

The Growth of the Roof-tile Industry in Later Medieval Wessex

By J. N. HARE

Peter Symonds' College, Winchester

DOCUMENTARY REFERENCES to the use of clay tiles and stone slates are used to build up a picture showing where tiles were produced and where they were used. A chronology for the industry is established and some of the influences on its location and expansion are discussed. The continuity of production at a number of centres is established, as is the growth of the industry in the later Middle Ages.

Roofing tiles provide one of the most common and neglected forms of finds on many later medieval excavations. Despite the daunting quantity of the material, we know little about the development of the industry or about its patterns of production and distribution. While the study of the excavated material has moved on to more sophisticated forms of analysis with these questions in mind,¹ little has been done to tap the great potential offered by documentary evidence.² This paper seeks to use such material to provide an outline sketch of the development of the industry in one part of southern England.

The conclusions of this study are primarily based on references to building works contained in the manorial accounts, which may record the purchase and carriage of tiles or the presence of a seigneurial tile kiln. These can show that in a specific year, tiles were purchased from a particular place for building works at a certain manor, and thus enable us to establish the movement of some tiles with a chronological and geographical accuracy denied to archaeologists. Changes may be ascertained both in the type of roofing materials used and in the source from which they were brought. Such evidence has occasionally been used in isolated examples,³ but not hitherto in a systematic attempt to establish chronological and regional patterns of supply and distribution.

There are, however, difficulties in using the manorial accounts to tackle such problems. Not every account roll provides information about tiles. The accounts were drawn up each year and cover the liability of local officials: what they should have received from the manor, the items of expenditure that they should have made, and how much they owed. They would not need, however, to purchase tiles every year. Even if building repairs or construction did take place, such works were not

necessarily detailed on the manorial accounts, small quantities of tiles might be included in the overall payment to the tiler for making the repairs, and large-scale works might either be recorded in summary form or accounted for on a separate account that is now lost (as at Bishop's Waltham).⁴ Even where a purchase of tiles is referred to, it is not always specified from where they had been brought. Large numbers of accounts must therefore be combed to establish relatively few useful references. Moreover, it is necessary that some manors at least are examined over a substantial period and not just on isolated accounts, as the latter may give a misleading idea of what type of roofing material was typical. Thus in an individual year the repair of roofs or the re-use of existing tiles or slates might lead the manor to purchase materials that would not otherwise have continued to be bought. Finally the leasing of the demesnes or manors, such as was occurring in the 15th century, led to much of the routine repairs becoming the responsibility of the lessee and ceasing to be accounted for.⁵

The evidence of the manorial accounts applies to buildings of relative importance, from the domestic buildings and barns of a manorial complex to a country palace such as that at Bishop's Waltham. For peasant accommodation a cheaper substitute, particularly thatch, would be expected (as at Durrington and Kingston Deverill).⁶ Moreover, within a manorial complex, a variety of roofing types could be found, from clay tiles and stone slates to the shingles and thatch used at Kingston Deverill and Silkstead,⁷ and on some chalkland manors thatch continued to be extensively used on the lord's buildings. The conclusions are not therefore offered as typical of all other roofing materials. In referring to slates and tiles, the practice of the documents will be followed: red clay tiles will henceforth be referred to as tiles, and stone covering, whether of local limestone or blue slates, will be referred to as slates. The documents use the Latin *tegula* for tiles and the vernacular *sclett* for slates.⁸ Comparison of the nomenclature with the source of the roofing material shows that, in Wiltshire and Hampshire, the distinction was an accurate and consistent one in the 14th and 15th centuries.

The origin of this study lies in material collected for other purposes in connection with earlier studies of the rural economy of later medieval Wiltshire, and of the buildings of Bishop's Waltham Palace, Hampshire,⁹ supplemented by an examination of many other account rolls. The manorial accounts were drawn from most parts of these adjacent counties, but they do not provide a comprehensive coverage of the whole area: there is little on the NE. of Wiltshire or the SW. of Hampshire. The survey includes, however, the chalk downlands, the clay and sands that lie around them, and Cotswold Wiltshire. It includes areas where stone slates could be easily obtained and those where they could not: areas near the sea and those far from it. For Hampshire much of the evidence comes from estates belonging to the bishopric of Winchester, with their remarkably extensive surviving documentation, and from those of the cathedral priory at Winchester, while for Wiltshire the evidence comes from a wider range of lords and estates. The documented production sites have been listed in Table 1 with their known period of activity. This was an industry that was divided rather than united by the chalk downlands which provided such a dominant element in the geography and economy of Hampshire and

Wiltshire, a relationship reflected in the grouping of the kilns. In Hampshire they have been grouped to the N., E. and S. of the chalk (Fig. 1). The W. part of the county, in the area of the R. Test, has been linked with the neighbouring area of SE. Wiltshire. The latter provides the most prolific area for tile production in Wiltshire. The first section will provide a chronological account of the development of the industry, collecting together the present known documentation about the various tile centres. This section provides an essential basis for the later discussion of some of the general aspects of the industry. Such a survey cannot hope to produce a re-evaluation of the later medieval tile industry as a whole, but rather to open up a neglected source of material, and to offer some local conclusions. If it encourages others to work on this industry and on similar sources both here and elsewhere, it should have performed a useful function.

CHRONOLOGICAL DEVELOPMENT

There is little known documentary evidence of roof-tile production for much of this area before the last quarter of the 14th century. In part this reflects the relative lack of material that has been examined for the earlier period, but not entirely. The orders for supplies for the royal residences in Wiltshire in the 13th century suggests that shingles then provided the standard roofing material and that slates and tiles were unusual.¹⁰ On other buildings thatch was used, and subsequently there were signs of a shift towards roofing the main buildings in the more durable slates, as occurred at Silkstead and Chilbolton in the early 14th century or at Winchester in the 13th and early 14th centuries.¹¹ This was a development that was to continue throughout the period of study, the change at Kingston Deverill not occurring until the 15th century.¹²

For the earliest medieval clay tiles we are dependent on archaeological excavations or early illustrations. Clay 'Roman type' roof tiles, in which the roof was covered by flat flanged *tegula* tiles, with the join between them covered by curved *imbrex* tiles, have been found in late 12th- or early 13th-century contexts in Southampton and in a small but increasing number of sites outside the region, as at London, Reading and Battle.¹³

The production and use of plain clay tiles as a roofing material seems to have become established here in the 13th century, but only in certain areas and on a limited scale. The industry seems to have first settled in N. Hampshire, and SE. and, to a lesser extent, N. Wiltshire, in those areas furthest from the sea and the coastal slate trade. Some of the earliest evidence comes from excavation. Roof tiles were used in the construction of a floor tile kiln at Clarendon Palace, probably dated to before 1244,¹⁴ suggesting that there was already local production of roof tiles. Shortly afterwards, in 1255, a building there was ordered to be roofed in tiles, and at Marlborough Castle further N. tiles had been bought in 1239.¹⁵ In the W. of Wiltshire, at Nash Hill near Chippenham, an excavated group of kilns of later 13th- or early 14th-century date seem to have produced roof tiles as well as pottery and floor tiles.¹⁶ In N. Hampshire, the bishop of Winchester had a kiln at Highclere from 1291, although the manor had been using tiles from at least 1268, and it probably remained consistently in use throughout our period. At Odiham, tile production took

