Chapter 6 Discussion of the Evidence

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THE FLOODPLAIN: FROM MEADOW TO INDUSTRIAL QUARTER, A NEW MODEL FOR WATERSIDE DEVELOPMENT

Introduction

At the time that the excavations at the Oracle Centre took place, between 1996 and 1998, there had been only two previous archaeological projects of any significant scale within the centre of Reading. The earlier of these had concentrated exclusively on the remains of the abbey (Slade 1969b, 1971-2, 1975-6). The other was a series of archaeological investigations collectively termed the Reading Waterfronts project, which was carried out by Wessex Archaeology between 1979 and 1988 (Hawkes and Fasham 1997). The Waterfronts project, like the Oracle excavations, focused on the urban valley floor of the river Kennet. In their conclusion, Hawkes and Fasham presented a model of changing land use over time (1997, 191, fig.104) and the stimulation for this (ibid., 194, fig. 105). Their model was applied to the entire landscape of the urban valley floor, including the Oracle project area. They identified five main land use categories: improved river flow/flood relief, wharfage, managed meadowland, industry and settlement. In general they concluded:

> The utilisation of the waterfront at various periods suggests a general chronological sequence, with earlier phases of activity limited to the control of watercourses, and the subsequent exploitation of the new conditions for water power and wharfage. The secondary benefits of drainage and the consequent utilisation of the adjacent areas was apparently only slowly realised, and then in selected areas only (ibid., 191).

The evidence from the Waterfronts project was mainly limited to water channels and the structures associated with them, principally revetments for improved river flow/flood relief and wharfage provision. There was only limited archaeological evidence for the other three categories, and for their conclusions about industry Hawkes and Fasham relied mainly upon documentary sources. The evidence from the Oracle excavations was much more varied. In addition to a large number of revetments, the Oracle project also investigated the sites of two mills (sites 150 and 300), a complex sequence of reclamation, construction and occupation within the valley floor itself (site 12), and activity on the edge of this landscape (site 29). This has shown that the sequence of development identified by Hawkes and Fasham is broadly confirmed by the Oracle results, but a significant revision is possible for many of the date ranges attributed to the changes in land use. No true wharfage was recovered by the Oracle excavations, but it is hard to understand why Hawkes and Fasham place this as late as 1300-1400 when documentary evidence (see below) makes it clear that there were wharves in place by at least the late 12th or early 13th century.

However, it is the evidence for industrial and settlement activity from the Oracle excavations that prompts the most significant revisions to the model. The 16th-century date proposed by Hawkes and Fasham (1997) for the appearance of industry on the floodplain can now be seen to be much too late. The construction of mills within the valley landscape is itself an indicator of industrial activity, whether it is for the milling of grain or, later, also for fulling. These buildings were essentially timber engines that effectively replaced the domestic grinding of grain by quern for a large number of households. How early this happened in Reading remains uncertain, but there were six mills by the time of Domesday Book, suggesting that industrial use of the floodplain should probably be seen as having a very early origin, at least in this restricted sense of the term. The Oracle excavations also recovered evidence for the establishment of industrial activity on reclaimed land from the late 12th century onwards.

Likewise, some revision can be proposed to the dating of settlement in the waterfront zone, although this was always on a very limited scale and probably closely linked to the industries in the area. The building known as the Yield Hall, investigated on Oracle site 12, may well have seen mixed trade and domestic use over its 400-year life, but the nature of alterations to it in the late 16th and 17th centuries suggest that it was certainly in use as a domestic dwelling, and even one that aspired to the architectural fashions of the day. If documentary evidence is taken into account, the date for occupation on the floodplain can be taken back even further, to the mid 14th century, when William le Catour held a house and vineyard on the west side of the gildhall from the mayor and burgesses, and a cottage with barns, stables and gardens was leased by the gild throughout the 15th century (Chapter 4, above).

THE ORACLE EXCAVATIONS AND THE DEVELOPMENT OF READING

In his general survey of the fortunes of British medieval towns between 1300 and 1540, Barrie Dobson (2000, 273) found himself drawn back to the famous comment of the great urban historian F W Maitland, who declared that he was 'far from thinking that any one history should be told of all our boroughs'. Nowhere is the truth of this better illustrated than in the case of Reading. It was, of course, subject to the same political, economic, social and cultural forces as other places and it shared many of the characteristics of other medieval towns, but, nevertheless, the development of Reading followed a distinctive trajectory that does not readily conform to any one model of medieval urbanisation.

In very general terms, the chronology of Reading's development can be followed in the town ranking lists derived from medieval taxation records (A Dyer 2000a and b). Reading was a 'small' town for much of the earlier part of our period. With 59 urban properties recorded in Domesday Book (which we might estimate as perhaps some 250-300 inhabitants), it ranks somewhere around 70th out of a total of 112 contemporary towns. The 'exact' figures are far from reliable, but the relative differences we see in these rankings are more meaningful; figures of around 900 properties are given for the largest recorded towns of the time, and the Domesday figures suggest that Reading was only a little more than one tenth the size of its Thames Valley neighbours Oxford and Wallingford. As such it provides an opportunity for us to recover and consider archaeological data for the obscure origins of early small towns, here perhaps developing at the site of a royal vill or a minster church, or both.

By the late 14th century, Reading's population had increased to something like 1700, and it ranked 44th amongst the country's most populous towns, a position it shared with Bridgnorth and Wells (Dyer 2000b 274, table 12.1). Once again, the 'exact' figures are less useful than the relative changes we see in the taxation records of this time. Reading's population in the late 14th century was perhaps six times what it had been in the 11th century. Although we have no population estimates for the 12th or 13th centuries, it is likely that a major phase of growth had taken place in the late 12th and early 13th centuries, as a result of the abbey's development of new streets and tenements (see below). A Franciscan friary had been established in the town in 1233, and the presence of friaries has often been seen by commentators as a mark of increasing size and status in a town, as the friars sought out populous urban centres for their mission. We have no evidence to assess how Reading had been affected by the population crises of the early and mid 14th century, or how rapidly it may have been recovering in the later 1300s. Nevertheless, we can perhaps at least suggest that Reading's expansion over this period had been steady rather than spectacular. By comparison, for example, Coventry had also been a very small place in the 11th century but had over 9000 inhabitants by 1377 (ibid.).

By 1524/5, however, Reading ranked as the 12th richest town in England in terms of the size and wealth of its business community, and around 20th in the country in terms of its population, more than 500 of whom were rich enough to be included in a national tax levied at this time (Dyer 2000a, 761-7, tables 6 and 7). This might imply a total population of around 3000. Although these estimates can only be approximate, they suggest that by the early 16th century the population of Reading was about half the size of the largest towns in the country excepting London. This was, of course, not the result of a simple linear process of growth at Reading, but a relative change due also to retrenchment and decline in other places. Against a background of substantial reductions in many larger towns, Reading's population roughly doubled between the late 14th century and the early 16th (Dyer 2000b, 278-81, table 12.3). Decline in some towns and growth in others is a characteristic feature of the later medieval period, but its causes are complex. Alan Dyer (2000b) has identified two clear trends in the distribution pattern of expanding and contracting towns in the later medieval period. Firstly, while declining towns form the great majority in eastern England, there are clear clusters of expanding towns in certain favoured regions, including central southern England, which probably reflects the buoyancy of the regional economy (ibid., figs 12.1-2). Secondly, there was a slimming-down of the urban hierarchy, with the larger towns shedding large numbers of inhabitants, while towns in the middling ranks were expanding (ibid., 285). As an expanding middle-ranking town in a prospering region, Reading provides a particularly good opportunity to study this process of change archaeologically.

The excavations at the Oracle development that are reported in this volume were not located within the core of the medieval town. They do not provide us with an opportunity to chart its development by the growth or decline in occupation of tenements along its street frontages, although some evidence for this has been recovered recently in smaller excavations elsewhere in the town. The Oracle excavations, located at the southern edge of the medieval town, largely provide complementary data relating to the town's economic development. In some cases, the excavations recovered evidence for *in situ* activities on the Kennet floodplain, but in other cases the evidence is a reflection of what was (or arguably was not) taking place elsewhere. This final section of our report reviews what light this can shed on some of the important

archaeological questions raised by Reading's origins and development, and what factors may have been influential in promoting its remarkable late medieval growth.

Reading: the origins of a medieval small town to *c* 1150

The late Saxon town

Reading was a monastic borough, a town developed and for long controlled by the major Benedictine abbey in its midst. But uncharacteristically, in the case of Reading the borough preceded the monastery by nearly a century (see Chapter 1). At the time of Domesday Book it was shared between the rich royal manor of Reading and the estate of its minster church, with properties in the borough being held in virtually equal numbers by both the king and the church. The date and circumstances of the creation of the borough are unknown, but foundation by Edward the Confessor would be consistent with the existence of a minor mint at the site in the 1040s. Grenville Astill has suggested that the borough may have been founded to act as a secondary marketing centre for the produce of the royal manor (1978, 75), and something very similar may have taken place at much the same time at the royal manor of Old Windsor (ibid., 69). If the equal shares of the king and the minster in the town of Reading predate the gift of the church to Battle Abbey, then it may be that the original establishment of the borough was intended to provide a marketing centre for the royal and minster estates jointly, with the profits divided between them.

No structural remains of the early town have yet been found in archaeological excavations in Reading, and little can therefore be added to what is known from documentary sources. A number of excavations in addition to those reported in the present volume have taken place in the centre of Reading in recent years but the only feature that might possibly be of this date was an early ditch observed at the north edge of St Mary's churchyard during the excavations at 90-93 Broad St (Norton and Poore 2007). The accumulation of negative evidence from these sites adds weight to Grenville Astill's suggestion that the early focus of the town is likely to have been around the crossroads to the west of St Mary's Church, along the Old Market and Old Street (now Bridge St) (1978, 77), in an area that has not been archaeologically investigated. As has been noted above, the Domesday figures imply that this settlement need have been no more than roughly one tenth the size of contemporary Oxford or Wallingford. One final independent strand of evidence that may be noted is that the quantities of late Saxon pottery reported from Reading remain very small indeed. In a recent review, Paul Blinkhorn (2005, 173-6) notes the presence of only a handful of sherds of pottery of this date, none of which need be earlier than the 11th century. The pottery that has been found includes shell-tempered ware similar to pottery found in Oxford and London, and a few sherds of regionally imported pottery from Stamford and Thetford.

