have been of fundamental importance and are linked in such a way that a change in one factor would affect the other two.

The data presented in this thesis are not sufficient to determine the relative importance of these factors nor the precise way in which they were interrelated. For example, at several periods there are differences in the size of the pottery industries of the Welsh borderland and the more heavily populated land to the east. If population density was responsible for these differences it is hard to explain why in one period a low population density led to distribution of pottery over larger distances than to the east while in another the same difference led to the production of pottery in a myriad of small centres.

The different response to what appears to be a similar situation was probably due to social factors which are outside of the scope of this thesis. The social situation of a tenant farmer of the late 16th to 17th century was different from that of his 11th century ancestors. It is probable that, like other woodland industries, pottery was treated in the same way as an agricultural crop (Thirsk, 1961). Factors such as deforestation and the relative price of different sorts of agricultural produce may therefore also have been important in producing nationwide changes in the pottery industry.

The interpretation of the evidence presented here therefore finally belongs in the hands of social and economic historians rather than archaeologists.

CHAPTER 13

GENERAL CONCLUSIONS

THE USE OF THIN-SECTION ANALYSIS

Over 1,200 thin-sections have been examined and a large amount of supporting binocular microscope analysis has been undertaken in connection with this research. It is appropriate to question the results of this vast expenditure of time and effort, not only to evaluate their contribution to archaeological knowledge but also to ensure that methodological conclusions reached as a result of this work are made available to future workers.

Petrological analysis can be used to answer several different problems. It is possible to take a sample in isolation and determine from geological literature where the constituents of this fabric originated. Many examples of this method could be cited and the results are extremely variable in their usefulness. At the worst this method can provide no indication at all of the source of the sample, or even be positively misleading by implying a local source through some formula such as "all the inclusions present in this sample could have originated in the locality in which sample was found". At best, this method provides the most forceful results possible if it can be shown that the inclusions in the sample have a limited geological outcrop. The work of Peacock on the Gabbroic clays of the Lizard region of Cornwall used in the south-western peninsula in the Neolithic period is the classic example of the method (Peacock, 1969). The source of the Gabbroic clay can be shown by geological argument alone to a small region on the south Cornish coast.

One such clear-cut result has been obtained in this study, from the analysis of Malvern Chase wares. On petrological grounds alone the source of these wares can be localised to a region c.20 miles by 6 miles in south-west Worcestershire so that it was possible in 1977 to publish a type series and distribution of the products of the Hanley Castle pottery before any archaeological evidence for the kilns had been discovered. Confirmation of this characterisation has come from the field-work of P. Ewence, who has discovered several areas of medieval and later potting waste in the parish of Hanley Castle.

Petrology can also be used to compare the inclusions in one pot sample with those in others. The comparative samples can be pot sherds; other ceramic material such as brick or tile; or briquettes made from clay samples of known origin (Howard, 1982). This is the standard method used in this study and has led to the characterisation of Minety ware, Gloucester TF41b and other groups.

Those fabrics which contain inclusions other than quartz sand are normally variable in the relative quantities, identity, size and roundness of their inclusions. Using these three characteristics it is possible to compare thin-sections, or groups of thin-sections, to show whether or not there are any differences present. If no differences are found then the samples can be placed into a single fabric group. A combination of archaeological and geological judgement can then be used to interpret the grouping. Not all acceptable petrological groupings are the products of a single production centre. A grouping might be a fabric produced at several kilns

forming a contiguous area, as in the case of Post-medieval Welsh Borderland wares, or it might be a ware used only at one centre, such as that used to make Ham Green ware jugs.

The likelihood of the ware being produced at several places is lessened considerably if the ware contains an unusual combination of rock-types or minerals, even if these types on their own have a wide occurrence. If, as at Ham Green, the fabric is formed by the tempering of a clay with material which does not occur naturally in the same area, then vessels made of this fabric were either produced at the same site or were made by potters with the same training.

The final use of petrology is to examine changes in the fabrics produced in a single industry. This is often much more difficult than the previous two applications, since the range of inclusions is likely to be the same. To investigate possible changes, accurate measurement of differences in size, relative frequency and shape are needed. In each case this information is available from a study of thin-sections but is laborious to collect and analyse.

