

Four excavations in Perth, 1979–84

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ABSTRACT

Between 1979 and 1984, four major excavations took place in the medieval burgh of Perth, funded by SDD Historic Monuments (now Historic Scotland) and the Manpower Services Commission.

At Mill Street, excavation on the line of the medieval defences located the stone revetment of the town ditch, and 21 stone shot. Also found was a group of grain-drying kilns, a 15th-century road and ditch crossing, 5 m of stratified deposits, and a 17th-century malting kiln.

At King Edward Street, near the High Street frontage, a group of four 12th-century timber buildings around a gravel yard were probably used for light industry. They had a complex history of repair, rebuilding, burning and disuse.

At Kinnoull Street, excavations located the remains of the Dominican Friary, founded in 1231 and dissolved in 1559, and part of the monastic cemetery. Earlier than the friary was a large ditch of unknown function, perhaps Roman in date. A later ditch was probably part of a Jacobite earthwork. Remains of 19th-century workshops were also found.

At Blackfriars House, excavations near the site of the castle demonstrated a reorientation of backland property boundaries in the 15th century, related to the development of the northern suburb by the Dominicans.

INTRODUCTION

This paper reports the results of four excavations in Perth: two within the historical limits of the burgh, and two in its medieval northern suburb. All were excavated under rescue conditions, producing partial and sometimes ambiguous evidence, but this report seeks to present the main conclusions as briefly and clearly as possible. Material has necessarily been omitted, including section drawings which form part of the archive. Readers who wish to assess the evidence for

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themselves and explore alternative hypotheses should consult the archive reports available in the National Monuments Record of Scotland.

The four sites examined were excavated as they became available in the course of development, but together they cover a wide sample of the town and its suburbs and explore some of its major topographical features: defences, High Street, Blackfriars and northern suburb. Mill Street is distinct in producing evidence of the town defences and of industry, but it also produced a group of timber buildings which can be compared with those from King Edward Street. Kinnoull Street was distinct in producing evidence of the Blackfriars monastery, but it also produced a road surface, though not as sophisticated as in nearby Mill Street. Blackfriars House is very close to Kinnoull Street, and its evidence of the northern suburb links closely with the Blackfriars monastery and its historical records.

There have been other High Street excavations before and since King Edward Street, but the King Edward Street structures retain their importance as an extensive and intelligible complex of buildings, showing the changing patterns of urban land use in fine detail. Similarly, the town defences have been excavated on other sites but have not produced evidence of the revetment and ditch crossing found at Mill Street. Blackfriars and the northern suburb had not been investigated before, and are unlikely to be re-excavated, and thus the results published here define the limits of our knowledge for the foreseeable future.

MILL STREET

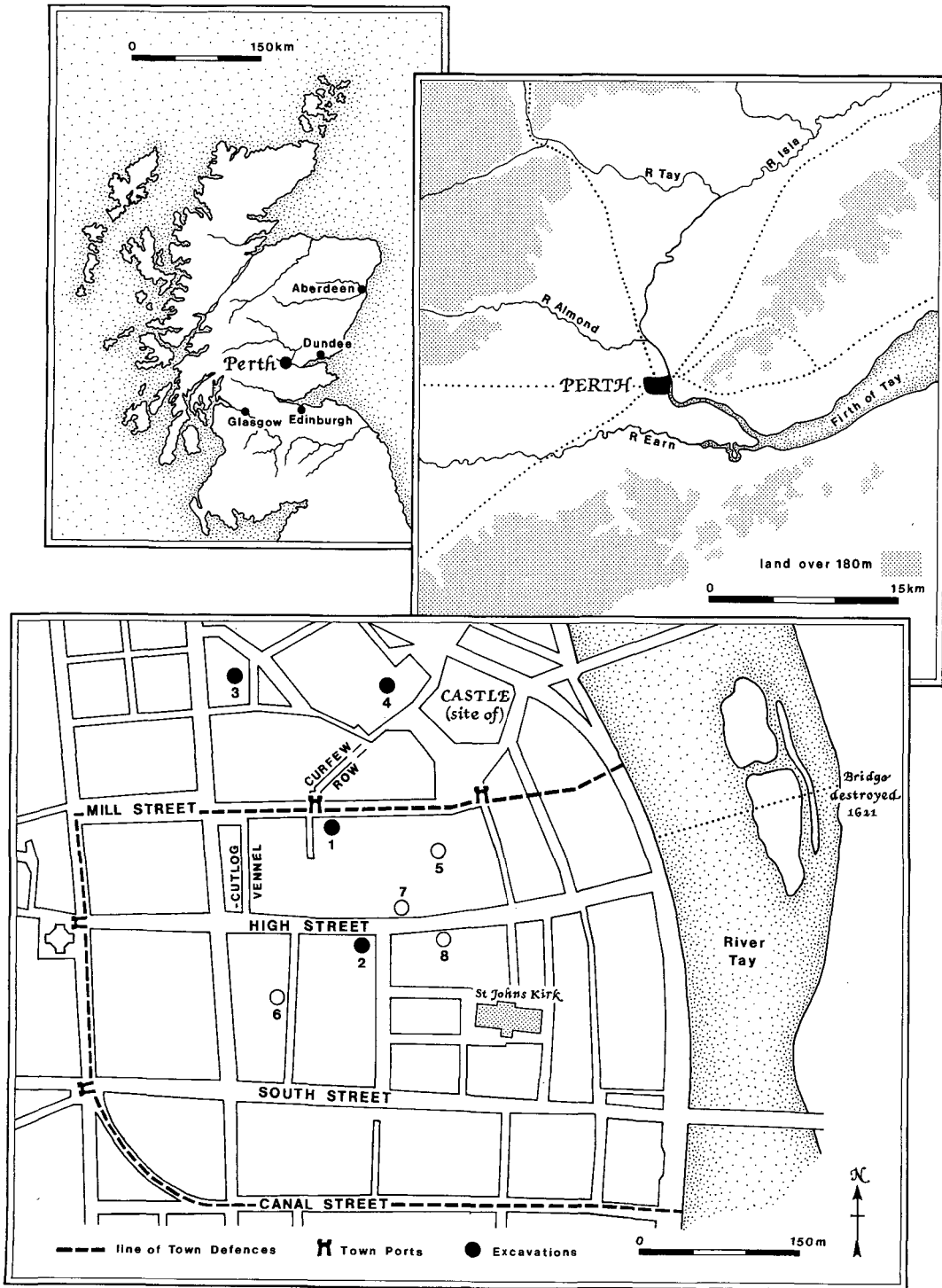
Martin Brann & the late Neil McGavin, edited by David Bowler

INTRODUCTION (ILLUS 2)

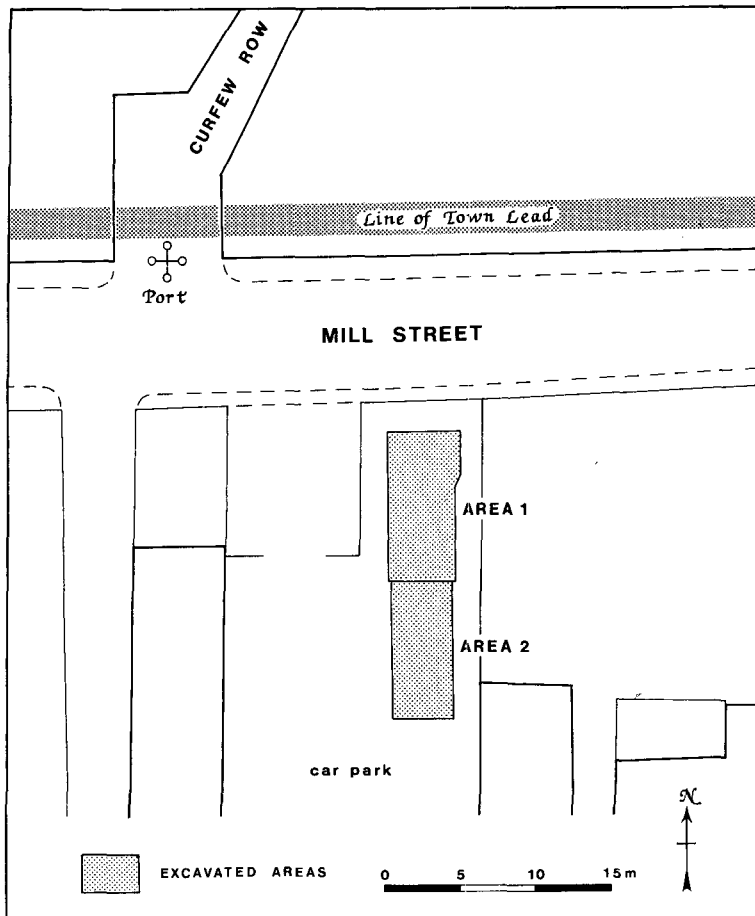
The site lies on the south side of Mill Street in an unnumbered plot between numbers 20 and 25. The numbered plots in this part of Mill Street have now been amalgamated or abolished, but the site is in effect the rear of 137–141 High Street, now part of Boots the Chemist. The widening of Mill Street and a planned extension to the premises of Boots were due to take place during 1980, threatening both the Mill Street frontage straddling the line of the town defences, and the interior of the property, in effect the northern extremity of the High Street burgage plots. Consequently, rescue excavations were undertaken over two seasons between October 1979 and June 1980, directed by the late Neil McGavin of the Urban Archaeology Unit (now the Scottish Urban Archaeological Trust Ltd). These were intended to locate and investigate the town's northern defences, determine the extent of the burgage plots, and identify the layout and function of the backlands. It would thus be possible to explore the relationship between three elements of the town: defences, burgage plots and High Street backland activity. The proximity of the town ditch and mill lade, and the extensive dumping which would have been required to level up the site in successive periods ensured that there would be deep waterlogged deposits, allowing the preservation of wooden structures and other organic materials especially leather. Work was funded by SDD (Historic Buildings and Monuments), now Historic Scotland.

PHASE I: DITCH AND REVETMENT (ILLUS 3)

Natural deposits were reached at a depth of c 4.6 m above OD in the south of Area 2. The ground sloped downwards to the north, levelling out in Area 1 at c 2.8 m above OD. This formed an east/west scarp on the presumed line of the medieval burgh defences, apparently the inward side of a broad, flat-bottomed town



ILLUS 1 Location plan. 1 – Mill Street, 2 – King Edward Street, 3 – Kinnoull Street, 4 – Blackfriars House. Other sites mentioned: 5 – Perth High Street Excavation 1975–7 (Marks & Spencer), 6 – Meal Vennel, 7 – 103 High Street, 8 – 80–86 High Street



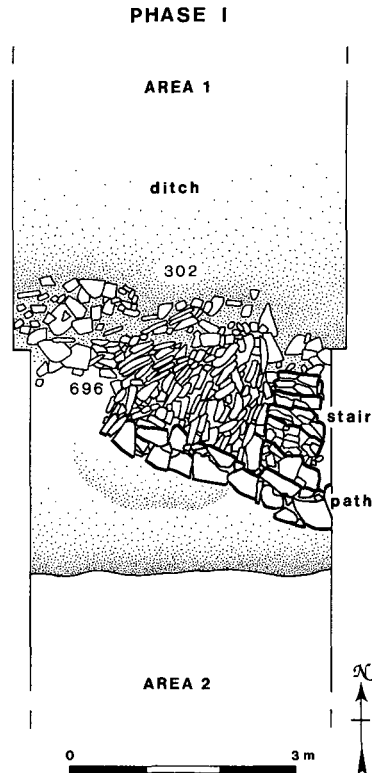
ILLUS 2 Mill Street trench locations (Based on the Ordnance Survey map © Crown Copyright)

ditch. The outer side must be beyond the north limit of the excavation. A similar east/west scarp, also interpreted as the edge of the town ditch, was picked up near the east end of Mill Street in the north trenches of the 1975–7 High Street excavation (Bogdan forthcoming).

Organic midden layers had been tipped down the scarp from within the town, but were then sealed by layers of clean sand (302), which formed a bedding for a stone revetment (696) of the slope, comprising angular stones set on edge. Some of the stones had been laid horizontally to form a rough stairway and were slightly rounded and polished by use. The town ditch may have been fordable here at low tide, thus providing an unofficial line of passage across the town ditch, avoiding the main ports or gates and any tolls or dues payable there.

Slabs laid flat along the upper margin of the revetment formed a possible walkway along the top, although they displayed no signs of wear. The revetment had eventually slumped down the slope leaving a scar in the underlying natural sand.

The ceramic evidence from these levels was sparse but suggests an early 13th-century date for the early tipping and the construction of the revetment. By association with the primary silting deposits (Phase III) in the ditch, the slumping of the revetment was given a *terminus post quem* of 1350 (Hall, Pottery, archive report). The revetment had been sealed by layers of clay and rubble tipped in from the top, and by sand (687) which had perhaps been upcast in digging the nearby kilns (Phase II).



ILLUS 3 Mill Street Phase I

PHASE II: FOUR KILNS (ILLUS 4)

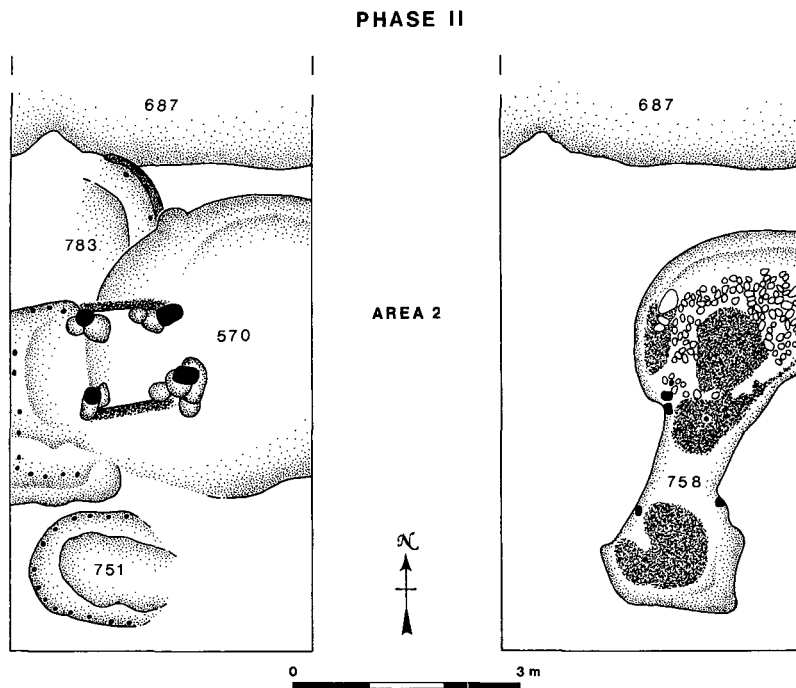
A series of four kilns (751, 783, 570 & 758) had been built immediately to the south of the ditch and revetment. It seems likely that only one kiln was in use at a time, although the first two (751 & 783) could have been contemporary. Pottery from the kilns and associated contexts provided a rough date range for their use in the 13th or 14th century.

Kilns 751, 570 and 758 were all built of clay showing signs of relatively low temperatures, and contained botanical evidence of grain-drying and peat fuel (Botanical Remains, 778/R275, 663/R191, 733/R250). The walls of kiln 783 were much more intensely scorched, and had apparently been used for making lime from animal bone (Robinson, Botanical Remains, archive report), perhaps for use in dyeing or tanning, two important industries in medieval Perth. Bone ash was also used in the extraction of silver from lead alloy by cupellation. Kilns 751 and 783 preserved evidence of clay and wattle domes, while kilns 570 and 758 had plank-lined flues. The flue of kiln 570 was supported by four wooden posts which had been renewed many times, and then finally replaced by a line of stakes. A candlestick (214) recovered from the collapse of the chamber sides may have been used for lighting in the chamber when cleaning and loading the kiln.

The last kiln (758) had traces of a cobble floor. It was disused and refurbished at least once, perhaps between harvests. Once it had finally fallen into disuse it was backfilled with ash and waste from another kiln which lay outwith the excavated area but was perhaps represented by a pad of burnt clay which protruded from the south section. Finally liquid sewage and midden were dumped into the kiln, and flowed into the still covered flue passage.

PHASE III: SILTING OF THE DITCH

The primary silting of the ditch consisted of water-laid deposits of silty sands and clays, with some sandstone eroding from the revetment. Ceramic evidence provides a *terminus post quem* in the middle of the 14th



ILLUS 4 Mill Street Phase II

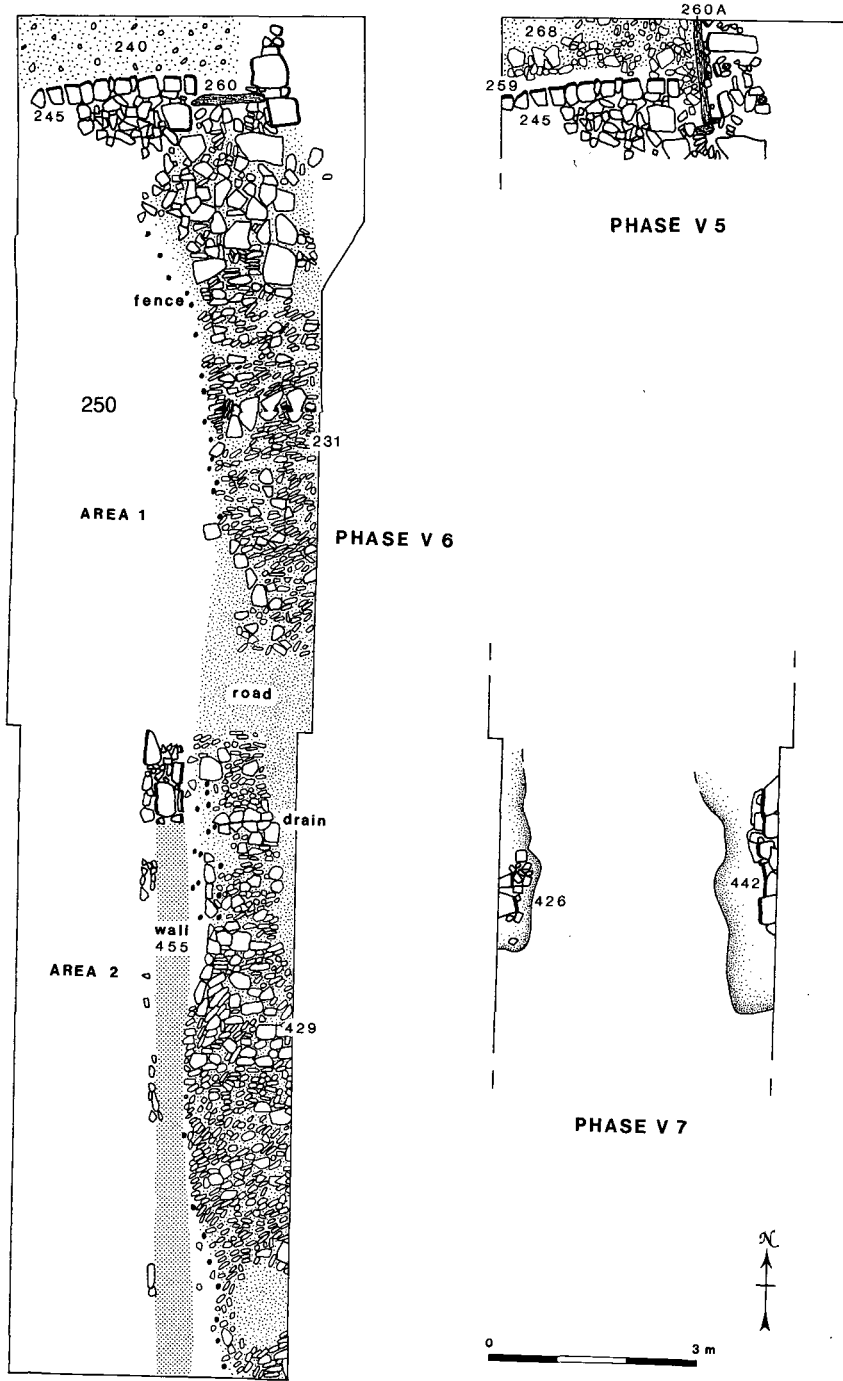
century, although there was some risk of later contamination. The primary silting of the ditch probably overlapped in time with the Phase II kiln sequence immediately to the south.

PHASE IV: DITCH INFILL AND LEVELLING

The ditch, revetment and kilns (Phases I–III) were subsequently all sealed by substantial dumps of midden, rubble and garden soil, which had been tipped in layers from the south, to a depth of some 1.8 m. These layers contained not only general domestic refuse, but also 21 large stone balls (Brann, Stone Shot), and a large pottery assemblage including two almost complete jugs (Hall, Pottery, archive report). The stone shot had obviously been deliberately rolled down the slope into the ditch where most of them were found clustered together. Backfilled deposits of a similar nature were found in the town ditch at the north end of the 1975–7 High Street excavation (Bogdan forthcoming), and on Methven Street (Spearman 1987).

During the Phase II industrial activity on the site, the ditch had been kept open. The fact that the ditch was allowed to fill with rubbish in Phase IV perhaps reflects a lesser need for defence in the later 14th century. The levelling up of the Phase II kiln area with deposits of garden soils and tips of building debris may have enabled a period of cultivation of these High Street backlands.

Early in the levelling process, a 1.2 m length of clay-bonded wall was built across the site, perhaps as part of a tentative east/west division of the site, but this soon went of out use and became buried in further levelling deposits. There were scant traces of a later north/south boundary running through the site, which had been obliterated by a modern drain trench. Division of the site into two separate properties would explain why the final levelling of the site was 0.2–0.3 m higher in the west than in the east, and is also suggested by the orientation and position of features in Phase V (below).



ILLUS 5 Mill Street Phase V

PHASE V: BUILDINGS OVER THE DITCH (ILLUS 5)

The dumping of midden into the ditch during Phase IV raised the ground level enough to make it practicable to build on. The partial remains of a number of features were found at the north end of Area 1 with an associated roadway leading south from them, probably to the High Street. Ceramic evidence indicates an early 15th-century date for the beginning of Phase V. Ceramic roof tiles and a fragment of anthropomorphic roof finial (542) give an indication of the character of some of the structures in this phase.

V.1–4 fragmentary structures

The earliest three structures were very insubstantial. The first (V.1) was represented only by a meandering row of timber posts, but produced the anthropomorphic roof finial (542). The second (V.2) comprised a cluster of timbers, a line of stones, and a slope in the ground which together with a difference in the nature of the deposits on either side suggest that the site had been divided between east and west. The third (V.3) was a row of timbers aligned north/south, and an east/west beam slot. Associated with the timbers was a reused cask stave (625).

The fourth structure (V.4) was more substantial, and comprised a north/south sill-beam founded on a bed of sand and gravel. A plank fragment at the north end of the sill may indicate that it was a plank-in-sill construction, as identified elsewhere in Perth (Murray 1980 and forthcoming).

V.5 stone and timber building

The fifth group of structures (V.5) was much more substantial. The floor consisted of sandstone and cobbles set in a thick layer of sand and gravel (268). This was bounded to the south by a stone wall (245) and a beam slot (259) and to the east by a sill-beam (260A). Wall 245 was packed on the south side with stones and organic midden filling a cut with a sloping face, formed by cutting a level building platform back into the midden. To the east of the sill beam lay a fragmentary north/south retaining wall.

V.6 eastward extension

The stone and timber building was extended slightly eastwards. An entrance with a wooden threshold (260) was inserted at the east end of wall 245. This phase of the building did not seem to rest on earthfast sill-beams. Instead, it was probably rebuilt along the lines of structure S1, Kirk Close (Blanchard 1980, 32–8 and 1987, 84–6), and structure B1, High Street (Murray forthcoming), with sill-beams lying on top of a stone wall footing.

The floor consisted of lenses of organic debris mixed with layers of sand and gravel (240) which had been spread periodically to cover accumulated debris. The floor was 0.3 m deep, indicating that this cycle of deposition and levelling went on for some time. A large flint nodule was found which had several flakes removed from it, perhaps to make strike-a-lights (Wickham-Jones, pers comm). Ash in the flooring material suggested that a hearth lay nearby (Robinson, Botanical Remains, archive report).

Road or track

To the south of the buildings, extensive tipping of midden (250) continued in Area 1, with a further 0.4 m being deposited. Along the eastern edge of the site the material was more stony, suggesting that a rudimentary north/south aligned path led from the early structures at the north end of the site. By the time of the third or fourth structure, a roadway was in existence leading south from the buildings, up out of the depression marking the line of the old town ditch, and probably all the way to the High Street. It remained in use until the demise of the final stone and timber building.

The roadway was resurfaced a number of times. The earliest two surfaces comprised merely stones and chippings deposited on the surface of the underlying midden and compacted. The more sophisticated

construction of the later stone and timber buildings was mirrored in the improved metalling of the roadway. Both seem likely to reflect an upturn in the prosperity of the holders of this High Street/Mill Street property.

Most of the old paving was lifted, and an even layer of clean bedding sand up to 0.2 m deep was laid. Into this sand cobbles had been set on edge, closely packed together, and sandstone and granite slabs were laid flat (231 & 429). Where the roadway sloped downwards, an alignment of two rows of slabs formed a drainage channel running across the road. Paving as elaborate as 231/429 compares very favourably to other excavated examples of urban roadways in Scotland dating to the medieval period, which were often built only of sand and gravel compacted by traffic, as at Castle Street, Inverness (Wordsworth 1982, 388) and Kinnoull Street, Perth (below).

Boundary wall

Remains of a largely robbed-out wall (455) running north to south down the west edge of the roadway in Area 2 indicate a probable property division contemporary with the roadway surfaces. Continuity of the boundary represented by wall 455 was demonstrated by stake-holes running the length of the roadway, indicating a fence. The fence post-dated the construction of the cobbled road surface (231/429) and was presumably erected sometime after the robbing of wall 455. In Area 2 a second phase of stake-holes points to the fence having been rebuilt.

Disuse of road

The standard of the road declined before it went out of use. A build-up of sandy clay was followed by a very poor final resurfacing of stones and clay. The accumulation in places of sticky mud on the road surface would have made passage difficult, and the ensuing ruts had been roughly repaired by dumping two strips of stones onto the mud. This was the last time that the roadway was repaired, and its redundancy was evident by the final stage of Phase V.

V.7 Building over disused road

A fairly substantial wall (442) set into a foundation trench extended c 2.6 m along the east section in Area 2. This may have supported the west end of a timber building straddling the slope. Along the west section of the excavated area, another length of stone walling (426) may have supported the eastern end of another timber building at a similar level.

PHASE VI (ILLUS 6)

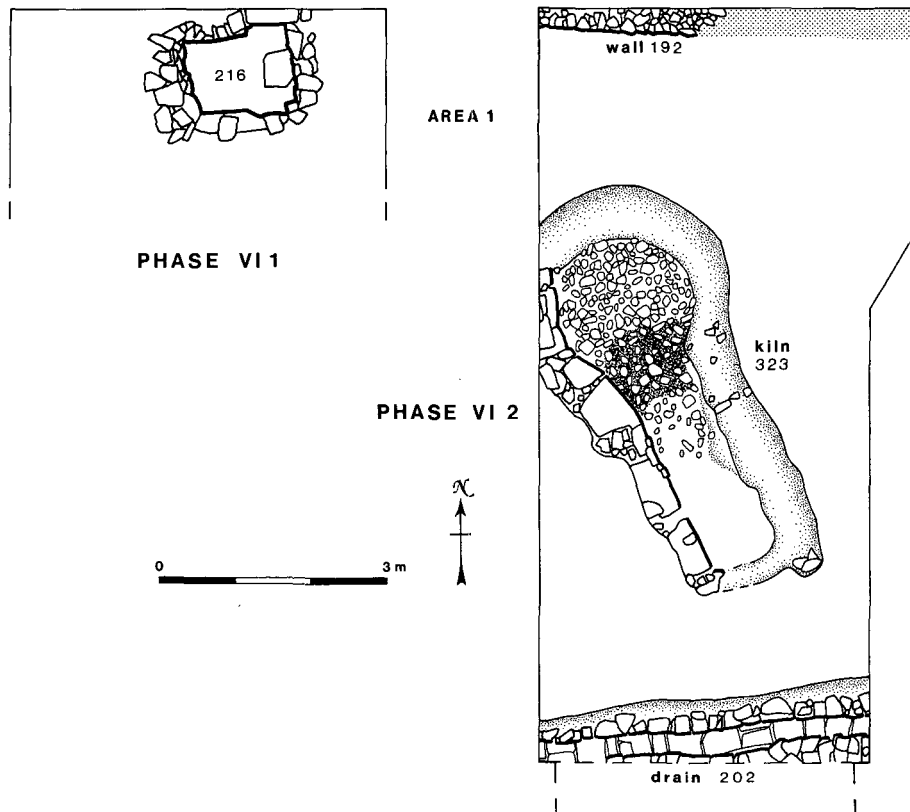
Site levelling and cultivation

Over the level of the roadways and the structural remains of Phase IV, the ground had been built up in Area 1 by a sequence of tipped soils, followed by an accumulation of garden soil over both Areas 1 and 2. Various features were contained in the tips and garden soil in Area 1, but there was little contemporary activity in Area 2, other than cultivation.

VI.1 cesspit

A rectangular stone-lined pit (216) had been cut into the tipped loams at the extreme north end of the excavation. Botanical analysis of the soft, greasy, organic material filling the pit confirmed that it had been a cesspit, and revealed information on the diet of those helping to fill it (Robinson, Botanical Remains, 220/R123, 220/R120). A complete skeleton of a dog was also contained in the cess pit.

