

## New light on Kelso Abbey: archaeological interventions on the Bridge Street Garage Site, 1996–8

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### ABSTRACT

*Archaeological fieldwork on the old garage site on Bridge Street, Kelso has revealed the extensive and well-preserved remains of buildings associated with the Abbey precinct. A series of large, substantial structures lay immediately to the west of the site of the cloister's west range. Pottery from the site includes stratified examples of an early pink Gritty Ware, similar to that found in early levels at Jedburgh. A rare condiment dish, possibly 13th century in date, was also found. Evidence of copper-based alloy working was also identified. Two principal phases of construction were identified, separated by a major reorganization and landscaping of the site, in perhaps the late 13th or early 14th century. One of the later buildings is tentatively identified as the monastic granary. There are indications that this part of the precinct was possibly abandoned prior to the Dissolution in the late 16th century. Forming part of the later glebe lands, the area was ultimately given over to gardens.*

### INTRODUCTION (illus 1)

The site of the 1996–8 investigations lay roughly 75m south-west of the Abbey. Located on the fluvio-glacial sands and gravels of the river terrace, it occupied a large part of the triangular plot of land formed by Abbey Court to the west, Bridge Street to the east and the River Tweed to the south. A formal garden, the Abbey Gardens, is depicted on the northern half of the site on the First Edition Ordnance Survey map of 1861; the southern half was occupied by a wood-yard. The later history of the site is closely connected with Croall's coach-house (established 1866) and the Croall Bryson garage which ultimately expanded northwards across the Abbey Gardens.

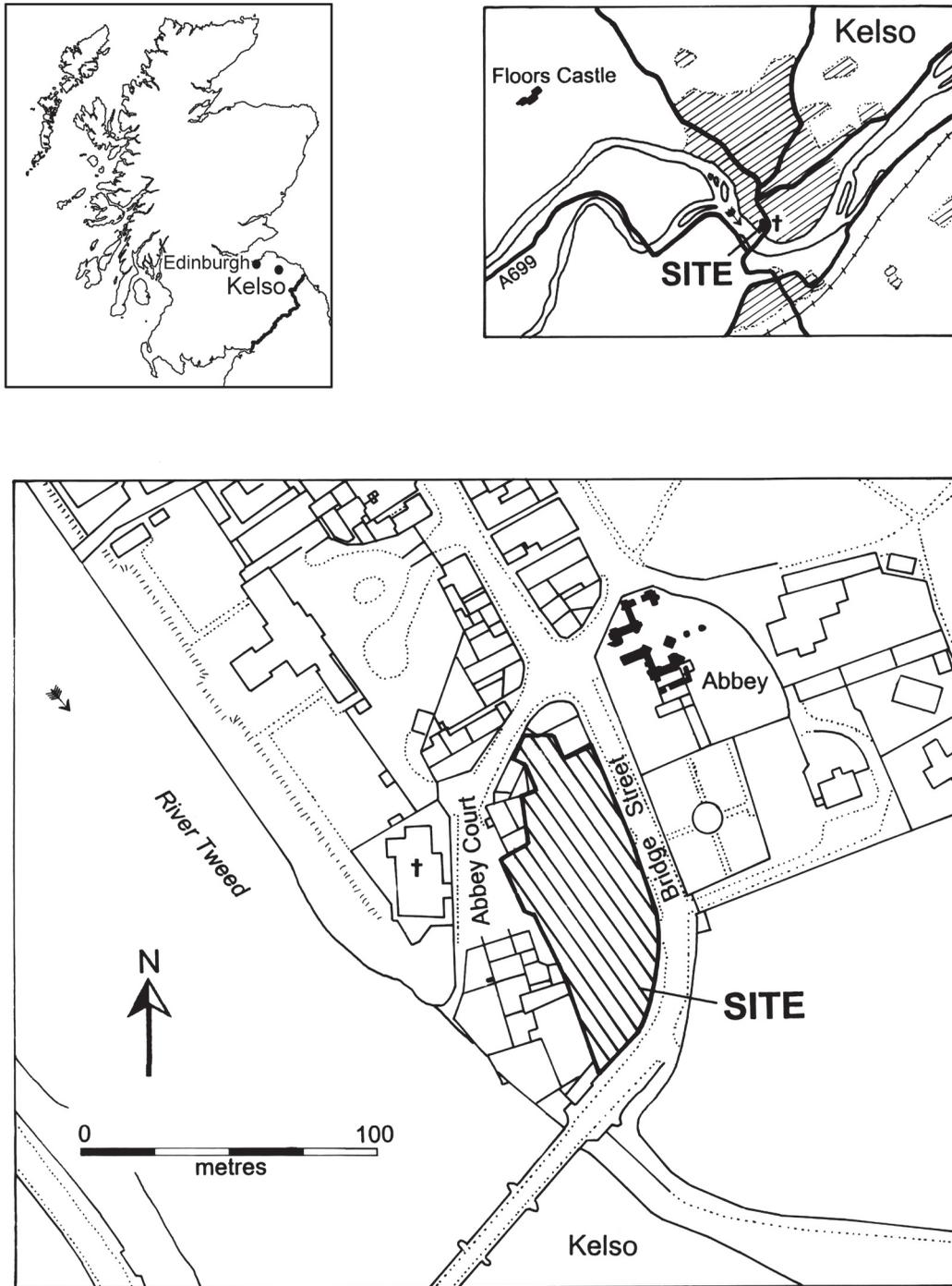
The present bridge across the Tweed was constructed in the period 1800–3. The south

end of Bridge Street itself, between the church and the river, was also laid out at this time. The 1800 bridge replaced an earlier structure that was erected in 1754 and washed away in 1797 (Simpson & Stevenson 1980, 6). Located roughly 75m upstream, the earlier crossing, up and along Abbey Court, would have led directly to the west front of the Abbey church. This was also the route of the earlier ferry, as depicted in John Slezer's 'Prospect of the Town of Kelso', an engraving which probably dates to the period 1671 × 1684 (Cavers 1993, 64–5). The site of the 1996–8 investigations thus occupied a potentially important plot of ground close to the western façade of the Abbey church, between the principal pre-modern access route to the west and the medieval cloister to the east.

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ILLUS 1 Location plan

BACKGROUND TO THE PROJECT (illus 2)

The archaeological investigation was undertaken in advance of, and in conjunction with, the demolition of the former garage site and its re-development for housing. Fieldwork progressed in a series of stages, commencing in November 1996, namely, watching-brief during the removal of petrol tanks (Zones 1 & 2); evaluation (Zones 3–6); watching-brief during topsoil stripping, prior to rafting (Zones 7–9); excavation of service trenches (Zones 10–17). The bulk of the work was undertaken over the course of Spring 1997. The final element of the fieldwork programme was completed in June 1998.

The initial watching-brief, undertaken during the course of the removal of the former petrol tanks (Zones 1 & 2), which had been cut deep into the subsoil, had clearly shown that there was a stratigraphic and chronological depth to the deposits and features revealed in section. During the course of the subsequent trial-trench evaluation (Zones 3–6) and topsoil stripping (Zones 7–9), a complex series of related structures and features was found to extend across much of the northern half of the development area. The southern half was found to be effectively archaeologically sterile, having been cut away by the basement of the former garage and coach-house.

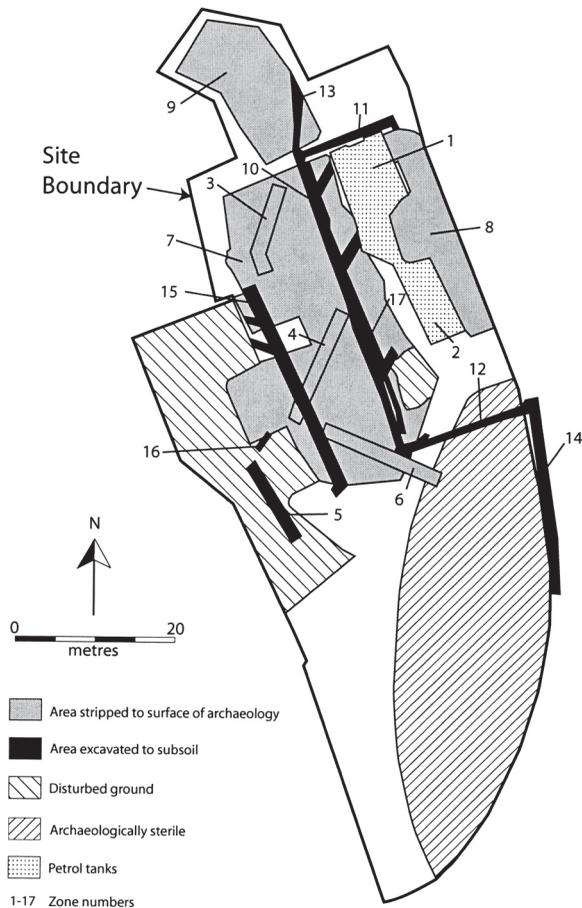
Removal of the uppermost ‘soft’ deposits, essentially the post-medieval garden soils, and burial beneath a sand and rubble raft was subsequently adopted as the preferred mitigation strategy for the in situ preservation of the archaeological remains on the site. The resultant surface and the palimpsest of features thus revealed were subsequently recorded, prior to rafting. Only minimal intrusive excavation was undertaken.

