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Archaeological excavation at

Bread and Meat Close, Warwick

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Danny McAree

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Northamptonshire Archaeology
2 Bolton House
Wootton Hall Park
Northampton NN4 8BE
t. 01604 700493 f. 01604 702822
e. sparry@northamptonshire.gov.uk
w. www.northantsarchaeology.co.uk

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HISTORICAL RESEARCH by Christine Hodgetts

1 BACKGROUND

The purpose of this study is to provide the background to the well-preserved remains of two successive medieval tile kilns located near the street frontage of Bread and Meat Close, of which the more recent is estimated to have last been fired around 1350. There must have been standing remains of this kiln for a considerable period after that, but no references to this use of the land in the form of a field name seem to have adhered to the property, although "tile" or "clay" names did attach to other closes on the periphery of the Common.

The site is a close of land fronting Friars Street, on the western side of the town of Warwick. It is the last such before the Common, from which it is separated by the Common Brook (The name has very recently been standardised along the whole length of this stream as Saltisford Brook).

The ownership history of the close is traceable back to 1649, and hypothetically back to 1590. Before that time, the history of Hill Close Gardens, immediately north of the site, reveals that its neighbour, this close, was in the ownership of St Michael's Hospital in the early sixteenth century, though none of the surviving records of the hospital permit its identification. The ownership history of the adjacent property to the east, St Paul's churchyard, does not extend before 1760, so does not furnish any additional information, and, in fact, only patchy correlation is possible between any of the modern properties on this side of Friar Street and their medieval predecessors.

The original name of the Common, 'Friar's Claypits' shows that it was used as a source of clay from the 13th century or sooner. Warwick was an early producer of roof tiles, which were transported as far as Stratford, though the raw material undoubtedly existed there too. However, from the 15th century, the identifiable kilns in Warwick were adjacent to Satlisford and Theatre Street (then called Hoggesford or Walldyke), rather than at Friar Street. From the sixteenth century, the same producers were also making bricks, and the rebuilding of Warwick after the fire of 1694 was eased by orders facilitating the extraction of further clay and building additional kilns on the commonable lands. There is no evidence of any of this later activity involving land adjacent to Friars Street.

The western boundary of Bread and Meat close is the Common Brook. The original course of the brook is found to have been moved, and a wide spread of alluvium to the north of the close suggests that there was once a pool there, or possibly the brook had been moved more than once. There is evidence for both such occurrences in the early 15th century, but it cannot be known whether it was those events which created the evidence found.

The recorded post-medieval use of Bread and Meat Close was as pasture. The tile-making activity and the use of the other structures identified by the archaeological investigation has not impacted on the written record. Part of it had become a market garden by 1851, while the rest of it was being used to raise pigs and perhaps poultry and other fatstock.

The land to the north, Hill (or Hilly) Close, was also pasture and meadow, until it was converted to gardens (1845-52) while to the east was land known in the 18th century as the Cherry Orchard, which was apparently an orchard or market garden at that time.

In 1824 the western part was transferred to St Mary's parish for an additional graveyard. Its mortuary chapel was extended to form the new parish church of St Paul in 1848-9 (Deed bundle. The title begins with a will of 1764.Warwickshire County Records Office (WCRO) CR1618/W4/31; for St Paul's Church, Victoria County History (VCH) VIII p.535).

The churchyard wall now forms the eastern boundary of Bread and Meat Close. From around 1880 Bread and Meat Close was used as gardens, which continued until the property was sold to Warwick Borough Council in the 1950's to provide parking for horse boxes. It was sold for redevelopment in 2004.

2 OWNERSHIP HISTORY AND USE OF BREAD AND MEAT CLOSE

The secure documentation of Bread and Meat Close only goes back to 1649, with the will of Edward Rainsford, gent. He came from a family which had lived in Warwick in the sixteenth century (Kemp,14, 45, 91) and states that he held the land in question in an "estate of inheritance". He may have been the son of the Nicholas Rainsford, known to have lived in Saltisford in the 1580's and who died in 1590 leaving two daughters and a son, Edward, all with some years of their childhood still to run. The absence of registers for St Mary's parish at this date make this a supposition only, but Edward is said to have been born in 1579 (VCH pp 504-14), and also named his eldest son Nicholas, which supports this assumption. Nicholas did not mention landed property in his will, but this was common at the time (Worcester County Records Office, wills, 1590). Edward became a lawyer and is found as deputy town clerk in 1619 and town clerk in 1628, and is acting for the Corporation as an attorney in cases in 1622 and 1633 (VCH 490-504; Corporation Minutes, CR1618/W21/6).

Edward was the patriarch of an extensive family, and by the time of his will-making had already made a settlement on his eldest son, now living in London. Although not referred to, it is likely that some of his other children had also already received their portions, since there is no mention of the house he lived in, for instance, or some of the other property in which he is known to have had an interest. His will consists mainly of monetary bequests to his grandchildren, particularly the large young family of his son Edward, whose death that year probably prompted the writing of his own will (Will of Edward Raynsford the younger of Warwick, dated 29 January 1648/9, proved 14 November 1649. The National Archive, Probate records (TNA PROB) 11/210 f.12). Among property remaining to be disposed of were two closes, one, Nunnery Close, was probably in St Nicholas Parish. The second was a close called Fryars Meadow, currently leased to Thomas Hicke for £3 p.a.

The terms by which this land was left casts light on the importance of such closes of pasture immediately beyond the built up area. The combined rent of these two closes was £9 a year, which he estimated, with the trees growing on them, "*may be sold at 26 years purchase or more, being closes of that conveniency so near the town as are hardly to be obtained for any reasonable or ordinary sume of money according to the usual rates of purchase, and apprehending that the said closes in case they should be sold would sell for £250 or thereabouts…*". He wished the land to remain in "*my name and blood*" so left the two closes to his eldest son Nicholas, who was then to give bequests totalling £210 to the children of the recently deceased Edward (Will of Edward Raynsford of Warwick, dated 15 August 1649, proved 27 April 1653, TNA PROB 11/229 f.329. Edward was buried 15 December 1652. His wife Margery's deathbed will a week later gives useful additional family information, but does not mention Fryars Meadow. Both wills were proved together by their son John. Will of Margery Rainsford, TNA PROB 11/229 f.328v).

Nicholas, from the distance of London, and perhaps not considering that the value of the land would leave him any benefit after the legacies, probably reached some negotiation with his younger brother Job, still living in Warwick.

In 1691 when Job Rainsford, Gent, of Warwick (almost certainly the same) bequeathed "all that my close or inclosed ground with the appurtenances at the lower end of Fryar Lane, adjoining next the commons, now or late in the tenure of Richard Hadley", to his eldest son Edward, a silkman of London (Dated 1 June 1691, proved 20 August. TNA PROB 11/403 f.327). This Edward himself died in 1694, leaving monetary bequests, particularly to his brother Job, of Warwick, and his children (TNA PROB 11/420 ff.129-30).

During this period, there are accounts for the collection of the tithes of the land on the north-west side of the town (known as the Northern tithes) from the individual occupiers. Here we find, in 1693, Sergeant [i.e. Richard, the Sergeant at Mace] Hadley, paying a tithe of 1s 6d for Mr Rainsford's Close in Friar Lane. In 1695 it is paid by Nicholas Rothwell, and in 1698 it is Lawrence Standish. The situation is explained in 1699 when Standish is said to be the tenant of Rothwell. From then on, the occupier is said to be Rothwell, until these tithe entries disappear when their collection was leased out (Corporation account book, CR1618/W13/5. This starts in 1692. Any earlier volumes (apart from the very first) do not survive). The interpretation of this evidence is that the close was sold after the death of Edward Rainsford in order to pay his bequests.

The Rainsfords in the 17th century refer to themselves unhelpfully as "gent". We know that the elder Edward was a lawyer, but we have no knowledge of his son's occupation. Hence, we cannot speculate on whether the close was used for anything more complicated than grazing and mowing. Its proximity to the town gave it more than ordinary value in the eyes of the elder Edward, but that could have been simply to accommodate the horses of the proprietor. It was clearly sometimes let out, if not often, and we do not have the occupations of any of the known tenants. The value of the tithe (between 1s 6d and 2s in 1692-1704) is not very different from neighbouring closes. All were probably permanent grass, and the productivity of the land by this time was evidently not significantly affected by the layer of broken tile below the surface. The medieval use of the close seems not to have even generated a distinctive name. Though the remains of the kiln must have been upstanding for some years, it was a close near the top of the street which was called Tile House Close, and our field, simply from proximity to the Friary, confusingly shared a name with another meadow on the south side of the street further to the west.

Early records of Nicholas Rothwell say he was a carrier (Party to deed, 1695, CR1886 BB96 12 DR 18/15/8). By his death he was a wealthy man, a former mayor, and, as one of the senior members of local society, trustee for the Kenilworth benefactor, William Edwards (DR 18/15/8°). Evidently, from the horses, mares, geldings, wagons, carts and tumbrills and associated gearings listed in his will, he was still occupied in that capacity, but was now also a brickmaker. He left one wagon to one son with the brick kilns, implements and stock of bricks and tiles, and the other vehicles and horses to the other son, thus separating the two elements of his business.

Rothwell did not appear among the brickmakers who pass through the records of the rebuilding of Warwick after the fire of Warwick. The brickmaking may have evolved from the carrying business, or he may have inherited or developed it from his father in law, John Hadley (d. 1702) who supplied bricks to the corporation in 1698 (Corporation account book, CR1618/W13/5).

In the meantime, he had been in contention with the corporation for some years over his refusal to pay tithes on some of his closes among the Northern tithes, Horn Close, "Rainsford's Close" and Friars' or Colemore's Meadow. He ultimately admitted he had been misinformed and paid up.

A man with so many horses to keep might be expected to be using a collection of closes around the town for grazing and hay, but in fact Rothwell, like many townspeople, was open to any opportunity and is found paying tithes for two crops of flax and one of oats grown on Friars or Colemore's meadow once he had made peace with the corporation in 1706 (Corporation Order Book CR1618/W21/3). This may have been Bread and Meat Close, which he calls Friars Meadow in his will, but is more likely to be the meadow associated with "The Friars" on the opposite side of the road. This had belonged to the Colemore family before being bought by Rothwell and retained the name through much of the 18th century (CR1886/5826-39).

In spite of the apparent link to the medieval use of Bread and Meat Close, Rothwell's brick and tile making activity was based on Saltisford. His will refers to the: "Messuage, cottage, tenement and garden in Saltisford and a barn heretofore reputed to have been a chapel called St Michael's chapel to the said messuage adjoining, formerly occupied by Edward Green, flaxdresser, now occupied by me and Samuel Smallwood together and also my brick kiln and backside there with appurtenances and my two tenements adjoining together in Saltisford with the gardens backsides and appurtenances belonging now in my own tenure".

The start of the story of Bread and Meat Close under its present name begins with Rothwell's will, dated and proved in 1730 in which he instructs that: "My close called Fryar Meadow in or near Fryar Lane, otherwise Queenwell Street, heretofore occupied by Richard Hadley and now of Robert Coles, and the stable therein lately erected, [granted] to feoffees, Charles Wath, gent., William Smith, woollen draper, John Jones, linen draper, Edward Rogers, innholder, John Dadley, sen., baker, all of Warwick, and my son Nicholas Rothwell and the said Robert Coles, to dispose of the rents and profits among the poor and needy as they think proper in bread and meat at Christmas yearly "(Prob 11/639; copy at CR1709/382).

The early years of the charity are obscure, as the surviving accounts only begin in 1777. We do know that from 1767 until his death in 1773 it had been rented at £6 a year by Sir Charles Shuckburgh, who maintained a Warwick home on Jury Street (From his personal account books CR1248/174, CR1248/177). In 1777 there is a re-feoffment of trustees, in which the close is again said to have been previously known as Fryar Meadow, but is now most commonly called Bread and Beef Close, the name by which Sir Charles knew it in 1769. By now, the tenant was John Standbridge, referred to elsewhere as an architect (CR1618 WA17/141). It is most probable that they were using it for grazing and hay. Shuckburgh certainly did mow an earlier rented close. The rent remained at £6 until it was reduced to £5 in 1782. Throughout this time, the account books give little clue about the nature of the use of the close.

The whole town was mapped by Mathias Baker in 1786-8 (Fig 18). The 1786 map (CR1886 M32) is a working copy on paper which contains additions and changes in a different hand and ink almost up to the production of the next survey in 1806. A fair copy on parchment is dated 1788 (CR1886 M24) (Fig 19). It shows the close (mis-ascribed to Oken's Charity in a later hand) bounded along its full length by the brook on the west.

A small building is in the southeast corner, possibly the barn mentioned in Nicholas Rothwell's will in 1730. It appears to be supporting a similar building in the Cherry Orchard, which has been added since the original survey.

The course of the brook is of interest. It appears to separate the upper and lower parts of Hill Close, and forms the entire western boundary of Bread and Meat Close, showing that the present course is a later diversion.

A small building sits on the Common, against or near the side of the stream The widening of the street to create an oblique entrance to the common, perhaps to facilitate the driving in of cattle, had already created the curved southern boundary of the Close, This was followed immediately by the need to cross the stream. The street crosses the stream by a bridge or culvert. This was unusual for stream crossings in Warwick at this time. Elsewhere, there was generally only a footbridge, while wheeled traffic and animals would have forded the stream.

The 1788 version of the survey adds the information that there were hedges on the north, east and south boundaries of Bread and Beef Close (Fig 19).

1n 1806, a further survey shows the little barn in the same place, the entrance to the Common on the same alignment, and the course of the brook as before (Fig 20). The meadow attached to Hill Close is not shown at all, but this is probably because this plan of Warwick town took the brook as the western limit of its coverage.

The rent for the close was collected somewhat haphazardly, and the distributions were consequently also irregular, taking place every two or three years. Sometimes the tenant seems to have paid the rent (often for more than one year at a time) directly to the tradesmen who were to supply the beef and bread. The bread was sent to the butcher, who handled the distribution. Tickets were printed and each trustee had a choice of recipients. The tickets were then presented at the nominated butchers' shops for redemption. By allowing the fund to accumulate, sometimes, over several years, quite substantial quantities were distributed at one time.; around 550lb of beef in 1783 and 1788, over 700lb in 1786 and over 900 lb in 1831 with 468 loaves. At this date it is not known how much was given to each recipient, but a list of the mid nineteenth century shows each trustee organising his dole differently. Some people received between two and eight lb of beef and one to five loaves; another trustee gave 1-2 lb. to a larger number of recipients, while the vicar even-handedly gave 4 lb and one loaf to each of his list.

The tenants followed the pattern of the 18th century: Thomas Greenway, a lawyer from Jury Street, Daniel Frost, auctioneer from Castle Street, and, from 1805, William Collins, a merchant living in the top house of West Street, whose back gate would have been not far from the close.

The land was surveyed in 1800 by Richard Margetts, (at a fee of 2s 6d), but the trustees seem not to have used the information so gained to re-assess the rent, which remained at £5 a year until 1813, when Collins agreed that it be raised to 10 guineas. In 1820 it was 14 gns (£14 -14s) and in 1826 Collins was allowed £29 2s towards his costs of taking down and re-building the stable and buildings. Collins remained the tenant until the end of this account book in 1847 (CR1618 WA17/140). By now he was one of the MP's for Warwick and a man of considerable property, having rebuilt his house in West Street, incorporating two adjacent properties, in the form in which is exists today (Background information relating to William Collins derived from Michael Evans "Blackfriars House, West Street, Warwick" Warwickshire History X, 3, 1997).

Although the house appears to have had a stable, the additional accommodation and source of hay and grazing would have been very convenient, as it had been for his predecessors. Collins ceased to be MP in 1852 and moved away, but there had already been changes to the Close.

The 1851 Board of Health plan (Fig 21-22) shows that the stream had now been re-aligned to the edge of Hill Close.

This may have been a recent change, since the old course is still watered across the foot of Hill Close, and still forms part of the boundary of Bread and Meat Close, though it was not any longer connected to its supply upstream.

The fact that the parish boundary of St Paul's follows the new rather than the old course does suggest it had been before the formation of that parish in 1846. It is not clear who might have paid for this work, which had enabled houses to be built on Linen Street right to the Common gate and would also enable the extension of the gardens in Hill Close, started in 1845. It seems not to have had an impact on the line of the boundaries of Bread and Beef Close itself. On the other side of the stream, the commoners had provided a garden for the herdsman and the small building had disappeared. The gate to the common, now guarded by the herdsman's house, erected in 1817 was now set a little further into the common, beyond the line of the stream. This had now been culverted as far as the wall which separated Bread and Beef Close and the herdsman's garden from the street.

Bread and Meat Close itself had changed significantly. It was now divided by a hedge, half way up. The southern part still appears to be used as pasture, since it is not notated with any other use. The building in the south east corner has disappeared. The gate is in the middle, and to its left are three stables, presumably those built by William Collins in 1826. To the west of them there is a range of piggeries, some in brick, some in timber, served by two small yards as well as the runs attached to each sty. A letter accompanying a survey made by James Bateman in 1853 estimates the annual value of the close and piggeries occupied by Chadband at £4 4s a year (Plan and letter CR1618 WA17/143). Benjamin Chadband, whose family ran a shop in Swan Street, had called himself a grazier in the 1851 census (though a poulterer in 1841 and a grocer in 1861). Bread and Meat Close evidently provided some, or even all, of the necessary land for raising his meat and he may already have been operating the pork butchery and pork pie business which became the family's principal line.

North of this, the land had been laid out as two gardens. They were approached by a narrow footway between the churchyard wall and a hedge to Chadband's close from a gate in the south east corner. The graveyard is shown bounded by a wall, but there is a line of trees beside the path, reaching just into the market garden. The first garden was also approached through a wide gate from the close. It contained a long narrow glasshouse or range of frames. The second garden was divided by paths into two large rectangular islands with a wide border on three sides. There was a substantial number of trees, presumably fruit, and a small area near the entrance is tinted the darker green which indicates ornamental planting. In the northeast corner two small timber buildings face down the plot, fronted by a small gravelled space.

Although laid out as two separate spaces, only one other tenant is named. Bateman's valuation assesses the garden occupied by Burton's widow at £4 4s. In 1851 a Thomas Burton, gardener is listed as living in Friars Street with his wife and three children who are described only as gardener's son or daughter, which presumably means that they helped in his business, which must have been market gardening.

These rents represent a reduction from 1847, and Bateman's survey may have been commissioned in order to consider ways of maximising the income.

His well-drawn plan of around 1853 does not contain as much detail as the Board of Health Plan and also has some differences, which may or may not be real (Fig 23). The stream is shown with an arm forming the northern boundary of the close, and a small watering place has been made in the southern section. A watering place would be a practical addition to a close occupied by livestock, but the additional stream seems unlikely to be real. The paths in the lower garden have been extended and there are now two long narrow buildings, possible glass houses, neither in the same location as the structure shown in 1851.

There is now one small building in the north east corner. The stables and piggeries on the southern boundary appear to be the same.

An outcome of Bateman's survey may have been the creation of a group of ten gardens in the southern part of the close. The date for this is not known; the 1853 tenants are still present in 1856, but paying £5 each (CR1618 W15/29), and the accounts are absent for this period.

The map has been marked out in pencil in plots, accessed by a central path, the boundaries measured for transferring onto the ground. There was a good reason for this. The rent currently being received can be calculated at about £8 an acre. The adjacent Hill Close Gardens was bringing its owner £16 an acre in 1866. Gardens at the edge of the town had become a more valued commodity than the close of pasture on which Edward Rainsford had set such store two hundred years earlier.

There is a gap in the record until the start of a minute book in 1894, and an account book in 1901, apart from the evidence of the Ordnance Survey map of 1886 (Fig 24).

By this date the division into gardens had taken place. Unlike the adjacent Hill Close, only one of the gardens appears completely hedged or fenced. Another one or two are separated from the central path by a fence, but not from each other. This would suggest a predominance of vegetable production. Though unfenced, one plot has a summerhouse and ornamental path layout in front of it. Even trees are not as plentiful as in other garden sites, being present on only four plots, including the enclosed one, which also had a large building in the north-west corner. However, evidence from 1901 suggests a different interpretation: that the gardens were still in course of development.

The gardens were served by simple paths up the centre or edge. There is every possibility that the edge-on medieval tiles found in lines running east-west had been used as path edgings after being turned up during cultivation.

The market garden in the north part of the close has seen few changes to its layout in 1886, most notably the removal of the dividing fence. There is a single greenhouse in the same position as in 1851, leading to the conclusion that the Bateman plan was not accurate in this respect, and so, possibly, in others. The trees alongside the main paths are more plentiful, and there are further lines of them along the western boundary and near the southern and northern edges.

The northern part of the western boundary of the close still follows the former line of the stream, but this has now been culverted near the inside edge of Hill Close Gardens, emerging to swing sharply eastwards to make the boundary of Bread and Meat Close. This culverting had happened before 1866 (Plan attached to deed 1866 December 21, WCRO CR2818/unnumbered), and probably soon after 1851. The path to the market garden still exists, but its gate in the corner by the churchyard seems to have been closed up, and access is by path from the central gate.

A building of apparently the same dimensions as the stables is still present, next to a reduced gateway, but the piggeries have been replaced by a square extension to the stable building, open on one side, with a wider gate leading to a hard-standing next to it. A pump, not shown in 1851, is in front of the stables.

A tracing of this map, dated 1891 is glued into a minute book of the trustees (CR1618 WA3/119, Fig 25). This shows hedges or fences between all the gardens on the east side and also between 2, 4, and 6. The plot labelled 9 seems to incorporate two of the gardens intended to be laid out on the Bateman plan. This development of the site in the short time since the survey for the 1886 plan suggests that the creation of the gardens had taken place not long before that, and had not been complete in 1886. This might particularly apply if the tenants were expected to provide their own hedges,

which was often the case (See, for instance the protracted debate on the subject by the trustees of the Freemen's estate in Coventry. Coventry City Records Office, Freemens Trustees minutes, 810/2/1). The tracing also suggests that the wide gate had by then been closed up.

In 1901 the Race Gate committee asked to take part of the southernmost garden and its wall (Plot 2 on the 1891 tracing) for payboxes and the following year requested to take over Mr Woodfield's stable to keep the payboxes in. Another source of income by this date was an advertising station on the wall outside, and these two items accounted for the majority of the charity's income by 1909.

In this year, the charity's estate, and any balances, was transferred to the Warwick United Charities, though garden rents continued to be collected until 1940. It is not clear when the doles of Bread and Meat were replaced by money payments. The close was sold to the corporation in around 1960 to provide parking for horse boxes.

3 MEDIEVAL BACKGROUND

The disappearance of most of the medieval records of the Earls of Warwick, as well as those of the Guild and the two monastic houses and most of those of the College, means that recovery of detailed topographic information for Warwick in the Middle Ages is problematic.

Speed's diagrammatic plan of the town of 1610 shows the area between Linen Street (marked F and called Lethenhull Lane) and Friars Street (marked illegibly E and called Quenewell Street) as being comparatively undeveloped (Fig 26). There are no houses in Linen Street and in Friars Street a short run of buildings fronts the street on each side at the top. A scattering of buildings fronts the present Bowling Green Street, then part of Walldyke. The name, used round the full circuit of the town from Westgate to St Nicholas Church, reminds us that this street ran essentially along the ditch of the medieval fortifications. This section at that time also had an alternative name of Hoggesford. Many of these buildings were still barns and stables on gardens created on the waste which had been the town ditch (A survey of waste of the manor in 1617 and a rental of manorial rents shows the process to be on-going at this time (1615) CR 1886/8971; (1619) 1886 BB705)

The first documentary picture of Friars Street is the survey of manorial rents in 1482 (TNA DL 29/642/10421). This rental replaced an earlier one of 1390 and most of the entries refer back to the occupier at that time and the rent and use of the plot if different. Three adjacent properties on the north side of the street were crofts owing rents to the lord of the manor, the most easterly of which was called Tilehouse Croft. Like three other plots in the street, it paid a full burgage rent of 12d.

It did not appear to have a tile-making use at the time. Further down the street there was a lane leading to Lethenhull, and then a garden, also paying a burgage rent.

None of these crofts or gardens are remarked upon as being reduced from earlier tenements and cottages, although this is frequently the case elsewhere in the town, suggesting that they had not been developed within living memory. Adjacent to the garden, and listed as an abuttal rather than a rent, there was a cottage of Warwick College. In fact, the College's own rental shows that, though, in 1424 it had a cottage and croft in the street, by the time of Edward IV it had two tenements there, one of which had presumably been built upon the croft ((1424) Fonge (2004), TNA SC11/693, SC11/694 (1491), SC11/695 (1508), SC6 Hen VIII 3751).

Theslford Friary also had land in the area: a close in the centre of the Lammas Field, which later came into the hands of Oken's charity under the name of Thelsford Close, a close on the far side of the common (mentioned below) and a garden in Friar Lane between property of the college and a tenement of one John Ganges (TNA SC6HenVIII 7311).

By the time of the dissolution, the college had also acquired a rent charge from a further tenement in the street. In 1575, the manorial property was still listed as closes, the cottage which had the rent charge to the College was now two, and in 1581, Okens charity owned three cottages, which had probably developed from the two which the college had owned, though may have included the single cottage of Thelsford (1575 rental, CR1886/Cupboard 4/18, 1581 rental of corporation property CR1618/WA12/1). The documentary evidence therefore supports the view of the development of the street presented by Speed, as consisting of five or six cottages on the north side of the street, though the houses were perhaps somewhat further from the top of the street than he shows.

None of these properties can be identified with Bread and Meat Close.

4 TILE MAKING IN MEDIEVAL WARWICK

Warwick Common and the closes of land around it provided a plentiful supply of clay and are clearly responsible for the early local development of the production of roof tiles in the town. Aerial photographs show the whole undeveloped area of the Common to be pock-marked with what could be clay diggings spanning many centuries.

West Street Common, as it came to be called, is said to have been granted to the town by Margery (d.1263), sister of Thomas Earl of Warwick (d.1242) for a common throughout the year (Recited, giving the date of 1243 in chamberlains account book, CR1618 WA16/1/13). It lay adjacent to the now Hampton Street, and was known as Clay Pits by 1268 (VCH VIII, 484; TNA C132/35/13) and for a long time thereafter (It is so called in the manorial rental of 1480 and in court leet presentments of 1611).