An example of these methods can be found in the work of Darvill and Timby, who have compared the quartz grain size frequencies in samples of different forms made at a Romano-British kiln site in north Wiltshire (Darvill and Timby, 1982). A conclusion from this study was that there was a correlation between the form or intended function of the vessel and the fabric. Similar results have been found in this thesis, the most common differences are between 'kitchen ware' and 'fine ware' and between thrown forms and roof furniture. It is also possible to show changes in clay

or temper sources with time, resulting from the exploitation of new resources. Examples of this change are the Malvern Chase 'pink' fabric, utilised only from the late 16th century, and a sandy variant of Minety ware, which may be limited to the last stages of production at Minety (Chapter 2).

In Bristol, Glamorgan, Worcester, Malvern Chase and Ashton Keynes wares there are differences in the fabric of contemporary ridge tiles and pots. The ridge tiles in all cases have more tempering which includes larger fragments than are found in pottery and in some cases are in a less well-mixed fabric.

There are two possible explanations for the difference between ridge tile and pottery fabrics. Firstly, it is possible that the ridge tiles were more heavily tempered because they are thicker wares, which needed more tempering to allow water vapour to escape during drying and firing. The other possibility is that there was less care taken with the preparation of ridge tile fabrics than with pottery fabrics.

It is possible to choose between these two hypotheses by examining wares in which no difference is found between ridge tile and pottery fabrics, for example Hereford A7b and Minety wares. In both these cases it is likely that the clay was used as dug without cleaning and that no tempering had to be added. Therefore, when a clay was already suitable for potting without further work no attempt was made to add more temper to the ridge tiles.

In the examples where differences are found they are probably due to the clay needing to be prepared by tempering or cleaning before use. In either case, less care may have been taken with the ridge tiles than with the pottery. Bristol ridge tiles often contain large quantities of clay pellets, which were probably present in the parent clay. These are less evident in the pottery fabric, which may therefore have been crushed and sieved to remove them.

A difference between the fabric of 'kitchen ware' and 'fineware' is less common but when present is often more clearly defined than that between pottery and ridge tiles. At Ham Green, the cooking pots and jugs were made from quite different clays. The cooking pots were made in a red-firing clay while the jugs were made in a light-firing clay although the same quartz and limestone sand temper was probably added to both clays. There are also differences between the fabrics used for Coarse Border ware lobed cups and other vessels although the same clay was probably used for both types. The lobed cups were not tempered but other vessels have a coarse quartz sand temper.

The difference between Malvern Chase cooking pots and tripod pitchers in the 12th century is very marked. There is however no proof that the two types were produced by the same potters, only that they were made in the same area. Malvern Chase cooking pots and jugs in the late 13th to 14th century were more similar in fabric. The same clay may have been used for both types but with more sand or gravel added to the cooking pot fabric. Differences between the fabrics of these types become less and less evident with time and by the late 14th to early 15th centuries there is no difference at all. In south-east Wiltshire,

fine sand-tempered Laverstock jugs were produced in the same kilns as coarse sand-tempered cooking pots.

Industries in which no difference is found between the 'kitchen wares' and 'finewares' include Minety, Hereford Fabrics A2 and A3, Worcester, and the later medieval and post-medieval Malvern Chase wares. Some, such as Minety and the later Malvern Chase industry probably utilised clays which could be thrown without much preparation. The Hereford fabrics would have needed tempering since the gravel found in them is not found naturally mixed with Devonian marl.

THE USE OF CHARACTERISATION STUDIES

Thin-section analysis and related studies can therefore reveal a considerable amount about the source and method of manufacture of medieval pottery and tile fragments. It could, however, still be asked to what end this information is needed.

In Chapters 10 and 11 data provided by the characterisation of pottery have been used to show changes in the sources of supply of pottery with time and it is suggested that the evidence implies that by the later 12th and 13th centuries pottery was being distributed by highly efficient means, so that every settlement was able to acquire pottery from a number of sources with little difference between the type of pottery available in a remote village and that present in a major town. This is not a new conclusion. It was suggested by Beresford and Hurst on the basis of a number of excavations on deserted medieval village sites producing mainly 13th to 14th century pottery (Beresford and Hurst, 1971). This study it

has been shown that this means of supply was used from the 12th century, and probably earlier.