The scarcity of archaeological evidence for late Saxon Reading is a feature shared with most other small towns of the Thames Valley region, although it contrasts starkly with the evidence for the known major towns at Oxford and Wallingford (Booth *et al*. 2007, 139-41, 247-63). One feature of these places that would repay further consideration in the future is the evidence from some of them that areas where occupation becomes established in the late 11th or 12th century show no evidence of occupation during the preceding centuries. In other words, the archaeology of small towns may be quite different from that of larger towns, where we are used to finding long sequences of occupation on the main street frontages that can date back to the earliest years of the town's existence. Small towns, which usually have much shorter stratigraphic sequences, may be showing us more clearly than their larger and more complex contemporaries, how urban expansion proceeded as a result of discrete additions to a small pre-existing core. The process may have been no different in some of the larger towns (Coventry might be a good example – Lilley 1994), just harder to detect archaeologically. To a certain extent this is stating the obvious, but perhaps archaeologists need to resist the tendency to think of small towns simply as smaller versions of large towns. Their archaeology may, in fact, be quite distinct.

The late 11th and early 12th centuries

The minster church at Reading was granted by William the Conqueror to his new foundation of Battle Abbey in 1071, and the pottery dating implies that the earliest signs of settlement from the Oracle excavations probably belong to the Abbot of Battle's 50-year period of tenure. Quarry pits for the extraction of gravel and chalk had been dug across a wide area, exploiting a naturally occurring band of thick gravel on the rising ground to the north of the Kennet valley floor (Fig. 2.3). With the exception of single redeposited Roman and early/mid Saxon sherds, the pottery from these pits dates from the mid to late 11th century onwards. In addition to the quarrying, three very large pits were found at the north edge of the site. From the nature of their fills, their size, spacing and regularity of alignment, these seem likely to have been a row of latrine pits, arguably located within a single large building of which no other evidence was seen. Pottery from the pits was of late 11th- to 12th-century date, and they also contained animal bone indicative of skinning or hide craft working activity. The latrine pits were located some 80 m to the south-east of the present church of St Mary's, which is a considerable, but still plausible, distance for an element of a minster

complex. The latrine pits remained in use although the quarried area to the south was soon redeveloped for the construction of a sequence of buildings. The first of these was represented by only slight remains (not illustrated), but the second was partitioned and floored with gravel and chalk and included a rare domestic detail, a hearth with a clear circular indentation such as would have been formed by the base of a pot (Fig. 2.4; Plate 2.2). Numerous sherds of pottery in the local fine sandy ware (F1) were recovered from the area around the hearth, refitting to form parts of two jars, either of which could have been the vessel that sat on the hearth. Part of a stone lamp was recovered from occupation layers within this building. Ruth Shaffrey (Chapter 9) comments that the lamp is similar to examples found at Winchester; early stone pedestal lamps such as this are quite rare, and mostly found in 12th-century contexts, although an earlier date cannot be ruled out.

In the absence of dendrochronological or other absolute dates, the pottery provides the only dating framework for this activity. However, the assemblages are dominated by fine sandy wares of probably fairly local origin, which were in use from the mid 11th century throughout the 12th century and offer little chronological precision. The very limited presence of Ashampstead ware and the absence of London ware from Project Phase 2 assemblages suggests an end date for the whole phase by the middle of the 12th century. An intermediate dating horizon is provided by pottery from the soil that built up over the abandoned remains of the second building, which dates from the end of the 11th century onwards. This would suggest that the quarrying, the construction and first use of the latrine pits, and the first two timber buildings date from the mid to late 11th century into the early 12th century, with the later activity of this phase taking place between the early and mid 12th century (see below).

The most convincing explanation for the archaeology of site 29 at this time would be a programme of rebuilding at the minster, which would have required the quarrying of gravel and chalk for construction, and it is arguable, although highly speculative, that a demolished Saxon church might have been the source of the stone lamp and the fragments of Roman tile found both at site 29 and in excavations nearby at the north-east edge of St Mary's Churchyard (90-93 Broad St; Norton and Poore 2007). It is worth noting that the Broad St excavation also recovered a sherd of Ipswich ware pottery, datable to 725-850. This type of pottery in this region tends to be associated with high status sites and places that were integrated into exchange networks linked with London in the mid Saxon period (Blinkhorn 2007a, 14). While this remains the simplest explanation for these events, it is also true that the nature and location of the royal manorial centre and its relationship to the minster remain unknown, and construction work at this time might conceivably have been associated with either of these centres, or both.

If we are right in suggesting that the latrine pits formed part of a minster complex, this would imply that it extended as far south as the river channels at the north edge of the valley floor at this time. This is a very plausible location for a Saxon minster, and is reminiscent of the position of St Frideswide's minster at Oxford, which was similarly located on higher ground overlooking not only river channels but also the route across them (Dodd 2003, 17-19). The first two timber buildings constructed on site 29 could well have been houses or workshops of minster servants or tenants, located towards the periphery of the complex. The occupants might conceivably have been engaged in the skinning or hide-processing activities for which there was some evidence in the contemporary animal bone assemblage. The excavations at 90-93 Broad St found some additional evidence for early occupation in the area. A butchered roe deer bone was found amongst a small animal bone assemblage from the earliest excavated layers at this site, which are dated to before *c* 1100, and other food remains included charred grains of processed wheat, barley and oats, with a single rye grain, together with abundant charred hazelnut fragments (Norton and Poore 2007, 24, 28).

Elsewhere, the earliest evidence for management of the Minster Mill stream may be datable to this period, and it is possible that St Giles Mill was also operating at this time (this volume, Chapter 2 above). Domesday Book records that the Abbot of Battle held two mills as part of the minster church estate and the king held another four in the royal manor. Slight evidence for an insubstantial revetment of a river channel meander, possibly from the Holy Brook, was recovered in the excavations at the Abbey Wharf (Hawkes and Fasham 1997, 16-18, fig. 13 Phase 1c). The remains consisted of a small number of beech posts possibly of 11th- or early 12th-century date. In excavations on the floodplain immediately to the east of Bridge St two beech or birch stakes were recovered that appeared to be part of a reinforcement of a channel junction. One of the stakes gave a radiocarbon date of cal AD 980-1120 (ibid., 50-51, fig. 36).

The early to mid 12th century

On midsummer's day in 1121 Henry I laid the foundation stone for his most favoured monastery, where he was himself to be buried, on the promontory overlooking the confluence of the Kennet and the Thames at Reading. Henry's new foundation was a Cluniac house, a Benedictine monastery following the practice of the mother house at Cluny in Burgundy, which was distinguished by the magnificence of its liturgy and ritual. The gift of the hand of St James ensured that it soon became a major centre of pilgrimage. Why Henry I made this decision will probably never be known. It could have been a symbolic decision, as the promontory

on which the abbey was built had been a Danish headquarters for the thwarted invasion of Wessex in 871. However, Reading also occupied a key strategic site within the Thames Valley, which was a prime route used by medieval kings and their courts on journeys west of London. It is almost certainly no coincidence that Henry had a palace built at Oxford by 1132, and both establishments were probably intended to provide a night's staging post on journeys to the favoured royal hunting lodge at Woodstock. The abbey was given all the lands and property of the royal manor at Reading, and of the minster, which Henry obtained from the Abbot of Battle in exchange for property in Sussex.

The problems of dating the archaeology of this phase have been discussed above. However it would seem reasonable to associate the next developments at site 29 with the second quarter of the 12th century, when the minster had passed from the control of Battle Abbey to that of the newly founded Reading Abbey, and during which the new abbey was itself under construction.

Until the late 12th century Old St and its bridge was probably the only route into the town from the south. Access to the abbey building site would then presumably have been along the edge of the old minster precinct itself, suggesting a plausible context in which Minster St might have become firmly established as a public thoroughfare. Arguably, it is at around this time that we see the first evidence for the laying out of the lane to the west of site 29, at right-angles to Minster St, and the construction up against it of a very large timber building of good quality. Building 5830 (Fig. 2.5) measured 12.5 x 9 m in plan, with partitioned spaces along its east side, a large open area on its west side, and a gravelled yard bounded by a small ditch or gully. The only evidence for its function is the presence of two hearths, one of which, at the south end of the building, was contained within the remains of a small chalk and flint wall and was possibly a small-scale furnace. Deposits within this hearth had a rusty colour, suggesting possible iron working. Large quantities of charcoal and a significant number of iron nails were found overlying the floor of this building. Although the nails might have been used in its construction, the combination of this evidence suggests the possibility that they were being made on the site, and it is possible that this short-lived building was in some way associated with the construction works at the abbey.

The final development of the first half of the 12th century at site 29 saw the construction of two new buildings, following the destruction by fire of Building 5830. Building 5820 (Fig. 2.6) was the first to use a mixture of stone and timber, with its south wall built of chalk with a dressed flint external face, but a timber-framed east wall at the back. It was a well-kept building with an extensive metalled yard and two successive internal floor surfaces, the first of rammed gravel, and the second of rammed chalk. The second floor was overlain by charcoal-rich occupation deposits, especially above a heavily fire-scorched area in the north part of the building that indicated the position of an internal hearth (Plate 2.4). Bone from one of these occupation deposits contained a rich variety of animal and bird bone, including pig, cattle, sheep/goat, hare, partridge, duck, domestic fowl and other birds. Both the variety of this bone and the subsequent history of this building suggest that it represents the probable establishment in its first form of the public cookshop later known as *La Kychene*, the evidence for which is discussed below. At first sight, the location might seem a rather odd choice, tucked away down a lane at the very edge of the valley floor. However, if we are right in suggesting that at this time Minster St would have formed the main thoroughfare between the Kennet crossing on Old St and the new abbey, then the choice of site becomes much easier to understand. Documentary sources of the later medieval period show that the site was owned by the abbey almoner, whose duties would certainly have included providing for the support of pilgrims and visitors. A smaller building, Building 5825, with chalk-built walls, was subsequently added to the south. Very little evidence survived for the function of this building, but it seems likely that it was a short-lived annexe to Building 5820.

Elsewhere on the floodplain there is evidence for the existence of St Giles Mill at this time, including the important discovery of a discarded pitwheel (an element of mill gearing) whose form suggests a date in the first half of the 12th century (see above, and Chapter 2). Associated features included a number of timber stake and post alignments from channel revetments, and a bank consolidated with deliberately laid plant matting (Plate 2.37). A single timber pile from within the area of the later mill building was dated by dendrochronology to the year 1131. Deposits of grain from a pit at the Minster Mill site are probably datable to this period rather than later, and suggest that the Minster Mill was being used for the cracking of germinated barley and oats for malting, and the grinding of wheat and rye into flour.

Pottery becomes abundant on the site in this period, and is dominated by simple sand-tempered wares from relatively local sources (Blinkhorn this volume, Chapters 5 and 7; Blinkhorn 2005). Pottery from further afield suggests that Reading's principal contacts at this time were to the west, with the Oxford area on the Thames, with the Newbury area on the Downs, and with the Cotswolds. Paul Blinkhorn (Chapter 5, above) draws attention in particular to the significance of the presence of the Cotswold wares, which may be associated with trade in Droitwich salt. He also notes contrasts between the pottery evidence from early Reading and that from Windsor, where shell-tempered wares that may have come from London were common, but conversely pottery from the Cotswolds and Newbury area was rare (2005, 175).

