

## Excavations at St Andrews, Castlecliffe, 1988–90

John H Lewis\*

with contributions by Sheila Boardman, David Caldwell, Stephen Carter, George Haggarty, Sheila Hamilton-Dyer, John Higgitt, Nicholas N McQ Holmes, Finbar McCormick, Coralie Mills, Helen Smith & Robert Will

### ABSTRACT

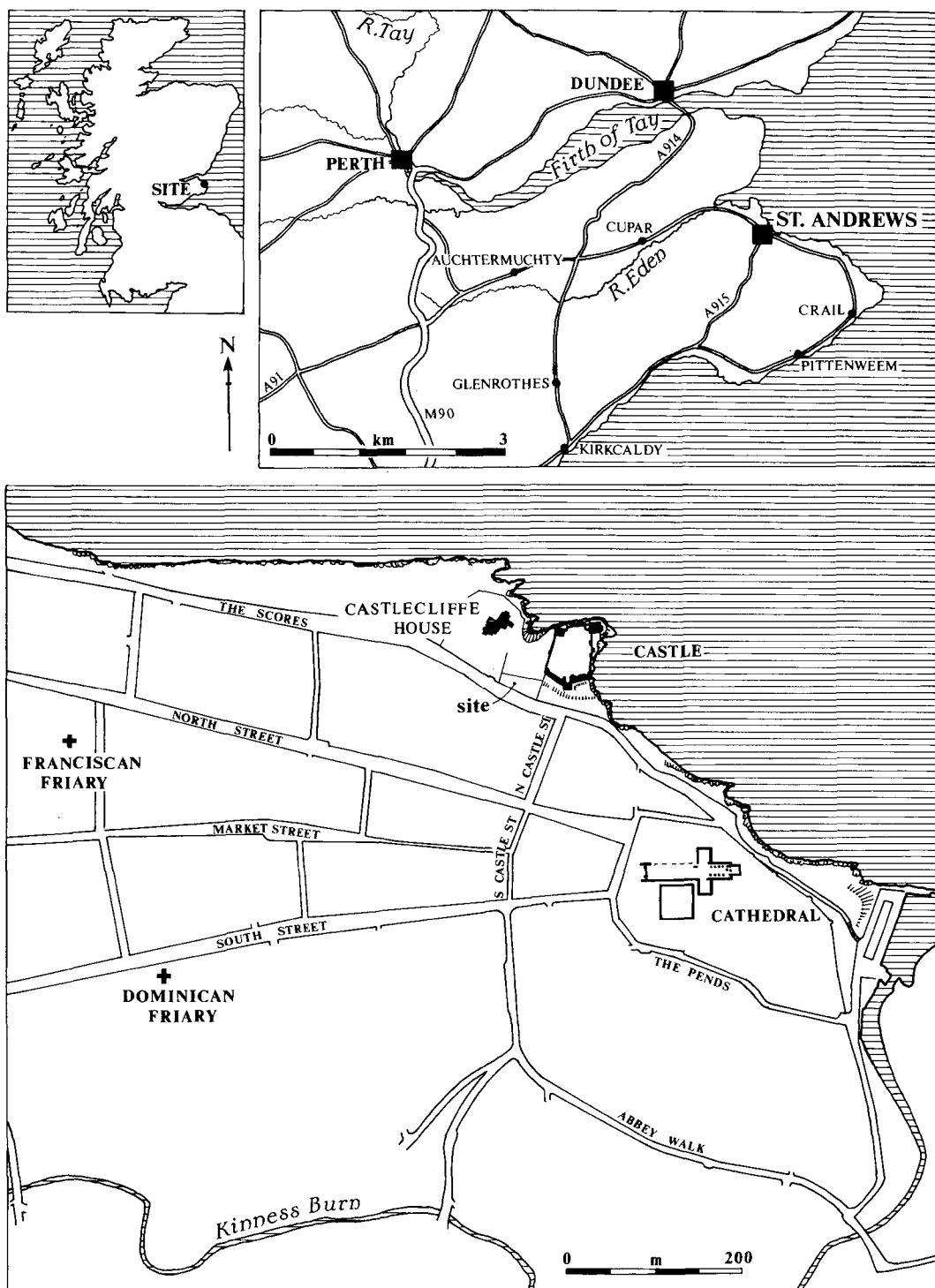
*Excavation to the immediate west of St Andrews Castle revealed considerable evidence of occupation (although probably not continuous) dating from c 1200 to at least the mid-16th century. Most, if not all, of the structures uncovered were associated with the medieval burgh, not the castle. The first timber buildings were replaced by a tannery in the 14th century, probably when the castle was in ruins and unoccupied. In turn, the tannery gave way to two further phases of residential buildings, either of masonry or at least set on stone foundations. The latest of these structures were set against a new boundary wall, all probably dating to the mid-16th century when the adjacent road, the Scores, was realigned. From an earlier period, Beaker sherds indicate prehistoric settlement at Castlecliffe, though no associated features could be identified. The project was funded by Historic Scotland (former SDD/HBM).*

### THE SITE (ILLUS 1–3)

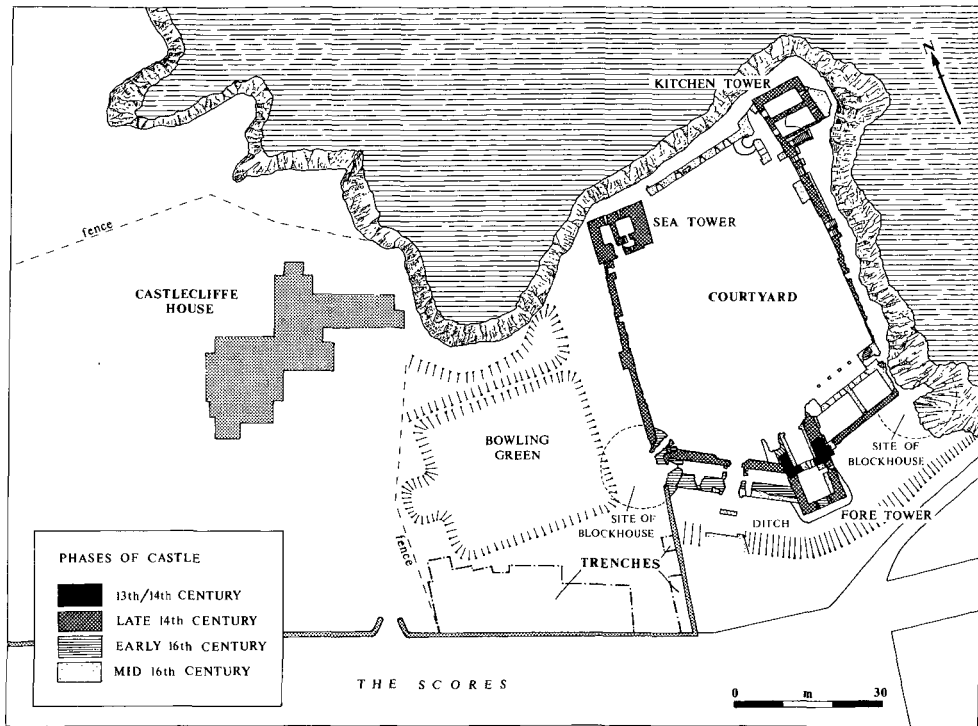
The site (NGR: NO 512 169) was located to the immediate west of St Andrews Castle which stands on a rocky headland on the north-east side of the town on the east coast of Fife. Although the cliffs once offered the castle protection on its north and east sides, the friable sandstone has suffered serious erosion, enabling the North Sea to claim several of the castle buildings, particularly on the east side of the enclosure. The bedrock forming the cliffs is a calciferous sandstone of the Dinantian (Lower Carboniferous) Limestone Series (Cameron & Stephenson 1985, fig 1) which is overlain by raised beach deposits of gravel and sand. These comprise reddish-brown, slightly stony sand and paler, stone-free sand which form the parent material for the soils above and which are believed to have been quarried by the builders of the castle, and perhaps by some of the residents of the nearby burgh.

The excavation site once formed part of the garden of Castlecliffe House, built some 100 m west of the castle by the Purdie family in 1870. Although Castlecliffe has been the property of the University of St Andrews since 1972, the relevant part of its grounds was used as a fruit garden until shortly before the excavation started. To the immediate north of the site was a sunken area, an erstwhile bowling green, and to the south was The Scores, a road which runs east/west across the northern edge of the town, following roughly the same route as the medieval Swallowgait.

\* Scotia Archaeology Limited, 29 Hillside Crescent, Edinburgh EH7 5EF



ILLUS 1 Location of the Castlecliffe excavation. (Based on the Ordnance Survey map © Crown Copyright)



ILLUS 2 Plan of the excavation site and St Andrews Castle (after RCAHMS 1933)

## HISTORICAL SUMMARY

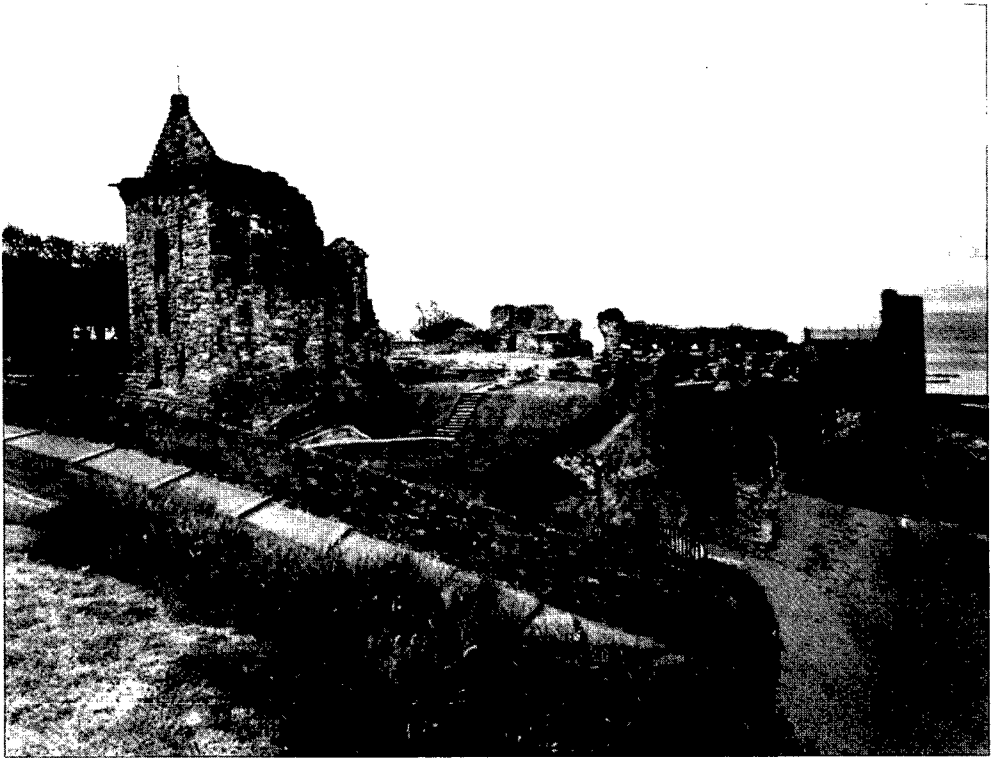
### THE CASTLE

The castle, the residence of the bishops (and later the archbishops) of St Andrews, has been assumed by many writers to date from c 1200 (MacGibbon & Ross 1889, 333; Cruden 1958, 3). This date seems to be based entirely on the works of Andrew of Wyntoun whose chronicle was not completed until about 1426. Wyntoun quotes thus:

This Rogere  
 The Earle's son was of Laycestere  
 The castelle in his dayis he  
 Founded and gart bigged be  
 In Sanct Andrewys  
 (Laing 1872, 8)

Before 1200 the bishops had probably resided firstly with the early monastic community of Culdees and later within the cathedral priory (Leighton 1840, 33; Lyon 1843, 88).

Few noteworthy events appear to have occurred within the castle until the Wars of Independence when it suffered at the hands of both the English and the Scots. Despite several attempts to repair its fabric during respites in hostilities, the castle spent most of the 14th century in a state of ruin and very little of the original (?early 13th-century) castle now remains. Possibly the only stone-



ILLUS 3 St Andrews Castle, from the east

work that might conceivably survive from Bishop Roger's day is part of the primary entrance which was subsequently incorporated into a larger entrance through the foretower during a rebuilding programme by the English in 1336. The following year the castle was demolished after a three-week siege by a Scottish army led by Sir Andrew Moray (*Chronica clvi*). It was not until Bishop Walter Traill came to office in 1385 that a comprehensive programme of rebuilding was begun; this work was completed before Traill's death in 1401. The surviving layout of the castle largely reflects his reconstruction work. Traill built a range of buildings (now mostly lost to the sea) on the east side of the courtyard; and curtain walls (probably with ranges set against them) on the west, south and perhaps the north sides of the enclosure; and had the south curtain pierced by a new entrance to replace the one within the foretower. The kitchen tower and sea tower, in the north-east and north-west angles of the enclosure, may also belong to this period as perhaps does the defensive ditch outside the south and west walls. The south section of the ditch has been emptied in modern times whereas its western arm remains infilled.

After the completion of Traill's work, there followed more than a century of comparative peace during which time the castle's fortifications and amenities were further improved. By the early 16th century there was an outer courtyard (perhaps including a garden) to the west of the castle. At about the same time the castle's landward defences were significantly upgraded in anticipation of the troubled times that were to follow. Circular blockhouses (gun towers) were built at the south-east and south-west angles of the enclosure (although only traces of the westernmost of these now

survive); and, shortly after, the south front was reinforced by the addition of a new curtain wall outside the original one.

St Andrews was the scene of protracted conflict during the religious upheavals of the mid-16th century. In 1547, after a year-long siege, a combined army of Scots and French captured the castle from the Protestant garrison who had occupied it after assassinating the archbishop, Cardinal David Beaton, and whose presence had been endorsed by King Henry VIII of England. Thereafter the castle's importance gradually waned even though both James VI and Charles I were keen to prevent its decay. In 1645 Parliament ordered the town to repair the castle (APS 481), but nine years later some of its masonry was used to repair the harbour walls (Lyon 1843, 54). A short time later, the castle appears to have become a common source of quarried stone (Fleming 1920, 238–9).

## THE BURGH

By the eighth century (and perhaps much earlier) an ecclesiastical community, with its own abbot, had been established at Kilrimont (Duncan 1975, 71). The precise location of this foundation is uncertain although it may well have been sited between the Kinness Burn and the castle rock (Cant 1971, 3). There has been speculation as to the whereabouts of a lay settlement associated with this community, the area centred on North Castle Street being a favoured candidate (Simpson & Stevenson 1981, 21).

In 1144, during the period of office of Bishop Robert, an Augustinian priory was founded and the long-established community of Culdees absorbed into it. By this date Kilrimont, whose name was changed to St Andrews in honour of its patron saint, had been granted burgh status although it did not become a royal burgh until 1620. The cathedral was founded in c 1160 although its church was not consecrated until 1318.

From the mid-12th century the burgh is thought to have developed along an east/west alignment with North and South Streets converging on the cathedral at the extreme east end of the town (Cant 1976, 12). Over the succeeding centuries expansion continued westwards, its limit in the early 15th century perhaps being indicated by the positions of the Franciscan and Dominican friaries, about 600 m from the cathedral. During the 15th and 16th centuries development continued at a relatively slow pace, culminating in the layout illustrated in Geddy's plan of c 1580 (illus 45). There were few changes to this late medieval layout until the 19th century when improvements were carried out within the heart of the burgh and the town expanded further westwards.

## THE EXCAVATIONS

### EXCAVATION STRATEGY

In 1988 part of the garden of Castlecliffe House was purchased from the University of St Andrews by the Historic Buildings & Monuments (HBM) division of the Scottish Development Department, predecessors of Historic Scotland, to accommodate a new visitor centre for the castle. Entry to the monument was to be through a new visitor centre leading directly from The Scores. The newly acquired area was defined by a 19th-century garden wall to the south; the castle's west curtain and another garden wall to the east (this wall has since been demolished); a new wooden fence to the west; and the sea cliffs to the north. The visitor centre was to be built on the higher ground (approximately 50 m east/west by 15–25 m north/south) south of the bowling green; although its precise location was dependent on the quality and, more importantly, the extent of the archaeological remains surviving in that area.

A geophysical survey carried out early in 1988, by Geophysical Surveys of Bradford Ltd for HBM, suggested that there was little of archaeological interest within the bounds of the former

garden. Exploratory trenching towards the east end of the site proved considerably more fruitful, the findings being important enough to warrant a more thorough investigation. Subsequently, the excavation had to be extended considerably in an attempt to locate a site where the new visitor centre could be built without endangering any surviving archaeological remains. As it proved impossible to identify such a location, it was decided to excavate completely most of the area to the south of the bowling green. The main trench, which was somewhat irregular in outline, measured 40 m east/west by approximately 13 m wide. In addition, two trenches were opened in the heavily wooded area against the east garden wall to test the archaeological potential of that part of the garden. Ultimately, the visitor centre was built towards the west end of the site, allowing those structures uncovered farther east to be preserved.

The main excavation was carried out by the writer in five separate stages between October 1988 and February 1990. Although this approach was unavoidable, it proved far from perfect, particularly when the archaeological record at Castlecliffe was so complex, yet severely disturbed and truncated. None of the excavated structures could be completely defined on plan. Indeed, none of the masonry walls could be traced over its full length; and few of the numerous features and deposits associated with those structures could be interpreted with accuracy.

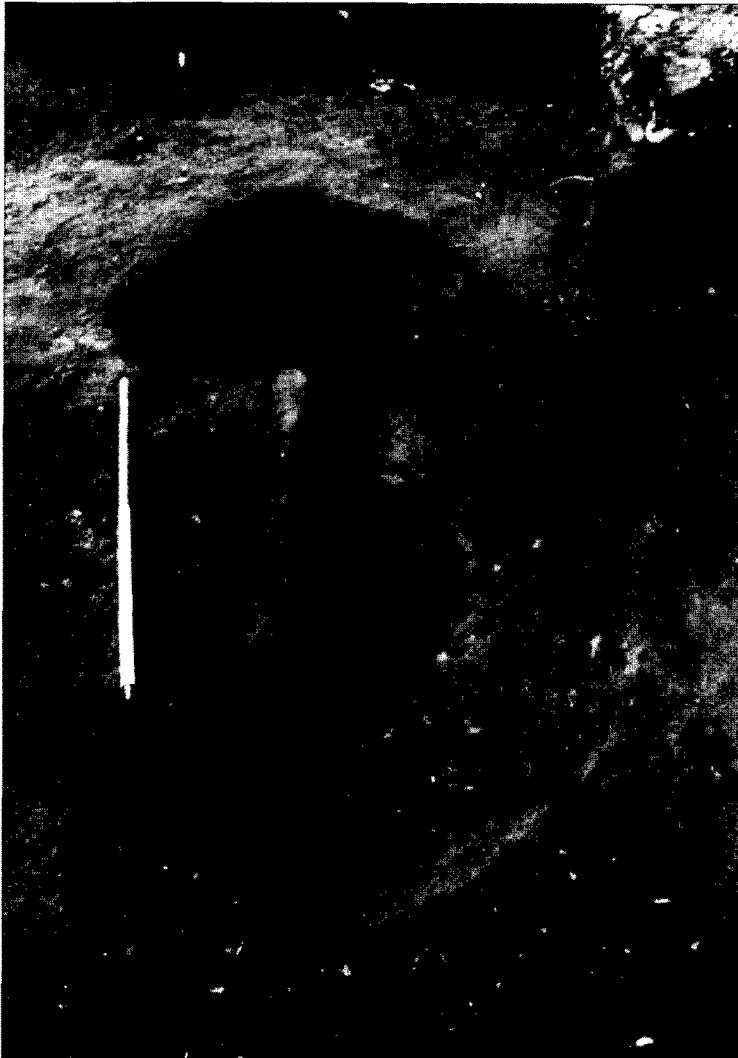
The topsoil, a very humic, sandy loam, increased in depth from 0.30 m adjacent to the south garden wall to 0.60 m at the north end of the trench, echoing the gentle slope towards the cliff. Below the topsoil there were numerous pits, trenches and spreads of disturbed materials derived from recent gardening activities. These modern materials overlay an abundance of evidence relating to the medieval occupation of the site. Unfortunately, each phase of building had been preceded by a thorough levelling of the area; resulting in what amounted to an array of truncated deposits and features, many of which defied interpretation. Nevertheless, it was possible to identify the remains of several timber structures; a medieval tannery; at least three masonry buildings belonging to two or more periods of occupation; and several later stone structures.

It is not feasible to group all of the excavated structures, let alone the numerous smaller features and deposits, into neatly defined phases of occupation. Notwithstanding, it is possible to distinguish five periods of activity – one of them prehistoric, the other four medieval – although the boundaries of some of those divisions may not be clear-cut. Furthermore, although the site was occupied between the early 13th and 16th centuries, it is not at all clear whether occupation was continuous or if the area lay derelict for some of that time. The periods of occupation were:

- Period 1: Early Bronze Age
- Period 2: 12th/13th century (first timber buildings)
- Period 3: 14th century (the tannery)
- Period 4: Late 14th/15th century (first masonry buildings)
- Period 5: 16th century (later masonry structures associated with the realignment of Swallowgait, the predecessor of the Scores).

#### PERIOD 1: EARLY BRONZE AGE (ILLUS 4)

The earliest indication of human activity at Castlecliffe consisted of the lower portion of a cordoned beaker, of late Neolithic/Early Bronze Age date, that had been crushed *in situ* (not illustrated). This was recovered from one of several crescentic and sub-circular pits cut into the undisturbed glacial sand towards the east end of the excavation site. With the exception of one of these features (partially exposed during the excavation of Period 3 Pit B), they were visible only after a layer of disturbed



ILLUS 4 One of the Period 1 tree-throw holes fully excavated

subsoil had been removed. They measured typically 2.4–2.7 m long, 0.8–1.5 m wide and 0.15–0.50 m deep. Each was orientated approximately east/west with its most curved side to the south. They were all infilled with similar materials: redeposited sands exhibiting varying degrees of lensing and humic staining.

These features, although initially thought to be artificially cut, are now interpreted as craters formed by the wind-felling of coniferous trees (illus 4). There was no indication as to how or why the beaker came to be within one of these tree-throw holes. It was located near to the surface of the pit, which is probably why its rim had been lost. No other sherds from this vessel (or from any contemporary object) were retrieved from anywhere on the site. It is difficult to prove that the beaker

had been emplaced intentionally although it is highly unlikely that a near-complete vessel could have been transported into the pit by natural means. Despite the argument that such tree-throw holes were used on occasion as shelters, the evidence at St Andrews was inconclusive.

#### PERIOD 2: 13TH CENTURY (ILLUS 5, 6, 7)

Period 2 represents the earliest medieval occupation identified on the site: a few sherds of pottery retrieved from some Period 2 features suggest that this phase of occupation dates from the early 13th century. One of the striking characteristics of this period was the alignment of its buildings, an alignment shared with structures dating from Periods 3 and 4. All such structures are thought to have been built alongside, or parallel to, a road. This early road is thought to have been Swallowgait, an early thoroughfare which was almost deserted by the early 18th century (Simpson & Stevenson 1981, 6) and 'a public walk, between the walls of gardens and fields' at the end of the same century (Stat Acc 1794, 190). During the following century this road re-emerged as The Scores, albeit at an angle of about 6° from its predecessor, particularly near to the castle.

It was possible to distinguish the outlines of three timber structures, each of which may have been a separate unit or all of which could have formed elements of the same building. Apart from a small patch of metalling (perhaps the remnant of a floor) the surviving evidence of Structures 1 and 2 comprised only post-pits and beam-slots. No trace of walling materials survived the destructive effects of later developments; and there was no occupation debris nor internal features such as hearths (except in Structure 3) to help interpret these structures.

In the vicinity of these buildings there were numerous post-pits which could not be ascribed to any definable structures. Many of them appeared to post-date Period 2 although some are thought to be contemporary or near-contemporary with this phase of the site. The implication is that this area may have been occupied on a continuous basis over a lengthy period.

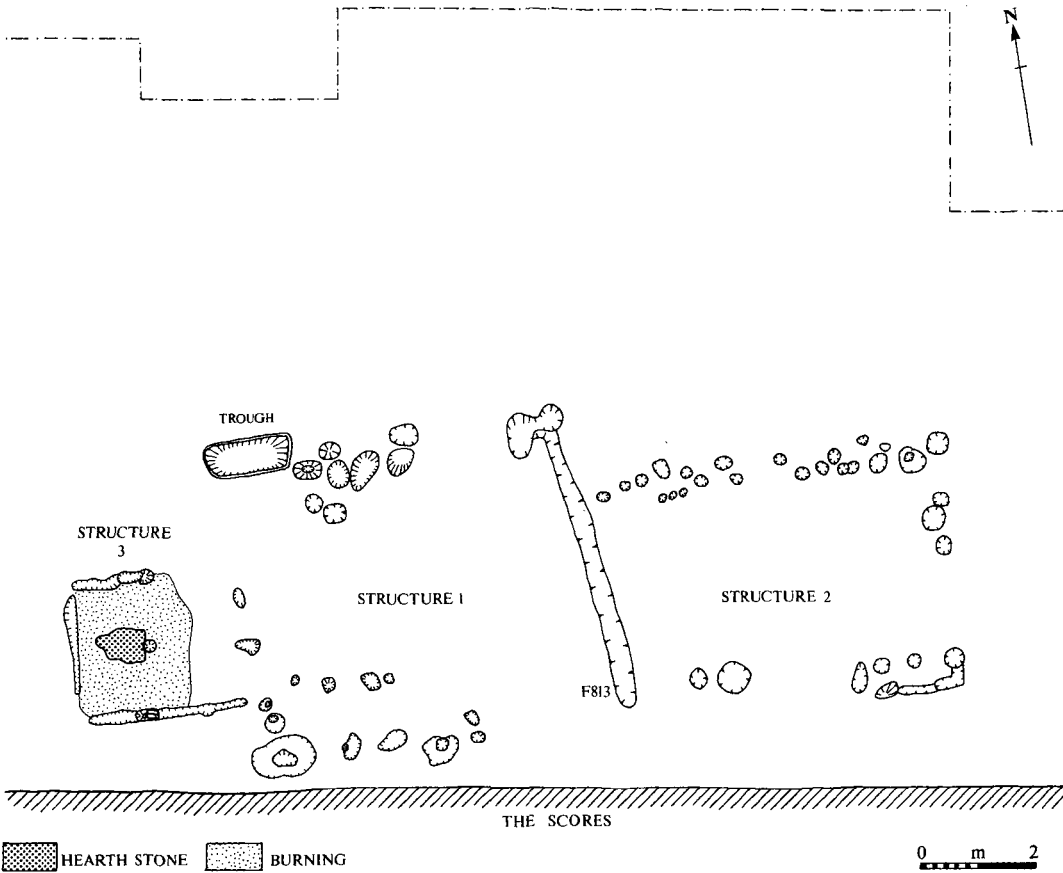
Structures 1 and 2 appeared to have shared a wall, the evidence of which survived as a beam-slot (F813), with very sharply defined sides and measuring 5.0 m long (north/south), 0.25–0.30 m wide and 0.20–0.30 m deep. What was at first thought to be the carbonized remains of its sill-beam proved to be a heterogeneous collection of small roundwood, derived from several species of trees, in a soil matrix containing several varieties of cereal grains, straw and fragments of moss and heather. This assemblage of charred materials is interpreted as hearth refuse. At the north end of the slot was a double post-pit which, although it could not be dated, is thought likely to be a Period 2 feature.

#### *Structure 1*

Defined on its east by the beam-slot and on its other sides by incomplete rows of post-pits, this rather small structure measured approximately 5.8 m east/west by 4.5 m wide internally. Only four pits remained on the north side of Structure 1, its north-west corner having been disturbed when a large, clay-lined trough was inserted, perhaps later in Period 2. There were two rows of post-pits on the south side of the building; it is not known whether the inner line was associated with Structure 1 or had belonged to another building which could not be further defined. Both rows appeared to be contemporary with other Period 2 features although this could not be confirmed. At the south-west corner there was a large, oval post-pit containing a stone post-pad.

A small, fragmentary spread of small pebbles and gravel towards the north side of the building was the only surviving remnant of what may have been a floor although it is just possible that this material belonged to an earlier, undefined period of activity. There was no occupation debris upon the metallised surface or anywhere else within the limits of Structure 1 other than that within the beam-slot associated with its east wall.





ILLUS 5 Plan of Period 2 structures and features

### Structure 2

The west wall of this building was represented by the beam-slot which it shared with Structure 1, its remaining three sides being defined by rows of post-pits which were far from complete. On the evidence of excavation, Structure 2 measured approximately 5.5 m east/west by 3.3 m wide internally.

On its north side was a double line of post-pits, perhaps signifying there had been a rebuild or that one row represented the line of the wall and the other the roof supports. The east and south sides of the building were defined by single, incomplete lines of post-pits, one or both of the gaps perhaps indicating the position of a doorway. At the south-east corner of the building there were the fragmentary remains of narrow beam slots, one of which was cut by one of the post-pits associated with the east wall, again suggesting that Structure 2 has been at least partly rebuilt at some stage.

### Structure 3

Situated immediately west of Structure 1 were the remains of a very small (2.4 m by 2.0 m), flimsy timber structure. Its south, west and north walls were represented by narrow beam-slots, the latter surviving to a length of only 1.25 m, perhaps indicating the position of a door. Its east side was defined only by the limit of materials

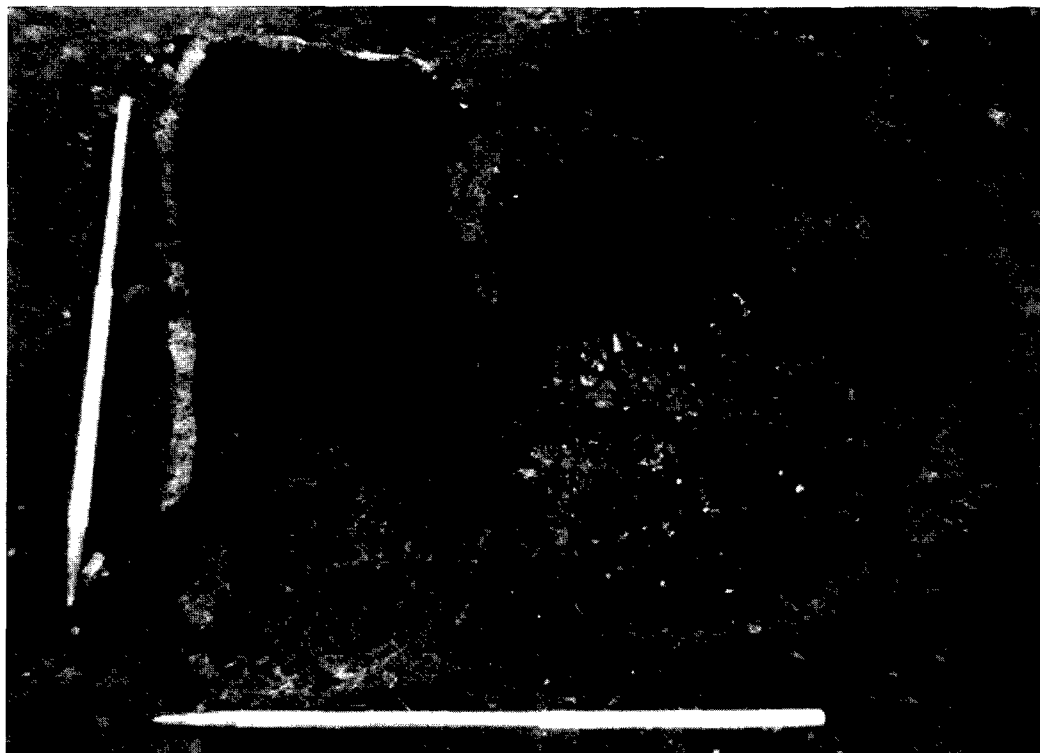


ILLUS 6 Structure 3, viewed from the west. The eroded hearth is in the centre of the frame; the beam slots for the south and west walls are on the right-hand side and foreground, respectively

contained within the structure's interior and by the western edge of the adjacent Structure 1. The walls themselves could have comprised timber planking or, less likely, wattle set into sill-beams, although no trace of such materials was recovered. What appeared to be post-pits midway along its north and south walls and one near the north-east corner of the structure may indicate the locations of supports for what was probably only a very light roof.

In the centre of Structure 3 was a hearth measuring 0.70 m by 0.52 m and composed of several small slabs of sandstone set into a mix of sand and clay within an oval pit. Over the hearth and covering what is assumed to be the whole area of the structure, were spreads of burnt loam and clay coloured black and red from the effects of heat. At some stage the hearth, which had been badly damaged by heat, had been replaced with cruder stones set directly upon the original masonry. On the east side of the hearth was a small post-pit, 0.23 m in diameter. The post it would have contained appeared to be contemporary with the hearth, suggesting that it may have been a sweep.

It is not clear whether this small timber structure had been free-standing or contained within another building whose location was not identified. Secondly, there were few clues as to its function: there were no indications of metalworking or of any other industrial activity within it although such evidence may have been lost along with its floor if, indeed, it had had one. Notwithstanding, a clay-lined pit or trough located about 2 m north of Structure 3 may have been associated with it although the stratigraphic links had been severed by the Period 5 robber trench F150. The trough was roughly rectangular and measured 1.60 m by 0.67 m and was



ILLUS 7 The Period 2 clay lined trough and, to its right, a circular pit of uncertain date; viewed from the west

0.40–0.60 m deep; its lining of grey-green clay, which was still intact, is believed to have provided a waterproof lining. Its function is not clear; it could have been used within a kitchen or, more likely, was associated with some industrial process, perhaps to quench tools. The trough could have been an external feature as there were no indications of any building in which it could have been housed. However, it is possible that all evidence of such a building could have been swept away by later development.

#### PERIOD 3: 14TH CENTURY (ILLUS 8–14)

This was a period of industrial activity during which the site was used principally – if not entirely – as a tannery. This works was evident only on the north side of the excavation area where some of the tannery's larger features were revealed just below garden soil which otherwise lay directly over the subsoil. Hence most of those features could not be fixed on stratigraphic grounds into the general sequence of excavated levels. However, their morphology and the nature of the numerous artefacts associated with them present a strong case for inclusion within Period 3.

It was usual for such a noisome process as tanning to be banished to the periphery, or even beyond the limits, of a burgh. While the site at Castlecliffe may have been just outside the medieval burgh, its proximity to the castle may seem unusual. However, as is discussed below, the tannery is thought to have been in operation during a period when the castle was unoccupied or at least when the bishop(s) did not reside within its walls.

The principal structure suggested by the evidence of excavation appears to have been a long timber wall (Structure 4), defined by a series of large post pits, which was either one side of a very large building or simply the wall of an enclosure. To the north of this wall were four large, rectangular or sub-rectangular pits (Pits A, B, C & D), thought to have been associated with some stage of the tanning process, perhaps for washing hides. Two smaller pits (E & F) may have had similar functions whilst other pits uncovered during the excavation could have been simply refuse pits for bones, hooves and other debris discarded during the preparatory stages of leather processing. One such pit (Pit G) was at the extreme west end of the site where it overlay a post-pit that may have housed one of the supports for Structure 4. This apparent stratigraphic contradiction was not resolved. There were, however, several pits that did not fit easily into any category of date or function: these are described below as 'Features of Uncertain Date'.

Towards the west end of the tannery, and perhaps associated with it, were several linear slots, probably for sleeper beams. The interpretation of these slots is far from conclusive and it is conceivable that they predate the tannery. Nevertheless, the slots as well as the pits were distinguished by the assemblages of pottery within them, all of which pointed to their being infilled during the 14th century.