No building relating to cesspit 216 was found; it presumably served a building to the north fronting



ILLUS 6 Mill Street Phase VI

Mill Street. A good stone-lined cesspit such as this suggests the relative prosperity of the users, which is confirmed by evidence of their diet from the botanical analysis. A window-like opening was built into the base of the north wall of the cesspit as an aid to drainage. A similar feature was built into a stone-lined cesspit found at Meal Vennel, Perth (Cox *et al* forthcoming).

VI.2 kiln 323

In Area 1, the long period of cultivation or dormancy was brought to an end by the construction of a large malting or grain-drying kiln (323). The walls, floor and flue roof were built of stone, with two reused window mouldings incorporated in the flue wall. Traces of peat fuel were found in the flue.

Documentary research of the King James VI Hospital Rentals for Perth (Smith & Spearman unpublished) reveals that in 1667/8 a Patrick Urquhart paid rent for a malt barn in the area of the excavation, then called Northgate North 30B (Milne 1891, 403–4). Kiln 323, dated by the inclusion of Delft ware in the kiln wall to the 16th or 17th centuries, would equate well with this, although no substantial evidence of a barn structure associated with the malting kiln was found. The functions of corn-drying and malting kilns are similar and they are of similar construction.

To the north of the kiln was a stone wall footing (192) probably contemporary with kiln 323, tentatively interpreted as the remains of Urquhart's malt barn. Alternatively, wall 192 and the subsequent

robbed-out walls may represent the north limit of this High Street property during the post-medieval period. Overlying wall 192 were the robber trenches of three more walls, one above the other, while the modern property boundary lies only 0.5 m farther north. If wall 192 and its successors were the limit of the property, they represent continuity of a boundary on this line over a considerable period.

It is also possible that wall footing 192 and the later robbed-out walls formed part of the south or back wall of a series of structures on the Mill Street frontage. Rutherford's 1774 plan of Perth shows a number of buildings fronting onto a roadway to the south of the mill lade. The north end of the excavated area coincides with the back of one of the buildings on the map, and the robber trenches may represent traces of earlier builds of a structure in the same position.

Probably contemporary with kiln 323 was a stone-built drain (202) running east to west along the south end of Area 1. A drain of similar construction to 202, and running on approximately the same east/west line, cut across the northern trenches of the High Street excavation, and may in fact have been a continuation of drain 202.

PHASE VII

In this final phase, kiln 323 was dismantled, and cultivation of the site resumed. Pits of unknown function were dug into the garden soils and then backfilled, and then lazy-beds were dug east/west across the site. A further accumulation of garden soils overlying the lazy-beds had been cut by a stone drain, probably of 18th-century date.

DISCUSSION

The town defences

The earliest documentary reference to the defences of medieval Perth appears in a charter of David I, repeated by Malcolm IV between 1153 and 1156, which records a grant to Baldwin the Lorimer of a toft in Perth free of services, except for watch within the burgh and *claustrum burghi secundum sua possessionem* 'the enclosure of the burgh beside his property' (James & Given-Wilson forthcoming). This points to the establishment of a boundary to the burgh by the mid-12th century. Neither the line of the town boundary nor, consequently, the size of the 12th-century burgh is known. Spearman suggests that the construction of the castle, first referred to in 1160, on the north side of the town may also have involved the coursing of a stank along the line of modern Mill Street (Spearman 1988, 48–9). The scarp slope found in the earliest levels on the Mill Street excavation and assumed to represent one side of a broad, flat-bottomed town ditch equates well with this. The stone revetment of the scarp was dated by pottery to the early 13th century, but the ditch may well have been cut earlier and the revetment may represent a subsequent action.

Excavation at the Central District School site in Meal Vennel, Perth, revealed the west edge of an early, but undated, substantial ditch oriented north/south running under Meal Vennel (Cox *et al* forthcoming). It is thought that this formed part of the burgh boundary referred to in 1153, but that by the 14th century, the burgh had expanded to fill the area bounded by modern Mill Street, Methven Street, Canal Crescent and Canal Street, with the town boundary following this revised line (Spearman 1988, 53). The Methven Street excavation (Spearman 1987, 56–8) uncovered part of a broad 14th-century ditch on this line of defence, at least 5 m deep, with botanical and sediment evidence that it was originally water-filled. However no other evidence of fortification survived there. Medieval urban defences constructed in Britain prior to the 13th century most commonly consisted of a ditch and bank, with a timber palisade sometimes topping the bank, and gateways of timber or stone controlling the entrances to the town (Barley 1975, 60). Perth's earliest defences were probably no exception. That the town had defences at an early stage is made all the more likely by the fact that the castle was destroyed in a flood in 1209 and never repaired.

A charter of Alexander II (1214–49) mentions the *muros de Perth* (James & Given-Wilson, forthcoming). However, contemporary English documentary evidence indicates that an earthen defence was sometimes referred to as *murus* (Barley 1975, 60). Many towns in England failed to erect more substantial defences. The Burdike at Grimsby, the Bardyke at Boston and the Pales Dyke at Dunwich, all earthen defences constructed by the early 13th century, remained those towns' only defences. The same was true in Scotland. Aberdeen (old burgh), Dunfermline, Elgin and Inverness never replaced their earthen defences with a stone circuit (Bond 1987, 92–116). It would seem therefore that ditch and palisade town defences may commonly have persisted throughout the medieval period.

However, the strategic importance of towns such as Berwick and Perth during the Wars of Independence caused their previously earthen defensive circuits to be strengthened in the early years of the 14th century. In 1304 it is recorded that Master Walter of Hereford was building a town wall at Perth. Walter of Hereford was one of the principal master masons employed by Edward I and is known to have been working on the castle and town walls of Caernarvon, both before and after his time in Perth (James & Given-Wilson forthcoming).

The rapidity with which Perth changed hands between the English and Scots in the Wars of Independence, subsequent to Walter of Hereford's recorded work, suggests that he may not have completed it; or it may be that he was only charged with the construction of stone gateways and towers at intervals along the circuit. Such towers and gatehouses provided secure platforms from which missiles could be fired. The 21 large stone shot tipped into the town ditch in the later 14th century (Phase IV) attest to the fact that Perth had its own stone-throwing artillery.

In March 1306, Edward I gave orders for Perth to be fortified with a new ditch and *peel* (James & Given-Wilson, forthcoming). Here *peel* is probably the Middle English word *pel* meaning stake or palisade (OED).

Evidently, each time that the burgh changed hands the defences would have been in need of repair. Bruce retook Perth after a siege in 1313 and is reputed to have slighted Edward I's stone walls. The speed and cost of repairs were obviously of great relevance. After a further two decades of war, however, Perth's defences were still being renewed in the quickest and cheapest manner. Medieval sources refer to 'un bon mur de terre' and 'une profonde fosse' built by Edward Balliol's English troops following his recapture of the town in 1332. Shortly afterwards, in 1336, Edward III ordered the rebuilding of the walls 'very strongly with squared stones and mortar, and to a suitable height, with towers, and gates and cornices' (James & Given-Wilson forthcoming); whether this work was ever completed is unknown.

The northern trenches of the 1975–7 High Street excavations, at Parliament Close at the east end of Mill Street, revealed the southern edge of a broad, deep ditch, at the head of which were the largely robbed-out remains of a 2.5 m thick stone wall. The wall may have been slighted in the early 14th century and robbed out probably a little later. Three courses of ashlar remained *in situ* (Bogdan & Wordsworth 1978). This wall might be the remains of Edward I's town wall which was supposedly slighted by Bruce after he took the town in 1313.

No traces of defences were found at the head of the Phase I ditch in the 1979/80 Mill Street excavation. If an Edwardian stone town wall existed at this point, it would most likely have closely followed the line of the ditch, as found in the 1975–7 High Street excavation. A berm between wall face and ditch lip, which was a standard feature of Roman defences and found to be particularly wide in Saxon *burhs* in England, was uncommon in the medieval period (Barley 1975, 69).

On the basis of the ceramic evidence, the Phase II kilns date to sometime between the mid-13th century and the second half of the 14th century. They may, therefore, either have predated or

post-dated the walls of both Edward I and Edward III. Remains of insubstantial fortifications such as low earth banks, mud walls or palisades could have been obliterated by the use of the site in Phase II as an industrial area; but the construction and demolition of a substantial stone wall such as that suggested in Perth by the historical sources could hardly have failed to leave some trace. The Mill Street excavation has clearly raised as many questions about Perth's medieval defences as it answered, but the quantity and quality of surviving evidence shows that excavation on the line of the defences will continue to expand our understanding of their complex history.

Between the collapse of Balliol's attempts to win the Scottish throne in the mid-14th century and the Civil Wars of the 17th century, little is known of Perth's defences from documentary sources (Turner Simpson & Stevenson 1982, 10). The coming of less turbulent times for Perth was, however, clearly signalled in the area excavated at Mill Street by the Phase IV filling of the ditch, dated on ceramic evidence between the second half of the 14th century and the early 15th century. The evident survival of the mill lade indicates that this dumping resulted only in a narrowing of the broad defensive ditch rather than its total infill. When it was dug originally, the Mill Street ditch might not have had a purely defensive function, for it could also have helped in the drainage of this low-lying area and may even have been used to power the royal mills at Perth (Spearman 1988, 48–9). The civil and commercial functions of the mill lade would still have been required in later centuries, and narrowing the ditch would have improved the flow of the lade.

The Phase V.1–V.6 structures, found only at the far north end of the excavation and erected on the Phase IV ditch infill, may have been built right up to the edge of the mill lade. The quality of the metalled roadway serving the Phase V.5 and V.6 structures indicates that they were important buildings, and from the position of the structures a mill could be conjectured, although there was no archaeological evidence to support this.

The kilns

The Phase II kilns are paralleled in construction and type by a group of kilns of similar date found in excavations at Meal Vennel, Perth (Cox *et al.*, forthcoming). The siting of the Meal Vennel and the Mill Street kilns is also similar. If it is correct that, prior to the 14th century, the west boundary of the burgh was for a time formed by a ditch running along Meal Vennel (Spearman 1988, 48–50), then the Meal Vennel kilns and the Phase II kilns at Mill Street were sited probably deliberately on the periphery of the burgh to minimize the fire risk to the town. The position of the kilns adjacent to a ready source of water (in case the kiln fires got out of control) would also have made the banks of the town ditch an ideal site.

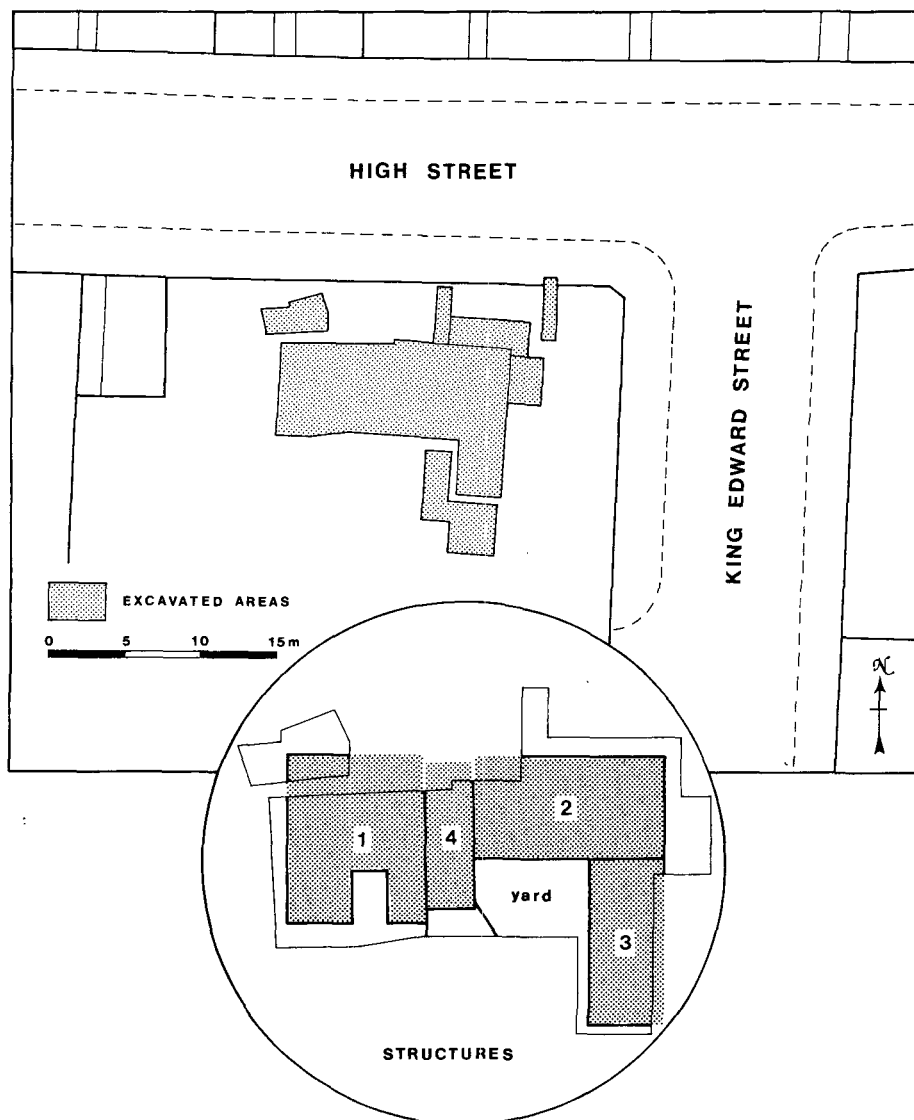
The Phase II and Phase VI corn drying/malting kilns show an increase in size and complexity over time. In isolation it might be tempting to see this as technological development of the corn drying/malting kiln between the 14th and 17th centuries; however, kilns of similar construction to the Phase VI kiln but dated to the 11th and 13th centuries have been excavated at Abercairny, Kincardineshire, and at Capo, Perthshire (Gibson 1988). Individual and local traditions and the availability of raw materials may explain the differences in the build and design of the kilns.

Whatever the type of kiln, the principles of use remained the same. The heat from a fire (commonly of peat), set in the passage, or at the mouth of the passage in the kiln chamber or bowl, rose up through a permeable floor forming a roof to the chamber. The grain or malt to be dried was spread over this drying floor, which may have consisted of timber joists overlain by a mat of twigs and straw, or alternatively a kiln hair (a cloth woven of horse hair). Many household inventories show that a hair or kiln hair was part of the equipment of most farmhouses in the post-medieval period and perhaps earlier (Bolton 1960, 131).

The functions of the malting kiln and the corn drier are very similar; both were used to dry wet grain. In places the same kiln may have been used for both purposes. The corn drier was used to facilitate the threshing, milling or storage of corn which had been brought in wet or unripe from

the fields. The malting kiln was used to destroy the vitality of the germinating grain in the process of making malt for the brewing of ale (Beresford 1974, 140–2).

As well as the kilns at Abercairny and Capo, other stone-built sunken corn drying/malting kilns, similar to the Phase VI kiln but of medieval date, have been excavated at Chapelton, Angus (Pollock 1985, 363–8), showing them to be a not uncommon form in eastern Scotland at an early date. Documentary evidence indicates that corn driers/malting kilns such as these were in use in Britain well into the 19th century (Britnell 1984, 193).



ILLUS 7 King Edward Street trench locations (Based upon the Ordnance Survey map © Crown Copyright)

KING EDWARD STREET

Peter Clark & Linda Blanchard, ed David Bowler

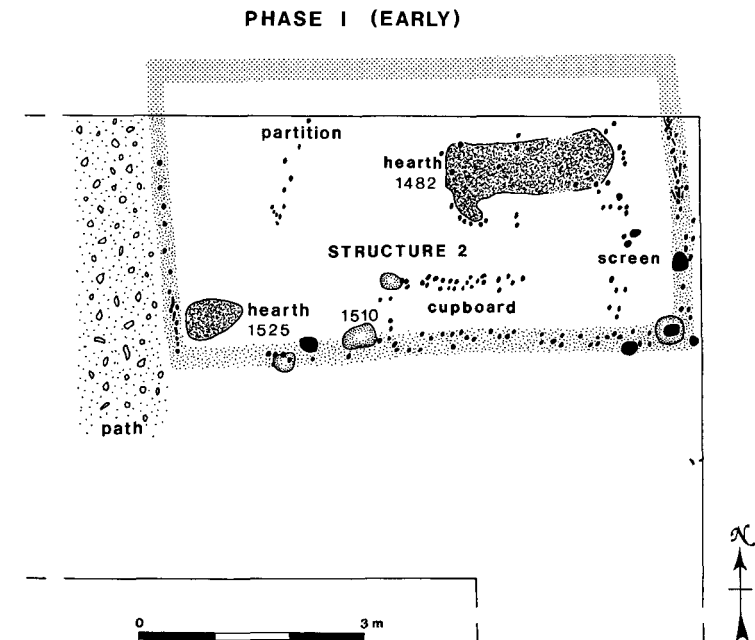
INTRODUCTION (ILLUS 7)

The site lies on the west side of King Edward Street at its junction with High Street and was due to be developed as part of a large shopping centre. A watching brief during February and March 1982 demonstrated, surprisingly, that there was significant survival of early medieval deposits beneath the later cellars. In April 1982, changes in the development programme allowed a fuller archaeological investigation of the site. A controlled excavation was carried out over six weeks in May and June of that year, supervised by Linda Blanchard and funded by SDD (Historic Buildings and Monuments), now Historic Scotland. It had as its objectives to discover the nature and date of the earliest occupation on the High Street frontage, and to recover early medieval building plans and industrial remains.

THE EXCAVATION

PHASE I: EARLY BUILDINGS (ILLUS 8 & 9)

The surviving deposits were deeply buried, below modern basement level, and were waterlogged, which allowed extensive preservation of wooden structures, as well as organic materials such as leather. Three early buildings were identified, Structures 1, 2 and 4, described below in chronological order. The buildings and demolition layers from Phases I–IV produced an unusual assemblage of imported pottery, dominated by Low Countries Grey wares, indicating a late 12th-century date for the occupation of the buildings.



ILLUS 8 King Edward Street Phase I (Early)

Structure 2

Structure 2, the earliest building recorded, was a rectangular post-and-wattle structure aligned east/west, parallel to the High Street, with a central hearth (1482), a screen to the east, and a cupboard built against the south wall. A gravel path running north/south abutted the west wall.

Structure 2 had later been modified; the central hearth went out of use, and a small hearth (1525) was built in the south-west corner. Stake-holes marked the line of a partition, and a post (1510) was added to the south wall. A hearth so close to the wall is surprising, as it would have posed a fire threat, but a domestic hearth in a similar position was excavated in a 13th-century context in Aberdeen (Murray 1982, 53, illus 24).

The gravel path adjacent to the west wall of Structure 2 was covered by an extensive clay floor (1585), which extended westwards into the areas later occupied by Structures 1 and 4 (Phase I.3). This may have been a precursor of Structure 1, but it abutted Structure 2 directly, without an intervening small building in the position later occupied by Structure 4.

Structure 2 was further modified later on, when the disused central hearth was sealed by another hearth. The north wall of Structure 2 may be represented by lines of paired stake-holes (1602), and lengths of double and single wattling (1603); alternatively these may represent the south wall of an adjacent structure, or internal features such as a cupboard or workbench. The south wall was partly replaced by a more substantial wall (1411) located slightly further south, built of posts set in a gully.

Structure 1

Structure 1 lay to the west of Structure 2 and overlay the clay floor (1585). The western wall did not survive, but its probable line was marked by the extent of the sand floor and, perhaps, by a gully (15). The north wall was represented by post-holes and robbing pits. South of these were clay and sand floors, while to the north were exterior gravel surfaces and trampled layers. The south wall was marked by a line of robbing pits.

On the south side of Structure 1 there were two extensions. The western extension was partly of wattle, partly of posts, with perhaps a sill beam (126) on the west side. The eastern extension was of similar construction but contained fragments of a wooden floor (229).

The entrance to Structure 1 was presumably in the recess between the two extensions. Running south from the entrance was a gravel path, butted by midden deposits on either side, extending in the east to a wattle fence (253) which divided the midden from the yard area beyond.

Structure 4

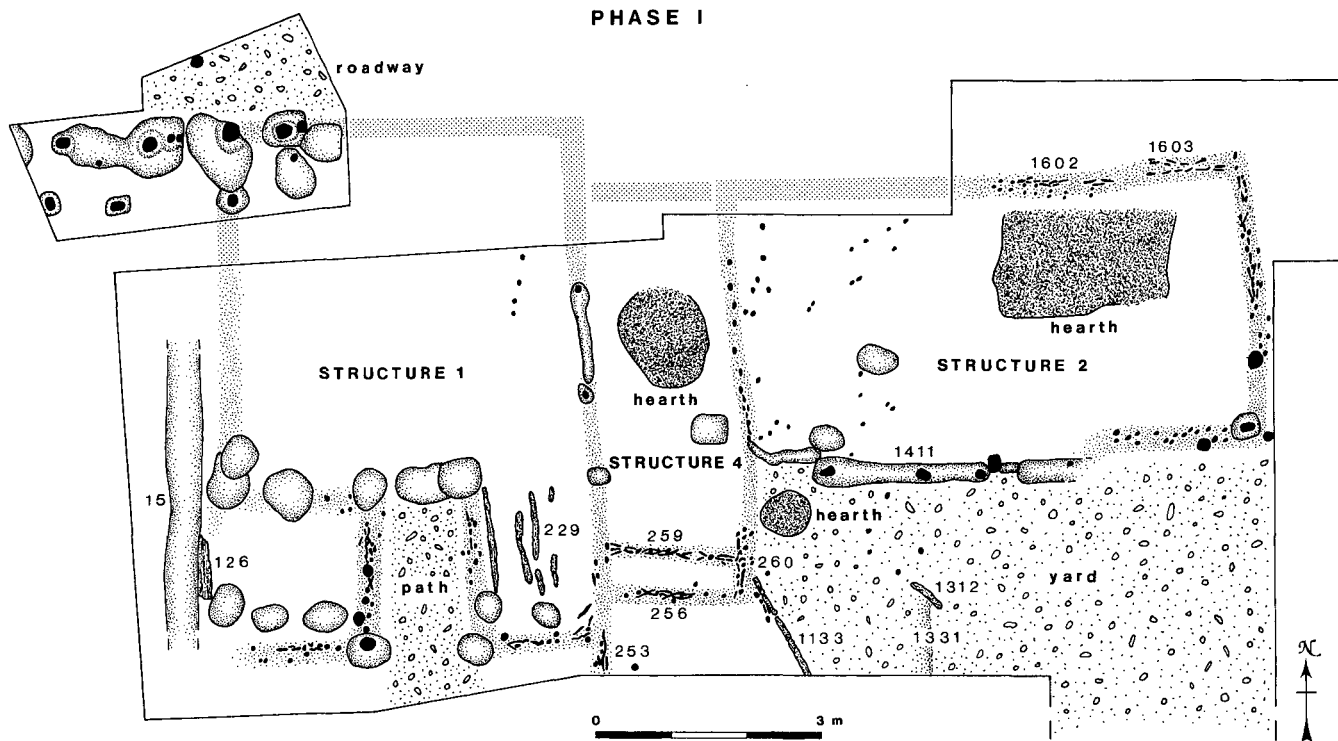
Structure 4 was created by the simple expedient of roofing over the narrow gap between Structures 1 and 2, and adding a short wattle wall (260) to complete the east wall, and a south wall (256). The north wall lay outwith the excavated area. A partition (259) formed an internal cupboard. Structure 4 had a clay floor and two superimposed hearths.

Yard area

South of Structure 2 was a gravel yard surface. A sharp edge (1331) and traces of clay in the gravel perhaps marked the line of a fence; a timber (1312) may be part of this boundary. Traces of hoof prints indicate that it had been used as a stockyard. Set into the gravel was a small hearth. A wooden spar (1133) probably represented the base of a fence.

Burning of Structures 2 & 4

Structures 2 and 4 were destroyed by fire. Ashy silts found concentrated around the interior edges of Structure 2 were overlain by further deposits of ash and burnt daub.



ILLUS 9 King Edward Street Phase I

PHASES II & III: LATER BUILDINGS

Phases II and III together span a very short period of time. As there are few stratigraphic links between the four building plots, the division between phases must remain very tentative. Structure 3 was built after the destruction of Structure 2, and Structure 2A was built after the post-destruction activities in the Structure 2 and 4 building plots. However the erection of Structures 2A and 3 may be roughly contemporary. Three main activities are represented by Phases II and III: first, the post-destruction activity over Structures 2 and 4; second, the construction and use of Structures 2A and 3; and, third, the destruction of these structures, also by fire.

PHASE II (ILLUS 10)

Structure 2: post-destruction activity

A drainage gully (1391) was cut into the remains of Structure 2, and ran down from north to south. This had been infilled, and an oven and screen were built over the remains of Structure 2. An ashy spread (1321) to the west may have been rakeout or a hearth. Over the original oven, another oven (1211), had been built of clay edged with flat planks. Farther west, a layer of sandy clay spread over the western wall line into the area of Structure 4, which by then was evidently disused.

To the east of these was a gully aligned north/south (1274), with a line of stake-holes along its west side. To the west was another gully (1182), apparently a drain running south-west to a small sump.

Structure 3

Vestiges of a timber building were found south of Structure 2, apparently a precursor of Structure 3 proper, represented by post-holes, a gully, and a length of wattle, all sealed by yellow sand. Structure 3 was erected in the south part of the site, aligned north/south, with an entrance at its north-west corner. The sand floor was bounded on the west by a stake-and-wattle wall, with a post (1320) beside the doorway, and a threshold of sandy silt and stones (1314). The east wall lay outwith the area of excavation, but the south wall was formed by large posts set in a gully, stake-and-wattle walling, and traces of plank cladding which had been burnt. The complexity of the south wall indicates repeated episodes of repair. The north wall was similarly formed by posts set in a gully (1295).

Structure 3 was substantially repaired at least once. A complex of stake-holes and post-holes indicated rebuilding of the north and south walls, and a new clay floor extending 0.7 m farther west was inserted, but there was no sign of a west wall. It is possible that Structure 3 was by now open-sided, but there was no trace of roof supports along its length. A rubbish pit had been dug inside the building.

Yard area

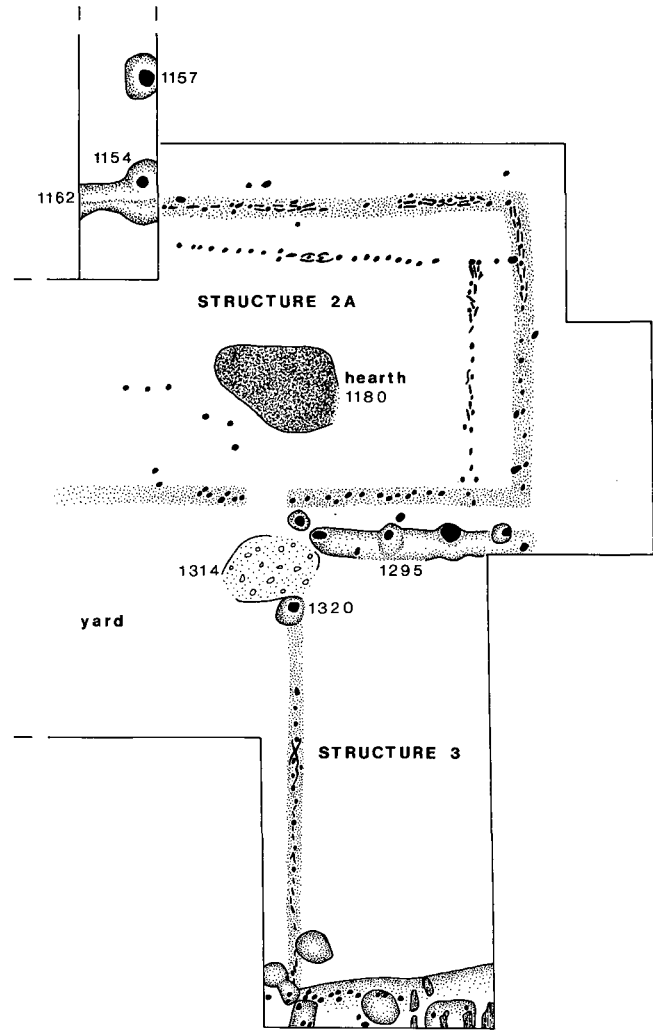
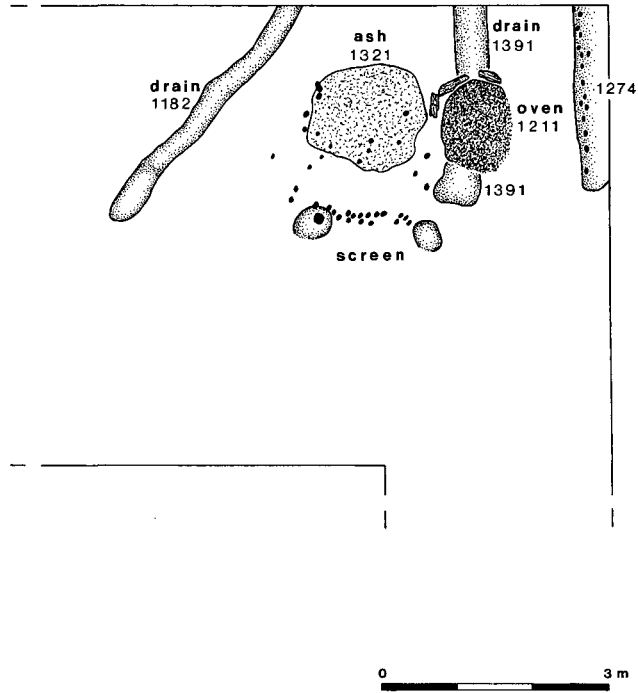
After the burning of Structure 2, a sequence of sand and gravel surfaces, trampled deposits and midden built up in the yard. This had been cut at various times by post-holes and other features.