Having shown that this pattern of supply is similar over a wide area of southern and western England it is doubtful whether further studies in other parts of southern England are needed to show that the same pattern is general. There are, however, large areas of northern England, Scotland, Wales and Ireland where the early history of the pottery industry is demonstrably different from that in southern England. At York, for example, there was no break in the tradition of wheelthrown pottery production in the 11th century and in Scotland, Ireland and Wales local pottery production began in the 13th century. Quantified comparison of these areas with southern England is likely to be rewarding. Even if the conclusion is that there is no difference in the type of distribution found in these areas from that found in southern England, this would show that previous history and social composition had no effect on the operation of the pottery industry.

DATING

Using the features outlined in Chapter 6, the majority of the late Saxon and medieval pottery in the study region can now be placed into a chronological framework. Usually this means that a type can be dated within a century and sometimes within a half-century. Assemblages can sometimes be dated even more closely, to periods of 20 or 30 years. Further precision has not been achieved from pottery evidence alone. This is probably because the working lifetime of an individual potter would also have been of

this order of magnitude and the period of use of a vessel, once made, may have been of similar duration. This was certainly the case for the late 17th to 18th centuries.

It is not possible to date a pottery type closely if it is not present in any stratified assemblage and is devoid of datable typological features nor if the pottery type is known in stratified assemblages but has a long life-span with no typological development. For example, even a large, stratified, later medieval assemblage, can only be dated within very broad limits since pottery types at that time changed very slowly.

'Early Medieval' cooking pot sherds are also extremely difficult to date unless found in stratified contexts. The type was current from the beginning of the 11th century through to the mid -14th century or later. Some Newbury B pitchers, for example, were originally published by Jope as late Saxon, although they are now known to be definitely post-c.1150 and possibly even of early 15th century date (Jope, 1947). Using petrological analysis sherds from vessels of identical form and made by the same techniques can now be given accurate relative dates (for example Gloucester TF41a and Gloucester TF41b sherds can look identical but while the first is unlikely to be later than the mid-11th century the second could be of mid-13th century date).

For the purposes of this study most medieval pottery is satisfactorily dated so that unstratified assemblages can be used to show the presence of a ware at the site and even the approximate frequency. However, too much reliance should not be placed on differences in relative frequencies, either for dating purposes or to reconstruct

marketing pattern. Many of the tables in chapter 6 and the catalogues in the gazetteer in volume III show clearly that later assemblages almost always contain pottery of earlier date. Only if it is certain that these wares were not still in use can they be discounted. Therefore the relative frequencies of contemporary wares in a group are usually 'diluted' by residual pottery.

Despite intrinsic limitations there are a few aspects of the pottery chronology which are capable of being refined by archaeology. For example, confirmation is needed that all of the Late Saxon wares in the study region are later than the early 10th century since this has the historical implication that commercially produced pottery was neither used in the late 9th and early 10th century towns of the region nor in their surrounding hinterlands. It is therefore important to show that this late starting date is as true, for example, in Gloucestershire and Wiltshire as it appears to be in Somerset and Herefordshire.

The nature of late Saxon pottery in the north Cotswolds, Berkshire and on rural settlements in the Severn Valley is still unknown, as is the dating of their replacement by Early Medieval wares.

Late medieval groups datable to the second half of the 14th century or later are also required to show whether there are differences between the pottery of this period and that of the previous century and to see whether the introduction of 'Tudor' forms, such as the cistern, the lobed cup and the conical bowl, was sudden, as it now appears to have been, or gradual, as in the south-east of

England.

THE USE OF POTTERY TO RECONSTRUCT TRADE ROUTES

Ceramic evidence for trade routes is equivocal, since the presence of a ware at a site may have any number of explanations. Documented examples of the movement of people and households in the medieval period are common and any one of these, or a unique event may explain the discovery of a single sherd. There is nevertheless more chance of explaining a consistent pattern, however uncommon the pottery type. The most likely explanation for such pottery movements is that they are the by-product of regular movements in other goods or people.

For the 10th century, there is so little data that it is not possible to distinguish the normal from the unusual. Therefore no evidence for Late Saxon trade routes can yet be presented. From the 11th century, onwards there is evidence for several trade networks, in which pottery was incidentally carried, allowing the network to be examined.