#### *Structure 4: the tannery building*

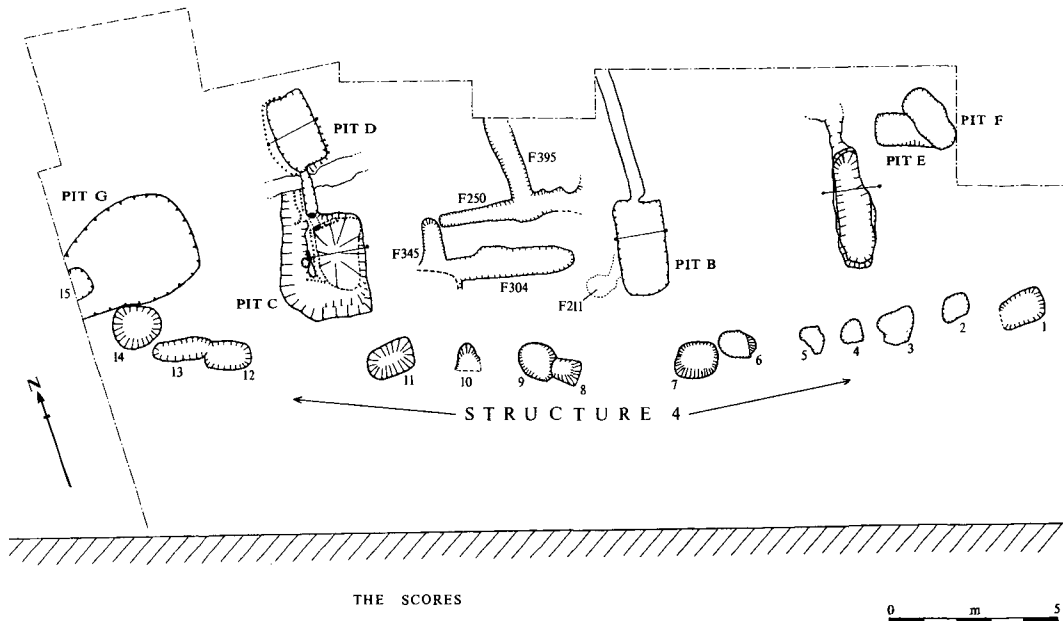
Structure 4 was not fully defined, its overall ground plan and dimensions remaining unknown. The material evidence for it consisted of a line of 11 post-pits, extending east/west over a distance of 38 m. A further four, similar post-pits extended north-west in an arc from the west end of this line although it was not clear whether the two groups were associated: if they were, then Structure 4 was a bow-walled building at least 56 m long. Indeed, it may have been even longer because its east end extended beyond the limits of excavation. It is not known whether there had been a parallel wall farther north because the north end of the site had been comprehensively landscaped during the 19th century, all post-glacial deposits having been removed and replaced by garden soil.

While Structure 4 was poorly defined, the relationship between the line of post-pits and the tannery pits seemed reasonably secure: Pits A, B and C were equidistant (1.8–2.0 m) from the timber wall; and the artefacts within all of these features were of similar dates. Although this is not positive proof of an association, the circumstantial evidence is quite compelling.

The dimensions of these post-pits are as follows:

Post-Pit	Width		Depth
	top	bottom	
1	1.40 × 0.94 m	1.04 × 0.70 m	0.21 m
2	0.92 × 0.75 m	0.92 × 0.62 m	0.23 m
3	1.24 × 1.00 m	1.16 × 0.92 m	0.31 m
4	0.72 × 0.72 m	0.66 × 0.66 m	0.27 m
5	0.90 × 0.60 m	0.86 × 0.56 m	0.18 m
6	1.10 × 0.76 m	0.88 × 0.70 m	0.52 m
7	1.35 × 1.06 m	0.94 × 0.72 m	0.40 m
8	0.86 × 0.64 m	0.64 × 0.40 m	0.31 m
9	1.16 × 1.06 m	1.02 × 0.76 m	0.74 m
10	0.85 × 0.80 m	0.48 × 0.52 m	0.36 m
11	1.66 × 1.02 m	1.20 × 0.30 m	0.55 m
12	1.45 × 0.93 m	1.16 × 0.50 m	0.33 m
13	1.78 × 0.70 m	1.48 × 0.30 m	0.20 m
14	1.40 × 1.20 m	0.82 × 0.78 m	0.36 m
15	0.92 × 0.50 m	0.83 × 0.46 m	0.72 m

At the excavated level, these post-pits cut only the subsoil, the overlying levels having been subject to severe disturbance during later activities. With the exception of post-pit 6 where the impression of the post-pipe was still visible, there was no evidence of the posts themselves, which presumably were removed after the tannery was abandoned. Only four of the post-pits (4, 5, 10 & 11) had packing stones within them; and in only one (4)



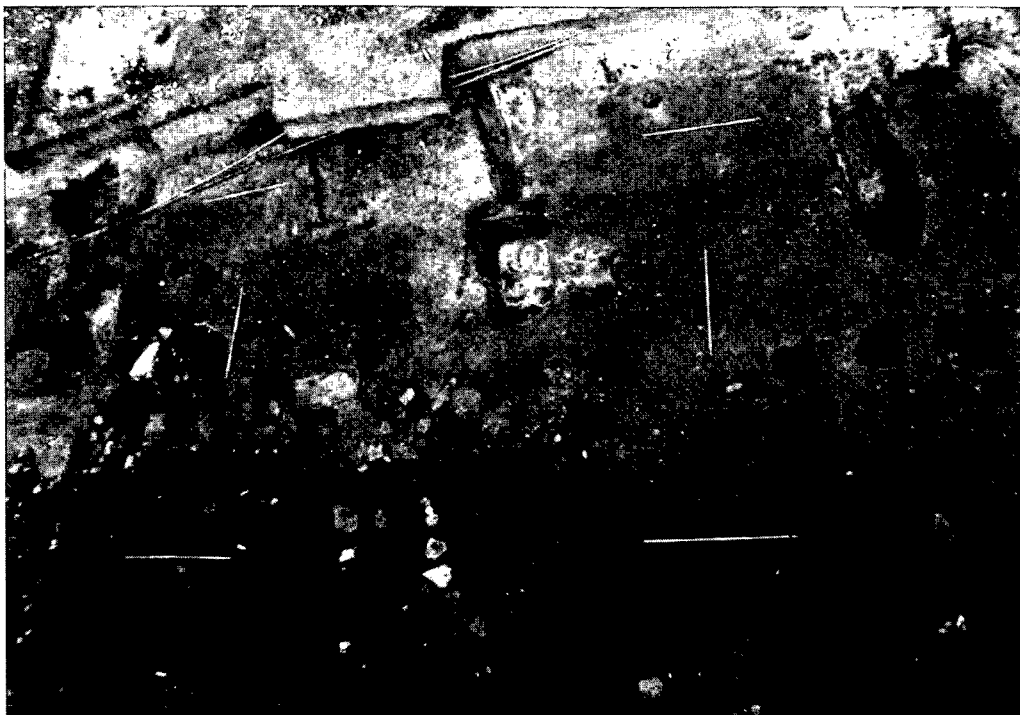
ILLUS 8 Plan of the Period 3 tannery

was there a post-pad at its base. In general, the post-pits were fairly evenly spaced (1.2–2.4 m apart). A much wider gap of 4.0 m between post-pits 7 and 8 and the close proximity of post-pits 6 and 9 to them may indicate the position of an entrance. There was no surviving evidence of what had filled the spaces between the posts, such evidence perhaps having existed only at a higher level and consequently having been destroyed during later construction and demolition work and the more recent gardening. There were possible stake-holes between some of the post-pits (particularly between pits 2 and 3, 3 and 4 and 5 and 6) although at least some, if not all, of these small features could have been associated with earlier phases of the site.

Nothing remained of a recognizable floor surface. In all probability, there would have been a flagged, cobbled, clay or even timber floor, either over the whole building or simply covering those parts adjacent to the main working areas of the tannery. Whatever the floor had comprised, it was probably removed when the tannery was abandoned.

### *The tannery pits*

Arranged towards the northern edge of the site and cut into the sandy subsoil were four large, rectangular or sub-rectangular pits (A–D) of similar although far from identical dimensions. All were aligned north/south. Two of the pits (B & D) bottomed onto bedrock; the bases of the other two were simply sand and gravel. Pits C and D were connected by a narrow channel, 1.4 m long. Channels also extended northwards from the tops of Pits A and B, the former petering out a short distance from the pit while the latter continued beyond the trench edge, 4.0 m from its source. These channels, which appeared to drain away into the sandy subsoil, probably acted as overflows, perhaps ensuring a gentle flow of water within the pits (Jenkins 1973, 9). Although these pits were thought to have been associated with the workings of a tannery, their precise functions were not determined. Perhaps the most likely interpretation is that they were washing pits used to remove blood, dung and salt after other unwanted materials had been scraped from the hides; or soaking pits where the skins were



ILLUS 9 The site, viewed from the south, midway through the excavation. The Period 3 tannery pits are towards the top of the frame

softened before they were transferred to other pits where the tanning process was carried out. The pits were all infilled with midden-like deposits although these materials differed somewhat in nature. There were variations in the concentrations of animal bones and of the quantities of pottery within the four pits; although the ceramic assemblages all seemed to date to the 13th and 14th centuries. The sides of Pits A, B and D were near-vertical and showed little evidence of erosion which, given the sandy nature of the subsoil, suggests they had been lined and that the lining had been removed shortly before the pits were infilled. There was no trace of timber lining against the sides of any of the pits, perhaps because it had been reused elsewhere, or, less likely, because they had decayed *in situ* without leaving any trace. The sides of Pit C were quite irregular both in outline and in profile; and it is unlikely to have been timber-lined.

**Pit A** This, the easternmost of the four large pits, was also the longest and narrowest, measuring 3.65 m east/west, 0.85–1.10 m wide and 1.10 m deep. Its ends were rounded and, although the edges were far from straight at the top of the pit, its sides were reasonably vertical, showing little sign of erosion. The channel, 0.23–0.35 m wide and 0.25 m deep, that ran from the north end of Pit A did not appear to have linked with any other pit, merely petering out after less than 1 m. Other than the gravel fraction which increased with depth and the humic content which decreased accordingly, there was little to differentiate between the sandy loams that infilled the pit. Within these deposits were large amounts of pottery and a few mammal and fish bones; although considerably less bone than in the other pits in this group. Towards the top of the pit there were several large sandstone boulders overlain by rough flags, used probably to stabilize the ground prior to a later campaign of building.



ILLUS 10 Pit A fully excavated, from the north. The overflow from the pit is just visible in the foreground

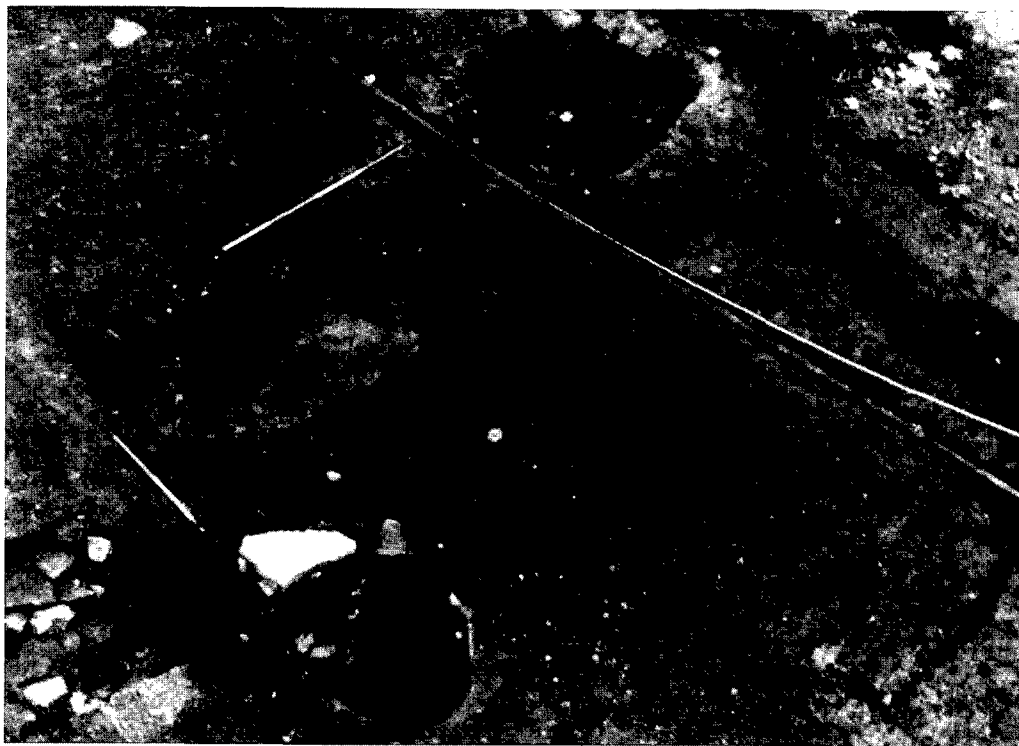
**Pit B** This rectangular pit was 2.80 m long, 1.55 m wide and had been cut through the subsoil as far as bedrock, a total depth of 1.15–1.25 m. The sides of the pit were vertical, an indication that it had been lined. The bedrock at the base of the pit was partly covered with a plastic, blue-grey clay which also extended 0.30 m up the sides of the pit. On the evidence of a mixed deposit of clay and sand that overlay the clean clay, this lining originally extended further up the sides of the pit but had fallen in immediately before or during backfilling. It is unclear whether the pit had been lined solely with this clay or if there had been some planking around the sides. There was no trace of this type of clay in any other pit; or anywhere else on the site. Small lenses of sand and gravel against the sides of the pit may have been the result of erosion; alternatively, such materials may have been placed deliberately between the (?timber) lining and the pit walls. The linear channel which extended from the north side of Pit B had a uniform width of 0.50 m and was 0.30–0.60 m deep; the absence of erosion products within the channel suggested that it, too, had been lined. Adjacent to the south-west corner of Pit B, and linked to it by a short channel, was a shallow, sub-rectangular scoop (F211), perhaps for a timber chute or some similar device for conveying water into the pit. The water source remains unknown, although it is argued below that wells were probably in operation. Iron panning was in evidence at several points in the sides of the pit. The pit had been infilled with several lenses of pale and mid-brown, humic, sandy loam as well as a substantial deposit of lighter, sandy soil. There were no finds within the latter whereas the humic soils contained very large quantities of pottery, mammal bones and fish bones. Conjoining pottery sherds were distributed throughout these fills (some being pressed into the clay that lined the base of the pit), suggesting that the pit had been infilled in a more or less single operation and supporting the evidence of the pristine condition of its sides.



ILLUS 11 Pit B fully excavated, from the north. The overflow is clearly visible, extending northwards from the pit. Note the bedrock at the base of the pit

**Pits C & D** These two pits, which may have functioned somehow as a single unit, were connected by a narrow channel, similar to those extending from the north sides of Pits A and B. Although the edges of Pit C were rather indistinct at its top, it measured approximately 2.70 m by 1.50–1.60 m and 0.90 m deep, was sub-rectangular in shape and had gently sloping sides. If this pit had contained fluids, presumably it, too, would have been lined to prevent loss through the sand and gravel of the subsoil. Against the sides of the pit there were lenses of sand, probably deposited after abandonment; on the other hand, if the pit had been unlined, perhaps this had happened when it was in operation. Around the south and west sides of Pit C, and extending as far as Pit D, was what appeared to be a shallow furrow, up to 1.20 m wide but only 0.15–0.30 m deep. This furrow may simply be the result of the original excavation of Pit C although it may have been associated in some (unknown) way with the process or processes carried out within it. This groove did not extend beyond a modern pipe trench which cut across the channel that connected Pits C and D. A channel, 0.26–0.45 m wide and 0.40 m deep, allowed fluids to overflow from the top of Pit C into Pit D, some 1.4 m to the north. This channel may also have been lined. Evidently, there had been a serious problem within Pit C, namely a breach, about 0.2 m square, near the bottom of its north side. To stem the flow, the hole had been sealed with a plug of sandy soil, not the most appropriate material for such a task. Pit D measured 2.40 m by 1.30–1.45 m and 1.10 m deep, its base being bedrock. Its sides were cut vertically through sand, again indicating that this pit had probably been lined. There was no trace of clay and it is assumed that if there had been a lining, it had been of timber. As in other tannery pits, lenses of sand and gravel at the base of Pit D were the probable result of erosion of the edges or perhaps of deliberate infilling behind a putative lining. The two pits were infilled with very different materials. There were three deposits within Pit C, each about 0.30 m deep, although the interfaces





ILLUS 12 Pits C and D, fully excavated, viewed from the south-east. Note Pit H (of uncertain date) in the foreground

between them were far from distinct. There was a gradual change from a dark brown, humic loam at the top of the pit to a stony, grey-green clay, almost devoid of organic remains, at its base. Throughout these fills there were large quantities of pottery but relatively few animal bones. The source of the clay could not be established although a possible provenance is the floor of an abandoned building. It did not appear to be the lining of this pit; rather, it was one of the materials deliberately used to level it. Pit D was infilled almost entirely with a dark, humic loam with a high clay content and some rubble which included large quantities of 14th-century pottery and a few mammal and fish bones.

#### *Other pits*

There were several other pits distributed throughout the excavation site. In most cases, they were exposed as soon as modern deposits were removed. Three of these pits are tentatively interpreted as belonging to Period 3: Pits E and F on morphological grounds; Pit G because of the pottery and faunal assemblages recovered from its infilling materials.

**Pits E & F** These two sub-rectangular pits were located towards the north-east corner of the site, just east of Pit A; on the evidence of their near-vertical sides, they had both been lined. Although their relationship was not altogether clear, it appeared that Pit F probably truncated and perhaps replaced Pit E. There was no clear distinction between the fills of these two pits which, apart from basal deposits of sand derived from the weathering of their sides, comprised sandy loams whose humic contents decreased with depth, probably because of leaching. These deposits contained large quantities of pottery and some fish and mammal bones, the latter



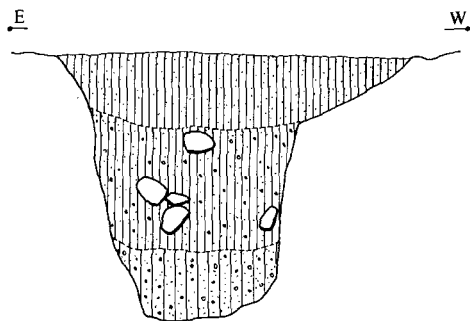
ILLUS 13 The overflow channel leading into Pit D from Pit C; viewed from the north

mostly sheep/goat. Pit F measured 1.65 m by 0.80–1.10 m and was 1.10 m deep. It appeared that Pit E had had similar linear dimensions but it was not as deep (only 0.75 m at the excavated level). This difference in depth may provide an alternative explanation as to their relationship, namely that they were two contemporary elements of a single feature.




**Pit G** Extending beyond the western limit of the excavation site, Pit G was sub-circular in shape and measured at least 3.70 m east/west by 3.10 m north/south. The pit was only 0.35–0.50 m deep; its edges were rather irregular and there was no overflow channel extending from it thus setting it apart from those pits (A–D; and perhaps E and F) which are thought to have been used in the treatment of hides. It may have been simply a sand quarry which was backfilled after the extraction of its contents. However, its infilling deposits were very similar to those materials excavated from Pits A–F, containing large quantities of pottery, none of which post-dated the 14th century, and considerable amounts of animal bones. Unlike the other pits, the bones from Pit G were predominantly from the heads and limb extremities of mammals (mainly sheep/goat and cattle), suggesting that this was a receptacle for some of the unwanted materials still attached to the hides when purchased from the slaughter house. Unfortunately, this interpretation may be over simplistic, because Pit G post-dated Post-pit 15, which may have been the easternmost post-pit of Structure 3. Alternatively, this post-pit may not have belonged to the tannery, perhaps being an earlier feature altogether. The top of Pit G was covered with several unworked, sandstone flags, perhaps used to consolidate the ground prior to a new (perhaps Period 4) building campaign.

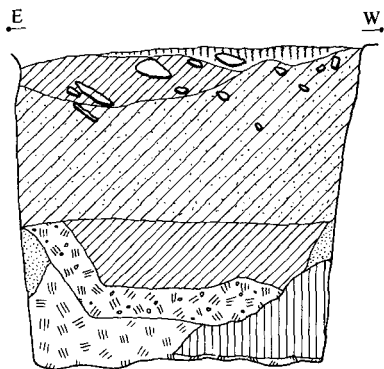
#### *The series of linear slots*

Located between Pits B and C were four shallow, linear cuts, interpreted as beam slots, which may have been associated in some way with the tannery. The infilling deposits and the pottery within them were very similar









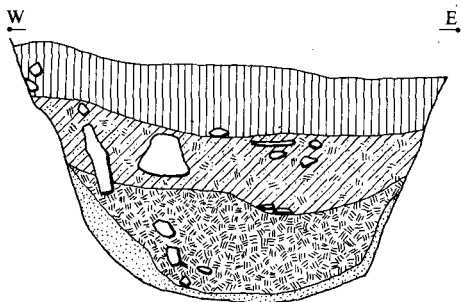
**PIT A**

-  mid to dark brown sandy loam & small rubble
-  mid to dark brown sandy loam & gravel
-  sandy loam & gravel







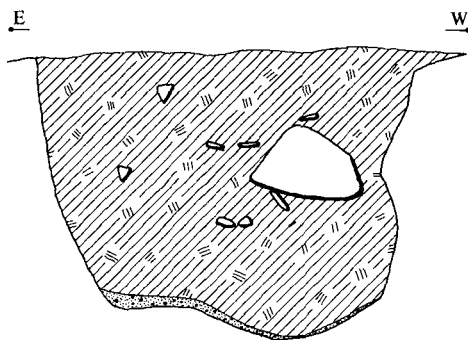
**PIT B**

-  dark grey-brown humic loam
-  light brown sandy loam
-  blue-grey clay with small stones & gravel
-  blue-grey clay
-  pale to mid brown sand
-  mid-brown silty loam





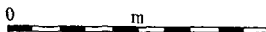
**PIT C**

-  mid to dark brown silty loam with some rubble
-  humic & sandy loams & grey-green clay with some rubble
-  grey-green clay
-  pale brown sand

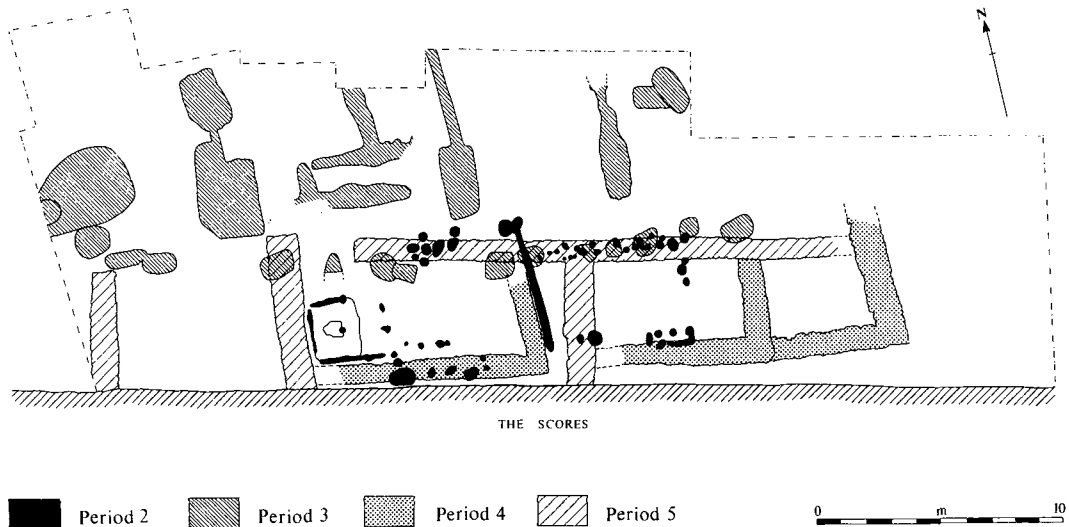


**PIT D**

-  mid to dark brown humic loam & clay
-  orange-brown sand & gravel



ILLUS 14 Sections across Pits A, B, C and D



ILLUS 15 Phase plan of the site

to the materials used to backfill the large tannery pits, suggesting that all of these features were contemporary. They were arranged in pairs, each pair forming what appeared to be T-shaped arrangements originally. The northernmost pair consisted of slot F250 which was 3.80 m long and aligned east/west; and slot F395 which was 2.4 m long within the excavation trench but extended beyond its edge. Farther south was F304, a 3.6 m-long, east/west cut; and slot F345, only 1.3 m long, apparently having been truncated by a feature (Pit H) of uncertain date and function. All of these slots were about 0.25 m deep and could have accommodated beams 0.35–0.45 m wide. They all contained loose, silty loams with clay and stone inclusions, suggesting that they had been backfilled at the same time.

#### PERIOD 4: LATE 14TH/15TH CENTURY (ILLUS 16–20)

Period 4 followed the abandonment of the tannery, probably at the beginning of the 15th century after the completion of a major phase of rebuilding at the castle, when it became fit for occupation once more. The tannery pits and beam slots were infilled mainly with sandy, humic soils, containing large quantities of pottery and animal bone. Whilst most of this material was probable midden deposits derived from the backlands of nearby burgage plots, the principal fill (grey-green clay) of Pit C may have come from a discarded floor surface. On other occasions such materials might have been jettisoned over the nearby cliff but, given the probable need to level the tannery pits as quickly as possible, they appear to have been put to a more positive use. On the evidence of the relatively intact states of the sides of most of the pits, it can be assumed that infilling was completed within a very short period, a conclusion supported by the many conjoining sherds of pottery distributed across different deposits within each pit, particularly in Pit B. Indeed, some conjoining sherds were recovered from different pits; for example, fragments retrieved from Pits C and F were both from the same storage jar. Most of the pottery retrieved from the large Period 3 pits and from the post-pits associated with them was 14th-century or earlier in date; none appeared to be any later than the turn of the 15th century.

Period 4 appeared to signal a distinct upgrading in the construction of buildings along this part of Swallowgait; Structures 5, 6 and 7 all had stone foundations. There was very little rubble associ-

ated with Structures 5 and 6 and it is quite possible that these buildings merely had stone foundations supporting timber walls; whereas there were significant quantities of mortared rubble within the robber trenches for the walls of Structure 7, strongly suggesting that this building was of masonry construction. The three Period 4 buildings were certainly not all contemporary, Structure 7 overlying the demolished ruins of Structure 5. Structures 5 and 7 occupied roughly the same position as Period 2 Structure 2; and the location of Structure 6 corresponded approximately with that of Structure 1, also from Period 2. The Period 4 buildings were all laid out along the same alignment as those dating from Periods 2 and 3, suggesting either continuity of occupation; or more likely, that the line of the adjacent road remained unchanged for a considerable time.

Other than those associated with Structures 5, 6 and 7, there were no features that could be positively identified as belonging to Period 4; notwithstanding, it is quite possible that one or more of the pits classified as undatable (see below) were contemporary with this period of occupation.

### *Structure 5*

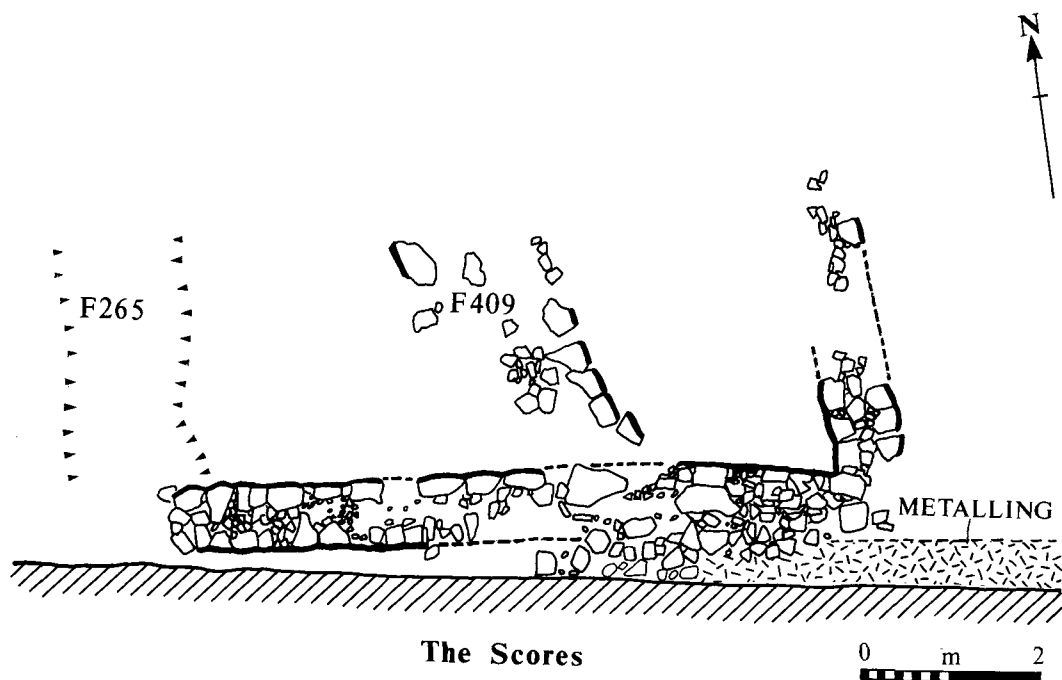
The remains of this building were extremely fragmentary, almost all of it having been swept away during the construction of Structure 7 and/or during building work in Period 5. The only surviving evidence of structural elements comprised fragments of the north and east walls of which only single courses of rubble masonry remained to lengths of 2.5 m and 1.5 m respectively. There appeared to have been two phases of metalled flooring and a layer of burning between them. To the south of this metalling there was a hearth, built of sandstone flags, which had been badly damaged both by heat and by the insertion of one of the drains in the floor of Structure 7. Other than the patch of burning (which contained no artefacts), there was no occupation debris or any other evidence concerning the building's function or date.

### *Structure 6*

This building lay directly on somewhat disturbed sandy subsoil, the walls being constructed on spreads of sandy loams which included a few small stones, gravel and numerous shell fragments. Other than post-pits associated with Period 2 buildings, all traces of earlier structures had been obliterated prior to its construction. It was in a very fragmentary state: the only structural elements to be positively identified were sections of its south and east walls, both of which survived as a maximum of two courses of clay-bonded, sandstone rubble foundations, only 0.75 m wide. The south wall survived to a length of 8.0 m and the east wall was only 3.0 m long, having been truncated by a Period 5 hearth and a robber trench. The west wall had been completely removed, leaving only what may have been its robber trench (F265). This shallow trench was approximately 1 m wide and returned northwards from the end of the building's south wall. The north side of the building had been completely obliterated, probably during 19th- and 20th-century landscaping and gardening operations. There was no trace of any occupation debris or of a floor surface associated with Structure 6; and there were no artefacts to help date its construction. Had its floor been of clay, some of that material would probably have survived near the building; if it had been of stone, however, it may well have been removed when the building was abandoned.

Against the outside face of the south wall were the remnants of a well-compacted metalled surface, comprising gravel and small pebbles, which had been repaired or relaid on at least one occasion. It extended around the outside of Structure 7 on its south and east sides and continued below the modern wall that marked the southern boundary of the site.

At some stage after the abandonment of Structure 6, the foundations of its south wall were cut by what appeared to be another wall. This comprised a fragmentary stretch of rubble foundations (F409), 2.5 m long and 1.6 m wide, which retained no evidence of its bonding materials. There were no other features that could be linked with this wall and it is unclear whether it was even part of a building. Although later than Structure 6, it seemed on the evidence of its alignment to pre-date the reorganization attributed to Period 5. Unfortunately, the relationship between wall F409 and the metalling (the probable surface of Swallowgait) outside the south



ILLUS 16 Plan of Period 4 Structure 6

wall of Structure 6 could not be resolved satisfactorily although it seemed quite possible that the foundations for the later structure had cut into the road.

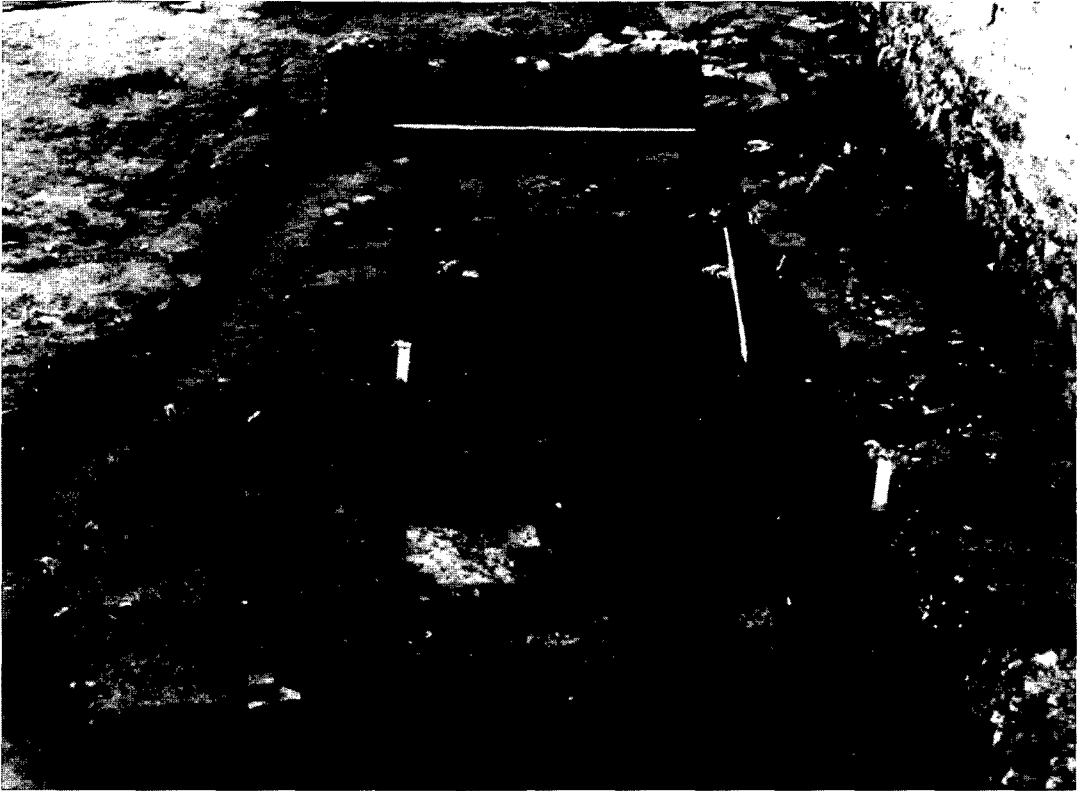
### *Structure 7*

This, the most substantial of the Period 4 buildings, was located to the immediate east of Structure 6. Its location was beyond the limits of the proposed new visitor centre: for that reason, the building was not fully excavated, and the evidence retrieved from it remains incomplete. As with Structure 6, its overall layout could not be defined, mainly because the north side of the building had been swept away by recent gardening or related activities. Furthermore, the location of the west wall of the building was not obvious. Its location may have coincided with that of the Period 5 wall F123 whose insertion could have removed all trace of it, although this could not be substantiated.

The overall dimensions of the building were at least 10.5 m east/west by 7.0 m north/south. It appeared to be divided into two apartments of unequal size by a partition wall, the smaller east chamber measuring 4.0 m wide internally. The dimensions of the larger chamber, like those of the building itself, remain uncertain, although it was at least 5.5 m wide (east/west). Alternatively, this putative dividing wall could have been originally an external wall against which the building was extended eastwards at some stage.

A maximum of two courses of the drystone rubble foundations of the east and south walls remained although for much of their lengths these walls, as well as the internal partition wall, could be traced only by their robber trenches (F124, F237 & F134). These trenches contained various soils and clays but were infilled mainly with rubble, most with mortar adhering to it. This is taken as substantial evidence that, above foundation level, the walls were mortar-bonded and that, in all probability, Structure 7 was built entirely of stone.