TABLE I
TILE PRODUCTION CENTRES IN LATER MEDIEVAL WESSEX:
A LIST OF DOCUMENTED EXAMPLES

GROUP I: N. HAMPSHIRE	
Highclere	1297-1482
Odiham	1357-1414
Woodhay	1448
GROUP II: E. HAMPSHIRE	
Isington	1405-15
Liss	1439-41
Oakhanger	1360
Petersfield	1389-1507
GROUP III: S. HAMPSHIRE	
Bishop's Waltham	1372-80
Crockernhill (in Fareham)	1464
Fareham	1486
Funtley	1422-92
Marwell	1438-1507
Otterbourne	1388-1539
Southwick	1538
Titchfield	1468
GROUP IV: W. HAMPSHIRE AND SE. WILTSHIRE	
Alderbury	1341-1481
Michelmersh	1309-1496
Mottisfont	1445-48
Tytherley	1450
GROUP V: N. AND W. WILTSHIRE	
Longbridge Deverill	1411

N.B. The dates are those of the first and last known reference to tile production, not the beginning and ending of tile production itself.

place from 1275 and 1280.¹⁷ Elsewhere in the N., tiles were being bought in mid century at Crondall and later in the century at Whitchurch, while over the border at Farnham, in Surrey, an excavated tile kiln has been dated by thermo-remnant magnetism to 1235 \pm 15.¹⁸

For the first three-quarters of the 14th century this pattern of tile production and use was to continue: the use of tiles being restricted to SE. Wiltshire and N. and W. Hampshire, in the areas generally less accessible to stone slates. In Wiltshire, tile production was dominated by the kilns at Alderbury, near Salisbury. Alderbury may have been the source of the mid 13th-century tiles, already referred to, at neighbouring Clarendon Palace, as it was certainly to be a century later. By then, an important industry had developed. Thus in 1341, 33,300 tiles for the small royal palace at Lugershall, 16 miles away, came from Alderbury.¹⁹ The latter was also a regular supplier of tiles to the nearby palace of Clarendon providing 64,000 tiles, 1,000 hiptiles and 50 crest tiles in 1354, and much smaller quantities in 1365-67.²⁰

Alderbury also provides us with a rare glimpse of a community of tile workers, for the 1379 poll tax returns record the presence of 17 tilers, and such a concentration shows that these were primarily tile makers rather than roofers. Nine of these men were originally described as labourers, the description tiler being subsequently added.²¹ This double description may reflect the dual role of such men, both general labourers and involved in a specific craft, and their payment above the basic poll tax rate suggests a degree of substance. Alderbury was the only tile-making centre that can be seen in the substantial surviving Wiltshire returns,²² only one village had two tilers or tile makers, and others had only one or none. Moreover, these isolated craftsmen were probably tilers rather than tile makers.

The industry now also extended into W. Hampshire, with a production developing at Michelmersh shortly after 1300. Thus in 1307, the manorial accounts recorded the purchase of 6,700 tiles and 200 ridge tiles for dispatch to Winchester, and from 1309 a piece of land was let to the tiler. From henceforth tiles were also regularly bought for the manor, although previously it had been slates that were purchased.²³ Other evidence also suggests the use of tiles in this part of Hampshire. Thus tiles were bought for East Tytherley, near the Wiltshire–Hampshire border in 1368–73, although the source is not specified,²⁴ and for Chilbolton, several miles upstream from Michelmersh, in 1346 and 1384. Here at Chilbolton, however, the purchase of slates seems to have prevailed in the period 1392 to 1396.²⁵

In the N. of Hampshire, tile production continued at Highclere in the bishopric tile kiln, as in 1308, 1342 and throughout the later 14th century with up to 58,400 tiles being produced and tiles being sent to Overton and Ashmansworth in 1382.²⁶ It also continued at Odiham, which in 1357 supplied 12,000 tiles to Beaufreyr in Sherborne St John,²⁷ and which was probably also the source for the tiles purchased in 1332 and 1371 for Odiham itself. Tiles were also used in 1338 at Wootton, and in 1368 at Fremantle, although in none of these cases was the source specified.²⁸ Further E. at Bishop's Sutton in 1360 tiles were brought from the kilns at Oakhanger (in Selborne) and Farnham (just over the border into Surrey).²⁹ An unidentified centre at Flexham produced tiles for Bishop's Sutton in 1356.³⁰

For most of the 14th century, as earlier, the roofing of important buildings in the Hampshire basin and the S. parts of the Hampshire chalklands was done with stone slates rather than tiles, as at Winchester itself, on the nearby manors belonging to the Cathedral Priory, or at Southampton, Bishop's Waltham or Portchester.³¹ Such places were not exclusively dependent on slates but might also have used clay tiles, although in much smaller quantities. At Bishop Waltham, slate provided the standard covering, although tiles were purchased in 1353 and the hall was covered with shingles.³² Tiles were also found in Winchester and nearby Silkstead.³³ The pre-eminence of slate is also shown in individual accounts, slate roofing being found or slates being bought at East Meon and Hambledon in 1334, Winchester in 1335, Crawley in 1356, and Barton in 1385.³⁴ The evidence of excavations and occasional specific references to blue slates suggests that the slates of S. Hampshire were part of the well-known trade in blue slates from Devon and Cornwall.³⁵ Some came through Southampton, or St Denys, but Botley seems to have been a major centre for the trade in central Hampshire.³⁶

From the last quarter of the 14th century onwards there were increasing contrasts between developments in the two neighbouring counties: in Wiltshire, the geographical spread of tile production and consumption continued to be restricted by the use of stone slates, but in Hampshire there was a considerable growth of tile production at the expense of slate, particularly in the S. of the county.

In Wiltshire the Alderbury kilns continued to be active. They provided tiles for Ludgershall in 1436, Winterbourne Stoke in 1437, Salisbury in 1446, Downton in 1466 and Bishopstone (Ebblesbourne) in 1481.³⁷ The chamberlain's accounts for Salisbury also suggest that this was a city where clay tiles predominated, although they do not specify the source.³⁸ Tiles were also bought for Durrington in 1413, Enford in 1433, and for Combe Bisset in 1467, although here again the source is not stated.³⁹ It is noticeable that all the references concerning a specific source are to Alderbury, a single rural parish, suggesting that it was this alone that supplied the needs of SE. Wiltshire.

Apart from this SE. corner of the county, Wiltshire was characterized by the use of slates, and only one other tile production centre has been found in the 15th century, at Longbridge Deverill which supplied Devizes Castle with tiles in 1411. Significantly the latter were crest tiles and these were probably in use with the stone slates that were also purchased at the same time.⁴⁰ Situated in an area where stone slates were easily available and prevalent, the kilns may have concentrated on a more restricted range of products, and this example should not challenge the general picture that most of Wiltshire was dominated by slate. The slates themselves usually came from the Cotswold part of Wiltshire, known sources being at Cheglow,⁴¹ Corsham,⁴² Haselbury⁴³ and Frome (Somerset),⁴⁴ but also from the Chilmark quarries,⁴⁵ and from Hindon.⁴⁶ Slates were also used in the SW. at Knoyle in 1466, Longbridge Deverill in 1503, and in the W. at Trowbridge in 1373.⁴⁷ This roofing material was not merely used in the immediate vicinity of the quarries, but also predominated in much of chalkland Wiltshire, where it ran parallel to the extensive use of thatch. Thus at All Cannings and Urchfont, in the centre of the county, slates were used throughout the later 15th century. At Durrington further E., slates were bought from Chilmark in 1415, although it also used tiles and 'purbeckstone' (or slates from Purbeck).⁴⁸ Ludgershall on the far eastern edge of the county used slate as well as Alderbury tiles on the buildings of the castle; this was the case both in 1341 and 1436, and slates were also bought in 1429-34.⁴⁹ These two manors probably represent the zone of division between the tiles of the SE. and the slates further W. It was a band which also included Salisbury where slates as well as clay tiles were used.⁵⁰ Finally in the N. of the county at Oaksey and Pole, slates were used.⁵¹