The final piece of fieldwork, involving the excavation of a series of deep service trenches (Zones 10–17), was required

when it became clear that these would extend below the level of undisturbed archaeological deposits. Excavation of features within the service trenches, 0.8–1.6m wide, was technically difficult, the features only comprehensible in light of the earlier observations. Cut down into the natural subsoil, these trenches facilitated the investigation of the full archaeological sequence.

HISTORICAL BACKGROUND

Little but the impressive west end of the Abbey church of St Mary’s, Kelso, the oldest,



ILLUS 2 Zone plan, showing areas investigated and level of investigation

wealthiest and most powerful of the four Border abbeys, has survived. Founded in 1128, it was settled by Tironesian monks, brought from Tiron, near Chartres in northern France, the first of the reformed continental Orders to arrive in Britain. The Order of Tiron, an autonomous congregation within the Benedictine Order, was founded *c* AD 1105 by St Bernard of Tiron. The Order laid emphasis on the simple life and stressed the importance of manual labour, attracting into its ranks many craftsmen who were encouraged to use their skills within the discipline of a cloistered and contemplative life (Tabraham 1984, 366).

Founded and endowed by David I, the community had originally been settled at Selkirk (*c* 1113), also founded by David prior to becoming king. The abandonment of the foundation at Selkirk is assumed to have been associated with plans for the establishment of the Cistercian House at Melrose and by the desire to bring the Abbey under the protection of the royal burgh and castle at Roxburgh, located nearby at the confluence of the Tweed and Teviot (Cowan & Easson 1976, 76; Cruden 1986, 42). A royal foundation of some prominence, the Abbey became the burial place of David's son and designated heir, the Earl Henry, in June 1152. In 1460 the Abbey church was the location for the coronation of the young king, James III, after his father's death during the siege of Roxburgh. However, like the other Border abbeys at Melrose, Dryburgh and Jedburgh, it suffered as a result of military incursions during the Wars of Independence and again in the 1520s and 1540s in the aftermath of the Battle of Flodden and the 'Rough Wooing'.

Redress was sought in Edward I's parliament of March 1305 for the burning of the Abbey's charters and muniments (Cowan & Easson 1976, 68). In *c* 1316 the monastery and its estates are said to have suffered so much disruption and destruction as a result of the war that the monks were reduced to begging at other houses for food and clothing (*Kelso Liber*, 249). In 1343, special permission was sought by the Abbey to

cut oaks to repair several buildings that had been damaged by fire (Robertson 1798, 63). A petition to Rome in 1420 refers to its precarious situation on the Border and the depredations wrought by hostile incursions (Lindsay & Cameron 1934, 177). Meanwhile, in 1461, it was alleged that the Abbey had not been visited by its ecclesiastical superiors for over a century as a result of the English occupation of nearby Roxburgh (Cowan & Easson 1976, 68). In 1523, Lord Dacre's forces entered Kelso 'where not only we brent and destroyed the whole town that would burn by any labour but also caste down the gate-house of the Abbey' (Brewer 1864, III/2, nos 3098 & 3135). It was burnt again by the English in 1542 (Brewer 1864, XVII, nos 996 & 998; Bain 1890, I, 292), probably again in 1544 (Brewer 1864, XIX/2, no 33) and once more during the Earl of Hertford's campaign in September 1545 (Brewer 1864, XX/2, no 456), when the army was ordered 'to brik the abbey and thake of the leied and outer myen the towres and strong places, and to owaier trowe all', to leave the Abbey 'razed and all put to royen, howsses and towres and stypeles' (Laing 1854). Some repairs are reported to have been undertaken by the Commendator, James Stewart (died 1557), but by 1587 it was reported that 'the hail monkis of the monasterie of ye Abbey of Kelso ar deciessit' (*Acts Parl Scot*, III, 454).

Little is known of the extent of the monastic precinct and its outbuildings, or the relationship of the Abbey and the medieval burgh. We are fortunate, however, in that a detailed description of the Abbey, as it was in 1517, has been preserved in the Vatican Archives, in a deposition made before a papal notary by John Duncan, a cleric of Glasgow (Theiner 1864; RCAHMS 1956, 240–1). Of particular relevance is the account's description of the cloister and associated buildings in the precinct:

The cloister . . . is on the south and is also joined to the church; it is spacious and square in shape, and is partly covered with lead and partly unroofed through the fury and impiety of enemies. In the

cloister there is, on the one side, the chapter-house and the dormitory, and on the other two refectories, a greater and lesser. The cloister has a wide court round which are many houses and lodgings; there are also guest-quarters common to both English and Scots. There are granaries and other places where merchants and the neighbours store their corn, wares and goods and keep them safe from enemies. There is also an orchard and a beautiful garden ... The Abbot's house is separate from that of the monks, but their table is in common.

Past investigations on the site have sought to elucidate the nature and extent of the Abbey church, in particular the form and position of the east crossing and its east end. Some evidence for the crossing and the position of the south transept was adduced as a result of Tabraham's 1971 excavation (Tabraham 1972). Meanwhile, excavations in 1975/6 in the area to the south-east of the church succeeded in revealing the vestiges of extra-claustral buildings, one of which has been identified as the monastic infirmary (Tabraham 1984). Subsequent, small-scale evaluations by the present author to the east of the church, and in the area to the south and south-east of the 1975/6 investigations, proved largely negative (Lowe 1988).

## RESULTS

Work at the Bridge Street Garage site was strictly limited to a series of small-scale interventions with only minimal intrusive investigation. Detailed information on the development of the site and the function of the various buildings, which were only glimpsed on plan or in section, is largely lacking. Interpretation of the findings is consequently made all the more difficult. Nonetheless, the cumulative results of these various interventions can be accommodated into a basic five-phase framework which witnessed at least two major periods of construction on the site, with the later work following a major reorganization of this part of the Abbey precinct in perhaps the late 13th or early 14th century. With the exception of those areas coincident with the deep service trenches (Zones 10–17), the archaeology of the site has been preserved *in situ*.

Evidence for the identified structures and deposits is presented first. This incorporates, where appropriate, the results of the specialist analyses of the artefacts and environmental material from the site. Detailed reports on the pottery, miscellaneous finds, industrial waste, faunal remains and carbonized plant remains then follow.

## THE STRATIGRAPHIC SEQUENCE

Simon Stronach & Christopher Lowe

### *Phase I: primary precinct buildings and associated activity (12th century) (illus 3)*

Primary use of the site involved the construction of buildings, at least one of which was probably associated with domestic activity. Primary features on the site were principally observed in section during the removal of the petrol tanks and on plan and in section during the works associated with the excavation of the service trenches. Little remained of wall foundations due to later robbing. A large assemblage of pottery, securely dated to the 12th century, was only recovered from one feature, an infilled storage pit.

**Building A** A foundation course (219) survived within a trench (220), cut into subsoil. It was formed from large roughly worked stones and was 1.3m wide. Relationships between the various foundations were much disturbed by later intrusions but it seems likely that context 219 was associated with three walls to the north, all of which were cut into subsoil. A footing (108), 2.5m wide and built from light blue/green sandstone flags and blocks bonded with clay, was aligned north-west to south-east, probably terminating at context 219. At right angles to this was a dry-stone wall footing (128), roughly 2.7m wide and also constructed with light blue/green sandstone flags and blocks. A smaller wall represented by a robber trench (113), 1m wide, lay parallel to context 128. Partially revealed to the west there was a short length of dry-stone wall footing (1041) built directly on a preserved ground surface (1040), possibly marking the return of the walls to the east. Taken as a whole, these foundations represent a complex structure, seemingly comprising a series of rooms 5–6m wide and possibly up to 14m long. However, given the varying styles of construction, it seems likely that the building was subject to alterations during its use. Associated with the building complex were two small post-holes (918 & 952).