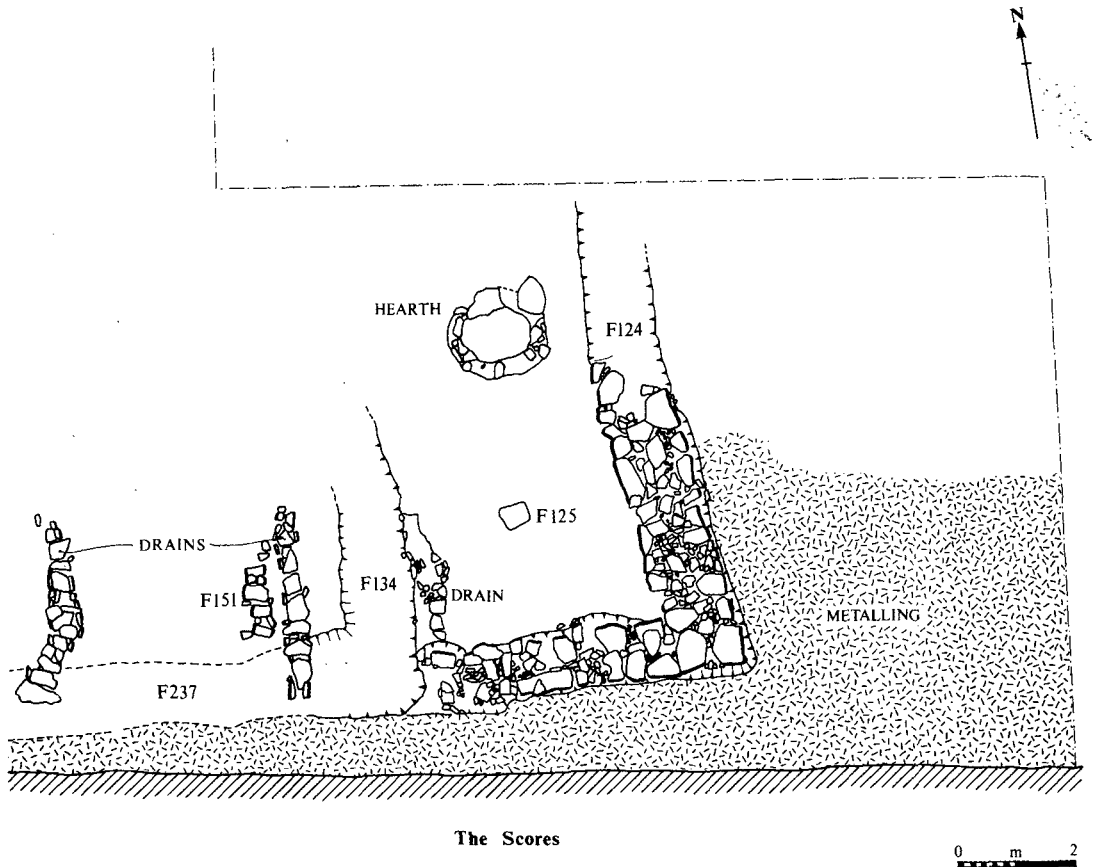
There were three capped, linear drains, one within the east chamber and two within the west chamber.



ILLUS 17 The remnants of Period 4 Structure 6, viewed from the west

All three appeared to be about 3.0 m long, although they had been truncated at some stage, probably during the insertion of the Period 5 wall associated with robber trench F158. Indeed, there is some evidence to suggest that the central drain continued beyond the Period 5 robber trench, making its overall length (and perhaps that of the building) at least 8.2 m; again this evidence is not conclusive. The easternmost drain remains unexcavated. The two other drains were each 0.20 m wide and 0.12–0.20 m high internally within sides of small sandstone slabs. Neither had a stone base and hence it can be assumed that waste was simply allowed to soak away through the underlying sandy soil, a process enhanced by the slight south/north slope. The west drain was capped with sandstone flags, some of which had been displaced; for the most part, rather thick slabs of muddy or partially metamorphosed limestone (a stone that occurred only rarely on the site) had been used to cap the central drain. Both of the excavated drains were infilled with small stones and lenses of soil; the west drain also contained burnt soils, ash and charcoal. All infills were probably deposited after the building was abandoned. The three drains arose within the thickness of the building's south wall, suggesting that they were slop drains accessed from above floor level, perhaps by intramural chutes; although this would not explain why one of them was capped over its whole length. The presence of these three drains suggests that Structure 7 was a substantial structure whose basement was either a kitchen or perhaps associated with some (unknown) industrial process.

There were a few other features of interest within Structure 7. Against the west side of the central drain were the remnants of what appeared to be a dwarf wall (F151). Laid upon a pad of pink clay and crushed sandstone, this survived as one to two courses (0.17 m high) of drystone rubble, 1.40 m long and 0.40 m wide. There were no obvious surviving features associated with wall F151: it may once have



ILLUS 18 Plan of Period 4 Structure 7

extended as far as the south wall of the building and been associated in some way with the adjacent drain.

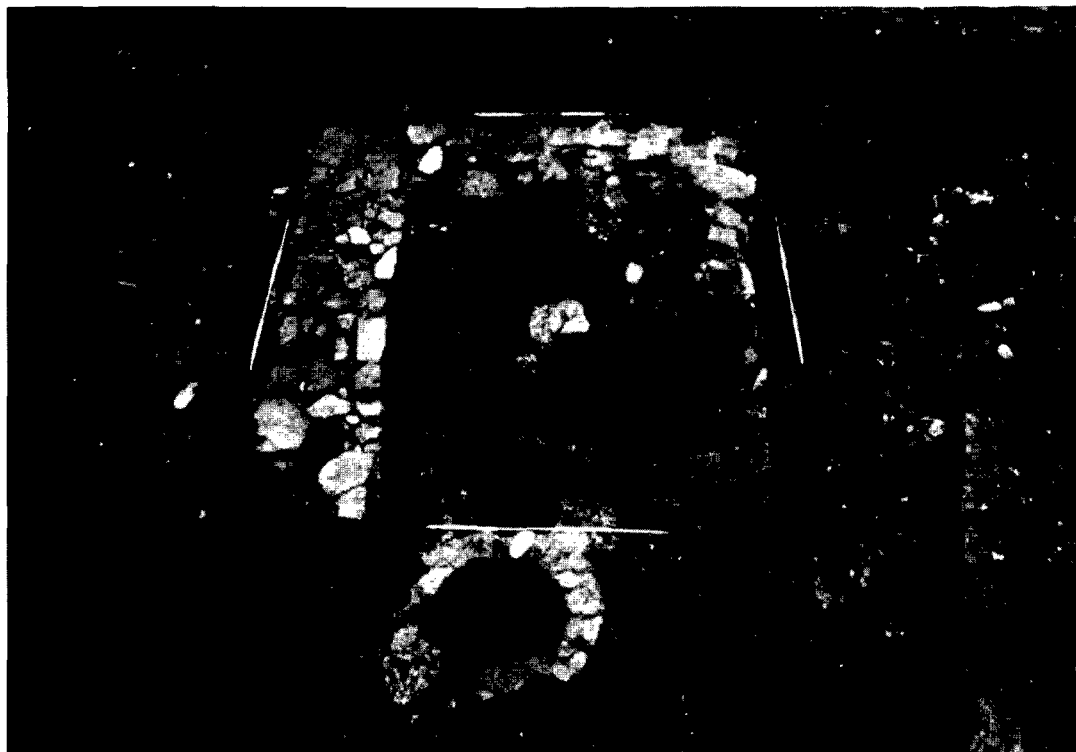
Midway across the east chamber and set into the subsoil was a single, squared slab of sandstone (F125) which still awaits excavation. It is tentatively interpreted as the base-plate for a post; although whether it was contemporary with Structure 7 or represented the remains of a truncated post-pit of another period is not clear. Further north, within the east chamber, was the bottom course of a circular hearth measuring 1.10 m in diameter internally. The hearth was lined with a single course of clay-bonded, sandstone rubble and infilled with a black, ashy deposit which remains *in situ*.

Outside the south and east walls of the building was the same compact metallated surface which extended beyond the south side of Structure 6. This metallating extended only 4 m along the side of the east wall of Structure 7. From that point northwards it had been truncated, perhaps by recent landscaping or the insertion of a Period 5 wall. It is not clear whether the metallating had been laid at the same time as Structure 7 was built or if it had been cut by the building's foundation trenches. A small area of metallating against the inside of the south wall may support the latter interpretation; alternatively, the metallating on the inside of the building may have been the only surviving remnant of its floor.

#### PERIOD 5: 16TH CENTURY (ILLUS 21-4)

The final period of occupation of the site followed the demise of Period 4 Structures 6 and 7, and seemed to mark a slight shift in the alignment of Swallowgait. This probably coincided with the





ILLUS 19 Period 4 Structure 7, viewed from the north, showing the stone lined hearth in the foreground and the remnants of the building's east and south walls behind

formation of the Castle Yard, an area bounded on its north, west and south sides by stone walls and on its east by a short stretch of wall and the castle ditch. This enclosure is depicted in Geddy's drawing which dates from some time before 1580 (illus 46). The excavation confirmed that there had been a significant change to the layout of this part of the town, probably during the 16th century.

The most prominent feature to be uncovered was a wall robber trench (F158) which ran for a considerable distance, perhaps continuing beyond the eastern limit of excavation. Its west end terminated 2 m from a north/south wall (F552) which had extended below the modern garden wall on the south side of the site. Some 10 m east of F552 was a similar wall (F123) whose robber trench (F117) abutted trench F158; and, about 6 m west of F552, another wall (F299) which terminated abruptly, there being no other features returning from it. Because it was not possible to expose the full lengths of any of these walls (or even their robber trenches), the structures to which they belonged could not be defined properly. Indeed, only the area between walls F552 and F123 could be thought of as a building (Structure 8), those to its east and west being described as Areas 9 and 10 respectively. It was difficult to determine whether Areas 9 and 10 were inside buildings; although there was much to suggest that there had been intensive occupation to the immediate west of Structure 8.

#### *Robber trench F158*

Although the wall itself was completely missing, both its foundation trench and its robber trench were identified. The foundation trench was 1.5-1.6 m wide and 0.25 m deep, the spaces between its sides and the wall having



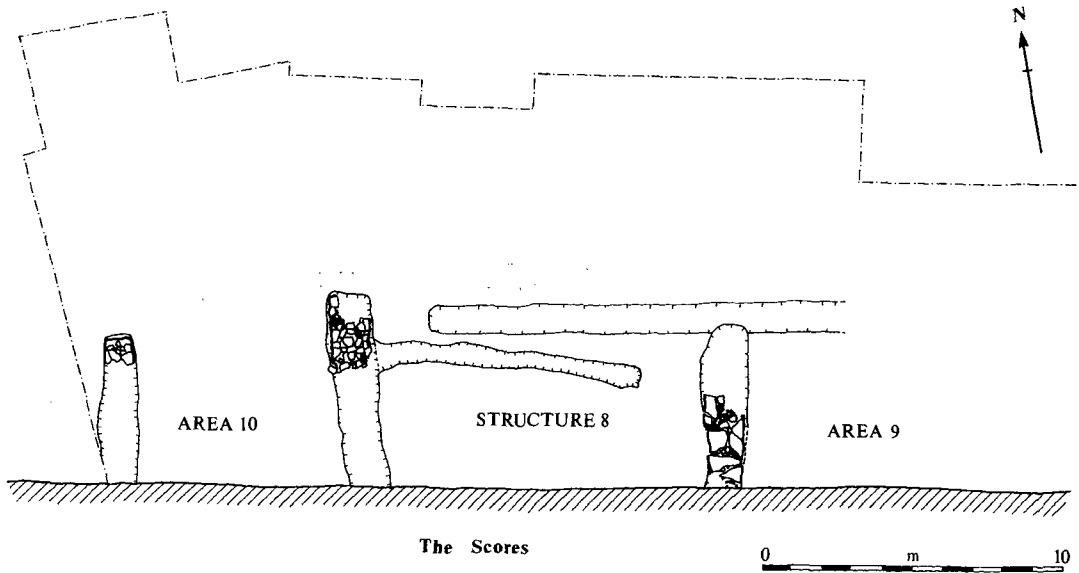
ILLUS 20 Structure 7 drains, viewed from the north. One of the drains has been emptied; the other, adjacent to the robber trench (F134) for the partition wall, has its capstones in situ. Both drains and the robber trench have been truncated by the Period 5 wall trench F158 which is in the foreground. Viewed from the north

been packed with small stones, clay, large quantities of shell fragments and light brown, sandy loam. The robber trench had vertical sides and was 0.90–0.95 m wide. Its infill, probably the remnants of wall core, comprised small and medium-sized (mostly sandstone) rubble, yellow mortar and some soil, indicating that the wall had been mortar bonded. Robber trench F158 extended from near wall F552 eastwards for about 23 m. Although the trench itself was not visible beyond that point, its line coincided with the truncated edge of the metalled surface to the east of the Period 4 Structure 7. There was no persuasive evidence to suggest that the robber trench had extended west of wall F552.

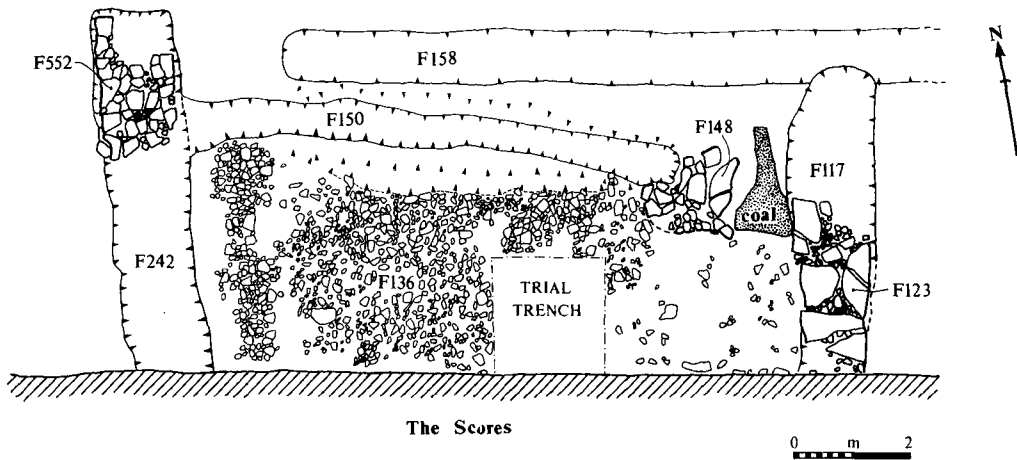
### *Structure 8*

Defined on its north by robber trench F158 and on its east and west sides by walls F123 and F552, this structure occupied a position similar to that of Period 4 Structure 6; although the later building extended farther south towards Swallowgait. Built over levelling deposits of soil, clay, marine shell fragments, gravel and small rubble (some perhaps derived from the demolition of Structure 6), this building measured internally 10 m east/west by at least 5.0 m wide.

Its east wall (F123) survived as a single course of drystone rubble foundations, 1.1 m wide and including some large boulders. These foundations petered out 3 m from the southern limit of the trench, its course continuing as a robber trench (F117) which was infilled with sandstone rubble, mortar and clay, indicating that the wall itself was not of drystone construction. The foundations of the west wall (F552) were also very fragmentary: a stretch of clay-bonded, sandstone rubble foundations, 1.5 m-long and 1.20 m wide. Farther south,



ILLUS 21 Plan of Period 5 structures and features



ILLUS 22 Plan of Period 5 Structure 8

its robber trench (F242) was infilled with rubble, mortar and lumps of pink, shelly clay, again suggesting that the wall's masonry had been bonded with mortar or perhaps mortar and clay. Access to the interior of Structure 8 may have been through a doorway in the 2 m gap between the west terminus of the north wall and the building's west wall.

The rather crude floor, which had been damaged by root action and by post-occupation gardening, comprised a reasonably level surface of small and medium-sized, fairly flat rubble (F136) set into pink clay, together with stretches of the bottom courses of the demolished south and east walls of Period 4 Structure 6. In the north-east corner of the building, and truncated by a robber trench (F150), was a hearth (F148) measuring 1.60



ILLUS 23 Period 5 robber trench F150, in the centre of the frame, fully excavated. Period 4 Structure 6 is on the left. Viewed from the east

m by 1.00 m and constructed of flat sandstone flags, tightly jointed with no obvious bonding material. The hearth stones were badly cracked and stained red and black by fire. Nearby was a spread of coal fragments and dust. Both the coal and the hearth overlay burnt soils and heat-damaged sandstone rubble, including a cracked, circular slab, 0.70 m in diameter, possibly another hearth. It was not possible to establish whether this feature was a predecessor of hearth F148 or if it belonged to an earlier period of the site.

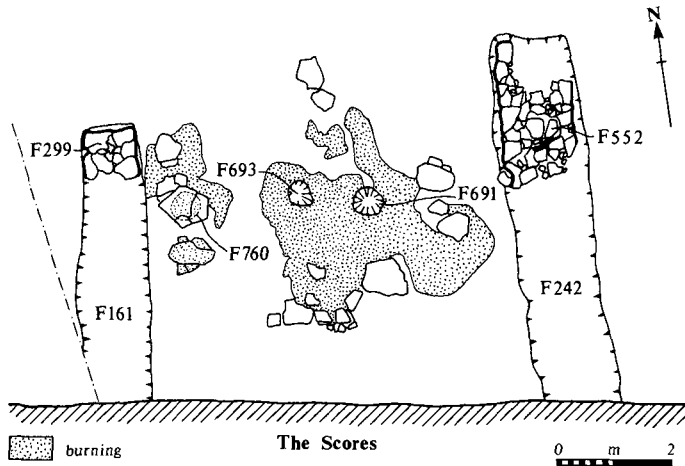
Cutting some of the deposits post-dating the destruction of Structure 6 was a linear cut (F150), adjacent to and parallel with robber trench F158. It was 8.70 m long and 0.60–1.00 m wide at its top, narrowing to 0.30 m at its flat base at a depth of 0.40–0.50 m. This cut was too narrow for a wall trench and appeared to truncate hearth F148 rather than be associated with it. No finds were retrieved from the rubble, soils and crushed marine shells that infilled F150 to help interpret its function or to date its usage although clearly it belonged to Period 5 or later.

#### *Area 9*

The only identifiable features to the east of wall F123 were a spread of coal fragments, 0.20 m deep, which overlay 0.20 m of burnt materials extending over an area 3 m square; and, cutting the coal, a post-pit, 0.80 m in diameter and 0.45 m deep, whose function remains unclear.

#### *Area 10*

There was ample evidence of human activity to the immediate west of Structure 8 although, if Area 10 had been within a building, its outline could not be positively identified. The west side of Area 10 (located at the



ILLUS 24 Plan of Period 5 Area 10

western limit of excavation) was defined by wall F299 which survived at its northern point as a fragmentary single course of drystone rubble foundations, 1.0 m wide, and its robber trench (F161). The infill of the robber trench comprised small rubble and considerable quantities of mortar, indicating that this wall was also mortar-banded. There was no trace of a wall connecting the north ends of walls F299 and F552.

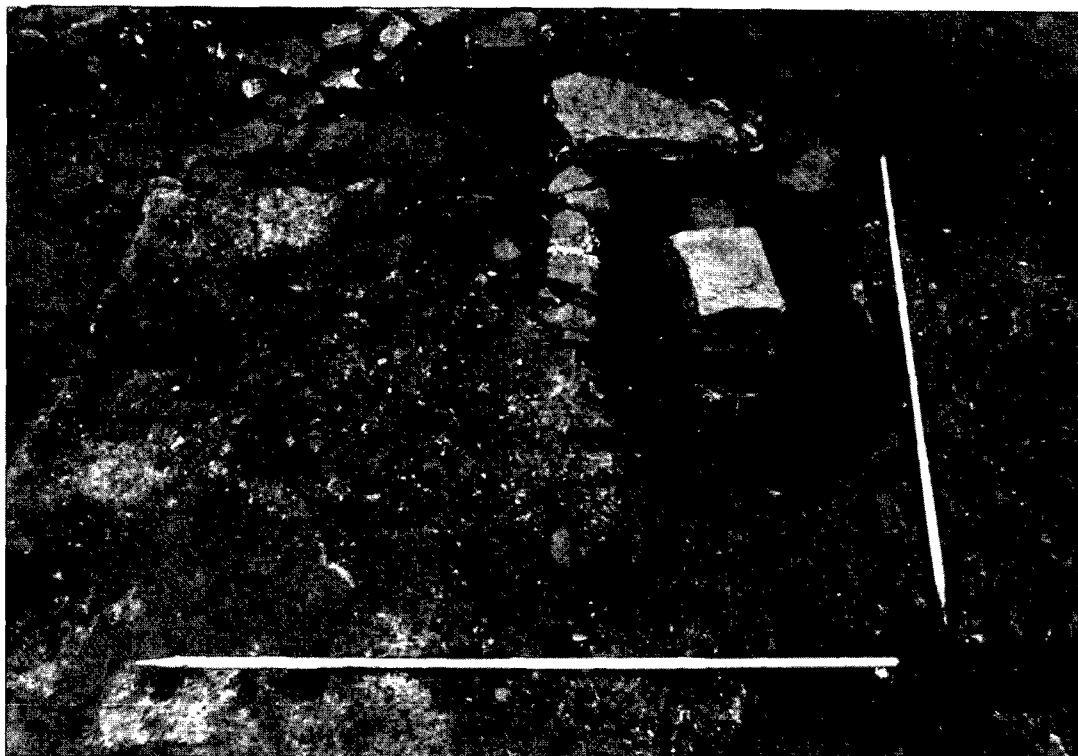
Area 10 measured 6.0–6.3 m east/west by approximately 5 m north/south. Although it had been badly disturbed by later gardening, there were sufficient crude sandstone flags surviving to indicate that this area had been paved. Some of these flags overlay other, similar stones, suggesting that the paving had been repaired or relaid on at least one occasion. All of these surfaces were covered with spreads of charcoal, coal and wood ash, burnt soils and clays.

Of the several post-pits uncovered in Area 10, two (F691 & F693) appeared to be contemporary with the uppermost paved surface. The sockets were angled upwards towards the west and east respectively, perhaps reflecting the manner of the posts' removal or that they had been elements of a structure from which an object had been suspended. There was, however, no evidence of a third member that might have formed a tripod. One post (F760) left a charred impression on one of the stone flags.

#### FEATURES OF UNCERTAIN DATE (ILLUS 25)

In common with many archaeological sites, particularly urban ones, a high proportion of the features and deposits excavated at Castlecliffe could not be attributed to specific periods of activity. These included numerous elements associated with buildings (post-pits, levelling materials, occupation and destruction debris, etc) whose complete outlines could not be traced; as well as the foundations of a substantial wall uncovered during trenching in the extreme south-east corner of the site. It is argued in the Discussion section that this was probably a Period 5 structure although it is felt expedient to describe it here. In addition, there were several pits, some probably sand quarries, which were of indeterminate age. Three of those pits are described below.

**Pit H** (illus 25) This sub-rectangular pit, measuring 1.60 m east/west by 1.10–1.20 m wide and 1.50 m deep, appears to have had at least two separate, although unclear, functions. Its west side was lined with six to seven courses of unmortared, sandstone rubble, laid at an angle of 10–12° from the vertical. Some of these stones were massive. The largest of them had the name ROBERTUS inscribed on one of its sides. The uppermost reaches of the pit's south and east sides were lined with a few courses of insubstantial, drystone rubble. No



ILLUS 25 Pit H, viewed from the east, with the central drystone masonry *in situ*

lining materials survived on the north side of the pit nor at its base; although this may simply be the result of erosion and decay following the abandonment of its primary use.

The only clue to the date of Pit H was that it truncated one of the Period 3 beam-slots. Whilst this may imply usage during Period 4 or 5, it may also be an indication that the beams were abandoned during the operation of the tannery and that Pit H could also be a Period 3 feature. The sloping, stone-lined west side of the pit may have been a feature of a tannery pit, allowing skins to be handled and removed with ease. Another possibility is that Pit H was a garderobe pit. Such an elaborate feature would be associated with a substantial building; the only credible candidate would be Period 5 Structure 8, but the evidence is far too circumstantial to offer this as an interpretation.

The bottom 1.0 m of the pit was infilled with rubble, sandy soils, mortar and clay, probably derived from the weathering of its edges. Within these deposits were moderate numbers of animal bones, almost all feline, which included the articulated skeleton of a cat that appears to have been skinned. Whilst this suggests that the skins of small animals were prepared on site, such a practice may have been carried out after the demise of the tannery.

Set upon the rubble and soil, towards the centre of the pit, were four courses (0.50 m high) of clay-bonded, rubble masonry, 1.0 m long and 0.30–0.40 m wide, the purpose of which is not understood. This stonework had been laid deliberately and was perhaps associated in some way with a building such as Period 5 Structure 8. The remainder of the pit was infilled at a later stage with rubble and various humic and clayey soils.

**Pit J** This sub-rectangular pit, measuring 0.95–1.30 m east/west by 1.10 m wide and 0.40–0.50 m deep with irregular edges, was uncovered immediately below recent deposits and cut into the subsoil against the north

side of the trench. There were no stratigraphic relationships by which this feature could be dated, nor was there enough artefactual evidence within its infill materials to date its abandonment; the absence of erosion products suggests that the pit was open only for a short period. The basal deposit of loose, sandy loam was overlain by a mix of soil, clay and rubble which was packed hard, perhaps to ensure a level platform upon which to build. Although this may have been a sand quarry, the presence of an articulated dog skeleton towards the bottom of the pit may point to its being simply an animal grave.

**Pit K** Extending beyond the limit of excavation, in the north-east corner of the site near Period 3 Pits E and F, was Pit K which is interpreted as a probable sand quarry. Its exposed area measured 1.80 m by 1.50 m and it was cut into the sand (which was particularly fine at this point) to a depth of 0.50 m. It was evident from its irregular edges that the pit had not been lined; and in all likelihood the infill of rubble and sandy loam, which was rich in pottery and mammal bones, was deposited soon after the sand had been removed.

### *Wall F147*

Limited excavation within a trench, measuring 11.5 m north/south by 2 m wide and located in the extreme south-east corner of the garden, revealed two courses of wall foundations projecting 0.5 m from the east precinct wall (now demolished), about 1 m below ground level. These foundations of substantial drystone rubble extended 2 m northwards from the corner of the site. Thereafter the wall's route was visible as a robber or bedding trench which reappeared in another, smaller trench some 5 m further north. It was apparent that the rubble foundations were of greater antiquity than the overlying garden wall; and, although there was no opportunity to investigate this area fully, it is thought likely that the earlier structure was the remnant of the east wall of the castle yard, depicted in Geddy's drawing of c 1580.

## SPECIALISTS' REPORT

### COINS

#### N M McQ Holmes

- 1 Edward I of England, silver 1d, Durham, 9b1; 17.5 mm, 1.04 g, 7.0 diaxis *Obv* + moline EDW[R'A]NGL'DNSHYB' (Roman Ns), star? *Rev* C[IVI]/TAS/DVR/ENE (unbarred N). Uneven striking, reverse slightly off-centre, some surface corrosion, moderate wear. Levelling deposit for Structure 8; Period 5.
- 2 James VI, hardhead, November 1588, 2nd issue, with lion rampant on reverse. 19 × 18.5 mm, 1.41 g, 8.0 diaxis. Some surface corrosion, fairly worn. Topsoil.

### SMALL FINDS

#### D Caldwell

Most of the metalwork was poorly preserved. Many of the copper alloy pieces were completely mineralized and some showed signs of burning, either in the texture of the surface or the corrosion products and soil adhering to them. Many had also been ravaged by bronze disease. The iron work was also in a very poor condition. Most of the larger objects had some metal preserved in the core but were suffering from the spalling of the corrosion layers. Organic (mostly plant) material was preserved to a greater or lesser extent on almost all the iron objects. Fragments of shell and bone adhered to some of them.

It is not possible to put a satisfactory date on most of the finds. It is worth pointing out, however, that none of the material listed here appears to be earlier than the 13th or later than the 17th century. The bulk of it seems to be within a 14th- to 15th-century time range.

*Copper alloy objects (illus 26 & 27)*

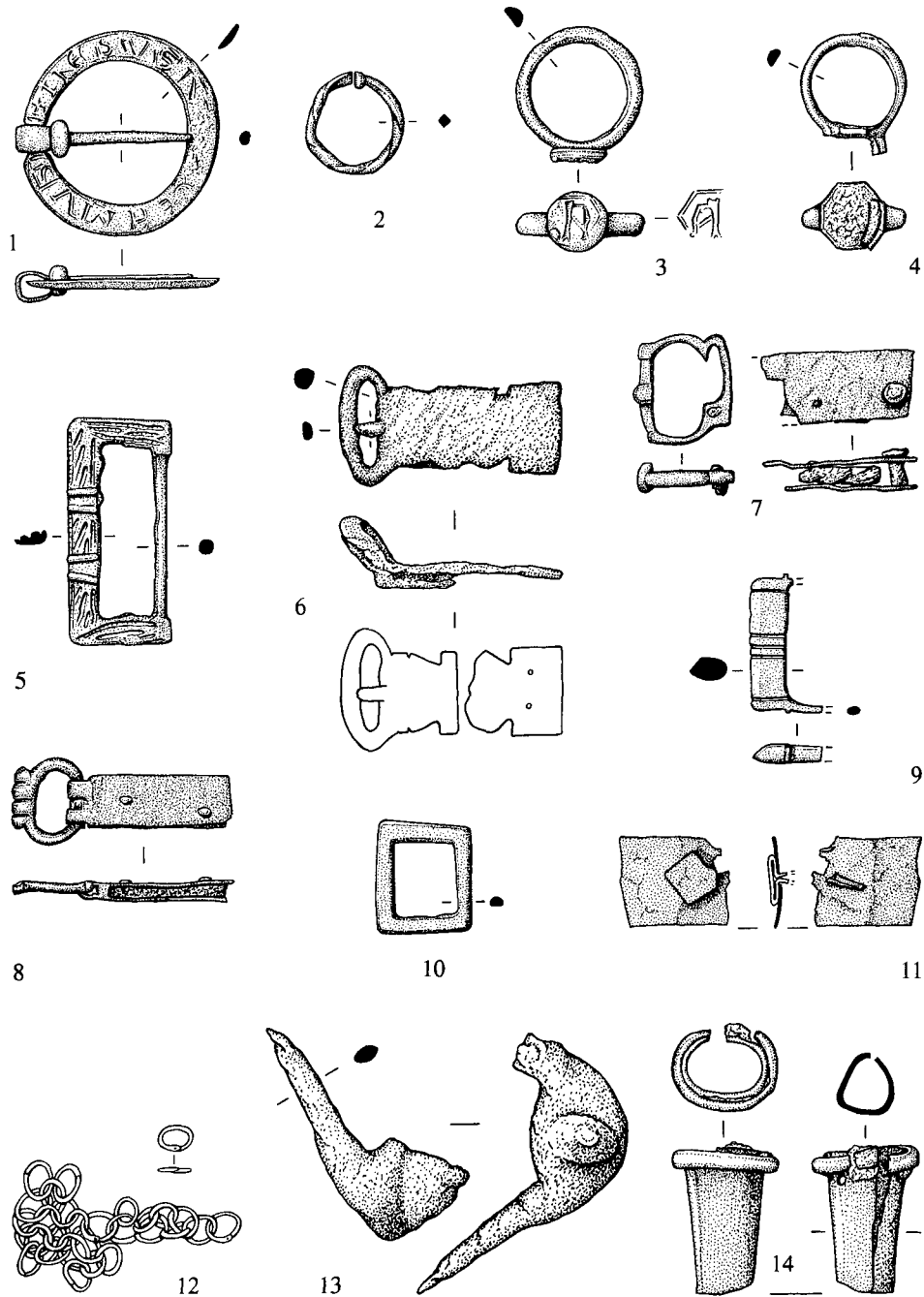
All but a few miscellaneous scraps of sheet metal and small pieces of scrap are listed here.

- 1 Ring brooch, formed as a continuous strip of metal, plano-convex in cross-section. It is indented top and bottom for a collared pin. The front is engraved with an inscription in Lombardic capitals: +I[H]ESVSN[AZAR]JEMUS[R]. There are residual traces of tinning in the letters. 14th century. Robber trench of Structure 7 wall; Period 5.

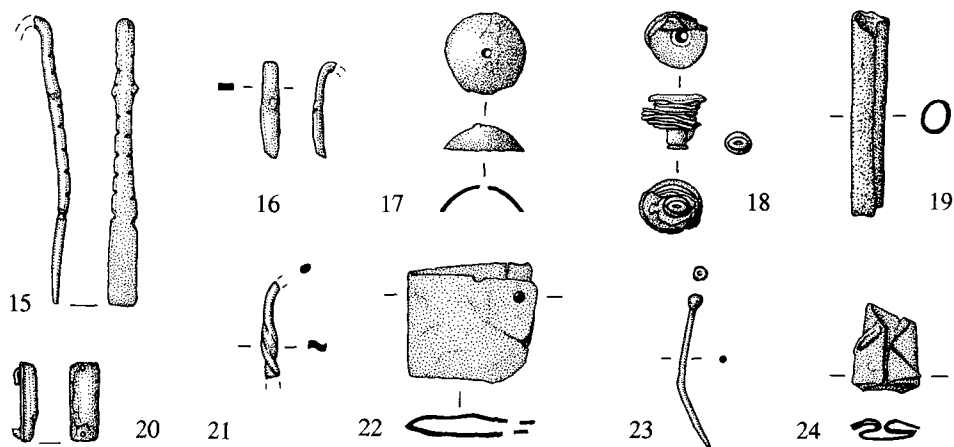
A number of 14th-century ring brooches with amuletic inscriptions have been recovered from Scotland, most of them being listed and described by Callender (1924). Almost all were recovered from coin hoards and owe their preservation to their value as silver bullion, but it is likely that base metal brooches would have been much more common. The 'Jesus of Nazareth' inscription, garbled to a greater or lesser extent, is one of the commonest dedications on such objects. The use of M instead of N in NAZARENUS is matched on a silver ring brooch, inscribed 'MAZAREMVS', recovered from Jedburgh Abbey and now in the National Museums of Scotland. Callender lists only three other brooches from Scotland with a plano-convex cross-section. This is obviously a side effect of casting the brooches in a mould. It is possible that most brooches with a flat, rectangular cross-section were cut from sheet metal. Most of these do not have a continuous ring, the junction of their two ends being hidden by the pin. A copper alloy ring brooch with a garbled Jesus of Nazareth inscription was found at the Broch of Yarhouse, Caithness (Anderson 1890, fig 5; NMS: GK 100), and another, now in Hawick Museum, has a Jesus of Nazareth inscription on one side and an Ave Maria on the other.