There should not be an automatic assumption that the earliest clay extraction was for tiles: it is now believed that pottery from the late 11th century onwards found in Brook Street, Market Street and Bridge End is of local manufacture and evidence of pottery kilns on the top of Market Street, and top of Linen Street have been discovered (Archaeological Excavations and Salvage Recording at the site of the Woolpack Hotel, Warwick Warwickshire Museum, 1999; Warwickshire SMR entries 5660, 5662 (Linen Street) and 5663, 8812 (Market Street). Clay may therefore have been taken from the common for domestic wares before the development of the tile industry, so the first known occurrence of the Clay Pits name may not necessarily indicate its start.

The status of the land as a common may have encouraged clay extraction here, where there was no particular owner, but it is more likely that the collective ownership might have been more resistant than an individual owner to the disruption and danger to stock, and the name, although not found earlier among the sparse documentation, may actually pre-date the conversion to common.

Clay was probably taken from the most accessible areas nearest to the road at first, and the earliest references are all adjacent to Friar Street/Hampton Road. The Earl of Warwick made a grant to Thelsford Priory in the 13th century of a furlong called the Clay Pits, next to a pasture called the Claypits.

They still owned this at the Dissolution, and it can be securely located immediately beyond the common, fronting the road (Beauchamp Cartulary 1268-98; grant apparently confirmed or repeated 1329 TNA E328/317). The existence of a Tile House Close near the top of Friars Street has already been mentioned. Of more relevance for this study is the information from as early as 1398 that land called Cleyputtes by the Friary was failing to return to the manor a rent of 2s because it was in the hands of the lord for lack of tenants.

This decayed rent is mentioned in the accounts of 1422/3 and 1451/2, as well as in 1480 and 1481, just before the old rental (dated to c1390) was renewed in 1482. This rental makes no mention of the close called Cleypits, nor of the two shilling rent, though it generally makes links back to the tenant and rent in the old rental. From this it has to be assumed that the rent had been abandoned.

Seventy years later, Linen Lane Close, for which there is a clear, if sparse, title proving it to be the later Hill Close, is said to abut Linen Lane on one side and land of St Michael's on the other (Former property of the Priory was granted to trustees for Edward Greville of Milcote in 1608 (TNA C66/1804 m.21) Some of the property was then conveyed to John Weale, who already was its tenant, with a residual rent charge conveyed to Rowley Ward in 1618. (WCRO CR1886/2599-2600) A descendant of Weale sold it to William Wilson in the 18th century, reciting the transactions of 1608, and his descendants held it until 1866. It is not entirely clear what the Letter patent which begins this chain of transactions was doing, since some of the land had been included in a sale of the Priory land to Thomas Fisher in 1546. Rents referred to in the grant were those given in a rental of the property which had belonged to the late Sir John Puckering in 1597 (SBT DR37/3/16. The abuttals are given in the Bickley (1923)). There is no corroborating evidence for this, but as there is no full survey of the St Michael's property, it is quite possible that the sterilised land was passed to St Michael's at about the time that its decayed rent ceased to be recorded.

Although there are virtually no surviving records before the 15th century, it is possible, from records of repairs, and what we know of surviving buildings to deduce that tiled roofs were already much in evidence by 1400.

St Sepulchre's priory, a modest house in both means and numbers, nevertheless would have had the normal quota of monastic buildings. At the Dissolution the lead, of which roofs would have been the major part, was only 600 lb. This equates with only 8.5 sq. yds of roofing, barely enough for a small steeple to house their three bells (The Receiver General in one place estimated that 30 sq. yds produced one fother (2128 lb if a hundredweight was 112lb and a fother 19 cwt.) and in another 24 sq yds to the fother. SC6 Hen VIII 7340).

The balance of their roofs was probably mainly tiles, and some repairs were made to tiled roofs on the site in the years immediately following the Dissolution (e.g.1543-4 SC6 Hen VIII/ 3743). It is not uncommon that when an expensive material fell into decay, it was replaced by a cheaper, but it is more likely in this case, that tiles were used at a fairly early date.

The Friary was probably largely tiled, including the church, since at the dissolution the only lead was in the gutters. One "fair lodging", complete with tiles was considered worth removing to Warwick Castle.

Another major institution in the town was St Mary's College. The choir, built by Thomas Beauchamp I was evidently always leaded., but tiling repairs in the 15th and 16th century suggest that the nave, vestry or chapter house were probably tiled, as was probably the chancel of St Nicholas, though the nave there was shingled.. St Lawrence's chapel was tiled, and repaired with 2000 tiles over 6 days in 1411 and again in 1433 (Styles (Styles 1968 and 1977).

Budbroke church and parsonage were tiled by the early 16th century when they are repaired both by the College and the new corporation (E315/433; Corporation accounts). The College's church at Compton Murdack (Compton Verney) was also tiled, and improbably repaired in 1411 and 1433 using tiles bought from their Warwick supplier.

By 1449, repairs on the canons' houses involved tiling, as did the Treasurer's Place, though this house seems also to have had some stone slates. By the early 16th century most of the repairs recorded in the accounts are to houses with tiled roofs.

One of the oldest surviving roofs in Warwick is that of the Guild Hall, now the Leicester Hospital. The earliest of the buildings may have been built soon after the land was granted to the Guild of St George in 1383. The pitch of these roofs indicates they were originally built to be tiled, and in fact, the tiles had been there long enough that early on in corporation ownership (1548-9), a considerable part of the buildings was re-roofed, the old tiles were stripped from the Kitchen and sold, to be replaced with new (WCRO CR1618 WA1/1).

A major landowner in the town was the Earl. Most of his property was held by free tenants, and so would not have been liable for repair by the bailiffs. However, it is apparent that from time to time property fell in, if the owner simply abandoned it, and the re-letting in such cases may be the origin of the increasing number of copyhold rents which are found in the 16th century. On such occasions, the only way of putting a house back into use would have been to repair it, and some such instances are found in the accounts of 1422-3. A tenement in Smith Street and a forge in Castle Street are mentioned, as well as the "Court House" and other, unspecified property as having tiling repaired (ex inf. Mark Booth). By the mid 15th century, there may have been more tiled roofs than the local industry could sustain, since tiles for repairs to the roof of the Gaol Hall were purchased from Berkswell in 1449, even though the college was buying them locally the same year (TNA E101/590/29-31; Styles, Ministers'Accounts).

By the 16th century the various surviving series of accounts make it clear that a significant proportion of buildings in the town were tiled. The town centre properties of the College, and even most of the modest properties of the Friars on West Street seem to have been tiled (TNA SC6 Hen VIII.3734 (1524); E315/432 (1532); E315/408 (1540)).

Some of the earliest references to tile making at Warwick relate to places outside the town. The earliest is in the account rolls for the estate of the bishops of Worcester at Hampton Episcopi (Hampton Lucy). The run of accounts is not continuous, but they make it clear that the complex consisted of buildings slated in stone (including the Church, the Hall and the Long Chamber), and some thatched, but certainly some tiled. In 1376 a small number of tiles were bought for the kitchen and bakery: 500, so for a repair not a renewed roof. In 1390-1 2,500 tiles were bought for the roof of the chamber and long house, again without specifying where from, but the following year, 300 tiles are specifically bought and fetched from Warwick for the hall (Worcester County Records Office, BA2636 Ref 009:1 92161; 92159/7; 92169; Corporation accounts, WCRO CR1618 WA1/1; Oken's charity accounts WCRO CR2758/1).

It is unlikely that they would have gone so far if there had been a closer supply. This is the earliest record found of Warwick tiles, though possibly fifty years after the last firing of the kiln at Bread and Meat Close.

There is then a break in the record for some years. When it resumes, in the mid 15th century, the manor is farmed out. Repairs are still mentioned, but a global sum is paid to the tenant on presentation of a bill whose items are not recorded.

In Stratford, there is evidence in the records of the Guild of the Holy Cross that this town which stands as much on the Warwickshire clay as Warwick, had turned to tiled roofs before it developed a strong enough tile making industry to support them all. The Guildhall, the School House, Guild Chapel and many of its properties were tiled, though they also used stone slates, bought from Grafton in one instance. References to the use of thatch were only occasional. In 1427-8, when the school house was built, 3,500 tiles were bought at 25s 8d, with carriage from Warwick to Stratford. An additional 1,000 tiles were bought for part of the almshouses, at a further 7s 4d.

The 11,000 paving tiles bought the same year for the guild chapel and the new parlour do not mention carriage; nor do subsequent purchases of roof tiles (SBT BRT/1/3/38. The account rolls have been calendared in Anon. Stratford Corporation Record: the Guild Accounts (now available on www.a2a.org.uk). It is valuable but far from comprehensive in its rendering of building and repair accounts).

The only other reasonably local source from the 15th century or earlier is the accounts for Kenilworth Castle. Unfortunately, good runs of accounts only start in 1438. By this time, as in Warwick and Stratford, the use of roofing tiles was widespread in the town, and numerous references can be found for their use on buildings within the castle and the house in the Pleasaunce (TNA DL/29/463/7540-1 (1439-41)). The origin of the tiles, when given, is the works at Stoke, Coventry (John Tymcocks). Stoke is roughly equidistant with Warwick from Kenilworth, and in both instances the journey would have been shorter than that from Warwick to Stratford. The presence of the Stoke works, then, suppressed the market for Warwick tiles to the north of the town, and also the development of a tile making industry elsewhere in the area. Kenilworth itself had the raw materials for tile making, and many of its buildings were evidently tiled, as well as most of the better quality of its properties. It is therefore surprising that the Castle works needed to be procured from as far afield as Stoke. At the Dissolution the desperately poor condition of many of the abbey's properties prompted the immediate response of getting 108,000 tiles fired in 1538 (TNA SC6/HenVIII/7338). While the pre-eminence of Stoke in its area may have been suppressing the development of more local industries, Warwick's lead in south Warwickshire was evidently being eroded by the opposite process there.

Tile making had made an impression on the surnames of Warwick residents by the end of the 14th century. No tilers are noted in the two published taxation lists of 1327 and 1332, possibly because they did not reach taxable wealth. However, in the poll tax of 1379 a Nicholas Tyler is assessed at 12d in Warwick Without and a Thomas Tyler at 4d in West Street ward (Carter (1926), Fenwick (1998)). The name continues in the 15th century, and is now clearly identified with roofing with tiles. A short surviving run of court rolls from 1424-5 mention a John, Hugh and Richard Tyler, as well as a Thomas Cook, tiler (WCRO CR1886/352-6).

These written records for tile making in Warwick begin well after the last apparent use of the Friars Street tile kilns, and it is clear that by the 15th century, the industry was moving round the common, and soon was firmly established on both sides of Saltisford.

Between 1398 and 1401 Henry Tyler is named as the late tenant of a curtilage in Hoggesford (potentially anywhere along the present bowling Green and Theatre Streets) which was then in the hands of the lord for lack of tenants, while in the same account the Cleypitts on Saltisford late held by W. Tyler also returned no rent. In 1423-4 a John Tyler received several payments for tiling Castle properties, mentioned above (Castle accounts, ex inf. Mark Booth). A Richard Tyler lived on Saltisford in 1424, occupying two College properties, one of which was clearly identified in 1544 as a tile house.

Next to one of them was a cottage which was later occupied by John Bosse, tilemaker, who rented two crofts from the college in 1465-6 and three in 1473-4, paying 4s 8d more than the 28s rental value, probably for permission to extract clay. These closes were described in detail in ministers' accounts for 1544, and can be firmly located opposite the Hospital, where they were still subject to a lease which permitted clay to be dug (Styles (1969), 65, 72, 118, 150; TNA SC11/693, 694, 695, SC6 Hen VIII/3751). From the mid 15th century references the name Tyler is associated with the process of tiling, while manufacture is a separate occupation. Whether this had been the case earlier is uncertain. The trades may have divided as the use of tiles increased and provided a full-time occupation in each.

In the 16th century, for which many more records survive, there is evidence of widespread extraction of clay from the closes on both sides of Saltisford. Saltisford Common is found with the name of St Michael's claypits (Given as an abuttal of Michael's Piece when it was bought to enlarge the commons in 1584. (WCRO CR1618/WA5/1/1) and named in a perambulation of the manor in 1714 (WCRO CR1886/8453). One of the properties of St Michael's hospital on the south of the street, called Clay Close, was leased with a claypit there to Oliver Brookes, who also rented the former Thelsford Close from Oken's charity for the same purpose. He leased other land on the common, including the closes which had belonged to St Mary's from which clay was taken at an earlier time, though it is not known whether these were also used for his brick and tile making business. Later in the century, overlapping Brookes' period of activity, Humphrey Kerby had a tile kiln on the land behind his house in Hoggesford which adjoined on the north west the land occupied by Brookes and is also found as tenant of the former St Michael's land.

By the later 16th century, manufacture of tiles had come into the hands of entrepreneurs. When Oliver Brookes was not calling himself a gentleman, he claimed the occupation of a draper. Humphrey Kerby also called himself "gentleman".

Of the people who supplied the bricks and tiles for the building of Eyffeler's almshouses in 1597, apart from Humphrey Kerby, one was a mercer, and two were widows of mercers (Clay Close WCRO CR26/1 (4); Oken's charity accounts op cit.: Rental of Puckering estate SBT DE37/3/16; Will of Humphrey Kerby 1610 TNA PROB 11/117Accounts of Eyffler's Charity published in Dugdale Society, Miscellany I (1977), ed. Occupational information from wills).

5 FLOOR TILES

There is no documentary evidence for the production of floor tiles in Warwick, though the use of wasters in the floor of the earlier kiln suggests that they had been made nearby. They could have been produced on site a little, or much earlier than the date of the repair, or since these are the only encaustic tile wasters found, have been produced elsewhere and been salvaged for the repair. It is assumed that ceramic floor tiles for prestigious works were frequently manufactured on site, if the supply of clay existed and space to set up a kiln.

It was easier for a peripatetic craftsman to go to the job, than for a heavy product to be transported more than short distances. In the claylands of Warwickshire, this system continued to be used for brick production until the early 19th century. If a new tiled floor were commissioned for Warwick Friary, or St Sepulchre's priory, this might have been the case. It is rather less probable for the confined site of St Mary's, but still a possibility. It has also been suggested that a floor tile maker might, for convenience, set himself up temporarily with an existing roof tile maker, to avoid the

trouble of setting up a new kiln and clay preparation site. The dating of the last firing of the kiln means that these tiles must have been produced at some time before around 1315.

The Friary had building campaigns probably in the 1260's, 1290's and around 1360, (see below) and the middle one of these is a possibility. Most of the other potential candidates for the project which yielded these wasters are illusory. The loss of the Castle accounts makes the structural history of the castle uncertain, but the works done by Thomas Beauchamp the elder (who obtained his lands out of wardship in 1329 and died in 1369) and his son, who extended the domestic buildings of the Castle (VCH VIII, 457). Caesar's tower, the gatehouse and barbican, are too late. The precursors of these late 14th century domestic buildings are not recorded in documents so their date of construction is hypothetical.

The most likely scenario is that the tiles were being made very locally, possibly on the Friars' site, or on another tile-making site in the street, and a resident tilemaker then used these wasters to repair his kiln.

St Mary's had the Norman choir (probably early 12th century) rebuilt by Thomas Beauchamp I (d. 1369) and his son, so this is also too late. Although the nave and transepts had work of the 14th and 15th centuries, if they were paid for by the parishioners, they would probably not have had an encaustic tile floor. Of the other ancient churches in Warwick, the College was evidently allowing the fabric of those which were to become incorporated into the college in 1367 to become run down. St Michael's was declared ruinous that year, and was probably rebuilt as the chapel of the hospital in the following century.

St James shows evidence of having been rebuilt for the chapel for the guild after 1383. St Peter's, in an inconvenient position by the Cross, was to be removed to East Gate soon after 1422, and St John's, in the Market Place was also reported as being of little value. These are then unlikely to have generated any building campaigns in the early 14th century. Nothing is known of any building works at St Nicholas church, which was completely rebuilt in the 18th century, leaving little information about its earlier structure and at St Sepulchre's Priory, where it is known that tiled floors did exist.

6 WARWICK FRIARY

6.1 Land

This house was established towards the end of the reign of Henry III but before 1263. In around 1314 an addition to the site was made, when Avice de Pillardinton sold them land 160 ft by 100 ft (The purchase resulted in an inquisition ad quod damnum, when it was found that it was worth 2d a year held without suit or services from the church of St Mary. The Friars were confirmed in possession in 10Edward II (1316-17). Then, In 1320 Edward II licensed the alienation in mortmain to the dean and chapter of St Mary's of a rent from a Warwick property, which John Daubenay was giving to them in exchange for the rent which had been due to them from the land granted by Avice to the Friars. VCH II, pp.101-2; St Mary's Cartulary, nos 74, 77, 100, 109; Inquisitions ad quod damnum, C143/110/9; C143/144/12). In 1344, they acquired ten acres of land to extend their homestead, and in 1360, there was a further inquisition into whether a grant might be made of land 300 ft long and 100 ft wide to enlarge the house, of which the outcome is not known (Inquisitions ad quod damnum, C143/341/13). This indicates yet another building campaign.

The vow of poverty of Friars was corporate as well as personal, so houses of friars did not generally have endowments for the upkeep of the house, and sometimes even the site of the house was deemed to be held in trust from the original donor. For this reason the friars, still comparatively popular, were not included in the initial phase of dissolution directed at houses with endowments of £200 a year or less. At the time of the Dissolution the property, worth £4 18s 6d, consisted of (in addition to an orchard in Walkers Lane, on the south side of West Street, which had been acquired by the friars between 1491 and 1508 - it owed a rent charge to the College, so this information can be derived from college rentals) the rents of five tenements with gardens in West Street, a cottage and garden in Friar Lane and a barn and garden there. Only a more substantial tenement in West Street was stated actually to be within the precincts of the house. It had a garden and barn. Also leased out was a close of pasture called Fryars Close, and then there was the precinct itself, containing a little grove, an orchard, garden and cemetery. In 1541-2 a further croft, called (improbably, since the Dominicans were the Black Friars) Whitefriars Close, was discovered (Ministers' Accounts SC 6/HenVIII/7311 -7314).

Apart from the orchard in Walkers Lane, it seems most likely that the property formed a continuous block of land stretching from the backs of the houses on West Street, and including some of them, to Friars Street. The houses cannot be identified, but the land can.

In 1549 John Dudley, then Earl of Warwick, was granted a close of pasture called Friars or Whitefriars Close, which extended from the grove to the pasture called the Marshes (Calendar of Patent Rolls Edward VI, ii, 3, 4. There was evidently some confusion in the minds of the officials of the Court of augmentations, as they were said to have lately belonged to Warwick Whitefriars). This must have included the later discovery, later known as Friars Meadow, to judge from the boundaries given. In 1551 the rest of the site and all the smaller properties were purchased from the crown by John Dudley, now Duke of Northumberland. The particulars for his grant say that there then remained no further property of the Friars in Warwick (Calendar of Patent rolls Edward VI iv 118. Described in particulars for grant, TNA E318/32/1819, including all the property listed).

Later identification of the land is straightforward. The main block, Upper Friars, the former site of their house, and Lower Friars, evidently the Friars Close of 1538, are identifiable on several maps until developed in the 1830s -1840s.

The Common Brook (here known as Friars' Brook) separated them (Warwick Castle Estate Plans, 1786-8, 1806 (CR1886 M24, 32, 38), a late 18th century estate plan (CR237/8911)). As this land alone was surveyed as ten acres, even allowing for differences in accuracy and the value of the acre, it would seem that the original endowment of land must have consisted of the bare site of the house before the gift of 1344.

For the purpose of this study, a more confusing site is Friars or "Whitefriars" close or meadow. Fortunately, a run of deeds survives which clearly fixes this Friars' meadow (otherwise known as Colemore's, from a previous owner) as being originally part of Friars Close, and adjacent to, and then owned with, pasture called the Marshes, on the south side of the road, towards Gog Bridge.

This clarity is particularly welcome as the land passed through the ownership of Nicholas Rothwell, with the potential for even greater confusion with Bread and Meat Close, then also known as Friars Meadow (CR1886/5826-39). It is thus reasonably clear that the Friars Meadow on the South of Gog Lane was probably originally part of the Friary estate, but that no evidence suggests that any land north of the street was in their possession. This Friars Meadow, then, takes its name from proximity rather than possession.

6.2 Buildings

The buildings were in progress in 1263, when Henry III gave the friars seven oaks from the Royal forest of Feckenham for timber and four more from Kinver in 1267 for the roof of the church. The church was finished in 1268, when it was dedicated (VCH II, 101-2).

A further royal grant of timber was given in 1295, suggesting that another building campaign was taking place. The application to acquire more land to extend their homestead in 1360 suggests a further building campaign at this date.

The church's dedication is not known, but it had altars dedicated to Our Lady, St Dominic and St Peter of Milan. As it was known to have been the requested burial place of several wealthy people, to the extent that an exemplary case was brought by St Mary's College for loss of dues, the church must have been of some status (Burial of Peter de Montfort, 1369, Edmund Verney, 1495, Richard Mynar, 1511(VCH II, 102), Stacy Camfild, 1513 (TNA PROB 11/17). In 1400 a dispute over the loss of dues and gifts to St Mary's Warwick resulting from the burial of Alice Russell in the Friars' church was taken to arbitration. It was agreed that St Mary's should receive a quarter of the payments made for burial. 2¼d from the oblations on the high altar that day, a half pound wax candle, 20d for a quarter noble left to the friars, 13d for a quarter of the value of a small brass pot and 2s for quarter of the value of a Parisian cloth were duly handed over (Fonge (2004), 289-90). The first high-status burial known to have taken place there, that of Peter de Montfort in 1369 corresponds with one of the periods of expansion of the site, so may have been the culmination of a building programme for the church, a new chapel, or partial re-build, financed by de Montfort.

The house is believed to have provided for 30-40 friars in the 14th century, making it one of the largest in the province, though, in spite of evidence of continued financial support and local favour, there was only the prior and seven friars by the time of dissolution in 1538 (This can be determined from the customary payment made by Edward I and Edward II of a groat to every friar of places they passed through, calculated in Warwick on 37 friars in 1301 and 30 in 1329. VCH II, 102).

It can only be guessed whether the dorter and refectory for the larger establishment still remained at that time.

The friars may also have had lodgings for corrodians, or at least good guest house accommodation. In 1347 the prior admitted Thomas Canning and Agnes his wife into fraternity, so that they might receive the masses and prayers usual for friars (Monasticon, Vol X, p.1495). Residence is not necessarily to be assumed from this, but visits do seem likely. After the death of William Harwell (of Wootton Wawen) in 1501, leaving £10 for the repair of the church and for masses to be sung for himself and his wife, his widow seems to have lived in the house, for in her will she is described as "of the friars", to whom she left a further ten marks (VCH II, p.102; TNA PROB 11/17). Possibly the buildings intended for a larger monastic establishment had been remodelled for such use.

Although the rental income listed was affluent compared, for example, with Greyfriars at Coventry, who had none, a constant stream of oblations would have been necessary for the maintenance of the establishment and the upkeep of the buildings. Such income undoubtedly existed, but it is doubtful that it was sufficient (Even in the later years of monasticism in England, gifts are evident. One such was an orchard in Walker's Lane, which owed a rent to St Mary's and had come into the Friars' hands by 1509, but had still been in lay ownership in 1491. The income remaining from the 2s 4d rent would not have been great once the rent charge of 13d had been met. TNA SC11/694, 695).

At the time of the dissolution, Dr London, the commissioner responsible for procuring the surrender of houses of friars described the house as ruinous, with lead only in the gutters and on the steeple. He destroyed the windows of the church and the cells (sellys) of the dorter, so that they could not be readily re-occupied as a friary, but did not pull the house down.

One building, or at least its roof, was in good condition. It is referred to twice, in slightly different terms. Much work was underway at Warwick Castle, then in the hands of the King. In November 1538 London reported that a roof 60 ft long, with good tile might serve at the castle; shortly afterwards he suggests that the only decent building a "fair lodging" might be translated there (Letters and Papers of Henry VIII, 13 II 757, 14 I 3). The best candidate for a 60 ft roof was the church, but a "fair lodging" could have been the building housing the prior's lodgings, guest house, or even the dorter or refectory.

The sale of building materials at the Friary was not significant. The only entry in the accounts is £6 owing from Robert Webb for surplus buildings (Receivers Accounts, SC 6/HENVIII/7340). This figure is carried forward, unpaid, over several years until it is finally revealed that Webb had never got his stone, for more than 500 loads had been taken to the castle to finish the repairs now under way. Only the carriage is accounted for in the Warwick estate accounts, but it was estimated that it would have cost more than £6 to have quarried so much. It was therefore suggested that the debt be written off (Letters and papers of Henry VIII, 15 I 1120).

It is generally assumed that Northumberland demolished the Friary (Monasticon, p.1495; VCH II 103), but in fact some evidence survives that at least part of the church or other stone buildings survived as a barn.

In 1708 the Corporation, who owned the tithes of both Warwick parishes, decided to sue the tenant of the Friars for non-payment of tithes on the two Friars Closes. The depositions of several witnesses survive. The defence was clearly based on the presumption that former monastic land did not pay tithes.

Witnesses of some age (born as early as 1624) testified either their personal recollection, or having been told in their youth by some aged person that there had been a building looking like a chapel in Upper Friars, and that quarries (floor tiles) had been dug up, about four inches square, with pictures or impressions of flower de luce, lions and such like. One former tenant had systematically cleared stone from a section of the close during the quiet period of every winter. Another witness had been given a seat said to have come from there (Corporation Order Book, WCRO CR1618/W21/3; TNA E134 8-9 Anne Hilary 2; 9 Anne Easter 3).

We thus have sketchy, but fairly conclusive picture of an establishment of some size, at least some of whose buildings were stone, but none with leaded roofs, therefore probably tiled. Encaustic tiles were used in at least one part, probably the church, but possibly others.

The original building campaign was of the 1260's, with further ones in 1295 and, perhaps, 1360. The tiles which formed the floor of the Bread and Meat Close kiln could have been wasters from production for either of the first two of these, with the first kiln being used for roofs there or elsewhere in the town.