The developing town: *c* 1150-1400

Streets and tenements

The period from *c* 1150 to 1250 sees the first substantial evidence for the development of the town. Documentary sources suggest that it was during the mid to late 12th century that Reading Abbey embarked on a programme of development of its borough with the construction of a new market place outside its gates, a new bridge over the Kennet, and the laying out of new streets with tenements for rent (Astill 1978, 77-8). Grenville Astill suggests that Broad St and Friar St may have been laid out as a small grid, with interconnecting lanes between them, and London St was created to bring traffic to the abbey's new market place, and was set out with tenements for rent to either side. By the late 12th century, suburban settlement is also attested in the St Giles area, south of the Kennet, where a parish church is first mentioned in documentary records at this time.

This is supported by a marked increase in archaeological evidence. The laying out of Broad St for occupation in the late 12th century would have required the definition of a new boundary to St Mary's Churchyard, and this may be represented by a west-east aligned ditch seen at the south edge of the excavations at 90-93 Broad St (Norton and Poore 2007, 2-3, figs 3, 4). The fills of this ditch contained 12th-century pottery; later chalk foundations on the same alignment were probably the churchyard wall, and a wall is shown in this position on Speed's map (Plate 1.3). The suggestion that the abbey laid out a grid of streets and interconnecting lanes is supported by evidence for the early existence of two properties aligned east-west in the south-eastern part of the same site, which would have fronted a lane (now Chain St) connecting Broad St and Minster St (ibid., 29-30). This lane appears as a substantial thoroughfare on Speed's map of 1611 (Plate 1.3) where it can be seen to form the eastern boundary of St Mary's Churchyard. This might suggest that the lane was originally laid out to mark the churchyard's edge, and that its frontage north of the churchyard was used to create additional tenements from an early date. The Oracle excavations identified a 12th-century surfaced lane leading from Minster St to Minster Mill and a third lane, leading down onto the floodplain from the east end of Minster St, was inferred from excavated evidence for the reclamation of land and construction to either side of it during the late 12th or 13th century (Chapter 2).

Excavations at both the west and east ends of Broad St and Friar St have shown that occupation was established on the main street frontages during the 12th or early 13th century, although in most cases the surviving evidence was fragmentary and had suffered much later truncation (Norton and Poore 2007; Scott and Hardy 2007; Ford and Ford 2005; Atherton 1999). The best results come from the west ends of both streets, with those at the east ends having suffered most subsequent damage. Occupation was also spreading along Castle St at this time, and excavations at Nos 31-37 found pits of mid 12th- to 13th-century date (Pine 2005a). A poorly preserved building identified on the site could only be broadly dated to the 13th or 14th century. The excavator comments that this seemed to have been a domestic rather than an industrial building, and as such its position on reclaimed land at the rear of the plot, and on a constricted site, might be evidence for pressure on land within the town at this time (ibid., 77).

La Kychene

On site 29 of the Oracle excavations, the suggested cookshop was reconstructed as a large and elaborate stone building, probably during the second half of the 12th century, at a time when the abbey was receiving frequent royal visits and had become established as a centre of pilgrimage. Building 5825 was demolished and replaced by the much larger and more substantial Building 5840, but Building 5820 continued in use to the north (Fig. 2.7; Plate 2.5; Fig .6.1).

The evidence suggests that this was a prestigious building, probably of one storey, with walls entirely constructed of chalk rubble with a dressed flint exterior up to eaves height. A chalk rubble internal wall created a small western room and a much larger eastern space containing a large centrally placed hearth, and stakeholes that were probably for benches in the eastern corners. A further hearth and charcoal-rich occupation deposits were found in the western room but there were very few finds, suggesting that the building was kept clean. Some time after the initial construction and occupation of Building 5840 a large new hearth of flat roof pegtiles set on edge was installed within the eastern area (Plate 2.8). Well-constructed keyhole shaped ovens, probably for cooking, were later inserted into both Building 5820 and Building 5840 (Plate 2.9). In addition, a semi-sunken cellar, probably originally timber-lined, was constructed on the east side of Building 5820.

Two large stone-lined cess pits (Groups 11294 and 11396) were constructed to the north of Building 5840. These were located on the north edge of the previously quarried thick band of gravel, and were set some 10 m apart. It is possible that they were associated with Building 5840, although they might equally have been constructed at the end of new tenement plots along the south side of Minster St. In the light of our suggested interpretation of the function of Buildings 5820 and 5840 it is interesting to note that a large fragment of a stone mortar (Fig. 5.49 No. 5) had been built into the wall of one of the pits.

Pottery associated with the construction and use of Building 5840 and the continuing use of Building 5820 includes relatively large quantities of London-type ware, likely to have been manufactured close

to the City of London from the middle of the 12th century, and Ashampstead ware from a kiln located *c* 15 km to the west of Reading. Highly decorated imitation North French and Rouen jugs in London ware, and highly decorated glazed jugs with painted geometric slip design in Ashampstead ware were found at the site, and are very characteristic of the first half of the 13th century, when we can assume that the cookshop was in use. Sherds from two of these Ashampstead ware jugs were found in context 11293.

In addition, Jamie Preston (Architectural stone, Chapter 8) comments that the earliest example of the re-use of architectural worked stone was recorded in the additions to Building 5840 creating Building 5860 (see below). This piece, Stone Type No. 10 (Fig. 8.2), is a hoodmould carved from chalk, dates to the 12th century and with its quirk and hollow mouldings is typical of the period. Hoodmoulds were employed on the extrados of window and doorway arches both externally and internally. While it is possible that this piece derives from remodelling works at the abbey itself, it is also possible it was re-used from demolished sections of Building 5840. The walls of the structure were built using roughly dressed chalk blocks, which corresponds with the material used for the hoodmould.

Eventually the location of Building 5840 proved to be problematic. At some point the southern wall must have started to fail, probably due to the effects of the Holy Brook flowing against its southern face, in combination with the soft nature of the underlying ground into which the foundations were placed. The response to this took the form not only of efforts to counteract the instability of the ground, but also of an ambitious expansion of the building, which was doubled in size to form Building 5860 (Fig. 2.8; Plate 2.10, Fig. 6.1). Building 5820 was demolished, probably as part of this operation, and its functions seem to have been transferred to a large new extension built onto the east end of Building 5840. A new northern wall created a cross passage along the entire length of Building 5840. The newly created extension had four centrally placed chalk and flint rubble column bases to support the roof, a small projection at its east end for a chimney and fireplace, and a large gap in the southern wall that opened onto the Holy Brook. The southern wall was underpinned with oak piles to prevent the subsidence experienced in Building 5840, and these have provided the dendrochronological evidence dating the creation of Building 5860 to around 1270. On the southern bank of the Holy Brook, opposite the gap in the southern wall of 5860, two short lengths of similar foundations were revealed suggesting the presence of an associated structure. Running along the southern face of Building 5860 was a well-built timber revetment that probably supported a walkway; this would have served to give access to the stream for water and waste disposal, but may also have functioned as a small wharf for loading and unloading goods.

The new extension housed a significant number of purpose-built hearths and working platforms (see Chapter 2, above). The specific function of hearths such as these is notoriously difficult to interpret in the absence of debris associated with their use. Similar structures at Swan Lane in London (Egan 1991, 12–15; Schofield and Vince 2005, 140-2, figs. 4.5-6) and Brooke Street in Winchester (Biddle 1968, 267 pl. 1xb) were interpreted as the remains of structures associated with cloth working; similar structures at Newbury (Vince *et al*, 1997) have had a broad industrial interpretation offered, as well as a kitchen hearth. However, at the Oracle the combination of structural, environmental and documentary evidence suggests that a very specific function can be proposed. Occupation deposits associated with Building 5820 and with the use of hearths 6134 and 6097 within building 5860 contained a varied range of food remains, including bones from pig, cattle, sheep/goat, hare, partridge, woodcock, duck, domestic fowl and other birds, as well as fish including plaice and flounder. Environmental samples from the same sequences of occupation layers (contexts 6096, 6125 and 6150) included grain from free threshing wheat, hulled barley and oats, along with rye chaff, broad bean, bean/pea/vetch, hazelnuts and fig seed, together with charcoal from oak and *Prunus* (plum-type) wood. Large proportions of seeds from cornfield weeds were also present, and taken together this evidence is highly suggestive of kitchens in which baking and the preparation and cooking of meat, fish, fruit and vegetables was taking place. This implies that the new extended area of Building 5860 had taken over and intensified the earlier function of Building 5820, as a kitchen serving Building 5840. However a kitchen on this scale would be much too large to provide for simply a domestic occupation.

There is little doubt that a prestigious building of this type built on a large scale and of good quality would have cost a significant amount of money to construct. There were only a few groups or individuals within medieval society at this time for whom this would have been possible and it is suggested that this building was probably developed by the abbey itself. Documentary sources offer only a generalised view of activities on Minster Street in the medieval period, and none can be identified specifically with site 29 (see Chapter 4, above). However, Amyce's survey of 1552 lists a number of properties on Minster Street that had belonged to the abbey but were purchased after the Dissolution by William Grey. Two of these may have belonged to the abbey almoner, and one of them may have been the property that formed the subject of a lease dated December 1370, called *La Kychene* (Kemp, Almoner f48a). On Peyton's cartographic representation of the Amyce Survey (Plate 1.2) a property owned by Grey is situated in a position that would have been covered by site 29. The coincidence of this with the archaeological evidence for a kitchen operating on a

Fig. 6.1 Reconstruction of Building 5860

very large scale on site 29 is compelling, and it is suggested that Buildings 5820, 5840 and 5860 represent the remains of *La Kychene*, and that it was a public cookshop. William FitzStephen, clerk, friend and biographer to Thomas Becket, describes a public cookshop in London in his celebrated account of the city in 1173:

> Every morning you can find those carrying on their various trades, those selling specific types of goods, and those who hire themselves out as labourers, each in their particular locations engaged in their tasks. Nor should I forget to mention that there is in London, on the river bank amidst the ships, the wine for sale, and the storerooms for wine, a public cookshop. On a daily basis there, depending on the season, can be found fried or boiled foods and dishes, fish large and small, meat – lower quality for the poor, finer cuts for the wealthy – game and fowl (large and small). If friends arrive unexpectedly at the home of some citizen and they, tired and hungry after their journey, prefer not to wait until food may be got in and cooked, or 'till servants bring water for hands and bread', they can in the meantime pay a quick visit to the riverside, where anything they might desire is immediately available. No matter how great the number of soldiers or travellers coming in or going out of the city, at whatever hour of day or night, so that those arriving do not have to go without a meal for too long or those departing leave on empty stomachs, they can choose to detour there and take whatever refreshment each needs. Those with a fancy for delicacies can obtain for themselves the meat of goose, guinea-hen or woodcock – finding what they're after is no great chore, since all the delicacies are set out in front of them. This is an exemplar of a public cookshop that provides a service to a city and is an asset to city life. Hence, as we read in Plato's Gorgias, cookery is a flattery and imitation of medicine, the fourth of the arts of civic life (Corporation of London Records Office, *Liber Custumarum*, ff.3-5 ca.1174/1183: translation in Transcription in: Henry Thomas Riley, ed. *Liber Custumarum*. Rolls Series, no.12, vol.2 (1860), 2-15).