PHASE III (ILLUS 10)

Structure 2A

Structure 2A, built of stake and wattle and with a sand floor, was erected on the old Structure 2 building plot. The east and north walls were reinforced with driven posts. The west wall was missing, but probably lay on the same line as that of Structure 2. There was a doorway in the south wall, and a clay hearth (1180) in the middle of the floor. Along the north and east walls were stake-and-wattle partitions, perhaps for cupboards or benches.

PHASES II and III



ILLUS 10 King Edward Street Phases II and III

Immediately to the north of the building was an irregular gully (1162), a post-hole (1154), and then an area of collapsed burnt wattle and clay. North of this was another post-hole (1157), cut into a gravel surface. This might have been a road surface, but the presence of post-holes and fencing in this area indicate that further structures may have lain to the north. Either the actual street frontage was located north of these putative structures, or they were encroaching onto the street.

Structure 2A had been altered internally. The wattle partitions were taken down, a new clay floor was laid, and a new partition was erected in the middle of the building. Layers of ash subsequently accumulated, another thick clay floor was laid, and a new hearth was built in the centre of the building.

Burning of Structures 2A & 3

Structures 2A and 3 were also destroyed by fire, evidenced by thick and extensive deposits of ashy sand which covered the entire area of Structure 3 and the eastern 4 m of Structure 2A. The western limits of these deposits may have been scaped away by later cellar construction.

PHASE IV: DISUSE AND DEMOLITION

A sequence of deposits accumulated over the remains of Structure 3. One of these was a clay layer impressed with what seemed to be hoof-prints possibly indicating trampling by livestock. Cut through these deposits was a large pit which had been left open and gradually filled with rubbish. A succession of three hearths had been constructed over the fills of this pit, in the hollow formed as the fills compressed. Robbing pits were dug over the south walls of Structures 2A and 3 to extract timbers which had survived the fire (Phase III.3).

PHASE V: VARIOUS CUT FEATURES

After the robbing-out of Structures 2A and 3, a pit had been dug on the former site of Structure 3. This had then been filled and replaced by a hearth. Other pits were also dug in this area, and over the plot of Structure 4, but these were much truncated by cellars, and their functions were indeterminable.

GENERAL DISCUSSION

The High Street frontage

The north edge of the excavation lay 4 m back from the modern High Street. It was assumed during excavation that Structures 1, 2 and 4 all fronted originally onto the medieval street, but this has proved to be a complex and important question of interpretation.

The two main structures, 1 and 2, were aligned exactly parallel to the modern High Street. Frontage structures of a similar date and also aligned parallel to the street frontage, have been found on sites in Gallowgate and Broad Street, Aberdeen (Murray 1982, 225), and in the 1975–7 excavations in High Street, Perth (Buildings 15 & 17, Bogdan *et al*, forthcoming). The Aberdeen examples were comparable in size to the structures in King Edward Street, Perth.

The gravel deposits recorded to the north of Structures 1 and 2A (Phases I.3 & III.2) could be interpreted as gravel surfaces in the medieval High Street itself. The creation of Structure 4 by roofing the gap between Structures 1 and 2 indicates pressure for space, again implying that the buildings fronted onto the High Street. If this analysis is correct, the modern High Street must have narrowed substantially since the early medieval period. Indeed, evidence from two other sites in the High Street, on the south side at nos 80–86, and on the north side at no 103, has since shown that the street was substantially wider initially, and on the north side was clearly encroached upon within the medieval period.

It is surprising that, after the burning of Structure 2, the building plot seems to have been left vacant until the erection of Structure 2A, and was used only for small-scale industrial activities in the interim, as represented by the ovens. The abolition of the Structure 4 plot boundary (Layer 1262, Structure 2, Phase II.3) is similarly surprising. This would be unexpected on a medieval High Street frontage, although temporarily vacant plots are known in other medieval towns, such as St Andrews (Turner Simpson & Stevenson 1981, 24). However, at 80–86 High Street (excavated 1992: Moloney & Coleman, forthcoming) there seems also to have been a substantial period of disuse on the frontage, perhaps indicating a period of local or burgh-wide economic decline.

The drainage gullies, here assigned to the period of disuse over Structure 2, also have a bearing on the location of the frontage. Gully (1391) (Phase II.2) lay at a right angle to the High Street frontage, running back from the street into the site. The second gully (1182) (Phase II.3) ran back at an angle across the site, as though relating to another structure to the north. Medieval drains have been found running from structures onto the street (Wordsworth 1982, 322), and they have lain at right angles to the street frontage, presumably to minimize disruption to the burgage plots. By contrast, the King Edward Street examples seem to drain from the street into a property, which is surprising in itself, and the second of them (1182) runs at an oblique angle, apparently disregarding the plot layout. If the High Street was farther north as now, then these features would make much better sense, running from a frontage property into backlands.

The post-holes cutting through the gravels to the north of Structure 2A (Phase III.2) indicate that there may have been further structures lying to the north in that phase, either on the frontage, or encroaching on the street as at 103 High Street (Falconer, forthcoming). Taken in isolation, the evidence from King Edward Street suggests that the excavated area was not on the frontage, but when more recent excavations are taken into account the balance of evidence is reversed. If the buildings and especially the vacant properties really were on the frontage, the function and importance of the street frontage in the 12th-century burgh needs to be reconsidered. Also, the complete disruption and apparent disregard of prime sites here (and elsewhere in Perth) suggests a considerable upheaval in the fortunes of the town in the late 12th century and demands further study.

The construction of the buildings

All of the structures at King Edward Street were of Murray's type 1b, that is a single skin of wattle and stakes inserted directly into the ground, with some additional supporting posts or planks (Murray 1980, 40). However there were also lengths of walling consisting of stakes and wattle only, without additional structural supports (notably the west walls of Structures 3 and 2). The buildings presented a variety of constructional techniques. There were only two examples of double walling, both in the north of Structure 2 (Phase I.3): the paired stake-holes (1602), and the double wattle line (1603). Neither could be clearly related to this building, and they may instead be internal features, but at least the contemporaneity of the two techniques is demonstrated.

In Structure 2A (Phase III.1), two short rectangular slots probably held plank supports for the north wall. The burnt timber planking in the south wall of Structure 3 (Phase II.2) is more problematic, associated as it was with post-and-wattle construction. If the interpretation as collapsed plank walling is correct, it appears that quite different constructional techniques were used in the same structure. This should perhaps be expected in a building which had been so much repaired and altered, but it demonstrates that rigid building typologies based on constructional techniques should be avoided wherever possible.

The walls of Structure 1 had been badly robbed and truncated. All that survived were the

shallow gully and post-holes of the east wall, and the mixed-construction types of the extensions to the south of the structure.

Structure 2 (Phase I) was supported by posts along its south wall but, as the north wall was not excavated, it is uncertain if these posts were paired across the structure. The east and west walls were of single stake construction, with no larger posts; neither were there any structural posts on the longitudinal axis. This may be an accident of survival, or may be because these gable walls were similar to Murray's type 1a walls, and served as a screen for a thick cladding which could act as a support by itself.

The main load-bearing posts of Structure 3 (Phases II & III) were at the gable ends, and again there was no clear evidence of roof supports on the longitudinal axis, or along the west wall. This latter consisted of a single row of stake-holes which may have acted as a screen for a thick supportive cladding. However, it is difficult to understand how Structure 3 would have functioned mechanically without additional support on its long axis, for which evidence is lacking.

Structure 2A was again clearly of Murray's type 1b, although the picture is complicated by the robbing of the south wall in phase IV.3, and the presence of internal wattle walls. It is likely that the south wall of Structure 2A formed a single party wall with the north wall of Structure 3.

The function of the buildings

Unfortunately the precise function of these buildings remains obscure. The timber floor recorded in the south-east extension of Structure 1 may imply a specialized function, as timber floors do not appear elsewhere on the site.

In Structure 2, soil samples from the hearths seemed to suggest an industrial rather than domestic function (Robinson, Botanical Remains, 1495/Rd1026, 1431/Rc1014, 1482/Rd1024, 1485/Rd1025). The discovery of a fragment of lead waste could be fortuitous, while the use of porous ceramic material relating to the latest hearth (Phase I.3) is not clearly understood. Deposits within Structure 2 tended to accumulate in one-half of the building or the other, east or west. This may represent different zones of activity or dumping. Overall, the balance of evidence suggests an industrial workshop rather than a domestic structure.

In Structure 3, the hearths and pit produced no diagnostic material, but the large hearth in Structure 4 leaves little room within the structure, again indicating an industrial workshop rather than domestic use. Structure 2A had two successive central hearths, but its most distinctive feature was the internal wattle walling forming a cupboard, workbench or seating around the interior of the structure.

The yard area had been intensively used. At times livestock was present in the yard; at other times temporary hearths and wooden structures were erected. Overall the picture which emerges is of a group of workshops on the south side of the High Street, probably constructed sometime in the late 12th century, which had a fairly short lifespan. Work on 18th-century records has suggested lifespans for similar but later structures of 8–20 years (Allen 1979).

The remarkable collection of imported pottery indicates wide-ranging contacts and, by inference, a very prosperous population in the vicinity. The predominance of Low Countries fabrics is a reminder of the documented importance of Flemish merchants in the early life of the burgh, and might even indicate the nationality of the inhabitants, perhaps not in these workshops themselves, but nearby, for example on a High Street frontage farther north. On the other hand, during this period of compact, single-storey timber buildings, it might have been convenient to place these 'grubby' commercial premises on the street frontage where the customers actually were, and to build more respectable residential quarters behind them. Perth's early High Street may have been shaped by an uneasy compromise of civic prestige and commercial pragmatism.

KINNOULL STREET

David Bowler & Derek Hall

INTRODUCTION (ILLUS 11)

The site lay to the north of the medieval burgh, on the east side of Kinnoull Street. In the north it was bounded by a public house called Christies and by Carpenter Street, which is a renamed portion of the medieval Blackfriars Wynd. Nineteenth-century tenements and workshops were demolished in November 1983 to make way for sheltered housing, now called Carpenter Court. This part of Perth was believed to be the site of the Dominican Friary but no plan of its buildings or layout has survived, and an excavation was undertaken to confirm the location indicated by Buist (1765) and Fittis (1885), and to investigate any remains of the friary buildings and graveyard. Perth & Kinross District Council kindly allowed excavation before construction began.

Excavation was funded by the Manpower Services Commission Community Programme and by SDD (Historic Buildings and Monuments), now Historic Scotland, and was supervised by David Bowler and Derek Hall. As the excavation began on 28 November 1983 and ended on 19 February 1984 it was severely hampered by bad weather. Some further work was undertaken during the contractor's excavation, up to the end of March 1984.

HISTORICAL INTRODUCTION

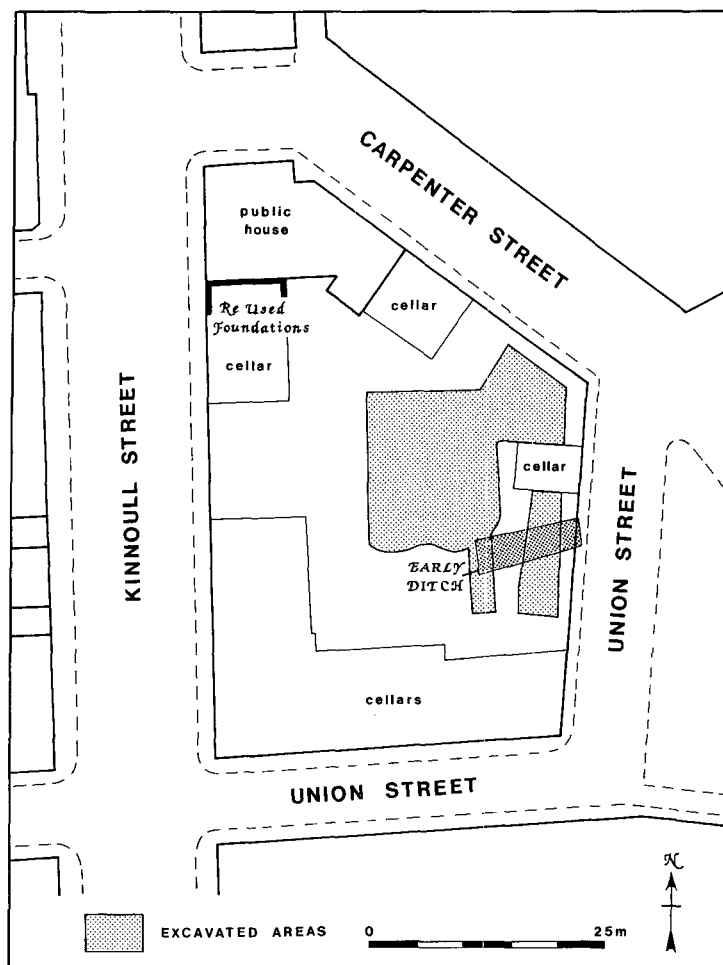
The Dominican friary was founded in 1231 by Alexander II, who introduced the Order to Scotland. The possessions of the friary are well documented in charters and other records published by R Milne in 1893, which show that the friary owned most of the north-eastern suburb, including the former royal gardens, given by Alexander II in 1244 (Milne 1893, 4, no V). In the absence of a castle, the friary became the centre for national events in Perth. Synods and parliaments were held there (Fittis 1885, 152, 154, 179; Milne 1893, xix, xx), and it became the usual residence of the kings in Perth, until James I was murdered in his bedchamber there in 1437.

In the years leading up to the Reformation, the friary's property interests led to interminable litigation against the burgh over the use of the royal garden or Gilt Herbar, beginning in July 1535 and still unresolved in October 1553. The Friars' Pot incident of 14 May 1543 was a farcical interlude in this dispute. Alexander Chalmer of Potty and six others entered the friary, broke all the gates, doors and locks, presumably mocking the friars' zeal for the protection of their property, then stole the friars' cooking pot with their dinner still inside it, and carried it about the town (Milne 1893, 229–30).

When the Reformation came, the Dominican friary was one of the three religious houses destroyed by what Knox called the 'rascal multitude' on 11 May 1559. Knox records that the monasteries were reduced to bare walls in three days (McGavin 1884, 114f), but subsequent demolition is not documented.

THE LOCATION OF THE FRIARY

The Dominican friary does not appear at all on the earliest map of Perth (Petit 1715/16), but on Buist (1765) it is marked at the western end of Blackfriars Wynd (now confirmed by excavation). Rutherford (1774) places the friary in open ground farther north and west, with a large area beyond marked Blackfriars Ground. The Ordnance Survey maps of 1863 and 1964 show the friary about 100 m east of the excavated site.



ILLUS 11 Kinnoull Street trench locations (Based upon the Ordnance Survey map © Crown Copyright)

Fittis states (correctly) that ‘The Dominican Monastery was built at the corner of the present Kinnoull Street and Carpenter Street’ and adds surprisingly, ‘part of the ruins could be seen before the building of Mr Lowe’s Academy, now a Mission Hall’ (Fittis 1885, 148). Mr Lowe’s Academy and St Paul’s Mission Hall can be traced in the Post Office Directories to 30 and 32 Carpenter Street, later amalgamated with 73 Kinnoull Street, now the public house called Christies, which forms the northern limit of the excavated site. This building may in fact incorporate part of the ruins.

THE EXCAVATION

PHASE I: EARLY DITCH (ILLUS 11)

The earliest feature on site was a very large ditch with a V-shaped profile, c 4 m wide, and up to 1.3 m deep. Analysis of the fills (Robinson & Whittington, Pollen and Particle Size Analysis, D229 & D231) indicates that the ditch lay open for some time, with organic silts eroding into it slowly. Later, a bank of upcast

material, mostly sand, which had stood to the south eroded rapidly into the ditch, producing distinctive sloping light and dark bands. Then followed a period of stability, during which 0.45 m of sandy clay eroded slowly into the ditch. After this, the rest of the bank was slighted, and cast, together with turf fragments, into the ditch. The turf was derived probably from grass which had become established on the bank during the preceding period of stability. Pollen analysis shows that the surrounding area was a weedy wasteland, with dandelions, thistles and willow scrub.

The bank and ditch together may have formed a barrier some 2.5 m high and 8 m wide, much too big for a domestic or agricultural enclosure, and more like a defensive rampart. The ditch contained no datable objects, but it was the earliest feature on site and was overlain by medieval structures of the 13th century or later, and by the monastic cemetery (II & III.6).

The friary was enclosed by ditches mentioned in John Shirley's account of the murder of James I in 1437 (Stevenson 1837, 55, 60), and was served by a system of water courses from the king's mill lade (Milne 1893, 4, no V, 45–7, no XXVII). However, those ditches ought to be contemporary with the monastic buildings and cemetery, and if one of them went out of use within the lifetime of the friary, its fills ought to contain at least some medieval refuse.

The ditch observed seems to require a pre-monastic context. It faced north, lying 115 m north of the town wall and 150 m west of the supposed castle site. It is unlikely to have had anything to do with the medieval town defences, but might have been part of an unrecorded outer enclosure round the castle. If so, the initial rapid erosion of the bank could have taken place in the flood which destroyed the castle in 1209. The slow erosion, turf formation and weed growth which followed would have taken place in a period of neglect after the flood, and then the remains of the bank would have been levelled to prepare the site for the arrival of the Dominicans in 1231. All these processes would have taken place in the absence of regular occupation of the site, and so could have produced clean fills containing no artefacts or refuse.

This is a possible interpretation, but would imply that there was an exceptionally large enclosure round the castle. An alternative explanation would be a Roman temporary camp overlooking the fords of the Tay on flat, well-drained sandy ground, just clear of all but the worst floods. Every opportunity should be taken in the future to trace the line of this intriguing ditch.

PHASE II: EARLY MEDIEVAL

In the western part of the site, a soil layer containing medieval pottery and disturbed human bone had accumulated over and sealed the early ditch. It had been cut first by small features of unknown use, and then by the graves of the cemetery (Phase III). The disturbed human bone indicates that the layer had been heavily reworked during the life of the cemetery.

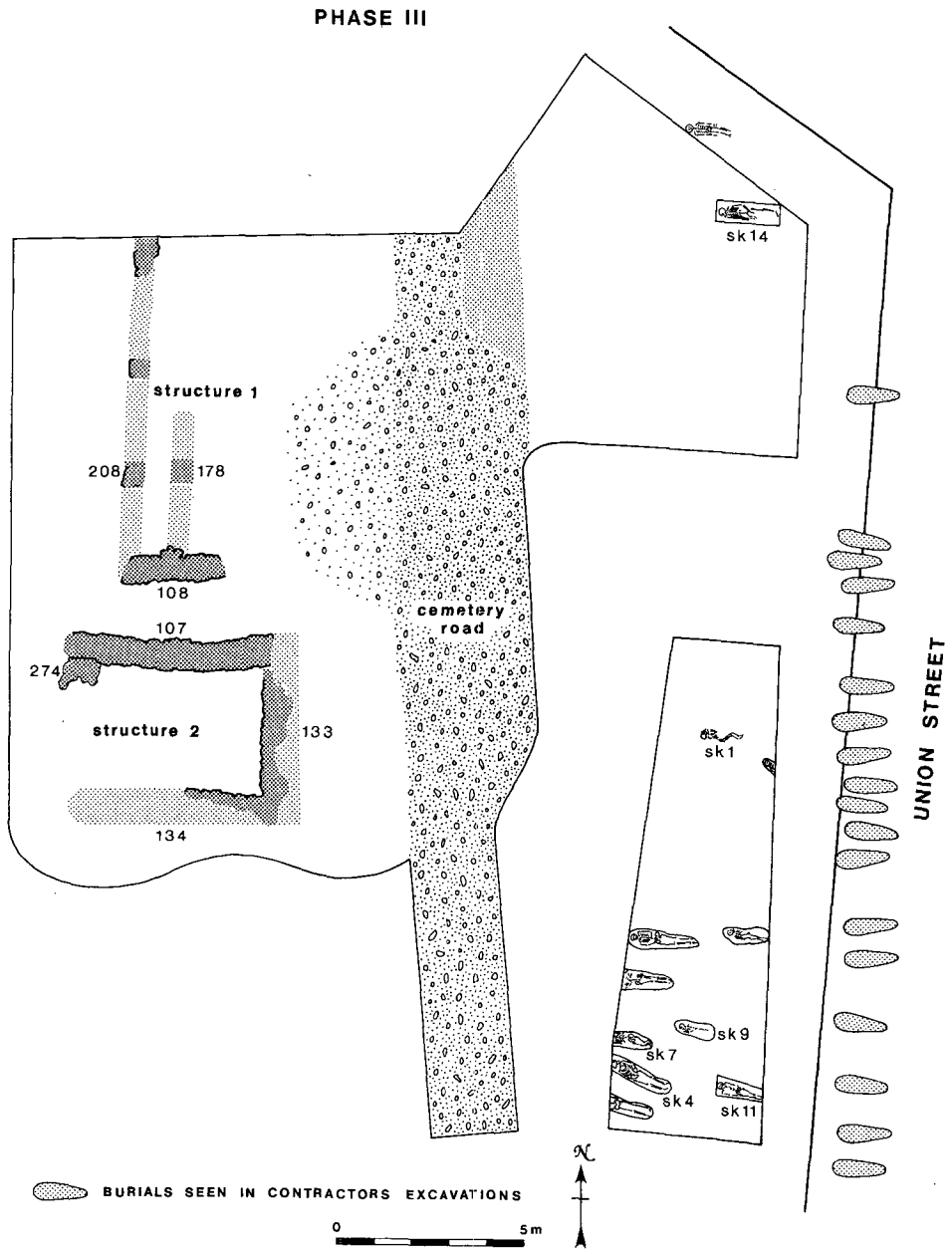
PHASE III: THE BLACKFRIARS MONASTERY (ILLUS 12)

In the north-west part of the site was a surface of clay and sandstone chippings, and a layer of silty clay with sandstone fragments. These may have been laid down when this was an external yard, or when Structures I and 2 were being built.

Structure 1

Structure 1 was a long, narrow building, apparently altered at some time on the east. It consisted of two wall foundations (108 & 208), the second largely robbed, and a third wall represented only by its robber trench (178) and fills. The east and west walls were only 1 m apart, which is very narrow, even for a passage. It may be that wall 208 replaced wall 178, rather than functioning together with it.

On the east side of the robbed wall 178 was a layer of hard brown clay and a small spread of green sandstone fragments, probably construction or demolition layers. They and the robber trench (178) were sealed by a hard silty clay surface, indicating that the eastern wall was removed within the lifetime of the building rather than during its general demolition.



ILLUS 12 Kinnoull Street Phase III

Structure 2 (cellar)

Structure 2 lay 1.5 m south of Structure 1 and consisted of three surviving walls forming a cellar. The west side lay beyond the limit of excavation. The north wall (107) was 1m high and solidly built in sandstone blocks bonded with clay and faced on both sides. The western end had been underpinned by inserting a mass of rubble (274) under the wall. The east wall (133) was a revetment of sandstone blocks bonded in clay. At the north end, a few blocks remained of one or two upper courses, set back 0.16 m from the western face of the wall, perhaps the lowest courses of a wall proper built on the foundation. The ledge created by setting them back may have provided a scarcement for a wooden floor at ground level. The southern wall (134) was no more than a revetment of blocks butting against wall 133. The clay floor was very uneven, and so low that wall 107 was partly undermined. In the north-east corner of the cellar lay a number of large, long sandstone blocks, mostly disturbed, but some still forming a rough stair up against wall 133.

Apart from wall 107, this cellar was very roughly built. If there was a wooden floor above, then headroom in the cellar would have been at best c 1.6 m, and more probably c 1.3 m. Wall 107 seemed to be original and would have supported some major structure above ground, but the rest of Structure 2 was an afterthought, added to form a cellar and outhouse to the south of Structure 1, or perhaps within a standing building, forming a cellar beneath it.

A thin deposit of silty clay was overlain by 0.11 m of compacted crushed coal and coal dust (193). Some of this had been spread beyond the south cellar wall, probably during demolition. The rough construction of the cellar fits well with its use as a coal store.

Finds from the cellar indicate a 13th- to 14th-century date for construction or initial use. A trial hole just east of wall 107, probably in its construction trench, produced a pair of English jettons of early 14th-century date (293 & 294); jettons were counters used for calculating accounts, perhaps a sign of the friary's numerous property interests.

Cemetery

The perimeter of a cemetery was located only 9 m east of Structures 1 and 2. Thirty-two articulated skeletons and 16 groups of scattered bone were found. The articulated skeletons had been interred in three rows. Ten skeletons were excavated in the first two rows, with two child burials (SK1 & SK9) tucked into the space between them. A further two skeletons were seen, but, before they could be excavated and recorded, a period of torrential rain and wind followed by deep snow and intense frost forced the abandonment of the site for several weeks. When work resumed, the bone had disintegrated beyond recovery. The remaining 18 articulated skeletons lay in the third, easternmost row, and were observed in section and partly recovered during contractor's excavations. Altogether, 23 skeletons were recovered in sufficient completeness for anatomical study. There are almost certainly more skeletons still lying beyond the eastern limit of excavation, and to the north.

There was a surprising amount of space between the graves, with no intercutting graves or multi-layering; and yet disturbed bone was found in the soil layer and even in the fills of some graves. There may have been some clearing out of the cemetery into an ossuary, as was the custom in some religious houses. Drainage work nearby in the 1820s is supposed to have uncovered vaults containing disturbed bones (Fittis 1885, 148), but there is no other evidence of this. Some human bone was found in later or unstratified contexts on site, and had presumably been disturbed during later episodes of demolition.

One of the graves contained 14th- or 15th-century pottery, and another a coin of 1476 (288). Most of the burials were in poorly defined graves, without coffins, in a conventional extended position, with the arms to the sides or slightly folded. There were some exceptions to this pattern. Two of the skeletons (SK11 & SK14) were in coffins, which survived as soil stains and rusty nails. Nails were also found in the easternmost row seen in section. The two child burials (SK1 & SK9) appeared to have been buried on their sides. Some trouble had been taken to bury SK1 in a natural sleeping position which would have been difficult to fit inside a coffin or shroud.

The presence of children and also women (SK4) in the Dominican cemetery is not surprising. Apart

from novices and ancillary staff, Prior David Cameron's account book for 1557 and 1558 includes numerous entries of fees for funerals and burials of layfolk, including women and children (Milne 1893, 249–61). The burials mentioned are 'in the kirk', but no doubt the outdoor cemetery would be even more widely available.

A young woman, SK7, was found in a very unusual position, face down, legs and arms flexed, and with head, elbows and feet all raised. The left hand was under the left shoulder and the right hand under the ribs, as if attempting press-up exercises in the grave. There was no sign of violence or deliberate disrespect. There was no coffin, and indeed the body would not have fitted inside a coffin in this posture.

A similar burial in the Carmelite friary, Linlithgow, has been interpreted as the result of *post mortem* muscular contraction in a fire casualty producing the contorted posture, which in turn made prone burial necessary (Cross & Bruce 1989, 141, SK19), and this may also explain the present case. Alternatively, SK7 may have been inadvertently buried unconscious but alive, and have struggled into this position while trying to escape. The grave was quite shallow, and the fill would have been uncompacted, so some movement may have been possible inside a shroud. A press-up position would actually be the best for attempting to rise.

Cemetery road

A gravel road ran between the buildings and the cemetery. It was traced over a length of 24 m, and was probably c 3.6 m wide, with an additional spread of gravel west of a kerb, towards the buildings. The latest material from the road was of late medieval date. The road continues the line of what is now Cutlog Vennel. This appears unnamed on the earliest town map (Petit 1715/16), and on Rutherford 1774 as Mastertons Vennel, but no map shows the vennel north of Mill Street. The northward extension must have gone out of use before 1715, probably at the Reformation; once the friary was gone, the vennel would have been a road to nowhere.

Demolition of Structure 1

The area in and around Structure 1 was covered with demolition layers of crushed plaster, mortar and sandstone. These were cut by the robber trench over wall 208, which was also filled with crushed plaster, mortar and sandstone. A rubbish pit nearby perhaps belongs to this phase of demolition. Pottery from this group was of late medieval date.

Set in the demolition layer was a small clay oven, surrounded by scorched black and reddish-brown clay. Some layers in the oven contained seeds and grain (Robinson, Botanical Remains, archive report), while others contained very small deposits of slag, but there was no sign of intense heat. It could have been used for the recovery of scrap lead from windows and roofs; or as a cooking place during some informal occupation of the site, for example by the demolition gang themselves. The demolition layers over the friary buildings produced a substantial assemblage of medieval window glass (Ford, *Medieval Window Glass, and 605*).

Demolition of Structure 2 (cellar)

Structure 2 eventually became filled with deep, soft demolition layers. Some fragments of human bone were found, indicating disturbance of the nearby cemetery. The cellar fills contained seeds of duckweed, which grows on open, moderately polluted water, perhaps in the abandoned monastic water supply (Robinson, Botanical Remains, archive report). A charter of 1491 mentions a *magnum stagnum* belonging to the friars (Milne 1893, 93f, no XXXVIII).