Thus, most of Wiltshire continued to be characterized by the use of slate on the more important roofs in the 15th century; by contrast Hampshire was to see a major expansion of the tile industry during this period. In the N. of the county the Highclere industry continued and probably expanded. In 1407, 22,450 plain tiles and 350 curved tiles were produced for the bishop and in 1416 tiles were sent the long distance (23 miles) from Highclere to Bishop's Waltham, in S. Hampshire. By 1482 nine kilns are referred to in the accounts. Nearby, tiles were produced at Woodhay in 1448.⁵² At Odiham, production continued to take place, tiles being sent from there to

Farnham in 1401, 1413 and 1414, and it probably continued to supply the substantial quantities of tiles purchased at Odiham in 1399 and 1439.⁵³

The increasing opportunities for tile purchase is reflected at Farnham, just over the border into Surrey, where tiles were initially produced at the manor itself, the bishop having a tile kiln here in 1372.⁵⁴ Subsequently, however, they were brought from the kilns at Tongham (1400, 1413, 1453) and Shalford (1372, 1399, 1419, 1422) (Surrey), as well as from Odiham in N. Hampshire and Isington in E. Hampshire (1415), as well as from the unknown 'Dymershe' (1453).⁵⁵

In E. Hampshire, it was Petersfield that emerged as the major centre of tile production. It was operational by 1389, and produced tiles for the bishopric of Winchester estates at Bishop's Waltham from 1389 to 1416,⁵⁶ East Meon in 1441, 1453, 1454, 1466, 1481, and 1507,⁵⁷ and Hambledon in 1481.⁵⁸ East Meon had already been using tiles in 1396, but the source was not specified.⁵⁹ Two other kiln sites were in operation in the Petersfield area, but probably on a much smaller scale. Thus Isington produced 500 tiles for Farnham in 1415, and a kiln was already in operation in 1405.⁶⁰ Finally, tiles were brought from Liss to East Meon in 1439 and 1441.⁶¹

In the W. of the county the kilns at Michelmersh continued to be active, and by 1413 showed an increased rent. Tiles from here went to Crawley in 1449, and to Chilbolton in 1496.⁶² Other kilns had become established by the 15th century. When the new Angel Inn was being built in Andover in 1445-50, tiles were brought from Mottisfont and Hatt (in Mottisfont) in 1445, 1447 and 1448, and from Tytherley in 1450, as well as from Woodhay, one of the northern group of kilns, in 1448. Although no other reference to these kilns has yet been found, they were able to produce substantial quantities of tiles with 30,000 coming in a single year from Hatt and 23,000 from Tytherley.⁶³

It was in the S. of the county in the chalklands and the Hampshire basin that the most dramatic growth occurred, with slate increasingly being replaced by tile. The development may be typified by Bishop's Waltham where an extensive study of the records enables the trends to be seen more clearly than elsewhere.⁶⁴ Here, before the rebuilding works inaugurated by Bishop William of Wykeham in 1378, the palace had been roofed predominantly in slate, although thatch and shingles were also to be found. Wykeham had his own tilehouse at the manor, active from at least 1372 to 1380, and from henceforth the roofs were increasingly covered with tiles. Slates continued to be purchased and reused in the first half of the century, however, and in 1401 a building was rebuilt with a roof of Purbeck slates; but by the 15th century the palace was predominantly roofed in tiles. Later in the 15th century, Winchester was to see a similar shift from slate to tile. Tiles were little used in the building accounts there before the 15th century and slates were rarely brought to Winchester after 1500, but here, as at Bishop's Waltham, the shift was not sudden and slates continued to be used in the city throughout the 15th century.⁶⁵ This increasing use of tiles was coupled with a continued, but declining, use of slates, as seen in their purchase at Marwell in 1435, 1436 and 1481, Fareham in 1466, Droxford in 1467, Bitterne in 1481 and Binstead in 1488.⁶⁶ At Southampton slates were still being purchased well into the 15th and early 16th century, and they were used near the

coast on the new buildings at Warblington in 1518.⁶⁷ In general, however, this was to be a period when clay tiles were taking over from slate in S. Hampshire.

So far up to eight different tile-producing centres have been documented for the period from 1370 to 1530 in S. Hampshire. While new centres may well be found, it is perhaps significant that further research is tending to provide additional references to known ones and not new kilns. The earliest tile kiln whose presence has been established in S. Hampshire was that at Bishop's Waltham which produced tiles for the episcopal works there from 1372 to 1380, although it then went out of use.⁶⁸

The kilns at Otterbourne, S. of Winchester, produced tiles for Waltham in 1388, as well as the better known floor tiles for Winchester College in 1396, roof tiles for Wolvesey Palace in Winchester in 1397 and for Winchester College in 1402.⁶⁹ Later it supplied tiles to Winchester during the 15th century, to Marwell in 1436 and to Wolvesey in 1481, and was still a centre of production in 1539.⁷⁰

Funtley, in Fareham, was another centre that produced for Bishop's Waltham, in 1422-26. It also produced tiles for Binstead in 1492.⁷¹ It may also have been the source of the crest tiles bought in Fareham in 1481 for Wolvesey Palace and in 1486 for Winchester. Fareham also includes Crockernhill, whose kilns supplied tiles to Binstead in 1464. The industry went back substantially before this, as hearth tiles were produced here in 1396 for Portchester Castle.⁷²

Only one example has been found of tile production from Titchfield, when tiles were brought from there to Binstead in 1468.⁷³ By 1539, Southwick also possessed a tile house.⁷⁴

Marwell, near Winchester, was to become a major producer during this period, but it was probably not producing tiles on any substantial scale before the 1430s. This conclusion may be inferred from the absence before then of Marwell tiles in the extensive documentation at Bishop's Waltham, which was both a neighbouring manor and also belonged to the same lord, the bishop of Winchester. Instead tiles came from much further away, from sources at Otterbourne, Petersfield and Funtley. It seems unlikely, if an industry had already existed at Marwell, that it would have not been used. Moreover, the Marwell accounts for 1435 and 1436 suggest both that slates were still widespread there and that tiles bought for the tile houses came from Otterbourne, not from Marwell itself.⁷⁵ But by 1438 Bishop's Waltham had begun to turn to Marwell for its tiles and already by this time the latter was able to produce on a large scale. Thus in 1439 the tilers at Marwell were able to produce 79,200 tiles and 180 crests for Waltham, in 1441 and 1442, 22,000 tiles in each year. In addition in 1441 they produced 5,000 tiles for East Meon and in 1442, 54,000 tiles and 120 great crest tiles for the new roof of the great hall at Wolvesey Palace, Winchester.⁷⁶ During the second half of the 15th century, Marwell appears to have been the only supplier of tiles at Waltham.⁷⁷ In addition it produced tiles for other bishopric properties at Marwell itself, Bishop's Sutton, Wolvesey Palace, Binstead and Droxford Philip, as well as being a source of tiles for the nearby town of Winchester.⁷⁸

In the course of the later Middle Ages, clay-tile production grew to become the dominant roofing material in buildings of importance in Hampshire and SE.