7 THE COMMON

West Street Common, open for grazing by townspeople throughout the year, had as its northern boundary in post medieval times a line roughly continuing straight on from the later Linen Street, beyond which were the Lammas lands, open for grazing between Lammas and Candlemas (18th century extent shown in CR1886/M24; 19th

century extent in CR1618 WA16/33). The medieval extent of the common was somewhat less than this.

The West Street Common had been granted to the townspeople by Margery, sister and heir of Thomas, Earl of Warwick, who controlled the estate between 1242 and 1253 (VCH p.452). Later that century, the Earl granted a furlong next to it to Thelsford Priory (See above, p. 19). These examples of discrete pieces of land in one ownership suggest that the process of engrossment of holdings by laying strips together had already begun, though it could be that 13th century tenants were simply removed from parts of their holdings to enable these particular engrossments to take place. To the north and west of the common there was land on which the townspeople had grazing rights after harvest.

North of Saltisford, another area of year-round common was known as St Michael's Claypits or Saltisford Common. Its origins are obscure (VCH pp480-9) states that West street common was the only common pasture or waste; it mentions the ridge and furrow on the land later to become Saltisford common, but (pp434-47) offers no explanation for its origin). Adjacent to it the Pigwells were also Lammas Land.

Aerial photographs of 1927 and later clearly shows the ridge and furrow of the original Warwick Fields, also extending over the area which had been West Street Common, indicating that it had previously been part of the open fields of Warwick which surrounded it.

The ridge and furrow is also clearly visible on the Pigwells, possibly extending into the original area of Saltisford Common, and also south of Hampton Road in the field called the Marshes which had been part of the Earls' demesne (Aerofilms 19743 (1927) A44047-8, 13310, 13311 (1950).

The loss of much of the medieval record for Warwick leaves open to question the development of Lammas rights and how they became attached to the townspeople rather than the owners or tenants of the land in question, and cottagers, such as was customary in a village, and pertained even as near as the Warwick hamlet of Longbridge (Grazing rights on the stubble in Longbridge was included in the business of most of the courts of Warwick College for which records survive. TNA SC2/207.88-89, 1515-50). The first reference to lammas rights found by the authors of the VCH is around 1612, when land conveyed to enlarge the common was referred to as "half year's ground". However, there is a reference to foremath (prima vestura) in 1465-6 and it seems likely that the lammas rights were of some antiquity, and may have become attached to the householders of the town as a result of the original donation of West Street common (Styles, 1969, 125). Such grazing rights for townspeople were not uncommon, and are found in Warwickshire in Tamworth and Coventry, where the right later became attached to freemen rather than specific householders.

What is more difficult to explain is how the grazing rights became limited to the area which came to be known as St Mary's Commonable Lands, excluding not only the Earls' demesne, south of Friar Street, but also Star Close, the closes at the extreme south of the present Common, (part or all of which had belonged to Thelsford Priory) and the closes on the east side of the Common Brook.

The process of engrossment of the open field strips may have taken place quite early, since it is clear that ownership became concentrated in the hands of the town's institutions: the College, the Priory and St Michael's hospital. Starr Close is identifiable paying a manorial rent in 1482, with every indication that it had been enclosed by the time of the earlier rental of 1390. St Mary's own land near Saltisford is enclosed in the rentals of 1424 onwards, while rent charges are collected on another close in Lethenhull Field from the time of Edward IV (Fonge, 2004; TNA SC11/693).

Their conversion to pasture probably took place largely in the 15th century. Lethenhull (Linen Hill) is definitely the central portion of today's common, facing Linen Street; the name Stockhull had passed out of use by the end of the 15th century, and was probably the area including Pigwells, and perhaps the northern part of the Lammas Field.

Only two cases of inclosure of arable are recorded for Warwick in the inquisitions in to inclosure of 1517 and afterwards. One, involving 24 acres attached to a house called Booston House cannot be located.

The other involved 80 acres belonging to the Priory, inclosed in 1516 to create four closes called Linen fields, and another called St Michael's field (I.S. Leadam, Domesday of Inclosures, (Royal Historical Society, 1897) pp. 414, 421-2, 649, 651, 655. PCC will Richard Fisher (copy WCRO Z410L); report of conveyance in Corporation minutes CR1618 W21/6 p.40: "*there was purchased by the bailive and principal burges lately of Mr Belcher and Mr Coxe who married the daughters and hers of Richard Fisher the lynnen feldes to inlarge the commons being half yeres grounds before which said grounds the said Richard Fisher in his lyffe tyme did promise to give the same to the use of the borough in common to St Maries parish which was not done yet he a good member to this borough it is desyered that thessurance of the same maybe perfeted and a good estate stablished*").

The inescapable conclusion is that the rest of the open fields of Warwick (apart from those of Longbridge and St Nicholas, which were to be enclosed much later) had been pasture since before 1485, the nominated starting date of the inquisition.

The first civic fathers of Warwick were anxious to improve the dignity of the town in numerous ways, including increasing the area of the commons.

Thomas Oken left £100 in his will to buy a piece of land to make a common forever. In 1584 his trustees bought Michael's piece and an adjacent meadow. This was land of which Oken himself had been tenant, and had belonged to the Priory, possibly being the St Michael's field inclosed in 1516. Since its name did not mean that it had belonged to St Michael's, it must have been near to the hospital, and in fact, it was said to lie next to the common called St Michael's Common or Claypits. It must, therefore, form part of the later Saltisford Common, as there was no permanent common on the south side of Saltisford.

In 1592 Richard Fisher died, a younger brother of Thomas Fisher who had bought the Priory estate shortly after the Dissolution. In his will he describes how in 1569 he had bought from his brother lands and pastures in Linenhillfield or Linenfield and a meadow adjoining, and he now left a life interest to his wife, and then to his daughters to be conveyed to trustees to "*Permitt and suffer for ever the poorer sort of the inhabitants of Saint Mary Parish...to take and have ...the pasturage of grass*". This transfer to the Corporation finally took place in around 1612.

The priory had had a compact holding which included the now Hill Close and spread across the Lammas field to include Swan Meadow and Gospel Close, as well as a "grove", which is not mentioned after 1547. At least one of these had been enclosed well before the land reported in the Inquisition, since it owed a rent charge to the College and is recorded as a close in their 15th century rentals and only passed to the Priory between 1491 and 1508 (Dorothy Styles "a Financial Account of St Mary's Warwick, 1410-11" Dugdale Society, Miscellany I (1977); Dorothy Styles, Ministers' Accounts of the Collegiate Church of St Mary, Warwick, 1432 85,Dugdale Society, XXVI 1969).

Information on the governance of the commons and lammas lands is almost lacking before the conditions were reconstructed in 1698 following the loss of earlier records in the Fire of Warwick two years before.

The bequest of Thomas Oken gives some indication of the rule which probably already existed, "*in trust for the use of inhabitants and householders of the parish, but not for lodgers or under-tenants, to graze a gelding and a cow or two cows or a cow and a calf*" (These words are not used in the will, but the deed of purchase. CR1618 WA 5/1/1. In 1721 this was re-conveyed to the use of 'every inhabitant being married and a householder' of St. Mary's parish (CR1618 WA 5/1/2)). The rights of common seem to have become fossilised at this point, in spite of the terms of the re-feoffment of 1710, for new houses which are present by 1600 are found not to enjoy the same right.

The surviving medieval court leet records have presentments affecting the commonable lands made by the tithingmen of Saltisford Ward. By 1611, although some presentments, particularly relating to scouring ditches on the common closes were made by the tithingmen, there were now chamberlains of the commons. These officers, elected annually at the court leet may have been introduced after the court leet was transferred to the Corporation in 1554. The office continued to exist until the extinction of the common rights in 1948, with their duties increasingly complicated by the collection of revenues from racing, lump sum payments arsing from sales of land, and the renting or purchase of the foremath of much of the land in the 19th century.

The right of the general public, in addition to the commoners, to walk upon the common was probably very ancient. Linen Lane clearly originated as the way to Hampton on the Hill and Budbrook. In 1528 the Prior was presented to the Court Leet for enclosing "Lenynlann" and preventing the use of this route (WCRO CR1886/366). It was probably the narrow section which still ran between his Gospel and Swan meadows in the 19th century.

However, the use of carts or other vehicles on the common itself was vigorously controlled by the commoners. Surviving court leet records from 1628, 1635 and 1648 all contain presentments by the chamberlains for offences against this rule.

The commoners could protest at digging clay on the commons, which they did in 1628 (WCRO CR1618/W11/3. the culprit was Thomas Wall, not otherwise known for brick or tile making. Clay would also have been needed for wattle and daub infill of timber framed houses which were enjoying a final phase of popularity in Warwick at this time). There is no reason to suppose that this prohibition was not of long standing, since the practice would have been both detrimental to the grass and dangerous to the stock. Similar prohibitions are found in the Court Leet records of Coventry. They evidently could not prevent the digging of clay on the Lammas lands, since there is so much evidence for their use for this purpose. It must have been equally detrimental, and there are some hints that there were objections to the practice as well as to making bricks and tiles on the Lammas fields.

Among the presentments of the chamberlains in 1635, three people were required to rail their quarries according to an order made at the previous leet, and Thomas Johnson was presented for not taking down his kiln and Edmund Makepeace for not tiling over his according to orders formerly made. The continuing existence of the court leet and the role of the chamberlains must have given the commoners more collective assertiveness than existed in some towns (In Worcester, for instance, when it was proposed to remove the common rights from Pitchcroft in the late 19th century, although there was a public though somewhat under-informed public outcry, but the commoners were incapable of taking collective action and no-one was able definitively to say who the commoners were, or quantify their rights. (Worcestershire County Records Office, Records relating to Pitchcroft in the Worcester City Council collection, (Cabinet 10, Box1) and council minutes published in the Council Year books from 1887)).

This resulted in the need for specially negotiated provisions to be made to permit the extraction of clay, and carting it over the commons and construction of kilns on Pigwells to produce the bricks and tiles needed for the rebuilding of the town after the fire of 1694. The associated regulations, although nearly 300 years later than the kiln in question, indicate the issues of diging clay and making bricks on the commons. Interruptions by "evil ill-disposed" objectors were so great that commoners were required to subscribe to a letter of permission, cattle were damaged by wandering into the workings and being chased away, and by eating the thatch on the hovels, rubbish from the destroyed houses was used to fill up the clay pits as quickly as possible, and indemnities had to be given to tenants of the foremath for damage cause by the cart ways (Farr 1992). What cannot be determined is the extent to which the extraction of clay or making of tiles on the common and Lammas land could be controlled or even prevented by the commoners in earlier times. However, this may be why the earliest known tile kiln locations were immediately adjacent to the commonable lands, rather than on them.

The court leet presentments furnish a small amount of additional information which may illuminate the findings at Bread and Meat Close, though, clearly it cannot relate to the time when the excavated kiln itself was is use. A frequent source of concern at Courts Leet was the cleaning of water courses. They needed to drain the adjacent land and not cause damage by flooding. Equally, an owner could not stop up a watercourse for his own use to the detriment of his neighbours downstream. In the early 15th century, one Henry Derby was presented for moving the course of the Lethenhull brook. The presentment is made by the tithingmen of Saltisford. This is probably a local name for the Common Brook and, since no adjacent landowner is named as suffering from this, it has to be supposed that the community at large was damaged.

This makes Bread and Meat close a distinct possibility for a location, since, further north, the brook ran through Hill Close, and beyond that, it bounded individual landowners on both sides. Close by, in the following court, a William Matthew was presented for blocking the course of the water at Lethenhull. While it seems improbable that the surviving five rolls from the 15th century should contain solution to the problem, these presentments do indicate that the inhabitants were capable of diverting a stream to change a boundary and damming it to create a pool for whatever purpose, though they must have anticipated the outcome. Given the audacity to perpetrate the offences, they may well have withstood pressures of the court and considered the fines worth paying.

8 CONCLUSION

Clay had probably been extracted from land adjacent to Friar Street and from the hillside known as Lethenhull for several centuries when the tile kilns in Bread and Meat Close were first built. This extraction will have resulted in the name of "claypits" attached not only to the land which was given to the town as a common, around 1243, but also an adjacent close. The location of the tile kiln was almost certainly prompted by the foundation of the Dominican Friary very shortly afterwards, on a site which could hardly have been closer. Once it was in production, the close would have had little alternative use in the immediate future, so it is likely that the growing demand for tiles in the town would have been an incentive for the kiln to remain. Before 1482 another close near the top of the street (probably now part of Westgate School) also had a kiln.

The abandonment of the site may have been because no more work was in prospect at the Friars, but there would have been a growing demand for tiles in the town and this location would have seemed as suitable as Saltisford, where production was about to start, or already had done. Yet Saltisford continued to accommodate tile and brick making into the 18th century. The answer may be increasing difficulty in obtaining clay. Even if clay continued to be taken from the claypits common in its early years as a common, it is likely that the townspeople soon placed objections to the practice. Clay could have been taken from Bread and Meat Close itself, and the surrounding closes, but there must have come a point when it was easier to establish a new kiln closer to the source The presence of the small landing stage contemporary with the second kiln suggests that clay was being floating in, possibly from the very fields which are known to have been exploited later, rather than just carried from an adjacent source. The option of floating made tiles across the road to the Friary also needs to be considered.

On Saltisford there were landowners in the College and St Michael's who were certainly agreeable to clay digging and kiln construction by the 15th century, so the death of the tile maker, or reaching the point where reconstruction of the kiln was preferable to repair might have led to re-location of the business

It seems highly likely that this was the site recorded as previously returning the high chief rent of 2 shillings, returning nothing throughout the 15th century for lack of tenants. The absence of evidence of occupation or use at this time backs up such a hypothesis. Possibly the useless piece of derelict land was then passed to the hospital of St Michael, before finally recovering the fertility which made it the desirable piece of pasture described in 1649.

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Fig 18: Plan of Warwick and adjoining estates belonging to the Earl of Warwick
Not signed (Matthias Baker) 1786-88 WCRO CR1886 M32

Fig 19: Plan of Warwick and adjoining estates belonging to the Earl of Warwick
Not signed (Matthias Baker) 1788 WCRO CR1886 M24

Fig 20: Plan of the Town of Warwick

William James 1806 WCRO CR1886 M38

Fig 21: 1851 Board of Health Plan of Warwick
North and South part of Bread and Meat Close WCRO

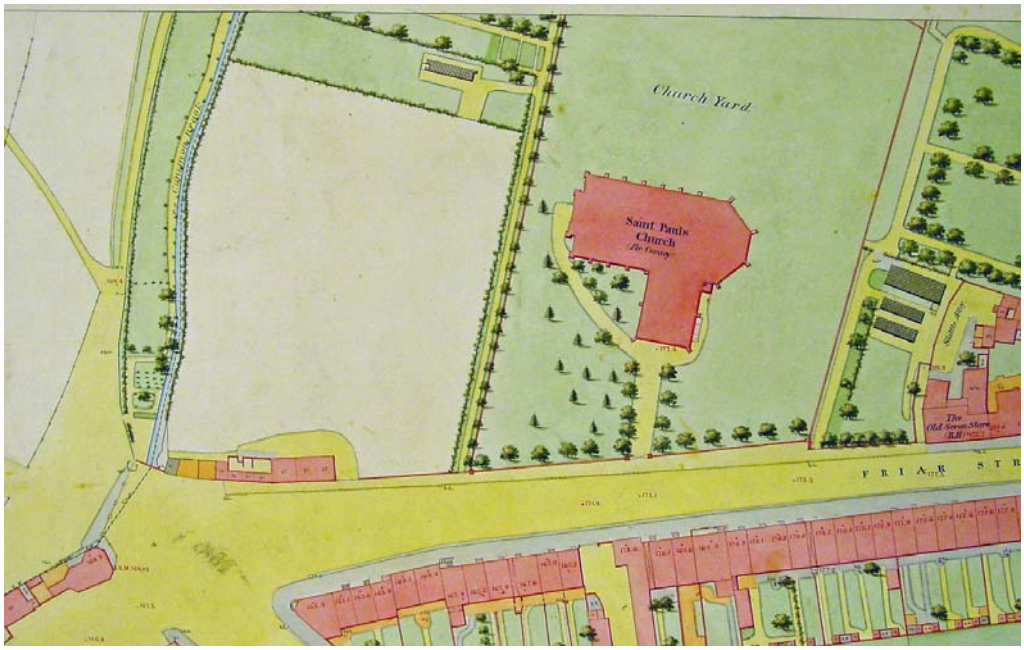

Fig 22: 1851 Board of Health Plan of Warwick
North and South part of Bread and Meat Close WCRO

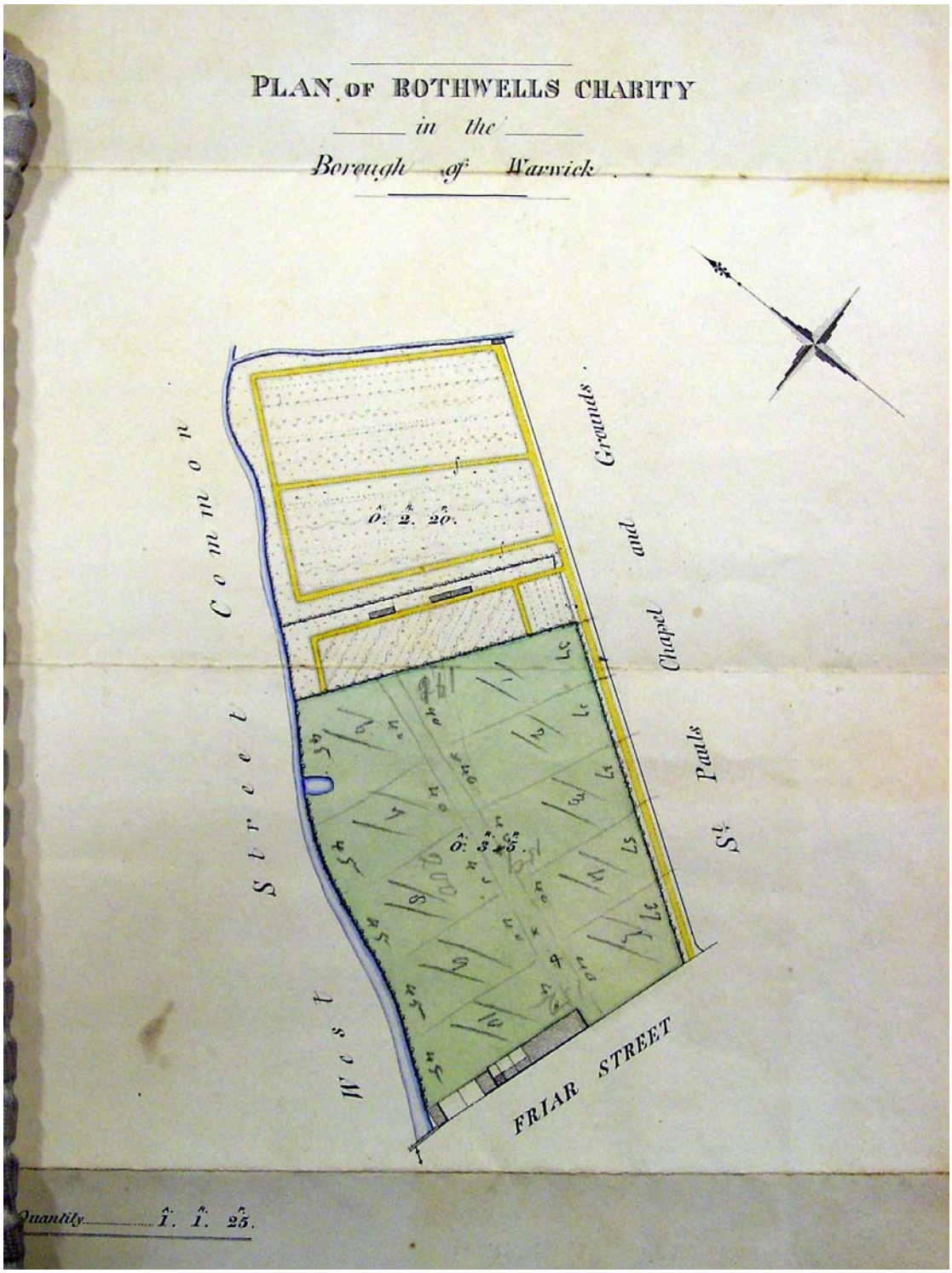

Fig 23: Plan of Bread and Meat Close by James Bateman, *c* 1853

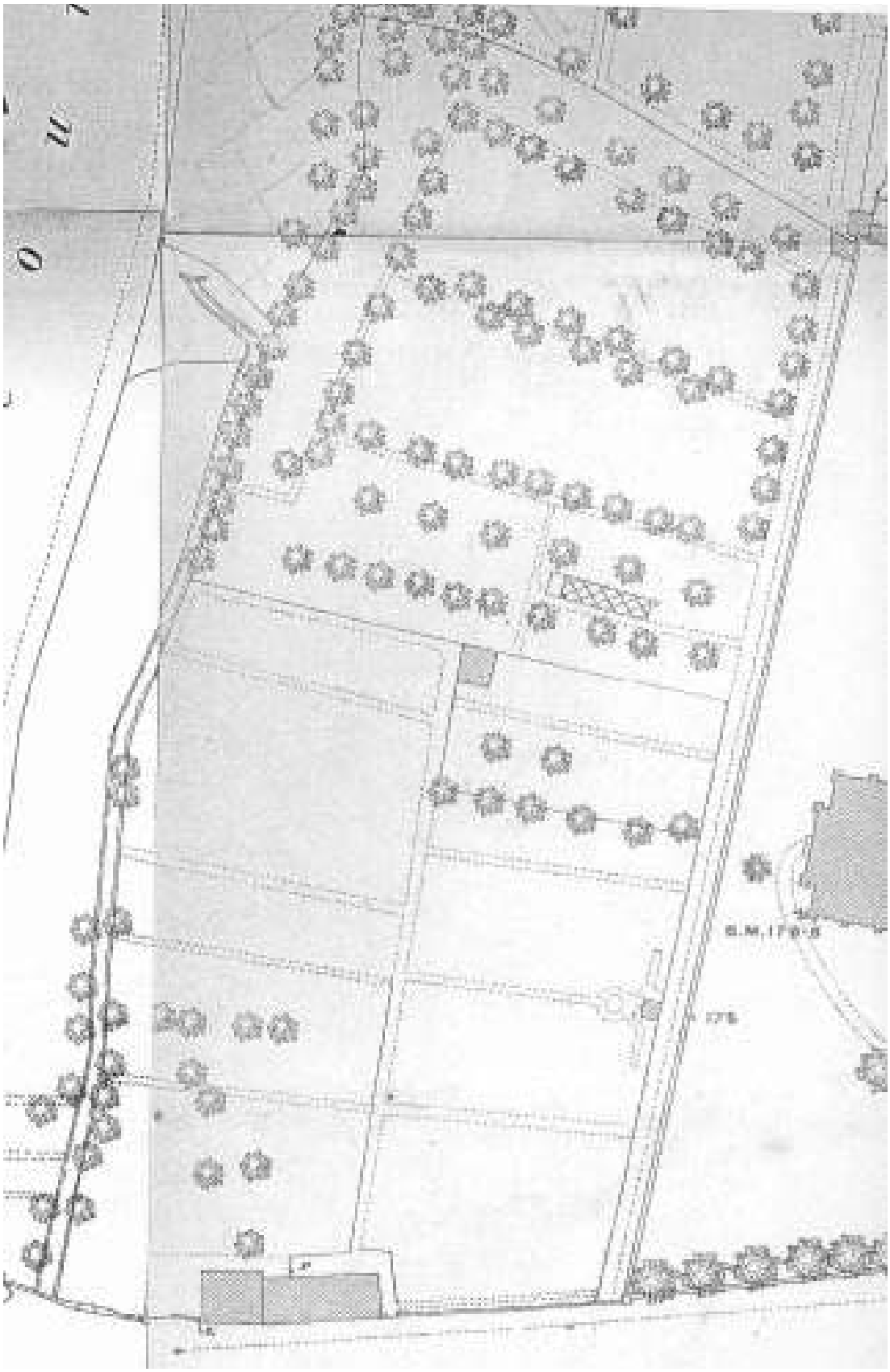

Fig 24: Extract from Ordnance Survey Map of 1886 1:5000 (not to scale)