Debris over cemetery and road

There were demolition layers over the north end of the cemetery and over the cemetery road, probably from buildings on other parts of the site. The layers over the road were very coarse and irregular, and probably represent dumping not resurfacing.

Wall foundations, 71 & 73 Kinnoull Street (illus 11)

About 20 m north-west of Structure 1, foundations were seen which may be contemporary. At 71 Kinnoull Street (demolished 1983) a change in construction was noticed at the north end of the cellar adjacent to 73 Kinnoull Street (now the public house called Christies). The cellar wall was unusually rough and irregular, with traces of offsets at 0.5 m and 1 m above the floor. On the Kinnoull Street frontage, the normal faced cellar wall was built up against and over this irregular unfaced construction.

This irregular masonry appears to be an earlier wall foundation exposed and incorporated into the 19th-century cellar wall. The early maps, Petit (1715/16) and Rutherford (1774) show no building in this position, but Fittis (1885, 148) specifically refers to the ruins of the Dominican friary standing on the corner of Kinnoull Street and Carpenter Street, until the construction of Mr Lowe's Academy, which can be traced to 73 Kinnoull Street. It seems the public house may incorporate the ruins of the friary, or at least the ruins Fittis knew, in its foundations.

Discussion

Structures 1 and 2 were very fragmentary, but can confidently be identified with the Dominican friary. They stood on the documented site, were accompanied by a cemetery, and are shown to be medieval by ceramic evidence and the style of construction. The finds of window lead, stained glass and painted plaster confirm the ecclesiastical status of the site.

To identify the individual elements of the friary is less straightforward. If a conventional arrangement of buildings around a cloister is assumed, then Structure 1 is likely to be a fragment of the east range; it was the easternmost building found, and seems to be orientated north/south. The south and west ranges probably lie in areas unexcavated or destroyed by modern cellars. Conventionally the church would have formed the north range, beneath and perhaps built into the public house.

Structure 2 would lie at the south end of the east range, in the conventional position for the reredorter, the communal latrine. The internal evidence from Structure 2 clearly indicates its use as a coal-cellar, but its rough, unfloored construction would be equally suitable for a cesspit, perhaps in an earlier phase of use. There was no provision for flushing Structure 2 with running water in the usual way, but then even the private latrine provided for James I emptied into a closed stone-built chamber which had to be shovelled out by hand (Shirley 1837, 56). The communal latrine might have worked in the same way.

The excavated remains can be compared with partial descriptions in early documents. The location of the cemetery east of the buildings is confirmed by a number of 15th- and 16th-century charters in which the road now called Blackfriars Wynd, which approaches the site from the east, is sometimes called instead 'the road beside our cemetery' or similar (Milne 1893, 84f, XXXVII(2); 88 XXXVII(3); 90 XXXVII(4); 92 XXXVII(5)). John Shirley describes the friary as it was during James I's ill-fated visit in 1437, with a garden enclosed by a ditch, locks on the doors, iron grilles on the windows, a private latrine adjoining the king's lodging and even a tennis court. The receptacle under the latrine was large enough to accommodate the king, a lady-in-waiting, and three assassins (Stevenson 1837, 55, 56, 60).

Shirley has a taste for grotesque, perhaps fictional detail, but evidently the friary was a place of some standing. After the events of 1437 the king's lodgings fell out of favour, but they were still maintained. The townsmen of Perth were directed to pay ten pounds 'to the Prior of the Brothers Preachers of Perth for repair of the Lord the King's lodging in the monastery' (Milne 1893, XIX).

The Friars' Pot incident gave rise to a summons of 'spuilzie' dated 28 May 1543 (Milne 1893, 229–30). This lists the damages, mostly to doors and locks, and so identifies many of the elements in the friary complex. There is a 'fore yett' with locks and bands, a 'bak yett', a 'throwgang' on the north side of the cloister with removable locks, the frater, with gilt brass chandeliers and glasses, and the kitchen with the fire and communal cooking pot and pewter

dishes, and a 'clossure yett' newly made. The provision of 'fore' and 'bak yetts' indicates that the friary could be approached from more than one direction, and may confirm the interpretation of the cemetery road as a previously undocumented way up from the town.

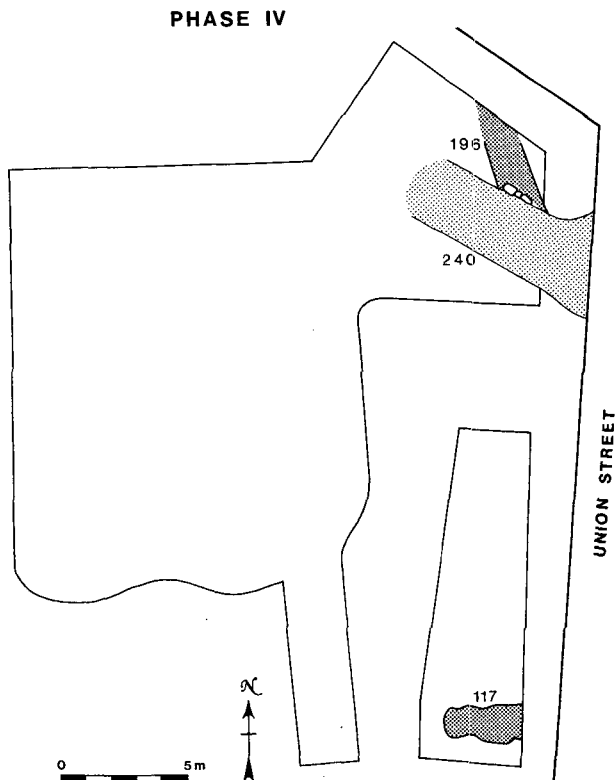
By 1559 the Dominican friary seems, surprisingly, to have been overtaken in magnificence by the Franciscan. According to John Knox, the Grey Friars, with only eight brothers in convent, were shockingly well provided, but 'The like abundance was not in the Blackfriars; and yet there was more than became men professing poverty' (McGavin 1884, 114f).

PHASE IV: POST-MEDIEVAL AND MODERN (ILLUS 13)

Ditches over cemetery

Two of the graves had been disturbed by later cuts. At the south end of the cemetery, Grave SK11 was disturbed and partly exposed by a small ditch (117), perhaps a field boundary, which then came to a stop. Along the north lip of the ditch were traces of a drystone wall. In the bottom of the ditch were 17 small round holes, forming no clear pattern except that five of them formed a double row across the ditch, just beyond the skull of SK11. Perhaps the ditch digger was probing with a stick to see if there were any more skeletons in his way.

At the north end of the cemetery, SK14 was disturbed by a ditch (196), which had cut into the coffin, removed the right leg and then stopped. Perhaps the digging of this ditch was abandoned, or at least made shallower. The ditch had a V-profile, but only the bottom 0.65 m survived. The fills of this ditch included fragments of a terracotta figurine (556), and an assemblage of floor tiles, apparently debris from the friary.



ILLUS 13 Kinnoull Street Phase IV

These small-scale disturbances suggest that for a period after the Reformation the cemetery was still recognized as a burial place, but was no longer in regular use. On 3 June 1589 David Jackson was granted ‘the grass of Blackfriars Kirkyard, and he shall for the same build a good dyke about it, and seeing it is a place of burial, which should be honourably entertained, [the Kirk Session] ordains that the dyke be well biggit, to be a stop that no beasts have entrance therein’ (Milne 1891, xlii). In 1608 the cemetery came back into use briefly ‘... the plague again appeared in Scotland ... those who were sent out to the “lone” of Balhousie ... and died there, were ordered to be buried in the adjoining grave-yard of the Blackfriars ...’ (Thomson 1845, 36). Reference to the cemetery continued as late as 1785, when it appeared as a landmark in a sasine (Fittis 1885, 148).

Later post-medieval ditch

Ditch (196) was cut by a much larger ditch (240) with a V-shaped profile, 1.8 m deep and 5.95 m wide. The bottom of the ditch was heavily encrusted with iron pan. Where it cut through ditch (196), the earlier fills were retained with a rough wall of green sandstone blocks. Botanical evidence shows that the ditch stood in an area of weeds and waste ground, which later gave way to the processing of cereals. Water stood in the ditch at some times of the year (Robinson & Whittington, Pollen and Particle Size Analysis, D240).

Petit’s plan of the 1715 Jacobite fortifications shows an inner work, marked F-F, called ‘The Small Redans made by the Townsmen’. Making allowance for the loose accuracy of the plan, this may correspond to the excavated ditch.

Victorian industrial

The Ordnance Survey map of 1863 shows the tenements demolished in 1983, with a timber yard and smithy. These can be related to the premises of John Burns, cabinetmaker, who is listed in the Post Office Directory at 1 & 3 Union Street between 1872 and 1887. Other carpenters worked nearby, especially in Carpenter Street. Some excavated features can actually be identified with wells, fences and saw pits shown on the map. An assemblage of files recovered from the fill of a saw pit are of a type used to sharpen frame or pit saws, and no doubt correspond to this period of activity.

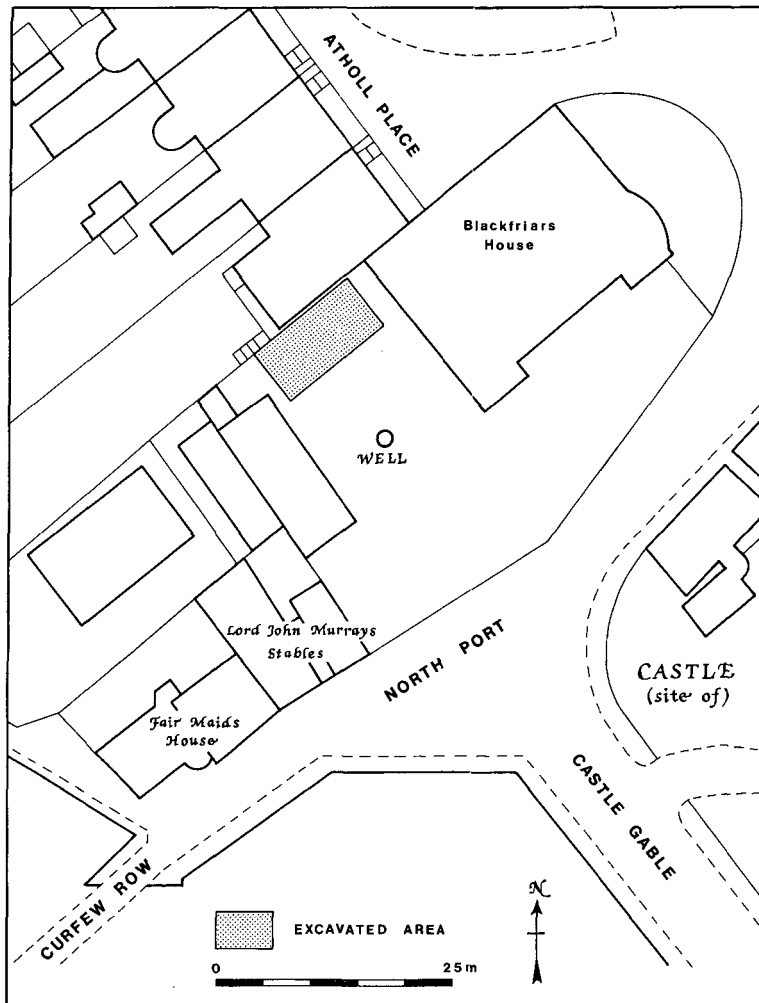
BLACKFRIARS HOUSE

David Bowler & Derek Hall

INTRODUCTION (ILLUS 14)

The site lay on the north side of the medieval burgh, at the junction of the streets called North Port and Castle Gable, and within the car park of Blackfriars House. This is the area office of Hydro Electric, who kindly allowed excavation prior to the extension of their office building. The name Castle Gable preserves the tradition that the castle stood nearby until washed away by flood in 1209. The oblique alignment of North Port, Castle Gable and Curfew Row might reflect the line of the castle defences. The site also lies 130 m east of the Blackfriars cemetery. Excavation was therefore undertaken to elucidate the development of the northern suburb, especially the influence of the castle defences on the street plan, and if possible to establish the eastern limit of the Blackfriars cemetery.

The excavation was supervised by D W Hall and D P Bowler from 7 August 1984 to 15 October 1984. The excavated area was a rectangle c 12 m by c 7 m. Work was funded by the SDD (Historic Buildings and Monuments), now Historic Scotland.



ILLUS 14 Blackfriars House trench location (Based upon the Ordnance Survey map © Crown Copyright)

HISTORICAL INTRODUCTION

Castle

The earliest reference to the castle is in a charter of Malcolm IV to Dunfermline Abbey (1157 × 1160, RRS I, 209, no 157). There is another in a charter of William I to St Andrews Cathedral Priory (1165 × 1169, RRS II, 137, no 28). The castle can be located at the north end of Skinnergate by charters which mention a road leading from the kirk to the castle (Scott 1796, 504) and by the street name Castle Gable. It is generally taken that the castle was on the east side of Castle Gable (Duncan 1974, 33; Spearman 1988, 46, 48). Fittis supposed it was on the west side and claimed that the ruins were still visible in the 1850s (Fittis 1885, 147).

The establishment of the castle had a major effect on the street plan. Spearman (1988, 48)

has shown that Skinnergate was inserted into pre-existing High Street burgage plots, apparently to link town and castle. The oblique alignment of Castle Gable, Curfew Row and North Port presumably developed in order to go round the castle enclosure and connect up with the entrances to the town. The basic pattern was in place by the 13th century (Spearman 1988, 49f) and has shaped the northern suburb up to the present. Although originally the focus of the northern suburb, the castle was removed around Michaelmas 1209, when a flood destroyed the castle and bridge. Nothing is known about its construction, but it may well have been of earth and timber at this period; this may help to explain its rapid and apparently total destruction in the flood.

Development under the Dominicans

The focus of the northern suburb shifted to the Dominican friary, which acquired the king's garden in 1244 (Milne 1893, 4) and eventually owned most of the northern suburb including the excavated site. In the late 14th century the friars had begun feuing out their lands, the earliest reference being a charter of 8 September 1327 (Milne 1893, 35f, no XXI). The northern suburb began to take the form which eventually appears on Rutherford's map of 1774, subdivided into strips modelled on urban plots (Spearman 1988, 52–5).

By 8 November 1486 the development of the castle site was far advanced. Andrew Mathieson conveys to Robert Powell '... all my inner land with garden, and the western booth of the foreland, with their pertinents, lying outwith the Castle Gable Brig and on its north side, between the land of Alexander Patonsoun on the east side, and the land of James Anderson on the west side' (Milne 1893, 61, no XXXIII, 1). A single plot has been subdivided into foreland, inner land and garden, while the foreland has had booths built on it and been further subdivided into east and west. Such complex subdivision indicates intensive land use.

The Blackfriars House site did not develop so rapidly. On 31 March 1455, John Hadingtoun resigns '... all my orchard ... outwith the Castle Gable, between the North Inch of the said burgh, and the land of the said Prior and Convent on the west, which orchard I held in chief from the said Prior and Convent ...' (Milne 1893, 48, no XXVIII). The area has not been built up or subdivided. It is still an orchard, and is bounded by the North Inch and the Blackfriars lands, not by plots belonging to various individual feuars.

By 1475, more intensive occupation of this block had begun, at least in the south corner, at the junction of Blackfriars Wynd and Castle Gable. On 16 November 1475 the friars feued out '... the eastern half of our land, namely a hall with chamber attached and two cellars, lying between the land of Cornelius Tailzour on the east and the king's road on the south and west' (Milne 1893, 74, no XXXIV). A few days later the western half was feued out to John Frew (Milne 1893, 75, no XXXV). A later charter for the same lands identifies the road as the 'the public street leading to our place', ie Blackfriars Wynd (Milne 1893, 76, no XXXV, 1). Milne (1893, 76), following a note in the Hospital Rental book of 1619, identifies the site with what is now called the Fair Maid's House.

It appears that the subdivision and development of the northern suburb was in progress from the late 14th century, and well advanced by the late 15th, but that the block containing the Blackfriars House site was a little behind the rest, beginning in the mid-15th century. Even here, it seems to have been complete by the 17th century. The King James VI Hospital Rental Books show the north-west side of the North Port feued out, including the Blackfriars House site (Milne 1891; Smith & Spearman 1983).

THE EXCAVATION

PHASE I

This phase comprised a layer of cultivated soil over natural deposits, and various undatable cut features.

PHASE II: EARLIER MEDIEVAL (ILLUS 15)

The features in Phase I were sealed by layers of cultivated soils containing pottery of 14th/15th-century date. These were cut by a system of ditches, north/south and east/west (86, 93, 142, 172 & 226), about 0.30 m deep, with V-profiles. No datable material was found in ditch 226, but the others contained 14th and 15th-century pottery. These ditches represent the earliest coherent pattern of human activity on the site, and perhaps served to define and drain garden cultivation plots.

PHASE III: LATER MEDIEVAL

III.1–2 ditches and fence (illus 15)

This phase comprised ditch fragments laid out on a new alignment. One of these (200) appeared to cut ditch 172 in the preceding phase. Ditches 158 and 200 both contained 14th- or 15th-century pottery, and ditch 236 was sealed by a layer containing 14th- or 15th-century pottery. This and ditch 158 were also sealed by a layer containing 15th-century pottery. West of these was a shallow ditch (129), and at the north-west end of this an alignment of small post-holes which had probably supported a fence. These features again probably defined or subdivided cultivation plots.

III.3–6 hearths and pit (illus 15)

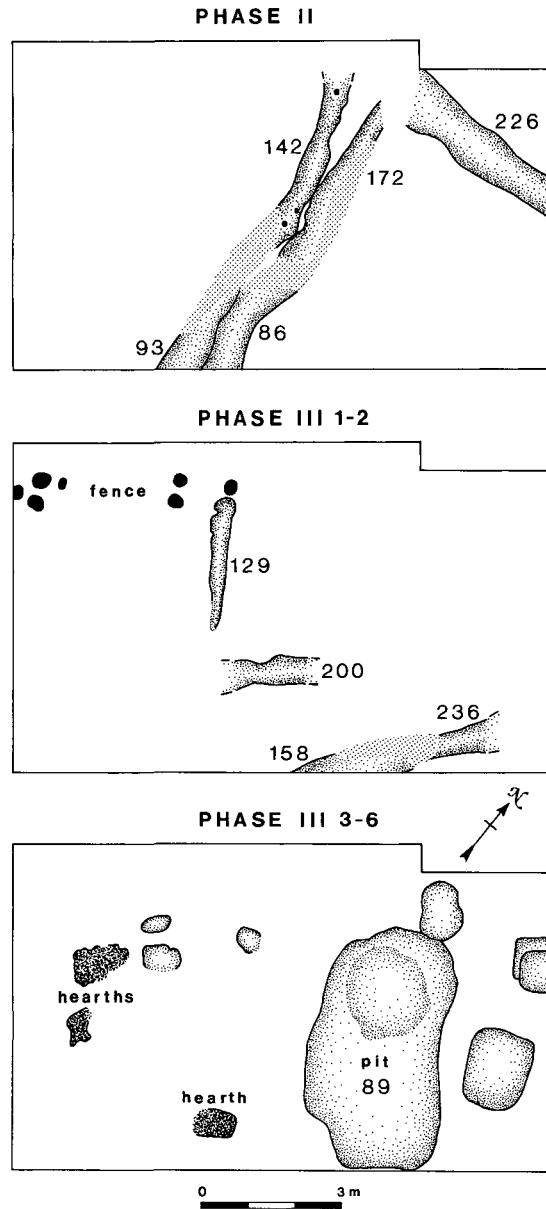
There were traces of three hearths, and various small cuts, but the most significant feature was a very large pit (89), probably dug to extract sand. It cut through most of the ditches in Phase III, and several in Phase II. Most of the pottery found on site came from its fills, mainly of the late 15th century, although there is some possibly 14th-century material from the lower fills, and some possibly 16th-century material from upper fills. This large, well-dated assemblage provides an important *terminus ante quem* for the ditches in Phases II and III.

PHASE IV: POST-MEDIEVAL AND MODERN

The site was converted from open ground or gardens to more intensive use, and early modern industrial features and artefacts appeared, including a system of drains and sumps, built of stone and brick, with cast-iron gratings. These did not connect up to main drainage and were probably of 19th-century date.

DISCUSSION

The most significant fact observed on site was the change in ditch alignment between Phase II and Phase III. The ditches are very fragmentary, but although there are minor variations, two broad systems of alignment can be recognized. Both systems contained pottery dated to the 14th or 15th centuries, and it is not possible to distinguish them on the basis of their inclusions, but ditch 172 (II) had been cut by ditch 200 (III). The realignment can be dated, since both systems contained pottery dated from the 14th to the 15th centuries, and both were cut by pit 89 (III), which is dated by a very large late 15th-century pottery assemblage. A 15th-century transition is strongly indicated, perhaps early in the century.



ILLUS 15 Blackfriars House Phases II and III

The early system, Phase II, was aligned with the main town street grid, as represented by South Street, High Street, the Mill Street defences, and numerous vennels. The later system, Phase III, was aligned with the oblique local group of streets, especially Castle Gable and North Port. As rights of way these roads apparently existed by the 13th century (Spearman 1988, 49f), certainly by the late 14th century when they start to appear in charters, but it seems that the ditch system disregarded them until they began to be built up as streets forming a suburb.

In the part of the suburb containing the excavated site, the change of ditch systems in the 15th century fits very well with the first charter evidence of subdivision in 1475 (Milne 1893, 74, no XXXIV). Until the change was imposed by subdivision of the land into burgages, the ditch system continued to reflect an alignment which disregarded the streets and perhaps the castle. Although the first ditch system is itself as late as the 14th or 15th centuries, it seems to reflect an arrangement going back before the foundation of the castle in the mid-12th century.

THE FINDS

Edited by Adrian Cox

INTRODUCTION

Pottery assemblages from each site are discussed in turn, these discussions being followed by a select catalogue of the illustrated material. Artefacts are discussed by material type, the discussions being followed by a select catalogue. In both reports, numbers in *italic* refer to the individual catalogue entries.

POTTERY D W Hall (ILLUS 16–18)

Mill Street

The Rhenish stonewares recovered from the Mill Street excavation provide the firmest dating evidence for the phases of occupation. It is useful to think of the development of the site in two phases, pre-stoneware and stoneware, as there is a distinct change of use of the site around the time of the first appearance of these stonewares.

The pre-stoneware period dates to before the mid-14th century. It appears from the pottery evidence that the revetment was in place by the middle of the 13th century. Stonewares first appear on the site at the end of Phase IV, six sherds of Langerwehe stoneware forming part of the large pottery assemblage from the Phase IV midden.

The dating of Phase V rests primarily on the presence of Langerwehe and Siegburg stonewares. These suggest a date in the first half of the 15th century for the buildings and roadways which were constructed on top of the levelled midden. At this time there were changes in the nature of the local wares: very few of the Perth Local jugs are slipped and the proportion of reduced Greywares is increased.

A difficulty with the dating of Phases V and VI is the absence of any Raeren stoneware from the period 1475 to 1550. As Raeren stoneware was widely exported it would be surprising if none was imported to Perth. The ceramic evidence appears to indicate that the main site sequence ends in the mid-15th century (Phase VI). If this is so, then the phases of midden dumping, levelling, construction and use of houses and roadways and their eventual abandonment may all have taken place within less than a century.

King Edward Street

The pottery assemblage from King Edward Street came from levels associated with a series of buildings and a yard surface. With only a few exceptions, all the ceramic material would appear to have been found *in situ* and therefore it relates directly to the occupation and use of the buildings.



ILLUS 16 Sources of imported pottery

The range of imported wares present suggests a late 12th-century date for the occupation of the excavated buildings. The absence of Perth Local wares appears to indicate that this distinctive local fabric was not produced until the 13th century.

Dominance of the assemblage by Low Countries Greyware vessels in Phases I to IV may indicate a preference for this pottery type. This may possibly reflect the nationality of the site inhabitants. It is tempting to suggest that the buildings on this site were occupied by Flemings, as there is documentary evidence for large numbers of Flemish merchants settling in Perth (Stavert 1991, 15). However, more evidence of early burgh life will be required to substantiate this suggestion.

Scottish East Coast White Gritty wares are well represented in all of the site's five phases. Their presence along with the imported wares suggests that White Gritty wares were in production in the 12th century. Their production at this time may represent one of Scotland's earliest pottery industries.

Kinnoull Street

The major part of the pottery assemblage from this site came from demolition layers overlying Buildings A and B. Among this group, the vessels represented are mainly water jugs in Perth Local Ware, although two unique vessel forms in this fabric were also present. The first is a small, globular pot from Phase III (63). The first example found of a vessel lid found in the Perth Local fabric (62) may also belong to 63. The second unique form is represented by fragments of a figurine (556).

Blackfriars House

The majority of the pottery from this site came from the fills of a single pit. This assemblage includes a large group of Perth Local and White Gritty wares and a small amount of residual Scarborough and Dutch wares. The local wares present appear to be of 15th-century date.

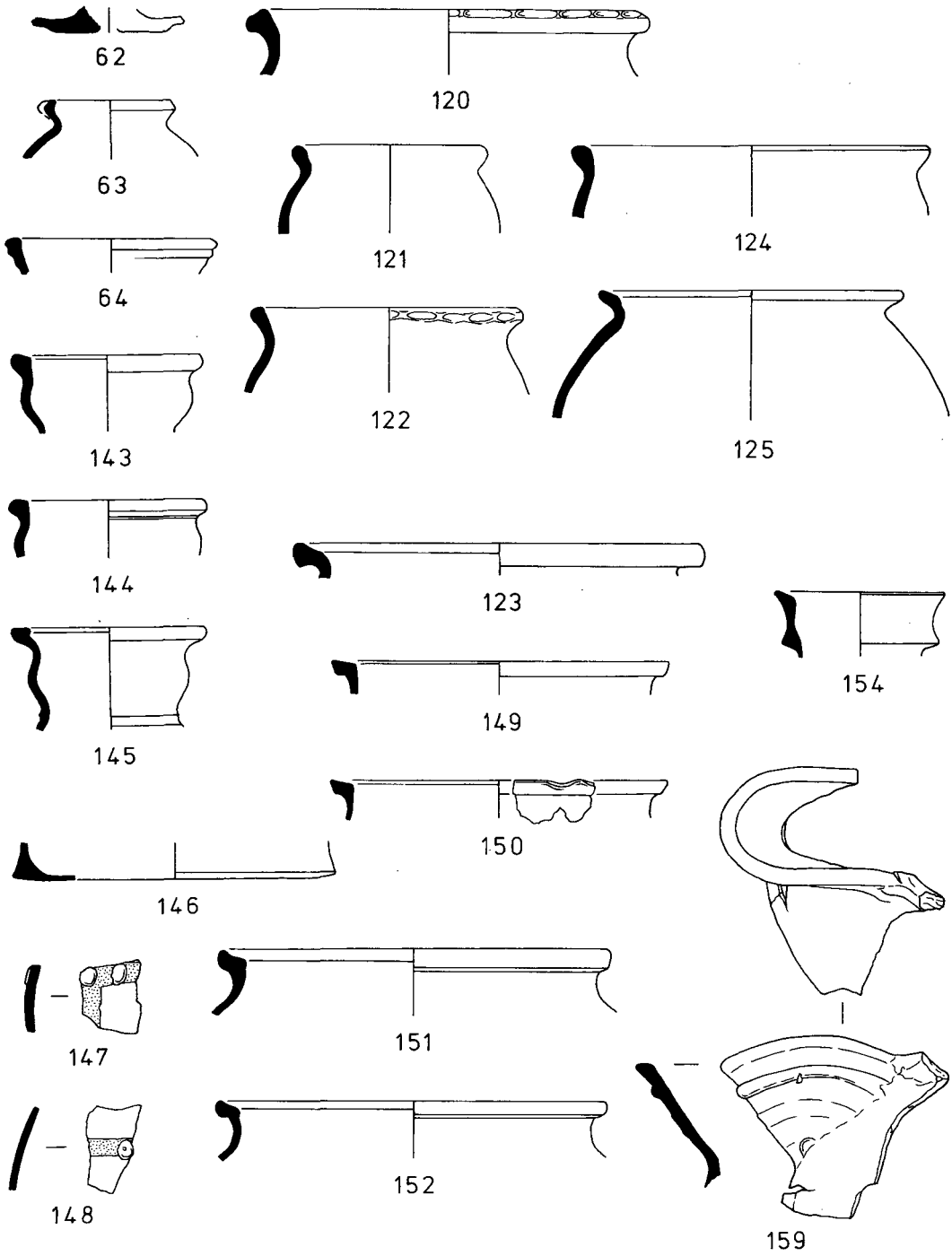
Conclusions

The King Edward Street pottery assemblage is the first published group that includes a possible early local product. This fabric type is well represented throughout the site phases and is replaced by the common Perth Local fabric in Phase V. The dating evidence from the imported wares from King Edward Street may indicate that Perth Local ware was not produced until the 13th century.

Although the presence of such a variety of imported pottery types at King Edward Street could be used as an argument for trade links, the evidence from such a small site as this cannot be used to make statements regarding the burgh as a whole. Such a range of pottery types may have come to Perth via an *entrepôt* where other goods were being collected. Such *entrepôts* may have existed at Scarborough and Lynn (now King's Lynn) in England and possibly at Dundee and Leith in Scotland (Dunning 1968).