- 2 Finger ring formed from a hoop of twisted wire. Post-pit of uncertain date; pre-Period 5.
- 3 Finger ring with traces of tin coating. The circular bezel is engraved with a capital A in reverse, for use as a seal. Levelling deposit below Structure 8; Period 5.
- 4 Finger ring with (now incomplete) octagonal bezel originally set with a gem. White chalky material inside it may be the remains of a stone made of paste. Unstratified.
- 5 Rectangular buckle with geometric decoration and two pins (now missing). There are traces of tin coating. Foundation trench for wall F158; Period 5.
- 6 D-shaped buckle. It is badly corroded but on the evidence of an X-ray there are two separate strap-end mounts. There is no obvious reason for this unusual arrangement. Levelling deposit below Structure 8; Period 5.
- 7 Strap loop with internal projections. The strap-end mount is in the form of a folded plate secured to the leather strap (some mineralized fragments survive) with an iron rivet. Other iron rivets were used to attach the loop. Levelling deposit below Structure 8; Period 5. Similar strap loops from London are dated c 1150–1400. Compare Egan & Pritchard (1991, fig 149).
- 8 Strap-end buckle, the buckle having an oval frame with four knobs. The plate, which is folded over, encloses leather impregnated with copper to which it was secured by three rivets. Iron corrosion suggests the buckle pin was of that metal. 13th–14th century. Levelling deposit below Structure 8; Period 5. Compare Egan & Pritchard (1991, 77, no 318).
- 9 Fragment of buckle. Topsoil. Compare Egan & Pritchard (1991, 96, nos 437–9).
- 10 Rectangular buckle, lacking its pin. Topsoil.
- 11 Patch with strip rivet, its ends broken off. Within wall of Structure 6; Period 4.
- 12 Piece of mail, composed of 27 small links, each about 8 mm by 6 mm. On the evidence of corrosion products, they were held together by iron pins. When complete this would have been a triangular piece, reducing from seven to one link in 10 rows. It would have formed part of the decorative edging to a mail garment. Foundation trench for wall F158; Period 5.
- 13 Fragmentary and badly corroded remains of a spur? The main surviving piece consists of the base of the down-curving arms with the terminal for the prick or shank for a rowel. Topsoil.
- 14 Ferrule with reinforcing band. It is lap-jointed and has a rivet hole. There are traces of tinning on the exterior. Fill of post-pit; Period 5 or later.
- 15 One arm only of a tweezers or parchment clip. Foundation trench for wall F158; Period 5.





ILLUS 26 Copper alloy objects. Scale 2:3



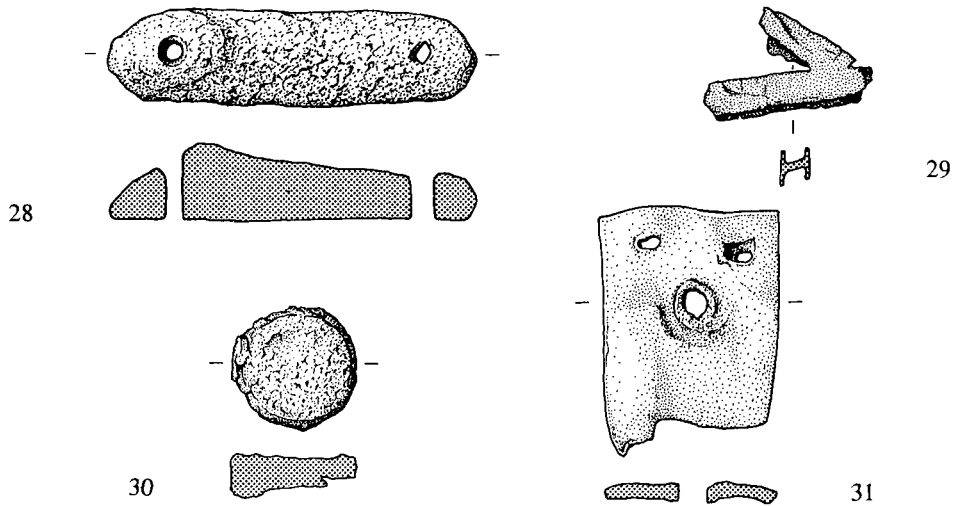
ILLUS 27 Copper alloy objects. Scale 2:3

- 16 Part of one arm of tweezers or parchment clip. Destruction debris from Structure 6; Period 5. Fragments possibly from two other similar objects were recovered. If they served as clips to fasten documents together they would have required movable collars, as did one found in London and illustrated by Alexander & Binski (1987, 384, no 426).
- 17 Hollow, dome-shaped mount; probably a decorative mounting for a belt. Topsoil.
- 18 Rivet with disc head. Traces of copper-impregnated leather are retained by two washers. Topsoil.
- 19 Lace chape, its edges butted together. Backfill of robber trench F150; Period 5 or later.
- 20 Bar mount from a belt, with two copper pins and traces of burnt organic material on its back. Levelling deposit below Structure 8; Period 5.
- 21 Piece of twisted rod. Robber trench of wall of Structure 7; Period 5.
- 22 Sheet of copper alloy, bent double, with rivet hole. Possibly a strap end mount. Topsoil.
- 23 Pin with solid globular head. Backfill of robber trench F158; Period 5 or later.
- 24 Strip rivet. Topsoil. Applying patches of sheet copper alloy, held in place with strip rivets, was a favourite method of repairing metal vessels during the medieval period.
- 25 Sheet with remains of a punched hole. Modern deposit. Not illustrated.
- 26 Patch. Probable modern deposit. Not illustrated.
- 27 Patch, folded twice. Topsoil. Not illustrated.

### Lead alloy objects (illus 28 & 29)

All but six pieces of scrap are listed.

- 28 Bar, pierced with two holes, possibly a weight. Weight 106.47 g. Possible levelling deposit; Period 5.
- 29 Piece of window came with milling. 16th–17th century. Topsoil.
- 30 Disc, possibly a seal or weight, but now too corroded to be positively identified. Weight 21.83 g. Within pit of uncertain date; probably pre-Period 5.
- 31 Piece of sheet lead pierced by nail holes. Backfill of robber trench F150; Period 5 or later. Similar fragments of sheet lead recovered from Jedburgh Abbey (Lewis & Ewart 1995, 89, illus 80) and Kirkstall Abbey (Moorhouse & Wrathmell 1987, 121, fig 72) have been identified as pieces of roof furniture.
- 32 Pilgrim's badge, vesica shaped, with openwork design depicting the crucifixion of St Andrew. He has a halo, a beard and a long, sleeved tunic gathered at the waist by a belt. The piece is fragmentary but evidently had four loops for attaching it to a hat or garment. It has been cast in a two-piece mould with ribs on the back for added strength. Topsoil.



ILLUS 28 Lead objects. Scale 2:3



ILLUS 29 Lead pilgrim's badge. Scale 1:1

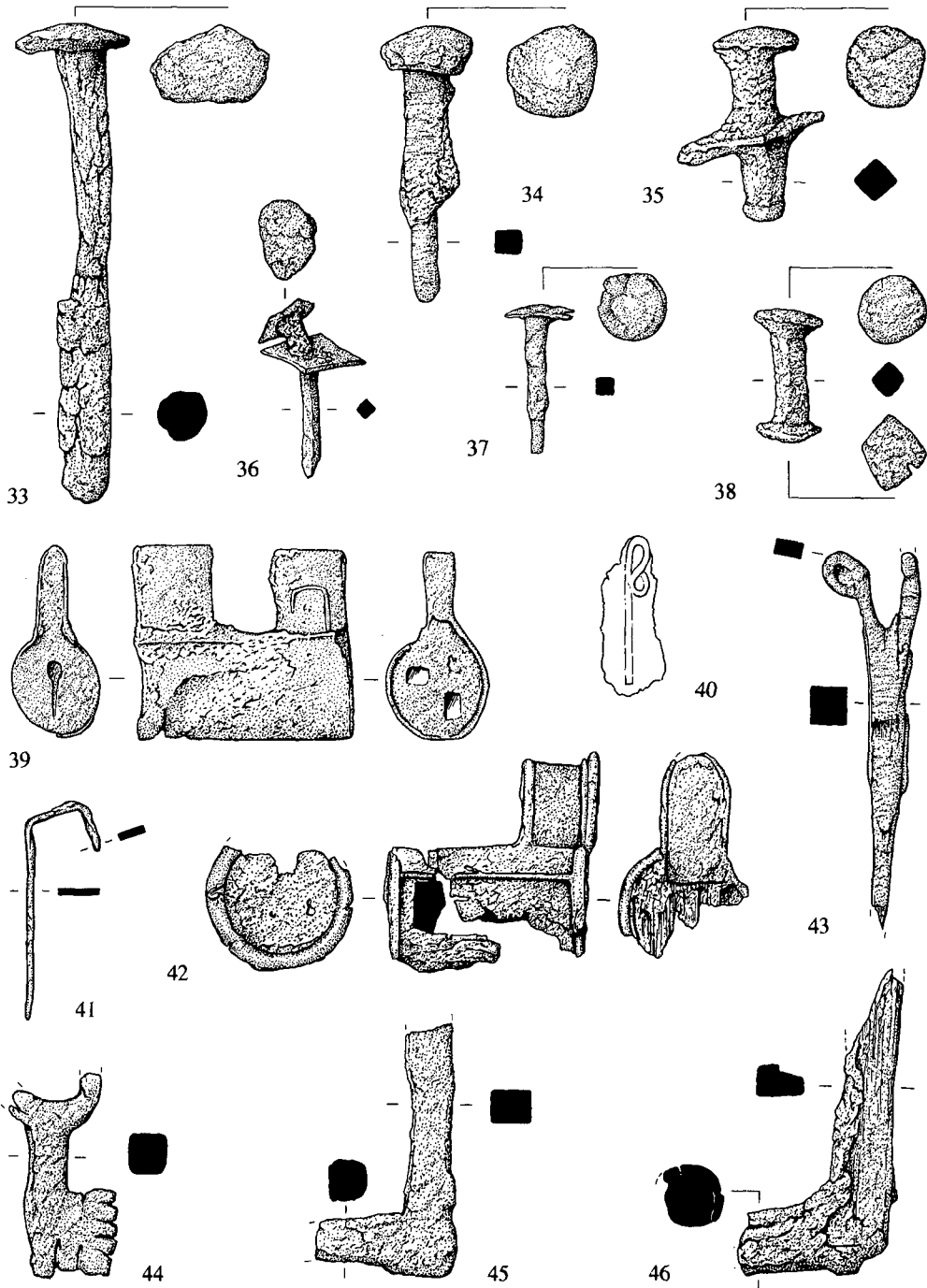
According to Spencer (1990, 8) the majority of pilgrims' badges are made of a eutectic alloy combining about six parts tin with four parts of lead. XRF-analysis of this object suggests that it is an alloy of about three parts lead to one part tin. Spencer (1990, 9) also points out that the use of two-piece moulds for making pilgrims' badges is an English, not a Continental, characteristic. This badge, however, was almost certainly made locally, in St Andrews or nearby. There is a stone mould for making St Andrew badges of another pattern in the collections of the National Museums of Scotland. It was found at North Berwick, one of the main ferry ports for pilgrims on the way to St Andrews.

*Iron objects (illus 30–2)*

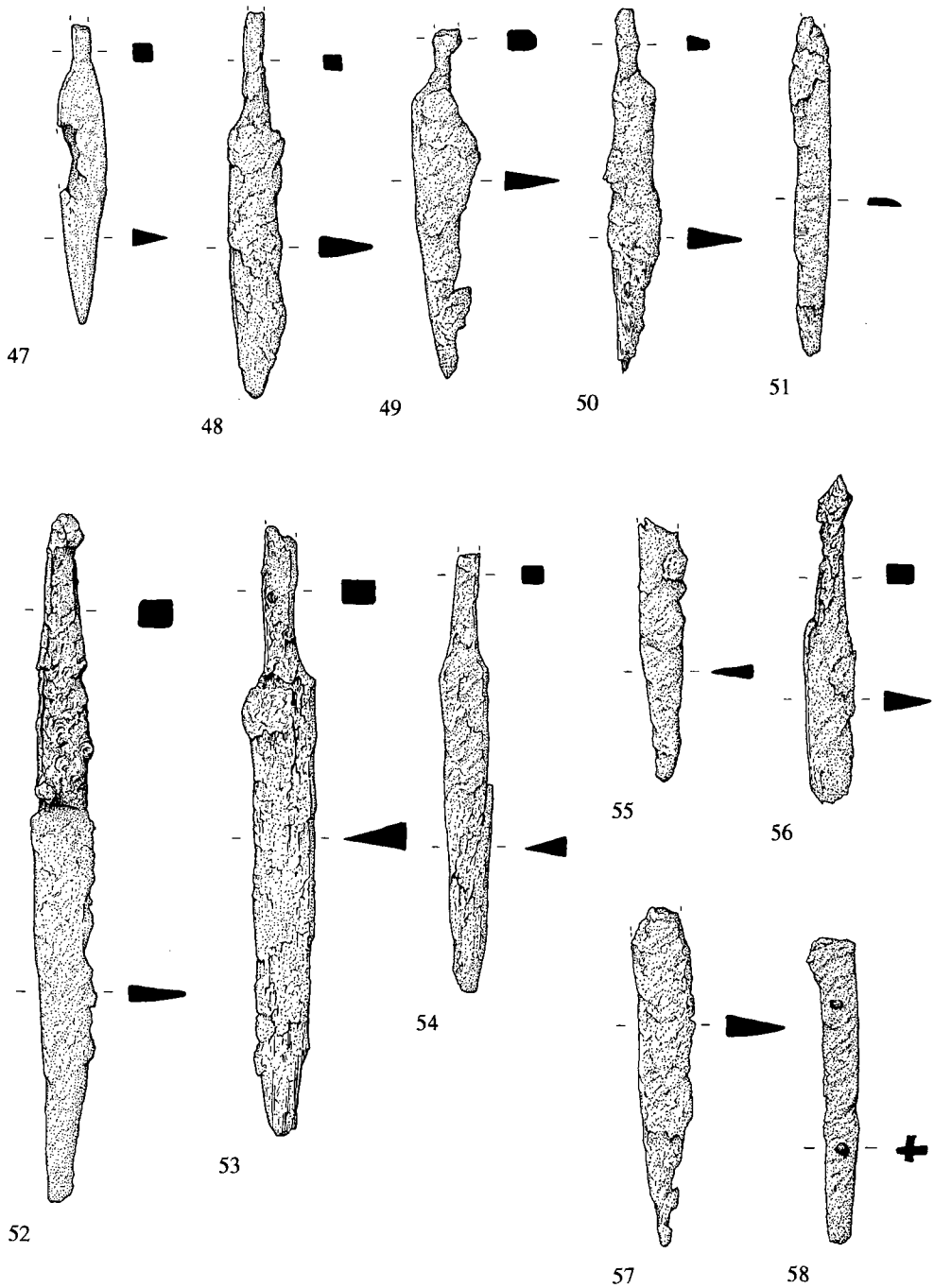
On the evidence of visual examination and X-rays, much of the ironwork consisted of nails and rivets, mostly too corroded or broken to be classified into different types. Only six have been selected for illustration. The two nails with washers were the only two examples of this type.

- 33 Large carpentry nail. Topsoil.
- 34 Large carpentry nail. Within infill of post pit of tannery Structure 4; Period 4.
- 35 Nail with washer. Upper fill of Pit H; probably Period 5.
- 36 Nail with washer. Topsoil.
- 37 Tack nail. Topsoil.
- 38 Rivet. Probable modern deposit.
- 39 Copper-plated barrel padlock. Levelling deposit for Structure 7; Period 4.
- 40 Upper part of a barrel padlock key? Probable modern deposit.
- 41 Tumbler from a lock mechanism. Upper fill of Pit B; Period 4.
- 42 Copper-plated barrel padlock, in a very fragmentary condition. Upper fill of Pit G; possible modern disturbance.
- 43 Rush light-holder? Levelling deposit below Structure 8; Period 5.
- 44 Casket key. Levelling deposit below Structure 8; Period 5. Compare London Museum Medieval Catalogue type IV (Ward-Perkins 1967, 138–40).
- 45 Hinge pivot. Deposit of coal in Structure 8; Period 5.
- 46 Hinge pivot. Infill of Structure 1 post-pit; Period 3.
- 47 Knife. Levelling deposit below Structure 8; Period 5.
- 48 Knife. Within burnt deposit; probably pre-Period 4.
- 49 Knife. Probable modern deposit.
- 50 Knife. Overlying floor of Structure 8; possible modern deposit.
- 51 Knife. Deposit of coal in Structure 8; Period 5.
- 52 Knife. Backfill of robber trench F150; Period 5 or later.
- 53 Knife. Levelling deposit below Structure 8; Period 5.
- 54 Knife. Levelling deposit below Structure 8; Period 5.
- 55 Knife. Upper fill of Pits E and F; Period 4 or later.
- 56 Knife. Upper fill of Pit C; Period 4 or later.
- 57 Knife. Topsoil.
- 58 Knife. Backfill of robber trench F150; Period 5 or later. Only one knife (58) has a scale tang, with two copper alloy tubular rivets for securing the grips. It is likely to date to the late 14th or early 15th century. The remainder have whittle tangs (where they survive), some with mineralized remains of their grips adhering to them. A white substance on the tang of 52 may be remains of cement for securing the grip. No 49 may show the effect of excessive sharpening of the blade.
- 59 Tool with whittle tang and square-sectioned blade. Infill of robber trench of wall of Structure 7; Period 5.
- 60 Fish hook. Levelling deposit for Structure 8; Period 5.
- 61 Fish hook. Levelling deposit for Structure 8; Period 5.
- 62 Fish hook. Probable modern deposit.

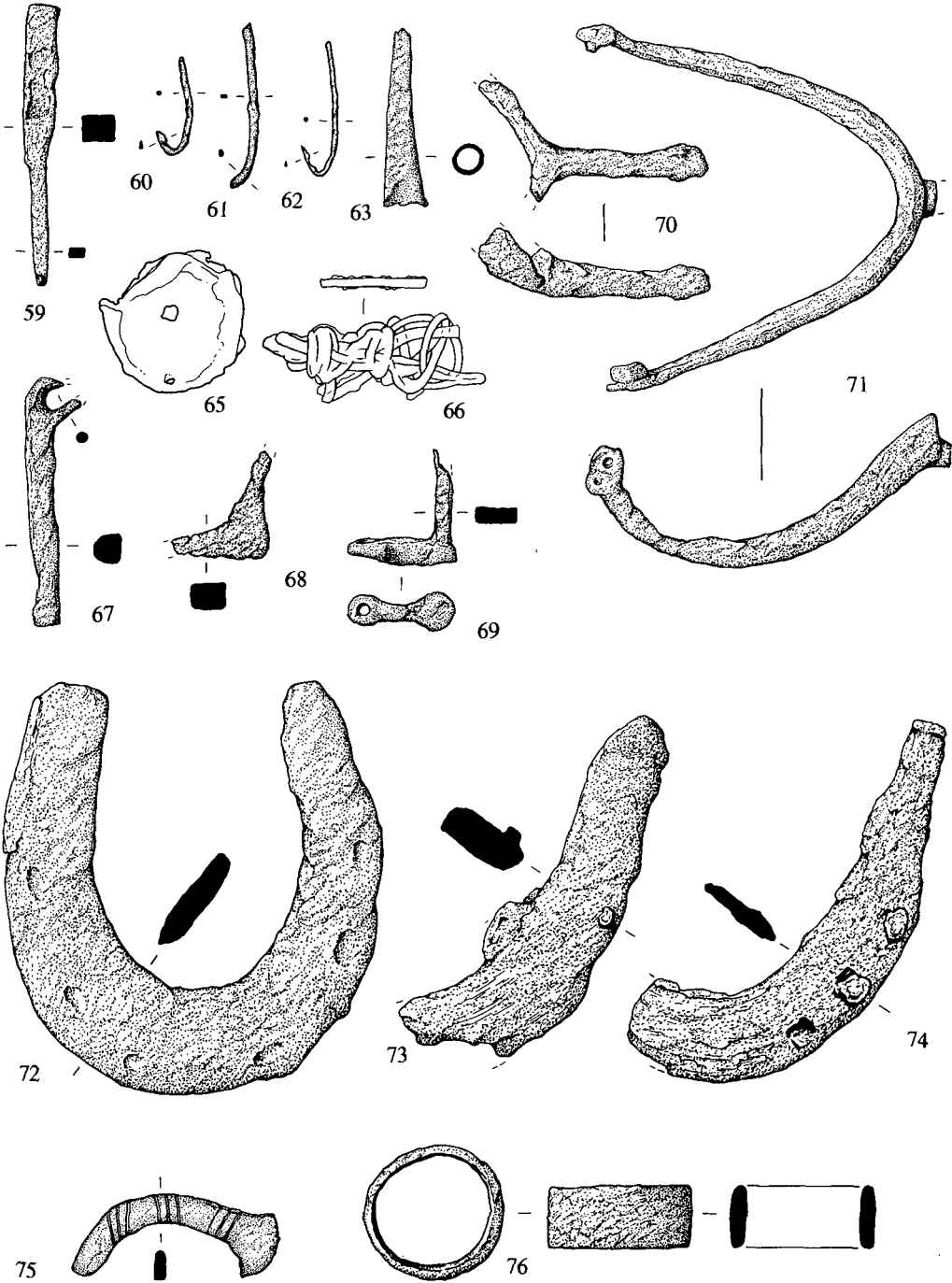
Forty-five fish hooks have been recovered from levels dating from c 1000 to c 1200 at Fuller's Hill, Great Yarmouth (Rogerson 1976); at least two from Jarlshof, Shetland, from a late ninth-/10th-century context (Hamilton 1956, 53, no 77; pl XXIII); 11 from Eyemouth, Berwickshire, dated by the excavator to the 14th or 15th century (Dixon 1986, 34); and one from a late medieval context at Castle Sween in Knapdale (Ewart & Triscott, this volume). All are made from lengths of thin rod or wire, bent into shape like the ones from St Andrews. It appears from the better-preserved hooks that typically they had splayed or thickened ends and barbed points. However, some hooks, made of iron or brass, from Amsterdam have an eye (Baart *et al* 1977, 428–30).



ILLUS 30 Iron objects. Scale 1:2



ILLUS 31 Iron objects (knives). Scale 1:2



ILLUS 32 Iron objects. Scale 1:2

- 63 Arrowhead or ferrule. Infill of post pit of tannery Structure 4; Period 4. Compare an arrowhead from excavations in Perth (Holdsworth 1987, illus 65:63)
- 64 Two badly corroded pieces of mail. Both are made of small links about 6 mm in diameter and are apparently seven rows deep. One piece,  $29 \times 26 \times 20$  mm, is rolled- or folded-up. The other piece measures  $44 \times 25 \times 6$  mm. Fill of post-pit; Period 5 or later. Not illustrated.
- 65 Dome-shaped mount. Fill of post-pit; Period 5 or later.
- 66 Wire. Fill of post-pit; Period 5 or later.
- 67 Piece of snaffle bit? Soil layer cut by Period 5 features; ?Period 4.
- 68 Small, L-shaped mount. Infill of robber trench F299; Period 5 or later.
- 69 Unidentified fitting. Fill of Pit F; Period 4.
- 70 Shank and portion of arm of a rowel(?) spur. Late 14th century. Upper fill of Pit A; Period 4.
- 71 Rowel spur with double-loop terminals. Late 14th/early 15th century. Fill of tannery beam slot; Period 4.
- 72 Horseshoe with six oblong countersunk holes and no calkins. Second half of the 13th century/early 14th century. Topsoil.
- 73 Half a horseshoe with four square nail holes and a calkin. 14th/15th century. Topsoil.
- 74 Half a horseshoe with four square nail holes. 14th/15th century. Topsoil.
- 75 Bar with fishtail terminal and inlaid (perhaps with tin) decorative lines. Possibly part of a sword or dagger hilt. Topsoil.
- 76 Ring-shaped mount. Infill of foundation trench for wall F158; Period 5.

#### *Stone objects (illus 33)*

- 77 Turned spindle whorl, decorated with horizontal grooves. Rock type: grey, medium to fine grained sandstone. Infill of robber trench for Structure 7 wall; Period 5.
- 78 Spindle whorl with very fine turned lines. Rock type: fine to medium grained, greyish quartzite or quartzarenite. Levelling deposit below Structure 7; Period 4.
- 79 Spindle whorl decorated with incised lines. Rock type: fine grained, grey sandstone. Burnt deposit associated with Structure 3; Period 2.
- 80 Spindle whorl, crudely shaped and incised with a ladder pattern. Rock type: pale grey, quartz-rich sandstone. Topsoil.
- 81 Spindle whorl, incomplete, made from pale grey, fine to medium-grained sandstone. Fill of Pit B; Period 4.
- 82 Whetstone, perforated for suspension. Its sides are polished and hollowed by use. Its end is lacking. Rock type: dark grey, fine grained slate. Fill of Pit B; Period 4.
- 83 Whetstone, its side hollowed out by use. Rock type: cream coloured, micaceous psammite. Topsoil.
- 84 Sliver of whetstone, its sides polished from use. L 90 mm. Rock type: fine grained, grey psammite. Unstratified.

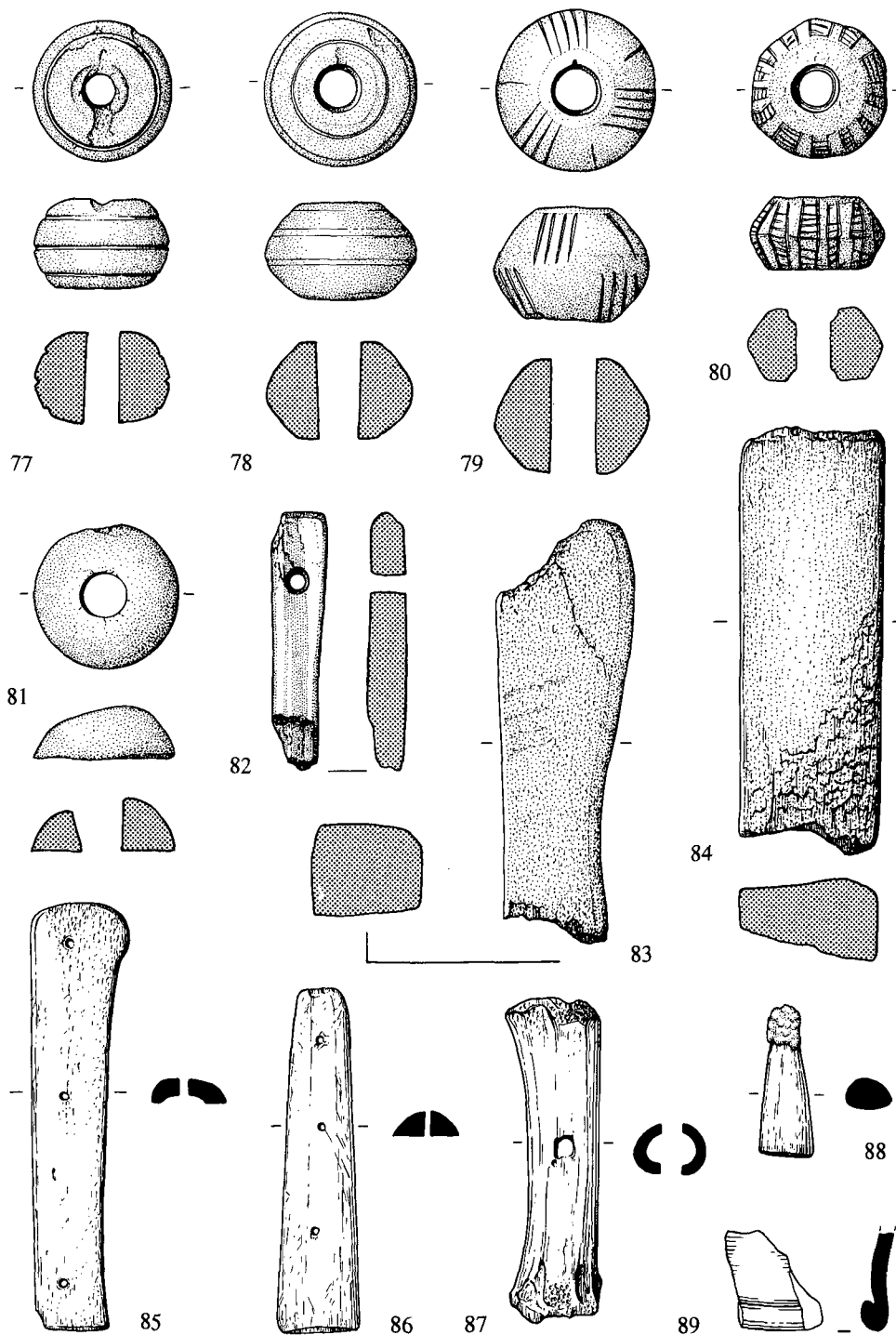
#### *Bone and antler objects (illus 33)*

- 85 Polished bone side piece for a scale tang knife. Levelling deposit below Structure 8; Period 5.
- 86 Polished bone side piece for a scale tang knife. Topsoil.
- 87 Toggle or bobbin, made from a pig metatarsal with diseased ends (F McCormick, pers comm). Topsoil.
- 88 Antler point with lead tip. Levelling deposit for Structure 8; Period 5.

#### *Glass object (illus 33)*

- 89 Small fragment of a clear glass rim or base. Levelling deposit for Structure 8; Period 5.





ILLUS 33 Stone (77-84), bone (85-88) and glass (89) objects. Scale 2:3



ILLUS 34 Stone inscribed with ROBERTUS in Lombardic capitals

#### THE INSCRIBED STONE (ILLUS 34)

John Higitt

During the excavation of Pit H it was noted that the largest of the stones lining the west side of the pit – a weathered and damaged slab of red sandstone measuring approximately 870 × 680 × 110 mm – had an inscription on one of its edges. The inscribed surface seems never to have been neatly dressed. The stone curves back from the plane of the main inscribed area above and below; the tops and bottoms of some letters seem to have followed this change in plane. Most of the letters are damaged but they seem to have ranged from about 30 mm to 50 mm in height, a very usual range for medieval inscribed lettering. There are extensive uninscribed areas before and after the one-word text, which seems therefore to have been intended to stand on its own.

The inscription can be transcribed thus: [RO]BERT[T]V[S]‘:’. (Capitals in square brackets represent damaged, but legible letters; the convention ‘:’ represents a mark of punctuation). The text seems to have opened without an introductory cross but its end is marked by a mark of punctuation consisting of five points. The text is the common personal name ‘Robert’ with a Latin termination.

The lettering is lightly but deliberately incised. (The punctuation at the end seems to have been drilled rather than cut.) The effect of the inscription is somewhere between a graffito and a formally cut piece of lettering. There is some attempt at elegance but the letter-cutter seems to have been competent rather than skilled. Most of the strokes are slender and shallow incised lines. There is no variation in the breadth of letter strokes but double outlines are used to give the letters ‘O’ and ‘V’ more weight. This is a device that is sometimes found around the 12th and 13th centuries in more formally cut inscriptions on stone. There are examples on tomb fragments in the site museum at Rievaulx Abbey. Similarly, the use of serifs follows more formal inscriptions: serifs close the tops of the ‘V’; and the final ‘S’ ends in a simple serif at the top right.

The inscription is in capitals. The ‘E’ is the rounded, or uncial, form and its right-hand side is

closed by a vertical line, in origin a fusion of the serifs of the three terminations. This is a characteristic feature of Lombardic, or Gothic, capitals (also known as Gothic majuscule). This feature seems to appear first in manuscript and metalwork lettering in the later 12th century and it is unlikely to appear in stone-cut lettering before the end of the century (Gray 1986, 109–21; Kloos 1980, 129–32; Kingsford 1929, 152–3, 154). The other distinctive letter form is the pointed form of the ‘O’. The two ‘R’s seem to be deliberately varied. The first is open at the waist and has a straight right leg, the second is closed at the waist and its leg is curved downwards.

The general character of the lettering suggests a date around the 13th century. As there is no body of datable inscriptions of this period from St Andrews, there is no basis for greater precision, particularly not in the case of slightly amateurish lettering.

The function of the inscription is not clear. It commemorates a certain ‘Robertus’, although it is not clear whether he was a living patron, owner or craftsman, or recently deceased. An inscription on the edge of a slab might suggest an architectural function, or possibly the edge of the top of a raised tomb-chest. The informality and apparent lack of other text would seem to argue against any very formal funerary function. There is too little evidence to make further speculation fruitful.

#### PREHISTORIC POTTERY (NOT ILLUSTRATED)

Helen Smith

Beaker pottery, consisting of 60 sherds and 118 small fragments (total weight 475 g) was found in pit F728, one of a series of tree-throw holes located towards the east end of the excavation area. This formed the lower portion of a single vessel which had been crushed *in situ*. There was no apparent evidence of a burial and no other artefacts were present. The sherds were cleaned and examined under a microscope at  $\times 40$  magnification.

There are 17 basal sherds (with an average thickness of 11 mm) and 43 wall sherds (8 mm thick). The remaining pieces are too small or too fragmentary to identify accurately. No rim sherds are present. The fabric, which is extremely soft and friable, consists of a fine clay matrix with 20% angular mixed rock inclusions (1 mm or less). The poor condition of the fabric may be due partly to scorching. The sherds have a pinkish exterior, graduating to a grey interior, suggesting that the vessel was inverted during firing. A burnt black deposit is present on the interior of the wall sherds.

The vessel has been hand-made and the surfaces have been smoothed but not burnished. The exterior of the majority of the wall sherds has been decorated with the impression of roughly parallel bands of twisted cord (1.5 mm dia), spaced 3–5 mm apart. This decoration does not appear to have been carefully or evenly applied. Six wall sherds (probably from immediately above the base) bear no decoration suggesting that there was at least one blank area on the vessel. There is no decoration on the basal sherds. The vessel has a flat base although the small and fragmentary nature of most of the wall and basal sherds provides insufficient information to gain an accurate picture of the dimensions or shape of the complete pot.

#### *Discussion*

The incomplete nature of the vessel makes it impossible to draw any direct parallels on the basis of shape. The corded decoration is scarcely more diagnostic since the application of cord impressions as a decorative technique was employed throughout the Beaker period (c 2100–1500 BC).

Cord-impressed Beaker pottery has been found at many locations throughout Fife (see Clarke 1970, 517; Gibson 1982, 104, 114, 250 for lists of those sites), most noticeably from Tentsmuir and Brackmont Hill, near Leuchars (Childe & Waterston 1942; Longworth 1968), at Balfarg, near Markinch (Mercer 1982; Mercer *et al* 1988); and at Balnacarron (Fleming 1907), 2.5 km south-west of St

Andrews Castle. The Balnacarron pottery consists of sherds from two All-Over Corded vessels (SAAUM 1977 2160/1 & 2160/2 and SAAUM 1977 2161, the latter illustrated in Clarke 1970, 281, no 1663) which were found in close association with a cist. Both are of a finer-walled construction with smoother fabrics and decoration which has been more carefully applied than the sherds from Castlecliffe.

Many of the Tentsmuir sherds (illustrated in Longworth 1968, 78 nos 10–13) show similarities to the St Andrews material. Some of the sherds from Tentsmuir (SAAUM 1977 2245 & SAAUM 1977 2250) have comparable cord impressions and wall thickness.

Perhaps the closest parallel to the Castlecliffe material is an incomplete vessel from Brackmont Hill (NMS accession number 529 719) which consists of the base and lower wall of a cordoned Beaker. The thickness of the walls, the size of the cord used and the spacing of the bands of decoration (including a blank band just above the base) all bear close similarities to those of the St Andrews sherds, as does the rather careless and uneven application of the decoration. However, its fabric is harder and more heavily gritted than the St Andrews pottery which resembles more closely some of the Beaker pottery fabrics from Balfarg (T Cowie, pers comm), especially in its friable nature.

#### MEDIEVAL POTTERY

##### *George Haggarty & Robert Will*

The excavations yielded an assemblage of approximately 9000 sherds of medieval pottery, one of the largest assemblages recovered from a Scottish site. After extensive reconstruction work more than 40 profiles or near-profiles were reassembled, leaving a residue of about 4000 individual sherds. Most of the illustrated vessels were retrieved from Period 3 Pits A, B, C and D. Considerable quantities of pottery were recovered from a wide range of other features and deposits; but much of this material was residual in nature and has been omitted from this report. Practically all of the assemblage is made up of local wares although fabrics from elsewhere in Scotland, from several locations in eastern England and from kiln sites in France, the Low Countries and Germany are also represented. Brief descriptions of all these wares and the associated kiln sites are given below.