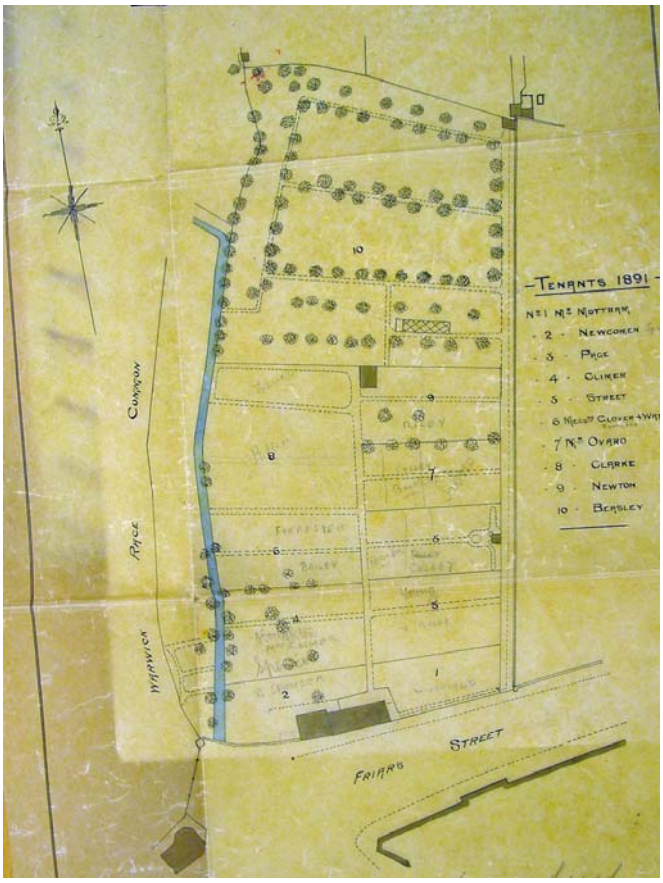

Fig 25: 1891 tracing of Ordnance Survey Map WCRO CR 1618 WA3/119

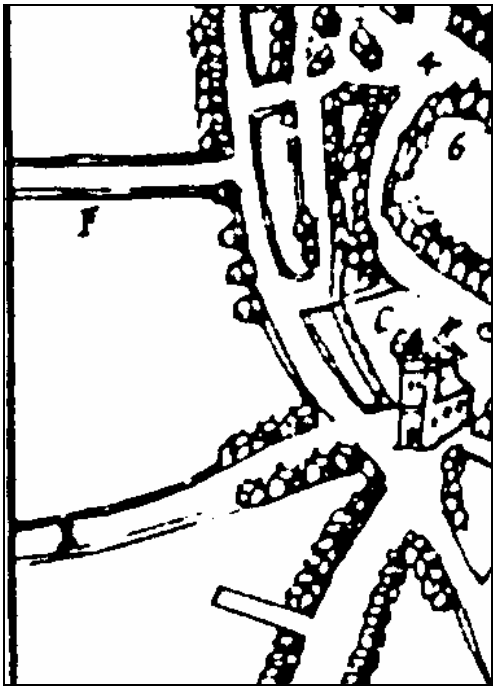

Fig 26: 1610 Speed's Map of Warwick

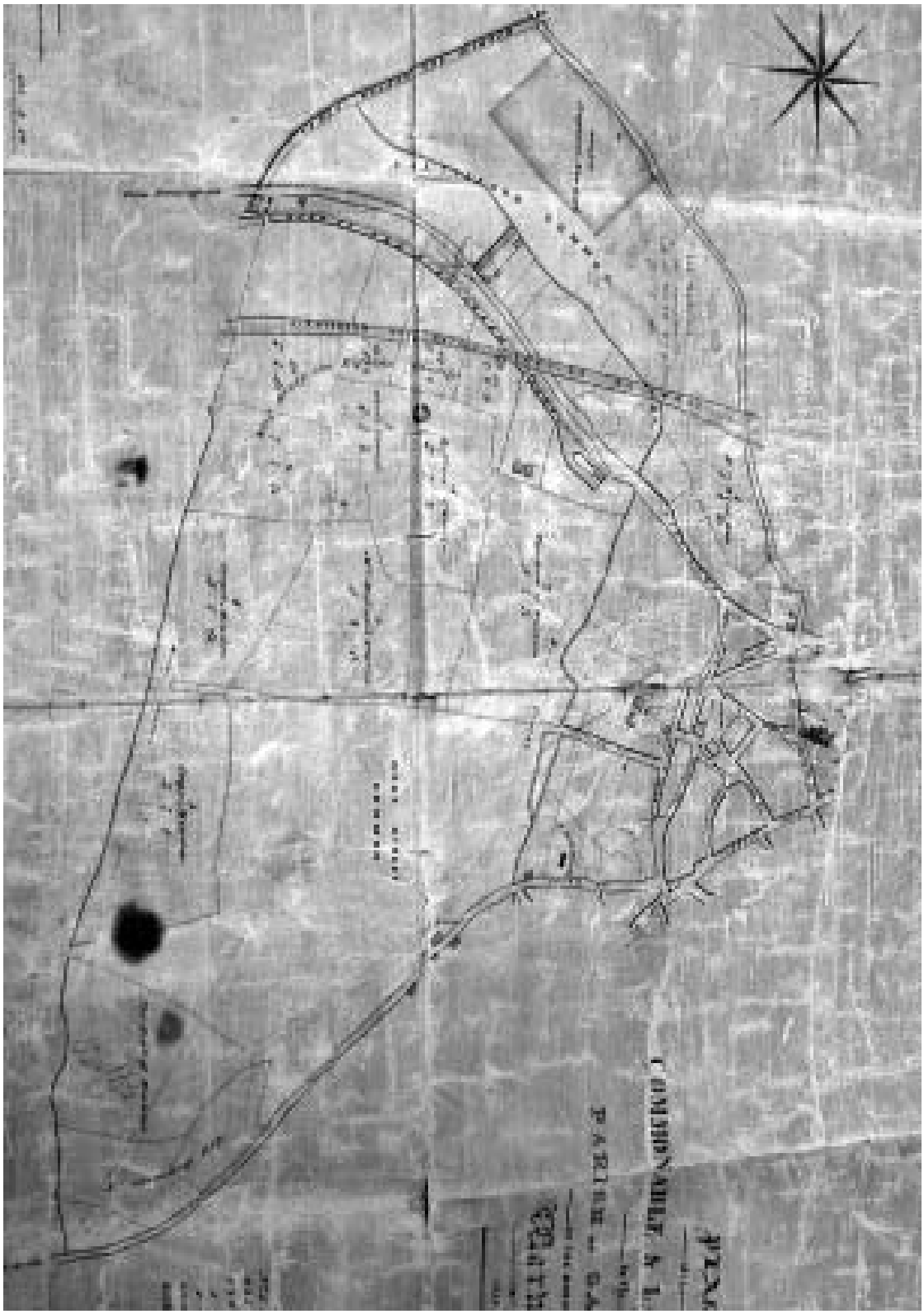

Fig 27: Warwick Commonable Land in the 19th century
Dated 1834 with annotation of 1854 WCRO CR 1618 WA16/1/33

APPENDIX B

THE EXCAVATED EVIDENCE by Danny McAree

1 AGRICULTURE AND DITCHES, PRE 13TH CENTURY (PHASE 1)

On the east of the site, the exposed natural sub soil was yellow/grey silt (106), very compact, stiff and sticky. Towards the centre and west of the site, this clay was covered with a layer of coarse gritty gravel (105) containing rounded river pebbles banded with dark grey/blue silts and clays.

From the north-east corner of the excavation and running in a diagonal across the site to a point 20m to the east of the south west corner of the site, lay the silted up palaeochannel of the stream that marks the west boundary of the site (Fig 4). The fill of the palaeochannel was grey/blue mottled silt clay (129) containing abundant grit and gravel. This was 0.5m deep and extended 1.8m across the base of the channel. It was overlain by grey/green silt clay (130) with occasional rounded grit and gravel. This was 0.2m deep over (129) and butted it to the west being 0.7m deep and extending a further 2m along the base of the channel. It was butted along its base by light brown/grey silt clay (132) with occasional flecks and strings of fine rounded gravel. This was 0.3m deep and 0.75m wide. It was overlain by a layer of mid grey/brown silty clay (131) which also butted the higher part of (130). It was firm and stiff, containing ribbons or lenses of coarse sand and grit. It was 0.2m deep over (132) deepening to 0.55m and extending 1.8m to the limit of excavation.

1.1 The ditches

In the north east of the site, a broad 'U' shaped ditch [270] was cut into the natural and aligned roughly north to south, becoming narrower and shallower to the south before tapering out (Fig 4, 13, Section 9). The ditch was up to 1.35m wide and had a maximum depth of 0.4m. The sides were steep sloping to a broad rounded base. The fill (273) was mixed medium and dark brown sandy silt containing frequent rounded gravel, occasional fragments of grey/green sandstone and flecks of ash/charcoal. The fill contained occasional fragments of 12th century pottery. This ditch was cut by ditch [210], the cut for the two kilns [1013] and by modern service trench [1001].

Ditch [199] was aligned roughly north-east to south-west, extending from the south-east and becoming shallower and fading out towards the centre of the site (Fig 4, 13, Section 10). It was 1.45m wide and up to 0.2m deep. The ditch had shallow sides sloping to a broad dished base. The fill was brown/grey sandy silt (200) mottled with grey/yellow clay. It contained frequent rounded gravel and flecks of charcoal. Pottery from this ditch was dated to the 13th century with a single sherd of late 13th early 14th century pot from the upper fill that also contained some broken roof tile fragments. It was cut through by ditch [203] aligned roughly east west across the site.

Towards the south-west of the site, an isolated sub-rectangular pit [267] was cut into the natural (Fig 4). It was 1m long, up to 0.8m wide and 0.3m deep with steeply sloping sides to a broad flat base. It was filled with dark grey/brown silt clay loam (268) containing copious gravel and some flecks of charcoal. Pottery from the fill was dated to the 12th century.

2 TILE KILN AND STREET FRONT OCCUPATION, 13TH - 14TH CENTURY (PHASE 2)

2.1 The Tile kiln

A tile kiln was built to north of the medieval street. It was oriented roughly north-east to south-west and measured 2.9m long and 2.4m wide. It consisted of a rectangular tile built structure 2.1m long by 1.9m wide internally with two vaulted flues, each approximately 1.9m long and 0.8m wide beneath what must have been a single firing chamber (Figs 5-7, Plates1-5).

The construction trench [1004] was cut into the natural and had near vertical sides up to 0.5m deep and a broad flat base. The south wall (1005) measured 1.9m internally and was built of tiles bonded with red clay and pointed along the inner face with white lime mortar (Fig 7, Section 1). It survived to a height of 0.4m and was up to 0.3m wide. It built of regularly coursed red clay roof tiles laid fairly randomly as headers and stretchers, forming an even and regular face to the inside of the chamber. Tiles width varied in length from 0.27 - 0.32m long and between 0.14 - 0.17m wide with an average thickness of 0.01m. Behind the inner face, the wall was made up of broken tiles packed with red clay and small tile fragments to form a solid structure.

The west wall (1007) measured 2.1m long internally, 0.4m tall at the south rising to 0.85m at the north wall (Fig 6 and Fig 7, Section 2). The east wall (1014) was 2.1m long and averaged 0.45m along its entire length (Fig 6). Both walls were built of whole and broken roof tile and wasters giving walls of about 0.26m-0.3m (10”-12”) thick.

The walls comprised three distinct elements, a solid plinth 0.1m high, built of regularly coursed roof tiles laid in random header and stretchers. This supported the middle section of wall built of roof tiles laid as headers, each about 0.14m wide and about 0.01m thick. These formed upright piers, up to 0.18m apart. In the intervening spaces, further columns of roof tiles, again laid as headers, 0.16m wide and 0.01m thick were built to form flue arches springing away from the wall towards the centre of the chamber. The arch springers were built of whole or largely whole tiles. The main wall piers were faced with complete end faces of tiles but the back of the wall was a mish-mash of broken tiles bonded with red clay. The upper part of the wall above the arch supports was again built of regularly coursed roof tiles laid in random headers and stretchers. All the tiles were bonded with stiff sticky red clay with just a narrow band of white lime mortar pointing along the tile edges on the inside of the kiln.

The north wall (1009) measured 1.9m wide internally and was 0.63m thick, twice the width of the other walls (Figs 6- 7, Section 3, Plates 1-5). The north wall was pierced by two arches to allow the firing of the kiln. The surviving west arch (1010) was 0.8m wide and stood 0.4m high at the apex of the arch. At the north-west corner of the kiln, the north wall stood 0.85m high. To the east the north wall had been truncated by the cutting of a modern service trench [1001] and by an earlier evaluation trench (WMFS 2003a). A fragment of the wall survived to 0.68m high.

The floor in each of the stoking chambers had been built of a mix of sandstone slabs and tiles. At the south of the kiln both chambers were floored with slabs of red sandstone (1022) laid on a bed of lime mortar. At the north of the kiln, only the lime mortar bedding (1018) survived bearing the imprint of the original tile floors removed prior to destruction of the kiln.

Forming the central part of the floor of the west chamber there were 49 encaustic tiles (1017, SF 15-63) set into the base of the kiln (Fig 6, Plates 1-5). Each tile measured 0.12m by 0.12m and was about 0.02m thick. They were bonded in lime mortar (1018) and regularly coursed. The patterns were arranged randomly with no attempt to have a single orientation or a matching or integration of patterns.

The flues were formed of six arches supported by the side walls and resting on a central spine wall (1020) up to 0.28m wide, extending the full length of the kiln and dividing it into two stoking chambers. There was no evidence that the spine wall had been tied into the north wall of the kiln, the relevant section of the south wall had been destroyed by the cutting of the modern service trench [1001].

Modern service trench [1001] had cut through the kiln removing the east firing arch of the north wall, the spine wall (1020) and the central part of the south wall (1005).

None of the flue arches survived, just the supports in both the east and west walls. Only a single course of tile survived to mark the location of the central spine wall.

The floor surface of the kiln, where undisturbed by the modern service trench [1001], was covered with a layer of fine black charcoal and ash (1021). This was sealed with a dump of stiff, sticky red clay (1011) containing frequent clods/ pockets of grey silt clay, some rounded gravel, charcoal/ash and abundant broken roof tile, fractured and discoloured from excess heat. This layer averaged 0.6m deep across the whole kiln. A 13th-14th century glazed floor tile (SF 3) was recovered from this layer.

This fill was covered with dirty grey/red sticky clay (1012) containing frequent pockets of grey silt clay, some rounded gravel, charcoal and ash and abundant heat fractured broken roof tile. This layer was only differentiated from the lower layer (1011) by the darker colour. Pottery from these layers was dated to the 13th century. Above this was black coarse sandy loam (1023) containing occasional rounded gravel and frequent charcoal, ash and coal. It is probable that it was the leaching of the charcoal and ash from this layer that created the interim layer (1012).

2.2 Occupation evidence

The area available for excavation and recording was limited by the construction of the 20th century 'Smithy' to the east of the main entrance. A series of modern service trenches also cut through the area leaving only strips and islands of surviving archaeology between the trenches and below the truncation and levelling of the site for the present car park surface.

Along the southern edge of the site, parallel to Friars Street and extending some 10m north from the present street frontage lay a series of hearths, pits, gullys and a stone surface that appeared broadly contemporary with the development and use of the southern tile kiln (Figs 5 and 10, Plates 9-11).

About 10m to the south west of the tile kiln was a layer of brown silty sand (187) containing frequent charcoal, grit and gravel and occasional pottery fragments. This layer butted a stone hearth (224) to the south and overlay the natural. This layer extended over much of the area but was machined away to expose the natural and survived only as isolated patches. Pottery from this layer was dated to the 13th-14th century. This was cut by a shallow ditch or gully [187] aligned east to west (Fig 10). The sides of the gully had a shallow angle to a break of slope where it dropped steeply to a broad dished base.

It was filled with dark brown sandy silt (188) containing frequent charcoal, grit and gravel and occasional pottery fragments. The feature was 2.2m long, 0.5m wide and 0.15m deep. It was deepest where it butt ended to the west. Pottery from this feature was dated to the 13th and 14th centuries. In the east, it was overlain by a spread of sandstone blocks (181).

The spread of rough, angular sandstone blocks (181) overlay the eastern end of the gully [187] and extended to the north and east (Figs 5 and 10, Plates 9-10). These were bedded on a layer of dark grey/black silt clay laid directly onto the natural grey clay (106). The blocks were rough hewn and laid to form a rough rectangle 3m north to south and 2.6m east to west. Most blocks were laid flat creating a rough irregular surface.

The gaps between the stones were filled with dark grey brown and black silt clay (182) that extended across much of the northern part of the stone surface to a depth of 0.1m, this contained frequent charcoal and gravel. Pottery from this layer was dated to the 13th and 14th century.

To the south, the stone was covered in mottled dark red/brown sandy silt (183) containing plentiful charcoal and coarse gravel. It was 0.05-0.07m deep across the southern third of the spread. Pottery from this layer was from the 13th century. The stone spread was truncated to the north west by modern service trench [302] and was cut through from west to east by cable trench [300].

At the south east corner of the spread there was a posthole [174] cut into the clay natural (Fig 10). The posthole was sub circular 0.31m in diameter with steep near vertical sides dropping 0.16m to a flat base. The fill (175) was dark brown silt clay loam containing frequent small sandstone fragments. The upper part of the fill on the north east side contained three larger pieces of sandstone up to 0.1m in diameter.

In the centre of the southern edge of the stone spread (181) there was a second posthole [176] cut into the clay natural (Fig 10). It measured 0.2m in diameter and 0.17m deep. The sides were steep, near vertical sloping to a ‘U’ shaped base. It was filled with a mid brown silt clay loam (177) containing occasional charcoal flecks. There was no evidence for post packing. Pottery from this feature was dated to the 13th century.

A third posthole [178] lay at the south west corner of the stone spread (Fig 10). This was also cut into the clay natural and measured 0.2m in diameter and 0.13m deep. The sides were steep and near vertical; sloping to a ‘U’ shaped base. It was filled with firm mid brown silt clay loam (179) containing occasional rounded grit, gravel and flecks of charcoal.

At the north east corner of the stone spread, there was the cut [185] for a ‘U’ shaped gully. This was 0.37m wide and 0.17m deep. It had steep sides sloping to a dished base. It was aligned north south along the east edge of the stone spread and had a square cut butt end to the north level with the north edge of the stone spread. To the south the gully tapered out and was partially overlain by sandstone spread (181) which may have been disturbed by machining. It was filled with a mid brown silty clay loam (186) containing plentiful grit and gravel and occasional charcoal flecks.

2.3 Hearths/ Ovens

At the south of the site, in the centre of the excavation, a foundation cut [224] for a stone built hearth or oven was cut into the natural grey clay (Figs 5, 10 and 13: Section 12, Plates 9-11).

The cut was circular with steep, near vertical wall to a broad flat base. The sides were 0.18m deep and 1.1m in diameter. Packed against the inner edge of the pit were rough hewn sandstone fragments (225) up to 0.35 long, 0.25 wide and 0.18m deep. These were bonded in stiff grey clay to form a stone lining. The base of the hearth was formed from a layer of grey clay, (226) very firm and compact and burnt bright orange or red. It contained frequent charcoal and ash flecks and occasional grit and gravel. It was 0.07m deep across the whole of the feature. Pottery from this layer was dated to the 12th century.

It was covered in patches, particularly against the stone sides of the feature by a 0.1m deep layer of mid brown slit clay loam (227) containing frequent ash and charcoal (Much of this layer had been excavated away in the evaluation). The southern edge of the feature has been truncated by a modern service trench (301).

Pit [117] was 1.1m long and 0.76m wide and 0.15m deep (Fig 10). It was filled with brown silt clay (118) mottled with re-deposited natural grey clay, both burnt deep orange/red on the upper part of the fill. It contained frequent charcoal, mainly in the upper, burnt part of the fill. The remainder contained more grit and gravel. Pottery from this fill was dated to the 13th century.

Pit [121] lay 0.5m to the west, this was oval in plan, 1m long and 0.8m wide, with the long axis aligned north to south (Fig 10). The cut was shallow, sloping 0.08m to a broad uneven base. It was filled with brown silt sand (122) burnt deep orange and red, containing abundant patches and flecks/fragments of charcoal and some small rounded gravel. There were occasional sherds of coarse, unglazed pottery dated to the 13th century.

2.4 Pits, postholes and gullies

Extending south towards the road and beyond the limit of excavation was a shallow ditch [119], 0.55m wide and 0.2m deep (Fig 10). It had steeply sloping sides to a dished base. It was filled with mid brown silt clay loam (120) containing frequent patches of re-deposited natural grey clay, decayed grey/green sandstone, and occasional charcoal flecks. The lower part of the fill was re-deposited grey clay, making it very difficult to distinguish the cut and fill from the natural. Pottery from this feature was dated to the 12th century. This ditch butt ended 3.5m to the west where it was cut by fire pit [117].

To the north of shallow ditch [119], lay a shallow sub rectangular pit [109], aligned north west to south east, 0.56m long and 0.82m wide (Fig 10). The sides were steep, sloping to a flat, base, 0.11m deep. It was filled with grey/brown silt clay loam (110) mottled with frequent flecks of stiff red clay, fragments of decaying grey/green sandstone and flecks of charcoal and tile fragments. An iron nail (SF 1) was recovered from this pit. Pottery in the fill was dated to the 12th century.

A shallow sub rectangular pit [107] lay immediately north of pit [109] (Fig 10). It was aligned roughly north east to south west, 0.75m long and 0.5m wide. The sides were cut sharp and clean with steep near vertical sides sloping 0.17m to a flat base.

It was filled with grey/brown silt clay loam (108) mottled with yellow clay flecks. It contained frequent charcoal, grit and fine gravel. Pottery from this feature was dated to the 13th century. It was truncated to the north by modern service trench [301].

Lying halfway between pits [121 and 109] and slightly to the east was a sub circular pit [115], 0.35m in diameter with shallow sides sloping to a slightly dished base only 0.04m deep (Fig 10). It was filled with grey/brown silt clay loam (116) mottled with grey clay flecks and containing frequent grit and gravel.

To the south was an oval pit [153], 0.33m in length and 0.17m wide with shallow sides sloping to a dished base 0.08m deep (Fig 10). This was filled with mid brown silt clay loam (154) containing frequent gravel and occasional charcoal flecks. Pottery from the fill was dated to the 13th century.

A sub circular pit [140], 0.6m long and 0.45m wide was cut into the natural clay (106) (Fig 10). The sides sloped steeply to a broad slightly dished base 0.16m deep. It was filled with red/brown silt clay loam (141) containing occasional gravel and charcoal flecks. Pottery from this pit was dated to the 13th century.

Immediately to the south and aligned roughly east west was a gully [138] (Fig 10). This was 1.8m long, 0.13m wide and 0.18m deep with sides sloping at 30° to a dished base. It was filled with red/grey silt slay loam (139) containing some gravel and occasional charcoal flecks. Pottery from this fill was dated to the 13th and early 14th century. To the west, the gully tapered out and was cut through by a small pit [157], circular in shape, 0.3m diameter with steep near vertical sides sloping to a flat base 0.2m deep. It was filled with dark brown silt clay loam (158) containing frequent flecks of charcoal. Pottery from this pit was dated to the 12th – 13th century.

To the east, gully [138] butt ended but was cut by a sub circular pit [151]; 0.8m in diameter but only 0.06m deep (Fig 10). It was filled with brown silty clay loam (152) containing occasional gravel and charcoal. Pottery from this pit was dated to the 13th century.

This pit was cut through on the northern edge by a posthole [149], 0.2m in diameter and 0.08m deep (Fig 10). It was filled with brown silt clay loam (150) containing some gravel and occasional flecks of charcoal or ash.

To the south of this spread lay a further pit [155] sub circular in shape, 1m long and 0.9m wide with steep sides sloping to a broad dished base 0.25m deep (Fig 10). Both sides showed a marked break of slope 0.1m from the top of the cut. The pit was filled with dark brown silt clay loam (156) containing re-deposited red clay natural and copious flecks and fragments of charcoal. Pottery from this pit was dated to the 13th century.

To the north of pit [140] lay a further irregular, sub-rectangular pit [142] (Fig 10). This measured 0.75m long and 0.3m wide, it had shallow sides sloping to a dished base 0.12m deep. It was filled with a layer of compact charcoal flecks and fragments (143) 0.06m deep. This was sealed under a layer of brown silt clay loam mottled with stiff red clay and containing frequent gravel and charcoal. Pottery from the fill of this pit was dated to the 13th century. The pit was truncated to the north by the cut of the modern service trench (301).

To the south of the linear (138) lay a sub circular pit [136] 0.75m long, 0.65m wide, with sides sloping at 50° to an irregular dished base 0.2m deep (Fig 10). It was filled with red/brown silt clay loam (137) mottled with grey and yellow clay, containing frequent gravel and charcoal. There were occasional rounded pebbles and a single piece of grey/green sandstone 0.23m long. Pottery from this pit was dated to the 13th century.

To the west lay a small circular pit [160] cut into the natural gravel (Fig 10). It was 0.2m in diameter with steep near vertical sides sloping to a 'U' shaped base 0.15m deep. It was filled with dark brown/grey silt clay (161) and gravel.

Further west lay two further pits (Fig 10). To the south, a sub circular pit [164], 0.7m long and 0.5m wide with shallow sides sloping to a broad dished base 0.2m deep. It was filled with brown/grey silt clay (165) and gravel.

To the north, pit [162] was oval, 0.9m long and 0.6m wide with sides sloping at 25° to a broad dished base 0.2m deep (Fig 10). It was filled with brown/grey silt clay (163) containing abundant rounded gravel.

To the west of the excavated area, adjacent to the line of the palaeochannel were two further pits. To the west, a small circular pit [277], 0.28m diameter had steeply sloping sides to a flat base 0.12m deep (Fig 5). This was filled with dark brown silt clay (278) containing frequent gravel and occasional charcoal flecks. Pottery from this pit was dated to the 13th century.

To the north lay a further circular pit [256], 0.4m in diameter with steep sides sloping to a 'U' shaped base (Fig 5). It was filled with red silt clay (257) and broken roof tile. It contained a post pipe (258) with vertical sides and a flat base. It was 0.1m in diameter and filled with dark brown sandy silt (259) containing some gravel and occasional fragments of decayed and decaying grey/green sandstone. The tile fragments in the red clay fill (257) formed vertical packing around the post pipe.

At the south of the excavation, in the centre of the modern entrance to the site, an 'L' shaped foundation trench [216] was cut into the natural (Fig 10). It was 1.07m long east to west and 1.1m north to south, it was 0.4m wide and contained a series of roughly shaped grey sandstone blocks (217) up to 0.5m long, 0.4m wide and 0.2m deep. The feature was truncated to the west by the cut of service trench [1001] and to the south by the cut [220] for the concrete foundations of the 20th century gate post. Within the surviving angle of the walls a layer of brown sandy clay (218) contained frequent rounded gravel and a single sherd of 12th century pot.

2.5 Ditches

Ditch [203] was aligned east west across the site cutting ditch [199] and extending from the south east balk towards the centre of the site (Fig 5). It was 0.8m wide and 0.4m deep. It sloped steeply to a rounded base.

The fill (204 and 205) was dark brown/grey sandy silt. This contained frequent rounded river gravel and charcoal flecks and occasional pieces of grey/green sandstone. The upper fill contains frequent fragments of broken roof tile. The lower part of the fill contains fragments of bone and occasional pot sherds which date to 13th century.

To the west this ditch was truncated by the construction trench [1013] for the kiln and by the cut for the 2003 evaluation trench.

Aligned north to south across the centre of the site was a ditch [297] with a broad 'V' shaped profile 0.45m wide and up to 0.2m deep (Fig 5). The cut on the east was gently sloping; the west side had a steeper angle. The fill (293) was grey brown sandy clay containing occasional rounded gravel. The ditch extended south where it terminated in the north side of a large east west ditch [210].