The pottery assemblage from Mill Street provides useful information on the types present in the burgh in later centuries, particularly as later cellars and other intrusions have removed these levels from many other locations in the town. The Kinnoull Street assemblage, whilst containing two new forms in the Perth Local fabric, came mostly from demolition levels and therefore says little about the occupation of the site.

The Blackfriars House assemblage contains a tightly dated group of late Perth Local wares from a large quarry pit. The imported wares from the property boundaries predating the quarry pit are dominated by sherds that are either Aardenburg Type Ware or Group X. This gives a slightly different picture from that on other sites in the town, where Scarborough ware is the most common import.



ILLUS 17 Pottery, catalogue nos 62-159 (scale 1:4)

CATALOGUE

Perth Local

- 62 Pottery lid, possibly from 63. External brown glaze with green and yellow patches. Internal white slip and lid seating.
Kinnoull Street; Phase III
- 63 Globular pot rim and neck. External green-brown glaze on white slip, internal white slip.
Kinnoull Street; Context 256; Phase III
- 64 Jug rim. Green-brown glaze.
Blackfriars House; Context 232; Phase III.3
- 120 Slightly thumbbed cooking pot rim. Unglazed.
King Edward Street; Context 006; Phase I

Possible Local

- 121 Rim. Unglazed.
King Edward Street; Context 1215; Phase II
- 122 Rim. Unglazed.
King Edward Street; Context 1237; Phase II
- 123 Rim. Unglazed.
King Edward Street; Context 1244; Phase II
- 124 Rim. Unglazed.
King Edward Street; Context 1093; Phase IV
- 125 Rim and upper body of cooking pot. Unglazed.
King Edward Street; Context 1094; Phase IV

London Sandy

- 143 Jug rim. External light green-brown glaze.
King Edward Street; Context 1065; Phase II
- 144 Jug rim. External light green glaze.
King Edward Street; Context 1172; Phase III
- 145 Jug rim. External light yellow-green glaze.
King Edward Street; Context 1030; Phase V
- 146 Basesherd. External green-brown glaze spots.
King Edward Street; Context 1094; Phase IV
- 147 Decorated bodysherd. Brown glazed stripes with yellow-green glazed applied spots on light green-brown glazed background.
King Edward Street; Context 1122; Phase III

- 148 Decorated bodysherd. Brown glazed stripe with yellow-green applied spot on light yellow-brown glazed background.
King Edward Street; Context 1122; Phase I

London Shelly

- 149 Cooking pot rim. Unglazed.
King Edward Street; Context 1047; Phase II
- 150 Slightly frilled cooking pot rim. Unglazed.
King Edward Street; Context 1047; Phase II
- 151 Cooking pot rim. Unglazed.
King Edward Street; Context 1094; Phase IV
- 152 Cooking pot rim. Unglazed.
King Edward Street; Context 1094; Phase IV

Andenne

- 154 Rim. External yellow glaze patches.
King Edward Street; Context 1431; Phase I

French White Ware

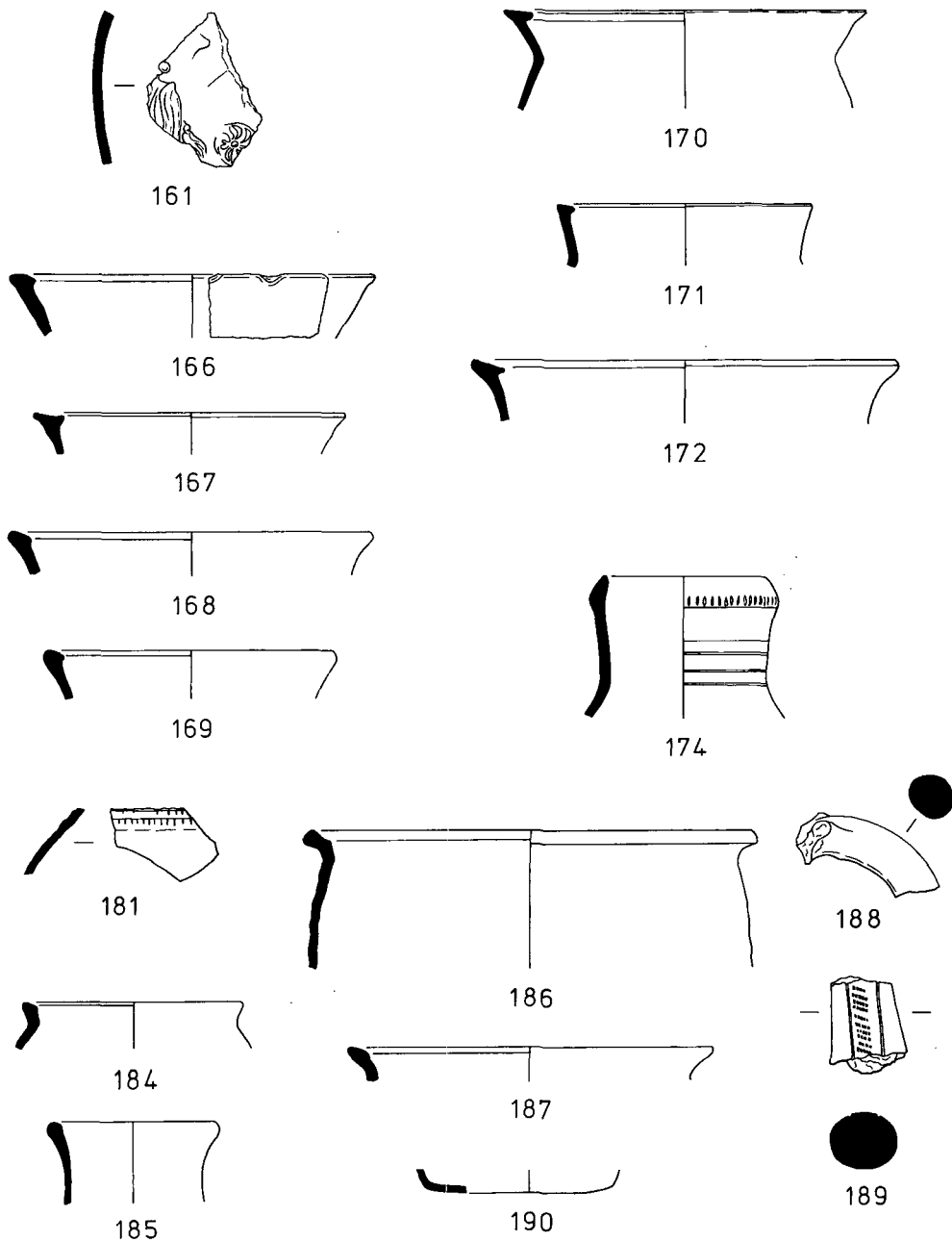
- 159 Parrot beak spout from jug. Unglazed in a white fabric.
Mill Street; Context 101; Phase VII

Low Countries Redware/Aardenburg

- 161 Aardenburg decorated figure jug bodysherd. Embossed design of standing human figure with hawk(?) and embossed rosette. Glazed dark green.
King Edward Street; Context 1000; Phase V

Low Countries Greyware

- 166 Rimsherd. Unglazed. Two thumb depressions on rim.
King Edward Street; Context 1083; Phase II
- 167 Rimsherd. Unglazed.
King Edward Street; Context 1122; Phase III
- 168 Rimsherd. Unglazed.
King Edward Street; Context 1093; Phase IV
- 169 Rimsherd. Unglazed.
King Edward Street; Context 1093; Phase IV
- 170 Rim and neck. Unglazed.
King Edward Street; Context 1094; Phase IV



ILLUS 18 Pottery, catalogue nos 161-190 (scale 1:4)

171 Rimsherd. Unglazed.
King Edward Street; Context 1109; Phase IV

172 Rimsherd. Unglazed.
King Edward Street; Context 1109; Phase IV

Rhenish

174 Jug rim. Internal and external dark brown-green glaze.
Mill Street; Context 167; Phase VII

181 Bodysherd with raised rouletted horizontal bands. Dark brown glaze and light grey glaze.
Mill Street; Context 228; Phase VII

Unidentified

184 Sandy gritty rimsherd. Unglazed.
King Edward Street; Context 1122; Phase III

185 Sandy gritty rimsherd. Unglazed.
King Edward Street; Context 1134; Phase III

186 Sandy gritty rimsherd. Unglazed.
King Edward Street; Context 1094; Phase IV

187 Grey ware rim. Unglazed.
King Edward Street; Context 1094; Phase IV

188 Rod handle. Light brown and green glaze.
King Edward Street; Context 1237; Phase II

189 Rod handle. Two vertical incised lines and stamped incisions. Light brown and green glaze.
King Edward Street; Context 10; Unstratified

190 Shell grit cooking pot base. Unglazed.
King Edward Street; Context 1047; Phase II

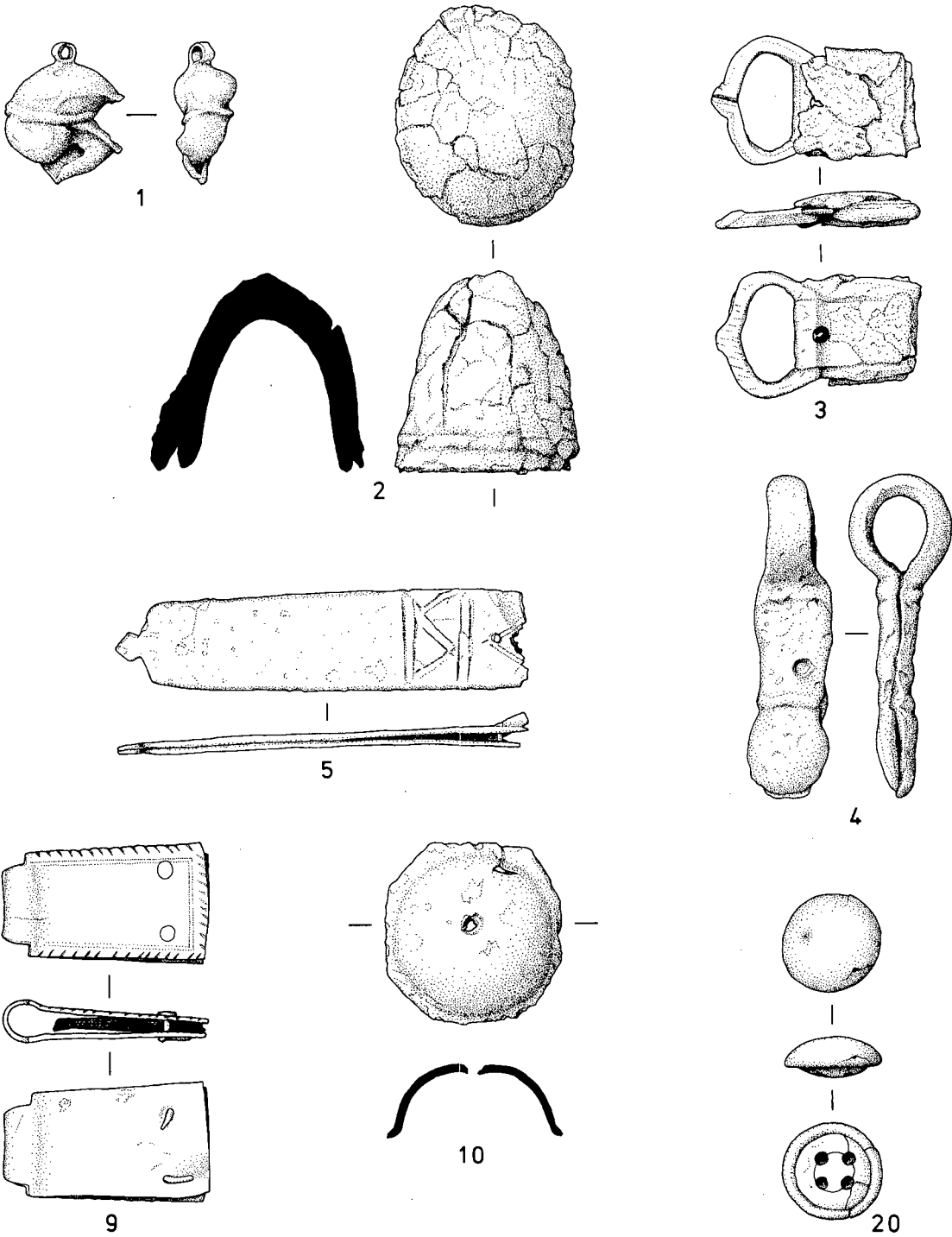
ARTEFACTS

B Ford (unless otherwise stated)

COPPER ALLOY OBJECTS (ILLUS 19–20)

Costume fittings and jewellery

Two bells (1 & 2) were recovered. 1, a small rumbler bell, may have been attached to the collar of a small animal such as a dog or a bird. However, bells of this type had become popular fittings for costume by the late medieval period. 2, recovered from within Structure 2A at King Edward Street, may have been worn by a larger animal such as a sheep or goat, or may have served as a horse-harness fitting.



ILLUS 19 Copper alloy objects (scale 1:2)

A small, D-shaped strap end buckle (3), similar to examples from London (London Museum 1940, LXXV, nos 7 & 8), was recovered from midden deposits of probable late 14th- to early 15th-century date at Mill Street. 4 is possibly a strap distributor. It is similar to one from Sandal Castle of late 13th- to 14th-century date (Goodall 1983, fig 1, no 38). Of the three strap end plates recovered, 5 was the most complete example. It is similar to one found in excavations at Canal Street I, Perth (Caldwell & Blanchard 1983, fig 15, no 1), and was from a context dated to the late 14th or 15th centuries. 9 is probably one of a pair of strap ends used to join two pieces of leather strap in a similar manner to that seen on a highly decorative leather belt from London (London Museum 1940, fig 63, no 5).

Two bosses were recovered, including a perforated example (10), which may have been attached to clothing or a leather belt by means of a rivet. Several buttons were recovered, notable among them being an example with a bone backing (20), recovered from a later post-medieval ditch at Kinnoull Street. It is similar to buttons found at Brunswick Town and Fort Fisher, North Carolina, dated to the mid-18th century (Nöel-Hume 1972).

Number 23, a highly decorative, enamelled stud, was found in association with pottery of 12th-century date in a pit fill at King Edward Street. It is possibly from a leather belt or a wooden casket. A flower-shaped stud from Kinnoull Street (25) was probably used on clothing or a leather belt, the central opening being to accommodate a buckle pin. A more complete example of this type of object was recovered from excavations at Tay Street, Perth (Cox 1994, 483, illus 9, no 4). Others are known from London (London Museum 1940, 197) and Northampton (Oakley & Webster 1979, 253, fig 100, no 38).

Needles and pins

A total of five needles was recovered. 43 is very fine and was used probably for sewing fine fabrics. Broader needles such as 44 could have been used only on fabrics of coarser weave.

The four excavations under discussion produced a total of 77 pins, the greatest number (56 pins) being recovered from the Blackfriars House excavation. The pins are described and discussed in detail in the full finds report. They fall into different categories according to their head type. 65 is an example with a wire-wound head (Type A), 120 has a wire-wound head formed into a conical shape with a flat top (Type B), and the head of 66 was formed in one piece with the shank (Type C). Pins of Type A make up the largest proportion of the group.

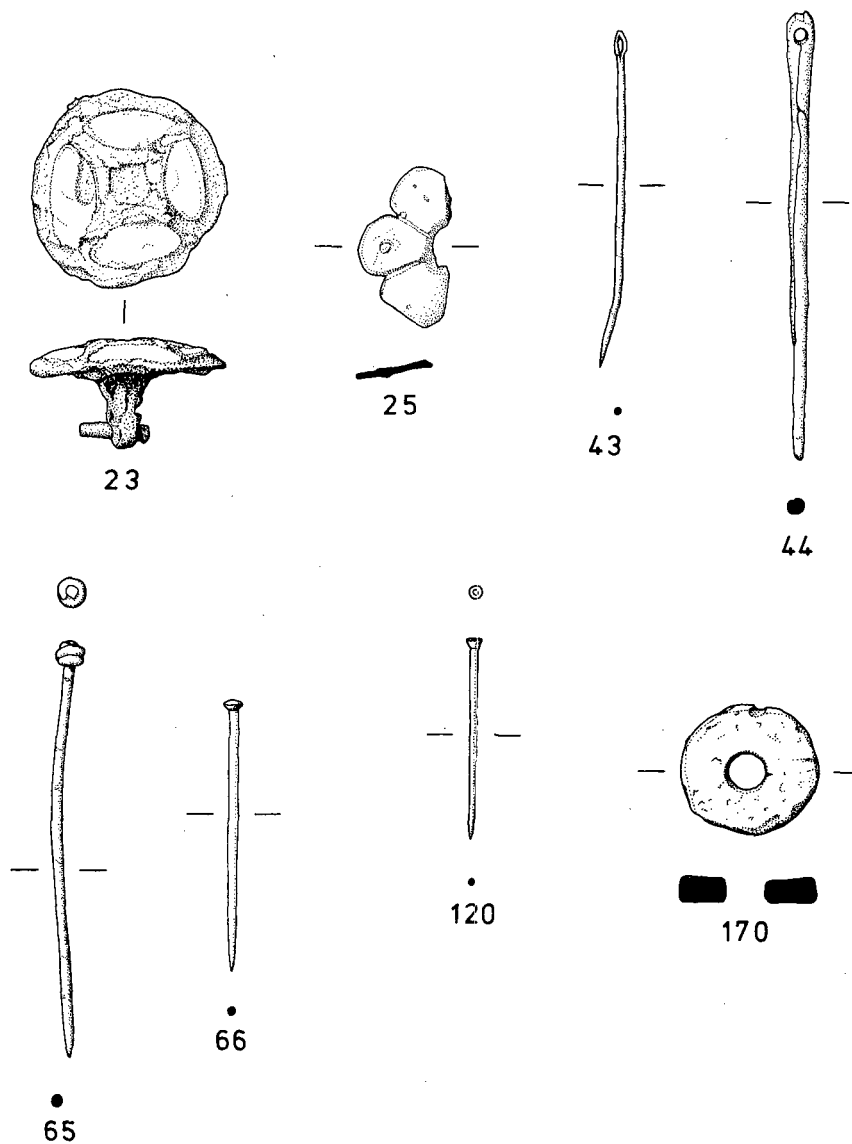
Sheets and offcuts

Sheet metal patches for the repair of vessels were recovered from contexts dated to the 14th to early 15th centuries at Mill Street. Further evidence of a sheet copper alloy working industry has come from the excavations at Meal Vennel, Perth (Cox, forthcoming a).

LEAD OBJECTS (ILLUS 20)

Three flat, irregular discs with central perforations (including 170) were found. These may have served as spindle whorls, weights or fishing line or net sinkers.

The presence of fragments of lead sheeting, an offcut and a partly worked fragment at King Edward Street may indicate that some cutting of lead was taking place on or near the site.



ILLUS 20 Copper alloy objects and lead object 170 (scale 1:2)

IRON OBJECTS (ILLUS 21–22)

Knives and scissors

Four incomplete knives were recovered. 195, a whittle tang knife with a complete blade, came from the fill of grave SK4 at Kinnoull Street, where it was positioned near the feet. It was associated with a Louis XI *maille tournois*, giving a *terminus post quem* for the burial of 1476. A pair of scissors found at Kinnoull Street (197) are probably of 16th-century or later date. They were recovered from garden soil deposits.

Locks and keys

A padlock key (198) was recovered from a floor layer in Structure 3 at King Edward Street. It is of a type which could be used only with a box padlock or a barrel padlock with a T-shaped keyhole completely in one plane. It is very similar to a number of examples from Castle Acre Castle, Norfolk, which are dated to the second half of the 12th century (Goodall 1982, 228, nos 81–8).

A key from King Edward Street (199) corresponds to J B Ward-Perkin's classification type VIII, which is predominantly post-medieval but can occur as early as the 15th century (London Museum 1940). 200, from Kinnoull Street, is of a type common throughout the medieval period.

Tools

Six files were recovered at Kinnoull Street. Five were contained by the fill of a saw pit, associated with two coins dated 1799 and 1816. The files correspond closely to half-round frame-saw files, used to sharpen frame or pit saws (Salaman 1975).

A possible reamer (209) was recovered from tips over the old town ditch at Mill Street of 15th- to 18th-century date. An almost identical object was recovered from excavations at Canal Street III, Perth (Cox, forthcoming b). Reamers were used to enlarge a bored hole.

Household ironwork

Examples of both socketed and pricket candlesticks were found. The single socketed candlestick (213) was found in a post-medieval cultivation soil. A pricket candlestick (214) was recovered from the collapse of the chamber sides of kiln 570 at Mill Street, which is thought to have been in use in the 13th or 14th century. 214 may possibly have been used for lighting in the kiln chamber. Further examples of both socketed and pricket candlesticks were found in excavations at Meal Vennel, Perth, where some may have been used to light smithing workshops (Cox forthcoming a).

Horse equipment

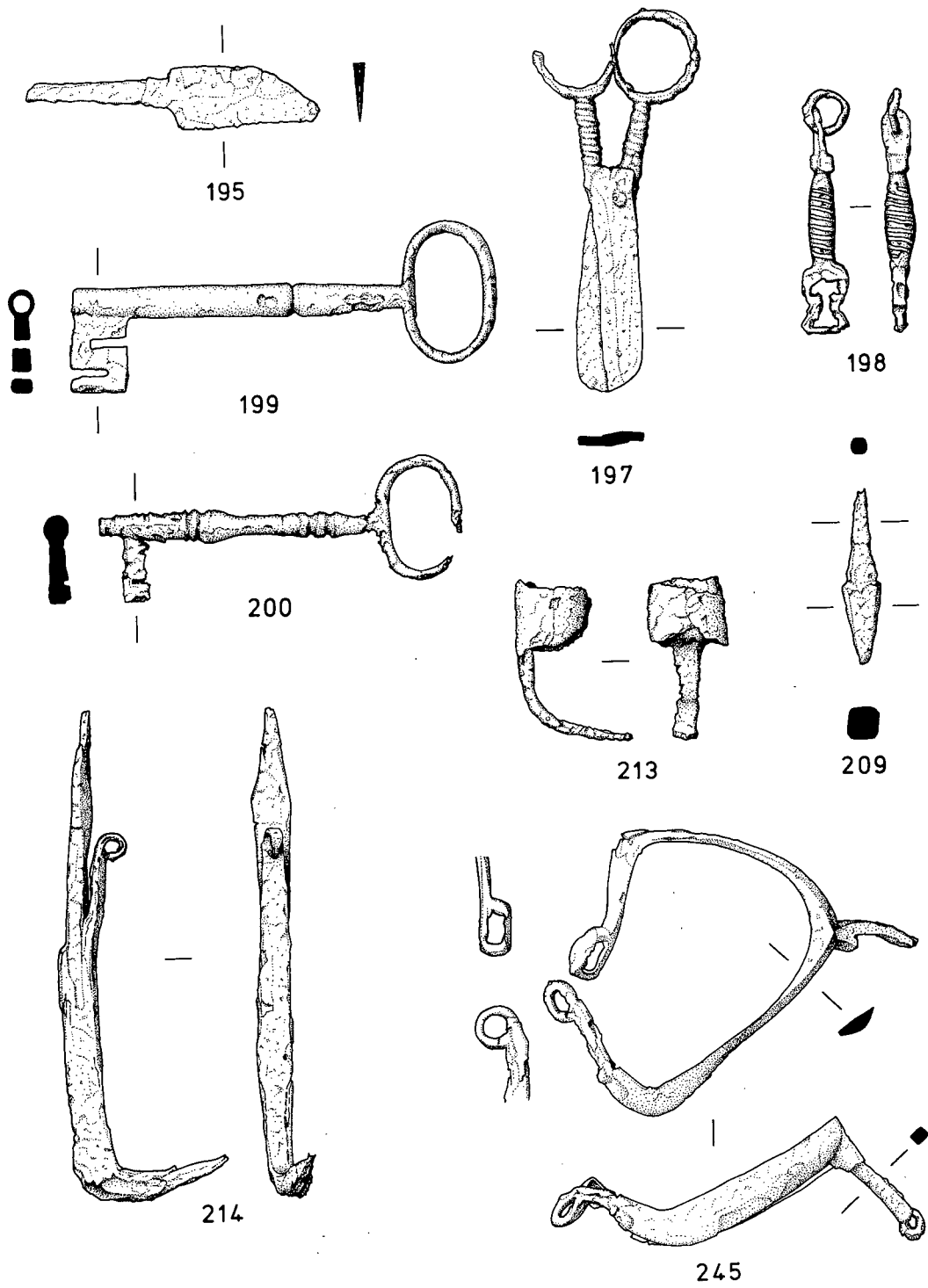
B Ellis

Fragments of four horseshoes were recovered, two from King Edward Street being characteristic of an early type of shoe dating from the mid-12th to mid-13th centuries. Three spurs, one of which is nearly complete (245), were found. 245 was recovered from midden deposits of late 14th- or early 15th-century date. It may be dated on typological grounds to the early 14th century.

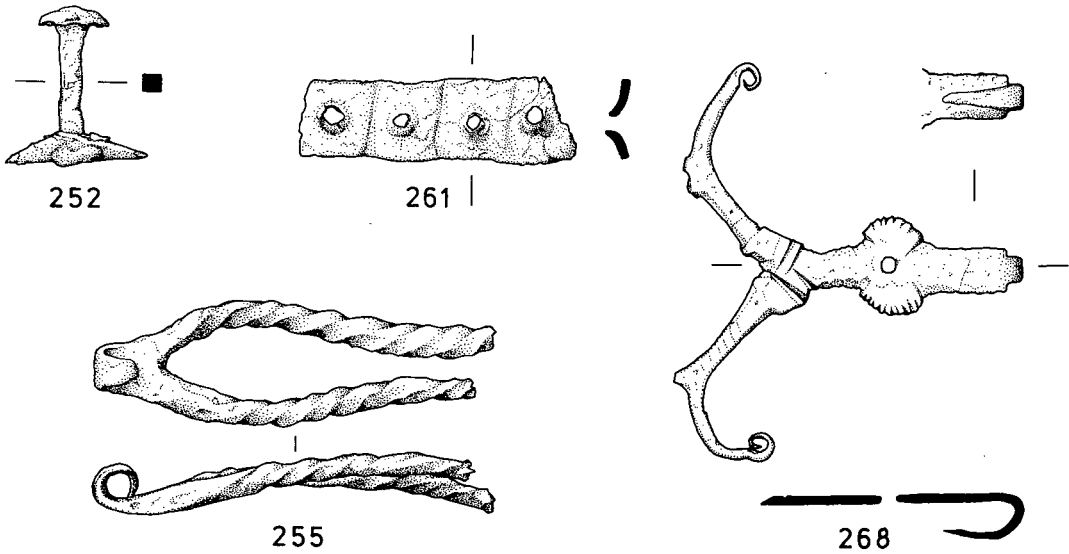
Structural ironwork and miscellaneous fittings

Clench bolts such as 252 were commonly used for joining two thicknesses of timber. They consist of a nail with its tip clenched over a diamond-shaped rove. 261 is a set of four roves still joined together. They have been forged from a strip of iron, with nail holes punched through it. Further examples of uncut roves have been found in London (Henig 1974, 195, fig 40, no 121; Henig 1975, fig 40, no 119).

Hasps like 255 were used for closing gates or chests, etc. in conjunction with U-shaped staples. The spiral decoration on 255 resembles that on a late 12th-century hasp from Oxford. A strap hinge with a bifurcated terminal (268) was found at King Edward Street and is probably of 12th-century date. It is likely to have been used on a casket or a box.



ILLUS 21 Iron objects (scale 1:2)



ILLUS 22 Iron objects (scale 1:2)

NUMISMATICA

N Holmes

A small denomination billon French coin of Louis XI, known as a *maille tournois* (288), was recovered from the fill of a grave at Kinnoull Street, and provides a fairly reliable *terminus post quem* of 1476 for the burial. Two early English jettons (293 & 294) were also found at Kinnoull Street.

POROUS CERAMIC MATERIAL (ILLUS 23)

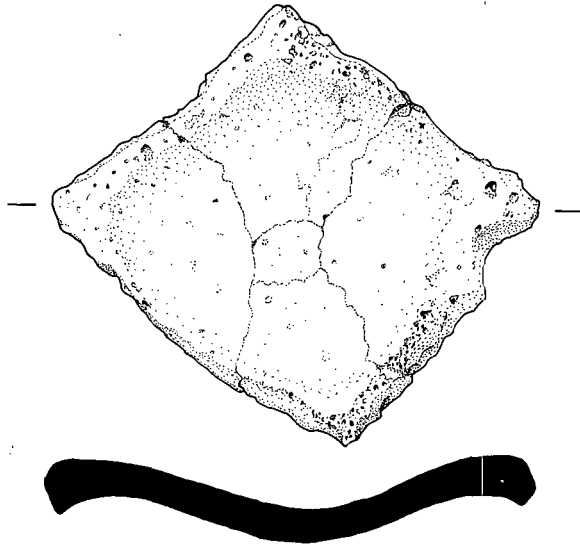
C Underwood

A total of 73 sherds of ceramic material was recovered from hearth and construction contexts in Structure 2 at King Edward Street. A detailed report on these may be found in the full finds report. The absence of associated industrial debris makes it difficult to ascribe the sherds positively to a particular industrial process. 371 is an irregular-shaped ceramic tile with a sooting ring on the concave surface and a corresponding depression on the convex surface. The tile has suffered from the effects of heat, particularly at the edges, where the heat appears to have been concentrated.