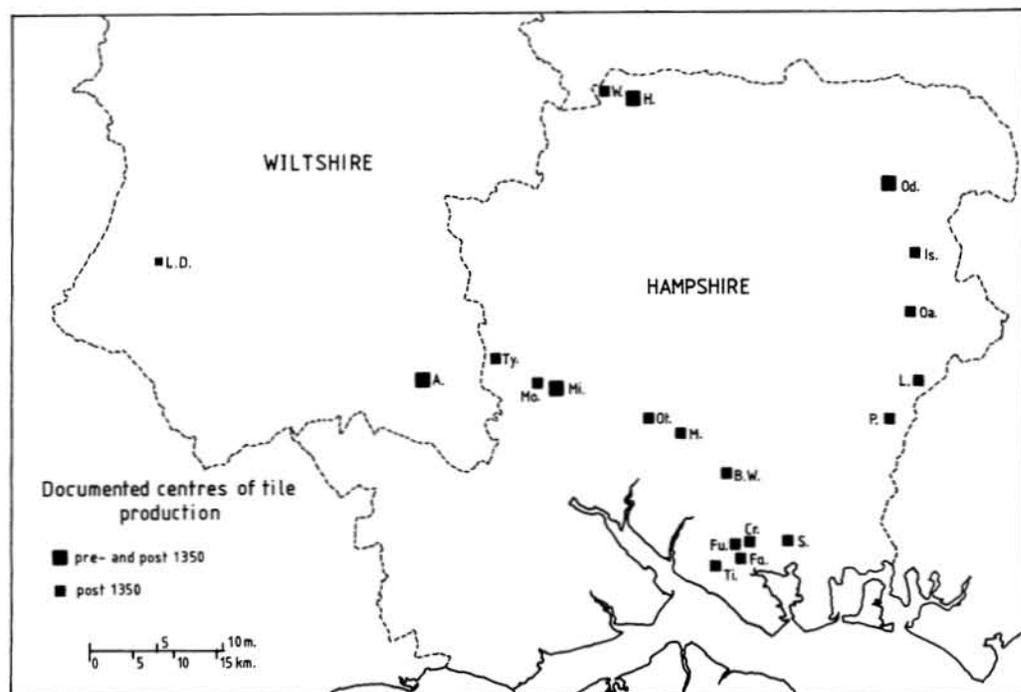


FIG. 1

Documented Centres of tile production: I. North Hampshire: Woodhay (W), Highclere (H), Odiham (Od.). II. East Hampshire: Isington (Is.), Oakhanger (Oa), Liss (L), Petersfield (P.) III. South Hampshire: Southwick (S.), Crockernhill (Cr.), Fareham (Fa.), Funtley (Fu.), Titchfield (Ti.), Bishop's Waltham (B.W.), Marwell (M.), Otterbourne (Ot.). West Hampshire and south-east Wiltshire: Michelmersh (Mi.), Mottisfont (Mo.), Tytherley (Ty.), Alderbury (A.). IV. North and west Wiltshire: Longbridge Deverill (L.D.)

Wiltshire (Figs. 1 and 2). First established in N. Hampshire and SE. Wiltshire, it had expanded during the 15th century at the expense of the imported slates that had hitherto been so widespread in S. Hampshire.

INFLUENCES ON PRODUCTION AND DISTRIBUTION

The establishment of an account of the development of the industry provides a necessary prelude to a consideration of some of the influences that affected the production and distribution of tiles. The list of production centres that has now been compiled is unlikely to be comprehensive, and conclusions must therefore be provisional. Our corpus of sites does, however, enable us to establish that tiles were being produced in long-established and not merely transient centres. A substantial number of manors bought tiles, yet they were buying them from a very limited number of places; so far only seventeen centres have been found operational in the 15th century in these two counties. Moreover, further research generally seems to be increasing our references to known centres rather than generating new kiln sites. While some of the centres would seem to have been of transient or local importance,

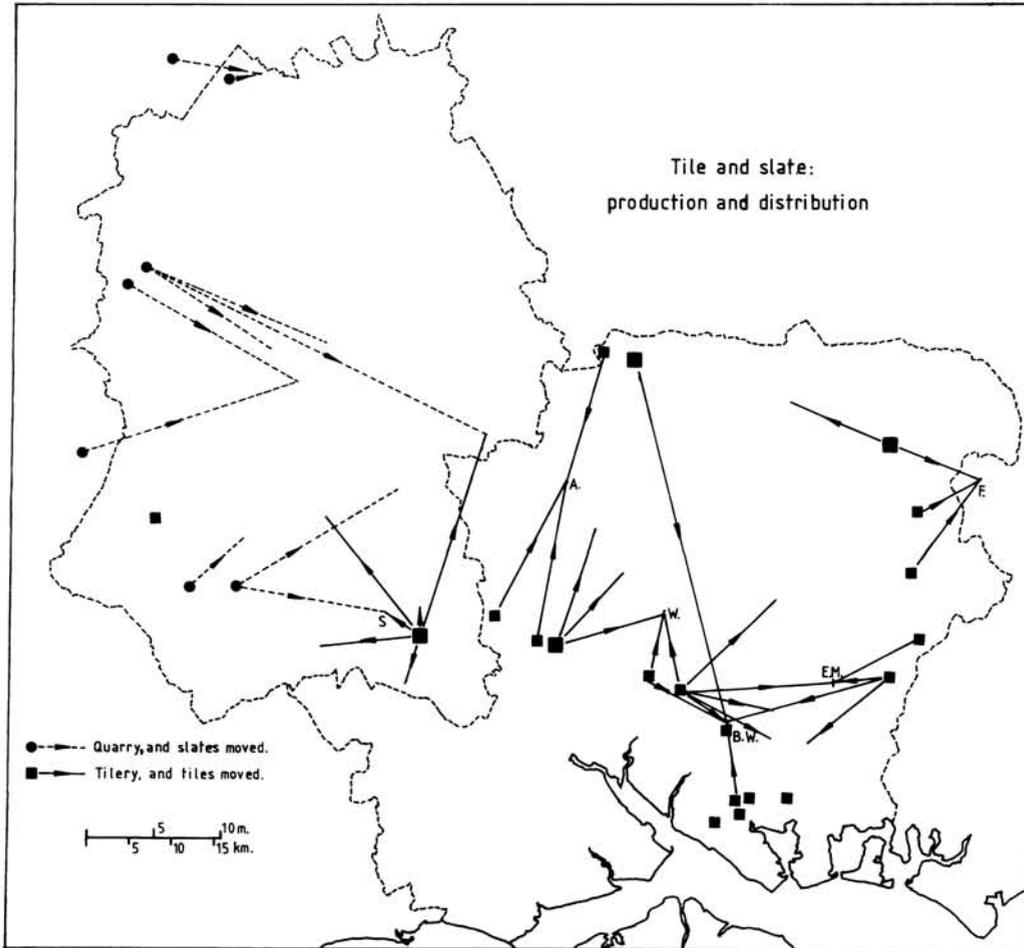


FIG. 2

Slate and tiles: production and distribution. The known movements of tile from the following production centres: Odiham, Petersfield, Marwell, Michelmersh and Alderbury (see Fig. 1), and to the following consumers: Farnham (F.), East Meon (E.M.), Bishop's Waltham (B.W.), Winchester (W.), Andover (A.), Salisbury (S.)

and this would seem to have been the case with most of the E. Hampshire kilns, others operated on a much more permanent or substantial basis, as with those at Alderbury, Petersfield, Marwell, Otterbourne, Highclere or Michelmersh. Regrettably our sources do not provide any information about the total output of the kilns, since they merely represent individual purchases, but the latter show the substantial scale of some of these kilns. A comparison with kilns elsewhere may be provided by York and Wye. At York, those belonging to the Vicars Choral provided one of the two tileries catering for this the second largest town in England. In the 1420s this produced an output of between 70,000 and 122,000 tiles per year. The large kilns at Nackholt (Wye, Surrey) produced 100,000 tiles of different sorts in 1355 and 190,000

in 1374.⁷⁹ By comparison, Alderbury in 1354 produced over 65,000 tiles for Clarendon Palace alone, and Marwell in 1439 and 1442 produced over 79,000 tiles for the bishopric itself. Given that they were also probably providing for other customers, production could evidently be on a large scale.

Tile production needed certain basic requirements: wood, fuel, clay, sand and water, and these were reflected in the distribution of the production sites which, with the exception of Petersfield and its E. Hampshire neighbours, are all to be found scattered along the narrow line of the sands and clays of the Reading beds, and this E. group could also offer the necessary raw materials. But the presence of such essential prerequisites does not explain why the industry developed in particular places and not in others, or why it developed at different speeds in various centres.