Ditch [210] extended from the east balk to the palaeochannel at the west of the site (Figs 5 and 13, Section 13). It was 2m wide at its west end and 0.6m deep. It had shallow sloping sides to a broad, slightly dished base. The fill (211) comprised dark brown/grey silty sand containing frequent rounded gravel and pebbles. It was cut on the north edge by a recut or further ditch [212] 1m wide and 0.4m deep (Fig 13, Section 13).

This ditch had a 'U' shaped profile and was filled with dark brown sandy silt (213) mottled with grey sandstone fragments and occasional rounded river gravel or pebbles. This was truncated by a further recut or ditch [214] cut through the top of ditch [212] and the north edge of ditch [210] (Fig 13, Section 13). This ditch was 1.5m wide and only 0.15m deep. The profile was broad and shallow with gently sloping sides and a dished base. It was filled with dark grey sandy silt (215). The upper layer of the fill was contaminated with black, coarse, gritty sandy loam (103) which sealed the whole ditch complex and spread across the whole of this part of the site.

It appeared that the original ditch [210] had been recut shallower but on the same general alignment by ditch [212] and then later by [214]. The whole ditch had then been sealed by the black sandy layer (103). It was cut by ditch [297] to the north that terminated in the northern edge of ditch [210].

2.6 Tile lined tank/cistern

In the middle of ditch [210], near its junction with ditch [297], the section revealed a square profile slot [262] cut along the base of the ditch (Fig 5 and 9, Section 8, Plate 12). This measured about 0.2m wide by 0.2m deep. It was filled with grey sandy silt (197) containing occasional charcoal flecks and fragments of broken roof tile. Pottery from this fill was dated to the 13th century. This was sealed beneath fill (211) which comprised dark brown/grey silty sand containing frequent rounded gravel and occasional fragments of broken roof tile in the upper part of the fill. About 1m to the east of the ditch junction, it was blocked by several large pieces of rough hewn grey/green sandstone (265) packed in stiff and sticky red clay and containing fragments of broken roof tile forming an effective blocking the full height of the ditch. This was about 0.5m thick, 0.5m deep and filled the 1.3m width of the ditch.

To the east of this blocking, the line of the ditch continued as a 'U' shaped cut [192]. This cut had fairly steep sides sloping to a broad dished base. It was filled with grey silt clay (193) containing occasional rounded gravel and pebbles and mottled with red clay. It was 1.8m wide and 0.4m deep. Cutting through this was a ditch/recut [194]. This had a very similar profile to [192] but 1.6m wide and 0.55m deep.

There was a narrow slot cut into the bottom of the ditch (equivalent to 262). This was lined along the base with sandstone slabs [195] and along both sides with roof tiles and tile wasters (196) forming a tile lined channel 0.2m wide and 0.2m deep along the base of the ditch (Fig 5 and 9, Section 8, Plate 12).

The tile lined drain was filled with mid grey sandy silt (197). This contained occasional flecks of charcoal and fragments of roof tile. The upper part of the ditch was filled with a red/brown silty clay loam (198) containing abundant fragments of roof tile and flecks of charcoal and ash. It extended to a width of 1.6m and was 0.35m deep. Pottery from these fills is dated to the 13th – 14th century.

About 4m to the east, the tile lined channel was again blocked by a series of sandstone blocks (265) forming another deliberate blocking the full height of the ditch. This stone fill was about 0.7m wide and extended to 1.17m across the width of the ditch. It was 0.34m deep with a further 0.15m to the base of the slot for the channel (Fig 5 and 9, Section 8, Plate 12).

The tile lined channel continued beyond the sandstone blocking, below a bridge created by balancing a large piece of sandstone across the two tile side walls. Immediately beyond the blocking, the channel angled to the south west and extended below the east balk of the excavation. At about 1m from the east face of the blocking the ditch and channel were cut by a modern service trench [1001].

The extension of the tile lined drain lay at the bottom a deep 'U' shaped ditch [239] cut through the sub soil (104) and into the grey clay natural (Fig 5, Fig 14, Section 16). It was 0.6m wide, with steep sides sloping 0.65m to a flat base. The base was lined with roof tiles (240) laid horizontally across the width of the base forming a level surface. These tiles were only exposed 0.14m long and 0.15m wide. Two lines of tiles (241) were aligned along the sides of the base and on top of the base tiles forming two low walls of tile 0.14m apart. The tile walls comprised a lower layer of thick heavy tiles 0.23m long, 0.15m wide and 0.06m thick. These were overlain by a further row of tiles laid end to end made up of roof tile and tile wasters, 0.3m long, 0.15m wide and up to 0.02m thick. Incorporated within the build of the drain were three glazed floor tiles (SF 11, SF 12, and SF 13). The tiles were bonded with stiff, sticky red clay.

The tile structure was sealed below a layer of red sandy silt clay (242) containing thin layers of dark red coarse sand and grit and some coarser grit and gravel. This layer had originally filled the full width of the ditch to a depth of 0.2m. In the centre it had been cut through by a narrow slot [243] with steep sides sloping to the tile base (240). This was filled with mixed red/brown sandy silt (244), very clean with only occasional rounded gravel or small pebble inclusions. It is 0.2m deep. Pottery from this layer was dated to the 13th century.

The upper part of the ditch was filled with 0.3m deposit of dark brown silty sand (245) containing some rounded grit and gravel. It was truncated by a later ditch cut [246] that was 1.25m wide, with shallow sides sloping 0.35m to a broad dished base. The primary fill of this cut was pale yellow/grey sandy clay (247), 0.1m deep and containing occasional rounded grit or gravel.

It was sealed below a 0.2m deep layer of red/brown clay sand (248) containing occasional rounded grit and gravel, some charcoal flecks and frequent fragments of broken roof tile. This was overlaid by a 0.16m deep layer of dark brown/grey silty sand loam (233), containing frequent charcoal, occasional gravel and fragments of roof tile. This was sealed below a dump of dark brown/grey sandy silt (234) up to 0.5m deep, containing frequent charcoal and decayed and decaying grey/green sandstone, fragments of roof tile and some grit and gravel. Pottery from this layer was dated to the 13th century.

To the south of the sandstone blocking (265) at the east of the tile lined drain, a second ditch feature [190] was also aligned roughly south east to north west. It was 'U' shaped, 0.63m wide and 0.4m deep (Fig 5 and 9, Section 8, Plate 12).

The fill (191) was a mid brown silty loam mottled with flecks of natural red clay. It contained some rounded gravel and pebbles and occasional flecks of charcoal. Pottery from this layer was dated to the 13th century. To the west and north it was truncated by the cut for the tile lined drain [192].

This small ditch extended east of the sandstone blocking and terminates in a butt end 1.2m to the east of the modern pipe trench [1001]. The fill (193) was similar to (191).

3 TILE KILN, WALKWAY AND LANDING STAGE, 14TH CENTURY (PHASE 3)

3.1 The tile kiln

To the north of the earlier kiln, a second kiln had been built using the northern arched wall (1010) of the original kiln as the south wall of the new kiln (Fig 11, Fig 6 and 8, Sections 4-7, Plates 1-2, 6-8). The north kiln was slightly off set to the east of the original kiln with the inner face of the west wall (1028) of the second kiln inset from the original west wall by about 0.15m. This wall was 2.16m long, built of regular horizontal layers of roof tiles laid randomly as headers and footers to form a solid plinth, which extended 0.05m above the chamber floor. This plinth supported the upper part of the wall comprised of eight piers (1028) built of floor tiles each 0.12m square 0.02m deep, many of them with a taper to a narrower 0.11m base. They were bonded with white lime mortar. The piers supported seven arch springers (1029) made of larger floor tiles 0.15-0.16m square and up to 0.03-0.04m thick. These were bonded with white lime mortar (Fig 11, Fig 6, Fig 8, Section 4, Plates 1, 6-8). The back of the wall behind the facing and arch springers was again constructed of roof tile fragments bonded with red clay and built against the inner face of the construction cut [1027].

The east wall of the kiln was also offset to the east, the cut for the east wall [1074] being roughly in line with the outer, eastern edge of the arch wall. The east wall (1075) was again built of roof tiles laid horizontally in mixed header and stretcher courses. They were bonded in white lime mortar and formed a plinth rising 0.1m above the floor of the kiln. The upper part of the wall was made of floor tiles 0.12m square, about 0.02m thick tapering to 0.11m square base. These were built to form the piers between arch springers. The arch springers (1076) were made of tiles 0.16m square but with 0.03m chamfers cut on the inner edge of the tile creating a narrower profile. The tiles were about 0.02m-0.03m thick and bonded with lime mortar. Only two partial layers of tile survived above the plinth level on the east wall (Fig 11, Fig 6, Fig 8, Sections 6, Plates 1-2, 6 and 8).

The cut of the service trench [1001] had removed much of the southern end of the central supporting wall (1034) of the second kiln; however, the northern section of the wall supporting the central arch support for the arch wall at the north of the kiln did survive (Fig 11, Fig 6, Fig 8, Sections 5 and 7, Plates 1, 7 and 8). The central wall (1034) was built of regular courses of horizontal roof tiles laid with a random bond of header and stretcher tiles. It was bonded with lime mortar. This formed a base on which the arrangement of piers and arch springers on both the east and west walls of the kiln would have been built. The piers were built up of floor tiles each 0.12m square 0.02m deep, with a taper to a narrower 0.11m base. They were bonded with white lime mortar.

The arches (1035) were built of tiles 0.16m square but with 0.03m chamfers cut on the inner edge of the tile creating a narrower profile. The tiles were about 0.02m-0.03m thick and bonded with lime mortar. The wall was 0.32m wide.Two of the larger tiles were laid flat with the rear edges touching and the chamfered edge facing into the east and west chambers. The smaller tiles were laid in twos with a small gap filled with lime mortar left between them

This allowed each tile to show one edge parallel to the chamfered tile face of the arches along the inner wall of the east and west chambers (Fig 11, Fig 6-7, Sections 5-7, Plates 1-2, 6-8).

The majority of this wall had been removed prior to the backfill of the kiln and only 1m of the upper part of the wall, 1-2 courses high survived adjacent to the north arch wall of the kiln, the remainder had been destroyed by service trench [1001].

The north wall of the structure had contained the two arches for firing the kiln. Neither arch had survived but the arch springers were visible at the north end of the east and west walls of the kiln. On the west wall, the arch wall (1030) survived 0.4m high with the curve of the arch still visible. On the centre wall, the base of the central arch springer (1064) had survived to a height of 0.35m (Fig 11, Fig 6, Fig 7, Section 3, Fig 8, Sections 4-7, Plates 1-8). It was built of two parallel sets of roof tiles, each 0.3m long, 0.15m wide and 0.01m thick. These were laid length way along the centre line of the wall and built up to form an arch to the east and west respectively. As the curve of the arch increased, broken roof tile was used to pack the widening core of the wall to form a solid structure. The tiles were all bonded with lime mortar. From the surviving curve of the aches and the width of the openings, the two arches were 0.9m wide at base. 0.45m high at centre and the external arch wall was 0.6m thick.

The east wall survived only two courses high above the floor level but two roof tiles (1065), each 0.3m long, 0.15m wide were butted end to end on the inner edge of the wall at the north of the kiln to form the base of the springer for the east arch.

The cut of the service trench [1001] revealed that the central wall (1034) and the east wall (1075) of the second kiln extended at least 0.65m below the kiln floor. On the lower part of the east wall (1055), a substantial tile built 'batter' (1059) was apparent extending 0.04m out from the vertical face of the wall and leaning at an angle of about 120° towards the east. This formed a distinct 'step' in the profile of the wall. This sloped from 0.25m below floor level to 0.4m below floor level at the north end of the wall where it butted up to a large block of sandstone (1055). This block measured 0.28m high and 0.25m wide and formed a stop or revetting for the north edge of the kiln wall. The upper layers of the 'batter' were butted against the vertical part of the wall. It was built of regular courses of horizontal roof tile bonded with lime mortar. It appeared to be made of tile fragments of varying lengths (Fig 11, Fig 6, Fig 8, Sections 5-7, Plates 1, 6-8).

The central wall (1054) also showed a 'step' (1058) in its profile. Located 0.25m below the kiln floor, tiles forming the vertical wall had been laid as headers and allowed to project 0.04m beyond the east face of the wall. This created a roughly level step long the exposed length of the wall. It varied in depth from 0.1m-0.15m thick being deeper towards the centre of the kiln. Below the 'step', the wall reverted to the same vertical alignment as above. The wall was built of regular courses of horizontal roof tiles laid with a random bond of header and stretcher tiles. It was bonded with lime mortar. At the north end of the wall, the tile step butted up against a large block of sandstone (1056). This measured 0.22m high and 0.18m wide and formed a stop or revetting for the central wall of the kiln (Fig 11, Fig 6, Fig 8, Sections 5-7, Plates 1, 6-8).

At the south of the kiln, against the north face of the earlier kiln arch, broken and waster roof tiles (1063) had been stacked across the width of the trench to form a blocking of the arch entrance to the earlier kiln. Most of the blocking had been removed in the cutting of the service trench (1001) but 5-6 layers remained in situ against the east wall and at the base of the arch to the west. Clearing the fill beneath the east arch of the earlier kiln, a similar blocking using tile and tile wasters could be seen below the floor of the west chamber of this kiln (Fig 11, Fig 6, Fig 8, Section 6).

Below the north kiln floor, the lowest excavated level of the kiln there was a layer of sticky red clay (1052) containing abundant charcoal and ash and occasional rounded gravel and broken roof tile and tile wasters (Fig 8, Section 7).

This was badly disturbed by the cut and fill of sewer trench [1001] and by the difficulty in trying to expose it either side of the sewer pipe and while it was under 0.3m of ground water. As far as could be established, this appeared to be about 0.1-0.15m deep. It was sealed by stiff, sticky, dirty red/grey silt clay (1033), containing frequent ash, charcoal, and gravel, and abundant roof tile/ tile wasters. This appears a single homogenous dump of material filling the full length of the kiln (Fig 8, Section 5).

Coveing the lower kiln fill (1033) was a layer of clean, stiff and sticky red clay (1053) up to 0.15m thick. This formed the bedding layer for the kiln floor (1037) made of floor tiles 0.16m square and 0.04m deep. These were burnt purple/black on the surface and had cracked and crazed in the heat. They were laid directly onto the clay layer, tightly butted to each other in regular symmetrical courses with straight joints (Fig 6, Fig 8, Section 6). Only a wedge shaped section of the floor survived from the south east corner of the kiln, tapering off into the east wall of the kiln to the north. The remainder were lost in the machining of the service trench [1001].

In the west chamber, the destruction of the centre wall at the south end revealed an identical build up of material under the kiln floor. The lower fill of the kiln (1033) was sealed below a layer of clean red clay (1053) forming a bedding layer for tile floor (1036) (Fig 6, Fig 8, Section 5).

The tile floor was made up of two types of tile. The majority were roof tiles 0.3m long, 0.15m wide and 0.01-0.02m thick. To the south, these were laid length way across the width of the kiln in an offset joint pattern. To maintain the offset joint, short sections of broken tile were used to fill the gaps along the walls. Along the centre of the kiln and towards the south of the floor, four floor tiles were laid end to end and parallel to the central wall. These each measured 0.2m square and 0.03m thick. The north end of the kiln under the arch was tiled in the same rectangular tiles as the southern part but with the tiles laid with straight joints, length way along the axis of the kiln (Fig 11, Fig 6, Plates 6-8).

Covering the surface of the tile floor in the west chamber was a layer (1040) of grey/black soot and ash up to 0.02m deep. It lay deepest along the sides of the walls and to the south of the kiln against the north wall of the earlier structure. It contained abundant fragments of heat-shattered tile. Pottery from this layer was dated to the 12th century.

This layer was covered by a deposit of dirty red clay (1031) containing frequent flecks and patches of soot, ash, charcoal and abundant broken roof and floor tiles, many with chamfered edges, all discoloured and heat fractured. There was occasional rounded gravel and flecks of grey clay. This deposit filled the whole of the interior of the west chamber to a depth of about 0.6m. Two encaustic tiles (SF 2 and 14) and pottery from this layer are dated to the 14th century.

Overlaying this was a layer of dirty red clay (1032) containing frequent flecks and patches of grey clay, ash, soot, charcoal and abundant burnt and broken roof tile and wasters and occasional floor tiles. This also contained sherds of 14th century pottery.

This layer was differentiated from the underlying deposit only by its darker, more ash/charcoal appearance. This was sealed under a layer of black, sandy silt (1023) containing plentiful charcoal/coal flecks and fragments and occasional rounded gravel and pebbles.

To the north of the kiln and butting onto the walls and floor of the arch wall, a single line of rectangular tiles (1043) was laid across the full width of the arch wall. Each tile was 0.3m long, 0.15m wide and 0.01-0.02m thick. These were laid side by side with the short edge butting the north wall of the kiln.

A second line of tiles, this time butted length way to the first row of tiles formed a sloping threshold to the kiln and the firing arches. The tiles were bedded onto a layer of clean, stiff sticky red clay (1053). Cutting the clay (1053) was a circular cut [1044] 0.5m in diameter and 0.2m deep with vertical sides and a flat base. It contained a single flat, circular pot (1046, SF 4) filled with grey/green coarse gritty sand (1045). This pot was dated to the 13th century (Fig 6, Fig 8, Section 5-6, Plates 6-8).

To the west of the kiln, a short length of tile wall (1039) was butted against the inner face of a construction cut [1038] which extended north on the same alignment as the west wall of the second kiln (Fig 6). The wall cut was exposed for 1.6m along its length although the wall only survived for 1.15m. The wall tapered from 0.4m high where it was butted against the north arch wall of the kiln to 0.02m where it petered out to the north of the kiln.

The wall was 0.3m wide and roughly constructed of roof tile fragments laid in roughly horizontal courses with offset joints. The tile was bonded with stiff red clay. The clay bonding for the wall foundation survived along the exposed section of the wall cut. The wall had clearly been robbed out prior to the backfill of the kiln.

The wall cut (1038) had steep, near vertical sides sloping to a flat base that had formed the base of the tile wall (Fig 6). It was exposed further along the line of the west wall where it curved to meet cut (1068). This cut was steep sided sloping to a broad slightly dished base that extended the full width of the north wall of the kiln. To the east, this cut curved to the south to meet another construction cut (1066) which contained a further tile wall (1067).

This wall (1067) survived the full length of the pit and was 2.8m long, 0.25m wide and 0.3m deep (Fig 6). It was built on a foundation (1069) of grey/green sandstone fragments up to 0.2m long and 0.05m thick. These were bonded in stiff red clay and supported the upper tile wall (1067). This was constructed of regularly coursed roof tiles laid horizontally with offset joints and bonded with stiff red clay. Walls (1039 and 1067) formed the two sides of a large sub-rectangular pit which had been cut 0.5m into the natural immediately to the north of the tile kiln. This pit measured 2.8m long and 2.4m wide. There was no evidence for a wall or revetting along the line of the north cut of the pit.

The base of the pit contained a layer of dirty red and grey clay (1052) 0.4m deep, containing abundant broken roof tile and occasional ash, charcoal and rounded gravel and pebbles. It was covered by a layer of mixed red and grey clay (1051) containing plentiful ash, charcoal and frequent broken tile. This layer was up to 0.05m deep reducing to 0.3m to the north. This layer was sealed below a 0.4m deep layer of dirty, stiff and sticky red and grey clay (1050) containing abundant broken roof tile and tile wasters, frequent ash and charcoal and occasional rounded gravel and pebbles. In the centre and extending 2.4m north and beyond the pit cut was a lens of mixed red and grey clay (1062) discoloured with copious amounts of ash and charcoal and containing substantial amounts of broken tile. This was 0.15m deep at its centre tapering to nothing to the north and south. This was sealed below a layer of black sandy silt (1023) containing frequent charcoal/coal flecks and fragments and occasional rounded gravel and pebbles.

3.2 Sandstone walkway

At the south west corner of the earlier, southern kiln, part of the corner of the south and west walls (1004 and 1007) had been cut by a foundation trench [1024].

The cut had near vertical sides and a broad dished base. It averaged 0.15-0.2m deep and up to 0.25- 0.4m wide along its length. The base of the trench was lined with a layer of stiff, sticky red clay (1026) that contained fragments of broken tile and rounded cobbles forming a bond and packing for a series of rough hewn grey sandstone blocks (1025). These blocks measuring up to 0.6m long, 0.4m wide and 0.25m deep were laid length way, end to end to form a single line of sandstone stretching from the south chamber of the earliest tile kiln, south west to the edge of the palaeochannel of the stream at the west of the site. This alignment was rough and irregular but very firm and solid being packed with tile or cobbles to ensure the stability of the stones (Fig 7, Section 2, Fig 11, Plate 13).

At the west end of the alignment, two modern service trenches had cut through the trench removing several stones. Beyond this modern disturbance, the cut for the alignment terminated 2m further to the west leaving a gap of about 3m to the edge of the palaeochannel.

3.3 Landing stage

On the projected line of the stone alignment, was a spread of sticky grey/brown silt clay (124) full of broken roof tile and tile wasters. This tapered from 120mm deep nearest the stone alignment to over 200mm deep adjacent to the palaeochannel. It formed a firm, stable surface stretching for 1.5m along the edge of the channel and extending 2.5m eastwards toward the stone alignment (Fig 11).

The bank of the channel was grey /brown coarse gravel (123) containing frequent lenses and ribbons of grey silt. This sloped naturally at about 45° to the base of the channel 0.5m (49.63m OD) below the machined surface of the excavation. Laid onto this surface was a series of five large roughly hewn sandstone blocks (125). These were bonded with stiff, sticky grey clay and packed with roof tile fragments to provide a solid, stable surface 1.12m long and 0.5m wide (Fig 11-12, Plate14).

At the interface between the sandstone blocks (125) and the edge of the channel to the west, a balk of timber (126, SF 64) 1.47m long, 0.12m wide and 0.1m thick had been laid against lower edge of the sandstone blocks forming a revetment or support for the stone surface. The timber also formed the upper edge for another stone surface (127) that was laid on the gravel slope down to the base of the channel. Three sandstone slabs and a single piece of hard black stone (127) were laid directly onto the gravel bank (123) of the channel. The blocks were bonded with stiff and sticky grey clay and formed a relatively flat surface angled at about 45° down the face of the bank of the channel (Fig 11-12, Plate14).

At the bottom of the stone slope, three timber stakes (128, SF 7, 8 and 9) had been driven into the bed of the channel forming vertical supports for the lower blocks of the stone ramp. Two were at the base of the northern block, one at the base of the south block. A fourth stake (SF 10) was uncovered lying horizontal immediately below the south block and may represent a displaced stake matching the three found in situ (Fig 11-12, Plate14).

All the palaeochannel fills and the natural were overlaid by a 1m deep deposit of grey/brown silt clay (133). This contained frequent grit and gravel and occasional larger pebbles and small cobbles. This was cut by a ditch [274] aligned north south along the line of the channel. The sides sloped steeply to a narrow 'V' shaped base. The ditch was 2.6m wide and 0.7m deep. The primary fill (275) was firm red/brown silt clay containing occasional grit and gravel. It was present only on the east side of the ditch and was 0.12m at its deepest.

It was overlain by dark red/brown silt clay loam containing frequent gravel and occasional lenses of grey sand and silt. It was 0.40m at its deepest and covered primary fill (275) up to 0.2m deep (Fig 11-12, Fig 14, Section 14).

3.4 Occupation evidence

At the south east of the excavation, trench cut [145] was aligned north south (Fig 11). It had steep, near vertical sides sloping to a flat base. The cut was 0.9m long, 0.35m wide and 0.3m deep. It cut through a layer of dark red/brown silt clay loam (148) up to 0.2m deep with abundant grit and gravel, frequent sandstone fragments and occasional flecks of charcoal. Pot from this layer was dated to the 13th century.

The cut contained a series of random sandstone blocks (146) forming a rough alignment or surface along the base of the trench (Fig 11). The sandstone was rough hewn up to 0.5m long, 0.25 wide and 0.22m thick. They were packed in red/brown silt clay loam (147) containing lumps of stiff, sticky red clay, flecks of charcoal and fragments of grey/green sandstone up to 0.15m long and 0.1m wide. Pottery from this feature was dated to the 14th century.

To the north, the trench was truncated by modern service trenches (300 and 301). Immediately to the south there was a series of three postholes (Fig 11).

The cut [166] for the south west posthole was located at the south west corner of the trench and sandstone fill. It cut through a layer of dark red/brown silt clay loam (148) and into the natural. It was sub circular, 0.37m in diameter with steep, near vertical sides 0.3m deep to a flat base. It was filled with grey/brown silt clay loam (167) containing frequent grit and occasional charcoal flecks, and 3 pieces of sandstone up to 0.5m long and 0.1m wide together with a number of smaller sandstone fragments.

At the south east corner of the trench, posthole [170] cut through the red/brown silt clay loam layer (148) and into the clay natural (106). The cut was sub circular, 0.28m in diameter with steep sides sloping to a concave base 0.13m deep. It was filled with firm, dark brown silt clay loam (171) containing occasional charcoal fragments and two pieces of sandstone up to 0.12 long and 0.1 wide.

Immediately to the south of this was a third posthole [168] cut through the dark red/brown silt clay loam (148) and into the clay natural (106). This cut was sub circular, 0.3m in diameter with vertical sides 0.35m deep to a dished base. The fill (169) was grey/ red-brown silt clay loam containing frequent grit, gravel and fragments of grey/green sandstone up to 0.05m square.

To the west of these features, a pit [134] cut into the clay natural (106). This was sub circular 0.6m in diameter with steep sides sloping 0.1m deep to a flat base. It was filled with a dark brown silt clay (135) mottled with flecks and lumps of stiff light brown clay. It contained frequent small flecks of charcoal with a particular concentration in the lowest part of the layer at the south west of the feature (Fig 11).