Stone Objects (illus 24)

B Ford, with a contribution by the late G H Collins

A total of 25 counters, mostly of grey slate, was recovered. 19 of which, including 380a and 380e, came from the destruction deposits of Structures 2A and 3 at King Edward Street. The function of the counters remains uncertain, although it is possible that they were used as gaming pieces.



371

ILLUS 23 Porous ceramic material (scale 1:2)

Several hone stones were found. Only one example (391) has been perforated for suspension. The small size of this hone suggests that it may have been used to sharpen a small, personal knife or other tool. Two fragments of quern were found at King Edward Street. Part of the central grain hole and the handle hole survive in 397, the larger example. Two spindle whorls, 398 and 399, were also found.

Stone Shot

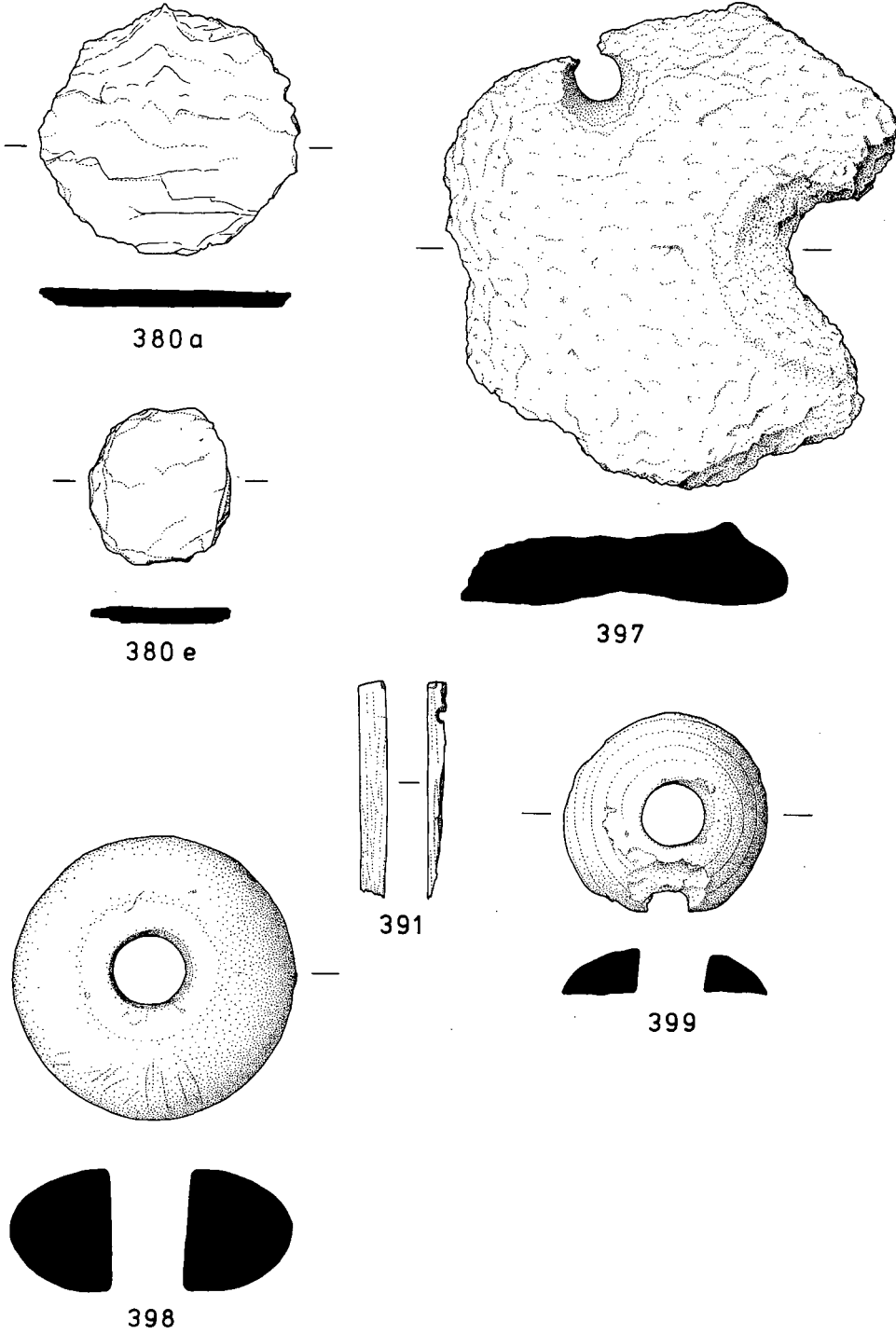
M Brann

Twenty-one large stone shot were recovered from the lower Phase V midden deposits in the town ditch at Mill Street, dated by the ceramic evidence to the later 14th or early 15th century. The shot vary in diameter between 0.19 m and 0.27 m, however the diameters of most lie between 0.23 m and 0.24 m. The average weight of this main grouping is about 14 kg. Their large size and their date suggest that the shot were for stone-throwing machines, trebuchets, which were in use throughout Europe in the 14th and early 15th centuries (Contamine 1980).

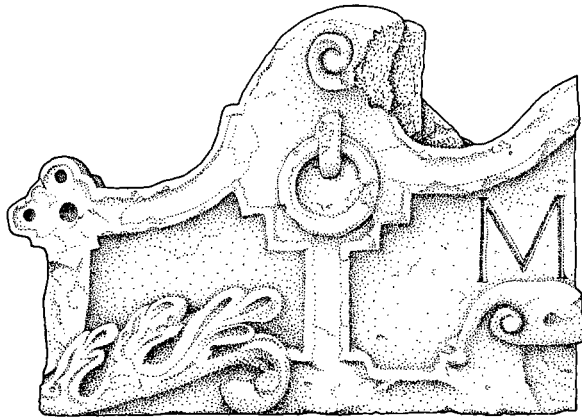
Doorway pediment (illus 25)

N Cameron & D Bowler

An architectural fragment (419), apparently a doorway pediment, was found in a garden wall adjacent to the Blackfriars House excavation, clearly belonging to a prestigious structure, perhaps the house of Lord John Murray, MP for Perthshire (1734–61). Between 1758 and 1787 he occupied a town house reckoned to be the most substantial in Perth, of which the stable block survives at 17/19 North Port, now a solicitor's office, near to the excavated site.



ILLUS 24 Stone objects (scale 1:2)



419

ILLUS 25 Doorway pediment (scale 1:8)

found in association with pottery of 12th-century date. It has thick, shallow side plates and corresponds to Birka group B, as identified by Danielson (1973). Combs like 435 were distributed fairly widely in the Viking period.

Skates

Bone skates appear to have been in use between the eighth and 14th centuries in the British Isles (MacGregor 1976; 1982). Two examples, of which 438 was more greatly modified, were recovered from unstratified contexts at King Edward Street. Both were made from horse long bones and both have upswept distal ends, further trimmed to produce a V-shape, enabling them to glide more freely over irregular ice or through light snow (MacGregor 1985). Both skates have axial heel holes which would have contained pegs to wedge straps into place for tying to the foot. 438 also has a transverse toe-hole through which a strap was probably passed. The skater would have propelled himself or herself along with a spiked pole pushed between the feet (MacGregor 1985). A further bone skate was recovered from more recent excavations at 80–86 High Street, Perth (Cox, forthcoming c).

CERAMIC BUILDING MATERIAL (ILLUS 27)

D W Hall

Floor tiles

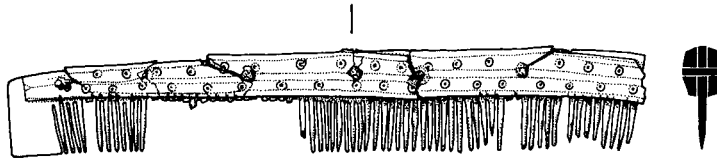
A group of floor tiles was recovered from the excavations of the site of the Blackfriars Monastery at Kinnoull Street. This was the first excavation of one of Perth's religious houses to have produced floor tiles. All the tiles are plain, with a yellow or green to brown glaze. None was found *in situ* and the majority came from the fill of a post-friary ditch. The ditch cut through part of the friary cemetery and had been backfilled with material removed from the friary at its demolition. Also among this debris were fragments of a ceramic figurine (556).

BONE AND ANTLER OBJECTS (ILLUS 26)

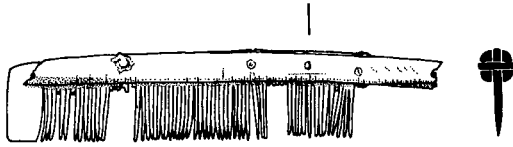
B Ford, with species identification by C Smith & the late G W I Hodgson

Combs

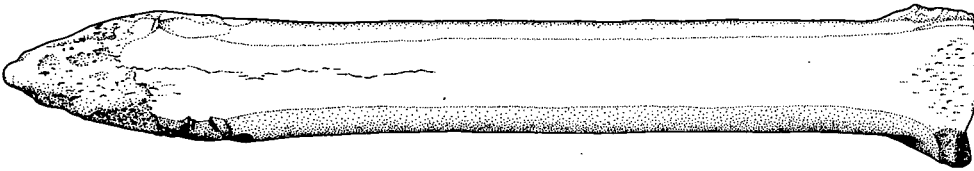
The excavations at King Edward Street produced fragments of three combs, all of which are of antler. 434, which was unstratified, is a single-sided, composite comb with trapezoidal side plates. MacGregor (1985) notes that this type of comb first appeared in Holland and northern Germany as early as the 8th century and had become more widespread by the 10th and 11th centuries. Another single-sided, composite comb (435) was



434



435



438

ILLUS 26 Bone and antler objects (scale 1:2)

Roof furniture

The excavations at Mill Street produced the largest and most interesting group of roof tiles. Peg tiles, curved ridge tiles and decorated finials are represented and were present in Phases IV to VII. The tiles relating to the construction of buildings in Phase V provide some evidence of the methods employed in roofing these timber structures. It is unlikely that the roofs were completely tiled; a more selective use of tile seems more likely. A fragment of a roof finial in the form of a human head (542) also relates to activities in Phase V.

CERAMIC OBJECTS (ILLUS 27)

Five fragments of a ceramic figurine, showing folds of drapery or clothing (556) were residual in machine clearance and the fill of a post-medieval ditch at Kinnoull Street. The ditch contained material which may have derived from the demolition or robbing of the friary. The folds of drapery on the figurine are suggestive of a kneeling figure, which may possibly represent the Virgin Mary or one of many saints popular in medieval times.

GLASS OBJECTS (ILLUS 27)

Three glass beads were found. 558, a melon-shaped bead from Mill Street, was found in a context dated to the late 14th or early 15th century.

In Viking and medieval times linen was smoothed using bun-shaped discs of glass or stone. This practice was still continued into modern times in Scandinavia (Charleston 1973, 143). 561, a linen smoother, was recovered from a 12th-century context within Structure 2A at King Edward Street. A less complete linen smoother was recovered from a context dated to the early 14th to early 15th centuries at Meal Vennel, Perth (Cox, forthcoming a).

MEDIEVAL WINDOW GLASS (ILLUS 27)

Fifty-seven fragments of medieval glass were recovered, 55 of these from excavations at Kinnoull Street in the vicinity of the Dominican friary. It seems likely that the Perth glass was imported from England, or possibly via England from continental glass houses. The discovery of a characteristic bull's-eye fragment from the centre of a crown at Mill Street (563), although not in itself evidence of glass manufacture in the burgh, shows that the cutting up of panes was taking place.

Twelve fragments of window glass still bear traces of decoration, consisting of combinations of linear and curvilinear patterns and cross-hatching in reddish-brown paint (eg 605). These combinations were commonly used in grisaille, a type of decoration formed by painting natural foliate motifs onto plain glass, sometimes set in a geometric border. The examples from Perth depict stylized representations of foliate decoration similar to that produced in the second half of the 13th century.

WOOD OBJECTS (ILLUS 28)

A single, reused cask stave (625) was recovered from Mill Street, where it was found in association with a row of upright timbers. One end of the stave had been cut to form a lap joint, possibly to form a joint with a post. The peg-holes in the stave may have been used to secure it to a

timber. Casks, reused as well linings, have been found in excavations at 75 High Street and at Scott Street, Perth (Curteis, forthcoming; Cox, forthcoming d). Two cask-head fragments (626 & 627) were also recovered at King Edward Street, as were two fragments of staves, possibly from smaller stave-built vessels.

TEXTILES

H Bennett

Three small samples of textiles were recovered from contexts at King Edward Street dated to the 12th century. The samples, all of wool, consisted of pieces of a woven cloth and two scraps of yarn recovered from a pit fill, and several charred and brittle fragments of yarn from a destruction layer.

LEATHER (ILLUS 29)

C Thomas & A Walsh

A total of 258 pieces of leather was recovered from the excavations at Mill Street and King Edward Street. Notable among the assemblage from Mill Street are two straps containing iron rivets (eg 659) and three fragments decorated by a stamped pattern, possibly representing mail (eg 662). The collection of shoes from the two excavations are of a range of styles spanning the 12th, 13th and 14th centuries, the most complete example being an upper from a low boot from King Edward Street (699). Parallels for most of the leather may be found among the assemblage of some 6000 pieces of leather from 75 High Street, Perth (Thomas, forthcoming) and from England.

CATALOGUE

Dimensions have been given to the nearest 1 mm, except where they are less than this, when they have been given to the nearest 0.1 mm.

COPPER ALLOY OBJECTS

- 1 Bell. Max. diameter 18 mm. Distorted rumbler bell made in two halves with a ridge around the circumference. The two halves are brazed together. The bell has a suspension loop. Mill Street; Context 502; Accession E050; Phase V.
- 2 Bell. Height 28 mm; width at base 33 mm by 28 mm; thickness of wall 6 mm. Oval bell made from sheet metal. There are traces of iron on the internal surfaces, possibly from an iron clapper, now missing. The object is heavily corroded and the outer surface badly laminated. King Edward Street; Context 1571; Accession E183; Phase III.
- 3 Buckle and plate. Length 32 mm; max. width of buckle 20 mm; thickness of buckle 3 mm. Single-sided, pointed D-shaped buckle. The upper face is slightly rounded and the back is flat. There is a groove at the point. File marks are visible on all its surfaces. A buckle plate, made from a single sheet (max. width 17 mm) and wrapped around the pin bar, is attached. It has been pierced with a hole for a pin. Part of a leather strap survives *in situ*. Mill Street; Context 288; Accession E081; Phase IV.

- 4 Strap distributor. Length 49 mm; width 12 mm. Attachment from a strap distributor, made from a moulded strip, folded to form a loop at one end. The two flat plates are pierced and joined by a single rivet hole. Kinnoull Street; Context 9; Accession 35; Phase IV.
- 5 Strap end. Length 63 mm; width 15 mm; thickness 4 mm. Strap end, made from a sheet, folded double and trimmed. It is decorated with incised chevrons and lines on one side. Part of a leather strap survives, still riveted in position. Mill Street; Context 247; Accession E071.
- 9 Strap end. Length 31 mm. Made from a folded sheet. The two plates are joined by two copper alloy rivets, the ends of which have been bent over. The edges of the front plate are decorated with an incised border filled by incised diagonal lines. A fragment of leather strap survives *in situ*. Kinnoull Street; Context 131; Accession 59; Phase III.
- 10 Boss. Diameter 28 mm; height 11 mm. Boss, probably wrought, with the edge folded out to make an eight-sided flange. There is a punched hole at the centre of the dome (diameter of hole 4 mm). Mill Street; Context 230; Accession E054; Phase V.
- 20 Button. Diameter 15 mm. Button with a plain face with a bone backing pierced by four holes. The backing is decorated by an incised concentric circle linking the holes. Kinnoull Street; Context 115; Accession 129; Phase IV.
- 23 Stud. Diameter 26 mm. Circular stud with a raised, central diamond pattern. The semicircular fields are enamelled. The enamel is now missing from the central diamond. The shank is pierced at its end by a copper rivet which survives *in situ*. King Edward Street; Context 1094; Accession E062; Phase IV.
- 25 Stud. Length 21 mm; thickness 0.8 mm. Incomplete, flower-shaped stud with a central perforation. The petals have incised line borders and the the upper surface of the object has been plated with tin. Part of iron rivet occupies the surviving rivet hole. Kinnoull Street; Context 58; Accession 178; Phase IV.
- 43 Needle. Length 45 mm; width at eye 2 mm. Needle, circular in cross-section, made from a drawn wire. The wire was flattened at one end and pierced from both sides to form an ovoid eye. King Edward Street; Context 1047; Accession E056; Phase II.
- 44 Needle. Length 59 mm; width at eye 4 mm. Needle, irregular in cross-section, made from a rolled sheet. The sheet was flattened at one end and pierced to form a round eye. The tip is missing. Kinnoull Street; Accession 47; unstratified.
- 65 Pin. Length 55 mm; diameter of shank 2 mm; width of head 4 mm; depth of head 3 mm. Complete pin with a wire-wound head consisting of two complete turns of wire. The top of the shank has a sub-rectangular cross-section. Heavily corroded. Kinnoull Street; Context 159; Accession 53; Phase III.
- 66 Pin. Length 36 mm; diameter of shank 1 mm; width of head 2 mm; depth of head 1 mm. Complete pin with a conical head with a domed top. The lower part of the head has been made in one piece with the shank and the upper dome has been applied separately. The head has been hammered and shaped. Draw lines are visible on the circular cross-sectioned shank. The pin has been plated with tin. Kinnoull Street; Context 162; Accession 176; Phase III.
- 120 Pin. Length 27 mm; diameter of shank 1 mm; width of head 2 mm; depth of head 1 mm. Complete pin with a conical head with a flat top formed by applying a wire around end of the circular cross-sectioned shank and shaping it. Draw lines are visible on the shank. The pin has been plated with tin. Blackfriars House; Context 219; Accession 168; Phase IV.

LEAD OBJECTS

- 170 Weight? Max. diameter 36 mm; thickness 8 mm; weight 65 g. Flat disc with a central perforation (diameter of hole 11 mm). Blackfriars House; Context 101; Accession 67; Phase III.4.

IRON OBJECTS

- 195 Knife. Length 89 mm; width of blade 18 mm. Whittle tang knife with a complete blade. The blade back and cutting edge run parallel before the back angles sharply down to the tip. Kinnoull Street; Context 39; Accession 231; Phase III.
- 197 Scissors. Length of blade 68 mm; width of blade 13 mm; thickness 3 mm. Scissors with blunt-ended blades. The handles have circular cross-sectioned arms. The finger loops are set centrally and one is broken. There is moulded decoration on the arms, between the loops and the blades. Kinnoull Street; Context 128; Accession 251; Phase III.
- 198 Padlock key. Length 67 mm; width of bit 14 mm. Padlock key with a swollen stem bearing spirally-inlaid copper alloy wire decoration. The key has a looped terminal with a ring. The bit is in line with the stem and has an unbroken outer edge. King Edward Street; Context 1404; Accession E205; Phase II.
- 199 Key. Length 128 mm; width of bit 17 mm. Key with an oval bow and a solid stem with a hollow tip. The bit has two ward cuts. King Edward Street; Context 1000; Accession E035; unstratified.
- 200 Key. Length 110 mm; width of bit 8 mm. Key with an incomplete, oval bow and a solid stem with moulded decoration. The solid tip projects beyond the bit. The bit has two ward cuts and is heavily corroded. Kinnoull Street; Context 73; Accession 191; Phase IV.
- 209 Reamer? Length 52 mm; max. width 11 mm. Possible reamer with a tapering, square cross-sectioned shank and a broken tang. Mill Street; Context 191; Accession E032A; Phase VII.
- 213 Candlestick. Length 44 mm. Socketed candlestick with an angled, rectangular cross-sectioned stem. The socket, set inwardly on the stem, was made by beating out the end of stem and bending it around, overlapping the ends. Mill Street; Context 171; Accession E049; Phase VI.
- 214 Candlestick. Length 147 mm. Pricket candlestick. The spike is rectangular in cross-section, with one surviving side scroll. The broken, angled stem is square in cross-section. Mill Street; Context 706; Accession E130; Phase II.
- 245 Rowel spur for the left foot. Overall length (positioned as worn and now distorted) 105 mm; length of neck 35 mm; length of rowel box 27 mm. Iron with a surface plating of tin, much of which remains. The section of the sides is a flattened triangular shape with the apex forming a horizontal ridge along the middle of their outer surfaces. The sides plunge from their junction behind the wearer's heel into a strong curve under his ankles, originally rising again towards their terminals, but their front ends are now twisted inwards. The outer terminal is formed as a single ring. The inner terminal is a rectangular slot, pierced so that the spur leather passed vertically through it; the outside bar of this terminal swells into an oval disc. The spur neck forms a point, which is not quite a crest, behind the heel where it joins the sides and from whence it projects downwards. It is divided for most of its length by the rowel box, one side of which is missing. The one remaining rowel boss is quite substantial and with the long rowel box suggests that the missing rowel was quite large. Mill Street; Context 249; Accession E076; Phase V.

- 252 Clench bolt. Length 40 mm; length of rove 38 mm; width of rove 24 mm; thickness of rove 3 mm. Complete clench bolt consisting of a circular, flat-headed nail with a square cross-sectioned shank and a diamond-shaped rove. King Edward Street; Context 1122; Accession E309; Phase III.
- 255 Hasp. Length 107 mm; max. width 32 mm; thickness 7 mm. Curved, figure-of-eight hasp with spirally-twisted arms. One end is hooked; the other is broken. King Edward Street; Context 001; Accession E097; Phase V.
- 261 Roves. Length 74 mm; width 21 mm; thickness 4 mm. Strip of four pierced roves. King Edward Street; Context 1122; Accession E307; Phase III.
- 268 Strap hinge. Length 93 mm; width 103 mm; thickness 3 mm. Strap hinge with a bifurcated terminal with scrolled ends and a spiked, U-shaped eye. The central expansion of the strap has decorative, radiating grooves. The base of the arms is decorated by incised chevrons and there are incised grooves on the arms. The object has been plated, probably with tin. King Edward Street; Context 252; Accession E096; Phase I.

NUMISMATICA

- 288 Maille tournois. Billon. French, Louis XI. Obverse: LVDOVICVS x REX: Crown. Reverse: OBO/LVS/xCI/VIS: single long cross cf Ciani 782, but different obverse legend; moderate wear. Kinnoull Street; Context 39; Accession 170; Phase III.
- 293 Jetton. Copper alloy. Diameter 22 mm; Mionnet scale 5.5. English series; dating from the reign of Edward II or possibly from the early part of Edward III's reign (1307–27+). Obverse: a single lion passant to right, head turned backwards, within a granulated inner circle: outside this, a border of pellets within a granulated outer circle (Berry 1974, 52, 35 & 46, type 5F). Reverse: a short cross moline, cantoned by pellets, within a granulated inner circle. Outside this, a border of pellets within a granulated outer circle. Partially pierced in centre (Berry 1974, 48, reverse type 5). Generally only slightly worn, but with some slight flattening near edge and a small flan crack. Kinnoull Street; Context 220; Accession 169A; Phase III.
- 294 Jetton. Copper alloy. Diameter 23 mm; Mionnet scale 5.5. English series; dating as 293. The obverse and reverse designs are both as the reverse of 293, and again the jetton is partially pierced at the centre on one side: moderate wear, with a small hole near the edge, caused by corrosion (Berry 1974, 48, type 14). Kinnoull Street; Context 220; Accession 169B; Phase III.

POROUS CERAMIC

- 371 Porous ceramic. Five conjoining pieces of porous ceramic. King Edward Street; Context 1351; Accession A259; Phase I.

STONE OBJECTS

- 380a Counter. Length 73 mm; width 70 mm; thickness 5 mm. Disc of grey slate. King Edward Street; Context 1122; Accession J059; Phase III.
- 380e Counter. Length 52 mm; width 50 mm; thickness 5 mm. Disc of grey slate. King Edward Street; Context 1122; Accession J059; Phase III.
- 391 Hone. Length 61 mm; width 8 mm. Incomplete, broken along its length. Pierced for suspension (diameter of hole 4 mm). Silicified siltstone. King Edward Street; Context 22; Accession J12; Phase I.

- 397 Quern. Max. length 285 mm; max. thickness 52 mm. Fragment from the upper stone of a rotary quern. The lower surface is laminated. There is a raised collar around the central opening and a handle hole in the upper surface. Garnetiferous mica-schist. King Edward Street; Context 1276; Accession J244; Phase II.
- 398 Spindle whorl. Diameter 40 mm; thickness 19 mm. Shaped pebble with a central hole. Mudstone. King Edward Street; Context 1122; Accession J159; Phase III.
- 399 Spindle whorl. Diameter 30 mm; thickness 6 mm. Incomplete. Laminated fragment sheared in half across horizontal axis. Decorated with incised, concentric rings around the central hole. Siltstone. King Edward Street; Context 1134; Accession J63; Phase III.

ARCHITECTURAL STONE

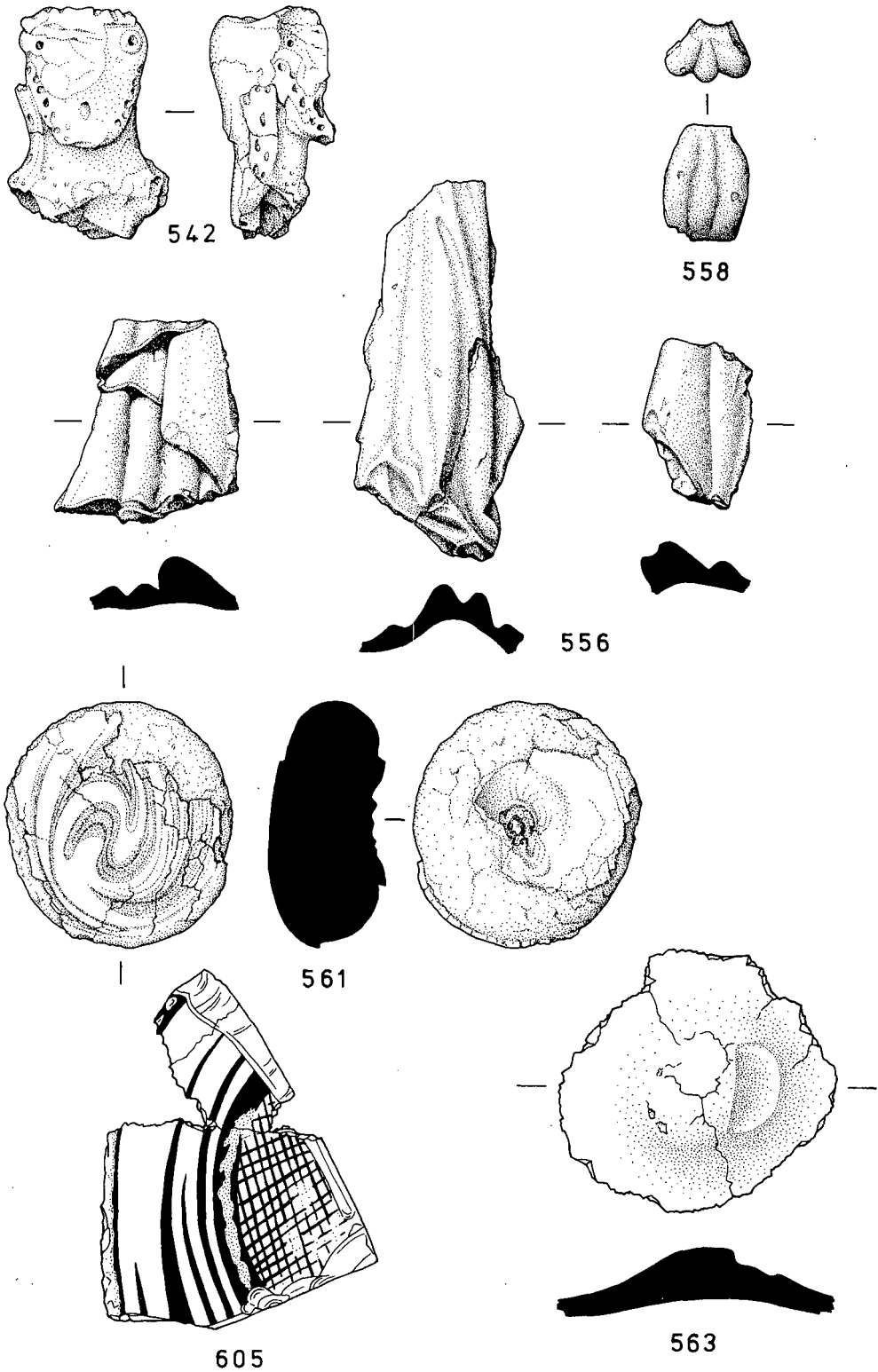
- 419 Doorway pediment. Height 436 mm; length 620 mm; thickness 184 mm. Doorway pediment with the initial M carved on the right-hand side. The left-hand side has a roughly tooled surface, suggesting that it was possibly contained within a stonework surround. Pale purple, fine to medium grained sandstone. Blackfriars House; Context 251.