The development of a cookshop on this site probably dates back at least as far as the construction of Buildings 5820 and 5825 towards the middle of the 12th century. Building 5840 seems likely to represent the addition of a larger eating hall, containing benches and a large fireplace for heating and light. The addition of the two keyhole hearths in these buildings charts the need to increase production and attests to the success of this enterprise. The eventual demolition of Building 5820 and the apparent transfer of its role to the new extension at the east end of Building 5860 sees activity increase to a scale that must have served scores of people each day. The changing access arrangements to the buildings provide some insight into how they were used, with the new cross passage giving access from the lane into the kitchen area of Building 5860. An entrance in this position would be consistent with continuing use of the former western area of Building 5840 containing oven 6004 for food preparation. Further east the large opening in the south wall of the extended area, which communicated directly with the Holy Brook and the structure on the opposite bank, was probably for the unloading and delivery of supplies, for access to water, and perhaps for the throwing and sweeping-out of rubbish into the river channel.

The Kennet valley floor

The extending of lanes across the floodplain, sometimes towards existing islands, and the land reclamation through dumping material beside these lanes (with subsequent construction of buildings) forms a general process by which the town was extended towards the main river channel or channels. At Reading this process was additional to, and probably more important than, the better-documented construction (at other towns) of successive revetments parallel to the river.

By the late 12th century there were three mills operating on the Kennet floodplain. The abbey's mill was built at the south edge of its precinct and powered by the Holy Brook. Excavations at Castle St and at the Abbey Wharf identified works associated with the realignment of the Holy Brook at this time (Pine 2005b, 63, 77, figs 4.3-4.4) and the revetment of a bypass channel and tailrace channel for the Abbey Mill (Hawkes and Fasham 1997, 18-19, fig. 14). New oak post and plank revetments were installed in the mid to late 13th century, probably in the period 1253-7 and it may be at this time that the old bypass channel was closed off and diverted to a more northerly alignment (ibid., 22-3; Groves *et al*. 1997, 69).

Although the Abbey Wharf excavations did not locate clear evidence of wharfage in the area at this time, it clearly existed. John Chandler (1997, 178-9) suggests that the late 12th- and early 13th-century revetment works in the area may have been associated with the construction of wharfage. A lease by the abbey to Osbert of Waltham of 1186x1213 refers to the grant of a quay (*kaio*) on land east of High Bridge, on condition that Osbert ensured that boats were not prevented from berthing there by flood or drought, and that he maintained a way through his property to the quay so that there was no hindrance to boats or waggons coming there for loading and unloading. In return, the profits of the quay would be shared equally between Osbert and the abbey (ibid.; Kemp 1987, 123 no. 846).

A lane giving access to the large island 'nearest the Gildhall' is mentioned in a deed of 1204x1220, and was probably the forerunner of the lane later known as George Lane/Yield Hall Lane.

This lane was not directly observed in the excavations, but its presence can be inferred from the

development and alignment of structures excavated to either side.

Reclamation of the valley floor was made possible by the dumping of chalk and gravel, retained by characteristic chalk and flint walls, to raise the ground above the level of flooding. In this way suitable building plots could be created that fronted onto the lane, with ready access to flowing water at the rear. Only the western plot, Site 12, the future site of the Yield Hall, was investigated in detail. Here, a man-made channel (9549/9149) a metre wide and lined with a post and plank revetment was dug to bring water to the area from downstream of the Minster Mill (Figs 2.13, 2.14).

Building 7410 stood next to this channel, on a raised platform of chalk and gravel, between the channel and the inferred lane. It had narrow chalk and flint walls that probably supported timber framing, thus elevating the elements that would be susceptible to decay in this damp location. Adjacent to the channel was a chalk-surfaced corridor or walkway, and within the building itself immediately to the east of the walkway were the remains of two opposing hearths with extensive rake-out deposits (Fig. 2.14). These hearths were probably used for heating vats, although what they had contained was unclear. They might have been part of a cloth finishing workshop or they may have been associated with the tanning trades active a short way to the south-west. Similar reclamation dumps associated with similar chalk rubble and flint walls were seen in test pits to the east of the inferred lane, suggesting that development of the valley floor was quite widespread.

Some 20 m to the south-west, a complex of large, sub-rectangular tanners' pits was excavated (Fig. 2.16), and in some cases evidence for timber and wattle linings survived. A very similar pit was identified in Test Pit 149 to the east, and it is likely that the excavations located only a small part of a more extensive industry. The pits were not closely datable, but pottery from the fills suggested that they came into use during the 13th century, and remained in use until the late 15th century. A detailed discussion of the excavated evidence for the medieval and early post-medieval leather trades at the Oracle sites can be found in Chapter 5, above. Dumps of unusable parts of the hides provide direct evidence for the operation of the industry in the vicinity. The earliest significant dump of waste leather was from late Phase 4 (late 14th century) adjacent to London St, and included hides with holes at the edges where they had been pegged out to dry. A large dump of 15th-century waste from the Minster Mill bypass channel at site 12 included udder fragments and more hide edges with pegging-out holes. A variety of hides were present in both primary and secondary waste at site 12, including bovine leather, but also evidence for the preparation and use of the softer leathers made from the skins of calves, pigs, goats and sheep. This suggests that the area was being used by both the tanning and tawying trades. A strict distinction was maintained by medieval gild regulations, between the trades of the tanners (who tanned cattle hides with oak bark) and the tawyers (who prepared the skins of other animals, including calf and kid, for the manufacture of softer, paler leathers for gloves and purses).

At some point before the 15th century the industrial structures in Building 7410 were demolished. A new revetment was constructed along the channel edge, chalk and flint were dumped to raise the ground level, and the building itself was reconstructed (Fig. 2.17). The new walls were built in several stages, of a mixture of materials including flint, chalk and tile in varying combinations. This suggests a more makeshift approach to building, with construction proceeding on the basis of what became available.

Active management of the Back Brook, which lay between the Minster Mill Stream and the main channel of the Kennet, seems to have begun rather later than that of channels closer to higher ground. Over time, the course of the Back Brook moved consistently southwards, with evidence for a sequence of revetments along its northern bank, while the southern bank was allowed to flood. The earliest evidence for a substantial revetment was seen on site 101 but can be only broadly dated to some time between the mid 13th and mid to late 15th centuries (Fig. 2.13).

Investment in Reading's infrastructure continued in the 14th century. The Oracle excavations found evidence for a complete rebuild of St Giles Mill at this time, which is discussed in more detail in Chapter 5, above. Dendrochronological dates on timbers from the mill frame suggested that the rebuilding took place during the early 14th century. At much the same time a phase of substantial river channel engineering took place downstream in association with the Abbey Mill. Here, the main channel of the Kennet was reorientated towards a more direct south-north alignment, an extensive new revetment was installed, and wharfage was developed (Hawkes and Fasham 1997, 23-5, fig. 17). Dendrochronological dates suggest that the new revetment was installed during the period 1296-1323 and repaired or rebuilt in 1343/4 (Groves *et al*. 1997, 69). Although this was the first physical evidence for the abbey's wharves (Hawkes and Fasham 1997, 192), it is likely that this represents a phase of remodelling and new investment, since it is clear that the abbey had wharfage in this area from a much earlier date (see above).

The economy of the medieval town

The excavators of recent sites in Reading have not been able to identify clear archaeological horizons distinguishing later 12th-, 13th- and 14th-century activity, except in the few cases on the floodplain where dendrochronology has been used to date preserved timber. Evidence for crafts and trade in

the town can therefore be only broadly dated to this general period, but some useful observations can be made. Reading had a Merchant Gild composed of the leading craftsmen and merchants by the 13th century (Chapter 4, above). Its most important industry, at least by the early 16th century, was the manufacture of high quality broadcloth. No structures that could definitely be associated with the medieval cloth trade were identified in the Oracle excavations, although it is possible that Building 7410 built on reclaimed land on the floodplain on site 12 in the late 12th or early 13th century could have been used for dyeing. A parasite of sheep known as a ked was found in silts at the bottom of the early Holy Brook channel at 31-37 Castle St (Pine 2005b, 76). This parasite cannot live long after separation from its host, and its presence suggests processing of sheep skins nearby. The channel was infilled during the mid to late 12th century, and this may be the earliest sign to date of the wool or cloth trade in the town. Four fragments of 14th-century woollen cloth from site 12 may well have been made in Reading, and wool from five of the seven different fleece types had been used in their manufacture (see Walton-Rogers, Chapter 5 above, and Chapter 9). This suggests that the town was drawing on wool from a relatively wide area. Three of the four fragments had been dyed with madder, in one case combined with a tannin-based brown dye. Dyes imported through Southampton were brought to Reading by London grocers, and madder, which was obtained from the Low Countries, is likely to have reached the town in this way. Two used fired clay spindle-whorls were found in medieval pits at the west end of Friar St (Ford and Ford 2005, 27). These provide the only direct evidence to date for spinning in the town; one of them is likely to be of 13th-century date, and the other occurred in a pit dated to the 14th century, but might have been redeposited. Documentary sources tell us that there had been a tenter-yard for the stretching of cloth on an island in the floodplain near to the land in John son of John's grant of 1204x1220 (this section, above), and also that there was a fulling mill at St Giles by the late 13th century (Kemp 1987, 135, 178). The evidence for the rebuilding of the mill in the early 14th century can be interpreted as a sign of substantial investment in cloth manufacturing at this time, although no direct evidence of the fulling process was found; both St Giles Mill and the Minster Mill were used for fulling as well as the milling of corn when sold to William Grey in the 16th century (see Chapter 4, above). There is also some evidence for flax cultivation and processing for linen. A single fragment of flax was found at 99-105 Friar St, but seed and capsule fragments were much more abundant in early levels at the Abbey Wharf excavations. Here, it was suggested that flax retting was being undertaken in the area, where the water resources for this process of soaking flax bundles to loosen the fibres would have been readily available. Flax remains were more abundant in samples of the late Saxon to early 14th-century phases, declined in the 14th and 15th centuries, and were absent from post-Dissolution contexts. Wendy Carruthers suggests that this might represent a shift towards woollen fabrics in the later medieval period (1997b, 89-90 and table 9). Evidence for the cultivation of hemp, probably for fibre, was also noted at the Abbey Wharf excavations (ibid.).