**Building B** The presence of two parallel walls, aligned north-east to south-west, can be inferred from two robber trenches (230 & 954), each roughly 1m wide. Possibly they represent elements of a single building, 7.6m wide and more than 25m long. Adjacent to the building was a rectangular stone-lined pit (1013), up

north, was a partially exposed pit (1017), 0.7m deep, its basal fill (1023) consisting of grit mixed with black humic material containing carbonized cereal grains, straw and charcoal. Adjacent was a small rounded scoop (1031) and two small circular patches of clay (997 & 1036). A shallow sub-rectangular pit (1037),

with stones set around its edge and filled with ash (1035), is interpreted as a hearth. All of these features were sealed beneath a later levelling deposit (1007). Together, they confirm the impression that the focus of domestic activity, perhaps a kitchen area, was located nearby.

The fragmentary remains of what are probably paved (context 1005) or cobble (context 815) surfaces were also identified; a thin lens of crushed green sandstone (921) along the north side of Wall 128 may represent masons' chippings.

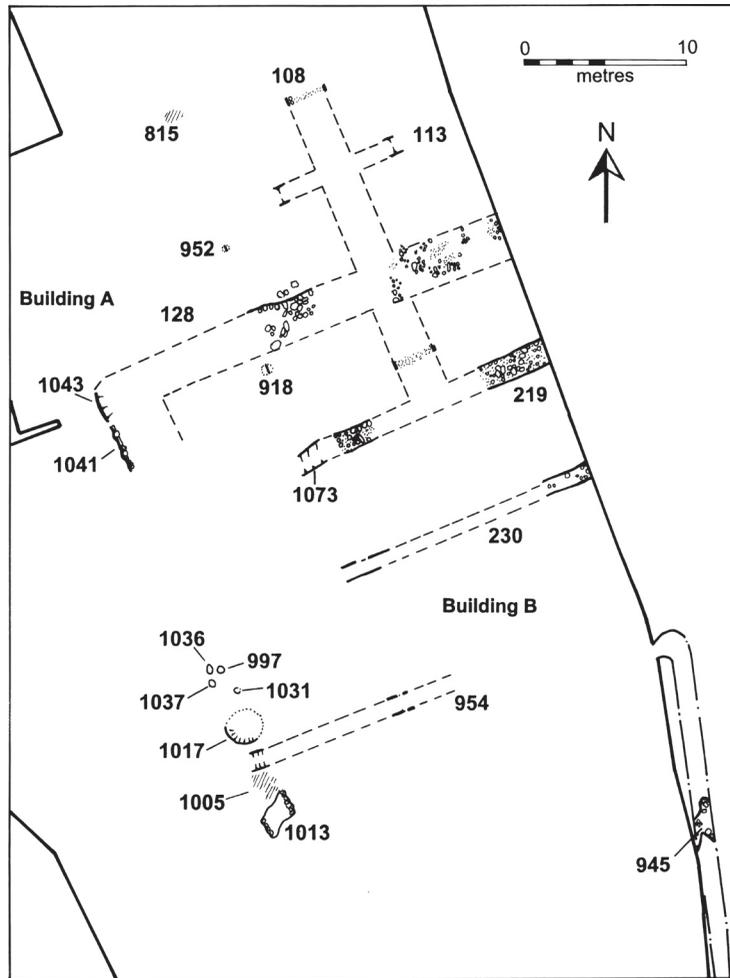
An isolated feature (context 945) was identified in a service trench to the south-east of the main area of excavation. It comprised a shallow gully with stones set into its edge. It was not excavated but is likely to be a drainage channel.

*Phase II: demolition, robbing and levelling (13th–14th century)*

The primary buildings were demolished and largely robbed of their stone. The area was then leveled with dumps and spreads of gravel and rubble (context 106). This activity dates to the 13th–14th century and suggests

a comprehensive reordering of the wider precinct.

The levelling deposits that sealed this activity provided a suitable surface for new construction. Distinct spreads of crushed green sandstone chippings (contexts 1006, 903 & 987), probably construction debris, were identified towards the south side of the area investigated. A large disposal pit (988) with



ILLUS 3 Phase I features

to 1m deep. A pronounced step on the north side of the pit probably provided access into the feature. No deposits relating to its primary use were preserved but it may have functioned as a storage pit. It was deliberately backfilled with dark sandy loam (1010) containing a large assemblage of pottery, possibly mid-12th century in date. Inside the building, to the

a cobble and loam fill (971) was cut through these and sealed by a Phase III surface. Deposits of sandy clay with mortar, rubble and midden material (227) sealed a robber trench (230) in the east, whilst spreads of stones (726 & 903) covered it in the west. This deposit also extended northwards to seal the remains of Wall 219. Wall 128 was sealed with a more complex sequence of redeposited gravel (718), green clay with charcoal lenses (916) and rubble (1055). Feature 952 was sealed by a dark loam soil (926) that in turn was buried under redeposited gravel (925) and a layer of crushed green sandstone (929). In the north of the area, levelling was represented by a spread of crushed green sandstone (719) in the west and redeposited gravel (106) in the east, the latter sealing the remains of Foundation 108. The gravel contained pottery dating to the 13th–14th century and partially covered a deposit of crushed white sandstone (110), also dumped as a levelling deposit but reused as a Phase III interior surface. Between the wall lines associated with Building B, levelling was finished off with a spread of dark redeposited sandy loam (1007) with signs of burning. Burnt grain, predominantly oats, and a fragment of crucible, probably unused, were recovered from this horizon. The Abbey precincts are known to have been affected by fire on several occasions and rebuilding may have followed accidental destruction in part of the area.

Levelling deposits across the north part of the site comprised spreads of sandy loam with gravel (814, 936 & 937), overlain by spreads of crushed green sandstone chippings (808, 931 & 929). A copper-alloy lace end, probably dating to the period prior to the mid-14th century, was recovered from this horizon. Overlying the crushed sandstone layer was a thin patch of mortar (932).

*Phase III: precinct structures and associated activity (14th–15th century) (illus 4)*

The secondary phase of buildings was markedly better preserved than the first and comprised a large central structure (Building C) and several smaller ancillary structures (Buildings D, E & F). Building C has been tentatively identified as a granary or kitchen; industrial use of the area may also be indicated, with evidence for bronze-working.

**Building C** A large structure, 15m wide internally and more than 30m long, is represented by surviving foundations (contexts 305 & 716). Both walls were constructed with large, faced, light blue to green

sandstone blocks with a rubble core and sandy mortar bonding. The building extended to the east and west but had been largely robbed and was represented by trenches (120 & 210) and a structural remnant (119). A flagged surface (720) set into brown sandy loam (1009) survived in places within the west room but had been replaced elsewhere by stone and gravel spreads (717), which showed signs of in situ burning. A thin accumulation of charcoal (723), containing pottery dating to the 13th–15th century, remained on the surface. The remains of a thin-walled crucible and glassy crucible slag were recovered from the loam (context 1009).