BONE OBJECTS

- 434 Comb. Length 171 mm; width 27 mm; max. thickness 11 mm. Incomplete, single-sided composite antler comb. Eleven antler tooth plates survive. They are connected by straight-backed side plates of trapezoidal cross-section, secured by iron rivets (six survive). The side plates are also of antler. The coarse teeth average five per 10 mm. The bases of the side plates are notched as a result of the saw-cutting of the teeth. The side plates are smoothed and polished and have been crudely decorated with four incised lines, two on either side of the median ridge, bordering two rows of regularly spaced ring and dot motifs. The side plates are broken across a rivet hole. Twelve loose teeth also survive. King Edward Street; Context 136; Accession K016; unstratified.
- 435 Comb. Length 116 mm; width 23 mm; max. thickness 9 mm. Incomplete, single-sided composite antler comb. Four antler tooth plates survive. They are connected by straight-backed, shallow, thick side plates, secured by iron rivets (four survive). The side plates are also of antler. The fine teeth average nine per 10 mm. The bases of the plates are notched as a result of the saw-cutting of the teeth. The side plates are smoothed and polished, and are broken across a rivet hole at both ends. King Edward Street; Context 137; Accession K017; Phase I.
- 438 Skate. Length 261 mm. Skate, derived from a horse metacarpal. The upper (posterior) surface has been trimmed and flattened, removing any projections. There are a number of transverse cuts on this surface. The front (distal) end has been pointed to a V-shape and has been pierced by a horizontal toe hole. The rear (proximal) end has an axial hole bored through to the medullary cavity. The lower (anterior) face at the distal end has been cut to give an upswept profile. The anterior surface has been trimmed and worn smooth, and has longitudinal striations. King Edward Street; Context 1000; Accession K164; unstratified.

CERAMIC OBJECTS

- 542 Stylized ceramic head. Max. height 66 mm; max. width 51 mm; max. thickness 31 mm. Anthropomorphic head, apparently part of a roof finial, in a hard grey fabric, glazed dark green with yellow mottling. The head is bearded and has pierced clay circles representing eyes and a depression



ILLUS 27 Ceramic and glass objects; medieval window glass (scale 1:2)

for the mouth. Stabbed decoration represents hair. The head appears to be wearing either a helmet or a crown. This survives as a stabbed applied clay strip running up one side of the head and the remains of a decorated, raised strip running along the top. Scars marking the original position of decoration show that the helmet decoration ran around the head and down the other side. Mill Street; Context 276; Phase V.

- 556 Figurine. Max. thickness 16 mm. Figurine fragments in a light orange to brown fabric of medium hard texture, containing rounded quartz and occasional iron ore inclusions. The fabric has a light grey core. It is possibly Perth Local. There are finger impressions on the interior surface. The exterior surface bears details of clothing, the surface being light brown with traces of a white coloured wash surviving in the folds of clothing. There is a spot of green to brown glaze on the exterior surface. The object was made in a mould. Kinnoull Street; Contexts 222 and 242; Accession 317; Phase IV.

GLASS

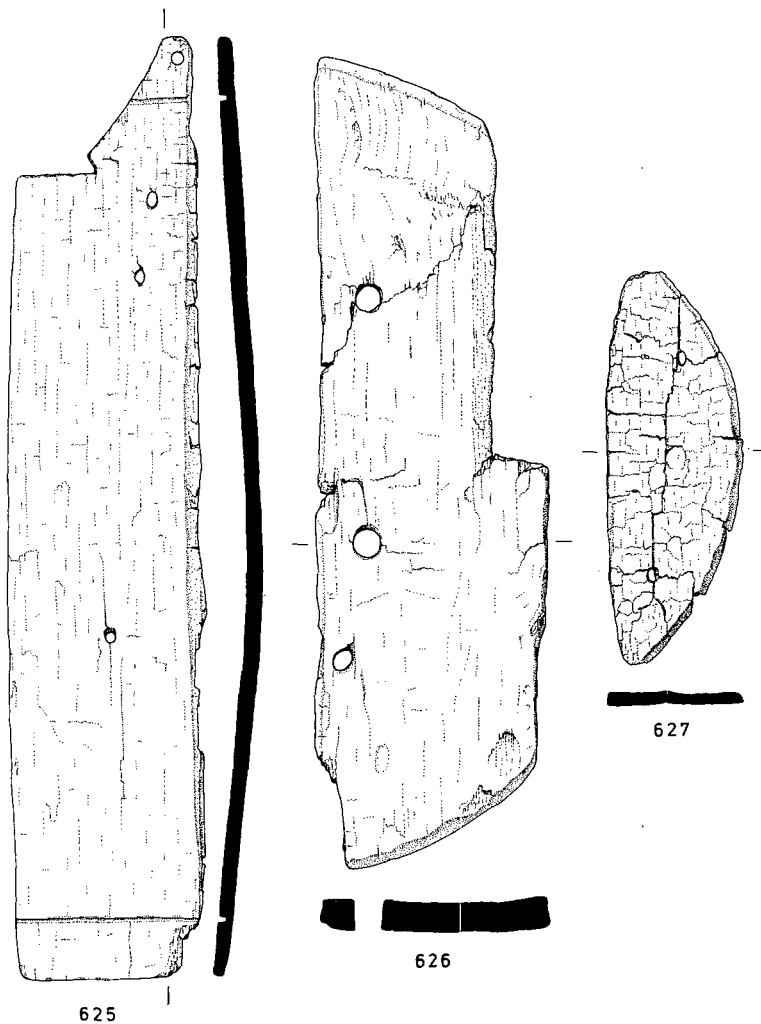
- 558 Bead. Length 17 mm. Opaque fragment of a dark blue glass bead. The exterior surface is ribbed. Mill Street; Context 559; Accession NO83; Phase V.
- 561 Linen smoother? Diameter 73 mm; max. thickness 35 mm. Possible linen smoother. The object is deeply weathered and the outer surface has deteriorated considerably, flaking away from the central core. The outer surface is now pink with a swirling blue pattern on the convex surface. The surface of the central core, beneath the pink layer, appears black and granular. The interior of this core is dark green and opaque. There is a scar on the concave surface. King Edward Street; Context 1571; Accession 279; Phase III.

MEDIEVAL WINDOW GLASS

- 563 Window. Max. thickness 10 mm. Fragment of a bull's-eye from crown glass with a semi-circular pontil mark. The fragment is opaque and heavily weathered. Mill Street; Context 749; Accession N121; Phase I.
- 605 Window. Max. thickness 3 mm. Two conjoining fragments. The glass is opaque, weathered and laminated. There are two grozed edges. The upper surface bears painted, curvilinear and cross-hatched decoration. There is lead staining along the edges. Kinnoull Street; Contexts 131 and 242; Accession 125/96; Phase III/IV.

WOOD

- 625 Barrel stave. Length 737 mm; width 153 mm; thickness 15 mm. Incomplete barrel stave. One vertical edge has been cut obliquely. There are U-shaped grooves 45 mm and 47 mm from the ends (width of grooves 3 mm; depth 2 mm). One end has been sawn to form a notch with a peg hole (diameter 8 mm) in the remaining tongue of wood. There are three other peg holes on the body of the stave (diameters 11 mm). Oak (*Quercus*). Mill Street 1979; Context 278; Accession R244; Phase VI.
- 626 Cask head. Length 635 mm; width 188 mm; thickness 22 mm. Part of a cask head. Original diameter 660 mm. The curved edges are chamfered. Pierced by three holes. Three wooden bungs still remain. Alder (*Alnus*). King Edward Street; Context 254; Accession H254; Phase I.
- 627 Cask head. Length 305 mm; thickness 213 mm. Part of a cask head. Original diameter 410 mm. The curved edge is chamfered. Pierced by two holes. Oak (*Quercus*). King Edward Street; Context 1251; Accession H241; Phase I.



ILLUS 28 Wood objects (scale 1:3)

LEATHER

- 659 Strap. Length 280 mm; width 17-18 mm; thickness 3 mm. Fragment of a strap of single thickness. It is perforated by 10 irregular holes, two of which contain iron rivets with domed heads (diameters c 10 mm & 15 mm) on the grain side of the leather. Cattle hide. Mill Street; Context 303; Accession C104; Phase V.
- 662 Fragments. Two conjoining fragments bearing stamped decoration. Both are irregular, one with one oversewn edge, the second with a trace of a stitched edge, probably a continuation of that on the first fragment. About two-thirds of the smaller fragment and the whole of the larger fragment have been decorated with a stamped, wavy pattern, possibly reminiscent of mail. The decoration has been stamped in vertical bands, each 7 mm in width. Mill Street; Context 293; Accession C160; Phase I.

699 Upper. Length 370 mm (reconstructed length 238 mm); width 76–157 mm. One-piece upper (left) boot. There are two separate inserts over the instep positioned one above the other. The vamp is slit towards the broad, oval toe, slightly off centre, with matching edge to flesh seams. There is a short slit for insert(s) (now missing) down the vamp wing on the outer side adjacent to this, turning back in the direction of the central slit. The vamp wings have thong holes 3 mm long, c 40 mm from the base. The upper edge has a very ragged edge to flesh seam. The matching crescent-shaped heel stiffener is now detached. King Edward Street; Context 1160; Accession C213; Phase I.

THE HUMAN SKELETAL REMAINS FROM KINNOULL STREET

M Bruce, edited by A Cox

INTRODUCTION

At least 23 individuals are represented amongst the human skeletal remains recovered from the Kinnoull Street site. They included a foetus, children, juveniles and adult females and males, although infants are noticeably under-represented. No individuals older than early middle age are present, thus there is little evidence of degenerative pathology in the series. There is evidence that many of the individuals suffered episodes of stress in childhood. One young adult male survived for some time after sustaining a depressed fracture of the skull. One adult female showed multiple pathology including congenital fusion of bones of the foot, ante-mortem tooth loss, osteochondritis desiccans and early osteo-arthritis. One young female may have perished in a fire. There was no evidence of the presence of the specific infections of leprosy, tuberculosis or treponematosi.

The condition of the bones ranged from good to extremely fragmentary.

NUMBER OF INDIVIDUALS

In order to estimate how many individuals were represented in the collection a minimum elements count was undertaken. The best preserved (ie the most frequently represented) skeletal elements were the temporal bone of the skull and the femur of the postcranial skeleton. Since even these bones were often incomplete or were represented by more than one fragment, a specific area or feature was identified in each case and only that feature enumerated.

The results of the minimum element count were:

	Right	Left
Femur	22	19
Temporal bone	11	11

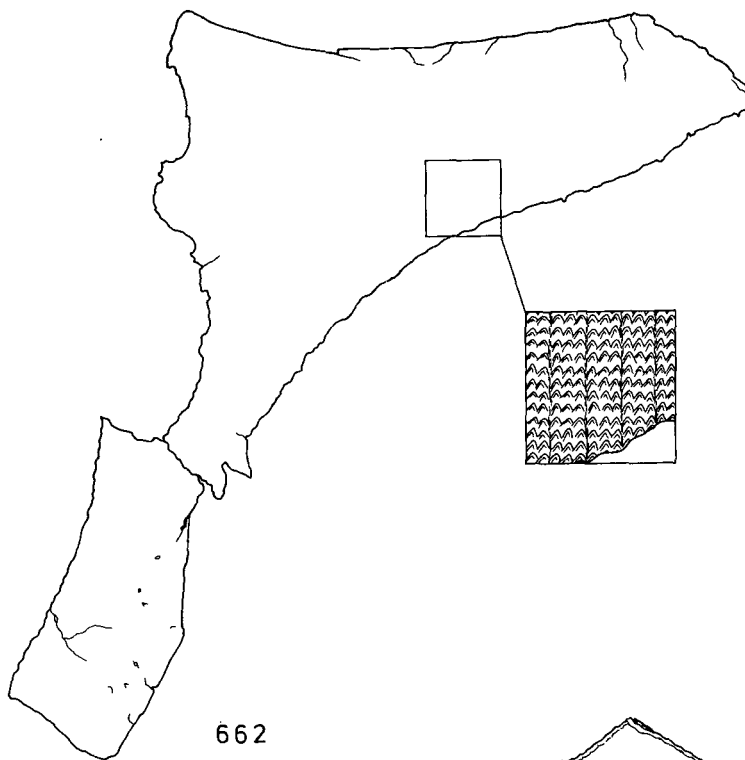
A single human fetal tibia was identified (SK51); no other fetal remains were identified. Therefore the minimum number of individuals represented was estimated to be 23. It must be stressed that this is a minimum number; the actual number is likely to have been somewhat in excess of the estimated figure.

AGE-AT-DEATH AND SEX

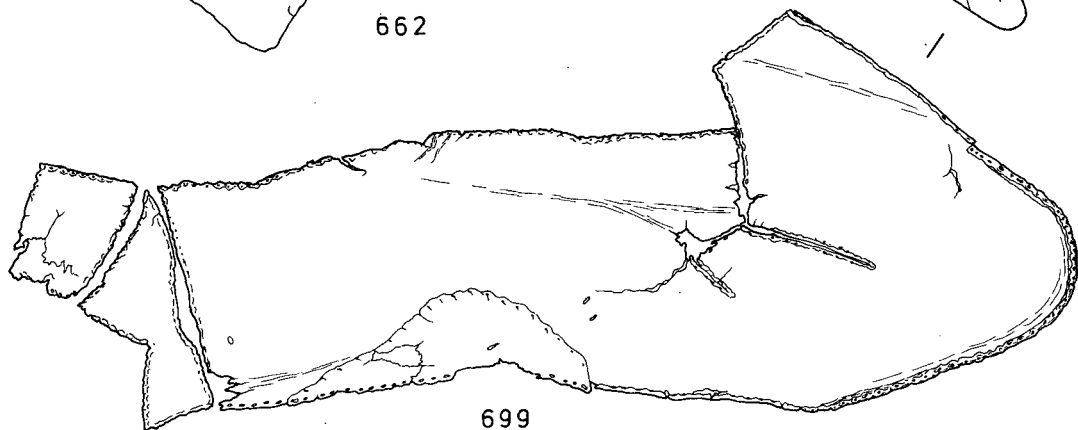
Given the small sample size, the fragmentary nature of much of the material, the incomplete site excavation and the unknown sampling bias in the collection, it was not possible to attempt to construct a demographic profile of the population represented. However, where possible, the sex and age-at-death of each individual were estimated.



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ILLUS 29 Leather (scale 1:3)

Age-at-death	Minimum No of Individuals
Fetal	1
Infant (0–2.5 years)	0
Child (3–11 years)	2
Juvenile (12–17 years)	5
Sub-adult (18–20 years)	4
Adult (20+ years)	11

Of these 11 adults it was considered that five may have been in the middle age range (35+ years) on the evidence of some degenerative change; two were considered to be in the 30–35 year range; two were considered to be in their twenties at the time of death; it was not possible to be more specific in the case of the others.

Sex estimates were made where possible on sub-adult and adult skeletal elements. Attempts were made to avoid the inclusion of SK designations which could represent different elements of the same individual. The resulting distribution by age and sex is shown below.

Age in Years	Males	Females
15–20	SK28/41	SK7; 010; 011
20–30	SK2; 016	SK5; 015/018/019; 020
30–35	SK12; 014; 022; 023	–
35+	SK32	SK4; 024; 027

It is interesting to note that twice as many females as males died in the 15–30 age range. The higher female mortality was probably associated with childbearing.

The relative absence of fetal, neonatal and infant material is also of interest since it is to be expected that there would have been high infant mortality. However, because of its nature, infant bone often does not survive well. In addition, the burial practices for very young children may have been different from that followed for older children and adults. Thus the smaller number of infant and child skeletons probably cannot be taken as representative.

The average lifespan in medieval times has been estimated by Brothwell (1972) to be 35 years for males and 31 years for females. In the small Perth sample at least eight individuals approached or achieved this age. No individual showed evidence of age changes characteristic of late middle or old age. Indeed, the oldest individual was considered to be no more than 40 years old (SK4).

For this small sample it appears that the average lifespan would have been even less than that suggested by Brothwell, given the absence of infants and children to weight the estimate downwards. It again raised the question of how representative this sample is of the general population. If the friary had a role in caring for the sick, it may be that this is the segment of the population represented here. However, the absence of the very old and the very young may argue against this case. The relative absence of evidence of chronic illness may indicate that the role of the friary may have been related to the care of the acutely ill – possibly those suffering from infections.

The presence of adult males, adult females, a foetus and at least two children indicates that it was not (or not only) the members of a single-sex religious order who were buried in the cemetery.

CAUSE OF DEATH

In no instance could a direct cause of death be established from the skeletal evidence. This is not surprising since many of the most likely causes of death would have left no trace on the skeleton. This is particularly true of acute infections which must have been the cause of the majority of deaths in the pre-antibiotic era.

SK16 showed evidence of a depressed fracture of the skull but there are signs of healing indicating that a substantial amount of time had passed since the original injury.

The position and posture of the remains of the young adult (sub-adult) female SK7 was unusual. The skeleton was in a prone position with the hands under the chest, elbows flexed, the vertebral column seemed slightly arched, and the hip and knee joints were flexed. Such a posture has been associated with live burials (Manchester 1978; Powlesland 1980). However, it is probably more likely to have come about as a result of the individual perishing in a fire, the intense heat of which caused the muscle proteins to coagulate, thus fixing the body in this typical position, in which it must then be buried since, unlike rigor mortis, the fixation does not pass.

ASSESSMENT OF HEALTH STATUS

'The pathology of a society reflects its general conditions and growth and offers, therefore, valuable clues to an understanding of the total society' (Ackernecht 1953).

There are limits to the information regarding the pathology afflicting an individual or a population that can be inferred from skeletal analysis. Acute infective illness rarely leaves evidence on the skeleton. Many diseases (eg smallpox, cholera, plague) do not produce pathognomonically diagnostic changes in bone. Generally, there is not time for changes in bone to develop during the short course of acute infections. Where inflammatory bone change is involved it usually indicates chronic infection of long duration.

Evidence of congenital anomalies of development can often be identified in skeletal remains. They range from the clinically insignificant to those which are incompatible with life.

Trauma involving the skeleton can often be identified long after the event which caused it. The fact that some individuals can be seen to have survived extensive injury gives insight into the level of medical care practised in the community.

Degenerative disease of the skeleton is one of the major causes of misery and restriction of life-style in the western world. In populations where the life expectancy is lower, it is less evident and may be different in its manifestation. For a similar reason, neoplastic disease is much less a feature of earlier than of present-day populations. By contrast, evidence of metabolic disease associated with nutritional or other deficiencies might be expected to be more common.

Children constitute a particularly vulnerable segment of any population as far as health hazards are concerned. This must have been especially so in the unhygienic conditions prevailing in the late medieval towns.

CHILDHOOD HEALTH STATUS

Despite the relative absence of skeletal material from very young individuals in this sample, it is nevertheless possible to make some cautious comments on the childhood health status of the sample.

A number of skeletal features have been considered to be 'markers of metabolic insult' – in particular of insults occurring during the period of growth of the skeleton and dentition, ie in childhood. Many childhood illnesses or periods of stress (nutritional, psychological, metabolic) interrupt or disturb the normal growth process of bones and teeth, leaving permanent or at least semi-permanent evidence of that disturbance. Disturbances of growth of long bones can be linked with the presence of denser transverse plates of bone (Harris lines) visible either radiographically or when a bone has been damaged, exposing the fine trabecular bone of the interior of the shaft. On the teeth, disturbances of enamel formation result in macroscopically visible defects in enamel. This condition is known as enamel hypoplasia. Each of these conditions can persist into adulthood. Each is considered indicative of childhood stress, but the nature of the stress cannot be specified.

Another skeletal feature which is considered indicative of childhood illness, this time of a more specific nature, is cribra orbitalia. This is manifested by pitting of the compact bone of the roof of the orbit and may be part of the more generalized condition of porotic hyperostosis, the aetiology of which is considered to be linked with anaemia. It is usually associated with iron deficiency anaemia though anaemia of genetic origin cannot be excluded.

Severe anaemia in childhood was probably incompatible with life. There are a number of contributory

factors in the aetiology of iron-deficiency anaemia. They include parasitic infection, unhygienic living conditions, weaning problems, prolonged lactation, nutritional deficiency, physiological susceptibility and periods of rapid growth.

Associated with anaemia is another feature which can be identified in the skeletal remains, namely metopism (the persistence, beyond the normal closure time of about two years, of the suture between the two frontal bones). Although a genetic factor has also been invoked, Riemann (1978) noted an association between the retention of this suture and iron-deficiency anaemia.

One of the most interesting features of this Perth skeletal series was the very high frequency of occurrence of metopism: seven out of the 11 skulls (64%) where this area survived showed the condition. The usual frequency is of the order of 10%. However, in view of the very small sample size here, it would be unwise to draw any firm conclusions about the significance of this feature.

The association among the features indicative of childhood stress was investigated. SK1 and SK13 exhibited cribra orbitalia, transverse lines, enamel hypoplasia and metopism; SK5 exhibited cribra orbitalia, enamel hypoplasia and metopism; SK4 exhibited cribra orbitalia, transverse lines and metopism. Cribra orbitalia, albeit in a mild form, was present in five individuals. In all but one of these, metopism was also present. Other features which may indicate growth disturbances were also noted.

The evidence suggests, then, that many of the individuals represented suffered from episodes of childhood illness, severe enough to leave some evidence on their skeletal remains, even into adulthood in some cases. Given the nature of the evidence, it can perhaps be very tentatively suggested that several individuals may have suffered from iron-deficiency anaemia in early childhood. This would be consistent with the likely susceptibility of children of the time to gastro-intestinal infections, the effects of prolonged lactation, weaning problems, parasitic infection, or the complex interaction of some or all of these and other factors.

EVIDENCE OF INFECTION

There was no evidence of specific infections such as tuberculosis, leprosy or treponematoses. Signs of localized non-specific periostitis were seen in the right fibula of SK4.

EVIDENCE OF CONGENITAL ANOMALIES

The most clinically significant congenital anomaly observed in the sample was the fusion of two tarsal bones (talus and calcaneus) of SK4. This condition was likely to have resulted in difficulty in walking over uneven ground and in turning on the affected foot. The same individual also showed congenital wedging of the right lateral mass of the first cervical vertebra or atlas.

The presence of an additional bone element or ossicle was observed in the innominate bone of SK3. Interestingly, the condition was bilateral and is an unusual one. Although additional centres of ossification in the acetabulum are relatively common, a literature search failed to reveal reports of an 'os acetabuli' or extra bone in this particular position on the acetabular rim. However, it is unlikely to have been of any functional significance.

A single case of sacral spina bifida occulta was found (SK12). There was partial failure of closure over the first sacral segment. Again this would have been unlikely to have had any significant consequences.

EVIDENCE OF TRAUMA

Several individuals showed evidence of trauma. The most life-threatening was probably that of a depressed skull fracture in a young adult male (SK16). The site was on the left parietal bone. Manchester (1983) noted that most injuries to the skulls in historic skeletal collections are found on the left frontal or left parietal bone. This type of injury was interpreted as being caused by a blow from a right-handed aggressor received in a face-to-face encounter. The fact that there is evidence of healing round the margins of the wound indicated

survival for some time at least after the injury. The treatment of the injury must have been very effective because no pitting indicative of infection remained on the surrounding bone. The shape of the wound suggests that a blunt instrument was used to deliver the blow – or perhaps that a blunt object fell on SK16 from a great height!

Healed fractures (or the results of repeated trauma) are suggested by the appearance of two small bones of the hands (As16k, As25x). These were respectively the fifth left and fifth right metacarpal bones which, because of their position on the outer border of the hand, are most vulnerable to injury.

In SK4 there is evidence of dislocation of the left thumb. This type of dislocation is difficult to reduce and would have resulted in considerable deformity and considerable loss of function of the left hand. The same individual probably also suffered a tibial fracture many years before her death. Another possible example of a well healed tibial fracture occurring a considerable time before death was seen in SK52.

The injuries to the hands, feet and lower limb probably reflect the normal hazards of daily living where manual work and walking on uneven and slippery surfaces would be conducive to frequent minor injury.

Lesions, known as Schmorl's nodes, were found on the vertebrae of at least three individuals (SK4, SK5, SK14, and a single associated third lumbar vertebra). These result from vertical herniations of disc material into the underlying or overlying bone of the adjacent vertebral bodies. They have been associated, among other causes, with the effects of compressive overloading of the vertebral column in young individuals at a time when possibly the spine is not fully developed.

EVIDENCE OF METABOLIC DISEASE

The possibility that several individuals suffered from iron-deficiency anaemia in childhood has been discussed previously. On the evidence of anterior wedging of thoracic vertebrae it is possible that SK4 suffered from osteoporosis.

EVIDENCE OF DEGENERATIVE DISEASE AND ARTHRITIS

Given the relatively young ages in the sample it is not surprising that there is little evidence of marked degenerative change. Minor lipping into ligaments, joint capsules or muscle tendons is characteristic of early middle age. Lipping into the foveal pit on the head of femur was seen in several cases. In general there was little degenerative change in the vertebrae with the notable exception of an associated lumbar vertebra in which marked degeneration with eburnation of the facet joint was evident on the right side. Similar but less marked change was seen in only one other vertebra, again an associated lumbar element. Degenerative change associated with the presence of congenital anomalies in SK4 has already been described (atlas, navicular and first metatarsal).

Osteo-arthritic change was noted on an associated femur (As21e). This was possibly secondary to avascular necrosis which led to partial collapse of the femoral head. Among the causes of this are chronic repeated trauma, congenital or hereditary factors, infection, embolism and metabolic disturbance. There was considerable osteophytic lipping round the joint margins and the degeneration had proceeded to the stage where bone was rubbing on bone producing a polished or eburnated surface. This must have been an extremely painful condition and one wonders what palliatives were available to the sufferer. Unfortunately, this was an associated bone element and it was not possible to match it with the rest of the skeleton.

SK4, probably the oldest individual in the group, was the only other instance in which osteo-arthritic change was noted. Early manifestations were evident on the superior aspects of the acetabulum in both hip joints. SK4 also apparently suffered from a form of erosive arthropathy (and see below) with both patellae affected.

NEOPLASTIC DISEASE

No evidence of neoplastic disease was found in any of the material.

OTHER CONDITIONS

The lesions present on the distal articular surfaces of both humeri and the distal condyle of the femur in SK4 are very suggestive of osteochondritis desiccans. This results from a form of ischaemic necrosis, probably caused by trauma, with the possibility of genetic predisposition. Fragments of bone below the cartilage of a joint become detached and their vascular supply is cut off. It occurs most commonly in the knee, hip, elbow and ankle joints and there is peak incidence in the age range 15–25 years.

DENTAL HEALTH STATUS

Most of the teeth have substantial deposits of calculus present, showing that dental hygiene and the use of a toothbrush were not a concern of the people represented. Despite the extensive calculus, there was evidence of periodontal disease in few cases.

Ante-mortem tooth loss was marked in SK4 and SK42 had lost molar teeth before death. It is not possible to say whether the teeth had been extracted or had exfoliated.

Several individuals (children and adults) showed dental caries. Generally the caries were present on the occlusal surface of the molars. SK14 had probably also suffered the pain associated with a dental abscess.

A young male (SK2) had a crowded dentition and in SK6, a child of 10–12 years, some of the teeth were malformed.

STATURE

Estimations of stature must be regarded as very tentative since they are based on formulae derived from recent populations and assume that bones such as the femur contributed the same proportion to overall stature in the past as in present populations. Sex must first be determined since the relative contribution of individual bones to overall stature differs between the sexes.

A stature estimate made only where it was possible to measure femoral length was:

Estimated stature			
Male		Female	
SK2	1.70 0.04 m	SK5	1.61 0.04 m
SK12	1.70 0.04 m	SK7	1.46 0.04 m
SK14	1.67 0.04 m		
SK23	1.75 0.04 m		
male	1.70 m (n=4)	female	1.53 m (n=2)

OTHER FEATURES

The femur of some earlier Scottish skeletons has been shown to exhibit a flattening of the proximal third of the shaft due to the presence of a flange of bone on the lateral or outside of the bone. This is especially characteristic of short cist femora (MacLaughlin & Bruce 1983). Its significance is uncertain but is possibly a biomechanical adaptation to (1) the pattern of stress generated by some particular activity, (2) a general (nutritional) deficiency in bone tissue, or a combination of these two factors. It is not common in modern femora. In this collection a flange was present in about one-third of all femora.

Flattened (platycnemic) tibia were considered characteristic of earlier populations, while a rounded triangular shaft is found in modern groups. None of the Blackfriars collection exhibited platycnemia, the significance of which is still unresolved.

ANIMAL BONE

C Smith

The animal remains from the four sites under review originated mainly from domestic stock. Wild mammals and birds occurred only infrequently (see Table 1).

TABLE 1
Number of mammal and bird bones identified at Mill Street, King Edward Street, Kinnoull Street and Blackfriars House

SPECIES	NUMBER OF BONES			
	MILL STREET	KING EDWARD STREET	KINNOULL STREET	BLACKFRIARS HOUSE
Cattle	929	387	190	55
Sheep/goat	456	144	116	32
Goat	41	17	*	*
Pig	53	65	19	14
Horse	40	3	1	
Red Deer			2+a	
Roe Deer	5			
Dog	83	1	6	12
Cat	8	9	1	
Hare	1	1		2
Rabbit	2		3	5
Small Mammal	13		12	
Domestic Fowl	21	38	6	8
Domestic/ Greylag Goose	11	10	9	4
Crow/Rook		1		
Raven		1		
Indeterminate Bird	5	14		3
TOTAL	1668	693	363	135

Notes Loose teeth are excluded.