One factor which clearly affected the industry was the presence or otherwise of alternative accessible roofing materials. Woodlands provided shingles although this area seems to have seen a decline in this industry in the later Middle Ages. Thus the halls at Ludgershall and Bishop's Waltham, both of which were covered with shingles, were in the 14th century recovered with slate and tile respectively.⁸⁰ In Hampshire, the tile industry developed first in that part of the county, the N., where the overland distance to the ports and water-bourne slates was at its greatest and therefore most expensive. In Wiltshire, the geographical expansion of clay tiles was held back by the presence of an easily accessible alternative form of roofing materials, the Cotswold and Chilmark slate, and the industry was therefore only able to establish itself in the SE. corner of the county where the distance from alternative durable roofing materials was at its greatest.

Above all a permanent source of production needed a permanent substantial market nearby. Here as elsewhere urban centres frequently spawned tile kilns, as at Beverley, York or Chelmsford.⁸¹ Royal purchases may have helped the tilers of Alderbury, but much more important was surely its position in the immediate vicinity of Salisbury, one of the greatest provincial towns of later medieval England. On a lesser scale the kilns of Otterbourne and Marwell lay close to Winchester, although the city was in decline at the time that tile covering became more important. Elsewhere the kilns of Michelmersh were outside Romsey. Petersfield was itself a small town. Perhaps significantly, the smallest 15th-century S. Hampshire kilns, as judged by the geographical range of their consumers, were those without such a substantial neighbouring town (Titchfield, Funtley and Crockernhill), while the failure of the Bishop's Waltham kilns to survive, or the apparent transience of most of those in E. Hampshire, may also reflect such an absence of a substantial close permanent market. But as with most of the influences on tile production, too mechanistic an approach should be avoided and neither distance from the sea nor the presence of the town will provide a comprehensive explanation, as the picture provided by the neighbouring valleys of the rivers Test and Itchen remind us. In W. Hampshire, in the Test valley, tile production was underway at the beginning of the 14th century, while in the area around Winchester on the R. Itchen, but no further from the sea, this was largely a product of the later 14th century. The contrast is also reflected in the archaeological record of the major towns of the two areas. At Romsey, tiles seem to be a standard feature of 13th- or

14th-century contexts, whereas in the larger town of Winchester slates remained the standard roofing material until at least well into the late 14th century.⁸²

The cost of transport would mitigate against long distance land transport. Any comments about the distance over which tiles were moved must be qualified by our general ignorance over the specific route that was used, or over the precise location of the kilns which were unlikely to be in the centre of the village. All we can do is to calculate distances 'as the crow flies' and from the centre itself (Fig. 2). Such a crude analysis suggests that most consuming centres were within a five-mile radius of the kilns, with many in the five- to ten-mile distance. Those over ten miles away probably generally reflect the wider market area of one of the larger production centres, as with the 16 miles from Alderbury to Ludgershall, or the 13 miles travelled by tiles from Petersfield to Bishop's Waltham and to Hambledon, but the 23 miles between Highclere and Bishop's Waltham probably reflects an unusual example of a lord using his own distant kiln in preference to more local ones that were not his.

Unusual as was this last example, it provides a reminder of the potential influence of the great estates on tile production. As elsewhere, lords have been found investing in tile kilns. Thus in SE. England, Battle Abbey had kilns at Alciston, Wye and Battle itself, Canterbury Cathedral Priory those at Great Chart and Hollingbourne, and Boxley and Durford Abbeys also had one each.⁸³ In Hampshire, a few of the kiln sites also show similar seigneurial involvement, particularly by the bishops of Winchester. Such investment was perhaps especially important in the early stages of a local industry. The bishops of Winchester built tile kilns at Bishop's Waltham, at Highclere and at Marwell.⁸⁴ Although that at Waltham did not survive once seigneurial support had been removed, the others continued. To these should perhaps be added Otterbourne, a manor which did not belong to the bishopric but which had been acquired by bishop William of Wykeham in 1386⁸⁵ and all the known early purchases post-date then. It is thus not clear whether the industry had been started by Wykeham to supply his own building works and had subsequently established a more permanent base, or whether he was using an existing local industry. It may not be a coincidence, however, that the man from whom Wykeham bought floor tiles here for Winchester College had the same name, William Tyler, as the man whom he had employed making tiles at Bishop's Waltham.⁸⁶ At Marwell, as we have already seen, the case for the bishop having begun the tile industry would seem to be more clear cut. In all three of these southern sites there seems to be some correlation between the establishment of the kiln or the acquisition of the manor and major building programmes: at Bishop's Waltham, for Bishop's Waltham itself under Wykeham; at Otterbourne, for Winchester College later under Wykeham; and at Marwell for Bishop's Waltham, Marwell and Wolvesey Palace under Beaufort. It may be that initially large-scale purchases required seigneurial capital expenditure to ensure large enough local production facilities, as found elsewhere in the building works for Tattershall castle in Lincolnshire.⁸⁷ Moreover, whether a lord had built a kiln or not, there was an incentive for him to buy from his tenants, where they were producing tiles: their prosperity could be his prosperity as reflected in entry fines or rents. Just as it made sense for Sir John Fastolfe to make his military cloth purchases from his own tenants at Castle Combe, so might it be in Wykeham's

interest to buy from his new tenants at Otterbourne if an industry had already existed.⁸⁸

Some of the monastic houses in the county also had their own kilns: the cathedral priory at Winchester had one at Michelmersh from the early 14th century and Southwick Priory had one by the end of the period. In addition, the kilns at Titchfield and Mottisfont may have belonged to the abbeys there, and Funtley was also a manor belonging to Titchfield Abbey. Apart from these, no other monastic kilns have been documented.⁸⁹ If there was any tendency for monks to invest in tileries, and the evidence is by no means clear, it probably reflected the steady requirement for roofing tiles of a large estate, as well as the availability of capital for commercial investment. When a lord invested in a kiln in the early stages of an industry, as at Bishop's Waltham and Marwell, he paid a tiler to make and burn a specified number of tiles in the kiln for which the latter was paid at piece rates. Later, as at Marwell, the lord might lease out the kiln for a fixed rent in tiles.⁹⁰

It would be wrong, however, to see the growth of this industry as simply a response to seigniorial pressures and spending. Although the bishopric was later to show an increased tendency to use the tiles of its own manor of Marwell, in the 1380s it shifted from using its own tile kiln at Bishop's Waltham to those production centres to which it had less or no tenurial link: Funtley and Petersfield, as well as Otterbourne. Such a development may be paralleled at Farnham where the shift was from using its own Farnham tile house to using the products of Tongham, Shalford and Odiham. Whatever encouragement Wykeham may have provided the industry at Otterbourne, it was to flourish long after any association between the manor and the bishopric had been broken. The bishopric would rarely use its own distant manor in preference to a local centre, thus in S. Wiltshire it used Alderbury and in E. Hampshire, Petersfield, neither of which had any connection to the bishopric. Although lords might have helped in the establishment of a tile kiln, essentially the industry had probably developed independently of them. It was unlikely to survive just for seigniorial demands, unless other conditions were suitable. Lords were as likely as not to go to the market, or at least to the producer, rather than to restrict themselves to their own kilns.