4 ABANDONMENT AND REVERSION TO PASTURE, 15TH-18TH CENTURY (PHASE 4)

To the west of the site, the clay natural was overlain by a pale grey sandy loam sub soil (104) (Fig 14-15, Section 15-16). Overlaying the drain cut and fills was a 0.2m deep layer of red/brown sandy clay loam (236) containing some rounded grit and pebbles. This merged with an upper layer of red/brown sandy clay loam (232) up to 0.27m deep, containing fragments of decayed and decaying grey/green sandstone and some grit and gravel. Fragments of 13th century pot were recovered from this layer. This in turn merged with the overlaying layer of dark brown sandy clay loam (231) up to 0.06m deep and containing frequent flecks of charcoal, gravel and fragments of broken roof tile. A fragment of possibly worked bone (SF 6) was recovered from this layer. Much of the upper layer (231) had been removed in the levelling for the car park and in machining the site.

A linear cut [237] aligned north east to south west cut layer (231) where present and into the sandy clay loam layer (232) below. The cut was about 7m long, 0.6m wide and up to 0.2m deep with steep sides and a flat, undulating base. It contained a series of roughly hewn grey/green sandstone blocks (235) forming an alignment along the length of the cut only one stone deep. The sandstone blocks were of random sizes varying from 0.3m long and 0.15m wide to 0.8m long and 0.6m wide. The alignment had been badly truncated by the levelling for the car park truncated by machining leaving only 0.1-0.2m protected within the foundation cut. There was no evidence for bonding or packing around the stones (Figs 5, 10).

To the south and east a second cut [228]) was aligned roughly parallel to this trench and about 1.5m apart. This cut through the upper layer (231) and into the red/brown sandy clay loam layers (232 and 236). It was 9.5m long, 0.65m wide and 0.6m deep (Fig 14-15, Section 15).

It had a steeply sloping cut sloping to a flat base. This contained a roughly built sandstone wall (230) comprised of rough hewn random sandstone blocks up to 0.9m long, 0.6m wide and 0.35m deep. These were packed with stiff, sticky grey clay (238) forming a bonding in parts of the wall. Small fragments of green/grey sandstone and pieces of broken roof tile were used as packing between the smaller pieces of sandstone. The construction trench to the west of the wall was filled with brown silt sand mottled with red/brown clay (229) containing frequent charcoal, fragments of grey/green sandstone, and plentiful broken roof tile, particularly in the upper part of the fill. The construction trench fill was 0.47m wide and 0.5m deep. Pottery from this fill was dated to the 14th century.

To the east of the wall, the lower fill was dark brown/grey silty sand loam (233) containing charcoal flecks, some grit and gravel and occasional broken roof tile. This layer butts directly against the wall and seals layer (104) below. It extends east below the balk. It was overlain by dark brown/grey sandy silt layer (234) mottled with patches and clods of stiff grey clay, fragments of grey/green sandstone, some of charcoal and copious quantities of broken roof tile, in places forming an almost solid layer across the excavated area and into the east balk. Pottery from this layer was dated to the 13th century (Fig 14, Section 15).

5 DIVISION INTO GARDENS, 19TH CENTURY (PHASE 5)

5.1 Clay lined pit

Located in the south –east corner of the excavation, pit cut (111) was circular, 1.5m in diameter with steep, near vertical sides dropping 0.5m to a broad flat base. This was packed with stiff, sticky red clay (112) that was 0.2m thick on the sides and 0.1m deep on the base. The clay sides retained the imprint of wooden barrel staves and hoops and the base had two indentations marking the location of two support slats for the base and the imprint of the protruding base of the side staves. The pit was filled with a mixed dump of lime mortar and plaster (113) containing fragments of brick and tile and tin glazed pottery. In the upper part of the fill there was a lens of material, mainly truncated by modern machining, comprised of dark brown silty sand (114) containing abundant ash, charcoal, coal grit and dust, some grit and gravel. There were occasional sherds of 19th century white tin glaze pottery and a single iron nail (SF 73) (Fig 16)

5.2 The gateway

To the south of the stone alignment (216), exposed in the baulk was the cut [220] for a construction trench extending east to west across the balk. This was filled with a layer of modern cement concrete (222) 0.27m deep supporting a red brick wall foundation (221) made up of modern red bricks (0.22m x 0.11m x 0.06m) bonded with cement mortar. Only a single foundation layer survived below the modern car park levelling layer (Fig 16).

5.3 Tile edging

At the west of the excavation a series of roof tiles stood on edge formed a boundary or edge 2.2m long. The tiles were fixed in the sub soil and there were no other features associated with them. White transfer printed pottery from this layer was dated to the late 19th and 20th century.

Both the natural and the palaeochannel were sealed below a layer of pale grey/brown sandy loam (104) that covered much of the site. This layer varied between 100-300mm deep varying across the site but generally deepest to the east. It contained frequent rounded river gravel and pebbles, with flecks and fragments of stiff red or grey clay and fragments of grey/green sandstone, mainly soft and crumbly. There were frequent flecks of ash/charcoal and occasional fragments of bone within the layer. A single glazed tile, probably 14th century was recovered from this layer, together with a single sherd of late 15th century pot.

This was overlaid by black gritty sandy loam (103). This contained frequent flecks of ash, charcoal and coal. This layer extends across all the excavated area of the site and varies in depth from 0.4-0.6m deep. This layer contains 19th-20th century tin glazed pottery, glass and modern brick and tile fragments.

6 CAR PARK AND MODERN DISTURBANCE, 20TH CENTURY (PHASE 6)

Service trench [1001] aligned roughly north south across the site extended beneath the modern site access and out into Friars Street (Fig 16). The service trench [1001] had vertical sides, 1m deep with a flat base 0.7m wide. It contained a 4" ceramic sewer pipe packed in limestone pea gravel (1002) and sealed below the re-deposited spoil from the excavation of the trench (1003).

Service trench [300] was aligned ENE to ESE and cut across the full width of the excavation at the south of the site. It contained a High Voltage triple phase electric cable. It also cut service trenches [1001], [302] and [303].

Trench [301] was aligned E-W across the south of the site parallel to the street frontage. It contained a 4" salt glaze sewer pipe terminated in a brick built inspection chamber at the main site entrance where it was joined to trench [301], [302] and [1001].

Service trench [302] was aligned NE-SW across the south-east corner of the excavation. It contained a 4" salt glaze drain packed in pea gravel and terminated at the inspection chamber.

Service trench [303] was aligned NW-SE across the south of the site and terminated in the inspection chamber at the site entrance. It cut across stone alignment [1024] and cable trench [300].

All of these trenches were sealed below a modern levelling layer of black ash and clinker (103) up to 0.6m deep. This was covered by an intermittent layer of modern demolition hardcore (102) containing broken brick, mortar and concrete. This lay in discrete lenses or deposits up to 0.2m deep and tapering out each side up to 2m. These were both covered with a layer of compact red/brown shale up to 0.7m deep in isolated patches, generally about 0.2-0.3m deep. This formed a levelling layer for yellow/brown Cotswold stone gravel up to 0.3m deep forming the modern car park surface.

APPENDIX C: THE FINDS

APPENDIX C.1

THE POTTERY by Paul Blinkhorn

1 INTRODUCTION

The pottery assemblage comprised 433 sherds with a total weight of 6,608g. The estimated vessel equivalent (EVE), by summation of surviving rimsherd circumference was 2.48.

The bulk of the assemblage was of 12th – 14th century date, with small quantities of late medieval and post-medieval material also present. Most of the wares are types well-known in the region, although sherds of Lyveden/Stanion coarse ware, a type not present in the Warwickshire type-series, were also present.

The assemblage was generally fragmented, and most of the context specific groups comprised only a small number of sherds. Generally, pottery does not appear to have been deposited at the site in any significant quantity after the abandonment of the tile-kiln, and the pottery which is contemporary or earlier than that shows no significant difference to material from contemporary domestic sites, indicating that the tilers may have been both living and working at the site.

2 FABRIC

The pottery was recorded using the codes and chronology of the Warwickshire Medieval and Post-Medieval Pottery Type-Series (Ratkai and Soden, in archive), as follows (the numeric codes prefixed by 'F' refer to those used in the databases, Tables and Appendices):

F300:RS01.Warwickshire black ware.13th-14th century. 66 sherds, 510g, EVE=0.08.

F301:RS02. Warwickshire grey ware, 13th-14th century. 99 sherds, 973g, EVE=1.29.

F302:Sq02. Warwick Sandy ware, 12th-13th century. 98 sherds, 910g, EVE- 0.51

F303:Sq03. Micaceous Sandy ware, 13th century. 8 sherds, 95g, EVE = 0.

F304:Sq05. Micaceous Sandy ware, 13th-14th century. 5 sherds, 970g, EVE = 0.

F307:Sq202. Coventry 'A' ware, 12th-14th century. 27 sherds, 669g, EVE = 0.49.

F308:Sq231. Cannon Park ware, 13th century. 8 sherds, 80g, EVE = 0.

F309:Sg01. L/Med Warwick glazed ware, 14th-15th century. 3 sherds, 70g, EVE=0.

F310:Sq30. Chilvers Coton 'C' ware, 1300-1500. 37 sherds, 667g, EVE = 0.11.

F311:Sg12. Deritend ware, 13th – 14th century. 2 sherds, 80g, EVE=0.

F324:Sg20. Brill/Boarstall Ware, 1200-1600. 8 sherds, 76g, EVE=0.

F330:CS05. Northants Shelly Ware, 1100-1400. 2 sherds, 13g, EVE=0.

F360:Sg032. Abingdon ware, late 11th-15th century. 1 sherd, 8g, EVE=0.

F401:SLM10. Late Med Red Ware, 14th-15th century. 1 sherd, 177g, EVE=0.

F403:WW02. 'Tudor Green' ware, 1380-1550. 1 sherd, 5g, EVE=0.

F404:CIST. Cistercian ware, 1475-1550. 1 sherd, 3g.

F420:PLW02. Blue Shell-Edge Pearlware, 1780-1840. 5 sherds, 37g.

F1000:MGW. Modern earthen wares, late 18th century +. 70 sherds, 594g.

The following, which is not present in the Warwickshire CTS, was also noted:

F319: Lyveden/Stanion 'A' Ware (McCarthy 1979). *c.*1150-?1400.

Handmade/Wheel finished. Moderate to dense, ill-sorted shelly limestone platelets up to 3mm, sparse to moderate red ironstone up to 10mm, occasional quartz, ooliths, black ironstone. Produced at numerous kilns in the villages of Lyveden and Stanion in north-east Northants. Fabric usually grey with blue-grey or brown surfaces, although other surface colours, such as buff, red, purple or orange not uncommon. It is not possible to relate fabrics to either village or to individual kilns, as most waster groups have not been analyzed or published. Vessels most usually jars with moulded and/or thumbed rims, but bowls also common, and jugs, storage jars and curfews occur. Rouletting occasionally occurs on large bowls/curfews, and thumbed applied strips on large jars. 1 sherd, 131g, EVE = 0.

The pottery occurrence by number and weight of sherds per context by fabric type is shown in Table 4. Each date should be regarded as a *terminus post quem*.

The range of ware types is fairly typical of medieval sites in Warwick, although the small quantity of regional imports perhaps shows the importance of the town in the medieval period. Fragments of vessels from Northamptonshire are present, as is a sherd of Abingdon-type ware. Recently, the latter has been shown to have in fact been manufactured at kilns at Ashampstead in Berkshire (M Mellor, pers comm), some 10km to the west of Reading (Mepham and Heaton 1995). Pottery from Buckinghamshire, in the form of Brill/Boarstall ware was also noted, as were Warwickshire wares such as Coventry and Chilvers Coton types, and Deritend ware.

3 CHRONOLOGY

The bulk of the assemblage is of medieval date, and the vast majority dates to the 12th – 14th centuries. Each context-specific assemblage was given a seriated date based on the range of wares present, with the dating scheme and the pottery occurrence per phase shown in Table 1.

Table 1: Ceramic phase-dating scheme and pottery occurrence per phase

Date	Defining Wares	No	Wt (g)	EVE
12th century	F302, F307, F330, F360	38	433	0.34
13th century	F300, F301, F303, F304, F308, F311, F319, F324	135	2334	1.38
14th century	F309, F310, F401	183	2289	0.72
L14th – 15th century	F403	1	5	0
L15th – 17th century	F404	1	3	0.04
19th C	F420, F1000	76	633	0
Total		**443**	**6068**	**2.48**

The pottery occurrence by fabric type per medieval phase is shown in Table 2.

The sharp drop-off in pottery consumption at the site from the late 14th century until the 19th century suggests very strongly that the site was not used after the tile-kiln was abandoned, or if it was, there was little ground disturbance and pottery was not being deposited at the site to any significant degree. Only a single sherd of medieval pottery was noted in the 19th century deposits, so residuality does not appear to be a significant factor.

Table 2: Pottery occurrence per medieval ceramic phase, expressed as a percentage of the phase, by weight in (g)

Fabric	12th century	13th century	14th century
F302	71.4%	12.5%	9.0%
F307	28.6%	9.4%	2.4%
F330	0	0.3%	0.3%
F360	0	0	0.3%
F300	-	8.9%	13.2%
F301	-	19.9%	22.2%
F303	-	0	4.2%
F304	-	40.6%	1.0%
F308	-	2.7%	0.7%
F311	-	0.1%	3.4%
F319	-	5.6%	0
F324	-	0	3.3%
F309	-	-	3.1%
F310	-	-	29.1%
F401	-	-	7.7%
Total	**433**	**2334**	**2289**

The data in Table 2 show a pattern which would be generally expected. The wares which fall from use in the 13th century (F302, F303, F304, F308) represent a much smaller percentage of the 14th century assemblage than they did in the previous phases.

Coventry 'A' (F307) ware also forms a much lesser proportion of the 14th century assemblage than it did in earlier phases, presumably due to competition from the wares which were introduced in the 14th century, such as the glazed Chilvers Coton wares (F310) and other late medieval wares (e.g. F309, F410). It is perhaps of significance that regional imports from the south-west (F324, F360) do not appear to be arriving at the site until the 14th century, some 50 – 100 years after they were first made, and the same can be said for the wares from Northamptonshire (F319, F330).

The 14th century assemblage also produced a slightly higher proportion (36.1% by weight) of glazed jug sherds (F310, F311, F324 and F360) than the vessel occurrence data (Table 3, below) would suggest.

4 VESSEL TYPES

The vessel occurrence, by EVE per medieval phase, is shown in Table 3. The bulk of the rimsherd assemblage (EVE = 2.22) comprised cooking pots/jars, with the rest made up of bowls (EVE = 0.04) and jugs (EVE = 0.22).

A handle was noted from a Brill/Boarstall skillet or pippin (Fig. BM1), but this appears to be the only other vessel type represented. It is from a context which is dated to the 14th century, and this appears to be the time at which such vessels were introduced in Oxford, one of the main consumers of the products of the Brill/Boarstall kilns (Mellor 1994, fig. 54 and 177). Here, it may well have functioned as a drinking vessel, as later medieval industrial sites often produce an unusually large quantity of drinking pottery (e.g. Blinkhorn 2000), presumably as a result of the hot and heavy work involved.

The proportions of vessel types during the medieval phases is generally what would be expected from a domestic site of the period, so the presence of the tile kiln seems to have had little effect on the range of pottery types in use, suggesting that the tilers may have been both living and working on the site.

Table 3: Vessel occurrence per medieval phase, as a percentage of the phase assemblage, in EVE

Phase	Jars	Bowls	Jugs	Total EVE
12th C	100%	0	0	0.34
13th C	97.1%	2.9%	0	1.38
14th C	69.4	0	30.6%	0.72

ILLUSTRATIONS

Fig 28 BM1: Context 182, F324, 14th century. Skillet/pipkin handle. Pale orange fabric. Handle is cracked due to the presence of a large (c 15mm) quartz pebble in the fabric.

Fig 28 BM2: Context 273, F307, late 15th century. Near full profile of a jar. Orange fabric with grey core. Extensive spalling on the outer surface.

Fig 28 BM3: Context 156, F307, 13th century. Non-joining rim and base from small jar. Light orange-brown fabric with a grey core.

Fig 28 BM4: Context 191, F301, 13th century. Rim and body of small jar. Uniform grey fabric with small soot patches on outer surface.

Fig 28 BM5: Context 202, F302, 12th century. Jar rim. Brown fabric with grey core. Extensive sooting on outer surface.

Fig 28 BM6: Context 1032, F311, 14th century. Jug base. Smooth orange fabric with grey core. Uppermost part of outer surface has a thick white slip, patches of thin, glossy apple-green glaze.

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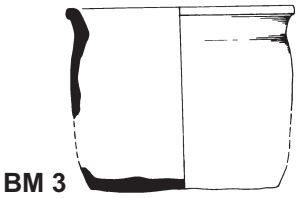
BM 1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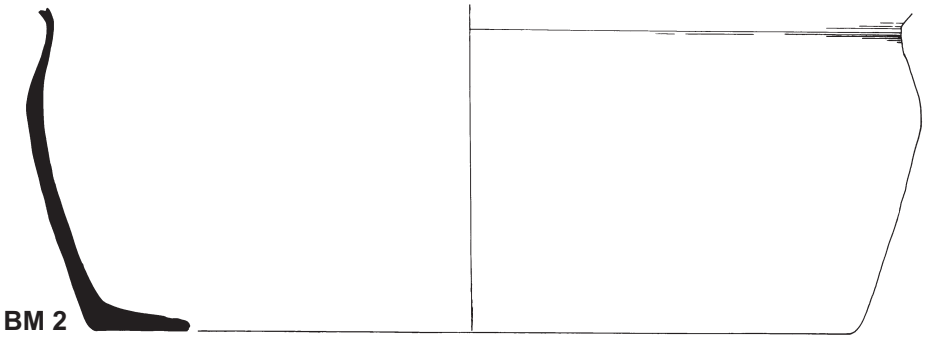
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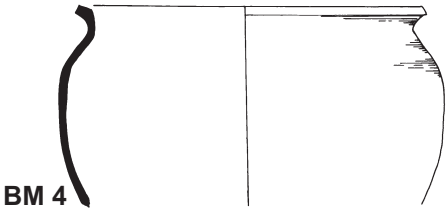
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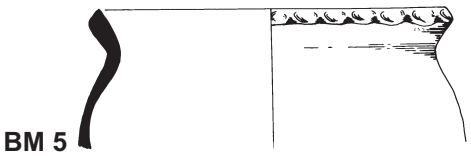
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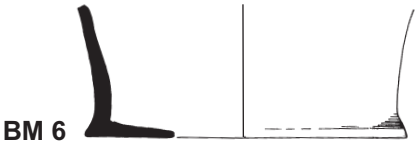
BM 6


0
200mm

Table 4: Pottery occurrence by number and weight (in g) of sherds per context by fabric type

	F300		F301		F302		F303		F304		F307		F308		F309		F310		F311		F319		F324		F330		F360		F401		F403		F404		F420		F1000		Date
Context	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	
103																																					28	321	19thC
108	1	5	2	23							2	8																											13thC
110											1	10																											12thC
113																																					31	243	19thC
114																																			5	37	2	2	19thC
118	1	2																																					13thC
120					1	8																																	12thC
122			2	3																																			13thC
129					1	2																															8	15	19thC
130													1	13																									13thC
131													1	7																									13thC
137	1	5	2	23	6	12																																	13thC
139	5	15	9	76							2	35			1	5	1	5											1	177									14thC
141	2	3			2	7																																	13thC
143													1	2																									13thC
144	1	13																																					13thC
147					7	47											4	124																					14thC
148			3	11																																			13thC
152	6	9			18	38																																	13thC
154	1	4									1	2																											13thC
156			5	19	4	70					2	78	1	17																									13thC
158					2	15											1	13																					12thC?
161			3	40																																			14thC
173											1	9									1	131																	13thC
177					4	21																																	12thC
182	23	233	23	209	14	146	8	95	1	12			2	16			5	88					7	72			1	8											14thC
183	9	63	5	88																																			13thC
188	2	15	5	50													3	61																					14thC
189	2	18			2	13											1	2					1	4															14thC
191			5	131	3	57																																	13thC
197	8	81			2	58																																	13thC
198			11	69													1	3																					14thC

	F300		F301		F302		F303		F304		F307		F308		F309		F310		F311		F319		F324		F330		F360		F401		F403		F404		F420		F1000		Date
Context	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	
200																	1	17																							14thC
202					3	163																																	12thC
205			4	29																																			13thC
218											1	24																											12thC
219																	1	4																					14thC
227					4	22																																	12thC
229																	1	19																					14thC
230			1	19																																			13thC
232	2	20																																					13thC
234																			1	3																			13thC
244			4	29																					1	7													13thC
251			2	16													4	28																					14thC
263			4	31	6	30					1	72																											13thC
264					1	10					9	50																											12thC
266															1	57																							14thC
268					1	10					1	14																											12thC
273					8	102					1	269																							1	3			L15thC
278	1	2																																					13thC
279																	1	2																					14thC
294																															1	5							15thC
1012			4	55									2	25																									13thC
1023																																					1	13	19thC
1031			1	11							1	5					7	78																					14thC
1032			1	6							1	16					3	49	1	77																			14thC
1037					4	37																																	12thC
1040					4	23					2	26																											12thC
1041			1	3	1	19					1	51																											13thC
1042																	2	85																					14thC
1046									1	947																													13thC
1072	1	22	2	32					3	11					1	8	1	89							1	6													14thC
Total	66	510	99	973	98	910	8	95	5	970	27	669	8	80	3	70	37	667	2	80	1	131	8	76	2	13	1	8	1	177	1	5	1	3	5	37	70	594	

APPENDIX C: THE FINDS

APPENDIX C.2

THE ENCAUSTIC TILES by Iain Soden

1 THE STAMP-DECORATED FLOOR TILES

A total of 62 complete or nearly complete glazed floor tiles were excavated from a total of eight contexts within or related to the kiln. Of these, 50 were stamp-decorated, the remaining dozen being plain, green- or yellow-glazed.

The contexts represented were:

104 one plain, yellow-glazed example

197 two plain, green-glazed examples

241 one plain, green-glazed example

1011 one plain, yellow-glazed example

1017 forty nine (49) examples, all stamp-decorated

1031 two examples, stamp-decorated

1041 one plain, green-glazed examples, plus two unglazed

1042 three plain, green-glazed examples

The stamp decoration present was limited to five distinct stamps, the content of which may be termed in what follows as armorial, floral, geometric and two zoological.

1.1 Armorial (Fig 30a, Plate 16)

The arms of Beauchamp, Earls of Warwick, gules, a fesse between six cross-crosslets or. This single tile could be laid just as it was or in groups of four. At Coventry Benedictine Priory such groups were laid with the points of the shield facing outwards (Rylatt and Mason 2003, plate 1c). The Beauchamp family held the Earldom of Warwick from 1298 until the late fifteenth century. The award of the arms is not in itself therefore significant in helping to date the tiles. There are, however, likely candidates within the lineage whose support for monastic causes was widespread. These were Sir Thomas I, Earl 1329-69, and Sir Thomas II, Earl 1370-97 (d1401), whose arms are ubiquitous in nearby Coventry (Fig 29). Sir Thomas II was a benefactor of both the Benedictine Cathedral Priory (ibid 2003, 89 & plate 1c), and St Anne's Charterhouse (Soden 1994, 154-9; 1995, 6-7). Another possibility is Katherine, Countess Beauchamp (d1369), wife of Sir Thomas I, whose is known to have been a benefactress of the Greyfriars in nearby Coventry (Fretton 1882, 39). Both she and Sir Thomas I are buried in St Mary's Collegiate Church, Warwick. There the Beauchamp arms can be seen on Sir Thomas' surcoat on his funerary brass and also on the tiled floor dating from the time of his descendant Sir Richard (d1444).

By the time Coventry sites portray the Beauchamp arms, many examples are debased, the crosses becoming simplified to Greek types and an extra one being introduced. This is true for all those at St Anne's Charterhouse which are dated post-1385, that of the official foundation. The single example in the ante-chapel to the Beauchamp Chapel, however, dated 1464, is a return to the correct arms with six crosses botonny.

It is possible therefore that variations are not related in any way to time elapsing, but rather to different makers and their relative familiarity with the client commissioning

the tile. In any one case (St Mary's Church, Warwick excepted) it may not even have been a Beauchamp at the heart of the commission but a lesser lord wishing to reflect his allegiance.

His interpretation of the Earl's arms or the ability of the stamp-maker to cut it correctly provide opportunities for all sorts of incorrect depictions in what ought to be a strict and clear-cut depiction. In any case the stamp from the kiln excavation seems to have been a faithful representation of the Earl's arms. Its dating must rely on factors other than the content.

No exact published parallels are known for this stamp in the size and style of cut it exhibits. However, for comparisons see a Warwickshire example from Bordesley Abbey dated 13th-14th century in Eames (1980, design 1593). Also compare Chatwin (1936, no 23:1). Further afield a similar depiction can be seen in Leicestershire (Whitcomb 1956, 39).

1.2 Floral (Fig 30b, Plate 16)

The floral stamp derives from a wider repeating pattern of four tiles. The design is basically a quatrefoil drawn as a single line, enclosing a radiating spray of stylised flowers. An outer floral motif, akin to a fleur de lys, springs from the spandrels of the quatrefoil. While such floral designs are very common amongst medieval tiles, no comparable examples have been found in published literature.

1.3 Geometric (Fig 30c, Plate 16)

This tile, like the floral example, derives from a four-tile design, each quarter made up of the same tile turned through 90 degrees. Whereas the floral depiction (above) made only the most basic allusion to a geometric element, this one is based around that same architectural quatrefoil which is here shown using double lines to denote cusps, spandrels and the surrounding circle into which such motifs were usually fitted. All of the open spaces of the tile are filled with spiky foliage which may be in part based upon sycamore-type leaves (outside the circle) and part upon some partly-opened fronds (emanating from the cusps). The relatively small spaces lying between the parallel lines which pick out the quatrefoil and the other architectural elements are liberally filled with stylised flowers, dots and colons.

1.4 Zoological - Birds (Fig 30d, Plate 16)

This tile depicts a common theme, two birds flanking a sprig of stylised foliage. It was designed to be laid singly or in a repeating pattern. It is one of a number of similar stamps of which numerous are published by Eames (1980, nos 1958-84) which are all from Byland Abbey (Yorks) and are of 13th-century. However this example has an exact published (photographed) Warwickshire parallel in Chatwin (1936, fig 4), an example from Kenilworth Abbey. Chatwin did not ascribe it a date.