The leather trades were well represented (see Chapter 5, above) and tanning and tawying were taking place on reclaimed land on the valley floor from at least the early 13th century. Most of the leather found in the Oracle excavations dates from the late 15th and early 16th century but a 14th-century dump of waste found near St Giles Mill included debris from shoe making and probably harness making. Evidence for the associated trades of butchery and skinning was identified in numerous pits at Nos 90-93 Broad St dating from the 12th to 14th centuries (Norton and Poore 2007).

There was some evidence for the operation of the metal trades in the medieval town. At Nos 99-105 Friar St fragments from a mould used for casting copper alloy vessels were found. It is suggested that there may have been a general purpose copper-alloy foundry here in the 14th century (Ford and Ford 2005 32). A large amount of copper slag and bell mould material was dumped in a pit containing pottery of the period 1200-1250 at the site at Nos 90-93 Broad St (Norton and Poore 2007, 30). Two items of medieval copper alloy jewellery found in excavations might have been made in the town. A copper alloy ring with a glass imitation gemstone of mid 12th- to 13th-century date was found in the disused Holy Brook channel at Nos 31-37 Castle St (Pine 2005b, 73), and a copper alloy penannular brooch was found in a 13th- or 14th-century context in excavations at the east end of Friar St (Atherton 1999, 2).

Medieval glazed and unglazed roof tile was found during the Oracle excavations (Vince, Chapter 8, CD-ROM) and was probably first used for the roofing of the cookshop in the later 12th century. Reading developed an early brick and tile industry; both the roof tiles and the numerous fragments of decorated floor tile that had been dumped on the site following the dissolution of the abbey (Vince Chapter 8) are likely to have been locally made.

The plant, animal, bird and fish remains from excavated medieval sites at Reading provide evidence both for the exploitation of the town's immediate and wider agricultural hinterland, and for increasing trade. Environmental samples from the period *c* 1150-1250 onwards contain much evidence for animal bedding (straw, bracken) and animal feed/dung (hay, legumes). The unreclaimed areas of the valley floor may have been largely kept for meadows, which would have been used both for the horses of visitors and the animals and geese of

the townspeople and traders at its markets and fairs. Plants associated with flora of damp, boggy ground are well represented in samples from the Oracle sites, along with plants of hay meadow, grassland and channel banksides, and willows, occasional alder and holly were growing at the channel edges (Pelling, Chapter 11; Scaife 1997, 78; Carruthers 1997a, 64). Results from a study of the wood species from the Abbey Wharf excavations showed that alder had been particularly prevalent on the floodplain in its unmanaged state, but a sharp decline in alder representation suggested that there had been substantial clearance or thinning of alder around the time of the foundation of the abbey (Carruthers 1997a, 64).

Arable weed seeds show that crops were coming from different sources, with weeds characteristic of acid, heavy and lighter well-drained soils all represented (Pelling, Chapter 5, above). All four major cereals were being used from at least the 12th century onwards. The 12th-century grain deposit from the Minster Mill provides evidence for cultivated oats, and for the cultivation of barley and oats together as a drage (Pelling, Chapter 11). Both bread wheat and rivet wheat were being used in the town, the former being preferred for bread making, and the latter for thatching because of its longer straw (ibid.). Vine wood found in a late medieval context at the Abbey Wharf excavations is probably from the abbey vineyards (Carruthers 1997b, 88), and there was a vineyard on the islands between the Kennet channels in the 14th century (Chapter 4, above).

Detailed dendrochronological studies for the Abbey Wharf (Groves *et al*. 1997) and Oracle excavations (Miles, this volume Chapter 5 and Chapter 11) have shown that the timbers used for the revetments of the Abbey Mill and for construction works at the Oracle sites up to the end of the 13th century probably came from the same source. It is suggested that this was naturally growing woodland owned by the abbey, possibly in the Cholsey area (ibid.). Cholsey was one of the estates granted to the abbey at its foundation (Kemp 1987). The timber used in 14th- and early 15th-century contexts at the Oracle excavations came from more diverse managed woodlands, possibly from the area around Mapledurham, only three miles to the north-west of Reading (Miles, Chapter 5, Chapter 11).

The animal bone assemblages from the Oracle present some difficulties of interpretation since it is likely that many of the groups represent selection for industrial purposes rather than food remains (Naomi Sykes, Chapters 5 and 10). As might be expected, the assemblages provide some evidence for integration between marketing and farming practice; both the relatively high age of the sheep and the high representation of wethers is consistent with animals from flocks kept primarily to maximise wool production. Animal remains from 13th-century deposits at 99-105 Friar St included neonatal piglet and some eggshell (Ford and Ford 2005, 38), which might suggest that a pig and hens were kept by the occupants on site. A review of animal bone assemblages from excavations in Reading and Windsor was published recently (Hamilton-Dyer in Preston 2005), and results from the Oracle excavations and the sites at 90-93 Broad St and 7-8 Broad St can now be added, although the latter site produced very little medieval material (this volume; Norton and Poore 1997; Scott and Hardy 1997). The three main domestic species, cattle, sheep and pig, predominate, and there is consistent evidence for the consumption of domestic poultry, possibly kept within the town and on the floodplain meadows. Sheila Hamilton-Dyer noted only a low representation of wild mammals and birds from the sites she reviewed (Preston 2005, 177-9 table 9.2), with a few bones of red, roe and fallow deer, some hare and rabbit. She comments that rabbit during the medieval period is likely to have come from managed warrens and was probably not available to most town inhabitants. Partridge and woodcock were noted by Hamilton-Dyer and were also present in deposits at the cookshop on site 29 at the Oracle. The most varied assemblages of animal bone from Reading were recovered from numerous cess and refuse pits at 90-93 Broad St (Norton and Poore 2007) and included snipe, jack-snipe, pheasant, teal and lapwing as well as small passerines. A wide variety of fish were available to the medieval inhabitants of Reading. Marine species such as cod, ling, haddock and herring were probably traded in cured or salted form, although flatfish such as plaice and flounder may have arrived fresh. Eels could have been caught locally, and fisheries at Reading are recorded in Domesday Book.

The pottery assemblages from the Oracle excavations (this volume, Chapters 5 and 7) show a distinct change from *c* 1150, with the appearance of London ware in relatively large quantities. This is the first clear indication of substantial trade with London, but pottery continued to be brought to the town from the west (Cotswold and Newbury wares) and the Ashampstead kiln site *c* 15 km to the west of Reading was a substantial supplier during the early 13th century. During the late 13th and 14th centuries Reading's pottery assemblages continue to suggest a range of trading contacts, with pottery from the west still present, but increasing proportions of pottery from London and from the whiteware industries of Surrey (including Kingston and Cheam). Paul Blinkhorn suggests that the pottery may be showing us how Reading was increasingly functioning as a 'lynch pin' between regional trade zones focused on London and on the west of the country (Pottery review in Preston 2005, 176). It is interesting to note that in 1228 the abbot was involved in a dispute with the bailiff of Windsor over the payment of tolls in respect of vessels of men of his lordship plying the Thames to London with goods and merchandise (Chandler 1997, 178; Kemp 1986, 413).

Reading in the 15th and 16th centuries

La Kychene

In the 15th century there was a significant change in use at the Oracle site 29. The cookshop building, a familiar part of the townscape for over two centuries, disappeared. Dating evidence suggests that this happened during the second half of the 15th century, and the plot of land that it had occupied was not built on again until around the middle of the 16th century, after the Dissolution. Instead, the area was covered in a thick loamy soil, ideal for cultivation.

Empty plots in late medieval towns are often interpreted by archaeologists as a sign of urban decline and depopulation. However, as we have seen above, the reality was much more complex than this. It is significant that the building does not seem to have been left to decay, which might perhaps have been expected if its demise was part of a wider malaise within the town. Instead it seems to have been dismantled, and the re-usable building materials taken away, perhaps to be incorporated into new building projects elsewhere. Numerous commentators have drawn attention recently to the complexity of the phenomenon of late medieval urbanism, and argue that the whole period from the 14th to the early 16th century should be seen as one of longer-term structural changes that were reflected in the social composition as well as the economic activity of towns (Astill 2000; Lilley 2000). A notable feature of this period is a decline in ecclesiastical charitable activity, with the initiative increasingly passing to town institutions such as gilds. Stricter definitions of the deserving poor were introduced, to reduce the need for charitable relief (Astill 2000, 228). At Reading, the abbey's 12th-century hospital for 13 poor people had lapsed by the middle of the 15th century, and its buildings were converted into a grammar school. Similarly, the abbey's leper hospital was no longer functioning (Astill 1978, 79). The characteristic shift to private charitable provision that we see in so many towns of this period is also evident at Reading, where a wealthy citizen, John Leche or A'Larder, left money in his will of 1477 for 8 almshouses to be built at the west side of St Mary's graveyard (Astill 1978, 79), perhaps in part to compensate for the loss of the abbey hospital.

The demise of the cookshop, a property of the almoner, can therefore be seen not as a sign of general malaise in the town, but as a reflection of more subtle change. There was clearly a general retrenchment in the abbey's charitable activity at this time, and it is also likely that by the 15th century, if not earlier, most visitors to the town would have expected to be catered for by inns rather than the abbey. If the abbey had no further need for the cookshop, the buildings may have been deliberately demolished in order to prevent unauthorised use of them. Keith Lilley asks why it was that the authorities in late medieval towns regarded vacant and decayed buildings as such a threat. He suggests that part of the answer may be that they provided an opportunity for the increasing numbers of migrant poor to move into an area as 'squatters', which could be discouraged if suitable abandoned buildings were not left standing (2000, 254-5).