Our documentary material tells us little about the organization of the industry within each centre. We have seen the presence of the seventeen tilers at Alderbury, with the suggestions that for some the industry may have been one of the by-employments of the forest, and that they were paying the poll tax above the standard rate. We have reference in 1438 to the tilers of Marwell. Nothing, however, seems to be known about the extent to which such craftsmen operated in co-operation or were sub-contracting. The records used in this study are singularly short on names of tile makers, by contrast to the references to other craftsmen. What is evident from some of our examples is that manorial lords made large-scale purchases direct from the production centres, from places that were certainly not market towns or fairs. There must have been somebody able to deal with the bishop's representative. Regrettably our picture of the tilers remains obscure. It is not just a question of whether the records survive. For, as work elsewhere on the cloth industry has shown, the manorial accounts may provide a distorted and anachronistic view of the economy of

the manor, they may show a notable reticence about the changes that were taking place within a manor and which did not involve seigneurial spending or receipts.⁹¹ The benefits of a tile industry to a manorial lord might not necessarily be shown in the rent of a tile kiln, but in the prosperity and demand for land which the industry helped to generate. Moreover, the tilers, as a group of newcomers dependent on the woodland and the waste, may often have worked on the fringes of the traditional manorial world and account. Study of the court roll evidence may yet help reveal more about the tilers as communities and as individuals, but a suitable community and records need to be found and studied.

As an expanding industry, much of the tile production was developed independently of the potters. A variety of roof tiles, from plain to crest, were produced on new sites, as at Alderbury and Marwell, away from the more traditional centres of potmaking. But potters could also be involved whether as producers of some of the more complex forms of roofing materials or as neighbours. In Wiltshire, crest tiles were produced at Longbridge Deverill, in the area dominated by Cotswold and Chilmark slate, and in a manor which contained a group of potters in the late 12th or early 13th century; at Nash in the 13th century, kilns produced pottery, floor tiles and roof furnishings; and the 13th-century Laverstock potters also produced ridge tiles and other roof furnishings.⁹² In Hampshire, evidence of pottery production is also known from Michelmersh, Crockenhill (Fareham) and Farnham, and the bishopric purchased pots from Highclere.⁹³ It is not clear whether there was any direct link between the producers of pots and tiles. It may be that there was a greater tendency for potters to be engaged in producing the more complex forms of tile, or that there was a tendency for the earlier tile centres to be associated with existing pottery sites. The readiness of potters to engage in the production of elaborate crests and roof furniture is also known from pottery sites elsewhere, such as at Cheam.⁹⁴

CONCLUSIONS

The 14th and 15th centuries were to be a period of considerable expansion for the tile industry. In the early 14th century the industry had been able to establish itself in N. and E. Hampshire and W. Hampshire and SE. Wiltshire, in areas where slates might be more difficult to obtain. The technology for large-scale production would already seem to have been there, but it is not clear why, in the following century, the expansion of the tile industry was able to have such success. In S. Hampshire, tile production overcame the earlier dominance of the imported maritime slates, although it had not been able to achieve this before and was failing to make any substantial progress against the slates of Wiltshire. The industry established itself in the 15th century in a group of firmly rooted and not transient centres. It had required a substantial investment in the tile kilns, and with this a regular demand for its products. In some cases the investment, and thus the beginnings of an industry, came from manorial lords, but in other cases this does not seem to have been the case. The demand for its products was provided above all by the towns whose importance was probably crucial in determining the successful location of many production centres. But the relationship between producer and purchaser was

not a constant one. Any account of the industry needs to take into account that large-scale consumers could shift from one supplier to another, and the single sequence of accounts at Bishop's Waltham shows that between 1370 and 1440 the manor had drawn tiles from six out of the ten centres of production in Hampshire known to be active at the time (or of the seventeen centres known to be active at some point during the longer period from 1350 to 1540). The expansion of the tile industry is merely one small example of the changes that were taking place in the economy and society of the period. The manorial records of purchase and carriage thus provide a necessary source for understanding both economic change and the tile debris from excavated sites.

ACKNOWLEDGEMENTS

This article has only been possible through the aid of the many who have discussed these matters with me and have added to my corpus of tile references. My debts are many and include those who have informed me about their own medieval excavations and roofing materials, from Ludgershall Castle onward; and to M. Biddle, Mrs A. Deveson, G. Soffe, M. Lyons and K. Rogers, who have all added to the documentary material on which this study was based. Two people in particular have made a considerable impact on the development of this article. Anthony Streeton reminded me that tiles are worth studying, discussed his own work on medieval ceramics, and commented on the text. Edward Roberts has given of his own important research on the documentation of buildings on the estates of the bishopric of Winchester. The large number of such references (marked E.R.) bear witness to his generous scholarship. The use made of the information provided by him and others is my own responsibility.

Studies such as this can only be produced by extensive examination of the documentary material, but it has only been possible to examine a small part of the available documentation. I should be delighted to receive any further evidence for Wiltshire and Hampshire. For other counties or regions, it is hoped that others may accept the challenge of producing similar documentary studies of the industry.

NOTE ON THE DATING OF THE ACCOUNTS

Most of the references come from manorial account rolls that usually ran from Michaelmas to Michaelmas. The accounting year has here been dated by the year in which the account closed.

NOTES

¹ E.g. A. D. F. Streeton, 'The Ceramic Building materials', in J. N. Hare, *Battle Abbey* (London, 1985), see also idem, *Medieval and later ceramic production and distribution in south-east England*, unpublished Ph.D. thesis, University of Southampton, 1985, 538-79.

² For earlier treatments of the documentary evidence see L. F. Salzman, *Building in England* (Oxford, 1952), 222-36; P. Drury, 'The production of brick and tile in Medieval England', 126-39, in D. Crossley (ed.), *Medieval Industry* (C.B.A. Research Report 40, 1981); J. H. Harvey, *Medieval craftsmen* (London, 1975), 139-43; J. M. Lewis, 'Roof tiles: some observations and questions', *Medieval Ceramics* 11 (1987), 9-12; S. A. Moorhouse, 'Documentary evidence for medieval ceramic building materials and its archaeological implications', *Medieval Ceramics*, 12 (1988), 33-50.

³ E.g. S. A. Moorhouse, 'The medieval pottery industry and its markets', 108-09, in D. Crossley (ed.), *op. cit.* in note 2.

⁴ J. N. Hare, 'Bishop's Waltham Palace, Hampshire: William of Wykeham, Henry Beaufort and the transformation of a Medieval Palace' *Archaeol. J.* 145 (1988), 222-54.

⁵ J. N. Hare, 'The demesne lessees of fifteenth-century Wiltshire', *Agric. Hist. Rev.* 29 (1981), 1-2; idem., *Lord and Tenant in Wiltshire, c. 1380-c. 1520, with particular reference to regional and seigniorial variations*, unpublished Ph.D. thesis, University of London, 1976, 126-27.

⁶ Winchester College Muniments (henceforth W.C.M.) 6019a; Wiltshire Record Office (henceforth W.R.O.) 192/32, 1448.

⁷ W.R.O. 192/32; J. S. Drew (ed. and trans.), *The manor of Silkstead . . . 1267-1399*, unpublished typescript, 1947 (copies in Winchester Cathedral Library (henceforth W.C.L.) and Institute of Historical Research in London), passim. These references concern the rebuilding of peasant houses by the lord. For the pre-eminence of thatch on peasant buildings elsewhere see C. Dyer, 'English Peasant Buildings in the Later Middle Ages (1200-1500)', *Medieval Archaeol.*, 30 (1986), 34, 41; and J. G. Hurst, 'A review of archaeological research (to 1968)' in M. Beresford and J. G. Hurst (eds.), *Deserted Medieval Villages* (London, 1971), 100.

⁸ I have avoided the use of the term tilestone, and have not sought to distinguish in the text between the tile stone or stone slates on the one hand and the blue slates on the other. The documents do not make such a distinction, although the location of a site can usually enable a reasonable deduction to be made: Devon and Cornish slate which were transported by sea being prevalent in S. Hampshire, and Cotswold slates being more frequent in Wiltshire. No evidence has been found of the word *tegula* having been used to refer to bricks, and the context usually makes clear that a roofing material is being referred to (cf. F. W. Brooks, 'A medieval brickyard at Hull', *J. Brit. Archaeol. Ass.* 3rd ser. 4 (1939), 152).