The first such network links Bristol, Gloucester and Dublin and is indisputable evidence for direct movement of people or goods from Bristol to Dublin and from Gloucester to Dublin, or between other sites close enough to these two towns to be receiving the same wares (chapter 11). The evidence for this route is continuous at Dublin from the 11th century to the mid-late 13th century, at which point the archaeological sequence becomes very fragmentary. Other English coarsewares are found, for example south-east Wiltshire cooking pots and tripod pitchers, but since these are all present in Bristol there is no evidence for direct contact with Wiltshire. After the 11th century ~~is there~~ no

evidence for Gloucester area pottery in Dublin, nor for any of the other 12th to 13th century wares which supplied Gloucester.

From the late 12th century onwards the Bristol-Dublin trade became a more general coastal trade with large collections of Bristol region wares at various sites along the South Welsh coast, declining in frequency to the west but still forming a substantial proportion of the pottery, for example, from Loughor on the Gower peninsula. This is in marked contrast with the evidence from the southern coast of the Bristol Channel, which is also liberally scattered with medieval sites but where Bristol region imports, although still found, are much rarer.

The evidence for this trade carrying on into the later medieval or post-medieval periods is scarce. Bristol wares are found at various South Welsh sites, but predominantly at sites in Gwent, such as Caerleon and Chepstow, which could be interpreted just as easily as part of a cross-river trade. Evidence for trade with Bristol from south Wales ^{West of} Glamorgan or from Ireland is very rare, probably because by that time both areas had flourishing pottery industries. The 16th century Malvern Chase distribution ^{is interpreted} as being part of a Bristol-based coastal trade but by that time there is also evidence for Severn Valley boats themselves travelling around the Welsh coast, carrying mainly malted barley (Lewis, 1927).

Another important 11th century trade route is that to Droitwich (chapter 11). Bath fabric A cooking pots and spouted pitchers are not only found at Droitwich itself but also at Worcester, Pershore and sites along the Cotswolds

and in the Severn Valley. As traded pottery, there is no reason for their presence since there were several pottery sources much closer. The most likely explanation is that this pottery reflects the trade in Droitwich salt and that pottery in the late 11th century was an acceptable commodity to take to Worcester'sire for trade, since the county did not supply its own pottery. It is interesting that in the 12th century, after the start of the Worcester-type industry, the quantity of non-local pottery at Droitwich decreased almost to zero as did the incidence of Bath fabric A vessels in Gloucestershire and North Wiltshire. However, the extraction of Droitwich salt continued (Berry, 1957). This may mean that the local distribution system may have ceased or altered or simply that pottery was no longer an acceptable item of trade.

The network which operated between the East Midlands and the study region from the 10th century to the early 13th century was more diffuse. The main ware in this trade was Stamford Ware and within this ware predominantly glazed jugs. It is possible that these were distributed non-commercially as 'prestige goods' since they were by far the best pottery serving vessels obtainable at the time. However, in the 11th century the trade also included utilitarian vessels such as East Midlands and Stamford greyware cooking pots and St. Neots type cooking pots and bowls. There was a decline in the trade in the late 12th to early 13th century but Developed Stamford Ware and St. Neots type jugs are found in the study region. Lyvveden ware, which replaced Stamford ware locally, is not found in the study region, except for a single vessel from Holm Castle, Tewkesbury. It would appear that this East Midlands

trade was mainly directed to the larger towns of the region, such as Hereford, Worcester, Droitwich, Winchcomb and Gloucester. However, very few rural settlements of early 13th century or earlier date have been examined in the detail needed to find these relatively rare sherds.

Other evidence for non-regular pottery trade is almost non-existent. There is a sparse distribution of Oxford AM jugs throughout Gloucestershire to Hereford and Worcester which is not matched by their distribution to the south into Berkshire, nor to the east into the Lower Thames valley. This distribution probably reflects the main east-west routeway from London to Wales but if so it is remarkable that the pottery does not travel in the opposite direction, to London.

The fall-off in frequency of Nuneaton glazed wares is also probably non-regular and examples are found more often in east Gloucestershire and North Wiltshire than one would predict. This may also be due to travel along a major routeway, following the Cotswold ridge and the Fosse Way from Bristol to the East Midlands. Bristol wares are also occasionally found on this route, for example at Cirencester, while the Minety production area lies just to the south of it and sent a huge proportion of its pottery to Bristol, from whence it reached other sites in Avon as well as being shipped to South Wales, the Wye valley and Ireland.