Occupation within the town during the 15th century

Evidence from the main street frontages is rather fragmentary, but sufficient to suggest that there was variation in the pattern of occupation. At the west end of Friar St (Nos 99-105) the frontages of two plots on the south side of the street were vacant for a time during the 14th to 15th century, although the backs of the plots continued to be used for pit digging (Ford and Ford 2005, 19-21, 40-42). At 90-93 Broad St there were fewer backyard pits at this time, although this may reflect changes in waste disposal practices as much as levels of occupation. Continuing disposal of domestic waste implies continuing occupation of the frontages, and butchers may still have been operating in the area as some animal bone was suggestive of primary butchery waste. Food remains from a cess pit included rabbit, fallow deer, partridge and sea bass, which would suggest that at least one prosperous household was living nearby during the later medieval period (Norton and Poore 2007, 31). At 31-37 Castle St pits of late 15th- to 16th-century date had been dug within the area previously occupied by a 13th- to 14th-century building (Pine 2005b, 63-4). One of the pits contained a dagger- or sword-scabbard chape (ibid., 72-3, fig. 4.8). From the 14th century onwards, the abbey's new market place and the wharfs had replaced the Old Market as the commercial centre of the town, and the Old Ward was producing the least tax (Astill 1978, 78). It is an interesting question whether the changes we see in the archaeology at these sites at this time might reflect this reorientation within the town.

The floodplain during the 15th century

Evidence from the Oracle excavations suggests that during the 15th century there were no recognisable episodes of major investment in this area, but investment on a smaller scale is evident, as is continuing industrial activity. On site 12, the complex of channels taking water from the Minster Mill stream to the Kennet was maintained, with evidence for minor realignment, the building of new revetments and the construction of a holding tank and possible fish trap (Fig. 2.18). The tanning pits in this area were in use during the late 15th century, and Building 7410 was extended slightly to the south and east. It is very unfortunate that so little remained of this structure, as the finds evidence suggests that it may have been a focus of

considerable activity in the later medieval period. A mid 14th-century halfpenny and four 14th- to 15th-century jettons were present in deposits of this phase associated with Building 7410 (Table 5.1), and all nine knives from Project Phase 5 contexts were from this site. A further seven 14th- to 15th-century coins and jettons were found in layers dated to the construction of a new building on this site in the later 16th century, along with a further eight knives. Although a number of these were from makeup layers and could have been brought onto the site from elsewhere the coincidence is nevertheless notable, and suggests that Building 7410 may have been of more interest than its insubstantial foundations suggest. One of the striking features about this building is the evidence for ad hoc episodes of construction. The walls constructed at the end of Project Phase 4, an episode that is difficult to date closely but may be of the late 14th or even early 15th century, had been built in several stages and comprised variously flint, chalk and flint, and chalk, flint and tile, with presumably a timber-framed superstructure. During the 15th century an eastern extension was added using flint, tile and chalk for the surviving wall elements, and a southern extension was built in several stages.

It is interesting to compare this with the documentary evidence relating to the construction and maintenance of the gildhall, which was certainly located within this general area, and underwent episodes of new work and rebuilding on at least three occasions, in 1356-7, the 1440s and 1495-8, as well as frequent running repairs (see Chapter 4). The funds for rebuilding work in the 1440s were raised from the sale of old timber and contributions from 80 donors, and the impression is of precisely the kind of ad hoc campaigns of rebuilding and repair, using whatever could be obtained when money was available, that we see reflected in the surviving remains of Building 7410. It is probably going too far to suggest that Building 7410 itself might have been the gildhall, but the gild owned other buildings on the island, including a house and vineyard in the mid 14th century, a cottage, barns, stables and a common latrine in the 15th century, and by the early 16th century a barn, stable, piggery and dyehouse accessed by a road and gate next to the hall. It is at least arguable that Building 7410, even if it cannot be precisely identified, represents the kind of structures the gild owned in the area, the building and maintenance campaigns of the gild and its tenants, and the limited resources to which they had access. This presents a striking contrast to the buildings on site 29 and site 300, which had presumably been developed with the far greater resources of the abbey itself.

Elsewhere, a major revetment on the north side of the Back Brook (Fig. 2.19) and a further possible fish holding tank on the south side are datable to the later 15th century (site 101). There was no evidence for substantial building work at Minster Mill or St Giles Mill at this time, although the revetments of the channels carrying water to and from them, and parts of the structure of St Giles Mill, were clearly being periodically repaired and maintained. A substantial reinforcement of the revetments associated with the abbey's wharf was undertaken in the early 15th century (Hawkes and Fasham 1997, 26-8).

The 16th century

The 16th century sees a marked change in the nature of the archaeological evidence at Reading, and there is widespread evidence of considerable prosperity in the town, and renewed investment in its infrastructure, particularly from the middle of the century onwards. This can be seen to continue into the early 17th century. The evidence is considered in more detail below, but it is worth noting here that much of this activity dates to the decades following the dissolution of Reading Abbey in 1539 and probably represents a widespread response to the opportunities this offered. William Grey, an exceptionally wealthy citizen of the town, is known to have bought no fewer than 197 former abbey properties, including Minster Mill and St Giles Mill, for the sum of £2133 in 1545.

During the mid 16th century there was new construction on the site at 90-93 Broad St, and there is continuing evidence for affluent households nearby, with a range of glassware that included a rare type of German or Low Countries beaker datable to the period *c* 1550-1600, many fragments of drinking vessels, including *façon de Venise* examples, and fragments from two unusual globular jars datable to the early 17th century (Norton and Poore 2007, 20-21). Bone from rock dove (pigeon) was first present in this phase. There was new development on at least one of the plots at 99-105 Friar St during the 16th to 17th century, although evidence for its nature was limited (Ford and Ford 2005, 19-21, 40-42). Excavations at 7-8 Broad St, at the east end of the street, revealed remains of a tavern in use between the mid 16th and mid 17th centuries. Part of a large cellar and a cess pit were excavated, and produced sizeable groups of mid 16th- to 17th-century pottery beer mugs, costrels, flasks and jugs, pancheons, a few fragments from drinking glasses, including two late 16th- to early 17th-century *façon de Venise* vessels, and a small group of early to mid 17th-century clay tobacco pipes. A smaller contemporary pit contained a large number of juvenile cattle mandibles associated with mid 16th-century pottery (Scott and Hardy 2007).

By contrast, the Abbey Wharf excavations recovered evidence for decline, with the waterfronts left unmaintained and the riverside structures falling into disuse (Hawkes and Fasham 1997, 28).

The tannery on site 29

Site 29 had been unoccupied since the demolition of the abbey's cookshop, perhaps as much as a

hundred years previously. Around the middle of the 16th century, a large industrial complex was developed on the site. This included Building 5835 (Fig. 2.9, Plate 2.16), which was probably a domestic dwelling located next to the lane. To the east of this building a complex of vats and troughs was laid out, comprising numerous barrels set into pits and waterproofed with clay, and larger clay-lined pits with no evidence for the presence of barrels that probably functioned as open tanks or troughs (Fig. 2.10, Plate 2.17). A small building adjacent to the vats and troughs contained a hearth and evidence for heavy scorching, and is interpreted as a furnace or drying room (Fig. 2.10, Plate 2.19). The north bank of the Holy Brook was reinforced with a new post and plank revetment, and evidence was recovered suggesting that the complex of vats continued on the south side of the stream. Three timbers from the revetment and a single timber sealed by the clay lining of one of the large open tanks were dated by dendrochronology and suggest that this phase of development took place shortly after 1566. Mineralised seeds found in a sample taken from a vat fill (sample 394, see Chapter 11) suggest the presence of urine, which was used as part of the tanning process, and the animal bone assemblage contained notable quantities of skull and foot remains from cattle and goats or sheep. These are indicative of industrial activities including tanning and bone boiling, which was undertaken to extract fat and grease for leather dressing (discussed by Naomi Sykes in Chapter 5).

The excavated remains of this complex are discussed in more detail in Chapter 5, above, together with a review of the evidence for primary and secondary leather waste and the products of the leather trades in Reading. It is tempting to associate the appearance of this complex on site 29 in the mid 16th century with the disuse of the earlier tanning complex on site 12 (see below), although no direct connection can be proved. The tannery on site 29 was located to either side of the Holy Brook, which had served in the medieval period as the water supply for the abbey's mill. In the aftermath of the Dissolution, as control of the town passed to its leading citizens, many opportunities must have arisen for local merchants and manufacturers to profit from the new conditions. Did this provide the opportunity for local tanners to move to this more convenient and prestigious location? Written records from the 16th and 17th centuries (see Chapter 4) indicate that most of the town's wealthy and influential community of tanners lived in St Mary's parish. By the 1570s, pollution of the river channels by effluent from dyeing and tanning had become such a nuisance that a commission was appointed in 1575 to deal with the problem. The commission prohibited the setting up of tan vats by the Holy Brook, and imposed a fine of five shillings a day on anyone allowing effluent from privies, tan vats or pigsties to flow into it. However, as Joan Dils comments (Chapter 4), the frequent fines for breaking these rules indicate the importance of the industry in the area. A tanner like Gilbert Aldworth, who was fined 3s 4d in 1582 and again in 1584 for allowing his tan vats to run into the Holy Brook, presumably regarded the benefits of the location as outweighing the inconvenience of the occasional fine. The remains on this site have been identified as a tannery on the basis of the very close similarity with tanneries excavated elsewhere, and on the basis of associated finds. However, documentary references including the final sale of the property for the construction of the Oracle workhouse (see below) suggest there was a clothier's works on the site, which would also have needed vats and furnace houses within easy access to a regular water supply. It is perhaps most likely that the site saw mixed, or changing, use over its 100-year history.

A major redevelopment of the floodplain

On the north side of the valley floor on site 12 there was evidence for a major phase of channel engineering, extending the area of reclaimed land westwards by some 20 m (Fig. 2.19; the infilled medieval channels are shown with a dotted outline, and the new 16th-century channels are in blue). The medieval tannery complex was infilled along with the disused medieval watercourses. The reclamation recycled the waste products of other activities in the town rather than using quarried raw materials. This waste attests to many of the trades and activities of the town (see below). Some of these may have been operating in the immediate vicinity, such as stabling, but others probably operated elsewhere in the urban centre. Some of the dumped material is very likely to have come from the dissolved abbey, including imported pottery, and a unique fragment of glass from a late 13th- or early 14th-century colourless finned goblet, the first to be found in this country. This would support the view that the reclamation took place towards the middle of the 16th century. The best dating evidence is offered by a substantial new post and plank revetment of the Back Brook that was installed on both sides of the channel at around this time, and probably formed part of the same operation. One timber from the northern revetment gave a felling date range of 1537-41.

Upon the newly reclaimed land, which formed what was to prove a rather unstable construction platform, a three bayed structure measuring 11 m by 6 m was erected (Fig. 2.19). Dwarf walls of mortared flints were laid within foundation trenches, and topped with a layer of roof tiles to receive a timber frame. This was the primary form of the building later known as the Yield Hall, and its construction can probably be dated to the years between the dissolution of Reading Abbey and the middle of the 16th century. This was considered for many years to have been the location of the medieval gildhall, if not the actual gildhall itself. However, the excavations have shown conclusively that this was not so.