##### *Scottish white gritty wares*

Over 90% of the material can be defined as being of Scottish east coast white gritty ware type. The industry that produced these wares has been extensively discussed elsewhere (eg Haggarty 1984; Cox 1984; Crowdy 1986 etc). Numerous attempts to subdivide this ware on the basis of the size of the quartz tempering have merely resulted in an unwieldy series of groups and sub-groups, divided on somewhat questionable grounds. On the evidence of morphological characteristics, there may have been three distinct production areas for Scottish white gritty wares: Tweeddale, Lothian and Fife (Haggarty 1984). It is on such criteria that the following classification is based.

**Tweeddale wares** White gritty wares may have been produced in the Kelso area from the second or third quarter of the 12th century (Cox 1984; Haggarty 1984). Distinctive, straight-sided pottery has been recovered from excavations in Edinburgh, other east coast Scottish sites and from Trondheim and Bergen in Norway (Haggarty 1984; Reed 1990; Haggarty & Will 1995). It has been suggested that this widely traded pottery may owe its origins to the introduction of monasticism into lowland Scotland (Haggarty 1984). It is also likely that, as in Norway, low-status cooking pots were transported to parts of Scotland where there was no locally developed ceramic industry.

**Lothian wares** The evidence for production relies mainly on the results from the excavation of a multi-phase kiln site at Coulston, East Lothian (Brooks 1980). Of the fragments of cooking pots from Coulston, 82% were from globular vessels while only 10% were from straight-sided pots. Of the straight-sided examples illustrated in the report of that excavation, only two had rims similar to those from Tweeddale. By far the most common rim type was square to rectangular. Many of the globular cooking pots also had pronounced cordons on the shoulders below their rims.

**Fife wares** As yet there is no definite evidence that white gritty ware was produced in Fife; although it has been suggested that some distorted material recovered from trenches excavated through a midden at Tentsmuir (to the north of St Andrews) during the First World War may have been wasters (Laing 1967, 143). Field walking in Tentsmuir and around Leuchars has yielded one of the largest assemblages of surface finds of white gritty ware in Scotland. Laing termed this material 'Leuchars ware' and divided it into two grades: 'one fine and thin and the other tending to be thick and coarse' (Laing 1967, 145). The nearest areas to St Andrews with substantial deposits of white clay suitable for the manufacture of pottery are those around Leuchars and Pitscottie (Soil Survey of Scotland 1982). On the evidence of a geophysical survey, another possible kiln site is at Balchrystie, near Earlsferry (Wedderburn 1973, 26); although, without excavation, this remains unconfirmed.

Cooking pots from Fife are similar to those from Coulston although the latter are generally more globular and have shoulder cordons. Fife rims tend to be square or rectangular; and there is a group of large, two-handled vessels which seem to have been used as cooking pots (D Hall, pers comm).

#### *Andenne Ware*

The only sherd of this material found at Castlecliffe has a typical white fabric with an external yellow glaze. It was recovered from topsoil. This industry was based within the Meuse Valley and had its main phase of production between the 11th and the mid-15th centuries (Borremans & Warginaire 1966). Only glazed jugs/pitchers with sagging bases are represented on Scottish sites, as in Trondheim, Norway (Reed 1990, 68). These wares probably date from the 12th to the early 13th century.

#### *Beauvais stoneware*

The only sherd of Beauvais ware retrieved was found in topsoil. White stoneware produced in villages to the north-west of Beauvais had distinctive flat bases and fabrics almost identical with contemporary Seiburg wares with frilled bases. There are references to these stoneware vessels in 1389 (Morrison 1971, 56). Kilns have been found at Le Detroit (Hurst *et al* 1986, 105), and pottery waste heaps from Savignies have been noted (Morrison 1971, 45). Most of the jug and goblet forms are easily identified (*ibid*, 45) whereas body sherds from small drinking bowls are very similar to those from Seiburg (see below). Evidence from the ceramic assemblage retrieved from Fast Castle, Berwickshire, raises the possibility that some stoneware previously attributed to Seiburg should now be reassessed as a product of Beauvais (Haggarty & Jennings 1992, 52).

#### *Beverley-type ware*

There are four sherds of what is probably Type 2b pottery with a smooth, hard orange fabric tempered with minute grains of quartz and a few flakes of mica. Some of the sherds have a bright orange glaze

on their exterior. Beverley ware, which has been studied extensively (Watkins 1987), was produced in Beverley, Yorkshire, between the 12th and the 14th century (Didsbury & Watkins 1990, 50). Fabric Type 2b ware is believed to date from the late 12th to the late 13th century. At Castlecliffe it was recovered from tannery Pit B which dates to the start of Period 4 (late 14th century).

#### *Brandsby-type ware*

Five sherds of this white, sparsely gritted ware were retrieved. It is thought that production began at Brandsby, Yorkshire during the mid-13th century (Le Patourel 1979, 88). Other sites in the area may have produced similar pottery at the same time (Brooks 1987, 153). Documentary evidence suggests that pottery was manufactured at Brandsby into the 16th century (Le Patourel 1968, 124) although the archaeological evidence indicates that production ceased after the second half of the 14th century (S Jennings, pers comm). At Castlecliffe it was recovered from a Period 4 deposit (the infill of tannery Pit D) and later levels.

#### *Humber-type ware*

This ware, of which four sherds were recovered from Period 5 and later levels, has a fairly hard, iron-rich fabric with very fine, sub-angular quartz sand tempering and a light grey core. Production seemed to start in the late 13th century, possibly peaking during the 15th century. The kiln sites producing this type of pottery included West Cowick (Mayes 1964, 297) and Holm-on-Spalding Moor (Hayfield 1992, 38–44).

#### *Langerwehe-type stoneware*

Langerwehe stoneware is represented by two sherds, both of which were retrieved from topsoil. It has a distinctive purple, matt iron wash on its exterior and a slightly under-fired fabric; and is dated to the 14th or 15th century. Langerwehe lies 20 km east of Aachen on the south bank of the River Eifel where pottery may have been produced from the end of the 12th century (Hurst 1977a, 220). Langerwehe pottery was at its most common in Britain between 1350 and 1450 (Hurst 1988, 336). During the last quarter of the 16th century it was largely replaced by Raeran ware drinking mugs, and confusion has sometimes arisen during attempts to differentiate these two fabrics (*ibid*, 336). In Scotland, as in England, Langerwehe seems to have been more common than Seigburg wares (Clark 1976, 211).

#### *London-type sandy ware*

Examples of 12th-/early 13th-century material similar to that retrieved from St Andrews have been recovered from Inverness, Elgin, Aberdeen and Perth (Pearce *et al* 1985, 7). Three sherds were retrieved from the Castlecliffe site, all of them from topsoil or recently disturbed levels. Its rough, sandy fabric is usually reddish or light brown but when reduced it tends to be pale grey; it often has a white slip beneath the glaze. The precise locations of the kiln sites are not known although they may have been situated close to the city of London (*ibid*, 54). This industry is thought to have operated between c 1140 and c 1350; although it may have been exported only during the 12th and early 13th centuries (*ibid*, 64). In most cases, only sherds from highly decorated jugs (often copies of Rouen wares) are found in Scotland.

*Low countries greyware*

Four sherds of Low Countries greyware were recovered from Period 5 or later levels (illus 43 no 63). Verhaeghe (1983, 4) has summarized the difficulties of attributing the wide range of greywares imported into Scotland to production centres in the Low Countries. It is possible that greyware cooking pots recovered from levels dating to c 1150 at Perth High Street were from Flanders (*ibid*, 5). It is also possible that Low Countries greyware recovered during an exploratory excavation in Leith is of a similar date (M Collard, pers comm). The most convincing evidence for the continuance of this trade comes from excavations in Elgin, Aberdeen, Perth and Linlithgow, all of which yielded hump-shouldered, Flemish greyware jugs typical of the period 1325-75 (Verhaeghe & Lindsay 1983, 97). This trade probably ceased around 1400 when these wares were superseded by Low Countries redwares.

*Low countries highly decorated ware*

This group of highly decorated material, of which four fragments were retrieved from St Andrews, was termed 'Aardenburg-type ware' by Trimp Burger (1974, 1). Aardenburg is in southern Holland but research has demonstrated that the main production area of this material was in Flanders, possibly around Bruges (Verhaeghe 1983, 29). As a consequence, it is now termed 'Low Countries highly decorated ware'. The sand-tempered fabrics of this group range from orange-red to a light reddish-brown, often with a grey core. The exterior is frequently coated with a white slip under a lead glaze to which copper has been added to produce a mottled green colour. Of the many techniques used to decorate the jugs, the most common were rouletting and the application of strips and sometimes stamps. In Scotland, this ware has been found in late 13th- and early 14th-century horizons. Its earliest occurrence (illus 44 no 94) at Castlecliffe was within an erosion deposit in tannery Pit F, perhaps dating to the 14th century.

*Low countries redware*

Twenty-seven sherds of this material were recovered, including the rod handle of a skillet (illus 44 no 96) and the base of a vessel with thumbled feet (illus 44 no 101). It occurred within the late 14th- or early 15th-century infilling deposits of several features belonging to the tannery.

Low Countries redware comprises an extensive range of undecorated, lead-glazed earthenware, manufactured at many locations from the 13th century until at least the 18th century (Baart *et al* 1977, 275). There are known to have been kilns at Utrecht (Bruijn 1979, 21), Aardenburg (Trimp Burger 1974, 1) and Bergen op Zoom (Reed 1990, 39). This pottery shows an exceptional typological uniformity: early forms usually have glazed patches on the exterior; by the end of the 15th century the external glaze cover is complete. Large amounts of this redware have been recovered from excavations in Newcastle, Hull, Norwich and other English east coast towns within contexts dating from the middle of the 14th century (Ellison 1981, 130; Watkins 1987, 147; Jennings 1981, 32). Although pottery of similar date has been recovered from Scottish east coast burghs, the quantities are small and the range of forms limited. The material recovered from St Andrews includes a skillet with rod handle; cauldrons with thumbled feet; and a jug.

*Martincamp flasks*

Long-necked flasks were produced in Martincamp (which lies between Beauvais and Dieppe) between the second half of the 15th century and the 17th century (Ickowicz 1993, 59). Three distinct

types are known: Type I, a hard, off-white to light buff earthenware (dating from 1475 to 1550); Type II, a hard, light to dark grey stoneware (16th century); and Type III, a very hard, orange/red earthenware/near-stoneware (17th century). The necks of these flasks were made separately and luted together. For a discussion of these flasks, see Hurst (1966, 54–9; 1977, 156–7; 1986b, 102–4). The single sherd recovered from topsoil at Castlecliffe, St Andrews, was akin to Type I. Such flasks are extremely common in Scotland where they are often retrieved from late medieval sites of high status.

#### *North French wares*

This category covers a group of northern French pottery which cannot be attributed to a specific source (Reed 1990, 40). Characteristics of this pottery include: a white fabric; a mottled green glaze; and a rim shape similar to that of Rouen wares. Two conjoining sherds were recovered from topsoil at Castlecliffe (illus 44 no 93).

#### *Paffrath ware*

One rim (illus 44 no 95) and three body sherds with the silvery-blue, metallic sheen characteristic of the classic Paffrath globular cooking pot were recovered from infilling deposits of tannery pits. Their deposition, therefore, can be dated to the start of Period 4 (probably late 14th century). The small size of the rim, however, indicates that the sherd is likely to be from a handled ladle. It has been suggested (Beckmann 1974, 188) that this material is the prototype of the later Seigburg stoneware. Most large-scale urban excavations on the east coast of Scotland have yielded examples (Verhaeghe 1983, 5). Paffrath probably reached Scotland from the Low Countries via the Rivers Meuse and Rhine. None of the Scottish discoveries can be dated securely although Paffrath wares are normally associated with post-Conquest sites in England.

#### *Perth-type ware*

Eighteen sherds in a fine-grained red fabric, tempered with fine quartz sand, mica and a few grains of red iron ore were recovered. Most have a white slip over both surfaces; two have traces of external lead glazing, one over the white slip. Thus far, no kiln sites have been identified although the large quantity of this material recovered from excavations in Perth is a likely indicator that it was produced locally (Scott & Blanchard 1983, 503). This industry is thought to date from the late 12th century. At Castlecliffe, this material was found in Period 4 (late 14th century) and later contexts.

#### *Pingsdorf-type ware*

Six sherds (illus 44 no 92) in a coarse fabric fired to near-stoneware quality were retrieved from a levelling deposit below a Period 4 (late 14th century) building. Four conjoining sherds formed part of a cooking pot or spouted pitcher. The fabric is dark brown with a lighter core; below the rim it is painted red. Production sites extended over a wide area including: Vorgebirge, near Cologne, the original site of Pingsdorf (Ludtke 1989, 39); Limburgh, near Hanover (Bruijn 1963, 357); and the Langerwehe (Reed 1990, 34). It is thought likely that more production sites await identification (Jennings 1981, 26). These wares date from the late ninth to the 13th century in the Rhineland and into the 14th century elsewhere. Pingsdorf-type ware is not common in Scotland where its use may date from the 12th century (Verhaeghe 1983, 26).



*Rouen-type ware*

Five body sherds and a rod handle fragment were retrieved (illus 44 nos 97, 99 & 100); all are decorated with typical panels of yellow and red glaze with applied strip and rouletted borders. Rouen-type pottery is possibly the most distinctive of all the imported material. The highly decorated, globular jugs have polychrome decorated panels; their rod handles are often pierced, just below the rim, with a pair of ears. The fabric can be white or a very pale pink and tempered with fine quartz sand and tiny plates of mica. No kiln sites have been identified although the Seine Valley is thought to be the most likely source. It has been suggested that its trade began in the second half of the 12th century, becoming more common during the 13th century (Barton 1966, 73). Rouen-type ware is not common in Scotland, being confined mainly to the larger east coast burghs. The largest assemblage to be published comprises 43 sherds excavated from Perth (Cheer 1991, 51). Its earliest occurrence at Castlecliffe was within the infilling deposits of tannery Pit B, hence dating to the late 14th century.

*Saintonge green glaze*

Five sherds of this material were recovered, its earliest occurrence being within the infill of tannery Pit F. This would date its deposition probably to the late 14th century. The Saintonge area of south-west France is famed for its pottery industry which emerged in the late 11th or early 12th century. It produced a range of cooking pots, jugs and tableware in a fine, white to buff fabric (often micaceous); and exported vast quantities of its produce from the mid-13th century onwards (Chapelot 1972, 100). Fifty kilns have been identified recently on a limestone plateau above the River Charente, to the north-east of Saintes (Hurst *et al* 1986, 76). The earliest jugs were globular with large spouts (parrot beaks), flat bases and broad strap handles. During the 13th century there was a stylistic change, resulting in taller jugs with flanged bases and a variety of decoration, aimed for the export market. Elegant, polychrome glazed vessels usually occur in contexts dated to the late 13th or early 14th centuries. The most common type of jug imported to Scotland has a light green, often speckled glaze. English east coast towns such as Hull have produced very large assemblages of Saintonge wares (Watkins 1987, 125); Scotland has no comparable collections. The evidence from excavations in Ayr indicates that Saintonge pottery may be more common in the south-west rather than on the east coast of Scotland (Lindsay 1985, 211).

*Scarborough ware*

Of the Scarborough wares recovered from the excavation, ten sherds are of Scarborough fabric 1 which occurred in Period 4 (late 14th century) and later deposits (illus 42 no 55). The remaining 52 sherds were of fabric 2 which, again, were retrieved from Period 4 and later deposits. Scarborough ware is widely distributed along the east coast of Scotland: few medieval sites of any status do not produce at least a few sherds (Farmer 1979, 2). Highly decorated, glazed jugs of quality faced little competition from Scottish potteries although decorative devices such as face masks were copied extensively. There continues to be considerable debate about the dating of the Scarborough kilns and their products. Fabric 1, which is a sandy pink to red, has been dated from the middle of the 12th to the first quarter of the 13th century; while fabric 2, which is hard and off-white, has been dated from the first quarter of the 13th to the middle of the 14th century (Farmer & Farmer 1982). However, recent research in Hull, Aberdeen and Bergen, Norway, has cast doubt on this chronology (Watkins 1987, 113; Murray 1982, 126; Herteig 1982, 98). Recent excavations in Perth have demonstrated

that Scarborough fabric 1 was present around 1275 and that fabric 2 followed a little later (Cheer 1991, 50).

### *Scottish medieval redwares*

Thirty-eight sherds were retrieved from a wide spectrum of contexts, the earliest of which was the infill of what is thought to be a Period 2 post-hole. This would date the deposition of the pottery probably to the 14th century. The term 'Scottish medieval redwares' is used to describe a range of oxidized fabrics which were produced to the north-east of the River Tay. In some cases it has been possible to assign discrete fabric names or codes to varieties of this material (Murray 1982, 118; Scott & Blanchard 1983, 503; Murray & Murray 1993, 150); although it is usually impossible to pinpoint sources. The fabrics are always sandy and sometimes coarse in texture with inclusions of iron ore, granite, mica, quartz, feldspar and other mineral and rock fragments. The colour varies from red to light grey.

### *Scottish post-medieval reduced ware*

Somewhat unusually for such a large assemblage of Scottish material, only five sherds of this pottery were retrieved, and none was within a secure context. This pottery, with its wide distribution throughout Scotland and long date range (from the late 15th to early 18th century), has been discussed at length elsewhere (Haggarty 1980a & 1980b). It has been suggested that one of its production sites was in Glasgow and another was near Stirling Castle (Haggarty 1980a, 61). Recent work has confirmed that there was a large production site centred on Throsk, near Stirling in the 17th and early 18th centuries (Caldwell & Dean 1992).

### *Seigburg stoneware*

One sherd from a jug, in a fine, light grey fabric, was recovered from an unsecured context (illus 44 no 98). Seigburg is situated on the River Seig, near its confluence with the Rhine. Ceramic production probably started there in the first half of the 12th century. By the early 14th century it had developed into one of the largest production centres for stoneware in Europe, manufacturing an extensive range of vessels, most of which had frilled bases. Some of the forms had a wide distribution in 14th- and 15th-century England (Hurst 1988, 336). There were three main pottery districts in the town: Aulgasse was the most important, having at least 15 major kiln sites stretching over a distance of more than 600 m (Hurst *et al* 1986, 176). Between 1961 and 1966 a tip of stoneware sherds, 60 m long, 23 m wide and 5 m high, was excavated (Beckmann 1974, 183–5).

### *Stamford ware*

One handle-rim and six body sherds of developed Stamford ware were retrieved, all of them probably in fabric B (Kilmurry 1980, 322). Each one has a heavy, copper-green external glaze. Two sherds are decorated with vertical strips, possibly from slim jugs (*ibid*, 55). A kiln site at Stamford School has been radiocarbon dated to c AD 1200. At Castlecliffe the earliest levels containing this ware were associated with the abandonment of the tannery, probably in the late 14th century (illus 44 no 81). Stamford-type wares have been recovered from several locations along the east coast of Scotland (Kilmurry, 1980, 340; Cheer, 1991, 51; C Murray, pers comm).

*Winksley-type ware*

There were 25 sherds of pottery from Winksley, north Yorkshire. It is thought that production started at Winksley in the second half of the 12th century (Bellamy & Le Patourel 1970, 110;), declining a century later (*ibid*, 152). At the St Andrews site this material was retrieved from several contexts associated with the abandonment of the tannery, probably in the late 14th century (illus 44 no 85). Sherds recovered from Scottish sites are often highly decorated, the lead glaze being either green or yellow. The fabrics vary although the material from St Andrews is mainly off-white in colour and finely tempered with quartz.

*York glazed ware*

Five sherds of this material were recovered from the Castlecliffe site. One sherd was retrieved from a probable late 14th-century context, the remainder being within topsoil (illus 44 no 84). York glazed ware is thought to have originated in the late 12th or early 13th century, declining by the start of the 14th century (Brooks 1987, 151). Its precise source is not known although it is thought to have been near the city of York (*ibid*, 151). This quartz-tempered pottery is usually white; a lustrous, yellow glaze is also quite common. The tubular-spouted, highly decorated jugs often have rod handles and ears in the northern French style.

*Yorkshire wares*

Thirty-seven sherds were retrieved from the excavation. The contexts containing this material date from the abandonment of the tannery (probably late 14th century) onwards (illus 39 no 39). This heterogeneous group includes a range of pottery, the precise provenances of which have not been identified. The fabrics range in colour from off-white to pale brown. The paste is quartz tempered: the flecks may be dense but they are usually small and angular. The glaze is usually pale green with flecks although it can often be a dark green or yellow with brown decoration (Reed 1990, 30). Characteristic products are highly decorated jugs which date from the late 12th century to the first half of the 13th century after which output declined (Brooks 1987, 152).

## CATALOGUE OF ILLUSTRATED VESSELS

Unless otherwise stated, all the illustrated material is composed of (probably local) white gritty ware.

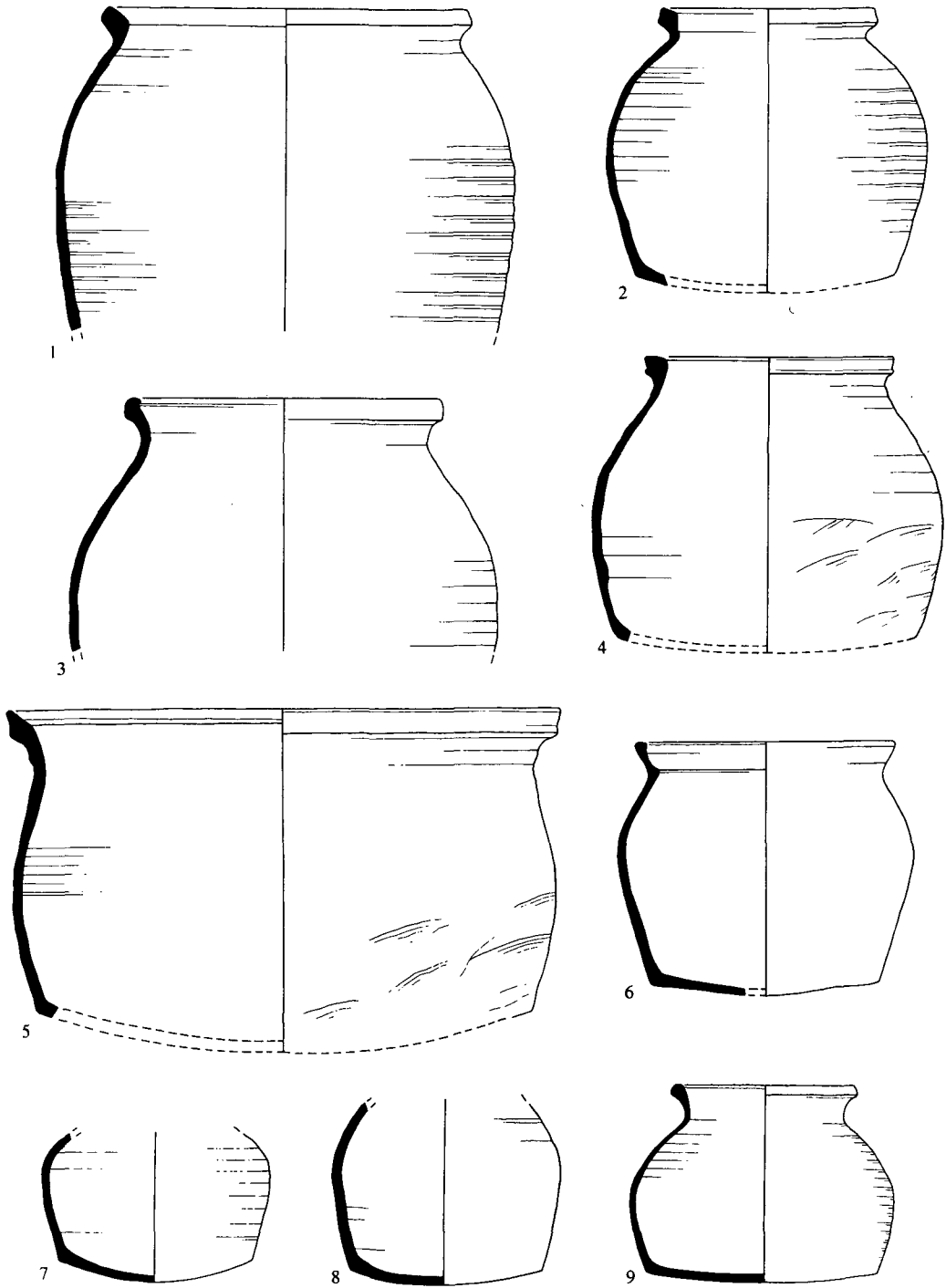
*Cooking pots and jars (illus 35-8)*

- 1 Large fragment of cooking pot; external fuming. Infill of Pit B; Period 4.
- 2 Globular cooking pot; some external fuming on lower body. Infill of Pit B; Period 4.
- 3 Large fragment of cooking pot; external fuming. Infill of Pit B; Period 4.
- 4 Cooking pot; traces of knife-trimming around base; heavy fuming and traces of carbon over exterior. Infill of Pit B; Period 4.
- 5 Complete profile of cooking pot; band of external fuming around lower body. Infill of tannery beam slot; Period 3 or 4.
- 6 Complete cooking pot with reduced interior; external fuming. Infill of Pit C; Period 4.
- 7 Half profile of cooking pot; extensive burning over exterior. Infill of Pit D; Period 4.
- 8 Large fragment of base of cooking pot; traces of external glaze where it may have been in contact with another vessel in kiln; heavy external and internal fuming. Infill of Pit B; Period 4.

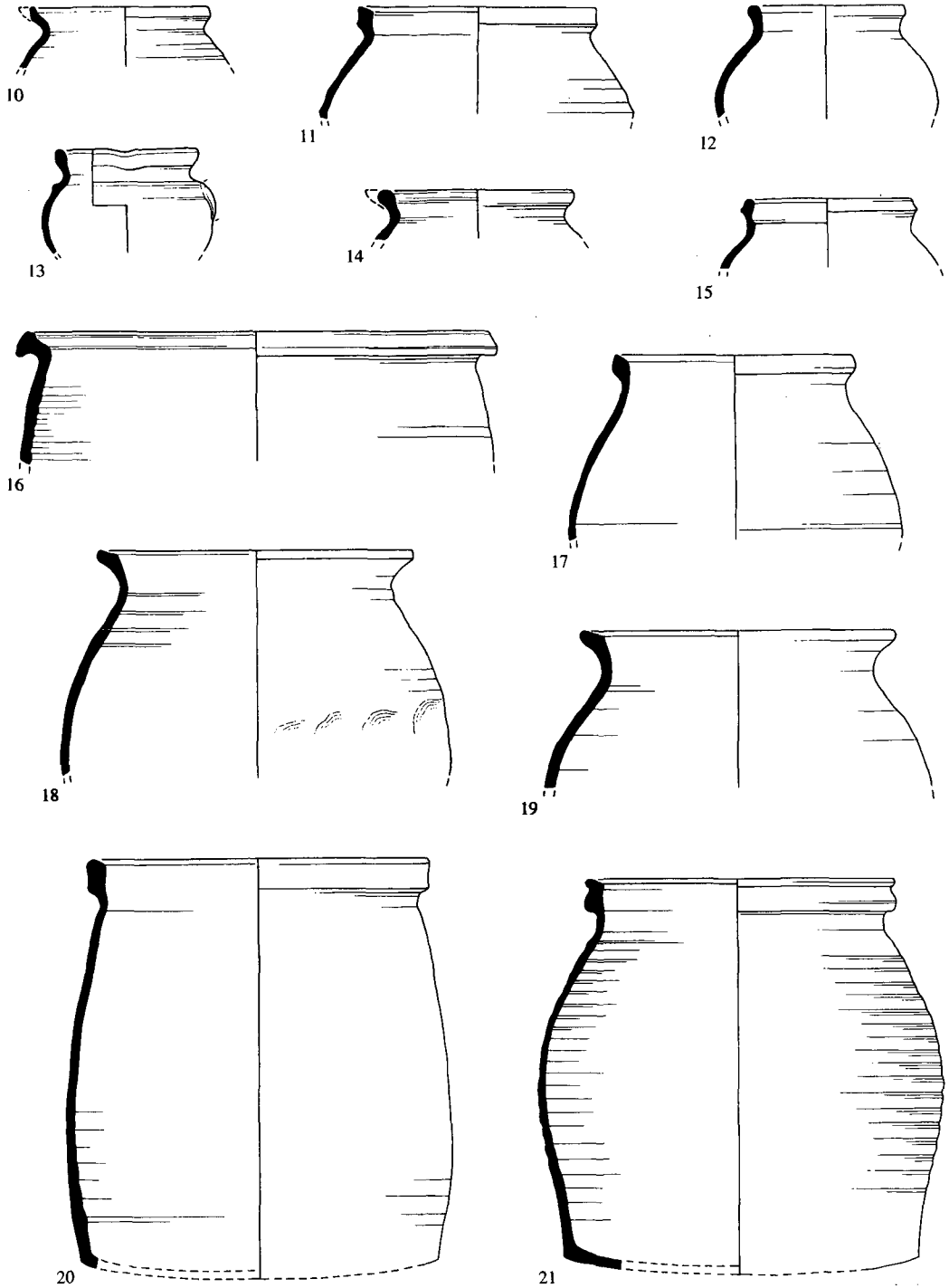
- 9 Complete, flat-bottomed cooking pot; fuming over most of surface. Infill of Pit D; Period 4.
- 10 Rim of ?pipkin with finger-pinched spout; fuming over external glaze. Infill of Pit B; Period 4.
- 11 Cooking pot rim. Infill of Pit B; Period 4.
- 12 Half profile of cooking pot; glazed below rim and over neck; some external fuming. 19th-/20th-century deposit.
- 13 Rim and shoulder of small, unglazed pipkin with pronounced neck cordon and handle scar; external fuming. Robber trench (F242) for wall F552; Period 5 or later.
- 14 Large rim sherd of small ?pipkin with finger-pinched spout; pronounced neck cordon and handle scar; external glaze. Infill of Pit B; Period 4.
- 15 Globular cooking pot rim; external fuming. Infill of Pit K, a possible sand quarry of unknown date.
- 16 Rim of large storage jar. Infill of Pit K, a possible sand quarry of unknown date.
- 17 Cooking pot rim; fuming on exterior except for a band, 20–30 mm wide, below rim. Infill of Pit D; Period 4.
- 18 Large fragment of cooking pot; patch of fuming on one side. Topsoil.
- 19 Cooking pot rim. Infill of Pit D; Period 4.
- 20 Profile of large, straight-sided cooking pot; external fuming at basal angle. Levelling deposit sealing Pit A; Period 4 or later.
- 21 Complete storage jar; splashes of glaze on exterior of body; some external fuming around basal angle. Infill of Pit A; Period 4.
- 22 Rim of large storage jar with pronounced lid seat; slight traces of fuming on body and underside of rim. Infill of Pit C; Period 4.
- 23 Small, globular cooking pot; total fuming on exterior. Infill of Pit B; Period 4.
- 24 Substantial fragment of cooking pot; some external fuming. Infill of Pit B; Period 4.
- 25 Near-complete cooking pot. Infill of Pit B; Period 4.
- 26 Cooking pot; some external fuming. Infill of Pit B; Period 4.
- 27 Straight-sided cooking pot; external fuming. 19th-/20th-century deposit.
- 28 Large basal angle fragment of large cooking pot; heavy sooting and fuming on exterior. Infills of Pits C and F; Period 4.
- 29 Large fragment of base and body of cooking pot. Infill of Pit A; Period 4.
- 30 Cooking pot rim; external fuming. Infill of Pit B; Period 4.
- 31 Cooking pot rim; patch of localized burning on rim. Infill of Pit B; Period 4.
- 32 Cooking pot rim; traces of fuming on exterior. Infill of Pit B; Period 4.
- 33 Large fragment of globular storage jar. Infill of Pit C; Period 4.
- 34 Globular cooking pot/ladle with very pronounced rounded base and simple, finger-pinched spout and handle; pronounced finger indentation inside vessel at junction with handle; extensive fuming. Infill of Pit C; Period 4.
- 35 Cooking pot rim; some external fuming. Infill of Pit B; Period 4.

### *Jugs (illus 39–42)*

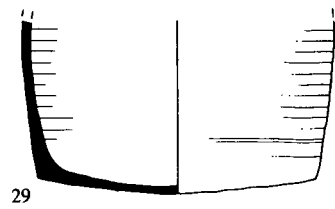
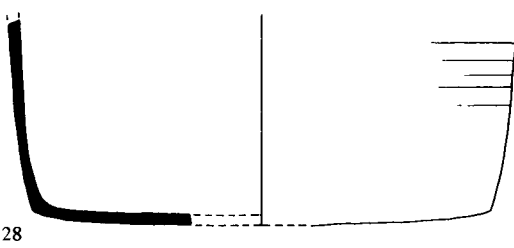
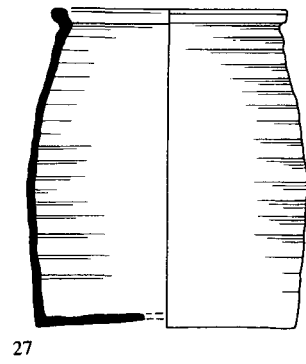
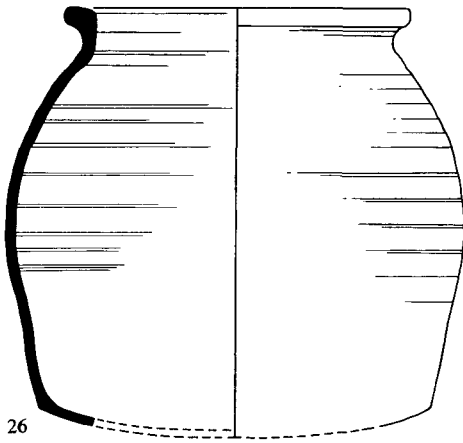
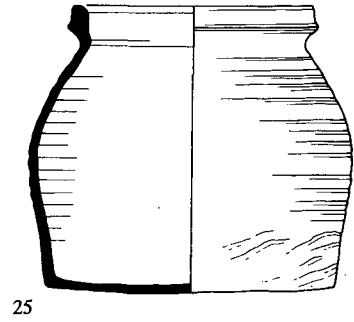
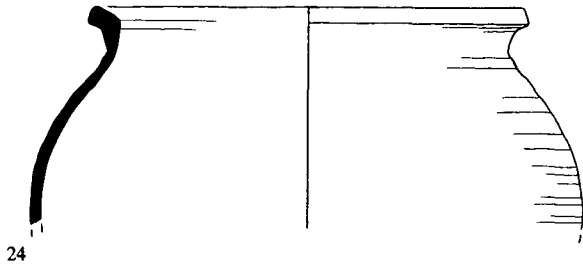
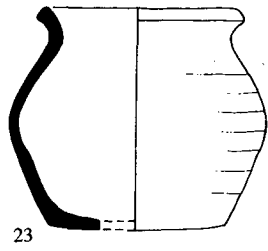
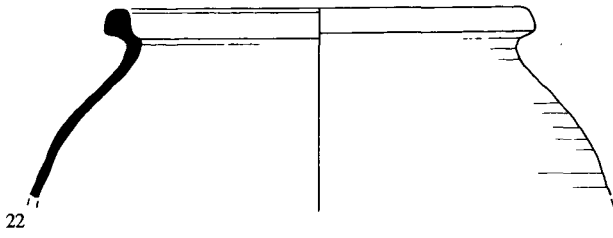
- 36 Substantial fragment of jug with finger-pinched spout; red painted (or possibly degraded glaze) decoration of near vertical strokes applied with finger; two parallel, vertical lines run down exterior of handle; some external fuming on one side. Infill of post pit; probably Period 4.
- 37 Highly fired fragment from small jug with hole punched through body before handle applied; may be earlier (perhaps 12th century) than most of assemblage; some evidence of external glazing. Infill of Pit C; Period 4.
- 38 Rim of jug with slight evidence of finger-pinched spout; pink wash over whole vessel and degraded glaze over wash. Infill of Pit C; Period 4.
- 39 Shoulder, neck and rim of substantial jug, in ?Yorkshire ware, with finger-pinched spout and 24 random stabs on the outer surface of the handle; small patch of glaze on the upper shoulder, below the neck; some fuming on exterior of base. Infill of tannery beam slot; Period 3 or 4.