These examples, however, are rare exceptions and it would be true to say that the material from a site such as 143-5 Bartholomew Street Newbury is more typical (Vince, forthcoming b). Here, out of a vast collection of pottery

covering the late 11th to 16th centuries, only a handful of non-local sherds were found, mainly of Oxford AM, Minety and possibly Salisbury/Laverstock wares. Three imported sherds were recovered, one 16th century Andalusian Albarello and the others mottled green-glazed Saintonge ware. There is no evidence that the site was particularly impoverished and indeed the collection of non-ceramic artefacts was unusually broad (Vince, forthcoming b). There is also documentary evidence for the presence of foreign merchants connected with the trade in wool and cloth but from the pottery one could not infer that Newbury was a flourishing market town let alone one of the most important centres for the 15th century cloth trade in the country.

The distribution of pottery in the Late Saxon to post-medieval periods does not therefore appear to be very responsive to variations in the local or national economy and it is therefore likely that the relative frequencies of pottery from different sources do not reflect the degree of contact between such places and the site.

"There is no better proof of the deceptive failure of pottery to travel the obvious trade routes than the apparent absence of Italian wares from any Southampton context earlier than the late 15th century" (Platt and Coleman-Smith, 1977, 29).

However, this lack of correspondance is unlikely to be random. Detailed comparison between the documentary and archaeological evidence for trade may indicate in which circumstances pottery was transported and in which circumstance trade took place but pottery was not transported.

Within the study region there is insufficient documentary evidence for local and interregional trade for such comparisons to be made but international trade is relatively well-documented for the later medieval and post-medieval periods and it would be possible to compare the continental imports from Bristol and, to a lesser extent, the south Welsh ports with historical evidence for international trade (Carus-Wilson, 1933).

THE FLOOR TILE INDUSTRY

Evidence for the source and distribution of later medieval pottery and floor tiles in the study region is very thorough since few uncharacterised pots or tiles occur.

A comparison of the market for floor tiles and that for pottery shows considerable differences between the two types of artefact. Pottery was in general use by all classes of society whilst floor tiles were always used by a small class, although this class widened with time. Despite this difference, and the probable difference in marketing, there are considerable similarities in the distances covered by the two types of commodity.

In the late 13th to 14th centuries floor tiles were transported over similar distances to contemporary pottery and ridge tiles. There is evidence for the manufacture of tiles for a specific project, for example at Halesowen, but also evidence for the distribution of 'off-the-shelf' stock. It is difficult to compare the frequency of fall-off for the distribution of pottery and floor tiles because of the small number of sites from which floor tiles have been recovered in sufficient quantity for relative frequencies to be valid. It is doubtful, anyway, if the calculation of relative frequencies of floor tile types from a site

adequately reflects their original use.

In the late 14th to 15th centuries the area of distribution of floor tiles is slightly greater than in the previous century, for example Droitwich-type tiles are found at sites in the Bristol Avon and south Gwent. Pottery distributions are also slightly greater at this time, although at present it seems that Malvern Chase jugs were not reaching Bristol and its immediate hinterland at a time when floor tiles from the Droitwich-type industry were.

Newbury-type tiles of the late 14th to 15th century have not been plotted in detail but occur over the same area of Berkshire, the Vale of the White Horse, Eastern Wiltshire and Hampshire as do the contemporary Newbury B cooking pots and pitchers (fig.2.101).

Even in the late 15th to 16th century, when the products of the Great Malvern and Canynges-type industries were definitely reaching areas as remote as the Pembrokeshire peninsula, west Wiltshire and Bath Abbey, there is a strong comparison with the distribution of Malvern Chase pottery (fig.2.62). However the relative quantities of Malvern Chase to other pottery, so far as one can judge, are much lower than the ratio of Severn Valley to other floor tile types. This may well be because other areas had at this time ceased production, or were using only plain floor tiles (Eames, 1980).

Outside the period under study, but useful as a comparison, is the distribution of North Devon gravel-tempered relief tiles and coarseware pottery. These predominantly coastal distributions extended into the Severn Valley in the late 17th century and there is good

correspondence between the distributions of tiles and pottery.

CHURCH BELLS: A COMPARABLE INDUSTRY.