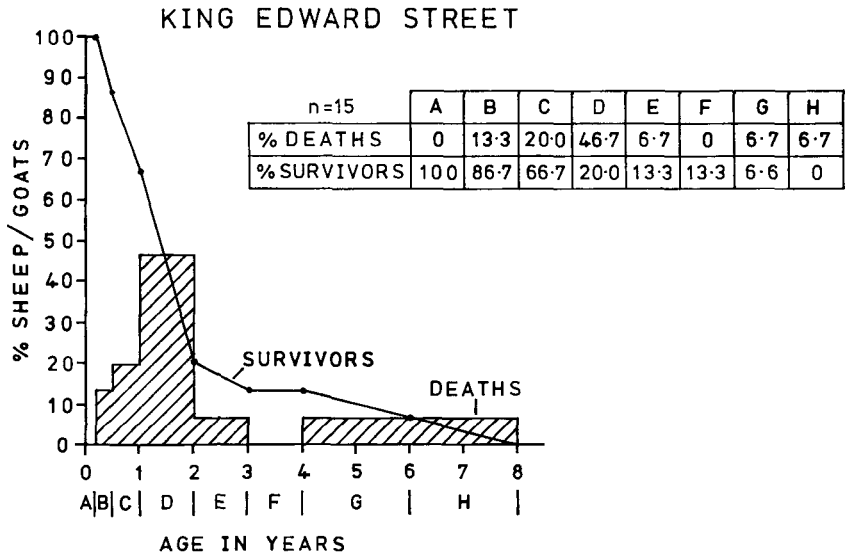
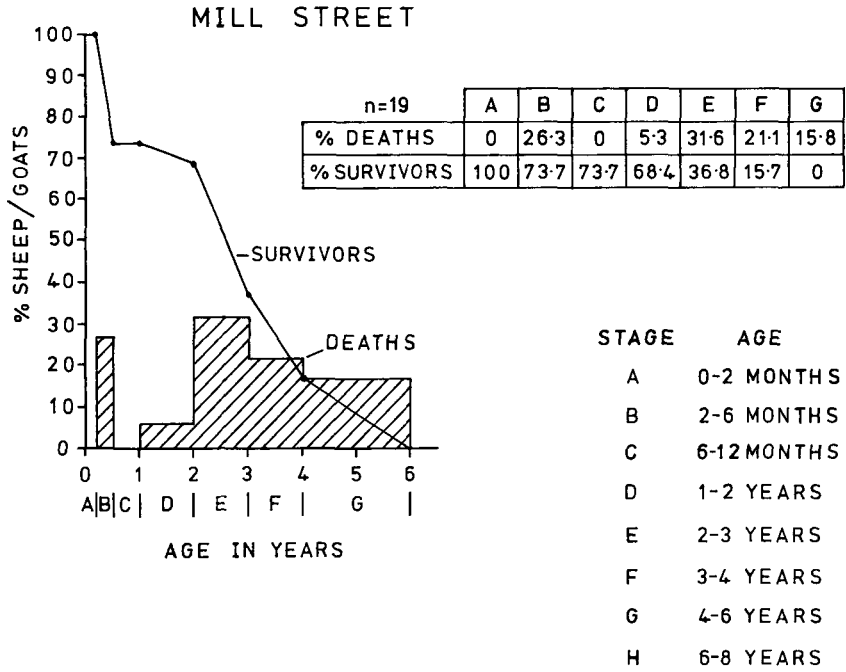
Bones from medieval and post-medieval phases appear in this table; unstratified and modern contexts are omitted.

* indicates that numbers of sheep and goat bones are expressed as one figure at Kinnoull Street and Blackfriars House.

a indicates antler which is not included in the total number of deer bones.

The ubiquity of cattle, sheep/goat and pig is unsurprising in a medieval context. As at other sites in Perth and indeed throughout the east of Scotland, the local economy appears to have relied heavily on cattle (see Table 2). Since there was evidence to suggest that most of the bovine remains came from mature animals of at least 4–5 years of age, it is presumed that they were slaughtered primarily for their hides. The export of hides was an important source of revenue to the economy of Scotland in the medieval period. Second in importance to cattle came sheep/goats, whose wool and woolfells were also important commodities on which customs were levied (Grant 1930, 308).

The culling patterns for sheep/goats at Mill Street and King Edward Street (illus 30) compare favourably with those for the High Street and St Ann's Lane (Hodgson 1983, figs 1 & 3). These culling curves probably indicate the killing of surplus male lambs for meat, while ewes were allowed to survive for the purposes of producing milk, lambs and wool until they became unthrifty, at which time they would be killed for their meat and woolfells.



ILLUS 30 Sheep/goat kill-off pattern (after Payne 1973)

TABLE 2
 Percentages of food forming mammals from thirteen sites in Perth, based on fragment count

	Cattle	Sheep/goat	Goat	Pig	Horse	Deer
High Street (PHSE)	63.5	22.2	4.9	8.3	1.0	0.1
St Ann's Lane	57.6	32.8	*	8.9	0.4	0.2
Methven Street	81.5	17.3	*	1.2		
Kirk Close	76.1	18.7	*	4.8	0.2	0.1
Scott Street	66.7	27.8	0.2	3.0	2.1	0.2
Canal Street I	58.2	32.1	0.1	5.8	3.6	
Canal Street II	67.7	27.1	*	3.4	1.8	
Canal Street III	66.0	28.1	*	4.5	1.3	0.1
Meal Vennel	69.9	20.6	2.0	6.3	1.0	0.2
Mill Street	62.7	26.3	4.1	3.8	3.0	0.2
King Edward Street	62.6	23.3	2.8	10.5	0.5	0.3
Kinnoull Street	63.1	29.3	*	7.6		
Blackfriars House	67.1	21.4	*	11.4		

Notes Loose teeth and unattached antlers are omitted from the fragment count
 * indicates that sheep and goat are expressed as one figure

Remains of pigs, as at many other sites throughout medieval Scotland, were relatively scarce as compared with those from cattle and sheep/goat. That pigs were indeed kept within the confines of the medieval burgh is attested by many statutes in burgh law, referring, for example, to their housing (eg Marwick 1911, 166). It is possible that the volume of cattle bones, the by-product of the hide industry, has tended to swamp those of pigs, which played no great part in the medieval export economy of Scotland. Other factors may have combined to produce this apparent lack of pigs; it has been suggested that decomposition of pig bones may be accelerated with respect to those of other animals due to the nature and quantity of the fats in pig meat (Noe-Nygaard 1977, 234). In addition, superstitions peculiar to the north-east of Scotland are known to exist to the present day, to the extent of the animals being considered unclean. Many writers have noted an aversion to pork, for example in the Highland areas of Perthshire, for which no explanation could be offered by the local people (Robertson 1813, 352). It has been suggested that this taboo on pigs was not linked with the Christian church, as might have been expected, since many religious houses kept large herds of swine, but may have had its origins in earlier Celtic mythology (MacKenzie 1935, 57). Excavations at medieval religious establishments in England show that pigs were abundant there; for example at Pontefract Priory, pigs accounted for 20% of the food-forming mammals (Ryder 1961, 106). At Kinnoull Street, where excavation revealed part of a Dominican friary, pigs accounted for 7.6% of the food-forming mammals, a figure which is not remarkably different from secular sites in Perth.

It is possible that in the medieval period, before landowners became interested in the profits to be made from woodland, goats (which have been blamed for causing severe damage to the native Scottish pine woods (Smout 1965, 188)) were preferred as a source of cheap meat. Goats have the added advantage of producing milk for human consumption, notably lacking in pigs. Goats' milk, indeed, may have been preferred over cows' milk since it was only rarely affected by bovine tuberculosis (Campbell 1965, 183-4) and was considered to have positive health-giving properties (Bil 1990, 164).

The incidence of goats at all four sites was undoubtedly underestimated due to the difficulty of separating their remains from those of sheep. The High Street site has produced the largest number of goat bones found in Perth, the bulk of these being horn cores which may have been imported on to the site for the purposes of horn working (Hodgson 1980, 56). It is likely that the goat horn cores

found at Mill Street and King Edward Street provide further evidence of this industry, as do horn cores of cattle and sheep. In addition, goat skins were exported from Scotland to London during the 17th century and it is possible that the medieval goat bones from the High Street (*ibid* 66), Mill Street and King Edward Street may represent evidence for the beginnings of this trade.

The proscriptions by the early Christian church against the eating of horse flesh (Harris 1986, 96) were in all likelihood ignored or forgotten by the inhabitants of medieval Perth. Butchered horse bones have been found at several sites in the burgh, including Mill Street, in contexts both pre- and post-dating the Reformation. While the meat may have been used as dog food, it is probable that during times of dearth, horses would have been eaten, as they were in such circumstances in 17th-century England (Thomas 1983, 116).

Dogs were present at all four sites, but were most numerous at Mill Street where their remains included those from a single male individual found in a post-medieval cesspit. A variety of pathological changes to the skeleton indicated that this animal had suffered trauma whilst alive, perhaps as a result of having been maltreated; in particular the skull had been fractured and subsequently healed in two places, while an abscess in one shoulder may possibly have been the result of a bite inflicted by another dog. The condition of the skeleton is a reminder that working dogs were not treated with the same care as lapdogs of the same period, nor indeed as modern pets.

Red deer were present only at King Edward Street and roe deer only at Mill Street. This trend of low utilization of greater game seems to have been typical in medieval Scotland, at least within the towns, and may be evidence of destruction of forest habitats as well as a lack of opportunity of the common people to hunt (Hodgson 1983, 10). Additionally there may have been little incentive to hunt because of the apparently ready availability of meat from domestic sources.

The remains of birds common to all four sites were those of domestic fowl and goose, presumed to have been either domestic or greylag (*Anser anser*). In addition, corvids such as crow/rook (*Corvus corone/frugilegus*) and raven (*C. corax*), which would have found rich pickings on the burgh middens, were found at King Edward Street.

The style of butchery at King Edward Street and Mill Street was remarkably consistent. Carcasses were divided in two ways, either into two equal sides of beef or mutton (the preferred method at both Mill Street and Kinnoull Street) or by placing the carcass on a floor or flat surface and chopping along the flanks (Armitage 1982, 98) as practised with greater frequency at King Edward Street. Saws were used only rarely, although there was increased evidence of sawing in the post-medieval period. The most commonly used implements seem to have been cleavers or axes and metal knives.

A range of pathological conditions, such as bovine spavin and osteoarthritis at Mill Street and King Edward Street indicated that the remains of draught oxen, which were slaughtered when they became unfit for work, were present. Other abnormalities included a case of rickets in a neonatal piglet at Blackfriars House, and dental pathologies including periodontal disease in sheep or goats and ante-mortem tooth loss in a horse at King Edward Street.

Although only a small proportion of the total bones found at the four sites were diseased, it is not entirely safe to assume that animal health must therefore have been good, since not all ailments, particularly short lived acute infections, leave macroscopic traces on the skeleton.

As regards size of the animals, the dimensions of the bones of the domestic stock fell mainly within the range of the large assemblage recovered at the High Street, and add further weight to the argument that Scottish medieval cattle, sheep, pigs and horses were generally smaller in stature than contemporary English animals (Hodgson 1980, 46). Conversely, in the case of wild mammals, there was additional evidence to support the notion that red deer were significantly larger in the medieval period than at the present day.

THE BOTANICAL REMAINS: MILL STREET AND KING EDWARD STREET

D Robinson, edited by C Smith

INTRODUCTION

Samples for environmental analysis were collected from all the excavations described in this paper. The results of their detailed analysis are presented in full in the archive reports. A selective report is presented here, describing only those samples which had a direct bearing on stratigraphic interpretation.

METHODOLOGY AND TERMINOLOGY

The samples were processed and analysed as described in Robinson (1987). The botanical nomenclature throughout this report follows Clapham *et al* (1981) for angiosperms and pteridophytes and Watson (1981) for bryophytes.

MILL STREET, PHASE II: AREA 2

Sample 778/R275 burning deposit from the last use of kiln A

Sample 663/R191 late phase firing deposit in the main chamber of kiln D

The two samples from kiln A and kiln D can be discussed together as they contained similar plant macrofossil assemblages and appear to represent the same function. Both samples represent residues in the base of grain-drying kilns. These kilns were used in the later stages of cereal processing, after threshing, winnowing and sieving, to dry the grain and thus prevent spoilage during its bulk storage. The kilns consisted of a stone hearth over which beams and probably finer branches were spread to retain the grain (Fenton 1976). Charring of the grain would occur where it fell through the retaining layer onto the fire or where accidental burning of the retaining beams took place. The latter was probably not uncommon, but in this case the samples represent a mixture of fuel remnants (charcoal and peat) and relatively small quantities of grain which must have fallen down onto the fire. A catastrophic fire would be expected to produce much greater volumes of charred grain.

Carbonized *Avena* (oat) and *Hordeum* (barley) grains made up the bulk of the plant remains, other than charcoal, present in the samples. Twenty-three taxa of arable and wasteland weed species were also recorded, including *Chenopodium album* (fat hen), *Anthemis cotula* (stinking mayweed), *Lapsana communis* (nipplewort) and *Raphanus raphanistrum* (wild radish). Large quantities of the seeds of *Spergula arvensis* (corn spurrey) and *Stellaria media* (chickweed), which would generally be of a lower stature than the cereal crop, suggest that the crops were harvested low on the straw rather than ears and straw being harvested separately. The absence of *Agrostemma githago* (corncockle) seeds was very interesting. It cannot have been part of the weed flora in the oat and barley crops, as once present the seeds would have been very difficult for the medieval farmers and millers to remove. *Agrostemma githago* (corncockle) seeds and, in particular, seed fragments were present in other samples from this site and from other sites within the medieval town. Perhaps this weed was confined to the wheat crop or to its even more well-known habitat, the rye field (Godwin 1975).

It is obvious that the cereal crop was well-advanced in its processing prior to being put into the drying kiln. Straw was absent from the samples as were *Hordeum* (barley) rachis segments; similarly, the *Avena* (oat) grains were only rarely enclosed in their florets. By reference to Hillman (1981, fig 6) it appears that the crop had been threshed, winnowed and coarse sieved prior to drying. However, the presence of small seeds such as those of *Stellaria media* (chickweed) and *Spergula arvensis* (corn spurrey) suggests that the fine sieving outlined by Hillman had not been performed. It may be that these small seeds were considered to be of little consequence and not worth removing. Alternatively, the fine sieving might have been easier to perform on

dry rather than damp grains. The kilns were apparently fuelled with both wood and peat. There was little to indicate the use of chaff as fuel as practised in later times (Findlay 1956). The wood used was mainly *Alnus* (alder) in the form of young branches up to 0.03 m in diameter. *Quercus* (oak), *Salix* (willow) and *Corylus* (hazel) were also used.

Sample 733/R250 burnt layer on the floor of kiln C

A low concentration of plant macrofossils, other than charcoal, was present in this sample. Those which were present obviously originated in the drying-kiln residues discussed above. Peat, both burnt and unburnt, and charcoal made up the bulk of the organic remains in the sample. Much of the charcoal was very fine and it seems likely that the sample as a whole represents material drawn along the flue passage by the draught from the kiln.

Sample 307/R224 primary silting of the town ditch

This dense compacted silt almost certainly settled out under water at the base of a weedy ditch. Wet-habitat plants present include *Filipendula ulmaria* (meadow-sweet), *Ranunculus sceleratus* (celery-leaved crowfoot), *Carex* spp. (sedges), *Myosotis* sp. (forget-me-not) and *Rorippa* cf. *islandica* (marsh yellow-cress). The most striking members of the ditch-side flora would have been *Hyoscyamus niger* (henbane), *Urtica dioica* (stinging nettle), *Chenopodium album* (fat hen) and *Rumex* spp. (docks) although a number of other weed species would also have been prominent. The proportion of domestic rubbish incorporated into the silt is apparently small. Bone, shell and carbonized plant remains are rare, although fragments of *Agrostemma githago* (corncockle) and *Brassica* sp. (cabbage/mustard family) seeds and *Hordeum* sp. (barley) testa (bran) fragments may indicate the presence of faecal material or other food waste. The ditch does not appear to have been grossly polluted. Archaeological and historical evidence suggests that water from the River Almond was diverted into the town ditch and the recovery of a caddis-fly larval case indicates the presence of fresh running water for at least part of the year. Similarly, the poor condition of many of the seeds and fruits may be the result of abrasion in running water. If this is the case then many of the plant macrofossils recovered need not be of directly local origin. The plant macrofossil assemblage is very similar to that of the lower layers of the town ditch deposit sampled in the excavation at Methven Street (Robinson 1987). In the Methven Street excavation a series of vertical samples was collected from the ditch deposits. Analysis of these showed the presence of fresh, running water in the early life of the ditch, followed by the progressive dumping of midden material which eventually choked the ditch and may have totally halted the flow of water. Unfortunately, a series of samples was not available from the Mill Street excavation but much the same dumping of midden material is likely to have occurred, with similar consequences for the water flow.

AREA 2 PHASE V.6 ROADWAYS AND STRUCTURES PHASE

Sample 428/R016 possible remains of a burnt fence

This sample consisted almost entirely of charcoal. Two forms were present, large fragments of carbonised rods of *Corylus* (hazel), up to 0.02 m in diameter, and smaller twig fragments almost exclusively of *Calluna vulgaris* (heather). Some of the carbonised *Corylus* (hazel) rod fragments showed signs of longitudinal insect galleries. It has not been possible to identify the insect responsible. Carbonized cereal grains (oats and barley), chaff and straw were also present but weed seeds were relatively rare.

The archaeological evidence for the feature being the remains of a burnt wattle fence is convincing. The most obvious interpretation of the plant remains is that they represent a wattle fence of rods interwoven with heather and plastered with daub, to which straw and chaff had been added as temper. The fence was destroyed by fire, which carbonized much of the plant material and fired some of the clay. Much of the clay in the sample, however, has apparently remained unaltered.

Alternatively, the straw and chaff may never have been part of the construction but may have accumulated at the base of the wattle either by accident or design prior to its destruction. Chaff and straw of varying composition would be removed at several stages during the processing of the cereal crop (Hillman 1981). It seems most likely that the material preserved here was removed at the winnowing or coarse sieving stage. It would have been used for fuel, fodder, temper and flooring.

AREA 1 PHASE VI

Samples 220/R123 & 220/R120 lower fills of cesspit 216 (16th to 17th century)

The analysis of these two samples, both from the same stone-lined pit, provides a tantalising glimpse into 16th- and 17th-century life. The state of preservation of the macrofossils, however, was generally poor and much must have decomposed between deposition and excavation.

The two samples were almost identical in content. Both contained significant quantities of *Ficus* sp. (fig) achenes, *Rubus idaeus/fruticosus* (raspberry/blackberry) pits, fish bone and very small butchered mammal bone fragments. The figs were probably imported although productive fig trees are known from medieval Scotland (Fraser 1981). It was expected to find cereal testa (bran), fragments of wheat, oats, barley and even rye in the cesspit, as had been the case in the latrine in Kirk Close (Robinson 1987) but none were present. The fact that *Ficus* sp. (fig) achenes were present in such vast quantities and that the cesspit was stone-lined and well constructed suggests its users were at least moderately wealthy. This being the case they may have been able to afford to eat white bread and to use white flour which contained little or no bran. However, the presence, particularly in sample 220/R120, of abundant fine fragments of *Raphanus raphanistrum* (wild radish) seed-pod fragments points to another possible explanation. *Raphanus raphanistrum* (wild radish) pod fragments are of a similar size to cereal grains and were very difficult for the medieval farmers and millers to remove. Accordingly they were often ground up with the cereals into flour and appeared in this form in the Kirk Close latrine material (Robinson 1987). In the Mill Street cesspit samples the fragments were very degraded and the suggestion is that wholemeal flour products were consumed but that the conditions in the cesspit were such that the delicate testa fragments decomposed completely leaving only the more resistant *Raphanus* seed pod fragments. The absence of intact weed seeds in the cesspit samples was most striking and it seems certain that the cesspit and the drain which fed it were totally enclosed during the period of use.

KING EDWARD STREET

Sample 1495/Rd1026 Phase I.1

The organic component of the sample consisted only of small amounts of burnt bone; the hearth probably had an industrial rather than a domestic purpose. It is possible however that this sample represents the lower layers of the hearth deposits, the upper layers having been removed.

Sample 1482/Rd1024 – Phase I.1

Macrofossils in this sample were confined to carbonised *Corylus* (hazel) nut fragments, *Calluna vulgaris* (heather) twigs, charcoal and burnt bone. Although there was more domestic debris than in 1495/Rd1026, it would seem that this too represents an industrial, rather than a domestic hearth.

Sample 1431/Rc1014 Phase I.1

Abundant charcoal was the only material of plant origin recovered. However, there were quantities of burnt bone, slag and fired, unworked clay present. This suggests an industrial rather than a domestic source for the material; possibly the east hearth.

Sample 1485/Rd1025 Phase I.1

Charcoal fragments were also present in this sample. The only additional macrofossils present were fragments of burnt bone. This hearth sample can also be tentatively interpreted as coming from an industrial rather than a domestic hearth.

Sample 1507/Rd1005 Phase I.2

Although plant macrofossils were more numerous than in the previous ash samples, they were not abundant; those which were present were mostly carbonized. The sample does not obviously represent a destruction layer and it seems that ash had been spread onto the floor followed by organic material in an alternating cycle. Most of the plant remains present were of wasteland weed species; there were no remains of plants which were of food or economic value. Apart from some occasional bone fragments, domestic debris was also absent. The amount of ash present and the absence of obvious domestic material leads to the tentative conclusion that this sample represents a floor from the working area round an industrial hearth.

Sample 1414/Rd1029 Phase I.3

Leather offcuts were obvious in this sample, which was typical in most ways of domestic floor levels from Perth (Robinson 1987). It contained the usual domestic debris of bone, hazelnut fragments and cereal grains, plus large numbers of seeds and fruits of wasteland and arable weeds. There were some indications of flax (and possibly turnip rape) processing for oil production and possibly also of dyeing residues. Leatherworking had obviously been practised close by.

Sample 1545/Rd1011 Phase I.3

Leather offcuts were common throughout and there were some wattle-sized wood fragments. This midden sample is made up mostly of material from domestic floors; crop processing waste (oats and barley), domestic rubbish (hazelnut shell fragments, bone fragments, eggshell and hair), leatherworking waste, dung, mortar and slag fragments.

Sample 1122/Rc1016 Phase III.3

Virtually all the plant remains in the sample were carbonised and it seems very likely that it represents a destruction layer. The macrofossil assemblage was characteristic of a domestic floor level. It contained domestic refuse, (bone, shell, teeth and hazelnut fragments). There were also *Avena* (oats) and *Hordeum* (barley) grains, which were probably carbonised during processing and cooking rather than during the destruction. Bodies of peat were present in the sample and are probably fuel residues. No particular industrial activity is indicated.

Sample 1094/Rd1154 – Phase IV.1

The sample appears to comprise a mixture of organic material from a variety of sources, such as might be expected of a midden. A large component was obviously from domestic flooring and within this there was evidence for cereal processing and food preparation; possible dyeing residues were also identified. A 50 ml subsample taken from the highly organic inclusions contained little of the coarse debris obvious in the sample as a whole. It was characterized by fine, highly decomposed plant debris containing few determinable plant remains, with the exception of *Calluna vulgaris* (heather) and *Eleocharis palustris* (common spike rush) which were moderately abundant. These bodies may represent peat or possibly even compacted herbivore dung.

POLLEN AND PARTICLE SIZE ANALYSIS OF DITCH DEPOSITS: KINNOULL STREET

D Robinson & G Whittington, edited by C Smith

INTRODUCTION AND METHODS

Samples of sediment intended for particle size and pollen analysis were collected from three ditch sections; two sections were cut through the southern ditch c 10 m apart (D229 & D231), while a further section (D240) was cut through the northern ditch. The results of this analysis and the methods used are presented in full in the archive report.

SUMMARY OF RESULTS AND INTERPRETATION

Section D229 east-facing section

The southern ditch at this point appears to have had an upturned bank on its southern side. Periods of violent inwash from the bank alternated with periods of more gradual accumulation. Over a span of time turf developed over the bank, and the surrounding area supported a weedy wasteland with few trees and shrubs other than *Salix* (willow) scrub. The most common herb taxa were *Compositae* – *Liguliflorae* and *Tubuliflorae* (dandelions and thistles). These species also occur in the other ditch section on the site and in similar deposits elsewhere (Boiché *et al* 1980; Robinson 1983); a disused railway line might be seen as a modern parallel. At some time when the turf was well developed, the bank was levelled off into the ditch, resulting in a mixture of turf fragments and sandy core.

Section D231 west-facing section

There was no upturned bank at this location on the southern ditch. Sediment accumulation was gradual with no indication of violent inwash episodes.

Section D240 west-facing section

The deposits revealed in this section accumulated at a much slower rate than any of those in the southern ditch, resulting in a high proportion of fine particles and the inclusion of significant amounts of organic material. The lower deposits may represent a period when the ditch was well maintained and possibly contained open water for at least some of the year, as indicated by the presence of *Potamogeton* (pondweed) pollen. In the upper parts of the sampled sediments there is evidence that the sides of the ditch became covered by a dense weed flora which stabilised the soil. Pollen of *Urtica* (nettles), *Gramineae* (grass), *Plantago lanceolata* (ribwort plantain), *Liguliflorae* (dandelion family), *Rumex* sp. (docks) and cereal types appears for the first time or increases dramatically and there is a marginal increase in tree pollen. This may indicate a period when the ditch was abandoned and was no longer kept clear of weeds. The weed flora was allowed to develop and domestic or agricultural waste from crop-processing, fodder and faeces, both animal and human, the likely sources of the cereal pollen, may have been incorporated into the ditch sediments. However, plant macrofossils were unfortunately very rare in these deposits. In particular, uncarbonised cereal remains, particularly the bran fragments found in faeces, are not very robust and although they may have been present have not survived to substantiate the pollen evidence.

CONCLUSIONS

This group of excavations has established or confirmed a number of patterns in the archaeology of Perth.

The difference in depth and conditions of preservation was very marked, with deep waterlogged organic layers on the High Street and in Mill Street, contrasting with shallow, well drained sandy layers in the northern suburb at Kinnoull Street and Blackfriars House. This has the paradoxical effect that undocumented, flimsy wooden buildings on the High Street were well preserved, while the major stone buildings of the friary were almost entirely lost to robbing and early modern disturbance. The archaeology of medieval Perth has produced a very large corpus of undocumented private buildings, while very few of the public buildings have left any physical remains or even a secure record of their location. Despite extensive historical records the location of Blackfriars was uncertain until the present excavations, while the castle continues to elude discovery.

The difference between the late 12th-century frontage at King Edward Street and the early 15th-century backlands in Mill Street is reflected in the intensity of use on the frontage. The King Edward Street buildings, although lightly built, were well defined, packed closely into the available space, and frequently altered or repaired while preserving the general property layout, indicating the importance and relative stability of High Street properties even when occupied by insubstantial buildings. An exception to this pattern in Phase II when plots lay vacant and boundaries were disregarded may indicate a period of major disruption in the life of the 12th-century burgh. In contrast, at Mill Street many of the buildings were extremely insubstantial and the site underwent complete reorganisation in almost every phase, changing from defensive ditch and industrial area to an open rubbish tip, then alternating between buildings and cultivation, industry and dumping, with rights of way appearing and disappearing. This indicates the much more fluid character of land use on the margin of the town, as might be expected.

Some of the processes observed in these excavations are well documented, for example the founding of the Blackfriars, their colonisation of the northern suburb, and their eventual dissolution. Similarly the apparent Jacobite earthwork at Kinnoull Street will almost certainly be a product of the 1715 Rising. Some processes can in principle be related to documented events; for example the digging and infilling of the town ditch at Mill Street, and the appearance there of stone shot must relate in some way to the Wars of Independence. The processes of growth and decline on the High Street are harder to interpret. The phase of abandonment at King Edward Street may correspond to a similar episode at 80–86 High Street (Moloney & Coleman forthcoming), and could be a result of the Wars of Independence, or pestilence, or some quite unrelated economic decline. Further historical and archaeological research is needed, to suggest an economic or political context for these events, and to confirm the pattern in other parts of the town. Further excavation, especially on the High Street, will obviously be relevant, but new analysis of existing evidence, especially of artefact assemblages, might also be fruitful.

The appearance of a completely undocumented bank and ditch at Kinnoull Street, either early medieval in date or perhaps even earlier, is a reminder that the search for pre-burghal activity cannot be confined within the late medieval defences. Much of the town centre must have been uninhabitably wet until artificially raised, as the floods of January 1993 demonstrated. Without the influence of a formal street system and defensive circuit to draw settlement in around the nucleus of the Kirk or the Harbour, pre- and proto-burghal settlement at such an inconvenient site might have tended to disperse; the islands of dry ground at the margins of the medieval burgh may yet produce other surprises.

Research is currently in progress on the relation between natural topography, deposit depths and settlement patterns in Perth, and will suggest further lines of enquiry in the search for pre-burghal settlement. The combination of long history, deep stratification and limited 19th- and 20th-

century disturbance have given Perth a unique importance for the study of Scottish burghs, and have attracted almost two decades of archaeological excavation. The results of the excavations reported here remind us that we are nowhere near exhausting the potential of this burgh for urban research; new evidence and new questions will continue to emerge wherever the opportunity for excavation arises.

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