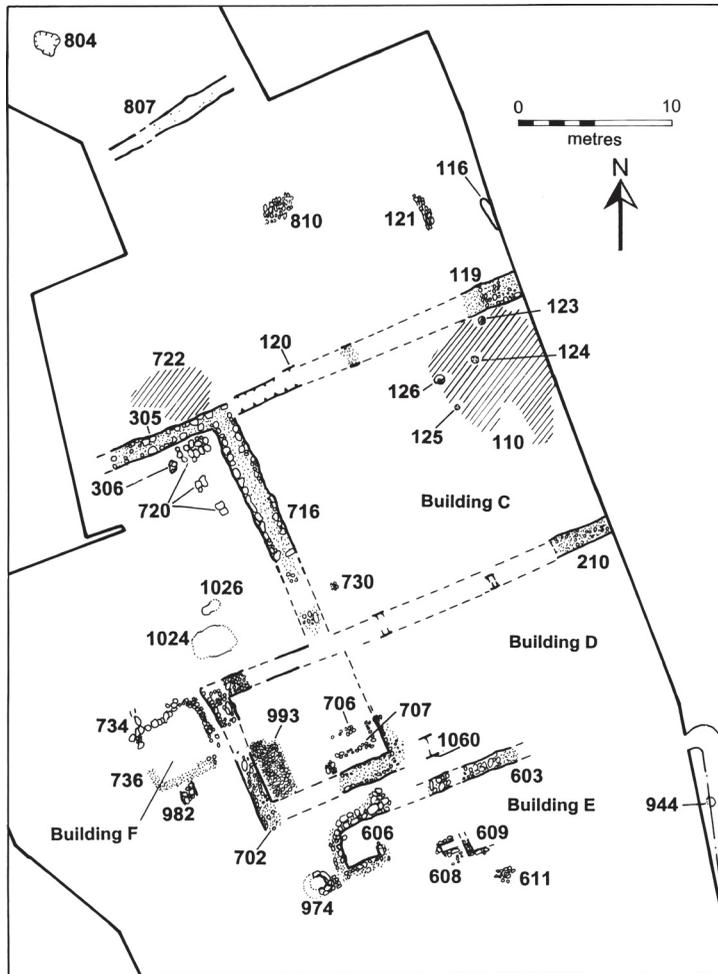
Two pits (1024 & 1026) were located in the southern half of the west room. Both could only be excavated within the confines of a service trench and their full extent is not known. Pit 1024 was over 1.6m long, 0.9–1.4m wide and up to 0.7m deep, with steep sides and a flat, partially stone-lined base. Pit 1026, with a similar profile, was over 1.1m long, 0.8m wide and 0.5m deep. Both pits had been filled with midden material containing large quantities of bronze-working waste. The fill (1025) of the larger pit (1024) contained crucible fragments, including a possible tuyere fragment, scraps of copper-based metal, crucible slag and a stone with spilt slag residue adhering. Cattle, sheep and fish bones, the latter comprising cod, herring and haddock, and probably chicken bones as well, were also recovered, as were two sherds of White Gritty Ware, two sherds of glazed pottery, the latter probably English imports of 14th–15th century date, and an enigmatic ceramic ball. Charcoal from the pit was identified as predominantly oak with occasional fragments of alder. Cinder and coal were also present. Low concentrations of oats, barley, wheat and rye were also identified.

A compact spread of gravel (1021) was used to resurface the area after the pits had gone out of use. This contained patches of charcoal-rich and oxidized sand, suggesting continued burning in the room. A post-hole (306) was located to the north.

The east room of the building contained a surface comprising a compact deposit of white crushed stone (110). This floor was cut by several post-holes (123, 124 & 125) and a small pit (126) with stones set around its edge. It was covered in places with an extensive layer of burnt material (221) comprising charred round-wood and large amounts of carbonized cereal grain. A large number of iron nails were also recovered from this conflagration deposit. The cleaned nature of the grain would indicate that the building may have been a kitchen or granary. A post-

pad, created from cobbles set into a cut (730), was located in the south-west corner of the room.

On the north side of Wall 305 were the remains of a flagstone surface (722). A partially exposed area of fragmented green flagstones (121) to the east is likely to be the remnant of an exterior surface, as is an area of cobbling (810) nearby.



ILLUS 4 Phase III features

**Building D** The partially exposed remains of a second structure, Building D, lay along the south side of Building C, sharing a common wall-line. It was roughly 7.3m wide internally but of unknown length. A cobbled surface (993), set into redeposited gravel (403) containing pottery of 12th- to 14th-century date, was preserved at the west end of the

building. The edge of a possible bench-like feature, formed by a line of large stones (context 707) only partially exposed, was identified in the south-east corner of the room. Meanwhile, in the eastern part of the building there was a shallow scoop (context 954: not illustrated) containing a series of laminated charcoal-rich sands and an orange sediment, possibly

ash (context 907). This feature was only partially exposed in section during the cutting of service trenches. It may represent a hearth-pit. A single sherd of pottery, 12th–14th century in date, and a piece of lead-strip were recovered from the fill. Outside the building to the south was an area of flagstone paving (974) set around the edge of a straight-sided, flat-bottomed pit (981), 0.9m in diameter and 0.7m deep. The pit was cut through midden material (966) containing pottery of 13th- to 15th-century date.

**Building E** The partially exposed remains of a third structure, Building E, lay to the south of Building D, on the same alignment. The wall (603) survived up to three courses high and was constructed of large sandstone blocks, bedded in clay, with mortar seemingly absent. The stub of what may be an internal dividing wall (606) was located towards the west end of the building. It appears to define a small room roughly 2.3m by 2.2m, presumably part of a wider building which continued beneath the site access road to the south. Pottery sherds of 13th- to 15th-century date were

recovered from the trampled earth floor (605) of the building.

Further internal elements of Building E, or possibly parts of a separate structure, were partially exposed a few metres to the south-east. These comprised a fragment of walling (609), a stone-lined pit (608) and an area of flagstones (611).

**Building F** The remains of a small, subterranean structure, Building F, were identified immediately to the west of Building D. Roughly 4m by 4m internally, its walls (contexts 734 & 736) were formed of large sandstone blocks set inside a pit (738). The structure was infilled with redeposited gravel (737). This was only partially excavated and the floor of the building was not exposed. The presence of associated structures may be indicated by a return at the end of Wall 734 to the north, and possibly by a fragmentary clay-bonded sandstone wall (982) which was exposed in a narrow service trench to the south.

**Other features** A linear feature (context 807), laid out on a slightly different alignment to the other buildings identified on the site, was encountered in the northern part of the development area. The feature was 1.1m wide, 0.6m deep and had been cut with straight sloping sides and a flat base. A layer of medium and large angular to sub-angular stones along the base of the trench was overlain with sandy loam and midden material (806) containing sherds of pottery dating to the 13th–15th century. It may represent the robbed out foundations of a wall. A large, sub-rectangular pit (804) filled with dark loam (803) and coal (802) was located to the north-west of context 807. A second pit (944), filled with midden material and loam (943), was identified in the service trench to the south-east of the development area.

#### *Phase IV: abandonment (late 15th–16th century)*

The Abbey was abandoned in the late 16th century after a prolonged period of decline. This period is marked archaeologically by stone robbing, midden accumulations and the digging of rubbish pits. Spot-dating of finds from these deposits, principally pottery, suggests that this part of the precinct may have been abandoned, or in a state of terminal decline, well before the troubles that afflicted the Abbey in the first half of the 16th century.

A robber trench (120) was applied to the north wall of Building C. It was filled with rubble and mortar in a loam matrix (118). To the north a demolition deposit of rubble and silty clay (117) formed over the flagged surface (121), and a disposal pit (116) filled with silty clay and midden (115) was cut through it. A second robber trench (210) was applied to the south side of the building and two disposal pits (955 & 958: not illustrated) nearby were identified in section during the course of work on the service trench. All were

filled with building debris (contexts 209, 908 & 911). Another disposal pit (217), filled with similar material, was cut through the earlier burnt horizon (221) in the north-east corner of the building.

Within the west room of Building C were a series of rubble (contexts 994, 995 & 996) and redeposited gravel (context 977) spreads, containing pottery dating to the 13th–15th century and fragments of severely weathered copper-based scrap metal. A later disposal pit (731) containing fragments of a yellow slipware dish, probably 17th century in date, was subsequently cut through these deposits.

To the south, a deep deposit of crushed green sandstone and gravel (972), containing pottery of 13th- to 15th-century date, was dumped inside the west room of Building D, sealing the cobbled floor (993). This deposit was subsequently cut by two disposal pits. One pit (context 991), 0.6m in diameter and 0.3m deep, was filled with midden (992) containing pottery of 13th- to 15th-century date. The second, much larger pit (context 1000) was only partly exposed within the confines of the service trench. It was at least 1.7m by 0.8m and 1.3m deep, filled with bands of gravel (contexts 1001, 1003 & 1004) and a 0.2m thick layer of mortar (1002). Sherds of 13th- to 15th-century pottery were recovered from the upper fill of Pit 1001. Similarly dated sherds and a piece of copper-alloy scrap were recovered from a general rubble layer (968) that overlay the ruins of Building D.