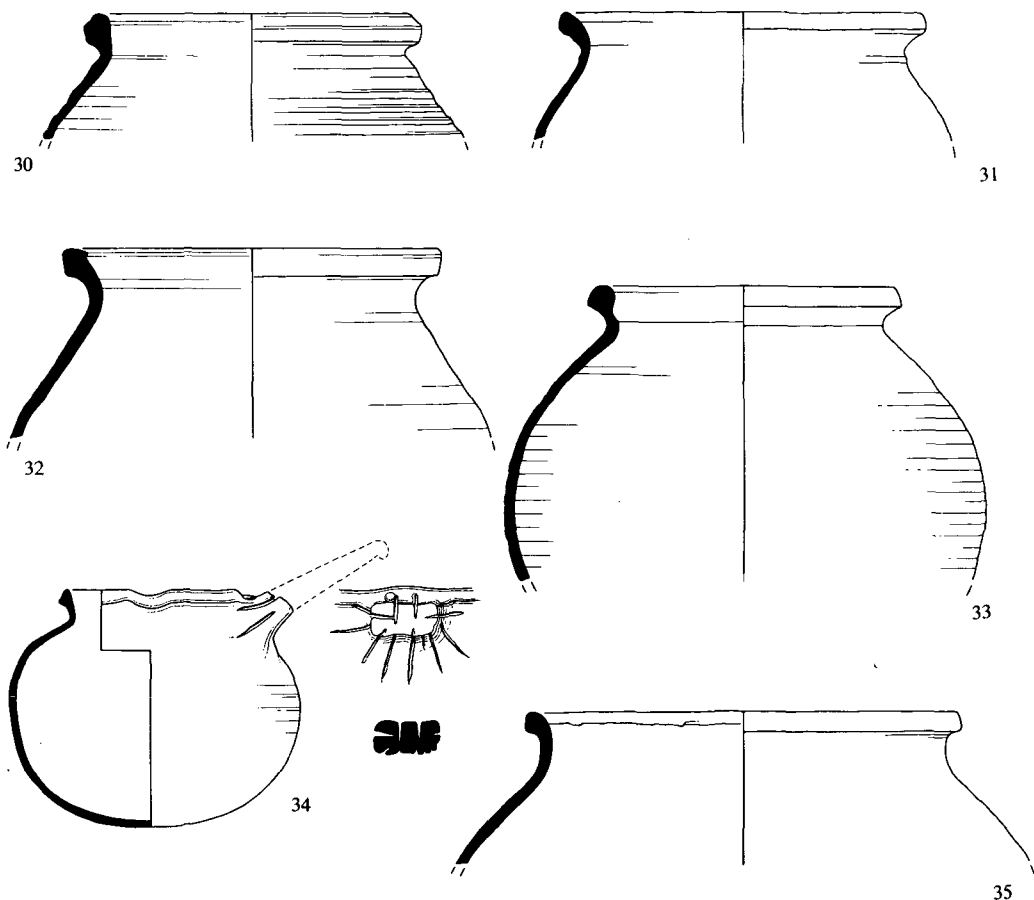
ILLUS 35 Medieval pottery: cooking pots. Scale 1:4



ILLUS 36 Medieval pottery: cooking pots. Scale 1:4



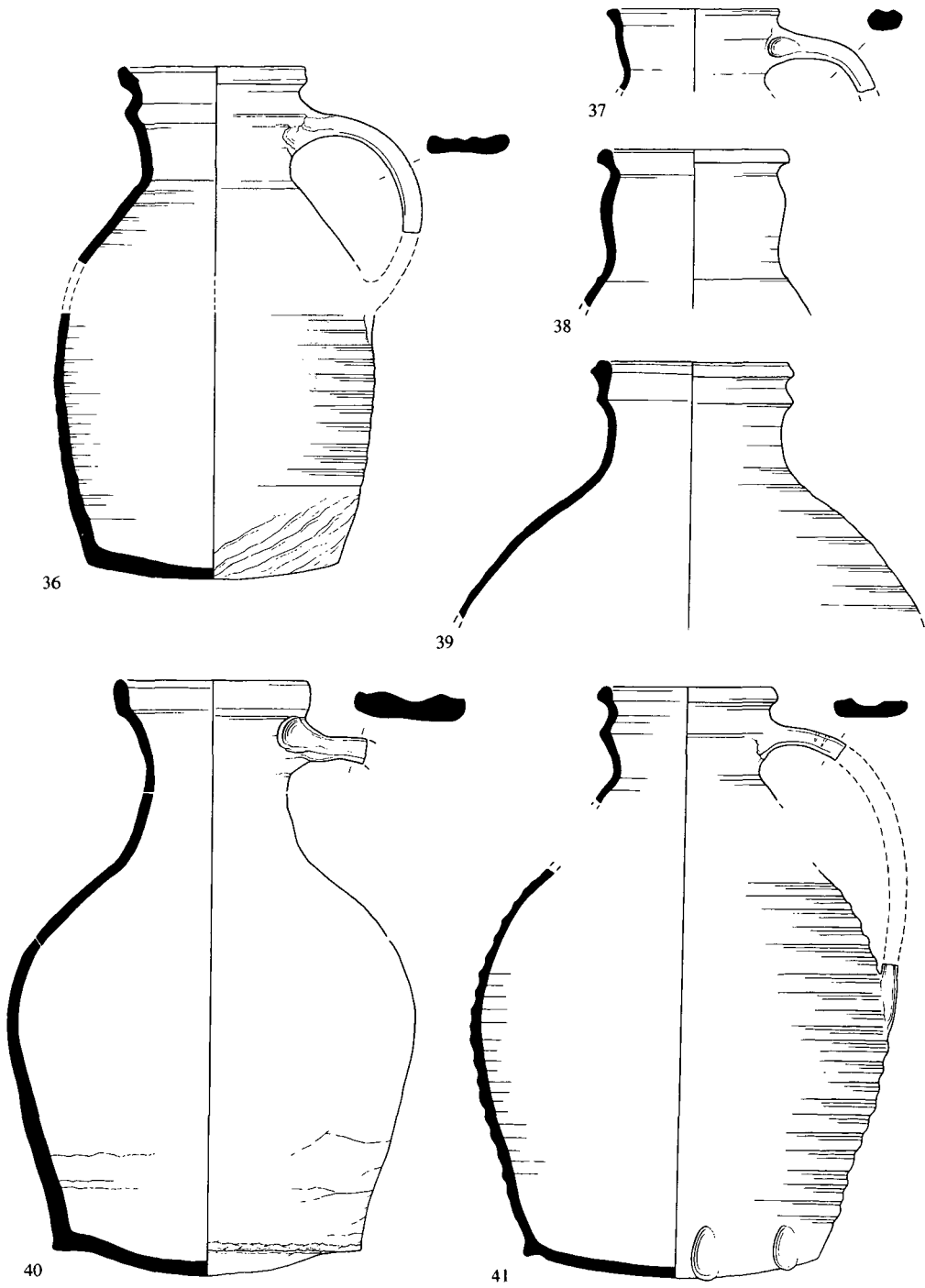
ILLUS 37 Medieval pottery: cooking pots. Scale 1:4



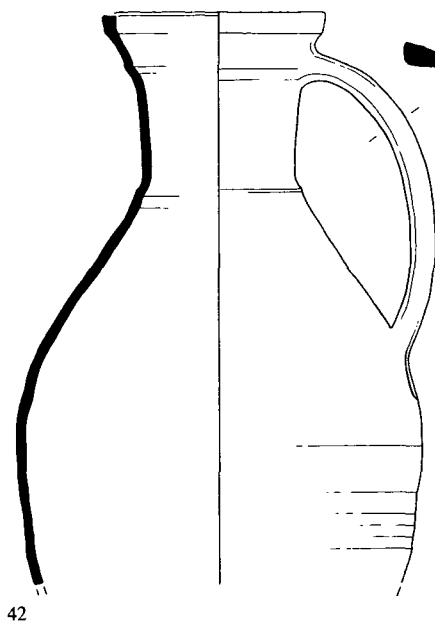
ILLUS 38 Medieval pottery: cooking pots. Scale 1:4

- 40 Near complete profile of jug with sagging base; bib of glaze on shoulder, below spout. Possibly coil-built. Topsoil.
- 41 Incomplete profile of jug with row of three slashes on base of handle; upper half of vessel glazed. Infill of Pit C; Period 4.
- 42 Half profile of jug; glaze almost totally denuded, probably because of soil conditions. Infill of Pit D; Period 4.
- 43 Large jug; its glaze almost totally denuded, perhaps because of soil conditions. Infill of Pit B; Period 4.
- 44 Large, misshapen fragment of jug with tubular bridge spout in grey reduced ware; heavily glazed over whole of exterior. Infill of Pit B; Period 4.
- 45 Substantial fragment of base and body of squat jug; heavily fumed on base. Topsoil.
- 46 Base and body of jug; traces of white slip over whole of exterior; glazed on upper shoulder. Infill of Pit C; Period 4.
- 47 Jug with spout and three handles in grey reduced ware; green glaze over whole of exterior. Infill of Pit B; Period 4.
- 48 Rim of coarse jug/ladle with large handle fragment attached; hole punched through vessel before handle applied and three finger compressions on inside of vessel where handle attached; random holes punched

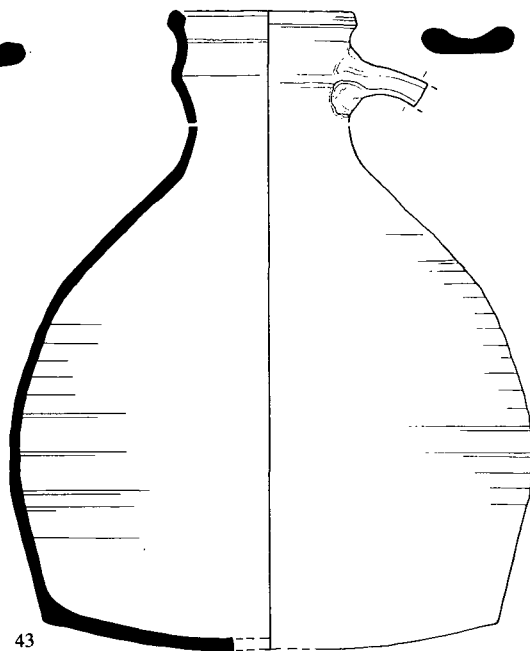




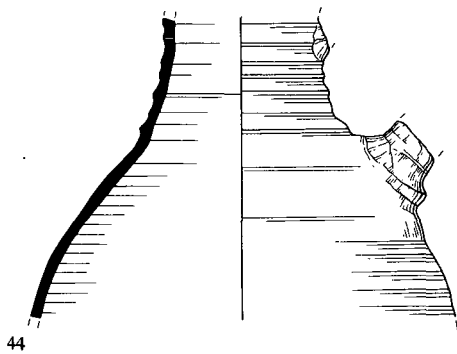
ILLUS 39 Medieval pottery: jugs. Scale 1:4



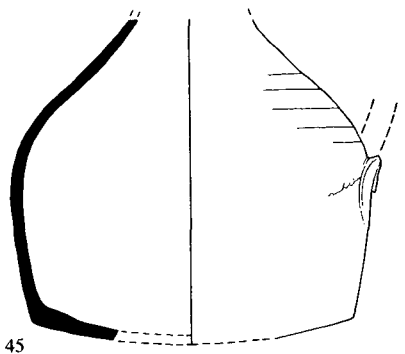
42



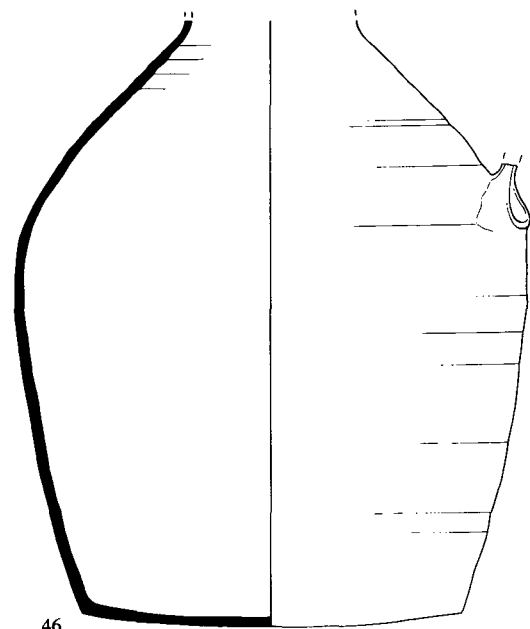
43



44

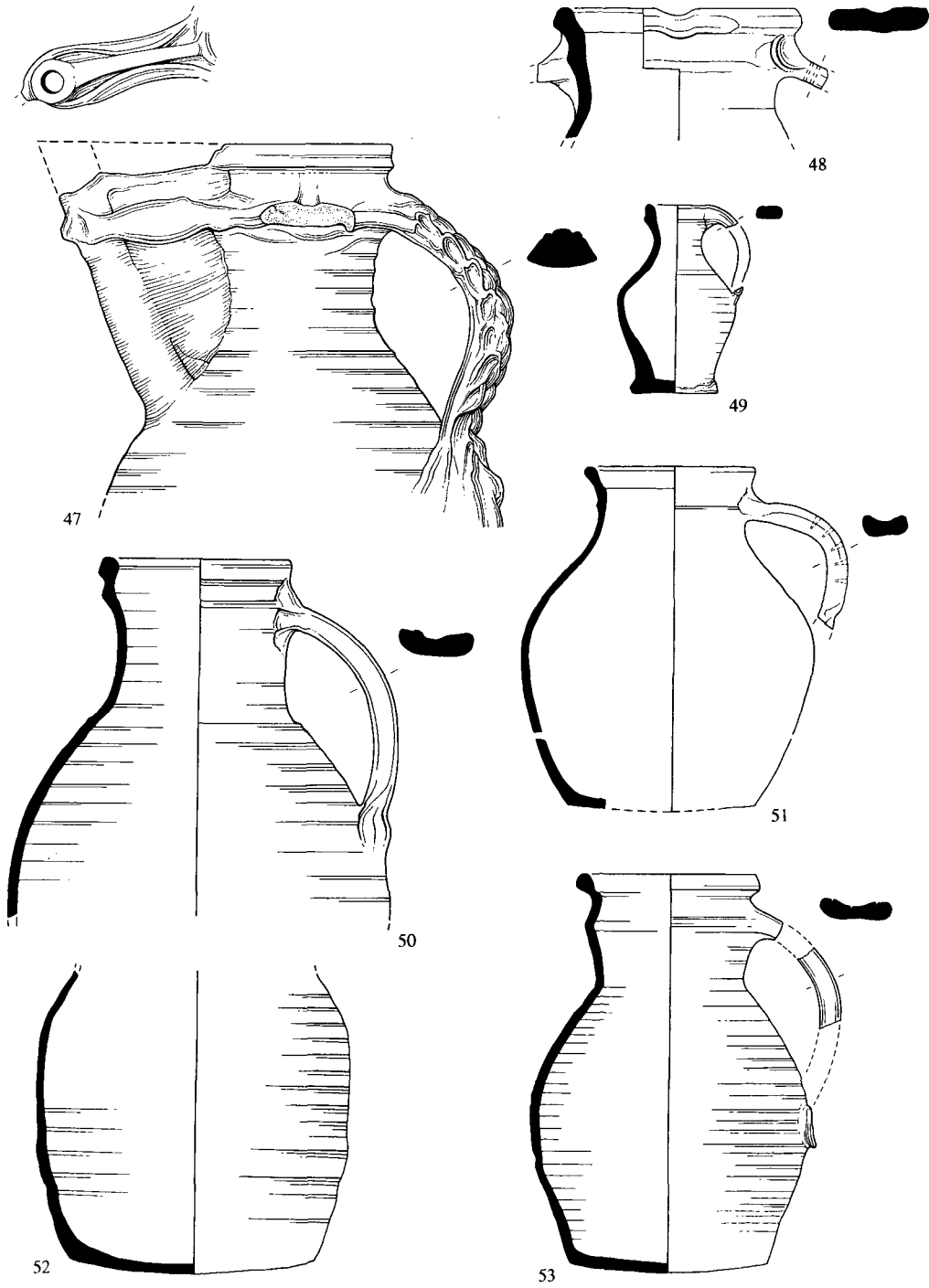


45

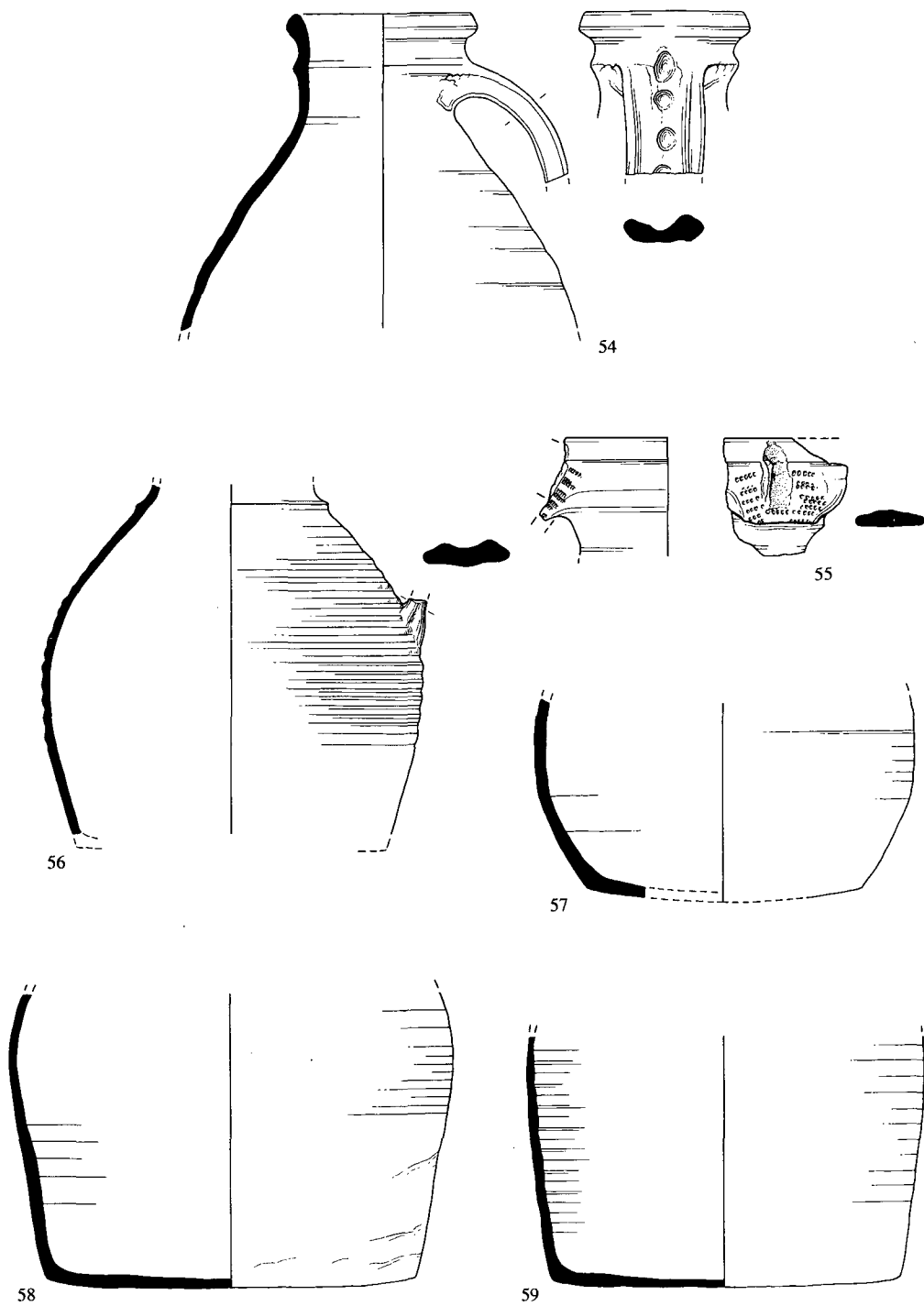


46

ILLUS 40 Medieval pottery: jugs. Scale 1:4



ILLUS 41 Medieval pottery: jugs. Scale 1:4

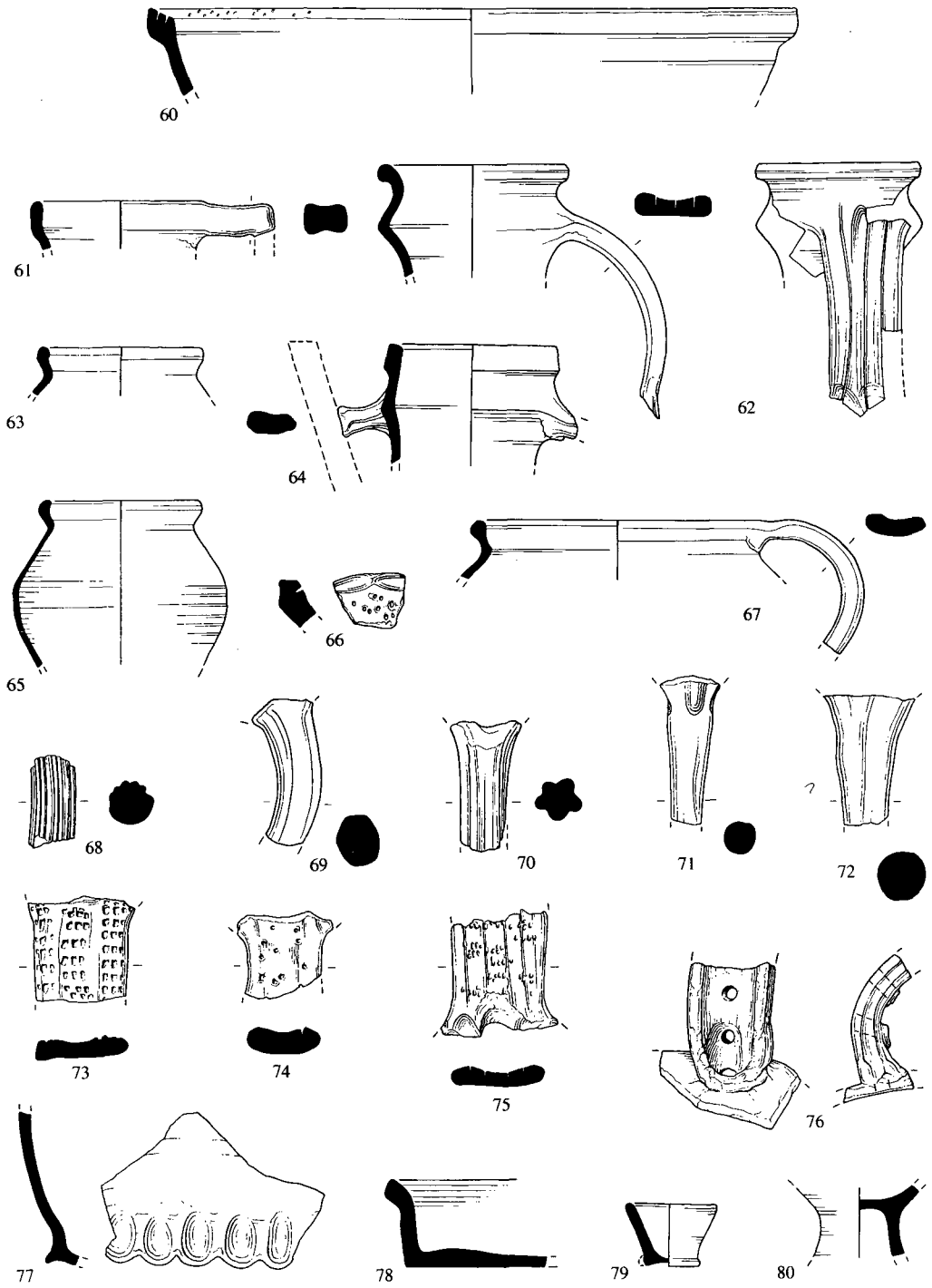


ILLUS 42 Medieval pottery: jugs. Scale 1:4

- through handle; slight evidence for incised decoration; some spots of glaze on body; position of spout suggests left-handed user. Infill of Pit C; Period 4.
- 49 Small jug; glazed over whole of exterior and inside rim and top of neck; slight evidence of applied decoration on upper shoulder. Infill of Pit C; Period 4.
- 50 Jug; exterior totally glazed. Infill of Pit B; Period 4.
- 51 Incomplete profile of jug. Infill of Pit C; Period 4.
- 52 Half profile of jug; extensive external fuming. Infill of Pit B; Period 4.
- 53 Complete jug with simple pinched spout and three long horizontal slashes on upper surface of handle; totally glazed below rim. Levelling deposit below floor of Structure 8; Period 5.
- 54 Half profile of jug with unusual decoration on handle; glazed on upper surface of handle, otherwise very sparsely glazed. Infill of Pit A; Period 4.
- 55 Rim of jug (probably Scarborough ware) with handle scar and perhaps another scar in the angle between upper handle and rim; decorated with horizontal rows of five-pronged stabbings; heavily dipped in dark green glaze. Infill of Pit C; Period 4.
- 56 Jug, heavily glazed on shoulder; some traces of fuming towards base. Infill of Pit B; Period 4.
- 57 Base of jug. Infill of Pit B; Period 4.
- 58 Base of jug; traces of vertical knife-trimming which has been wiped over. Infill of Pit D; Period 4.
- 59 Base of jug; traces of glaze on upper body. Infill of Pit D; Period 4.

### *Miscellanea (illus 43)*

- 60 Rim of large bowl; irregular stab decoration; internal green glaze. Topsoil.
- 61 Rim and unusual square handle of skillet; internal yellow/green glaze. Infill of robber trench F150; Period 5 or later.
- 62 Rim and strap handle with three vertical slashes from top to bottom of handle; handle luted to body after hole punched through. Topsoil.
- 63 Rim of small, globular, possible Low Countries blue-grey cooking pot. Levelling deposit below floor of Structure 8; Period 5.
- 64 Neck, rim, bridge and handle scar of bridge-spouted jug; green glaze on exterior of neck. Infill of robber trench F150; Period 5 or later.
- 65 Small cooking pot, possibly earlier than any other material within pit assemblages; traces of fuming on exterior and interior. Infill of Pit B; Period 4.
- 66 Pie crust rim sherd from a ?bowl with random stabbing. Topsoil.
- 67 Rim and handle of chamber pot; external fuming. 19th-/20th-century deposit.
- 68 Rod handle; ribbed decoration. Topsoil.
- 69 Rod handle with hole pressed more than 10 mm through vessel into top of handle. Infill of Pit A; Period 4.
- 70 Rod handle; ribbed decoration. Infill of Pit B; Period 4.
- 71 Straight rod handle of skillet with two finger indents through vessel into top of handle; glazed on upper surface. 19th-/20th-century deposit.
- 72 Rod handle of skillet with large finger impression, about 20 mm deep, through vessel into handle; glazed on upper surface. Topsoil.
- 73 Jug fragment with strap handle luted onto body after hole made through jug; decoration probably applied with three-pronged tool. Topsoil.
- 74 Strap handle; stab decoration. Infill of Pit C; Period 4.
- 75 Strap handle; decoration probably applied with a three-pronged tool; five lines of vertical slashing applied after tooling. Topsoil.
- 76 Handle sherd from a curfew. Infill of Pit A; Period 4.
- 77 Thumb-decorated base angle from a jug. Levelling deposit below floor of Structure 8; Period 5.
- 78 Fragment of large dripping dish; internal glaze; knife-trimmed around basal angle. Infill of post pit; probably Period 4.



ILLUS 43 Medieval pottery: miscellaneous items. Scale 1:4

- 79 Small ?cup, its base spalded off; glazed on exterior and interior. Topsoil.  
 80 Sherd from a ?lamp; interior of top glazed. 19th-/20th-century deposit.

#### *Decorated wares (illus 44)*

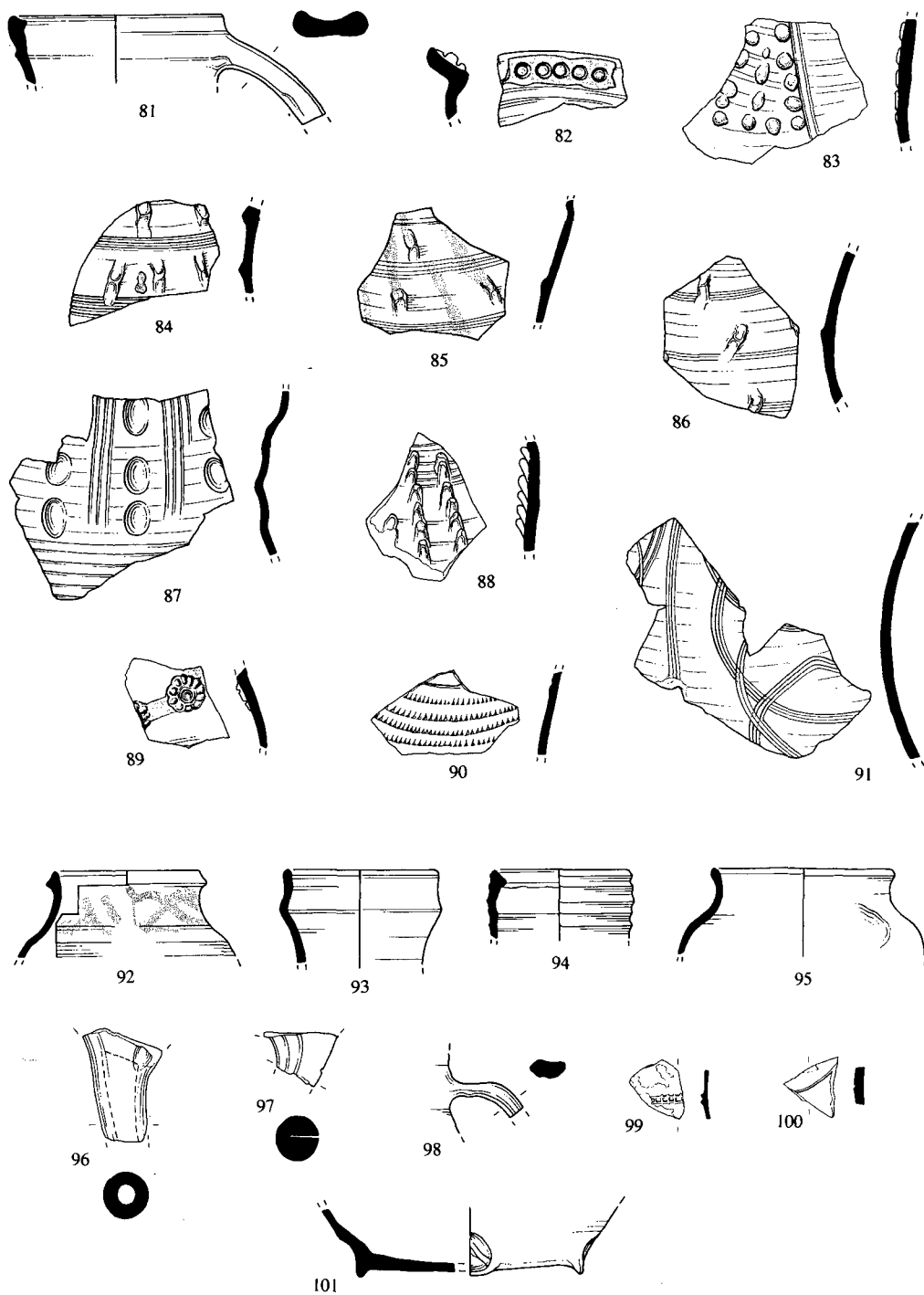
- 81 Rim and handle of developed Stamford ware jug. Infill of tannery beam slot: Period 3 or 4.  
 82 Rim sherd of ?bowl with applied strip of clay with punched circles. Topsoil .  
 83 Body sherd with applied pellet and vertical strip; external glazing. Infill of Pit C; Period 4.  
 84 Body sherd of York ware with scale and inscribed decoration. Topsoil.  
 85 Body sherd of Winksley ware, decorated with horizontal bands, impressed with a three-pronged tool after pellets applied; patches of iron staining visible. Infill of Pit A; Period 4.  
 86 Body sherd with decoration using a four-pronged tool before pellets applied. Infill of Pit A; Period 4.  
 87 Body sherd with bands of triple, inscribed lines and thumbed decoration; heavy external yellow glaze. Levelling deposit below floor of Structure 8; Period 5.  
 88 Body sherd with scale decoration. Infill of Pit C; Period 4.  
 89 Body sherd with rosette decoration applied in dark clay and iron-rich strip connecting them. Probable modern deposit.  
 90 Body sherd with vertical lines of rouletting running around shoulder. Infill of Pit G; Period 4.  
 91 Body sherd with circular patterns inscribed with three-pronged tool dragged across body. Infill of post-pit; probably Period 4.

#### *Imports (illus 44)*

- 92 Rim and shoulder of red-painted Pingsdorf ware vessel. Levelling deposit below Structure 6; Period 4.  
 93 Jug rim of northern French ware; external and internal glazing. Infill of Pit F; Period 4.  
 94 Rim of Low Countries highly decorated ware jug; some degraded, clear lead glaze over a reddish fabric on external and internal surfaces. Period 4.  
 95 Rim of blue-grey Paffrath ware ladle. Infill of Pit B; Period 4.  
 96 Hollow handle of skillet in Low Countries redware. Topsoil.  
 97 Rod handle of Rouen ware with red and yellow decoration. Levelling deposit below Structure 6; Period 4.  
 98 Strap handle of Seigburg stoneware. Fill of possible post-pit of unknown date.  
 99 Body sherd of Rouen ware with panel decoration, coloured red and yellow. Infill of Pit B; Period 4.  
 100 Body sherd of French (?Rouen) ware with incised and applied decoration. 19th-/20th-century deposit.  
 101 Thumbled base of cooking pot of Low Countries redware; glaze on exterior of base and body. Infill of Pit A; Period 4.

#### *Discussion of the pottery assemblage*

The large, shell-tempered and sandy greywares with everted rims retrieved from pre-1150 levels in Perth were absent from Castlecliffe, as they have been from other sites in St Andrews (D Hall, pers comm). These low-quality wares, thought to have been produced in the London area, were distributed throughout the North Sea area and have been recovered in large numbers from excavations in Scandinavia. Also absent from the Castlecliffe excavation were examples of late 12th-century London sandy ware jugs which have been found on sites in Perth and Aberdeen (C Murray, pers comm). The lack of such types is thought to indicate that pottery was being produced in the St Andrews area during the 12th century and perhaps earlier. The local material was dominated by jugs and simple cooking pots – as are most Scottish medieval ceramic assemblages. With the exception of one jug which may have been coil-built (no 40), all the vessels were probably thrown on a fast wheel. All the spouts are pinched; sagging and flat bases are about equal in number. There are four rod handles and 151 strap



ILLUS 44 Medieval pottery: decorated wares (81-91) and imports (92-101). Scale 1:4



handles of which 26 are slashed, 38 stabbed and 87 plain. The strap handles all appear to have been wheel thrown. Prior to glazing, all the slashed handles had received three, long, vertical cuts, some so deep that they cut right through the fabric. Stabbing appears to have been done with a single spike, applied in random fashion. Many of the jug handles have been attached to the upper body of the vessel by pushing a finger through the wet clay from the inside of the pot with so much force as to form a depression within the end of the handle where it is luted onto the neck. After smoothing, a deep hollow is still visible inside the jug.