Despite the similarity in overall distribution pattern, it is not suggested that the same methods of distribution were used for pottery and floor tiles. It is far more likely that the purchase of floor tiles was more akin to the acquisition of church bells, which also bear evidence of the origin of their makers (Walters, 1912). Bell-founding would take place usually at the site where the bell was to be used but the founder would come to the site with his equipment, which would consist of a template for shaping the clay mould and a set of metal dies for making the inscription. Other materials, such as the bell-metal could be obtained locally.

The distribution of the products of the medieval bell-foundries has been studied by Walters (1893-4, 1895-7, 1911, 1912, 1918-9). The products of two Severn valley foundries can be identified, one was situated at Gloucester and the other at Bristol. During the later medieval period, Bristol bells are found over a much wider area than those from the Gloucester foundry. They include examples from Dorset, south-east Wiltshire and a large number along the south Welsh coast. There are comparatively few Bristol bells from the south-west peninsula. This may be due to competition from another large-scale foundry, situated at Exeter. However, although the specific reasons for the shape of the distribution area vary from commodity to commodity there are points of similarity between three quite different types of artefact whose distribution may have been organised in Bristol. In each case coastal

distribution is evident but there is more evidence for trade along the south Welsh coast than along the Somerset, Devon and Cornish coast.

SUMMARY OF CONCLUSIONS.

The initial aims of this thesis were: to produce evidence for production and distribution of medieval pottery; to extract from the data regularities in location of production and distribution of the finished products and to examine the processes which governed pottery production and distribution.

The first aim has been adequately achieved for the 13th century onwards but for the 10th to 12th centuries there still needs to be much initial fieldwork before even the basic facts can be accepted. For example, there is an almost complete lack of data from rural sites until the 12th century but it is unlikely that earlier settlements were aceramic. It is probable that it is a consequence of the smaller pre-12th century population.

POTTERY FORMS AND FUNCTIONS

From the 11th to the 15th century pottery was used predominantly for two purposes, cooking and serving. In both areas of use there were other materials which could fulfil the same function but all were more expensive. However, in the late 13th to 14th century there was a steep decline in the use of pottery cooking vessels. Wood and metal were also used at this time for the manufacture of drinking vessels. In the later 15th century pottery versions of such cups became more frequent. During the 16th century the production of tableware in pottery became much more common, leading in the early 17th century to

industries whose production was dominated by bowls, dishes and plates.

No principles governing the changeover from one material to another have been found. It is likely that the underlying principle is such that a slight fluctuation in the cost of production of vessels in one material could tip the balance between the different materials. For example, the changeover from ceramic to metal cooking vessels in the late 13th to 14th century was due to the increased availability of metal vessels, which itself has several causes, one of which is that the economy was able to support bronze-foundries where economies of scale and the use of casting techniques could bring down the price of metal vessels.

The later changes from wood to pottery drinking vessels and tableware and may have been influenced by advances in the techniques of production of the pottery vessels. Both types require more control over the clay in throwing than is needed in the production of ceramic jugs and cooking pots. Advances in the use of glaze and decorative techniques might also have been a factor although fluctuations in the relative cost of the raw materials involved may also have been important.

Towards the end of the sixteenth century potters producing drinking vessels had to compete not only with wood workers but also with locally produced glass. A number of glasshouses are known in the study region, mainly founded by Huguenot immigrants (Vince, 1977d fig.1). Earlier glass is very rarely found in archaeological contexts in the study region and cannot have had a serious

effect on the production of pottery.

Changes in the quantity of pottery used were as important as these qualitative differences. Ceramic cooking pots of 12th to 13th century type would have been rough and ready utensils whose period of use might be as little as a year. This would create a steady demand for replacements. A comparison of the relative sizes of cauldrons and ceramic cooking pots shows that the metal vessels had a greater capacity (although this difference could not be quantified using examples from the study region). This difference may indicate variations in function between the types but is just as likely to be due to the inability of the potter to produce stable vessels of the size of the metal cauldrons (it was within the capability of the potter to make vessels of that size, for example storage jars, but it is possible that they would not have withstood the sort of treatment given to a metal cauldron).