The east end of the south wall line of Building D was removed by a robber trench (1060). It was backfilled with sandy loam (1059) and sealed by rubble and loam deposits (contexts 1051 & 1062) containing pottery of 13th- to 15th-century date. Pitched rubble (1050) identified in the excavated service trench next to the building is interpreted as collapsed wall-matrix.

Building fragments (609) and the nearby stone-lined pit (608), possibly part of Building E, were both backfilled with loam and midden material (contexts 610 & 607). This contained pottery dating to the 15th–17th century. Similar material (contexts 605, 901 & 1068), together with spreads of rubble and clay (1066), extended to the north, overlying the identified wall fragments (contexts 603 & 606) associated with Building E. Over this was an extensive spread of charcoal (604). This assemblage was dominated by very large fragments of birch roundwood; fragments of alder, oak and willow were also identified. Although probably derived from the timber wattle superstructure of Building E, and perhaps from other

structures in the vicinity, the stratigraphic position of the deposit would imply that it was laid down following its earlier abandonment and demolition. A single sherd of pottery, 13th–15th century in date, was recovered from the burning horizon (604).

The nearby pit (981) and its associated paving (974) was backfilled and overlain with a mixture of loam and rubble (964) containing pottery sherds of 13th- to 15th-century date and a fragment of lead sheet. Building F was deliberately backfilled with redeposited gravel (737).

A general demolition horizon, represented by spreads of building rubble (contexts 701 & 963), extended across much of the area. A loamy soil (612), containing pottery of 14th- to 16th-century date, subsequently formed over it.

#### *Phase V: post-medieval garden (17th–19th century)*

The area was ultimately levelled and landscaped, and a deep topsoil (contexts 103, 969 & 976), 0.4–0.7m deep was formed. It contained occasional rubble, mortar and pottery dating from the 13th–18th century. Two midden disposal pits were cut through the garden soil: Pit 812 with a fill (context 811) containing material dating to the 17th century, and Pit 980 with 18th-century backfill (context 965).

It seems likely that during the post-medieval period the area was devoid of structures and was used as a garden. A formal garden, known as the Abbey Gardens, is depicted on the north half of the site on the First Edition Ordnance Survey map of 1861; to the west, fronting on to Abbey Court, was a row of five buildings; to the south, on part of the old glebe, was a wood-yard. The yard was occupied by a series of buildings, a weighing machine, saw-pit and crane. Croall's coachworks, the predecessor of the Croall Bryson garage, was established on the site in 1866 (*Rutherford's Directory, Kelso*). The original coachworks, with its deep basement, occupied the area of the old wood-yard. Later structures associated with the coachworks and garage expanded onto the area of Abbey Gardens.

#### POTTERY (illus 5)

Julie Franklin

The assemblage numbered 490 sherds, almost all medieval in date and relating to the occupation of

the Abbey. The largest group came from the backfill (1010) of a Phase I storage pit (1013). Dating to the mid-12th century, the material is among the earliest pottery produced in medieval Scotland. A large group of such a secure early date is rare and is focused on separately.

Similarly dated pottery was found at Kelso Abbey during Tabraham's excavations of 1975/6 (Tabraham 1984). Pottery from pits of his earliest phase is thought to date from the second or third quarter of the 12th century (Haggarty 1984, 397). There are parallels between the two assemblages but also some interesting differences.

#### PHASE I: PIT ASSEMBLAGE

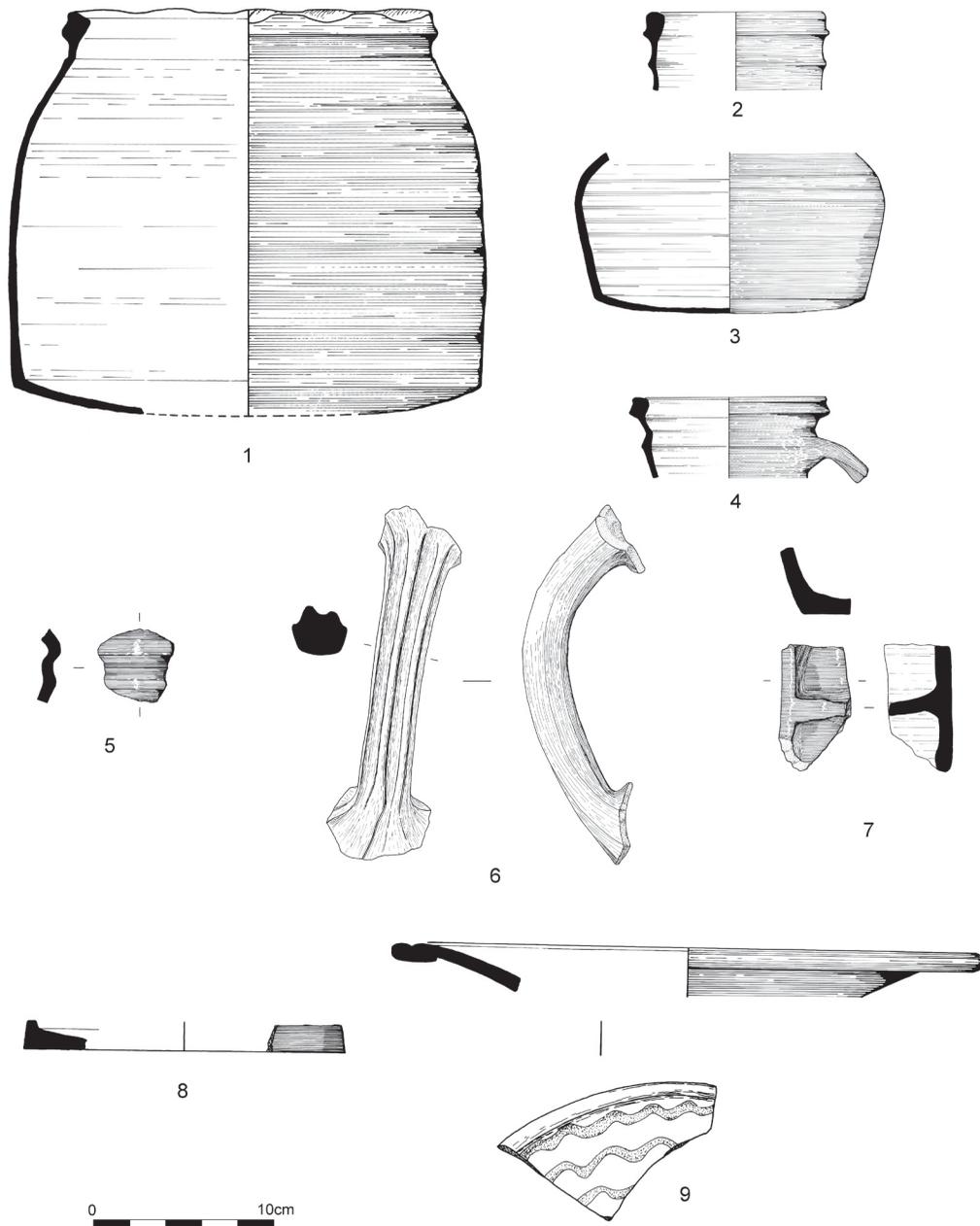
Almost all of the 179 sherds were of locally produced pink gritty fabric, typically pale pink or pale orange in colour, sometimes partly reduced to grey. They included a cooking pot, complete excepting most of the base (illus 5.1). It was globular in form with a decoratively thumbled rim. Extensive sooting around the walls suggested it had been well used.

Most of the other sherds appear to be from jugs, a minimum of seven to judge from the various rim forms. Two are illustrated (illus 5.2 & 5.4), together with the rather squat-bellied base profile (illus 5.3) that probably belongs to one or other of these vessels. Another sherd is possibly from a shaped tubular spout or a cresset lamp (illus 5.5). One or possibly two jugs had decoratively thumbled bases, but the only other decoration was a sherd with horizontal rows of rouletted squares (cf Tabraham 1984, 388, illus 19.24). A handful of sherds were green-glazed and one piece of base was covered in an internal yellow glaze.

There were also two sherds of imported wares. One was of a fine pale pink fabric, covered in a thick golden yellow glaze. The other was a coarser white ware with a bright mottled green glaze. Both are unidentified but are probably from England or possibly France.