It is probably the case that when the gildhall moved to the Greyfriars the nearest building adopted its name. The initial development was small, but the limited evidence of its form and the provision of a wooden floor in at least one of the rooms suggests that it may have served a dual purpose as a residence and workshop. A deposit of broken pins and other copper alloy fragments from above the first floor of Room 3 may suggest that craft working activities were taking place here. The location in the valley floor was not a prime area for development, but documentary evidence confirms that there were houses and gardens here in the 16th century (see Chapter 4). During the later 16th century a corridor-like structure was added to its southern side, and a new room (Room 4) was added to the west (Fig. 2.20). A lean-to service aisle formed by an outshut at the back of a hall was a regular feature of small 16th- or 17th-century houses (Wood 1965, 219), and that may be what is represented here. The new west room was large and constructed of a mixture of flint and brick walling, with a large opening on the north side. Like the west end of the corridor or lean-to, it was floored with brick. No internal features survived, but the existence of the large opening suggests it may have served as a store, cartshed or possibly a stable.

Further evidence of renewed investment at this period comes from Building 7410, which was extensively rebuilt during the second half of the 16th century for the installation of new industrial equipment (Fig. 2.20). This comprised a timber structure associated with two hearths and a tiled working surface. Although these remains were well preserved their original function remains uncertain, although they could have been part of a dyehouse. Building 7410 was located only a relatively short distance away from the Yield Hall, and the coincidence of the redevelopment of both buildings at approximately the same time suggests that they could have been in the same ownership. No evidence was recovered for any alterations or repairs to Minster Mill or St Giles Mill during Project Phase 6.

The economy of Reading in the 15th and 16th centuries

One of the most striking changes in the archaeology of Reading at this time is the increasing evidence for prosperity reflected in the presence of a much wider range of consumer goods in finds assemblages, including items that were both fashionable and even luxuries. Imported pottery was relatively rare throughout the Oracle excavations, but a sherd of a decorative Ligurian maiolica dish (Fig. 5.10 No. 24) was found in contexts associated with the sandstone house at site 29. Fragments of glass beakers, goblets and tankards dating between the late 15th and early 17th centuries were also found at the site, mostly from contexts associated with tan vat fills (Fig. 5.12). Seven fragments are from vessels in the *façon de Venise* tradition typical of the Antwerp and Amsterdam industries of the period. Hugh Wilmott comments (Chapter 5) that although *façon de Venise* glass is not particularly rare, it is nevertheless an indicator of the presence of people with the means to acquire fashionable imported luxury goods. A market for fashionable goods is also hinted at by the presence of decorative purse frames at the site, including examples in copper alloy with probable niello inlay (see Fig. 5.34 Nos 17 -19). Purses such as these were fashionable from the late 15th to the late 16th century, and their presence at the site suggests that they were being manufactured nearby. Leigh Allen (Chapter 5) comments that 16th-century contexts at site 29 also produced almost the only notable personal items from the whole of the Oracle excavations, comprising a decorated pin, a highly ornate belt chape and a sickle-shaped toothpick or earscoop (Fig 5.34 Nos 13, 12 and 21).

This is mirrored at other contemporary sites in the town. Glassware found at 90-93 Broad St and at the probable tavern site at 7-8 Market St also included a number of imported items (see above). Large dumps of waste leather, most of it from the backfilled tanning pits and obsolete watercourses on site 12, show that a wide range of leather goods were being made in the town at the time. Products represented in these assemblages included not only shoes, boots, belts and straps, but also horse harness and saddles, garments such as leather jerkins, gloves, fine and everyday bags, cases and purses, sheaths and scabbards. An increasing market for fashionable leather goods is suggested from the late 15th century onwards. A fragment of sheep or goatskin from site 12 showed very fine workmanship, and was probably from a luxury purse or case of the late 15th century. Some of the shoes of this date had fashionable extended toes stuffed with moss, although these were not as extreme as the exaggerated long 'poulaine' toes of the period (Mould, Chapter 5). Two calfskin shoes of late 15th-century style (as Fig. 5.16 Nos 1 and 2) were another fashionable type, with buckle and strap fastenings, and an uncommon style of ankle boot (as Fig. 5.15.No. 8) had hardly been worn prior to discard. Fashionable styles were also evident amongst the early 16th-century shoe types (Fig. 5.23 No. 17), and some low-cut shoes were probably for dress or summer wear (Fig. 5.17 Nos 2 and 3).

A little additional evidence for the late medieval cloth trade is provided by a small fragment of perforated leather found in the Abbey Wharf excavations, which is thought to have come from a carding comb used to prepare wool for spinning (Mould 1997, 118, fig. 66 no. 33). Fragments of coarse knitting from the 16th century at Oracle site 12 provide evidence either for the introduction of a new craft, or at least the arrival of new traded goods, in the town at the time. The craft of knitting is thought to have become established in the 15th

century, and the excavated fragments may have been from knitted stockings (Walton-Rogers Chapter 5 and Chapter 9). The earliest probable *in situ* deposits of the copper alloy wire wound 'sewing' pins that are abundant in the town in the post-medieval period suggest that the manufacture and use of these items began in Reading in the 16th century. This period may also have seen a general increase in metalworking in the town. A brass and bronze casting workshop was established just inside the abbey precinct in the late 16th or early 17th century (Pine 2005a), and a large dump of bell mould fragments was dumped on site 12 of the Oracle excavations during the major land reclamation operations of the mid 16th century.

The pottery assemblages of the 15th and early 16th centuries at Reading are dominated by wares from Surrey, including Surrey Whiteware and the slightly later 'Tudor Green' tradition, with an increasing presence of late medieval Redwares, well-fired sandy wares possibly supplied locally and from London (Blinkhorn, Chapter 5; Table 5.3). By the later 16th century, 40% of the pottery at the Oracle comprised utilitarian post-medieval Redware. Most of this was probably supplied from local Berkshire sources; a production site is known near Newbury, and the Kennet valley would have been a likely area for these potteries to be established (Brown and Thomson, Chapter 5). Other pottery was being supplied from the Surrey Borderware industry, located around Farnham and Farnborough. By the 15th century the earlier sandy wares industries (London ware, Cotswolds and Newbury wares) had gone out of production, and the products of Surrey potters, based in places like Kingston and Cheam, were marketed very widely. How far this evidence can be seen as reflecting the orientation of Reading's trading contacts is therefore hard to assess, since it also reflects changes in the pottery industry itself. It is interesting to note, however, that there is a strong contrast between pottery of this period at Reading and contemporary assemblages from Merton College, Oxford (Blinkhorn 2006), where nearly 75% of a large 15th- to mid 16th-century assemblage came from the Brill-Boarstall kilns on the Oxfordshire/Buckinghamshire border. By contrast, Surrey 'Tudor Green' wares represented just 2% of the pottery from this period at Merton College, and only 47 sherds of Surrey Whitewares were present in the entire site assemblage of 6000 sherds.

This period at the Oracle also sees an increase in pottery from abroad, although most of this is represented by German stonewares, which were imported in very large numbers for use as beer mugs. Vessels from Spain, Holland and France were also present in small quantities at the Oracle excavations. The meaning of this is unclear, as much of the imported pottery (and indeed much of the regionally imported Surrey Whiteware) was recovered from make-up layers for the construction of the Yield Hall in the mid 16th century. The same layers included a sherd of a very rare late 13th- to 14th-century glass goblet, and it is very likely that the make-up material had been brought to the site from elsewhere, and arguably from the dissolved abbey itself. The relatively high representation of imported pottery may, therefore, reflect the abbey's sources of supply rather than those of the townspeople. However, comparative evidence from the site at 90-93 Broad St, where the pottery derived from adjacent tenements, does show a very similar pattern, with Surrey Whitewares and 'Tudor Green' wares accounting for 45% of the 15th-century pottery, and German stoneware accounting for 5.5% (Blinkhorn 2007a, table 1).

The suggestion that the post-medieval Redwares that appear at the Oracle from *c* 1540 may have come from the Kennet valley can be compared with similar evidence from the dendrochronological study for a change in timber sources. Unlike the timbers from the 14th and early 15th centuries, which probably came from managed woodland in the middle Thames Valley, timbers used in constructions of the mid 15th to early 17th centuries showed excellent matches with sites along the Kennet Valley towards Newbury (Miles, Chapter 5).

Project Phase 7: *c* 1600-1680

The phase of new investment that we can see in the second half of the 16th century continued into the early 17th. Much of the direct evidence recovered in the Oracle excavations relates to the cloth trade, and suggests that there was continuing confidence in cloth as the source of the town's wealth, although the trade was in difficulties by the 1620s and went into decline after the Civil War (Chapter 4, above). William Grey's property, including Minster Mill and St Giles Mill, passed through a marriage alliance into the ownership of the Blagrave family, who seem to have been responsible for several of the initiatives represented by the archaeology of this period. It is under this new ownership that the two mills were rebuilt, and both mills were probably still in use for fulling at this time (see Chapter 4, above). At the Minster Mill, a phase of works at this time included the installation of a new timber tailrace channel, while at St Giles Mill the medieval structure was dismantled and new timber mill races were built over its remains (Chapter 3, above). Timbers used at the Minster Mill and St Giles Mill were from the same tree and dated by dentrochronology to *c* AD 1611. Two photographs taken *c* 1900 (Plates 3.36 and 3.40) show St Giles Mill shortly before demolition, with the larger 18th-century mill (see below) abutting an older and smaller structure to the south. The southern element is entirely clad in weatherboarding, some of which has fallen away to reveal the timber frame of the early 17th-century mill beneath, visible on Plate 3.36, while Plate 3.40 shows the two mill races associated with this older structure. Repairs were also being undertaken to the tailrace channel at this time.

The best structural evidence for Reading's cloth trade came from a dyehouse excavated at site 78 towards the western edge of the Oracle excavations (Fig. 3.2, Plate 3.18). This relatively simple mechanism consisted of two pits, which probably contained large vessels holding liquid, linked by a hollowed-out oak timber that sloped slightly from west to east. A sheet of perforated lead covered the east end of the channel, suggesting that liquid was run off along the channel from the western pit and strained before entering the eastern pit. The liquid then probably drained out of the eastern pit into the Minster Mill Stream. The timber channel gave a dendrochronological date of 1611, and the wood used for its construction had come from the same tree as a timber from St Giles Mill. This suggests that there had been a phase of investment by the Blagrave family in facilities for cloth making in Reading Elsewhere continuing maintenance and exploitation of the valley floor is suggested by the insertion of a new revetment of coursed brick on the north bank of the Back Brook, and the construction of a platform at the water's edge, built firstly of timber and later rebuilt in brick.