Given that some late 12th- and 13th-century imported pottery was retrieved from the site, it would seem that Castlecliffe was occupied from about 1200. However, most of the pottery retrieved from the excavation comprised locally produced, domestic wares reflecting the low status of the site's occupants.

#### MAMMAL BONES

Finbar McCormick

The excavation provided relatively small samples of stratified bone, those described below being mostly from Period 3 (tannery) features.

The samples are too small to provide detailed information concerning the meat diet and live-stock of the area but a general pattern does emerge. Table 1 shows the distribution of bone fragments from some of the site's most important features, sheep/goat generally being the dominant species in terms of fragments present. This is also the case when the aggregate MNI (minimum number of individuals) value of the main meat producing species is considered. Sheep/goat account for 42.3% compared with 30.7% for cattle and 26.5% for pig. Pig generally played a less important role than either cattle or sheep/goat, this pattern being noted on most Scottish medieval sites that have produced animal bone (Table 2).

TABLE 1  
Percentage frequency of bones from Period 3 features and an undated pit (Pit H)

LOCATION	CATTLE	HORSE	SHEEP/ GOAT	PIG	CAT	DOG	HUMAN	NO OF BONE FRAGMENTS
Pit A	42.1	—	42.1	15.8	—	—	—	19
Pit B	24.0	—	62.8	10.9	1.6	—	0.8	129
Pit C	37.5	—	37.5	12.5	—	12.5	—	8
Pit D	54.6	9.1	27.3	4.5	—	4.5	—	22
Pit F	15.4	2.6	66.7	15.4	—	—	—	39
Pit G	35.2	—	59.3	3.7	1.9	—	—	108
Beam Slots	41.5	—	53.7	4.9	—	—	—	41
Pit H	2.2	—	—	2.2	95.6	—	—	46

Perth is the nearest urban centre to have produced large samples of animal bone. The distribution from four sites in Perth is quite different from that noted at Castlecliffe (Table 3) with cattle bones being nearly twice as numerous as sheep/goat. The high incidence of sheep at St Andrews (the majority of the caprovine bones being sheep – see below) may reflect more extensive development of sheep-rearing for the wool trade in the vicinity of the town.

The bones from Castlecliffe were retrieved from pits, occupation layers, levelling deposits below buildings and from robber trenches. There was considerable difficulty with residuality of material in many of the contexts. Most of the bones did not display evidence of the abrasions expected from material left uncovered for a long period before deposition. In a few instances (Pits B and G) there is evidence that bones were in articulation when thrown into the pits, indicating that

TABLE 2

Percentage of fragments distribution on Scottish castle sites

after (1) Smith & Hodgson (1995), (2) Barnetson (1985b), (3) Noddle (forthcoming), (4) Smith & Hodgson (1984), (5) Batey *et al* (1984), (6) Smith & Hodgson (1983), (7) McCormick 1997, (8) McCormick (this vol), (9) McCormick (1993 a) and (10) Barnetson (1988)

SITE	CATTLE	SHEEP/ GOAT	PIG	NO OF BONE FRAGMENTS
St Andrews, Castlecliffe (all periods)	36.0	53.5	10.6	483
Balgonie Castle, Fife (1)	35.0	58.7	6.4	409
Cruggleton Castle (2)	49.8	46.9	3.3	3,200
Bishop's Castle, Caithness (3)	46.6	36.9	16.6	464
Castlehill of Strachan, Kincardine and Deeside (4)	54.3	42.9	2.9	35
Freswick Castle, Caithness (5)	33.3	56.9	9.8	51
Scalloway Castle, Shetland (6)	53.2	41.0	5.8	139
Edinburgh Castle (7)	49.1	43.3	7.6	1,662
Castle Sween, Argyll (8)	63.5	24.5	12.5	510
Ratray Castle, Aberdeenshire (9)	52.5	35.8	11.6	2,932
Smailholm Tower, Roxburghshire (10)	17.5	80.9	1.6	744

TABLE 3

Percentages of fragments totals from Castlecliffe, St Andrews and Perth based on data in Smith (1989) and Hodgson & Jones (1983)

SITE	CATTLE	SHEEP/GOAT	PIG
St Andrews, Castlecliffe	36.0	53.5	10.6
Perth sites			
St Annes St	58.3	32.5	9.2
Canal Street	60.6	33.7	5.7
High Street	63.9	26.8	9.3
Whitefriars	62.6	36.8	0.6

they were probably deposited in a fresh state. The relatively small quantities of bones in the pits, however, makes it clear that they were not primarily refuse pits, the bones apparently being deposited in an incidental way.

With two exceptions, all the bones seem to represent discarded food refuse. Those from Pit H, a feature of uncertain date, consist almost exclusively of cat bones: they are all from immature individuals but not young kittens, all being at least several months old. The distal humeri, for instance, are fused while the proximal ends are not; according to Habermehl (1961, 151), this indicates animals of between eight months and a year old. One complete skull shows that the cat was killed by a blow to the head; knife marks on the snout show that the animal was skinned thereafter. Skinning of cats was also noted at Ratray Castle, Aberdeenshire (Murray & Murray 1993, 203). The deliberate rearing of cats for their skins seems to have been common practice throughout the British Isles during the Middle Ages (McCormick 1988). A knife mark on a dog's pubis found in Pit B is also probably indicative of skinning; knife marks on the same bone of a dog have also been noted in medieval deposits at Iona Abbey (McCormick 1993b). Hodgson (1979) notes that there is documentary evidence for the export of cat and dog skins from Scotland to London in the 17th century.

The collection of bones from within Pit G contain an unusually high incidence of sheep skull and metapodial fragments. This suggests either that the sheep were being slaughtered and butchered in the vicinity of the pit and the carcasses taken elsewhere for consumption; or that skins were brought to the site directly from the slaughterhouse. The number of metapodials present is especially high. One metacarpal has been drilled at its proximal end, suggesting that the metacarpals and

TABLE 4

Percentages of sheep/goat slaughtered at different ages from a range of Scottish medieval sites after Hodgson (1979), Smith & Hodgson (1987) and McCormick (1993a), on the basis of ageing data provided by Payne (1973)

APPROX AGE in months	PERTH		ABERDEEN			CASTLECLIFFE	RATTRAY
	Kirk Close	High Street	Paul Street	Queen Street			
0-6	-	9.9	5.6	3.8	10	2.6	
6-12	13.0	17.4	5.6	7.7	-	2.6	
12-24	31.9	27.5	44.2	26.9	30	7.7	
24-48	44.9	35.0	38.9	34.6	50	22.2	
48-96	10.1	9.9	5.6	26.9	10	59.0	
96+	-	0.3	-	-	-	-	

metatarsals (the straightest bones in the sheep skeleton) may, in this instance, represent a collection of bone worker's raw material.

Most of the bones have been chopped or broken, and few complete bones survive to provide evidence of the sizes of animals present. Only sheep/goat long bones have survived in a complete state. All the caprovine metacarpals and metatarsals are of sheep and the only evidence for the presence of goat at the site is a male goat horn-core from Pit C. The sheep were of a very slender build and typical of the type found in medieval Scotland.

There are only 10 sheep mandibulae from which evidence of the age at slaughter could be determined: most were semi-mature individuals. Although the sample is very small, it conforms generally with the age/slaughter pattern of sheep from Scottish medieval urban sites but contrasts with rural sites, such as Rattray Castle, where the majority are older animals (Table 4).

The ageing data from the other species is too limited to provide any useful information but, on the basis of the epiphyseal fusion data, most of the cattle seem to be old individuals.

The only pathological anomalies are on two cat ulnae, both from the same immature individual. The proximal ends of both bones are curved forward towards their articular face. This anomaly seems to be due to retarded growth, the most likely cause being rickets.

## BIRD AND FISH BONES

Sheila Hamilton-Dyer

A total of 384 bird and fish bones was recovered from the excavation. No sieving was carried out for small bone retrieval which may account for the lack of small species. The ubiquitous herring and common eel, for example, are notable by their absence.

### *Birds*

Bird bones number only 25 and comprised mainly domestic fowl or goose. The remaining five bones are probably great black-backed gull (*Larus marinus*), herring gull (*Larus argentatus*) or lesser black-backed gull (*Larus fuscus*); guillemot (*Uria aalge*); and curlew (*Numenius arquata*). The large numbers of sea birds, such as shag, found on some sites are not present in this material. There could be several reasons for this including small sample size, choice of excavation area or simply that the inhabitants did not greatly exploit sea birds. Use of sea birds in Scotland seems to be concentrated in the Northern Isles and the Hebrides (Serjeantson 1988). Butchery marks were absent apart from one fowl distal tibiotarsus, making it impossible to determine whether any wild birds had been exploited.

### *Fish*

Five species of fish were identified. With the exception of one dentary from a conger eel (*Conger conger*), the bones were all from Gadidae, mostly cod (*Gadus morhua*) and ling (*Molva molva*) with a few from haddock (*Melanogrammus aeglefinus*) and pollack (*Pollachius pollachius*). The fish assemblage is very similar to that from Rattray Castle (Hamilton-Dyer 1993), both in species and elements represented. Most of the St Andrews assemblage was retrieved from Period 3 Pit B.

Haddock is represented only by several cleithra and a post-temporal bone. These are the most sturdy elements in haddock and have a characteristic swollen appearance. Comparison with modern material indicates fish of 0.5–0.7 m total length. The other Gadidae were represented mostly by vertebral centra and other sturdy elements such as jaws, articular, quadrate and cleithrum. Comparison with modern specimens indicate that the fish would have been approximately 1 m in total length, with some considerably larger. Pit B contained three cod atlas amongst the vertebrae, two having total lengths very close to 1 m; the other just over 1.2 m. These would be considered as fish of average size, probably weighing about 11 kg (Wheeler 1978, 150).

The conger eel bone was from a fish probably weighing no more than 3 kg; although this species can weigh up to 65 kg. The head bones of conger are sturdy and survive well.

One of the fish bones, a parasphenoid, was pathologically swollen and distorted; in morphology it resembled cod but, in view of the pathology, ling cannot be ruled out. This bone had been cut obliquely. There are butchery marks on three other bones: a cod vertebra had small cut marks along the lateral process, presumably made during filleting; and two butchery marks occur on dentaries, one each on cod and ling. Both were cut through near the symphysis, probably indicating axial splitting of the fish, perhaps for drying (although the head was usually removed during processing). The presence of head bones in this material may indicate that the fish were fresh or being processed on site, rather than brought in already dried or salted.

### *Discussion*

A detailed interpretation of the material would be unreliable, given the small amount and the taphonomic bias. The dominant presence of domestic fowl and goose and of large Gadidae is, however, a feature of many medieval sites, both in Scotland and elsewhere in Britain. These taxa were present at Edinburgh and its port, Leith (Coy & Hamilton-Dyer unpublished; Barnetson 1985a, 425). At Leith, however, the cod and ling were from smaller fish, perhaps 2–3 kg and already beheaded. At Edinburgh sieved samples revealed several small species, including common eel, herring, whiting and flatfish.

#### THE MICROMORPHOLOGY OF A BURIED SOIL

Stephen Carter

The excavated medieval features either cut into or overlay a soil (F400) which extended over the whole of the site. This soil sealed a number of negative features – evidently tree-throw holes – which were cut into the raised beach deposits of sand and gravel that formed the parent material for the soil. One of these tree holes contained pottery of Early Bronze Age date. There was no evidence of human activity on the site between the Early Bronze Age and the early 13th century – a period of approximately 3000 years. Soil F400 was present during this period so a micromorphological examination of it could provide evidence of soil formation and human activity not otherwise represented in the excavation record.

## Methods

Three 80 mm by 50 mm thin sections were produced from soil F400. From the top of the layer, these spanned 0–80 mm, 220–300 mm and 310–390 mm. The boundary of context F400 with the underlying raised beach sands occurs at 360 mm. The sections are described using the terminology and methods devised by Bullock *et al* (1985). In the field the soil consisted of one horizon, 360 mm thick, at the place where it was sampled. It is described below (the terminology follows Hodgson (1976)).

## Results

The soil is a dark brown (7.5YR 4/2–3/4), very slightly stony, sandy loam with few very small to medium, rounded and sub-rounded stones. It has massive apedal structure with a low packing density. There are no roots but rare vertical earthworm burrows with a dark brown fill are apparent. There is an abrupt, smooth boundary with the underlying raised beach sand. In thin section the micromorphology from 220mm to 300 mm and from 310 mm to 360 mm is the same, consisting of moderately well sorted, sub-rounded, medium sand-size grains with very little associated fine material. There are occasional soil fragments 10–30 mm across and common loose, unsorted silt and fine sand infillings between the sand grains. This is similar to the micromorphology at 80 mm and it is assumed that it extends from 80 to 360 mm (the base of the soil). The top 35 mm of the soil consists of five thin horizontal layers with sharp boundaries characterized by variation in the texture of the coarse mineral grains and in the abundance of the fine fraction. These bands overlie a layer with abundant fine material (clay and silt) and consequently little void space. Much of the fine fraction has accumulated as coatings on void walls, causing a reduction or total blocking of voids. The quantity of fine material declines with depth and there is an increase in voids until by 80 mm there is an open pellicular grain structure similar to that lower in the profile.

## Discussion

At the time of sampling no sections were available where overlying medieval deposits were still present. Therefore, it is possible that, as a result of over excavation, the top of this section is slightly below the actual soil surface. On the evidence of the high degree of profile disruption, the sedimentary bands in the top 35 mm are not inherited from the raised beach parent material. It is therefore suggested that these bands were formed by the deposition and trampling of sediment on the soil surface. Immediately beneath these bands is an accumulation of fine material forming a layer with very low porosity. This is thought to be a pan, formed as the result of trampling and subsequent soil slaking. It could predate or be contemporary with the overlying bands of sediment. The remainder of the profile has abundant infillings which must result from considerable disruption higher in the profile. The movement of fine, sand-sized grains indicates a total loss of soil structure some time before the formation of the trampled surface bands and pan.

The structure of the soil below 80 mm suggests that it is a B horizon. No recognizable A horizon survives which, on the evidence of soil disruption and slaking, is not unexpected. An appropriate context for the soil surface trampling and sediment deposition is the long period of medieval occupation which involved the intensive use of the soil surface. The earlier phase of soil disruption that created the infillings at depth in the profile cannot be dated although their abundance and freshness indicate that they were formed only shortly after the later surface features. It follows from this that no aspect of the soil micromorphology relates to the impact of prehistoric land use. This hypothesis is supported by the fact that all prehistoric features were sealed by soil F400, although they must have cut through it originally. Clearly it has been completely disrupted since that time.

In conclusion, context F400 appears to be the B horizon of a buried soil that has been considerably altered by human activities. The surface A horizon has been removed or destroyed and coarse

infillings in the B horizon reflect the loss of soil structure higher in the profile. Subsequently, the soil surface has been trampled and modified by accumulation of sediment. These events are probably associated with the start of the medieval occupation of the site.

#### PALAEOBOTANICAL ANALYSIS OF SAMPLES FROM PERIOD 1 CUTS AND PERIOD 2 BEAM SLOT

Sheila Boardman

Thirteen bulk samples from Period 1 curvilinear cuts (tree-throw holes), together with one charcoal sample from Period 2 beam slot F813 were processed. The samples are discussed below.

#### *Period 1 cuts*

**Cut 1** Each of these three samples produced 1 g or less charcoal. No other flot or residue was noted.

**Cut 2** This is the richest sample group (three samples from separate fills) from these features, two of the samples having reasonable quantities of charcoal. Each of the samples has produced one or two charred seeds although none is of cereals. There are no finds other than charcoal in the residues.

**Cut 3** All four samples are charcoal poor. One yielded a single cereal grain; and there are a few charred seeds elsewhere. Residue finds include marine molluscs, burnt bone, burnt peat/turf and some small coal fragments.

**Cut 4** This sample produced less than 1 g of charcoal. No other remains were noted in the flot or residue.

**Cut 5 (F728)** One of its fills contained the Early Bronze Age beaker. There is insufficient charcoal in either of the two samples for identification or dating. There are three cereal grains and three charred seeds, coal fragments and unidentified molluscan remains.

#### *Period 2 beam slot F813*

This context was very rich in charcoal. Most of this is in the form of very small roundwood (3–4 mm in diameter), and overall weights of the material are not high. The majority of the material is identified as small Pomoideae roundwood, most of it probably from *Sorbus* (rowan/whitebeam). Other species represented were *Corylus* (hazel), *Quercus* (oak), *Betula* (birch) and *Prunus spinosa* type (sloe type). The small size of the original wood appears to rule out structural use. The charred material most likely constitutes hearth refuse.

The charred macroplant remains recovered from this slot are quite exceptional in their range and quality of preservation, the species including hulled six-row barley (*Hordeum vulgare* L var *vulgare*), oat (*Avena* sp), possible rye (cf *Secale cereale*), breadwheat (*Triticum* cf *aestivum*) and cultivated pea (*Pisum sativum* L). Cereal chaff (floral fragments), straw and a range of possible weeds of cultivation are also present. Other remains include moss stems and leaves and the tips of heather shoots. No evidence has been discovered which might indicate the deliberate disposal of the crops; for example, grain germination or signs of insect attack. If accidentally destroyed, this assemblage may represent some of the contents and activities of the building to which the beam slot related.

The presence of burnt organic material identified as probable burnt peat/turf, as well as carbonized heather and moss fragments, supports the hypothesis that charred material here largely constitutes hearth refuse. The mixture of charcoal, charred grains/seeds and peat/turf may reflect a number of different burning episodes or accidents and/or dumping of such material from other parts of the site.

## PALAEOBOTANICAL ANALYSIS OF SAMPLES FROM PERIOD 3 PITS A, B &amp; C

## Coralie Mills

Two samples from Pit A and one each from Pits B and C were processed. Sieving and sorting allowed the retrieval of a range of ecofactual materials, the only clearly artefactual object being a rim sherd of pottery from Sample 3. None of the retrieved quartz appears to be artefactual or worked and no metal working waste or other obviously industrial materials were found. There was a range of biological remains present, including mammal bone, fish bone, marine shell, land snails, charcoal and seeds. No remains of cereals or other economic plants were found. In general, the biological remains were in very small quantities and were highly fragmented, perhaps reflecting some reworking of deposits. The probable exception is Sample 3 which contains many fragments of large fish bones and some identifiable fragments of mammal bone. These have been incorporated into the bone reports.

Some modern contamination of the deposits is indicated; uncarbonized woody roots were found in the flots from all four samples. The land snails in Sample 2 may also be recent in origin, since all four snails are from a burrowing species (*Cecilioides acicula*). This snail usually lives well below the surface among plant roots, or in the crevices of rocks, mostly on calcareous soils (Kerney & Cameron 1979, 149). The species has only recently been noted in Scotland (S Carter, pers comm).

## GENERAL DISCUSSION

The analysis of the upper level (F400) of the sandy subsoil showed that its structure had been consistently broken down by pressure from generations of people living and working on the site. With the exception of what may only have been temporary, opportunist encampment in the Early Bronze Age, this occupation spanned the period between the early 13th and the 16th centuries. What is not altogether clear is how intensive that activity was at any particular time. Furthermore, there is no way of knowing whether the site was deserted at any time during those three or four centuries; although it does seem that rebuilding was under way very soon after the Period 3 tannery was closed down.

The site seems to have been levelled prior to each of the major building campaigns, in many cases leaving only tantalizing glimpses of previous phases of occupation. Little attempt had been made to use the remnants of demolished stone buildings as platforms for new ones. Such a strategy was often used to improve drainage; but at Castlecliffe the site was on a gentle slope and the subsoil well drained, making it unnecessary to raise the ground level. This resulted in a paucity of information concerning the functions of buildings at Castlecliffe or even their overall ground plans. It is assumed that most of the excavated structures had been roofed with organic materials although, on the evidence of a single fragment of stone roofing slate recovered from a Period 4 level, at least some of the later buildings may have had more substantial cover.

## PERIOD 1

Pits of crescentic or lunate form, of similar size to those excavated at St Andrews and displaying similar orientations, are readily interpreted as tree-throw holes. That is, they result from the uprooting and felling, either sequentially or simultaneously, of otherwise healthy trees by windstorms. Conifers are particularly prone to this phenomenon: their shallow, laterally developed root systems provide access to poorer substrates such as those developed over sand and rock, but can render them vulnerable to catastrophic events such as storms and floods. Another problem is that trees can fall victim

to their own success, outgrowing the ability of the soil to support those over a certain height or canopy to root ratio.

A tree which succumbs to drowning or disease tends to disintegrate where it stands. The resulting hole made by the roots when it eventually falls tends to be relatively small, being confined to the extraction from the A horizon of a few large, bare stumps nearest the trunk. When a tree with a healthy root system falls (illus 45), a semicircular area of topsoil is removed from its windward side, extending to a hinge line coincident with the far side of the trunk or slightly further. The depth and profile of the resulting hole is dependent on several factors, including the size of the tree, the form of its root system and the nature of the soil in which it stood. Tree-throw holes have been observed on several archaeological sites, including Drayton Cursus where they were associated with late Neolithic and Beaker activity (Lambrick & Moore forthcoming); and during the excavation of a Bronze Age landscape at Reading Business Park where 72 such pits were uncovered, six of them yielding a total of 10 flints and one sherd of Late Bronze Age pottery (Moore & Jennings 1992, 13).

Pits and upstanding discs of turf and soil thus produced form shelters that can be utilized by wild and domestic animals. In earlier times they could also have been used as hunting blinds, firepits, latrines, graves, huts and middens. There was no definitive evidence as to how the Castlecliffe pits were used: there were no structural features that could be definitely linked to any of the pits; although the presence of the beaker suggests at least some domestic usage. Furthermore, although the pits had a common level, their outlines suggest that the trees were not all felled from exactly the same direction and were perhaps not all contemporary.

While deliberate placement of beakers and other late Neolithic vessels in a sand matrix in the normal (as opposed to inverted) position occurs locally at Brackmont Hill and is generally assumed to be the intended aspect for the disposal of a pot in Beaker ritual (but see Rideout 1992, 131), the example from Castlecliffe appears to be less purposive, more likely the result of abandonment or accident.

If the St Andrews tree holes had been utilized as shelters, then it is likely that some sort of lean-to structures would have been built around them. Whilst there was a profusion of post pits that may have been associated with such structures, none could be ascribed with certainty to Period 1. The matter simply remains unresolved.

Third and second millennium BC activity in the St Andrews area is concentrated mostly on the sands and gravels of Tentsmuir, St Michaels and Balmullo and along the catchments of the Eden and the Kenly Water to the respective west and south of the town. There have been several discoveries nearer the site: a cremation cemetery at Balnacarron, on the west side of the town (Fleming 1907, 410); cinerary urns at Market Street and at the east end of North Street (Fleming 1907, 414); a food vessel urn at Westerlee in the western suburbs (Fleming 1925, 72); a flint scraper at the east end of Market Street (Wordsworth 1983, 8); and a Neolithic arrowhead and flake on the south-east side of the town (Kelly & Proudfoot, 1990, 16). Although parts of the area in and around St Andrews seem to have been settled during the late Neolithic/Early Bronze Age, the environs of the castle was probably too exposed to attract colonization on a permanent basis. Hence it is suggested that if the excavation site had been occupied during that period, this was probably only a temporary phenomenon.

## PERIOD 2

It was not possible to give a precise date for the construction of the Period 2 features although some, if not all, of them seem to have been built about the same time as the castle, c 1200. This could be taken as an indication that these timber buildings had been within an outer court of the castle,



although their proximity to what is believed to have been the edge of the Swallowgait suggests otherwise. As yet, this first recognizable phase of medieval occupation has not been supported by direct documentary evidence. The buildings may have functioned simply as agricultural or manufacturing workshops although there are various fragments of historical, morphological and cartographic evidence that might suggest different roles for them.

The siting of a port, or opening, on Swallowgait is significant, as is its position. Ports were established at all main entrances to burghs as control posts for traffic approaching the town market. Consequently, despite the paucity of supporting documentary and cartographic evidence, Swallowgait was undoubtedly a thoroughfare, not a minor vennel. Settlement along such an important route would be expected and is certainly evident during the 16th century (illus 46). The location of the port, well east of the other ports in St Andrews, suggests an early demarcation of the urban limit. The lack of subsequent development of any significance along the street would have obviated the need to move the port westwards to accommodate expansion, as was the case in other towns (Stevenson & Torrie 1990, 15-18). Failure to expand along this thoroughfare can be explained by the later preference for North Street, South Street and, later still, Market Street to the south; notwithstanding, Swallowgait obviously remained one of the important access routes to the town and the bishop's castle.

The castle was not founded until c 1200, some 50 years after the formal laying out of the burgh in 1144 × 1153, although it is quite possible that an earlier, timber stronghold had preceded it. Nevertheless, the Period 2 timber structures appear to belong to the early 13th century and they seem to have respected a road that either pre-existed them or which was at least contemporary with them.

Brooks & Whittington (1977, 288) pinpoint the easternmost block of rigs shown by Geddy as the first stage of the burgh plan, defined on the east by the cathedral precinct and on the west by a line running southwards from the Swallowport through North Street and South Street as far as Prior's Lade (parallel with and just to the north of the Kinness Burn). North and South Streets may be seen as part of an ambitious plan by Bishop Robert to converge two roads on a new cathedral: he was to die a year before the cathedral was founded in 1160 (Cant 1976, 12). Swallowgait was clearly not part of this grand scheme despite having its own port; but at the same time it could never be regarded as a mere back lane to the North Street rigs. A charter of Bishop Richard (1163-78) suggests that the early urban nucleus ran down what was Fishergait (now North Castle Street) and possibly into a section of North Street (LCPSAS 1891). If so, then it is very likely that there was already a settlement in Swallowgait by this time.

Unfortunately, there was little information with which to interpret the use of the Period 2 structures. As with every phase of occupation at Castlecliffe, subsequent developments had removed most of the preceding evidence. It was not even possible to say whether Structures 1, 2 and 3 were separate constructions or were components of one building, perhaps divided into two chambers by a partition (represented by beam slot F813) and with a hearth (within Structure 3) extending beyond its west wall. If the latter was the case, the clay-lined trough could easily have been accessed from the hearth, a distance of only 2 m away, although it is difficult to imagine how the trough and the north wall of Structure 1 could have coexisted. There was no trace of any other hearth or even any burnt sand within Structures 1 and 2; albeit the charred roundwood and the carbonized seeds within beam slot F813 suggest domestic usage. The burnt peat/turf, heather and moss perhaps indicate that the building had burnt down. It is conceivable that Structure 2 extended beyond Structure 3, thus encompassing the hearth; although there was no surviving evidence that any Period 2 building extended further west than this point.

There were no indications of burgage plots to the north of the Period 2 building(s), either in the form of backland boundaries (gulleys, walls or fences) or the expected humic loams; certainly,

the east/west dimensions of Structures 1, 2 and 3 do not readily lend themselves to the typical widths (about 11 m) of burgage plots at the east end of St Andrews. One explanation could be that this part of St Andrews was outside the limits of the 12th-century, planned burgh: alternatively, such divisions may have disappeared following recent scarping of the site.

### PERIOD 3

Siting a tannery near to such a prestigious building as the bishop's castle may seem inappropriate; but there was a tanning works close to the abbey precinct and the royal palace of Dunfermline. Both sides of Swallowgait were 'open' and used as croft lands throughout much of the Middle Ages (Reg Mag Sig no 1917). The area west of the castle (perhaps including the land later called the 'castle yard') was let out to the townspeople, even after it had passed to St Salvator's College in the 15th century (R G Cant, pers comm). As with the burgh crofts to the west of the town, these lands would have been used for a variety of purposes, not necessarily agricultural. Although this area may previously have formed part of the burgh nucleus (see above), focal points of burghs often shifted, usually for economic reasons, and a location that had once functioned as a core site could in time take on the characteristics of a marginal site (Stat Acc Scot 1794, 190).

There is no obvious source of water for the Castlecliffe tannery, the nearest stream (at least above ground) being the Kinness Burn, some 600 m south of the site. However, *tanneries were not* always located near rivers: in medieval York, Northampton and Exeter some were situated well away from rivers or streams (Radley 1971, 46; Shaw 1984, 242; Allan, 1984, 325). Many such works would have been served by wells and it is quite likely that the St Andrews tannery, built on water-retentive sandstone, was supplied in a similar manner. Although there were probably no springs on the site itself, water would have been readily available nearby: most of the older, surviving buildings in the town have wells in their cellars (G Whittington, pers comm). The neighbouring castle boasts a substantial well within its courtyard.

Little evidence remained of the processes carried on within the St Andrews tannery. Quite probably, the works extended well beyond the limits of the excavation site, perhaps as far as the cliff edge (which was farther north than now) to allow waste to be jettisoned directly into the sea. After hooves and horns had been removed, skins were usually washed free of dung, blood and salt, the latter often added to preserve them after they had left the slaughterhouse. Washing was usually carried out in a stream or, as in 10th-century Winchester, in an artificial watercourse (Keane 1985, 765). There was no trace of such a watercourse at Castlecliffe but, again, the evidence may simply have been lost. Once washed, the skins were placed initially in soaking pits containing acid (urine, stale beer or fermented grain) or alkaline (lime or dung) liquors to loosen hair and then further immersed to soften them. After more washing, their quality would be assessed before their transferral to the tanning pits. The tanning process was divided into two stages: the hides were daily worked in pits called 'handlers' which contained a dilute solution of tanning liquor, before being stacked for longer periods of time in deep pits known as 'layaways'. There tiers of cattle hides alternated with vegetable tanning matter (usually oak bark) after which the pit would be topped up with cold water. (A good, general account of the tanning process is described by Cherry (1991, 295–9).)

There seems to have been a marked contrast between pits in which the hides were washed or soaked and those used for tanning; and between those used at different stages of the tanning process. Laying pits were usually deep – up to 2.5 m in the Viking Age pits at High Ousegate, York (Radley 1971, 43) – whilst those in which the hides needed frequent handling tended to be relatively shallow. The latter group probably include those excavated at Northampton in 1983 where circular pits, 0.80–1.60 m in diameter, and rectangular pits measuring 0.80–3.60 m by 0.80–1.60 m were uncovered;

both types were about 0.70–0.80 m deep (Shaw 1984, 242). The larger pits at St Andrews were of similar size to the rectangular ones at Northampton and again were used probably for preparatory work on the skins. The iron panning around the sides of Pit B may be an indication that the alkaline process was used for the preparation of hides. The channels leading from Pits A, B and C were probably meant to remove dirty water during one or more of the early stages of preparation, as at the 18th-/19th-century Rhacadr Tannery, Radnorshire (Jenkins 1973, 9). The smaller Pits east and F had no such channels and were perhaps associated either with a different stage of leather manufacture or for the processing of hides from animals smaller than cattle.

Pit G, at the west end of the site, appears to have been used as a dump for heads and hooves removed after the skins were received from the slaughterers. The lack of horns within the pit suggests these were passed on to craftsmen either by the tanners or, at an earlier stage, by the slaughterers, as was often the case at other sites (MacGregor 1985, 42). The bones were from both cattle and sheep/goats, suggesting that not only cow skins were treated within the Castlecliffe tannery. Such a practice is in contrast to what was laid down in the 15th-century customal of Northampton: that the 'tanner shall tan no sheeps' leather, goats' leather, deers' leather, horse leather or hounds' leather' (Markham & Cox 1898, 348). In practice, it was unlikely that all leather manufacturers adhered strictly to such regulations.

In 10th-century Winchester some of the pits were lined with horizontal and vertical planks supported by posts. At least one of them appeared to have horizontal beams around its edge, perhaps to support a floor. At Northampton many of the excavated pits appear to have been lined with staves bound with twigs and set against clay (Shaw, 1984, 242; Thomson 1981, 163). At St Andrews there may have been planking against the sides of Pits A, B and D although only one pit (B) seems to have been lined with clay, and then only partially lined. There was no trace of a floor or of anything that might have supported one.

It is difficult to visualize the layout of the tannery complex at Castlecliffe. It would not be unreasonable to expect washing pits to be external; although the layaways at least would probably have been under cover to prevent dilution of the tanning liquids by rainwater. What then of Structure 4, the long line of posts stretching some distance across the site? It could have been one wall of a very long building, perhaps open to the elements to allow air to circulate around what must have been an extremely unpleasant environment; alternatively, these posts may simply represent the southern limit of the compound which may have extended as far as the then cliff edge.

The only other excavated features thought to date to this period are the pairs of slots cut into the subsoil midway between Pit B and Pits C and D. There is no obvious explanation for these slots although they could mark the positions of tables or beams upon which skins were laid so that hair and flesh could be scraped from them prior to immersion in an acid or alkaline solution to make them more flexible.

The construction of the tannery could not be dated accurately; although, because of the appalling odours associated with such a complex and the close proximity of the castle, the only period during which this was likely to occur was some time after the castle was slighted by Sir Andrew Moray, Guardian of Scotland, in 1337 and its buildings deserted. For the following half-century the tanners were probably free to operate on the site without upsetting the castle's residents; albeit those living in nearby streets would have been all too aware of their new neighbours, particularly when the wind blew from the north or east.

The tannery was probably forced to close when the castle was reoccupied after Bishop Traill completed his programme of renovation towards the close of the 14th century. This was supported by the evidence of the pottery within the infills of the large pits, none of which post-dated the early 15th century. After their linings were removed, these pits were infilled almost immediately with

domestic debris which might otherwise be destined for the nearby cliffs. The apparent urgency of this operation was probably sparked by a desire to resume construction on the site, presumably reflected by the buildings of Period 4.

#### PERIOD 4

Artefactual evidence indicates that by the early 15th century (when the castle was again habitable) the Period 3 tannery had been dismantled and the ground levelled, probably in readiness for the construction of one or more of the Period 4 masonry structures. This seems to have been carried out within a short space of time. The materials used to infill the pits were typical of domestic rubbish expected from urban environments: there was very little of the type of pottery expected from high-status sites such as the nearby castle.

There is no known documentary evidence to corroborate the presence of masonry (or part-masonry) buildings on this part of Swallowgait during the later medieval period. There are certainly 17th-century and later references to merchants' houses formerly standing on Swallowgait (Grierson 1833, 47, 90, 92) although those houses may have stood only on the south side of the road, as in the late 16th century (illus 46). The only mention in contemporary documents of structures on the north side of the road are of crofts and yards (Reg Mag Sig, no 1917; SROb).

Despite having stone foundations, Structures 5 and 6 were quite likely to have been of mainly timber construction. In this respect, they appear to have differed from Structure 7, which perhaps belonged to a separate scheme of development. There was no evidence of backlands extending from the rear of any of these buildings. However, it would be dangerous to assume from this that these structures were not associated with burgage plots: the evidence might well have been swept away in comparatively recent times. The evidently substantial nature of Structure 7, with its mortar-bonded masonry walls, stone-lined hearth and under-floor drains, is certainly more indicative of merchant housing than of low quality dwellings, workshops or animal accommodation. It may well have been a two-storey building and, if so, its construction would have required scaffolding. This might account for some of the many post-pits uncovered in that part of the site which could not be attributed to specific features or to definite phases of occupation. Structure 7 overlay the demolished Structure 5 and, on the evidence of its apparently superior quality, may also have post-dated Structure 6. However, Structure 7 did appear to respect the alignment of Swallowgait, unchanged since Period 2, and it is thought likely that all the Period 4 buildings predated the enclosing of the castle yard (see below).

If the metalling outside the south wall of Structure 7 was the surface of Swallowgait, it is not immediately obvious why that surface continued around the east side of the building. It is inconceivable that the road should deviate towards the west side of the castle when its entrance was in its south wall. The most likely explanation is that there was a lane down the side of Structure 7, suggesting that there were more buildings between it and the castle.