#### OTHER SCOTTISH MEDIEVAL WARES

Most of the other medieval sherds were of the same fabric as those from the Phase I pit but there were also some 60 sherds of White Gritty Ware. These too may have been produced locally. The earliest pottery from Tabraham's excavations was white in colour, although at Bridge Street the White Gritty Ware was concentrated mainly in Phases II and III. One base



ILLUS 5 (1) Cooking pot, thumbed rim, unglazed, sooting on base and lower walls, SF 135, F1010, Phase I; (2) jug rim, SF 135, F1010, Phase I; (3) jug base, probably from same vessel as above rim, SF 135, F1010, Phase I; (4) jug rim, remains of glaze on handle, SF 135, F1010, Phase I; (5) tubular spout/cresset lamp, thin exterior green glaze, SF 135, F1010, Phase I; (6) condiment dish, mottled bright green glaze extends over whole interior and on exterior walls, SF 3, F701, Phase IV; (7) jug handle, glazed olive green, F106, Phase II; (8) cooking pot base, thinly glazed on interior, sooted exterior, SF 80, F1051, Phase IV; (9) slipware dish, glazed over interior under rim, decoration appearing red on yellow, SF 17, F731, Phase IV

sherd appears to be from a straight-sided cooking pot (illus 5.8), a type found in Tabraham's 12th-century pits. This is the only evidence on the Bridge Street site for this form in the assemblage. Unfortunately, it was found in a redeposited abandonment layer (context 1051) of Phase IV.

There are also a handful (25 sherds) of Reduced Wares and Redwares that can be dated to the later medieval period. These were found in two contexts related to Phase III surfaces (1009, 966) and in several Phase IV demolition layers.

#### BELL MOULD

Two sherds of a coarse ceramic bell mould (not illustrated) were found in Zone 8, unfortunately unstratified but presumably contemporary with medieval activity. The inner surface has been blackened through use and one piece clearly shows the shape of the rim of the bell.

#### IMPORTED MEDIEVAL WARES

The most interesting of the imported sherds is a piece of a rectangular condiment dish (illus 5.7), a type of small, divided dish for use at table. It was recovered from building rubble (context 701) of Phase IV. Such dishes are rare. The only known parallels come from the south-east of England and date to between the late 12th and late 13th centuries (Cook et al 1969, 94; Pearce et al 1985, 44). The Bridge Street example is crudely slab-built, of a reduced sand-tempered fabric and is covered internally in a thick, bright-green glaze.

There is also a sherd (not illustrated) with crude slip decoration, a spot and an applied ridge, glazed over, appearing orange on olive green. The fabric is gritty, the decoration crude and it is possibly of local manufacture, although such decoration is unusual.

The other imports are a variety of small, generally undiagnostic green-glazed sherds, probably English or French in origin. These include a thumbled Yorkshire jug base (unstratified) and a grooved rod handle (illus 5.6), probably also from Yorkshire, which was recovered from the levelling horizon (context 106) of Phase II. Both date to around the 13th or early 14th centuries.

#### POST-MEDIEVAL WARES

The post-medieval assemblage comprises 20 sherds ranging from the 17th to the 19th century. These

include large sherds from a slipware dish (illus 5.9), an early tin-glaze hand-painted handle junction and a sherd of Throsk-type ware, all dating to around the 17th century. The sherds were recovered from contexts associated with the abandonment of the Abbey and the formation of the post-medieval garden soil (Phases IV & V).

#### DISCUSSION

The larger pottery assemblage from the 1975/6 excavations (Tabraham 1984) provides a useful reference to the Bridge Street material. Both are characterized by many near-complete vessel profiles from securely stratified early pits, followed by a scatter of smaller and generally undatable sherds. Most of Tabraham's vessels were large, straight-sided White Gritty cooking pots, of which there is only one identified sherd in the Bridge Street assemblage. However, also from his earliest phase, there were two cooking pot sherds with decoratively thumbled rims, identical to that of the complete Phase I cooking pot. In terms of fabric, most of Tabraham's assemblage was of White Gritty sherds, less commonly the dominant pink fabric found on Bridge Street.

Early Redwares were found at Jedburgh Abbey (Haggarty & Will 1995) including several decoratively thumbled rims from 12th-century deposits. These were possibly from Northumbria, specifically a 12th-century kiln in Newcastle. At Jedburgh, the possibility of a pre-white ware tradition with links to the south suggested occupation on the site before the Augustinian arrival around 1138. However, the pink and pale orange gritty fabrics from Bridge Street appear to be a variation of the White Gritty tradition and the globular cooking pot form implies a slightly later date than the material from Tabraham's pit, dominated as it is by straight-sided pots. A date in the second half of the 12th century is implied for the Bridge Street pit.

The differences in imported pottery between the two Kelso sites are more defined. The only imports from the 1975/6 excavations are 15th–16th century in date. On Bridge Street there is no identified pottery from this period. There appears to be a gap in the sequence from the 15th–17th century, although this may reflect the size of the assemblage and the inherent difficulty in dating local pottery. The lack of any large, deeply stratified sites in the Borders has resulted in the pottery sequence remaining less well understood than that from the east coast burghs.

Jedburgh, like the Bridge Street site, has a similar dearth of early imports. Its pre-15th-century assemblage of imported pottery comprised 11 sherds of Scarborough-type ware, compared with two from the present Kelso site. Yorkshire wares are the most commonly imported pottery up the east coast of Scotland and its presence here is not out of the ordinary. The presence of a condiment dish from the south-east of England, however, is unusual. This is believed to be the only condiment dish identified in Scotland and implies not only strong links with east coast trade but also that a high standard of living was enjoyed by at least some of the Abbey's inhabitants.

Of the four Border abbeys to have produced large pottery assemblages (Cruden 1953), Kelso and Jedburgh are the only two to have 12th-century material. The Melrose and Glenluce Abbey collections have been dated from the 13th century onwards (Cruden 1951; 1953). It is interesting to note that both Kelso and Jedburgh had strong links with France. Canons from Beauvais were invited to settle at Jedburgh (Lewis & Ewart 1995, 2), while Kelso was the daughter-house of Tiron. As Haggarty (1984, 396) has already pointed out, work such as pottery-making was part of the Tironensian monastic life and it was

possibly they who brought the craft to an aceramic Scotland. Beauvais has resources of fine white firing-clay and was later to become a major centre of pottery production (Hurst et al 1986, 105). The pattern of pottery development at both Kelso and Jedburgh may owe much to French techniques and tastes. The production of white wares at both sites is possibly a desire to copy the white pottery of Northern France. The initial red or pink ware stage at both sites, and the introduction of the later white wares, may suggest that sources of white firing-clay were not found until some time after the initial establishment of these two Border abbeys. This parallel development may also be indicative of a greater degree of contact between these two abbeys. It may well be that the Scottish medieval pottery industry, at least in its inception, owes more to France than to its nearest neighbour, England.

#### OTHER FINDS (Table 1)

Julie Franklin

All the finds, with the exception of a piece of intrusive glass waste, are from medieval contexts. The only

TABLE 1  
Miscellaneous finds

<i>Phase</i>	<i>Context</i>	<i>Find</i>	<i>Material</i>	<i>Quantity</i>	<i>Description</i>
I	938	107	Copper alloy	5	1 round flat object, poor condition, diam 15mm; 4 fragments of sheet
II	808	36	Copper alloy	1	Large lace end, tube made of rolled sheet, slightly tapering: length 79mm, thickness 5mm
III	221	25	Iron	35	4 nails; 27 nail shafts, mainly straight, some hammered; 4 lumps
III	720	153	Iron	8	3 nails; 4 nail shafts; 1 rod/thick shaft bent to L shape, 80×65mm
III	907	91	Lead	1	Strip 54×15mm
III	1025		Coarse ceramic	1	Roughly rounded ball of brick-type ceramic, seems to have been shaped from fired ceramic rather than specially made, diam 22–27mm
IV	737	21	Glass	1	Glass waste, large lump, dark green: post-medieval
IV	901	105	Copper alloy	1	Sheet, irregular, 37×24mm
IV	964	182	Lead	1	Sheet, ragged 45×27mm
IV	968	122	Copper alloy	1	Shaft/wire, square-sectioned, bent into large curve, length 79mm, thickness 5mm
IV	1059	90	Lead	1	Sheet, bent with hole at one end, 35×25mm
V	103	22	Worked stone	1	Piece of column/spiral stair, diam 90mm, length 92mm

recognizable copper-alloy object was a large lace end (SF 36), 79mm long, which was recovered from a chipped green sandstone surface (context 808) associated with the reorganization of the site at the end of Phase II. Lace ends of this size have been found in London, though they become less common after the mid-14th century (Egan & Pritchard 1991, 290).