⁹ Hare, *Lord and tenant*, op. cit. in note 5; idem., op. cit. in note 4, 145.

¹⁰ *Calendar of Liberate Rolls*, I, 355; II, 59, 307; III, 38, 62, 129, 156, 190, 293, 304, 317, 379; IV, 89, 93, 181, 223, 504; V, 28.

¹¹ Drew, op. cit. in note 7, 37; idem. (ed. and trans.), *The manor of Chilbolton*, unpublished typescript, 1945 (Copies in W.C.L. and Institute of Historical Research, London) 43; M. Biddle, *Object and Economy in Medieval Winchester*, Winchester Studies, 7.2 (Oxford, 1990), 320.

¹² W.R.O. 192/32.

¹³ C. Platt and R. Coleman Smith, *Excavations in Medieval Southampton* (Leicester, 1975), 189-90; Streeten, op. cit. in note 1, 95; K. H. Armitage, J. E. Pearce, and A. G. Vince, 'Early medieval roof tiles from London', *Antiq. J.*, 61 (1981), 359-62.

¹⁴ T. B. James and A. M. Robinson, *Clarendon Palace* (London, 1988), 90, 131-34, 161.

¹⁵ *Calendar of Liberate Rolls*, IV, 223; N. J. Williams (ed.), *Collectanea* (Wilts. Archaeol. Soc. Records Branch, XII, 1956), 31.

¹⁶ M. R. McCarthy, 'The medieval kilns on Nash Hill, Lacock, Wiltshire', *Wiltshire Archaeol. Natur. Hist. Mag.*, 69 (1974), 100-06, 144.

¹⁷ G. D. Dunlop, *Pages from the History of Highclere, Hampshire* (Oxford, 1940), 71; P. MacGregor, *Odiham Castle, 1200-1500. Castle and Community* (Gloucester, 1983), 76, 78.

¹⁸ J. S. Baigent, (ed.), *A collection of records and documents relating to the hundred of Crondall* (Winchester, Hampshire Record Society, 1891), 55; Whitchurch, Mrs A. Deveson, pers. comm.; S. M. Youngs, J. Clark and T. Barry, 'Medieval Britain and Ireland in 1985', *Medieval Archaeol.*, 30 (1986), 164-66.

¹⁹ Public Record Office (henceforth P.R.O.) E101/593/117.

²⁰ R. A. Brown, H. M. Colvin and A. J. Taylor, *The History of the King's Works*, II (London, 1963), 916; James and Robinson, op. cit. in note 14, 38; British Library (hereafter B.L.) Add. RL. 26594.

²¹ P.R.O. E179/239/193/vi.

²² Hare, *Lord and Tenant*, op. cit. in note 5, 76-78.

²³ J. S. Drew, *The manor of Michelmersh*, unpublished typescript, 1943 (copies in W.C.L. and Institute of Historical Research, London), 36, 177, 186, 191, 199, 214, 227, 240, 261.

²⁴ P.R.O. E101/485/13 m.1 and 2.

²⁵ Drew, *Chilbolton*, op. cit. in note 11, passim.

²⁶ Dunlop, op. cit. in note 17, 71, 38, 39, 41, 46, 52; J. H. Harvey, op. cit. in note 2, 140; Hampshire Record Office (hereafter H.R.O.), Eccl. 2 159388.

²⁷ Montagu Burrows (ed.), *The family of Brocas of Beaurepaire* (London, 1886), 402.

²⁸ P. MacGregor, op. cit. in note 17, 102, 111; G. W. Kitchen, *The manor of Manydown* (Winchester, Hampshire Record Society, 1895), 147; Brown, Colvin and Taylor, op. cit. in note 20, 768, 941.

²⁹ P. D. Brooks, and A. C. Graham, *The Bishop's Tenants*, unpublished typescript, 1983 (copy in H.R.O.), 241.

³⁰ H.R.O. Eccl. 2. 159366 (E.R.).

³¹ D. Keene, *A survey of Medieval Winchester* (Oxford, 1985), 173; G. W. Kitchen, *Comptus Rolls of the Obedientaries of St. Swithun's Priory, Winchester* (Winchester, Hampshire Record Society, 1892), 211, 230; Drew, *Silkstead*, op. cit. in note 7, 37; Drew, *Chilbolton*, op. cit. in note 11, 43 and passim; N. S. B. Gras and E. C. Gras, *The economic and social history of an English village* (Harvard, 1930); Platt and Coleman Smith, op. cit. in note 13, 25, 27; Hare, op. cit. in note 4; B. Cunliffe and J. Munby, *Excavations at Portchester Castle, 4, The Inner Bailey* (London, 1985), 43, 45, 78, 117, 237-38.

³² H.R.O. 11M59 Bp BW4, Eccl.2 159355.

³³ Kitchen op. cit. in note 31, 231; Drew, *Silkstead*, op. cit. in note 7, 38.

³⁴ H.R.O. Eccl.2.159346 (E.R.); Kitchen, op. cit. in note 31, 230; N. S. B. Gras and E. C. Gras, op. cit. in note 31; J. Greatrex, *The administration of Winchester Cathedral Priory in the time of Cardinal Beaufort*, unpublished Ph.D. thesis, University of Ottawa, 1972, 113.

³⁵ E. g. Platt and Coleman Smith, op. cit. in note 13, 1, 25; D. M. Wilson and D. G. Hurst, 'Medieval Britain in 1961', *Medieval. Archaeol.*, 6-7 (1962-63), 319, but cf. Hare, op. cit. in note 4, 243; Keene, op. cit. in note 31, 173; E. M. Jope