Conversely, pottery vessels have an advantage over wooden ones for tableware (if glazed, they are easier to clean) but again it is possible that they would have been more fragile and therefore would need more frequent replacement. Royal orders for pottery from Kingston-on-Thames show that large quantities of jugs were ordered each year (Hinton, M., 1980). Five orders survive between 3rd November 1264 and 26th December 1266. Between 500 and 1000 jugs were ordered at a time and one order for 600 pitchers was followed only a month later by an order for 500 pitchers. Thus in 25 months the royal household obtained 3800 pitchers from one source alone. We have no information on the consumption of jugs by lesser households but it is likely to have been on a similar scale for the

seigneurial households. People at the bottom of the social scale may well have had to take more care over their jugs, hence the occasional use of lead plugs to repair jugs, for example at Loughor Castle and Gloucester (Site 53/69). Social differences in the treatment of pottery vessels could give rise to identical assemblages from sites of differing social status which result from quite different patterns of use.

This difference in attitude towards pottery reflects its varying value in the society. It is likely that when glazed jugs were first introduced they would have been more highly prized than in the late 13th to 14th centuries.

The rate at which vessels were broken and the value placed upon them by their users would affect how much they would be willing to pay to replace them and this in turn governs both the rate and location of the production of new vessels.

The state of the economy would have played an important part in the development of the industry. All things being equal, the quantity of pottery in use in a society and the rate of acquisition of pottery both depend on the amount of economic surplus. The 'richer' the society is the more non-agricultural craftsmen the peasantry can support and conversely the desire for manufactured goods is one reason for the production of an agricultural surplus. The social structure would also play an important part in this equation, since if the land-owning class purloined all of the economic surplus then there would be nothing left for the acquisition of manufactured goods.

The spread of manufacture and use of glazed serving vessels in the 12th century may therefore be seen as a measure of the available agricultural surplus. Other evidence for the presence of an increasing surplus during the 12th and 13th centuries comes from the granting of markets and fairs to numerous settlements in the region. These were given not only to established towns but also to settlements which, to judge by present day topography, were mere villages.

We do not know how successful these rural markets were; only the large ones are mentioned in subsequent documents, and these documents are predominantly of the Tudor period and later (Everitt, 1967). It seems reasonable to suppose that the majority of these markets were not merely speculations by the grantee and that they fulfilled a need for a network filtering agricultural produce in one direction and manufactured goods, services and different agricultural goods in the other.

If this correlation is correct then it is of interest that the present dating of the introduction of glazed wares would place it consistently earlier than the granting of markets or borough status in the same areas. It may also be relevant that the foundation of both markets and boroughs is earlier in central southern England than it was in the counties of Herefordshire and Worcestershire (Beresford & Finberg, 1973). This, together with the general increase in pottery distributions in the later 12th century, may be strong evidence to show that the foundation of towns and markets was built upon a pre-existing surge in the local economy rather than bringing such an upsurge into existence.

THE DEVELOPMENT OF THE MEDIEVAL POTTERY INDUSTRY

Although individual industries may have had unique histories it is possible to recognise the same stages in the development of the pottery industries of most regions of southern England, for example the London area, the South West (J. Allen, pers. comm.), East Anglia (Clarke and Carter, 1977; Jennings, 1981) and the South East (Streeten, 1980, 1982).

The early ceramic development is different in all areas, but from the late 11th century onwards the same pattern is found. Small-scale 'early Medieval' industries existed everywhere except in the western Celtic fringe. At some stage, thought to be in the mid-late 12th century, there is an improvement in technology, sometimes involving the introduction of the wheel and an increase in average distribution distance. This marks the beginning of the 'Medieval' industries, even though in some areas the change is less obvious than others.

In the next stage, industries of regional scale emerged out of the 'medieval' industries. The distinction between 'medieval' and 'regional' industries is an arbitrary one made solely on the basis of distribution. There is, however, a definite break between those industries supplying centres more than 40 miles away with more than 10% of their pottery and those that do not, most of which are substantially smaller (chapter 10). The earliest example is that of the Surrey-Hampshire border, which achieved 'regional' scale in the mid-14th century. Within the study region the only example is that of Malvern Chase in the late 15th to 16th centuries. In the south-west two

regional scale industries produced North Devon and South Somerset wares respectively. These industries too had their origins in the medieval period and underwent a period of growth in the late 15th and 16th centuries.

The late 16th to early 17th centuries saw the emergence of factories producing specialised finewares, such as light-bodied earthenwares, tin-glazed wares and, from the late 17th century onwards, stonewares. The final stage in all the sequences, is a network of small country potteries producing lead-glazed earthenware (Brears, 1971). These potteries can be recognised as early as the 16th century and still exist today.