#### PERIOD 5

The final phase of occupation is probably associated with the castle and in particular the enclosed castle yard to its west. This yard, depicted both by Geddy (*c* 1580) (illus 45) and Gordon (1642) (illus 46), may once have formed part of the 'castle crofts' which had been leased to the townspeople at some stage. Documentary evidence offers no date for the wall's construction; and there is not even mention of it in *Registrum Secreti Sigilli Regum Scotorum* which holds many references to the 1546 siege of St Andrews. There is, however, at least one pertinent reference to the area west of the

castle. In 1758 the castle yard was described as ‘... bounded with the Castle Walls on the east and the said old college crofts on the west the new dyke built by John Lindsay . . . on the south and the Sea Rocks or Craigs on the north. . .’ (SROc).

Once the area was established as a distinct castle yard, it might be expected that buildings would spring up within it. The instrument on the delivery of the castle on 9 September 1565 (SROa) suggests that little remained of the castle at this date although there were ‘ane hayck and ane manger ennow the zeittis’ and ‘ane hayck and ane manger out the zeittis’, an indication that there were buildings within the outer yard of the castle as well as within its main courtyard. It would be reasonable to suppose that other structures, such as outhousing and storerooms, would also have stood within the yard. It appears (although it is not stated in John Scot’s *Protocol Book*) that the French siege of 1546 all but destroyed the castle buildings as well as those in the yard. There is certainly nothing to suggest that the castle was occupied long after the siege which might explain why Geddy portrays the yard as being empty. Although not a surveyed plan, the overall impression of Geddy’s drawing is one of accuracy and it is unlikely that he would have ignored buildings within the yard – except, perhaps, if they were very insubstantial or in a ruinous state.

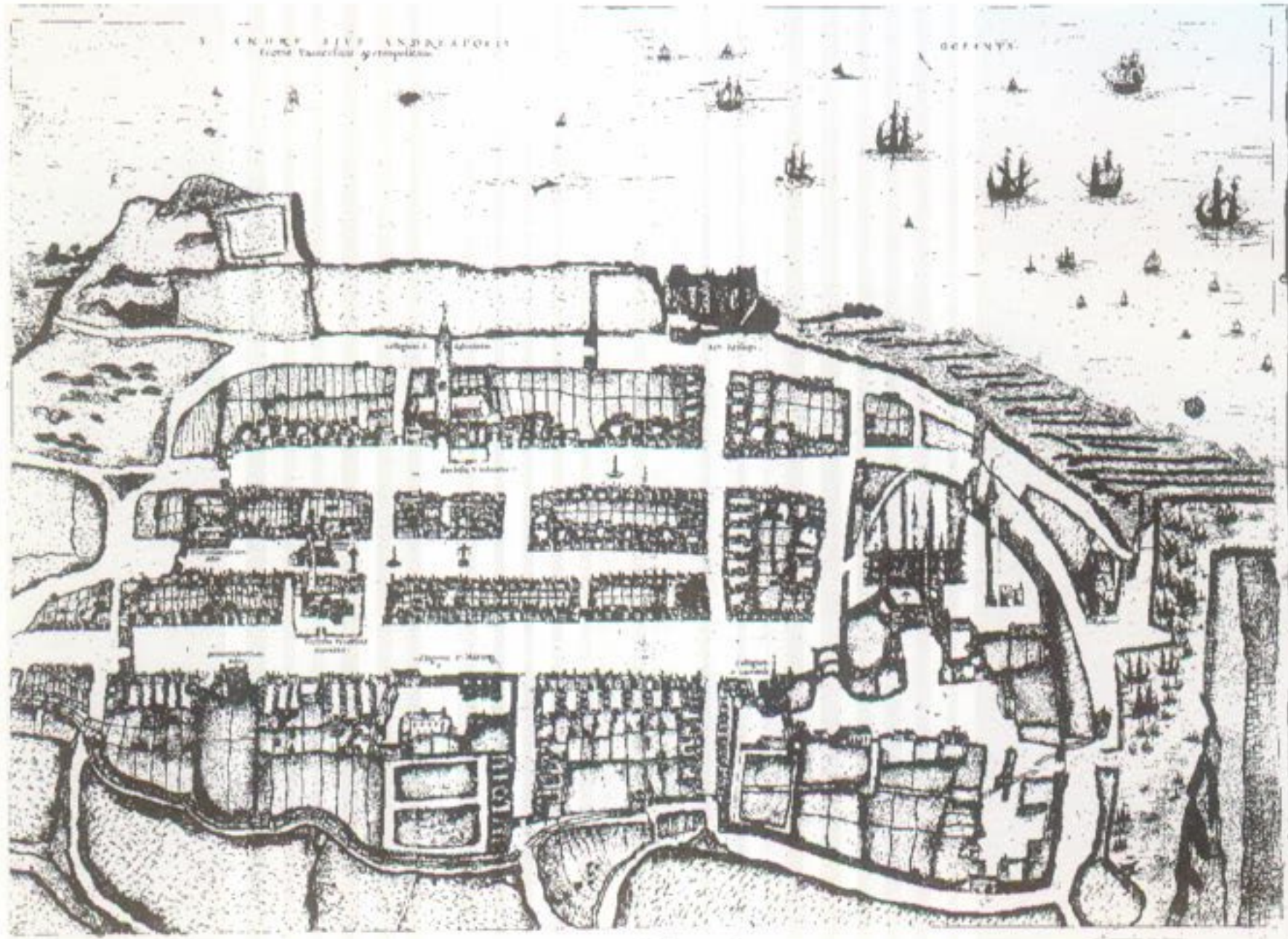
Unless Swallowgait had been widened significantly or its course had shifted northwards, it can be assumed that Structure 8 and Areas 9 and 10 were inside the south boundary wall of the castle yard. It is unlikely that the road was broadened at a time when the area was probably in decline: the size of the thoroughfare, as portrayed by Geddy, is simply the result of his exaggeration of the widths of all streets in the town (Brooks & Whittington 1977, 279). Although the structure represented by robber trench F158 appeared to extend some distance across the site, it seems unlikely that this wall was the southern boundary of the castle yard. It was more probably the north wall of a building (or range of buildings) set against the south wall of the castle yard, itself perhaps a precursor of the modern garden wall. According to Geddy, there was a deviation along the course of this wall although this is not evident in Gordon’s plan of 1642. Similarly, the east wall of the yard probably lay below the east wall of the garden and can probably be equated with the substantial foundations revealed in the extreme south-east corner of the site.

Structure 8 represents the clearest surviving manifestation of the putative building on the south side of the castle yard. Although a hearth, remnants of its floor and what may have been its entrance were uncovered, the building’s function remains unknown. Wall F299, located at the extreme west end of the site, could perhaps be equated with the west wall of the castle yard, both structures appearing to run northwards from the Swallowport. However, although the north side of the site had been severely scarped in recent times, it would still be difficult to explain the sudden termination of wall F299. This could represent the position of a doorway into the yard; but no such feature appears in Geddy’s drawing.

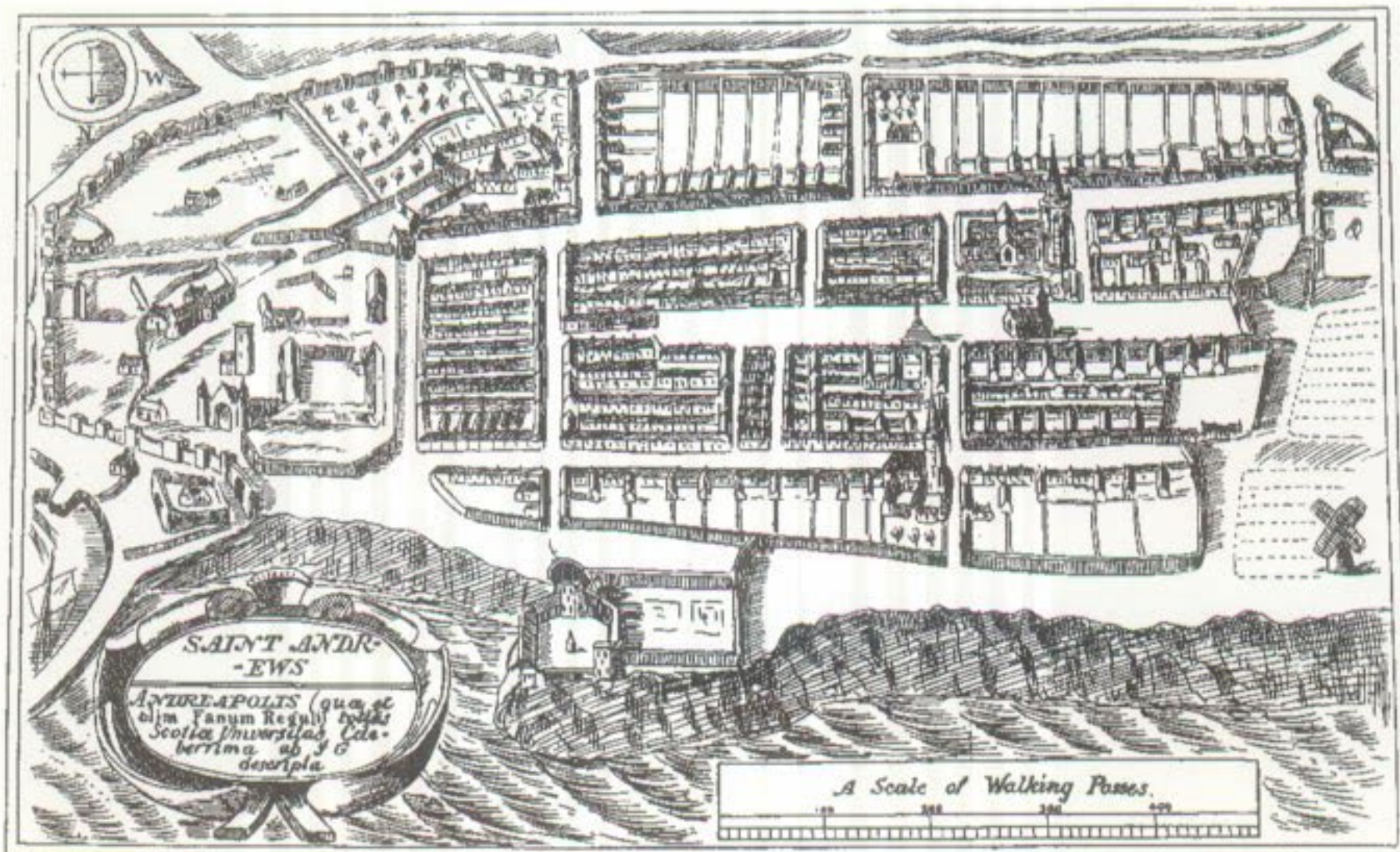
There were clear indications of occupation on either side of Structure 8, yet in each case it is difficult to be certain whether those areas had been inside or outside the walls of a building. Area 9, being bounded on its north and west by walls F158 and F123, and presumably on its south by the south wall of the yard, was probably internal although the material evidence remaining is too sparse to allow a more precise interpretation.

Area 10 was more likely external. Although partially defined by walls F552 and F229, there was no evidence of a north wall enclosing this area. Perhaps the most likely explanation is that it was an external yard lying between the west wall of Structure 8 and wall F299; either totally open or having a roof supported on posts.

On balance, although the evidence is somewhat negative, the most likely interpretation of these features is that they belonged to the castle, and were probably built at the same time as the yard wall or very soon thereafter. On the evidence of the excavated artefacts, this appears to have been in the



ILLUS 45 John Geddy's drawing of St Andrews, dated c 1580 (Copyright of the Trustees of the National Library of Scotland)



PLAN OF ST ANDREWS, 1642

ILLUS 46 Plan of St Andrews, drawn by James Gordon in 1642 (Copyright of the Trustees of the National Library of Scotland)

late 15th/early 16th century. They may have functioned as stabling, outhousing, barracks for retainers or in some similar capacity. Their subsequent decay, however, was such that they did not merit inclusion in cartographic works of the later 16th century.

## ACKNOWLEDGEMENTS

The excavations were initiated by the then Historic Buildings and Monuments division of the Scottish Development Department, now Historic Scotland, who also funded the project. I am extremely grateful to the excavation staff, Alan Radley, David Reed, Helen Smith, John Godbert, David Stewart, Neil Oliver, Andrew Long, Gordon Turnbull, Caroline Hunter and Lynne Casebow, who extracted considerable amounts of data, not to mention masses of artefacts, from a very truncated but complex and interesting site. I would like to thank Denis Gallagher and Dr Pat Torrie for their valuable historical research. Marion O'Neil and Angie Townshend were responsible for the finds drawings and line drawings respectively. I would also like to express my thanks to Dr John Shaw for information concerning the tanning industry; and Robert Smart, Keeper of the Muniments of the University of St Andrews, for information concerning Castlecliffe House. Dr Torrie would like to thank Professor Ronald Cant for his comments on the early history of the burgh of St Andrews; and Helen Smith wishes to thank Trevor Cowie, Dr Ann MacSween and Dr Alison Sheridan for their help during the preparation of the report on the prehistoric pottery. George Haggarty and Robert Will would like to convey their gratitude to Sarah Jennings for her valuable contribution towards the medieval pottery report and to acknowledge the assistance of David Stewart during the reconstruction of much of the assemblage. Dr Caldwell is grateful for the stone identifications supplied by Emrys Phillips. I also take this opportunity to acknowledge the Trustees of the National Library of Scotland for permission to reproduce James Gordon's 1642 plan of St Andrews. I must also thank Barney Meldrum and the rest of Historic Scotland's St Andrews DEL squad for their help on several occasions during the excavation; and Julie Crabtree, then custodian of the castle, for her patience during our frequent invasions of the monument. I am indebted to Chris Tabraham and Dr Richard Fawcett of Historic Scotland for reading a draft of this report and for commenting on its contents. Finally, I would like to express my gratitude to Dr Fawcett who had to contend with a 'short, exploratory excavation' growing into a very large field project; and for his forbearance during the long, drawn-out process that has been the production of this report.

## SITE RECORDS AND FINDS

All site data, including day books, context sheets, photographs and field drawings; together with relevant catalogues and lists and other miscellaneous documents are lodged with the National Monuments Record of Scotland. The finds are with East Fife Museums Service.

## REFERENCES

- Alexander, J & Binski, P (eds) 1987 *Age of Chivalry*. London.  
 Allan, J P 1984 'Medieval and Post-Medieval Finds from Exeter, 1971-1980', *Exeter Archaeol Rep*, 3.  
 Anderson, J 1890 'The Broch of Yarhouse', *Archaeol Scotica*, 5 (1890), 131-42.  
 APS *Acts of Parliament of Scotland*, 1814-75.  
 Baart, J, Krook, W, Lagerweij, A, Ockers, N, van Regteren Altena, H, Stam, T, Stoepker, H, Stouthart, G & van der Swan, M 1977 *Opgravingen in Amsterdam*. Amsterdam.  
 Barnetson, L 1985a 'Faunal remains' in Holmes, N McQ 'Excavations south of Bernard Street, Leith, 1980', *Proc Soc Antiq Scot*, 115 (1980), 401-28.

- Barnetson, L 1985b 'Faunal report', in Ewart, G *Cruggleton Castle: Report on Excavations, 1978-1981* (=Dumfriesshire & Galloway Natur Hist Antiq Soc special volume, 68-72).
- Barnetson, L 1988 'Faunal remains', in Good, G L & Tabraham, C J 'Excavation at Smailholm Tower', *Proc Soc Antiq Scot*, 118 (1988), 258-60.
- Barton, K J 1966 'Medieval pottery in Rouen', *Archaeol J*, 122 (1966), 73-85.
- Batey, C E, Morris, C D & Rackham, D J 1984 'Freswick Castle, Caithness: report on rescue excavation carried out in 1979', *Glasgow Archaeol J*, 11 (1984), 83-118.
- Beckmann, B 1974 'The main types of the first four production periods of Seigburg pottery', in Evison, V I & Hurst, J G (eds) *Medieval Pottery from Excavations: Studies presented to Gerald Dunning*, 183-220. London.
- Bellamy, C V & Le Patourel, H E J 1970 'Four Medieval Pottery-kilns on Woodhouse Farm, Winksley, near Ripon, W Riding of Yorkshire', *Medieval Archaeol*, 14 (1970), 104-25.
- Borremans, R & Warginaire R 1966 *La ceramique d'Andenne; Recherches de 1956-1965*. Rotterdam.
- Brooks, C M 1980 'Medieval pottery from the kiln site at Coulston, E Lothian', *Proc Soc Antiq Scot*, 110 (1980), 364-403.
- Brooks, C M 1987 'Medieval and Later Pottery from Aldwark and Other Sites', *Archaeology of York*, 16/3.
- Brooks, N P & Whittington, G 1977 'Planning and growth in the medieval Scottish burgh: the example of St Andrews', *Trans Inst Brit Geographers*, new ser, 2, 2 (1977).
- Bruijn, A 1963 'De mittelalterliche keramische Industrie in Sudimburg', *Berichten Rijksdienst Oudheidkunds Bodemonderzoek*, 12-13 (1962-3), 357-459.
- Bruijn, A 1979 'Pottersvuren langs de Vecht', *Rotterdam Papers*, 3. Rotterdam.
- Bullock, P, Federoff, N, Jongerius, A, Stoops, G & Tursina, T 1985 *Handbook for soil thin section description*. Wolverhampton.
- Caldwell, D & Dean, V 1992 'The Pottery Industry at Throsk, Stirlingshire, in the 17th and early 18th century', *Post-Medieval Archaeol*, 26 (1992).
- Callender, J G 1924 'Fourteenth century brooches and other ornaments in the National Museum of Antiquities of Scotland', *Proc Soc Antiq Scot*, 58 (1923-4), 160-84.
- Cameron, I B & Stephenson, D 1985 *The Midland Valley of Scotland*, British Regional Geology (=Brit Geol Survey).
- Cant, R G 1971 *The Development of the Burgh of St Andrews in the Middle Ages*. St Andrews.
- Cant, R G 1976 'The Building of St Andrews Cathedral', in McRoberts, D *The Medieval Church of St Andrews*. Glasgow.
- Chapelot, J 1972 *L'artisan ceramique en Saintonge, XIIIe-XIXe siècles: Rapport preliminaire*. Paris.
- Cheer, P 1991 'Pottery imported into Perth', *Medieval Ceram*, 15 (1991), 50-51.
- Cherry, J 1991 'Leather', in Blair, J & Ramsay, N *English Medieval Industries*. London.
- Childe, V G & Waterston, D 1942 'Further Urns and Burials from Brackmont Mill, near Leuchars, Fife', *Proc Soc Antiq Scot*, 76 (1941-2), 84-93.
- Chronica Johannis de Fordun Chronica Gentis Scotorum*, Skene, W F (ed) 1871. Edinburgh.
- Clark, P 1976 'German Stoneware', in Schofield, J 'Excavations south of Edinburgh High Street, 1973-74', *Proc Soc Antiq Scot*, 107 (1975-6), 206-11.
- Clarke, D L 1970 *Beaker Pottery of Great Britain and Ireland*, 2. Cambridge.
- Cox, E 1984 'Ceramic Material', in Tabraham, C J 1984, 381-95.
- Coy, J P & Hamilton-Dyer, S unpublished *Bird and fish bones from Edinburgh Castle, Area H*.
- Crowdy, A 1986 'The pottery', in Dixon, P 'Excavations in the fishing town of Eyemouth: a report on the archaeological excavations in the Burgh of Eyemouth, 1982-1984' (= Borders Burghs Archaeol Project, Monogr ser 1).
- Cruden, S 1958 *St Andrews Castle*. Edinburgh.
- Didsbury, P & Watkins, J G 1990 'The Pottery from Eastgate, Beverley' in Evans, D H (ed) 'Excavations in Eastgate, Beverley, 1984-85', *East Riding Archaeology* (1990).
- Duncan, A A M 1975 *Scotland: The Making of the Kingdom*. The Edinburgh History of Scotland. Edinburgh.
- Egan, G & Pritchard, F 1991 *Dress Accessories. Medieval Finds from Excavations in London*. London.



- Ellison, M 1981 'The Pottery' in Harbottle, B & Ellison, M 'An excavation in the castle ditch, Newcastle upon Tyne, 1974-6', *Archaeol Aeliana*, (1981), 95-164.
- Ewart, G & Triscott, J this volume 'Excavations at Castle Sween, Argyll, 1989-90'.
- Farmer, P G 1979 *An Introduction to Scarborough Ware and a Reassessment of Knight Jugs*. Hove.
- Farmer, P G & Farmer, N C 1982 'The dating of the Scarborough ware pottery industry', *Medieval Ceram*, 6, (1982), 66-86.
- Fleming, D H 1907 'Notice of the recent discovery of a cist, with fragments of urns and a jet necklace, at Law Park, near St Andrews'; with a note of the discovery, near the same place, of a cremation cemetery of the Bronze Age, with many cinerary urns, in 1859', *Proc Soc Antiq Scot*, 41 (1906-7), 401-14.
- Fleming, D. H 1920 'The Accounts of Dr Alexander Skene, Provost of St Salvator's College, St Andrews, relating to the extensive repairs of the college buildings, the church and the steeple', *Proc Soc Antiq Scot*, 54 (1919-20), 216-48.
- Fleming, D H 1925 'Donations to the Museum', *Proc Soc Antiq Scot*, 58 (1924-5), 72-3.
- Gibson, A M 1982 *Beaker Domestic Sites: A study of the Domestic Pottery of the Late Third and Early Second Millennia BC in the British Isles*, 1 (=BAR Brit Ser, 107). Oxford.
- Gray, N 1986 *A History of Lettering: Creative Experiment and Letter Identity*. Oxford.
- Grierson, J 1833 *Delineations of St Andrews*. Cupar.
- Habermehl, K H 1961 *Die Altersbestimmung bei Haustieren, Pelztieren und beim jagbaren Wild*. Berlin.
- Haggarty, G 1980a 'The Pottery', in Ewart, G 'Excavations at Stirling Castle, 1977-1978', *Post-Medieval Archaeol*, 14 (1980), 36-46.
- Haggarty, G 1980b 'Post-medieval pottery in Scotland', *Scott Pottery Hist Rev*, 5 (1980), 45-61.
- Haggarty, G 1984 'Observations on the ceramic material from Phase I Pits BY and AQ', in Tabraham, C J 1984, 395-7.
- Haggarty, G & Jennings, S 1992 'The imported pottery from Fast Castle, near Dunbar, Scotland'. *Medieval Ceram*, 16 (1992), 45-54.
- Haggarty, G & Will, R 1995 'Ceramic Material', in Lewis, J & Ewart, G (1995) 98-104.
- Hamilton, J R C 1956 *Excavations at Jarlshof, Shetland*. Edinburgh.
- Hamilton-Dyer 1993 'The bird and fish bones', in Murray, H K & Murray, J C 'Excavations at Rattray, Aberdeenshire: A Scottish Deserted Burgh', *Medieval Archaeol*, 37 (1993), 213.
- Hayfield, C 1992 'Humberware: the development of a late medieval pottery tradition', in Gaimster, D & Rednap, M *Everyday and Exotic Pottery from Europe c650-1900: Studies in Honour of John G Hurst*, 38-44.
- Herteig, A E 1982 'Scarborough Ware from Bryggen, Bergen', *Medieval Ceram*, 6 (1982), 97-9.
- Hodgson, J M 1976 *Soil survey field handbook* (=Soil Survey Technical Monogr, 5). Harpenden.
- Hodgson, G W I 1979 'Report on the animal remains excavated during 1975-76 from the medieval levels at the High Street, Perth'. Unpublished report.
- Hodgson, G W I & Jones, A 1983 'Report on the animal remains from the medieval levels', in 'An Excavation at 45 Canal Street, Perth, 1978-9', *Proc Soc Antiq Scot*, 113 (1983), 514-17.
- Holdsworth, P (ed) 1987 *Excavations in the Medieval Burgh of Perth. 1979-1981*, (=Soc Antiq Scot Monogr Ser, 5). Edinburgh.
- Hurst, J G 1966 'Imported Flasks', in *Kirkstall Abbey Excavations, 1960-64* (=Thoresby Soc Monogr, 51), 112, 54-9.
- Hurst, J G 1977a 'Langerwehe stoneware of the Fourteenth and Fifteenth centuries', in Apted, M R, Gilyard-Beer & Saunders, A D (eds) *Ancient Monuments and their Interpretation: Essays Presented to A J Taylor*, 219-38. Chichester.
- Hurst, J G 1977b 'Discussion of Martincamp flasks', in Neal, D S 'Excavations at the Palace of King's Langley', *Medieval Archaeol*, 21 (1977), 156-7.
- Hurst, J G 1988 'Problems of Middle Rhenish Stoneware in Britain' in Gaimster, D R *et al* (eds) *Zur Keramik des Mittelalters und der beginnenden Neuzeit in Rhineland* (=BAR Brit Ser, 440), 336-7.
- Hurst, J G, Neal, D S & van Beuningen, H J E 1986 'Pottery Produced and Traded in North-West Europe, 1350-1650', *Rotterdam Papers*, 6 (1986). Rotterdam.
- Ickowicz, P 1993 'Martincamp Ware: a Problem of Attribution', *Medieval Ceram*, 17 (1993), 51-60.

- Jenkins, JG 1973 *The Rhaedr Tannery*. National Museum of Wales.
- Jennings, S 1981 'Eighteen centuries of pottery from Norwich', *East Anglian Archaeol*, 13 (1981).
- Keane, D 1985 *Survey of Medieval Winchester*, Winchester Studies, 2, ii.
- Kelly, C A & Proudfoot, E 1990 '14 Priestden Road, St Andrews', *Discovery Excav Scotl* 1990, 16.
- Kerney, M P & Cameron, R A D 1979 *A Field Guide to the Land Snails of Britain and North-West Europe*. London.
- Kilmurry, K 1980 *The pottery industry at Stamford, Lincolnshire, AD850–1250* (=BAR Brit Ser, 84). Oxford.
- Kingsford, H S 1929 'The Epigraphy of Medieval English Seals', *Archaeologia*, 79 (1929), 149–78
- Kloos, R M 1980 *Einführung in die Epigraphik des Mittelalters und der frühen Neuzeit*. Darmstadt.
- Laing, D (ed) 1872 *Andrew of Wyntoun's Orygynale Chronykil of Scotland* (=Historians of Scotland, 3).
- Laing, L R 1967 'Excavations at Linlithgow Palace 1966–67', *Proc Soc Antiq Scot*, 99 (1966–7), 111–47.
- Lambrick, G & Moore, J forthcoming 'Drayton Cursus'.
- Leighton, J M 1840 *History of St Andrews*. Edinburgh.
- Le Patourel, H E J 1968 'Documentary evidence and the medieval pottery industry', *Medieval Archaeol*, 12 (1968), 101–26.
- Le Patourel, H E J 1979 'The Medieval Pottery', in Andrews, D D & Milne, G (eds) *Wharram: A Study of Settlement on the Yorkshire Wolds* (=Medieval Archaeol Monogr Ser, 8), 74–107. London.
- Lewis, J & Ewart, G 1995 *Jedburgh Abbey: the Archaeology and Architecture of a Border Abbey* (=Soc Antiq Scot Monogr Ser, 10). Edinburgh.
- LCPSAS 1891 *Liber Cartarum Prioratus Sancti Andrew in Scotia*. Bannatyne Club. Aberdeen.
- Lindsay, W J 1985 'Digging Up Auld Ayr: an Excavation at 102–104 High Street', *Ayrshire Collections*, 14 (1985), 195–224.
- Longworth, I H 1967 'Further discoveries at Brackmont Mill, Brackmont Farm and Tentsmuir, Fife', *Proc Soc Antiq Scot*, 99 (1966–7), 60–92.
- Ludtke, H 1989 *The Bryggen Pottery I: Introduction and Pingsdorf Ware* (=The Bryggen Papers, supplementary ser, 4). Bergen.
- Lyon, C J 1843 *History of St Andrews*. Edinburgh.
- McCormick, F 1988 'The domesticated cat in early Christian and medieval Ireland', in MacNiocaill, G & Wallace, P F (eds) *Kemilia: Studies in Medieval Archaeology and History in Memory of Tom Delaney*, 218–28. Galway.
- McCormick, F 1993a 'Animal Bone', in Murray & Murray (1993).
- McCormick, F 1993b 'Excavations at Iona, 1988', *Ulster J Archaeol*, 56 (1993), 78–107
- McCormick, F 1997 'The faunal remains', in Driscoll, S T & Yeoman, T A *Excavations within Edinburgh Castle*, 201–12. (Soc Antiq Scot Monogr Str, 12) Edinburgh.
- McCormick, F this volume 'The animal bones', in Ewart, G & Triscott, 'Archaeological excavations at Castle Sween, Knapdale, Argyll & Bute, 1989–90', *Proc Soc Antiq Scot*, 126 (1996), 517–57.
- MacGibbon, D & Ross, T 1889 *The Castellated and Domestic Architecture of Scotland*, 3. Edinburgh.
- MacGregor, A 1985 *Bone, Antler, Ivory and Horn*. Beckenham.
- Markham, C A & Cox, J C 1898 (eds) *Records of the Borough of Northampton*, I.
- Mayes, P 1964 'Medieval Britain in 1962 & 1963', *Medieval Archaeol*, 8 (1964), 297.
- Mercer, R J 1982 'The excavation of a Late Neolithic Henge-type enclosure at Balfarg, Markinch, Fife', *Proc Soc Antiq Scot*, 111 (1981), 63–171.
- Mercer, R J, Barclay, G J, Jordan, D & Russell-White, C J 1988 'The Neolithic Henge-type enclosure at Balfarg – a reassessment of the evidence for an incomplete ditch circuit', *Proc Soc Antiq Scot*, 118 (1988), 61–79.
- Moore, J & Jennings, D 1992 *Reading Business Park: a Bronze Age Landscape* (=Oxford Archaeological Unit, Thames Valley Landscapes: The Kennet Valley, 1). Oxford.
- Moorhouse, S & Wrathmell, S 1987 *Kirkstall Abbey, 1. The 1950–64 Excavations: A Reassessment*. West Yorkshire Archaeological Service.
- Morrison, H 1971 'Pots et Godets du Beauvaisis' *Bulletin Groupe de Recherches d'Etudes de la Ceramique de Beauvaisis*, 3 (1970–1).

- Murray, J C 1982 *Excavations in the Medieval Burgh of Aberdeen, 1973-81* (=Soc Antiq Scot Monogr Ser, 2). Edinburgh.
- Murray, H K & Murray, J C 1993 'Excavations at Rattray, Aberdeenshire: A Scottish Deserted Burgh', *Medieval Archaeol*, 37 (1993), 109-218.
- NMS National Museums of Scotland.
- Noddle, B forthcoming 'Mammalian bones from the Bishop's Castle, Scrabster, Thurso'.
- Payne, S 1973 'Kill-off patterns in sheep and goats: the mandibles from Asvan Kale', *Anatolian Studies*, 23 (1973), 281-303.
- Pearce, J Vince, A G & Jenner, A 1985 *A dated type series of London medieval pottery, part 2: London type ware* (=London & Middlesex Archaeol Soc special paper, 6). London.
- Radley, J 1971 'Economic Aspects of Anglo-Danish York', *Medieval Archaeol*, 15 (1971), 37-57.
- RCAHMS 1933 Royal Commission on the Ancient and Historical Monuments of Scotland *Inventory of Monuments and Constructions in the Counties of Fife, Kinross and Clackmannan*. Edinburgh.
- Reed, I 1990 *1000 Years of Pottery: an Analysis of Pottery Trade and Use* (=Meddeler, 25). Trondheim.
- Reg Mag Sig *Registrum Magni Sigilli Regum Scotorum*, iv, no 1917 Thomson, J M (ed).
- Rideout, J 1992 'Gillies Hill', in Rideout, J, Owen, O A & Halpin, E *Hillforts of Southern Scotland* (=AOC (Scotland) Ltd Monogr Ser, 1), 127-36. Edinburgh.
- RMAS Royal Museum of Scotland accession number.
- Rogerson, A 1976 'Excavations on Fuller's Hill, Great Yarmouth', *East Anglian Archaeol*, 2 (1976), 131-45.
- SAAUM North East Fife District Museum Service accession number - material formerly held by St Andrews University.
- Scott, C & Blanchard, L 1983 'The Pottery', in Blanchard, L 'An excavation at 45 Canal Street, Perth, 1978-9', *Proc Soc Antiq Scot*, 113 (1983), 503-10.
- Serjeantson, D 1988 'Archaeological and ethnographical evidence for seabird exploitation in Scotland', *Archaeozoologia*, 2 (1988), 209-24.
- Shaw, M 1984 'Northampton: excavating a 16th-century tannery', *Current Archaeol*, 91 (1984), 241-4.
- Simpson, A T & Stevenson, S 1981 *Historic St Andrews: the Archaeological Implications of Development* (=Scottish Burgh Survey). Glasgow.
- Smith, C 1989 'The animal remains', in Stones, J A (ed) *Three Scottish Carmelite Friaries* (=Soc Antiq Scot Monogr Ser, 6), fiche 13:F2.
- Smith, C & Hodgson, G W I 1983 'Report on the animal remains', in Hall, D & Lindsay, W J 'Excavations at Scalloway Castle, 1979 and 1980', *Proc Soc Antiq Scot*, 113 (1983), 590-2.
- Smith, C & Hodgson, G W I 1984 'Animal remains', in Yeoman, P 'Excavations at Castlehill of Strachan', *Proc Soc Antiq Scot*, 114 (1984), 351, fiche 4:C12.
- Smith, C & Hodgson, G W I 1987 'Animal bones', in Holdsworth, P (1987), 196-9.
- Smith, C & Hodgson, G W I 'Animal bones', in Will, R S & Dixon, T N 'Excavations at Balgonie Castle, Markinch, Fife', *Proc Soc Antiq Scot*, 125 (1995), 1109-18.
- Spencer, B 1990 *Salisbury Museum Medieval Catalogue. Part 2: Pilgrim Souvenirs and Secular Badges*. Salisbury.
- SROa *Scottish Record Office*, NP1/26 The Protocol Book of John Scott.
- SROb *Scottish Record Office*, RH6 1054, v, 12 March 1529.
- SROc *Scottish Record Office*, Sasine RS32/27.124v).
- Stat Acc Scot 1794 *The Statistical Account of Scotland*, 13. Edinburgh.
- Stevenson, S J & Torrie, E P D 1990 *Historic Glasgow: The Archaeological Implications of Development* (=Scottish Burgh Survey). Glasgow.
- Tabraham, C J 1984 'Excavations at Kelso Abbey', *Proc Soc Antiq Scot*, 114 (1984), 365-404.
- Thomson, R 1981 'Leather manufacture in the post-medieval period with special reference to Northamptonshire', *Post-Medieval Archaeol*, 15 (1981), 161-75.
- Trimp Burger, J A 1974 *Aardenburgse Pottenbakkerswaar* (=Mededelingenblad van de Vrieden van de Nederlandse Ceramick), Berichen ROB, 62 (1974).

- Verhaeghe, F 1983 'Low Countries pottery imported into Scotland: note on a minor trade', *Medieval Ceram*, 7 (1983), 3–43.
- Verhaeghe, F & Lindsay, W 1983 'Low Countries Pottery in Elgin, Scotland', *Medieval Ceram*, 7 (1983), 95–9.
- Ward-Perkins, J B 1967 *London Museum Medieval Catalogue*. London.
- Watkins, J G 1987 'The pottery', in Armstrong, P & Ayers, B 'Excavations in High Street and Blackfriargate', *East Riding Archaeol*, 8 (1987), 53–182.
- Wedderburn, L M M 1973 'Tentsmuir', in Stewart, M E C & Lythe, C M (eds) *Discovery Excav Scotl 1973*, 26.
- Wheeler, A 1978 *Key to the Fishes of Northern Europe*. London.
- Wordsworth, J 1983 'Market Street, St Andrews', *Discovery Excav Scotl 1983*, 8.

*This paper is published with the aid of a grant from Historic Scotland*