- and G. C. Dunning, 'The use of blue slate for roofing in medieval England', *Antiq. J.*, 34 (1954), 209-17; E. W. Holden, 'Slate roofing in medieval Sussex', *Sussex Archaeol. Coll.*, 103 (1965), 67-82.; J. N. Hare, 'The building stone' in idem, *Battle Abbey*, op. cit. in note 1; E. W. Holden, 'Slate roofing in medieval Sussex — a reappraisal', *Sussex Archaeol. Coll.*, 127 (1989), 73-88.
- ³⁶ Keene, op. cit. in note 31, 173; Hare, op. cit. in note 4; Drew, *Silkstead*, op. cit. in note 7, passim; H.R.O. Eccl.2.155832, Fareham.
- ³⁷ P.R.O. SC6/1054/25/2; P.R.O. SC6 1062/7; H. J. F. Swayne (ed.), *Churchwardens' accounts of St. Edmund and St. Thomas, Sarum* (Salisbury, Wiltshire Record Society, 1896), 358; H.R.O. Eccl.2.155832; Eccl.2.155842.
- ³⁸ W.R.O. G23/1/44/1-4.
- ³⁹ W.C.M. 5968, B.L. Harleian Roll x 8, W.C.M. 4697.
- ⁴⁰ P.R.O. SC6/1062/25.
- ⁴¹ Oaksey and Pole P.R.O. DL29/652/10533; 653/10564.
- ⁴² All Cannings W.R.O. 192/28, Ludgershall P.R.O. SC6/1054/25; Devizes P.R.O. SC6/1062/25.
- ⁴³ Urchfont 1478, W.R.O. 192/36.
- ⁴⁴ Urchfont 1486, B.L. Add.Rl.19718.
- ⁴⁵ Durrington W.C.M. 5970; Ludgershall P.R.O. SC6/1054/25; Swayne (ed.), op. cit. in note 37, 20.
- ⁴⁶ Stockton 1525, B.L. Add.Rl. 24434.
- ⁴⁷ H.R.O. Eccl.2. 155832; I. J. E. Keil, 'Impropriator and benefice in the later Middle Ages', *Wilts Archaeol. Mag.*, 58 (1963), 361; W.R.O. 192/32; K. Rogers, pers. comm. citing P.R.O. DL29 682/11039.
- ⁴⁸ W.C.M. 6020, 5968, 6046.
- ⁴⁹ P.R.O. E101/593/17; SC6/1054/25.
- ⁵⁰ W.R.O. G23/1/44/1-4.
- ⁵¹ P.R.O. DL29/10564; 652/10533. The mixture was reflected in the archaeological evidence seen in P. V. Addyman's excavations of the castle, with some buildings roofed in Cotswold slate and others in tile.
- ⁵² Dunlop, op. cit. in note 17, 71; H.R.O. 11M59 Bp BW47; E. Roberts, 'A fifteenth century Inn at Andover', *Proc. Hants. Field Club Archaeol. Soc.*, 47, in press.
- ⁵³ MacGregor, op. cit. in note 17, 113-15; H.R.O. Eccl.2.159405; Brooks and Graham, op. cit. in note 29, 263-64.
- ⁵⁴ H.R.O. Eccl.2.159454 (E.R.).
- ⁵⁵ Brooks and Graham, op. cit. in note 29; H.R.O. Eccl.2.159403A, 159405, 159417, 159443.
- ⁵⁶ Hare, op. cit. in note 4, 243.
- ⁵⁷ H.R.O. Eccl.2.159443 (E.R.); H.R.O. Eccl.2.155832, 155842, 155855.
- ⁵⁸ H.R.O. Eccl.2.155842.
- ⁵⁹ H.R.O. Eccl.2.159402 (E.R.).
- ⁶⁰ H.R.O. Eccl.2.159366, and M. Lyons, pers. comm.
- ⁶¹ H.R.O. Eccl.2.159435, 159436 (E.R.).
- ⁶² H.R.O. 5M50 2691, 2692; Gras and Gras, op. cit. in note 31, 298; W.C.L. Box 12.29.
- ⁶³ Roberts, op. cit. in note 52. On the medieval use of the place-name Hatte in Mottisfont, now Hatt Hill, see J. E. Gover, *Hampshire Place Names*, 190, typescript in H.R.O.
- ⁶⁴ Hare, op. cit. in note 4, 242-44.
- ⁶⁵ Keene, op. cit. in note 31, 173-74.
- ⁶⁶ H.R.O. Eccl.2.159433, 159434; 155842; 155832; 159476/2 Dr 92; 155842; G. Soffe, pers. comm.
- ⁶⁷ H. W. Gidden (ed.), *The Stewards' Books of Southampton* (Southampton Record Series, 1935), 1, 56, 58, 116; II (1939), 59, 68, 70; idem., *The Book of Remembrance* (Southampton Record Series, 1927), 1, 78; R. R. and S. Morgan, 'Warblington Castle', *Hampshire Field Club Newsletter*, 15 (1991), 1-2.
- ⁶⁸ Hare, op. cit. in note 4, 243-44.
- ⁶⁹ Hare, op. cit. in note 4, 243; E. C. Norton, 'The medieval paving tiles of Winchester College', *Proc. Hants. Field Club Archaeol. Soc.*, 31 (1976), 30, 39; M. Biddle in prep., *Wolvesey Palace*, Winchester Studies. 6.2 (Oxford).
- ⁷⁰ Keene, op. cit. in note 31, 174; H.R.O. Eccl.2.159434; 155842.
- ⁷¹ Hare, op. cit. in note 4, 243; G. Soffe, pers. comm.
- ⁷² H.R.O. Eccl.2.155842; Keene, op. cit. in note 31, 174; G. Soffe, pers. comm.; Cunliffe and Munby, op. cit. in note 31, 185-86.
- ⁷³ G. Soffe, pers. comm.
- ⁷⁴ P.R.O. SC6 Hen.VIII 3340 m.22.
- ⁷⁵ H.R.O. Eccl.2.159437.
- ⁷⁶ H.R.O. 11M59 Bp BW 64, 65, 66/1; Eccl.2.159436 (E.R.); Eccl.2.159437.
- ⁷⁷ H.R.O. 11M59 Bp BW 73, 81, 83, 91, 94, 96, 97, 107, 108, 112, 128, Eccl.2.155842, 155852 and 155855.
- ⁷⁸ H.R.O. Eccl.2.155832; Biddle, op. cit. in note 69; G. Soffe, pers. comm.; Eccl.2.155842; Keene, op. cit. in note 31, 174; see also C. Currie, 'Earthworks in Fishers Pond and Hassock's Wood', *Hants. Field Club Newsletter*, 9 (1988), 15-16.
- ⁷⁹ J. M. Lewis, op. cit. in note 2, 10; W. Page (ed.), *The Victoria County History of Kent* (henceforth *V.C.H. Kent*), III (1932): 393.
- ⁸⁰ *Calendar of Liberate Rolls*, II, 307; P.R.O. E101/593/17; H.R.O. Eccl.2.159355; 11M59 Bp BW20.
- ⁸¹ Drury, op. cit. in note 2, 132, 138-39.
- ⁸² Based on excavations conducted for the Test Valley Archaeological Committee, and on those carried out by the Winchester City Archaeologist's Office. I am grateful to F. Green for information about the Romsey excavations and to successive staff of the Winchester City Archaeologist's Office for discussing their excavations and material with me. See also Keene, op. cit. in note 31, 172-75.

- ⁸³ J. A. Brent, 'Alciston Manor in the Later Middle Ages', *Sussex Archaeol Collect*, 106 (1968), 90; M. Mate, 'Agrarian Economy after the Black Death: the manors of Canterbury Cathedral Priory, 1348-91', *Econ. Hist. Rev.*, 2nd ser., 37 (1984), 351; *V.C.H. Kent*, III, 393; Streeten, op. cit. in note 1, 79-80; *V.C.H. Kent*, III, 393; E. Roberts, pers. comm.
- ⁸⁴ H.R.O. 11M59Bp. BW14-20, Dunlop, op. cit. in note 17, 71; H.R.O. Eccl.2.159434.
- ⁸⁵ *Victoria County History of Hampshire*, III, 441.
- ⁸⁶ Norton, op. cit. in note 69, 39.
- ⁸⁷ Lewis, op. cit. in note 2, 10.
- ⁸⁸ E. M. Carus-Wilson, 'Some evidences of industrial growth on some fifteenth century manors', in E. M. Carus-Wilson (ed.), *Essays in Economic History*, II (1962), 160-61.
- ⁸⁹ P.R.O. SC6 Hen VIII 3340 m.22; H.R.O. 5M50, 2691.
- ⁹⁰ Keene, op. cit. in note 31, 174; H.R.O. Eccl.2.155832.
- ⁹¹ E. M. Carus-Wilson, op. cit. in note 88, 158, but cf. Hare, *Lord and Tenant*, op. cit. in note 5, chap III.
- ⁹² H. E. J. Le Patourel, 'Documentary Evidence and the Medieval Pottery Industry', *Medieval Archaeol.*, 12 (1968), 105.
- ⁹³ A. Streeten, pers. comm.; H.R.O. Eccl.2.159287 (E.R.).
- ⁹⁴ S. Moorhouse, 'The Medieval pottery industry and its markets', in D. W. Crossley (ed.), op. cit. in note 2, 108.

ADDENDUM

To the list of tileries should now be added the tile oven at Selborne Priory in 1464, W. D. Macray, *Selborne and its priory* (Winchester, Hampshire Record Society, 1891), 117. Selborne is two miles SW. of Oakhanger (see fig. 1).