Several pieces of lead sheet from a series of Phase III and Phase IV deposits may be remains of, or off-cuts from, lead roofing. Two late Phase III contexts (221 & 720), surfaces in the east and west rooms, respectively, of Building C, also produced large amounts of structural ironwork, mainly nails. These may derive from the remains of roofing or other structural features.

A curious find was a small, not quite spherical, ball of coarse ceramic, 22–27mm in diameter, which seems to have been fashioned from brick or tile, rather than specially made. It was recovered from the fill (1025) of Pit 1024 (illus 4), the large pit in the west room of Building C. Although soft, it could have been used as an impromptu piece of sling shot.

## THE ANALYTICAL EXAMINATION OF THE COPPER-BASED INDUSTRIAL WASTE

Effie Photos-Jones

A total of 16 samples of metallurgical waste were presented for examination and analysis (Table 2). The material comprised metallurgical ceramics (including partially heated to completely vitrified clay), crucible slag and metal scrap. Of these, only the latter two groups were subjected to analytical examination. The metallurgical ceramics were far too friable to undergo any type of analysis other than visual examination. The aim of the investigation was to establish the type of metallurgical activities on site, in particular with reference to two Phase III pits (1024 & 1026) which contained the majority of the metallurgical waste.

### ANALYTICAL INVESTIGATION

#### *Methodology*

All 16 samples were examined macroscopically and, when necessary, with the stereo-microscope. Five samples were selected for examination and analysis with a scanning electron microscope with an energy

dispersive unit (SEM–EDAX). The samples were cut, mounted on slow-setting metallographic resin and ground and polished with a series of diamond pastes. They were subsequently carbon-coated prior to SEM examination and analysis.

#### *Results of SEM examination and analysis*

**Kelso 1** (context 1025) Amorphous lump of metallic bronze scrap enveloped by a layer of weathered metal and ‘slag’, c 4cm long axis, c 1cm thick. This is a fragment of leaded tin bronze scrap. The composition of the ‘slag’ layer enveloping the metallic phase consists of a calcium copper silicate, rather uncharacteristic for a crucible slag.

**Kelso 2** (context 1025) Scrap of metallic bronze with substantial amount of earth adhering. The matrix consists of a copper–tin alloy with lead. Darker grey inclusions in the matrix correspond to copper sulphide and copper–iron sulphide. Enveloping the metallic phase of this scrap metal fragment is a ‘slag’ consisting of unreacted silica grains, inclusions of metallic copper with traces of lead, white inclusions of lead and inclusions of a copper silicate phase consisting of copper, silicon, iron and aluminium. Relatively high quantities of chlorine in the form of copper chloride were also detected.

**Kelso 3** (context 1025) Fragment of highly fired ceramic displaying gradient in colour and degree of firing (black vitrified interior to red sintered exterior) with metallic inclusions as well as fragments of charcoal, trapped within; glassy and smooth on the surface. This is an alumino-silicate with small amounts of copper, tin and iron. The composition of the metallic prills varies from leaded tin bronze to copper with (phosphoric) iron inclusions.

**Kelso 6** (context 1025) Amorphous lump of vitrified porous slag with many fine red (copper oxide) prills dispersed throughout the black ‘glassy’ phase, mostly dark grey-black but also with patches of green evident at many places. Fragments of charcoal were also noted trapped within the glassy mass. Dimensions: c 4cm long axis, 3cm short axis. This is an alumino-silicate with small amounts of copper, tin and iron within the matrix. The composition of the metallic prills varies extensively.

**Kelso 8** (context 1025) Flat, triangular-shaped stone with liquid metal or slag on its surface. The sandstone

TABLE 2  
Copper-based industrial waste (SEM-EDAX samples shown in bold)

<i>Sample</i>	<i>Find no</i>	<i>Context</i>	<i>Phase</i>	<i>Comments</i>
<b>Kelso 1</b>	<b>112</b>	<b>1025</b>	<b>III</b>	<b>Copper-based scrap metal</b>
<b>Kelso 2</b>	<b>112</b>	<b>1025</b>	<b>III</b>	<b>Copper-based scrap metal</b>
<b>Kelso 3</b>	<b>112</b>	<b>1025</b>	<b>III</b>	<b>Crucible fragment, vitrified as result of usage</b>
Kelso 4	157	1009	III	Amorphous lump of glassy crucible slag
Kelso 5	185	1025	III	Copper-based scrap metal, severely weathered
<b>Kelso 6</b>	<b>112</b>	<b>1025</b>	<b>III</b>	<b>Amorphous frothy lump of crucible slag with green staining</b>
Kelso 7	110	995	IV	Copper-based scrap metal, severely weathered
<b>Kelso 8</b>	<b>65</b>	<b>1025</b>	<b>III</b>	<b>Stone with slag residue</b>
Kelso 9	70	1027	III	Fragments of thick-walled crucible, probably unused
Kelso 10	69	1027	III	Fragments of thick-walled crucible, probably unused
Kelso 11	160	1009	III	Fragment of thin-walled crucible
Kelso 12	113	1025	III	Fragments of crucible, including possible tuyere fragment
Kelso 13	56	1007	II	Fragment of crucible, probably unused
Kelso 14	177	993	III	Natural ferruginous material
Kelso 15	111	1025	III	Waterlogged fragments of crucible
Kelso 16	95	1064	III	Stone with slag residue

is heated but had only green staining impregnating the surface. On section, a glassy purple mass is discerned with metallic coppery red inclusions. This is a very interesting sample of a very inhomogeneous composition. It is a silicate-rich slag produced from the melting of an alloy resembling gunmetal or the quaternary alloy copper–tin–lead–zinc, its inhomogeneity reflected in the varying relative ratio between the four metals.

## DISCUSSION

John Duncan, an ecclesiastical cleric visiting the Abbey in 1517, describes Kelso as a centre for both religious and commercial activities. Because of the importance the Order placed on manual labour, it attracted craftsmen who wished to practice their art in the seclusion of a monastic order (Tabraham 1984, 366). Bronzsmiths would almost certainly have been included in their ranks, and the ‘waste’ of their labours can clearly be attested among the material analysed here.

Excavations at Kelso Abbey, carried out in 1975/6, produced only a limited number of non-ferrous artefacts (Tabraham 1984, 377). These included a hook, pin, plate and some sheet metal fragments, also some lead artefacts consisting of strip and sheet

metal and iron artefacts like small knives. This rather unimpressive collection cannot possibly reflect the quantity and perhaps diversity of copper-based objects that could have been available, given the Abbey’s status.

The same story emerges from the catalogue of pieces from Jedburgh Abbey (Lewis & Ewart 1995, 84). There are quantities of scrap copper-based alloy, also some clippings and pieces of sheet metal. Some of the pins had considerable traces of tinning but again no analytical data are available.

The present material is divided into three groups: metallurgical ceramics (including partially heated to completely vitrified clay), crucible slag and metal scrap (Table 2). The scrap metal recovered is minimal and does not amount to more than 100 or 200g. On the basis of the analyses it is clear that at least two types of metals were worked: leaded tin bronzes and quaternary alloys resembling gunmetal.

The composition of Scottish medieval copper-based alloys is not well-documented and what exists is still largely unpublished (K Eremin, pers comm). In the long term it would be essential to be able to match the analysis of metallurgical waste from copper-based alloy preparations with the analysis of contemporary artefacts themselves. This scrap metal may be the product of one of two processes:

the remelting of metal for the purpose of recasting into new shapes, or alloy preparation.

Kelso 1 and Kelso 2 represent scrap metal of the same type, perhaps the same melt. The alloy composition comprises *c* 80% copper and *c* 13% tin together with small amounts (*c* 4%) of lead. Small copper sulphide inclusions point to the type of copper ore, a mixed sulphide. The weathered metal is enveloped within a 'slag' that comprises either calcium copper silicate or aluminium copper silicate. The latter is very much in concordance with other types of crucible slags from elsewhere in the British Isles (Tylecote 1986, table 8.13). None of the samples analysed can be classified as copper-smelting slags, lacking the characteristic phases like fayalite, wustite and others associated with copper smelting.