1.5 Zoological – Fish (Fig 30e, Plate 16)

This tile depicts a fish within a lozenge-shaped stylised vessel, with a spray of foliage in opposed corners beyond. It was designed to be laid singly or in a repeating pattern. There are broadly similar examples from Warwickshire (cf Chatwin 1936, figs 12.5 & 14.2) and from beyond (cf Eames 1980, fig 2000).

This tile represents a common theme, rarely remarked upon but having an iconographic significance. The fish as a symbol was adopted by the early Christians, even before the Cross. It derives from the Greek word for fish (ichthus), which was used as the acronym for "Iesous Christos, Theou Huios, Soter = Jesus Christ, Son of God, Saviour".

The fish on this tile is also depicted within the medieval vessel known as a dripping tray, or more popularly as a 'fish dish'. Distinctively shaped to hold the fish for cooking or serving (or both); one such pottery dish was excavated from Bridge End, Warwick in 1983.

The tiles are from five individual stamps and have been completed, including the application of slip and glaze. Thus they seem to be the end of a line, perhaps left over from an order from a single patron. They are basically all of the same size (allowing for shrinkage and minor warping in the kiln heat), namely 69% of them are within 3mm tolerances, suggesting a single production and firing.

From 14th-and 15th-century documents in neighbouring Coventry it is clear that a patron would either order tiles in numbers or specifically in dry-weight of clay to avoid being sold short since the loss of water in firing made the tiles lighter (Soden, forthcoming). No fabric analysis has been carried out since the tiles are all very badly over-fired, having been re-fired in the kiln at least once. Their stamps will, however be easily recognisable if they are found in excavation of a consumer site.

2 THE KILN AND THE WARWICKSHIRE TILE INDUSTRY

The Warwickshire industry is generally thought to emanate in the mid-13th century from the London area where tillers produced the limited range of designs known as 'Westminster' tiles (Betts 2002). Betts (ibid, 12, 19), following Whitcomb (1956, 9), believes that the early midlands producers may have been centred on Coventry, producing for both Warwickshire and Leicestershire. 'Westminster' types are known from Warwickshire at Kenilworth and Baginton, Coventry and Polesworth.

At this period Betts (op cit) says that "there is little doubt that the 'Westminster' tiles found in the midlands were made by the same tilemakers who worked in London" (spreading up the old Watling Street).

There is currently no dating for the manufacture of Westminster tiles in the midlands. A date soon after the completion of the major London projects is sensible (cf Betts 2002, 25-6). Betts (ibid) speculates that the industry opportunities best fit the period c1260-late 1270s. He then goes on to say, erroneously in view of the much greater numbers of Coventry-products, that their wares were superseded by Chilvers Coton tiles. This is only part of the picture since tiling was already under way in Stoke, Coventry by 1299, not confined to a single kiln. Betts follows Chatwin (1936) in citing the Stoke kiln found in 1911 but misses out a second found in 1940 (see Chatwin, 1941). Numerous others are copiously documented from the late 13th century to the 17th century (Soden 2005).

It would seem that by the end of the 13th century there were numerous tiling centres in Warwickshire, at least comprising Stoke (Coventry), Chilvers Coton (Nuneaton) and Polesworth. To this list can now be added the Warwick kiln, which seems to fit into a first-to-second, almost transitional, generation of tile production.

Of the extant designs, two might be said to show distinct 'Westminster' influence: that containing the two birds (and the artist's treatment of animals is very similarly dealt with on 'Westminster' tiles) and the simpler of the two geometric/floral stamps. Both exhibit the 'blurred' stamp quality of a slip which in places was inexpertly applied, leading to indistinct motif edges. These two are the less-deeply stamped designs, the others having a deeply-incised, more deliberate stamp. In many cases the application of the slip and its quantity is impossible to gauge since the repeated firing of the kiln has scoured the upper surface of glaze and abraded the slip. Suffice to say that in most cases slip application seems to have been liberal.

One tiling tradition as yet is excluded from the overview of Warwickshire, that of 13th-century mosaic tiles, a type very popular on the continent. While such tiles have been known for many years from the likes of Halesowen and Bordesley Abbeys and Maxstoke Priory in the 19th century and more recently from Sandwell Priory (Hodder 1991), little has come to light on their origin or their place in a wider tradition. When a few were found residual in later contexts at St Mary's Cathedral, Coventry, little more could be added even when the types have been known to archaeologists for over a century (Rylatt and Mason 2003). That these types represent a completely different but perhaps parallel tradition within the thirteenth century seems plausible, but how they relate to the known Warwickshire kiln sites (if at all) is unknown. They seem to have died out during the thirteenth century and no fourteenth-century monastic foundation in Warwickshire has so far produced any such tiles.

3 DATING

The dating of the midlands versions of 'Westminster' tiles has been tentative (Betts 2002, 26). The existence of new tiling industries, with a new range of designs, some with a particular local resonance (such as Beauchamp), vastly expanded from the Westminster originals, suggests that by the end of the 13th century, most reliance on London-originating designs and technologies had ceased. Warwickshire tillers were probably fully independent by 1300. The Warwick kiln fits closely into this period and while there are similarities with aspects of what went before, the new, locally-resonating stamps look forward to a time in the 14th century when the Warwickshire tilers, based at Stoke and Chilvers Coton were supplying almost every monastic house in a wide area.

Since the kiln lay within the purview of the Dominican Friary in Warwick, it must be a possibility that the Friars themselves were responsible for bringing the tilers to Warwick. Little is known of the patterns of church-planting adopted by the Dominican order. Their appearance at Warwick seems roughly coeval with that at other provincial centres. That they were the instigators is one possible reason for the apparently abrupt end to the production of this kiln. In the absence of documentation, such as exists for Coventry Greyfriars, the Beauchamp arms might explain an initial Beauchamp-Friary benefaction at that time. With a job completed, the tillers may have returned to their place of origin, or moved on to the place of the next commission. Certainly their distinctively-struck and designed stamps have few excavated parallels in the area as to almost see them as an aberration or at least as a dead-end expression of the industry.

The Black Death may also be responsible for the tilers' brief appearance in the archaeological record. The archaeo-magnetic dating of the kiln shows that it was last fired between 1300-1330 with the later kiln last fired between 1340-1370. Coincidence with the Great Pestilence may or may not be significant, but in the light of there being so few similarly-manufactured tiles from consumer sites in Warwickshire, the possibility of this being a plague-truncated end to a tiling operation has to be given consideration.

In any case the nature of subsequent tile production in Warwickshire apparently heavily weighted towards Stoke, suggests that this Warwick site not only ceased, but had failed to influence further production methods and these distinctive, deeply-struck tiles from Bread and Meat Close represent a short period during the tradition when the spotlight fell upon the county town. Whether unable to compete with bigger tiling centres or cut short by plague, the kilns represent a distinct thread in the tiling tradition, all the more important since it is the first in the county to benefit from scientific dating.

It has been possible to compare closely the sizes of the Warwick kiln tiles with those from modern excavations and in-situ floors of known dates in order to begin to trace the increasing standardisation of types during the medieval period. In future such an exercise might be increased to take account of unpublished excavated material such as Southam Church and Coventry Whitefriars, together with Stoneleigh and Combe Abbeys, and other in-situ floors such as that of Stoke designs at Wormleighton Church. Such a wider study is beyond the scope of the present report.

4 CONCLUSIONS

The tiles, built into the kiln, must have been made in another kiln, perhaps nearby. That they went through slip and glaze-application indicates that they were made as part of a completed order, but were perhaps left over when a floor was dispatched, surplus to requirements; they were used by the tiler to line a new kiln, presumably because he had too few to do much else with.

The tiles built into the kiln are from a single tilery, the many examples of each design deriving from a single set of five stamps. That none of the stamps are worn indicates a single period of production. Because they are so uniform in size and designs, they are likely to have been left over from a single order.

The tiles fall into a transitional generation of tile manufacture, which in style makes canting allusion to the foregoing Westminster type tiles of the late 13th century but which also look forward to the mass-production of tiles in the local industries of the later 14th century with their plethora of intricate designs. As such the tiles represent an avenue of tile production which appears to have no parallels, its end date may be significant as being brought to a premature end by the Black Death.

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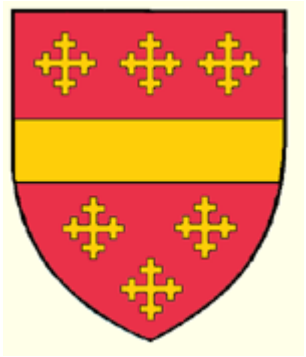
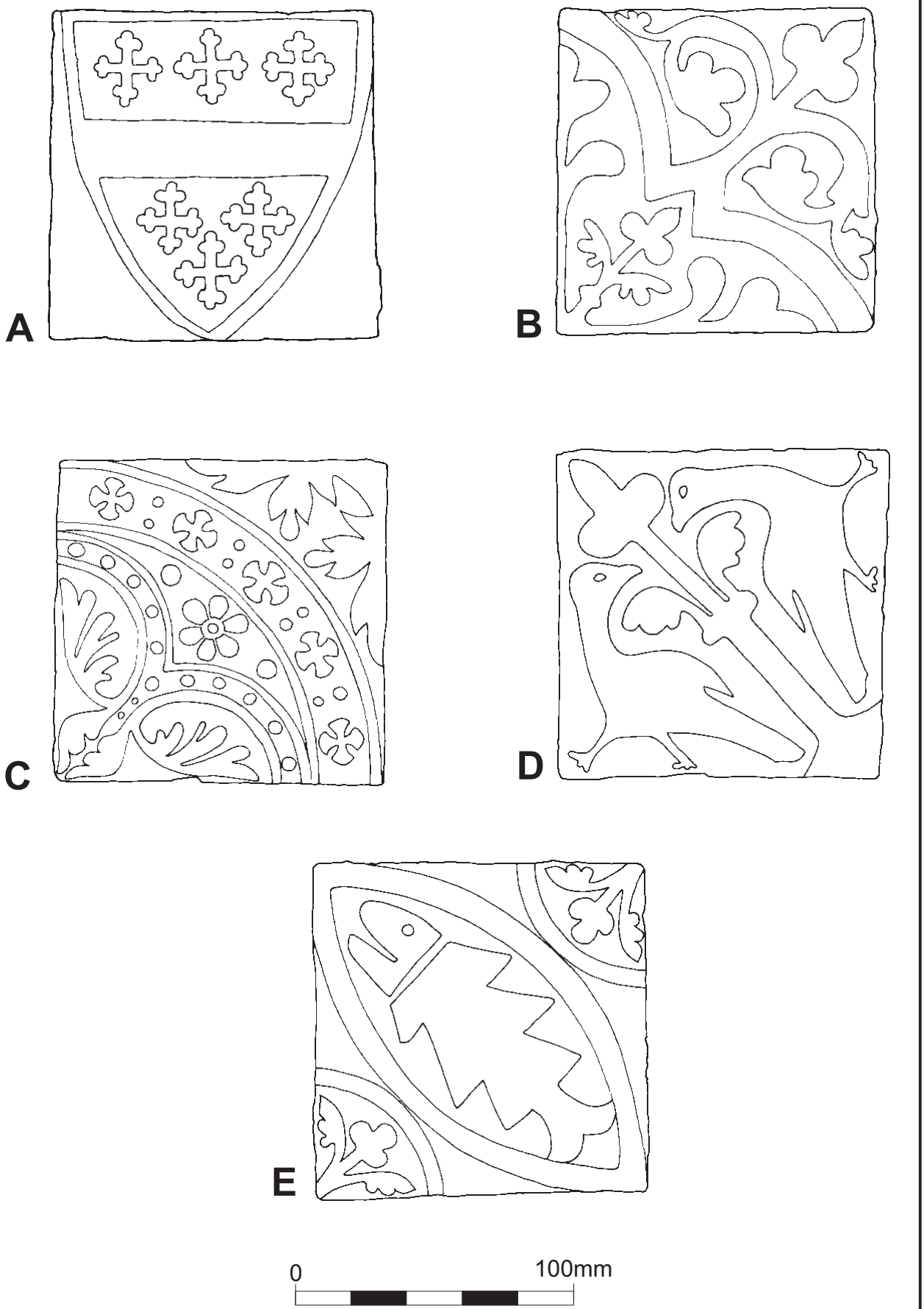


Beauchamp Coat of Arms

Thomas Beauchamp, Earl of Warwick, 1345 – 1401
Coat of Arms depicted as worn on a surcoat with armour
(Image from www.earlymusic.i12.com)



The encaustic floortiles Fig 30

Plate 16: Stamp decorated tiles

APPENDIX C: THE FINDS

APPENDIX C.3

CERAMIC AND STONE BUILDING MATERIALS by Pat Chapman

1 THE TILES

A range of ceramic building material, including reused roof tiles, purpose made kiln furniture, wasters from the kiln products and plain bricks, had been used in the construction of the kilns, or were recovered within the fills of the kilns. Samples of the large quantities present were retained for analysis.

1.1 Flat roof tile

This assemblage of 1530 roof tile fragments, weighing 210.4kg, is a representative sample. They were retained when they had measurable dimensions, for nib and peghole features, and for indications of other elements such as the presence of glazes or marks on the surfaces.

There are only seven complete tiles, six which had been used to line the tiled drain [241] (Plate 17). Five of these had been severely overfired, which did not affect the length and breadth measurements, but at least doubled the thickness as they became bloated through the expansion of gases within the clay. They have a black to grey black surface and a slight vitreous feel and a black core with red edging. Their length varies between 285mm and 300mm (11½ - 12inches), and they are 150, 160 or 165mm wide (6, 6¼ or 6½ inches, Fig 31.1). Width measurements on all the measurable tile varies between 150 – 175mm (6 to 7 inches). The thickness is typically 15mm (5/8 inches), although a thickness of 11 to 13mm occurs occasionally. All of the roof tiles have pulled-up nibs and a square peg hole at each side. Many of the nibs had been deliberately knocked off so they could be used in the kiln structure.

These sizes are comparable to those from The Austin Friars site in Leicester, whose two reconstructed tiles are 290mm long by 180mm wide (11½ and 7 inches) and 305mm long and 170mm wide (12½ and 6¾) and 12 to 15mm thick (Allin 1981). These tiles had pegholes at each side with no nibs and are earlier in date than the Act of 1477, which regulated the manufacturing processes and the size of the tiles. Tiles from the 13th to 14th century tile factory at Danbury in Essex were c 270m long and 150 to 175mm wide and 12 to 15mm thick, also with only pegholes (Drury and Pratt 1975, 111).

Although splashes of green glaze on both the upper surface and the edges occurred on a number of tile fragments, only four tiles, three from layer (1031) of kiln 2 and one from backfill (229) of trench (228) had been well glazed, covering the entire surface of the bottom half (Plate 18).

There are four fabrics with slight variants within each one. The predominant fabric is fine or slightly coarse orange sandy clay. Less common is a hard finer slightly silty sand pink brown with a reduced core, with frequent grog and other sub rounded inclusions of 1mm and occasionally 8 by 4mm. An infrequent fabric is a light brown

silty clay with a red to reduced core. Only a few tiles are made from a hard fired red fabric.

Almost one fifth of tile fragments were bloated and warped, like the complete tile described above. Many other tile fragments had been fired to a level beyond which their fabric could be determined. Other tiles used in the kiln structure had been fired to red with black edges where they protruded (Plate 19).

A few tiles had been marked in some fashion. Two fragments from (1031), one had a cat's paw print on the surface from being laid out to dry, the other had a cluster of wedge shaped marks on the surface, identical to the three on the complete tile from drain (241) (Plate 20). An unstratified fragment has had initials drawn upon it, possibly 'T E' (Fig 31.5).

1.2 Ridge tile

There are ten fragments of ridge tile. They are from six medieval contexts, except for two tiles which are unstratified. The only measurable dimension is the thickness, which is typically 10-12mm thick at the edge to 15mm thick in the body. Two of these are crested, of which one is the only green glazed ridge tile.

A green-glazed Nuneaton ware crested ridge tile has been reconstructed from twelve sherds (Plate 20). It has a surviving length of 250mm (10 inches), although no dimensions from edge to apex, and is consistently 11m thick throughout. The crest has been knocked off, but its base is circular with a diameter of 55mm and has been pushed up from underneath. The green glaze with dense fine mottling covers the upper surface.

An unstratified crested tile is a fragment, 80mm long, with all or part of a crest. The two points have a rectangular base with the four sides drawn up to a rounded point. They have been pulled up from the ridge, not pushed from underneath, then knife trimmed. It is unglazed and in the light brown fabric (Plate 22).

1.3 Hip tile

There are also two hip tiles and a further possible example. Two fragments come from layer (294) in wall trench [262] dated to the 14th century. In the most complete example the top curved edge is short, 45mm wide and the sides are angled out at 125°, and the surviving length is 140mm (Fig 31.2). There are two 7mm square nail holes, 25mm apart, the top hole 18mm from the apex. They are both in the fine sandy silt light brown fabric, with a reddish underneath going into a central dark grey reduced core. The other fragment from this context is a corner with a remnant hole.

Another possible hip tile, from fill (263) ditch [262] dated to the 13th century, is larger and in an orange fabric. This has a hole and the fragment of another 45mm apart The maximum surviving length is 175mm.

The small number of ridge and hip tile sherds recovered is probably a reflection on the ratio of ridge to flat tile in any production. The presence of a single crested green glaze ridge tile in a different fabric to all the other tiles suggests that it may have been part of a specific order.

2 KILN FURNITURE

2.1 Square tiles

There are two complete and 62 fragmentary examples of square to rectangular thick tiles from kiln 1 and kiln 2. They are typically 160 to 170mm (6¼ to 6¾ inches) square and 40 to 45mm (1½ - 1¾ inches) thick. All the surviving edges are chamfered, indicating that they were cast in a mould. They have all been pierced quite deeply on one face with either round or square holes set in a fairly regular pattern, which have become clay filled after being pushed onto a soft surface.

The two complete examples come from the floor (1037) of kiln 2. One is square, measuring 160 by 160mm at the top and 155 by 155mm on the bottom pierced face (Fig 31.3). The other example measures 162 by 157mm on top and 160 by 152mm on the bottom with a black glaze on the top and two sides. Both tiles are 40mm thick and have been pierced with nine regularly spaced 10mm diameter holes. These tiles, and the other fragments from the floor, are in a coarse grey fabric with some orange on the surface and frequent angular inclusions up to 5mm long.

The 42 fragments of tiles from fills (1011) and (1012) of kiln 1 and fill (1031) of kiln 2 are in a dull red to orange fabric with thin creamy streaks which has been roughly mixed, some fired to grey or purple black. The holes are either 8mm square or 10mm in diameter. Two tiles have had green glaze on one surface which has burnt or bubbled off.

These are similar to the structural tiles were found in the contemporary 13th to 14th century tile factory at Danbury in Essex (Drury and Pratt 1975, 123 and fig 54). A similar style of tile was also recovered from the 17th to 18th pottery kiln at Donyatt in Somerset, indicating the longevity of this element of kiln structure (Coleman-Smith 2002, 158 Fig 24).

2.2 Floor tiles

There are also four complete and 43 fragmentary tiles which have had two adjacent corners removed (Fig 31.4). These are mainly from the fills in kilns 1 and 2, but also from fill (229) of trench [228], fills of ditch [262] and palaeochannel fill (280).

The complete tiles, from fill (1011) of kiln 1, are almost square, measuring 145 or 150mm wide (5¾ to 6 inches), 148 to 150mm long. These do not have chamfered sides. They are 35 to 40mm thick, but thinning to 32m at the end with the removed corners.

The fabric is either an orange coarse sandy clay with the surface darkening to red in the centre, the edges on three sides blackened, except for opposite the corners, or a dark red sandy clay sometimes over-fired to purple, both with occasional small sub rounded gravel inclusions and occasional wide black reduced core. A single tile was in a finer pink brown fabric with frequent crushed grog and flint up to 12mm long.

Tiles similar in shape, but larger and with stab holes were also found at Danbury, where they were interpreted as being used as a secondary floor for an even distribution of vents into the oven through the square gaps left by the cut off corners (Drury and Pratt 1975, 144 and Fig 61).

2.3 Plain glazed tiles

There are nine standard floor tiles with chamfered edges, measuring 110 by 115mm and 22 to 30mm thick. Of the five from the tile foundation wall (1055) of kiln 2, four have been glazed black. A tile from palaeochannel (280) had been cut as a triangle. The fabric is typically a coarse red orange sandy clay, except for one that had been completely reduced to grey.

2.4 Saggar

There is part of a short saggar, from fill (264) of ditch [262], weighing 236g. It has a diameter of c. 140mm, and is 60mm high although the under surface of the base is missing, and 20mm thick with a flat well finished rim (Fig 31.6). It was made from a silty light brown fabric, red internally and with a reduced core in the base. There is a narrow flat vertical 'ridge', 30mm wide with chamfered edges, and 7mm thick. This may have been designed as a grip for lifting out of the kiln.

Similar short saggars were found at the Polesworth pottery in Warwickshire, which was in production during the 17th to early 19th centuries (Melton and Scott 1999, 119 and fig 18). These were used for holding small objects for firing, such as the bird whistles which would have been far too small to stand alone in a kiln, as at Stanion in Northamptonshire dated to the 15th century (Blinkhorn and Hurst 1991).

2.5 Fired clay

An irregular piece of fired clay had been pressed against a curved surface, leaving the rest very irregular, comes from the primary fill (1011) on the floor of kiln 1. Another very large piece, 248mm long, had also been pressed against a curved surface and had on one side the partial impression of a tile. This comes from the fill (1048) under the arch in kiln 2. Both of these were made from fine red brown sandy clay with occasional small gravel and frequent tiny grog inclusions. These were probably used for bonding the structural tile, possibly in the arches.

2.6 Brick

Two bricks came from fill (1031) just above the floor of kiln 2, which is dated to the 14th century. The most complete brick measures 215mm long by 95mm wide and 35mm thick (8 by 3¾ by 1½ inches). The other is 10mm longer.

They are made from a dense brown pink fine sandy clay with a few cream streaks and occasional small gravel inclusions. Both are severely damaged along all the edges and are very worn. These are most likely to have been part of the structure.

One small orange red roughly mixed fragment came from fill (263) of ditch [262] dated to the thirteenth century.

2.7 Stone roof tile

Two fragments, one with part of a peg hole, the other a corner piece, come from fill (1031) above the floor in kiln 2, which is dated to the 14th century.

3 OTHER BRICK AND TILE

There are fifteen bricks and brick fragments from 19th and 20th century contexts.

3.1 Post-medieval brick

Eight brick fragments come from fill (114) of pit [111] dated to the 19th century. Three bricks are made from a pink brown to mauve fine sand with occasional cream streaks and occasional large pebble inclusions up to 30 by 25mm. The surviving dimensions are 110mm by 55mm or 65mm. A lot of mortar is still adhering to them. Another fragment is in a hard and fine pink fabric with one side slightly grey, measuring 110mm wide and 63mm thick. The other four fragments are made from a coarse red sand poorly mixed.

A nineteenth century layer (129) produced four small fragments in different fabrics, between 110 and 116mm wide and 57 to 60mm thick. A coarse dark red brick with angular inclusions, 116mm wide but only 39mm thick, may be a tile but is more likely to be a brick.

3.2 Modern brick

Four bricks come from buried soil horizon (103). The first is an almost complete frogged brick in a light red brown fabric, measuring 230mm by 110mm by 73mm thick (9 by 4¼ by 3 inches), with 'LEAMINGTON' then BRICK CO' below, in plain capitals within the frog, which measures 172mm by 60mm by 10mm deep. The size of the frog indicates that it is at least early 19th century (Harley 1974, 80). (There are two circular rough 'discs' on the base 20mm in diameter and 80m apart)

There is part of an unfrogged yellow stock brick, 110mm wide and 70mm thick. A word beginning 'THISTLE. . ' is on the upper surface up to the broken edge and a single 'A' below it. The surface is dark yellow, partially stained a rust colour, with dense black speckles, bright yellow inside.

There are two very hard black shaped bricks with a dark red interior. The plinth brick for the top of a wall or string course measures 218mm long at the base sloping up to 160mm along the top, and is 116mm high and 75mm thick. The coping brick has a base length of 230mm, a centre height of 110 and 78mm thick. One face has a shallow recess 5mm deep, leaving a margin of 15mm top and bottom from the edge broadening to 30mm at the corner.

3.3 Stone roof tile

There is one slate fragment from layer (103). The remaining eight pieces of stone are small fragments of flat limestone, the largest measuring 190mm by 113mm, and 10-25mm thick, found in both medieval and modern contexts.