In 1624, John Kendrick (another very successful merchant and clothier from Reading) left a bequest of £7500 to Reading Corporation 'to build a strong house of Bricke fit and commodius for the setting of the poore on worke therein'. The money was used to buy land on Minster Street from Kendrick's brother William, and in 1628 the workhouse was constructed on the site of the 16th-century tannery, by now functioning as William Kendrick's cloth works. The workhouse, originally constructed as the Kendrick Cloth Workhouse, was intended by its founder to provide work for the poor in the cloth trade. A series of rooms with equipment were leased to various clothiers who employed poor skilled craftsmen to produce broadcloths and Spanish cloths (see Chapter 4). However, the decline in the cloth trade meant that alternative uses soon had to be found for the workhouse, and a century later it was occupied by poor craftsmen making pins, silk and sailcloth, and sacks, rope and light fabrics such as satin and silk were made there in the later 18th and 19th centuries. The Oracle was pulled down in 1850 and replaced by a row of shops. Unfortunately, large basements that had been dug into the area during the 19th century had destroyed much of the archaeological evidence for the workhouse, although some structural fabric of the east, west and south ranges remained (see Chapter 3). The excavations uncovered evidence for the layout of the courtyard, which had cobbled paths around the outside and narrower paths forming an X shape inside. Three semi-cellared rooms were discovered that are not represented on historic maps, and a record was made of the surviving bridge (Plate 3.8) across the Holy Brook that has since been demolished. Although the archaeological results from excavation were fairly limited, some evidence of the pin making trade was found in the form of a furnace and quenching pit, and large numbers of finds of the pins themselves.

Building 7410 continued in use during the 17th century, with the probable rebuilding of a timber-framed room to the east of the main structure. Some interesting evidence for activity in the area at this time came from a pit (8513) containing a densely packed deposit of horncores (Plate 3.22) and a group of pottery including Surrey border ware, brown-glazed redware and plain white tinglazed ware, suggesting a date after *c* 1630. This suggests that tanning was still taking place in the vicinity, but also provides some evidence for nearby domestic occupation. A small group of 17th-century shoes was recovered during the Abbey Wharf excavations (Mould 1997, 119-22).

The pottery might well have come from the nearby Yield Hall. Changes during the 17th century show that the house was continually modified to counteract the effects of subsidence, but also to keep in step with changing fashions in domestic architecture. A fifth room constructed in coursed brick was added, turning it into an L-shaped building (Fig. 3.6; Plate 3.23), and floors of brick or tile were laid in both Rooms 5 and 4 in what was now a west wing to the house. A brick chimney was subsequently inserted into Room 5 (Fig. 3.7; Plate 3.23), with fireplaces to either side, serving both Rooms 4 and 5, and a new porch was built in the angle between the new wing and the old north wall. This provided a new entrance into the building immediately east of the chimney, and it was notable that the east wall of the chimney was more carefully finished than the other faces. This evidence would all combine to suggest the modification of the house to create the fashionable 'lobby entry plan' of the period, in which the main door gave onto a lobby next to a chimney, with living rooms to either side of the lobby and a stair to an upper storey on the other side of the chimney. There was no evidence for a stair in this position in this phase, but two small walls joining the west wall and the chimney were present in the succeeding rebuild of this wing (see below), and are likely to have supported a stair. A half cellar was installed in the north-eastern corner of Room 2, in which a large number of early wine bottles of late 17th- or early 18th-century date were found (Plate 3.27). Throughout the 17th century the building suffered from problems of subsidence, and evidence was recovered for numerous attempts to reinforce the walls and floors.

A new industry that appeared in Reading at this time was the manufacture of clay tobacco pipes (Higgins, Chapter 5 and Chapter 9). This was in existence by 1623, and by the 1630s there were at least four pipemakers working in the town. David Higgins comments that this is a large number compared with most other towns of the period. Two of these men seem to have moved to the town to set up their business there; one, named Ferdinando Hulyns, is clearly not local, while the bowl form and maker's mark used by the other, John Perry, suggest

that he came from the West Country. Reading's pipemakers were not just producing for local consumption, but probably also for regional export and examples of Reading pipes have been found in London. Although most of the pipes produced in Reading were plain and ordinary, there were some better products designed to cater for the top end of the market as well. The sizeable assemblage of clay pipes from the Oracle excavations is the largest from Reading, and one of the largest groups in the country. An abbreviated report on the assemblage can be found in Chapter 5, and the full report is available in Chapter 9.

The pottery used in Reading during the 17th century was dominated by the ubiquitous functional post-medieval Redware, but the products of the new English tin-glazed industry appear in the town at this time, and are likely at first to have been imported from London, or possibly Bristol (Brown and Thomson, Chapter 5).

Project Phase 8: *c* 1680-1750

The Minster Mill underwent a major reconstruction during Project Phase 8 (Fig. 3.5; Plates 3.20-3.21). Associated pottery suggests a date in the early 18th century, which is supported by a dendrochronological date of 1700 from a timber of the foundation frame of the new mill. The excavations recovered evidence of a new wheelpit channel with substantial brick walls, and to its west the end of the headrace channel, or penstock, which was constructed with a floor of wooden planks and walls of brick. The position of a sluice gate controlling the flow of water between the headrace and the wheelpit was also identified. Unfortunately the remains of the mill buildings and other channels had largely been destroyed by modern intrusions, although some evidence of a spillway channel was seen to the north of the wheelpit. The Minster Mill does not appear on Roque's map of 1761 (Plate 1.4), but the Coates map of 1802 (Plate 1.5) shows the mill extending across the stream, with the main mill buildings apparently on the north bank. This may well represent the form of the mill following the reconstruction of Project Phase 8; further phases of repair to the mill race walls were undertaken throughout the 19th century. Evidence for continuing revetment of the Back Brook during the late 17th and early 18th centuries was also recovered, and the remains of a race for the short-lived water pumping mill constructed during the 1690s on Mill Water, a short distance upstream of St Giles Mill, were recovered in limited Test Pit excavations.

During the early 18th century, the subsidence problems that were affecting the Yield Hall led to the demolition and complete reconstruction of the west wing (Fig. 3.9; Plate 3.28). Plates 3.23 and 3.28 show the substantial brick walls of this rebuild encasing the slighter 16th- and 17th-century foundations, but unfortunately the rebuilding did not solve the problems, and Plate 3.29 shows the effects of subsidence on the walls of both builds. The chimney and fireplaces of the west wing were relocated some 2 m south of their former position, and Room 4 was extended across the area of the former corridor or outshut. It is possible that the internal wall of this outshut was demolished entirely in this phase since it had clearly been removed from Rooms 1 and 3 by the time the plan of the house appears on a Reading Corporation Terrier of 1807 (Plate 3.30). Further modifications took place in the older eastern wing of the house. The north wall was rebuilt in coursed brick, and a new doorway, possibly a new main entrance, was constructed north of the fireplace in Room 3. These alterations, as well as being necessitated by subsidence, would also have given the house a more fashionable appearance for the period. Building 7410 continued in industrial use at this time, with evidence that the hearth and furnace in their late 16th-century emplacements were continuing to function.

The industrial period: Project Phases 9 and 10 *c* 1750-1900

Only limited evidence was recorded from Project Phases 9 and 10, since the research aims of the project were largely focused on the medieval and early post-medieval form of the Yield Hall, Oracle and mills.

The trend for the town to expand southwards into this low-lying area continued. Roque's map of 1761 (Plate 1.4) shows the valley floor to be still largely open ground, with meadows and gardens occupying most of the space between the Minster Mill Stream and the Kennet. However, Coates' map of 1802 (Plate 1.5) shows that industrial build-up of the valley floor was well underway, and the Corporation Terrier of 1807 (Plate 3.30) provides a detailed view of the complex of workshops and warehouses into which the Yield Hall and Building 7410 had been integrated. The availability on the valley floor of relatively large empty spaces, close to the urban core and with access to water, was an important factor in many of the activities that developed. The arrival of large-scale industries such as Wilder's Foundry and Simonds brewery from the late 18th century would have required further land reclamation. This had been a consistent feature of the medieval reclamation of the area, but in this period it would have been on an unprecedented scale. Many of the familiar smaller channels disappeared, as they were buried within underground culverts, or simply infilled. The main course of the Kennet became increasingly important for trade, and it was eventually canalised as part of the Kennet and Avon Canal. This was coupled with the construction of a new stone bridge called High Bridge at the northern end of London Street. River craft could now pass this medieval restriction, and wharfage provision in the town increased as wharves spread from their medieval location

around the southern limits of the abbey precinct, onto the banks of the Kennet within the project area.

Many of the historic structures revealed from earlier phases, such as the Oracle workhouse, Minster and St Giles Mills, the Yield Hall and Building 7410 remained within the landscape and continued in operation. The workhouse on site 29 remained fairly unchanged and was home to a large number of small-scale craft workshops and activities until 1850, when it was demolished. In the late 18th century a foundry developed in the area of site 12. Much of this lay outside the excavation area to the east, although the evidence of the 1807 Terrier shows that Building 7410 was incorporated into the foundry complex. Evidence for steam-powered machinery was recovered. However, limited understanding was gained of the process through these limited archaeological remains. The early 19th-century form of the Yield Hall, then known as Hill Hall, can be seen clearly on the Terrier. This is discussed in comparison with the archaeological evidence in Chapter 3, above. By 1821, James Wilder, an iron founder, is recorded occupying property at Hill Hall, and the Wilder iron foundry was to occupy the site until 1938. During the excavations, ironworking remains were found in a corner of Room 2, suggesting that domestic occupation was replaced by industrial use during the later 19th century.

St Giles Mill underwent massive expansion in the mid 18th century, and it was probably at this time that it changed from undershot to breastshot waterwheels, which allowed a much more efficient use of the available water resource. The mill was doubled in size, with a new four-storey mill building added to the north side of the old mill, and the old bypass channel was modified to create three additional new races running through it (Fig. 3.11). Plates 3.36 and 3.40 show the new 18th-century mill added to the north side of the older 17th-century structure. The retaining walls of the races were constructed in brick, but timber was used for the ground beam and post foundations. However, the days of waterpowered timber engines were numbered and during the 19th century steam engines were installed. Evidence for the primary phase of boiler and engine emplacements was recovered in the excavations, and on the north bank a new structure was built to incorporate the chimney. By the end of the 19th century the mill was defunct and the site was redeveloped, becoming home to the Reading Tramways Depot (Plate 3.48). This change allowed for significant infilling and culverting of the mill leats as these elements of the landscape became redundant. During the 20th century the complex grew and changed as buses were introduced and the electric trams were decommissioned. Eventually the bus depot covered the entire area between the canalised river Kennet, Mill Lane, Seven Bridges and London Street. The buildings and activities that comprised the Reading Bus Depot as it had become by 1998 were recorded and form part of the archive.