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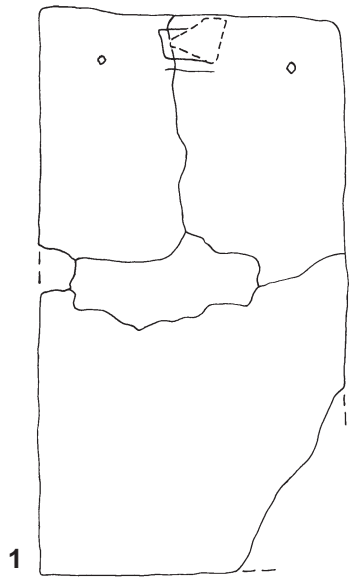

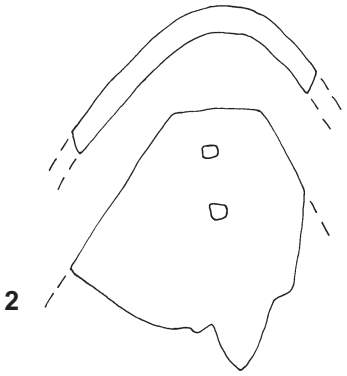

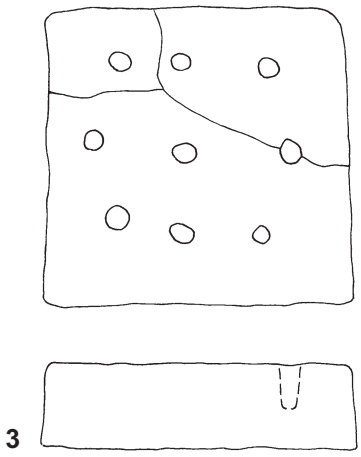

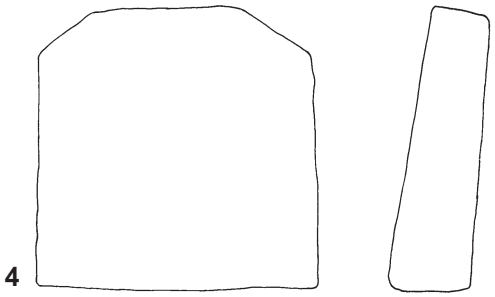

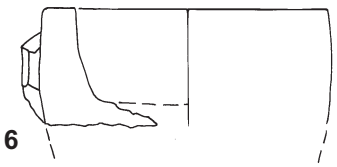

Roof tiles and kiln furniture Fig 31

Plate 17: Roof tiles and wasters

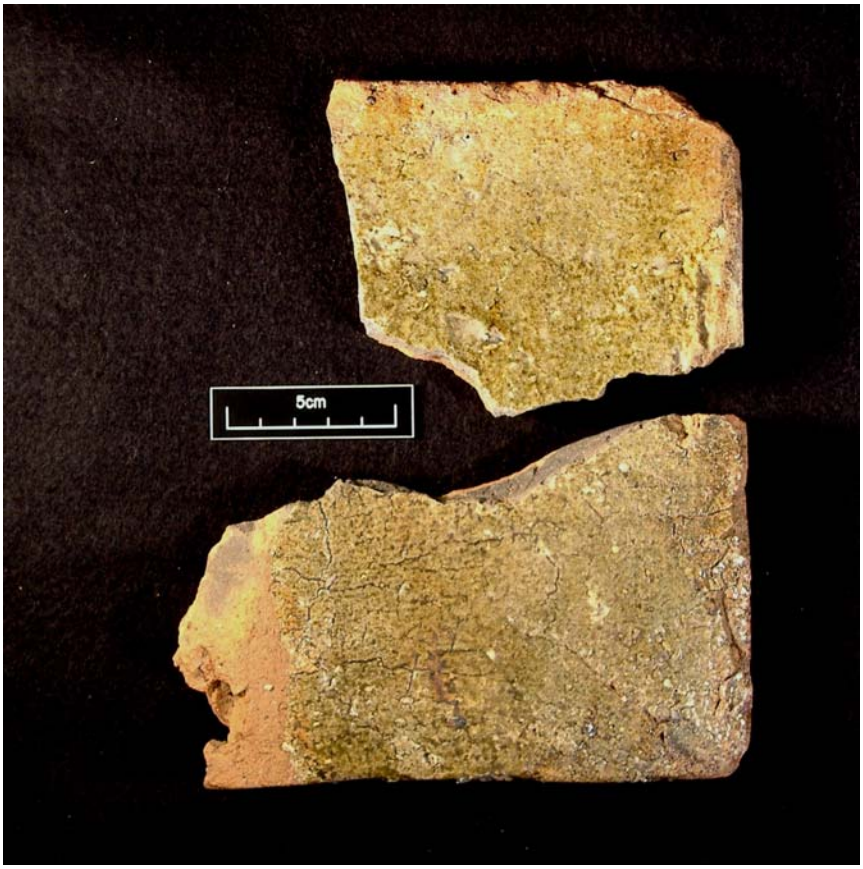

Plate 18: Green glazed tile

Plate 19: Kiln tiles burnt along inner edge

Plate 20: Tiles with tool marks

Plate 21: Glazed roof tile

Plate 22: Crested ridge tile (Scale 10mm)

APPENDIX C: THE FINDS

APPENDIX C.4

THE OTHER FINDS by Tora Hylton

1 INTRODUCTION

The excavations produced a small group of 12 individually recorded small finds in four material types, iron (6), lead (1), stone (1) and glass (4). Six of the finds were recovered from the series of 12th-14th century pits, gullies and postholes located adjacent to the medieval street frontage. The remainder (6) were recovered from post-medieval deposits.

2 MEDIEVAL

Finds from medieval deposits include 5 iron nails and a fragment of lead. Most of the nails are incomplete, but most still retain their heads.

One nail from a 12th century pit (110) has a small T-shaped head and displays similarities to well worn fiddle-key nails, which were used to attached horseshoes during the 11th -12th centuries.

Other head types represented include, one with a rectangular head and two with flat circular/sub-circular heads, both types would have had any number of uses.

A small undiagnostic fragment of lead was recovered from the fill of a 13th century pit (108).

3 POST-MEDIEVAL

Post-medieval metal finds are represented by an iron nail from a 19th century pit (113).

The glass sherds comprised vessel glass (mainly beer bottles) and fragments of 20th century etched and painted glass (from allotment soil), which may have been for internal domestic use.

In addition a single sandstone whetstone for sharpening knives and tools was recovered from the medieval soil horizon (104).

4 OTHER FINDS CATALOGUE

4.1 Iron Objects

Nail, iron. Incomplete, terminal of shank missing. T-shaped shank with square-shaped head. Possibly a horseshoe nail. Length (incomplete): 33mm (SF 1, Context 110, Fill of pit, 12th century)

Nail, iron. Complete with large ?rectangular head and circular-sectioned shank tapered to a point. Length: 111mm (SF 65, Context 161, Fill of posthole, 14th century)

Nail, iron . Incomplete, terminal of shank missing. Sub-circular head with square-sectioned shank. Length (incomplete): 44mm (SF 65, Context 161, Fill of posthole, 14th century)

Nail, iron . Incomplete, terminal of shank missing. Flat circular head with circular – sectioned shank. Length (incomplete): 30mm (SF 69, Context 139, Fill of gully, 14th century)

Nail, iron . Incomplete, shank only. No measurements (SF 72, Context 156, Fill of pit, 13th century)

Nail, iron . Complete, but head covered in corrosion deposits. Flat sub-circular head with square-sectioned shank. Length: 60mm (SF 73, Context 113, Fill of pit, 19th century)

4.2 Lead

Fragment. Small fragment of melted metal. Measurements: 15 x 10mm (SF 71, Context 108, Fill of pit, 13th Century)

4.3 Stone

Whetstone, sandstone. Incomplete, both terminals missing. Square-cross-section, all surfaces display signs of wear. Length (incomplete):77mm Width: 30 mm (SF 74, Context 104, medieval soil, 14th century)

4.4 Glass

Small fragment of brown glass with slight curvature. Probably fragment of beer bottle (SF 67, Context 1023, Layer over kiln, 19th century)

Three very small undiagnostic fragments of green vessel glass (SF 68, Context 114, Fill of pit, 19th century)

Two fragments from a brown glass ?beer bottle and one base sherd from an opaque blue glass bottle (SF 70, Context 129, Layer in palaeochannel, 19th century?)

Seven fragments of etched and painted glass. Motif includes etched leaves and square panels containing a single 8 sided star/snow flake. Painted red spots and leaves add colour to the design (SF 66, Context 103, Garden soil, 19th century)

APPENDIX D: FAUNAL AND ENVIRONMENTAL EVIDENCE

APPENDIX D.1

THE ANIMAL BONE by Karen Deighton

1 METHOD

All animal bones hand recovered from the excavation were identified with the aid of a bone atlas (Schmidt 1972) and by comparison with the author's reference material. Animal bone from wet sieving (3.4mm and 1mm residues) was also included; sample sizes varied with context but were typically between 2 and 20 litres. Hand collected bones had previously been washed.

2 PRESERVATION

Fragmentation was moderate and surface condition was reasonable. A single instance of canid gnawing was noted. Three examples of butchery (chopping) were observed. No evidence of burning was noted which suggests this was not the usual method of disposal.

3 TAXONOMIC DISTRIBUTION

Table1: Identifiable bones by phase

Phase	**2**	**3**	**4**	**5**	**6**	**Total**
Bos (Cattle)	2	6	5		1	14
Ovicaprid (Sheep/Goat)	3	3	2	1	6	14
Sus (Pig)		1				1
Equus (Horse)		1				1
Canis (Dog)	1					1
Gallus (Chicken)			1			1
Small mammal			1			1
Small ungulate	3		1	1		5
Large ungulate		1	3		7	11
Amphibian			2			2
Piscis (Fish)					39	39
Total	**9**	**11**	**12**	**2**	**53**	**90**

4 CONCLUSION

The assemblage appears to represent domestic refuse for the most part. The presence of horse (Equus) and dog (Canis) could be the remains of disturbed deliberate burials or the dumping of carcasses. The amphibian remains observed could be intrusive, i.e. an animal which died during hibernation. The largest proportion of the assemblage (58%) was collected from 19th century contexts which suggests an increase in waste disposal activity during this period. The material is too sparse and too thinly dispersed across the phases for any further comment.

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APPENDIX D: FAUNAL AND ENVIRONMENTAL EVIDENCE

APPENDIX D.2

THE SOIL SAMPLES

by Karen Deighton

1 METHOD

Thirty-six samples were hand collected from the excavation from a range of features. One sample was a mortar sample and there was one duplicate sample. Thirty-four samples were processed for environmental remains using a siraf tank fitted with a 500-micron mesh and flot sieve. The resulting flots were dried and analysed using a microscope (10xmagnification). Identifications were made with the aid of a small reference collection and a seed atlas (Schoch et al 1988). Three samples were sterile, five samples produced charcoal fragments only.

2 PRESERVATION

Preservation was by charring; no evidence of waterlogging or mineralization was noted. Most of the grains were fragmented and abraded.

3 SAMPLE DISTRIBUTION

Table 1: Number of samples by phase

Phase	**1**	**2**	**3**	**4**	**5**	**6**
Samples	2	6	12	3	1	2

4 SPECIES PRESENT

4.1 Agriculture and ditches, pre 13th century (Phase 1)

There were only two samples, ecofact concentration was very low and only one identification was possible, therefore the phase is not discussed further. The presence of charred material here could be the result of accidental deposition when material washed into the palaeochannel of the stream.

4.2 Tile kiln and street front occupation, 13th-14th century (Phase 2)

There were six samples with charred plant material, but concentrations of seeds are low. Cereal appeared in five samples and, where species could be identified, was dominated by wheat types. Where wheat grains could be differentiated bread-wheat appeared to be the most abundant. Wild species were seen in low numbers in four samples. Sample 4 had the only occurrence of stinking mayweed for the site.

4.3 Tile kiln, walkway and landing stage. 14th Century (Phase 3)

This phase had twelve samples. The majority of these produced cereal grains, wheat types being the most prevalent. Barley was seen in six samples and the naked variety was the most abundant. Low numbers of oat grains were observed in two samples, due to poor preservation it could not be established if these represented the cultivated or the wild variety. A single rye grain was observed in sample 13 (context 108).Wild weed taxa were seen in nine samples, including the only occurences of nipplewort and tussock sedge for the site. The presence of cereal grains and weed seeds in kiln samples (e.g. samples 10, 27, 39) could be the result of the use of dry crop waste as fuel.

4.4 Abandonment and reversion to pasture, 15th-18th century (Phase 4)

There were four samples, each with a low concentration of finds. The phase is not discussed further.

4.5 Gardens, 19th century (Phase 5)

There was only one sample, again with low ecofact concentration so is not discussed further. This paucity could reflect the use of the site as pasture during this time.

4.6 Car park and modern disturbance, 20th century (Phase 6)

Only one sample from these contexts produced grains. As only two grains were observed this phase is not discussed further. The lack of material would reflect the use of the site as allotment gardens and later as a car park for the adjacent racecourse.

Comparisons were only possible between phases representing the initial development of the 13th century tile kiln on the site, and its replacement by a later kiln in the 14th century. These are cursory due to the small number of ecofacts in most samples. Both phases were dominated by wheat type cereals, although the later phase had a wider range of taxa, including oat and rye. Similar wild taxa were present in both phases, although again phase 3 has a wider range. The wider range of taxa in phase 3 could simply be due to the fact that more samples were available for this phase. The wild/weed species seen in both phases are common weeds of disturbed ground. Fat hen is ubiquitous on sites of all periods.

5 CONCLUSION

The material recovered appears to represent “background” i.e. small amounts of charred plant material not associated with any specific crop related activity. As already suggested the material could be crop waste used as fuel, in which case it does indicate that a variety of crops and their associated weeds were growing in localities associated with the site.

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APPENDIX D: FAUNAL AND ENVIRONMENTAL EVIDENCE

APPENDIX D.3

THE WOOD SPECIES

by Maisie Taylor

1 INTRODUCTION

The wood from Warwick Bread and Meat close was examined at the offices of Northamptonshire Archaeology.

2 SUMMARY OF MATERIAL RECOVERED

2.1 Quantity of material

A total of five pieces of wood were examined.

2.2 Provenance

All the material is derived from the edge of the Saltisford Brook where they had formed part of a timber and stone feature believed to have been used as a landing stage.

2.3 Range and variation

Of the material that was examined, four were stakes of roundwood, the fifth was a larger piece of timber worked to a roughly rectangular profile.

2.4 Condition of material

The wood is generally not in first class condition, but it is clear that this is partly due to the circumstances of deposition and the abrasive action of the waterborne sands and silts in which it had been buried. Using the table developed by the Humber Wetlands Project (Van de Noort, Ellis, Taylor and Weir 1995 Table 15.1) the wood from Bread and Meat Close generally scores 2.

Two of the stakes had fractured during excavation but it was still possible to see that the original quality of the wood had been high. The large timber was 2m long, 0.14m wide and 0.125m thick. It had originally been worked to form a rectangular profile but wear and abrasion during its use and subsequent burial had resulted in an irregular profile along its length. The stakes all measured between 0.4.and 0.6m long and all had been sharpened to a point over the lower 0.2m. All were from round wood with no obvious signs of working. None were well enough preserved to show tool marks.

All five pieces of wood were of oak (quercus). Wood that grows naturally in woodland or forest grows more slowly than managed wood. Slow grown oak would normally be very hard, especially in the heartwood. The wood examined was all from coppiced or pollarded trees.

3 CONCLUSION

The wood of itself does not help answer any archaeological questions thrown up by the excavation. None of the material was suitable for dendrochronological analysis as no sapwood was preserved, and any dates would be imprecise.

Management of woodland was normal throughout the medieval period and use of coppiced or pollarded wood for revetting a structure such as the probable 'landing stage' would be the norm rather than an exceptional occurrence. Oak could have been selected for its known resilience to wear and tear and for its longevity when used in wet environments.

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APPENDIX D: FAUNAL AND ENVIRONMENTAL EVIDENCE

APPENDIX D.4

THE CHARCOAL

by Maisie Taylor

1 INTRODUCTION

The charcoal from Warwick Bread and Meat Close was recovered from environmental samples obtained from fills within the tile kilns and from a pit.

2 SUMMARY OF MATERIAL RECOVERED

2.1 Quantity of material

A total of three samples of charcoal was recovered weighing 0.27kg.

2.2 Provenance

All the material is derived from wet sieving of samples hand recovered from contexts within medieval tile kilns and an associated pit.

2.3 Range and variation

Of the material that was examined, there was evidence of ash, hazel and oak.

2.4 Condition of material

The wood is generally not in first class condition, but it is clear that this is partly due its use as fuel within the kilns and to the circumstances of deposition in the pit with angular and abrasive tile and gravels.

Much of the material was fragmentary with only a few larger pieces retaining their original form. The charcoal was all carbonised to a uniformly high standard. The original wood from which it was derived appears to have been of a fairly uniform size: roundwood from 20-30mm in diameter with no obvious signs of working.

3 CONCLUSION

Wood that grows naturally in woodland or forest grows more slowly than managed wood. The fast growth of coppiced or pollarded trees may be detected in the rings. The wood examined was from a mix of natural slow grown and managed ash, hazel and oak trees. All are common species used in the making of charcoal and burn effectively producing maximum heat with little ash or smoke.

Wood recovered elsewhere on site was from coppiced or pollarded oak. Both managed and wild wood sources were being exploited throughout the medieval period. In the limited sample examined, it was predominantly managed wood that was exploited with additional naturally grown wood being collected and used in the manufacture of charcoal.

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APPENDIX E

ARCHAEO-MAGNEMOTERY DATING by Mark Noel

1 INTRODUCTION

Open area excavation has been carried out by Northamptonshire Archaeology of a site at Bread and Meat Close, Warwick (Coordinates 52.28ºN 1.57ºW). The work has uncovered a medieval tile kiln, oven and a series of sandstone surfaces and walls, possibly indicating industrial activity fronting onto Friar Street. Two connected features were sampled: Context 1036 comprises the floor of the central chamber of the kiln (of latest date); Contexts 1005, 1008, 1010 and 1015 comprise the north, south, east and west walls of the south chamber (oldest part). It is conjectured that both phases of the tile kiln relate to the development of the Dominican Friary less than 100m to the south.

2 ANALYTICAL METHODS

Sampling was via the button method with orientation by fluxgate magnetic compass. Archaeomagnetic remanence measured using a Molspin fluxgate spinner magnetometer and stability assessed using stepwise, alternating field demagnetisation. Secondary components of magnetisation removed by partial demagnetisation. Mean of selected vectors computed (with unit weights) and corrected to Meriden. Comparison then made to the UK Master Curve to obtain a last-firing date. Further details of technical methods are contained in the Appendix.

3 RESULTS

Table 1: Kiln 1 samples

SAMPLE	J	D	I	AF	D	I	COMMENT
WAR 1							Too small
WAR 2	115.1	355.3	56.0	2.5	356.3	54.8	
WAR 3	175.7	5.2	56.3	2.5	2.5	55.9	
WAR 4	187.6	350.9	50.0	2.5	351.4	50.3	
WAR 5	267.1	1.9	55.2	2.5	0.4	54.7	
WAR 6	182.3	5.8	57.1	2.5	5.3	56.8	
WAR 7	37.8	8.0	60.0	2.5	8.1	60.3	
WAR 8	211.5	352.0	56.6	2.5	353.2	56.7	
WAR 9	227.2	2.3	50.5	2.5	2.0	50.7	
WAR 10	68.7	11.2	55.6	2.5	11.5	54.9	
WAR 11	49.2	18.3	56.0	2.5	19.8	56.1	
MEAN	**K=200.6 Alpha95=3.4 c.s.e.=1.8**				**2.8**	**55.4**	
MERIDEN					**2.8**	**55.5**	

D=declination, I=inclination, J=intensity in units of mAm-1x10-2. A.F.=peak alternating demagnetising field in milliTesla. K=precision parameter, c.s.e.=circular standard error, alpha95=semi-angle of the 95% cone of confidence. A correction of 9° has been applied to the declination to compensate for a local anomaly in the computed value of magnetic variation (3.5°W).

Estimated date range for last firing: **1340 AD – 1370 AD**

Table 2: Kiln 2 Samples

SAMPLE	J	D	I	AF	D	I	COMMENT
WAR 1							Too small
WAR 2	115.1	355.3	56.0	2.5	356.3	54.8	
WAR 3	175.7	5.2	56.3	2.5	2.5	55.9	
WAR 4	187.6	350.9	50.0	2.5	351.4	50.3	
WAR 5	267.1	1.9	55.2	2.5	0.4	54.7	
WAR 6	182.3	5.8	57.1	2.5	5.3	56.8	
WAR 7	37.8	8.0	60.0	2.5	8.1	60.3	
WAR 8	211.5	352.0	56.6	2.5	353.2	56.7	
WAR 9	227.2	2.3	50.5	2.5	2.0	50.7	
WAR 10	68.7	11.2	55.6	2.5	11.5	54.9	
WAR 11	49.2	18.3	56.0	2.5	19.8	56.1	
MEAN	**K=200.6 Alpha95=3.4 c.s.e.=1.8**				**2.8**	**55.4**	
MERIDEN					**2.8**	**55.5**	

D=declination, I=inclination, J=intensity in units of mAm-1x10-2. A.F.=peak alternating demagnetising field in milliTesla. K=precision parameter, c.s.e.=circular standard error, alpha95=semi-angle of the 95% cone of confidence. A correction of 9° has been applied to the declination to compensate for a local anomaly in the computed value of magnetic variation (3.5°W).

Estimated date range for last firing: **1300 AD – 1330 AD**

4 PRINCIPLES OF MAGNETIC DATING

Magnetic dating is based on comparing the remanent magnetisation in an archaeological structure with a calibrated reference curve for the geomagnetic secular variation. Two distinct methods have evolved. The intensity technique relies on obtaining estimates of the past strength of the Earth's magnetic field while directional magnetic dating uses archaeomagnetic measurements to derive the orientation of the geomagnetic vector in antiquity. Intensity dating can only be applied to fired materials which have acquired a thermoremanent magnetisation upon cooling from high temperatures (>600°C) while the directional method enables the age of a broader range of archaeological materials to be determined. For example, sediments and soils may have acquired a dateable 'detrital remanence' if magnetic grains had been aligned by the ambient field during deposition. The growth of magnetic minerals during diagenesis or as a result of manufacturing processes can also give rise to a magnetisation which may enable materials such as iron-rich mortars, for example, to be dated. However hearths, kilns and other fired structures are the most common features selected for magnetic dating primarily because their thermoremanence is generally strong, stable and sufficiently homogeneous that the ancient field can be determined with sufficient precision from a small set of specimens. An analysis of dated archaeomagnetic directions, largely from fired structures, together with lake sediment and observatory records has enabled a master curve for the UK region to be synthesised for the period 2000 B.C. to the present (Clark, Tarling & Noel, 1988).

For directional magnetic dating it is essential to obtain specimens of undisturbed archaeological material whose orientation with respect to a geographic coordinate frame is known. A number of sampling strategies have evolved, enabling specimens to be recovered from a range of archaeological materials with orientations being recorded relative to topographic features, the direction of the sun, magnetic or geographic north. For this feature the miniaturised 'button method', illustrated overleaf, was employed Clark et al, 1988). Modern archaeomagnetic magnetometers are sufficiently sensitive that only small volumes of material (~1ml) are required for an accurate remanence measurement (Molyneux, 1971).

This has the advantage of reducing the impact of sampling on archaeological features - of particular significance if they are scheduled for conservation and display. For dating, all archaeomagnetic vectors are transposed to Meriden, the reference location for the UK Master Curve (Noel & Batt, 1990, Fig 32).

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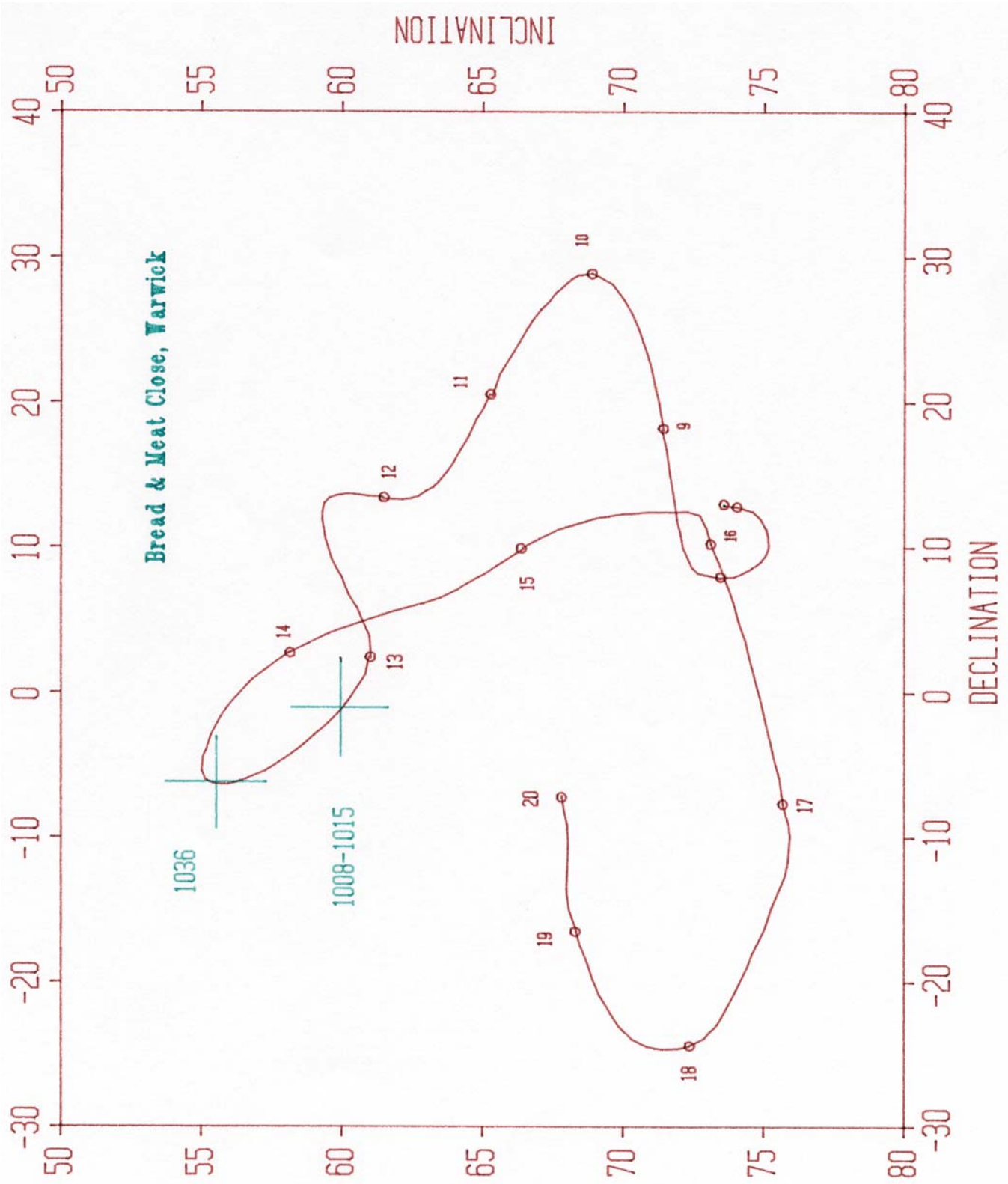

Comparison between mean archaeomagnetic vectors in the 2 parts of the kiln with the UK Master Curve 600AD.to present. Numbers refer to the date in centuries.