The ternary alloy of copper, tin and zinc, and the quaternary alloy of copper, tin, zinc and lead were used very extensively from the Roman period onwards. The nearest modern equivalent is gunmetal comprising either 5% tin, 5% zinc and 5% lead, or 7% tin and 2% zinc, the remainder being copper (Tylecote 1986, 38). The presence of pure phases like copper oxide, tin oxide or lead (oxide) suggests that, in reference to Kelso 8, this quaternary alloy was being produced from raw metal. The alloy had particularly good casting properties and was thus favoured. Sometimes additional lead was added to the melting alloy to facilitate the melting process.

Kelso 8 represents a trial gone wrong. Possibly the crucible was removed from the furnace with the metal still molten, ready to be poured in a nearby mould. Left to rest momentarily on the cold sandstone surface, the crucible may have gone into thermal shock, resulting in the cracking of its base and subsequent spilling of its contents onto the stone. It should not be assumed that the stone formed part of the hearth, only a resting-place for the crucible. This is attested by the lack of evidence for heating and the superficial reaction of the stone surface with the molten metal and its associated crucible slag.

Kelso 3 and Kelso 6 are fragments of crucibles used in the making of the above scrap. Most of the other ceramic fragments have been classified as belonging to crucibles, based on wall thickness (*c* 2–3cm) and gradient in heating. Therefore there are crucibles that clearly have been exposed to usage and others that have never seen action. Heating was certainly applied from within. This means that charcoal was placed within the crucible and air-blown via a tuyere. One such fragment may be included in the collection of Kelso 12. Crucible walls appear to have been built

in layers. This was one way of building up strength in the absence of adequate refractory materials. Another way, the one implemented in the making of Kelso 13, is with the addition of small fragments of charcoal and crushed slag. It may be argued that some of the ceramic fragments, which show no sign of vitrification but only a gradient in heating, belong to moulds rather than crucibles. Among these may be the ceramic bell mould fragments identified by Franklin (this paper).

It may be argued that apart from providing the monastic order with pins, buckles or other items of everyday use, the Kelso Abbey craftsmen may have been involved in bell-casting or indeed in casting larger decorative or devotional artefacts for the Church. It is noticeable, for example, that the ceramic fragments appear to derive from large vessels and the collection also includes one or two fragments of crucible slag of relatively substantial dimensions (*c* 10cm×6cm). Such fragments could have only been produced within large crucibles.

## FAUNAL REMAINS

David Henderson

The site produced a small assemblage of faunal remains, derived from hand-collection and sieving. The limited data available from this small collection cannot lend themselves to detailed analysis. General conclusions that can be made are that the material is consistent with a site of consumption of faunal remains, although a small amount of primary butchery (dividing the carcase, removing the lower leg and foot bones) also occurred. From the thorough breaking of the larger cattle bones for marrow, and the extraction of brains for consumption, it would appear that the carcasses were used intensively, to extract the maximum nutrition from each slaughtered animal. The Phase III pit (1024), associated with bronzeworking waste, also contained cattle, sheep and probably chicken bones, as well as the remains of cod, herring and haddock.

The mix of species is typical of medieval Scottish sites, dominated by cattle and sheep, but with less pig and goose and chicken also present. The cod bones, comprising those from the head, suggests access to whole fish. Although Kelso is inland, over 30km from the sea, the good communication with the coast provided by the River Tweed would not prevent the inclusion of fresh sea-fish in the diet.

It is impossible to establish whether the cattle and sheep consumed had been raised specifically for meat, or if the secondary products of milk, traction or wool were more important, with only a surplus and older animals culled for consumption. The state of preservation of the bone indicates that much of it had lain around on the surface of the ground for some time, and was available to the depredations of scavenging dogs and rats.

## THE CARBONIZED PLANT REMAINS

Mhairi Hastie

### METHODOLOGY

Thirteen samples were subjected to a system of flotation and wet-sieving in a Siraf-style flotation tank. The floating debris was collected in a 250µm sieve and, once dry, scanned using a binocular microscope. Most of the samples contained substantial amounts of carbonized material including cereal grains, weed seeds and wood charcoal. Preservation of archaeological botanical material was, in all cases, by charring.

All identifications were made with reference to the modern comparative collection of Headland Archaeology Ltd, seed atlases (Berggren 1969; 1989) and wood atlases (Brazier & Franklin 1961; Schweingruber 1982). Botanical nomenclature broadly follows that of the *Flora Europaeae* (Tutin et al 1964–80).

### RESULTS

#### *Cereals*

The most common component was cereal grain, with barley, oat, wheat and rye present. Grains of oat and barley were the most frequently encountered. Most oat grains could only be identified to the level of *Avena* sp. However, a small number of oat florets were recovered from a late Phase II levelling deposit (context 1007), from an extensive late Phase III burnt horizon (context 221) that extended across the floor in the north-east corner of Building C and from the fill (1025) of a Phase III rubbish-pit (1024). The majority was identified as *Avena strigosa* (small/bristle/black oat), which implies that the bulk of the naked grain was also of this species.

Barley grains were recovered from all but one sample. Preservation was generally very good and

the majority could be identified as the hulled variety. Straight (symmetrical) and twisted (asymmetrical) grains were identified where preservation allowed. A ratio of 1:1.6 straight to twisted was recorded, potentially indicating that the six-row variety was present. Small numbers of barley rachis fragments were also recovered. However, preservation of these was poor and it was not possible to distinguish between the two-row and six-row variety.

Wheat and rye grains were also recovered, although in far fewer numbers than barley and oat. Overall morphology of the wheat was typical of *Triticum aestivo-compactum* (bread/club wheat). It is, however, impossible to distinguish between *T. aestivum* (bread wheat) and *T. compactum* (club wheat) purely on the morphology of the grains. Separation of the varieties relies on the chaff being present and none was recovered. Small quantities of rye grains were identified and four rye rachis internodes were recovered from the late Phase III burnt horizon (context 221).

#### *Wild taxa*

A variety of wild or weedy taxa were present in most of the samples, with elevated concentrations in those contexts containing large numbers of grain. The most commonly encountered were seeds of *Chenopodium album* (fat hen), *Agrostemma githago* (corn cockle), *Centuarea nigra* (lesser knapweed), *Galeopsis* sp (hemp-nettle) and members of *Vicia/Lathyrus* sp (vetch/pea families), *Graminae* sp (grass family), *Rumex* sp (dock) and *Caryophyllaceae* indet (chickweed family). The majority were common elements of arable land; corn cockle is specifically associated with cultivation. It is therefore likely that most of the seeds were growing as weeds in the fields along with the rest of the cereal crops and were brought to the site as crop contaminants.

The samples also contained a small quantity of *Carex* sp (sedges) and *Menyanthes trifoliata* (buckbean/bogbean). These wild taxa cannot grow as weeds of cultivation and their presence indicates more acidic heaths and marsh land. Most commonly these plants were collected for use as, or along with, material used for bedding, packing, thatching and flooring.

#### *Potential economic species*

Seventy-two flax seeds were recovered from a sample of the late Phase III conflagration layer (context 221).

Flax is a very versatile crop and is cultivated for both its fibre and seed. The seed is most commonly used to produce linseed oil, though it can also be used for human consumption as part of a pottage, and the fibres are spun into linen. In addition, the straw can sometimes be used for thatching purposes (Walker 1996). It has been recovered from a number of Scottish archaeological excavations dating back to the Neolithic and is commonly found in samples from medieval sites. A single pea (cf *Pisum* sp) was recovered from the Phase IV infilling (context 610) of Building E.

#### *Wood charcoal assemblages*

Generally, the amount of charcoal recovered was small, with most samples only containing 10–50ml of charcoal, allowing the whole of each sample to be examined. Where samples contained over 500ml of charcoal they were sub-sampled randomly using a riffle box, with 25–50% of the sample being examined.

The most common components were oak (*Quercus* sp), birch (*Betula* sp) and alder (*Alnus* sp). In addition, small amounts of willow (*Salix* sp) and heather (*Calluna/Erica* sp) were also recovered. All species present could have grown locally and suggest that local woodland and heath were being exploited.

#### DISCUSSION

Major differences between the Phase I/II deposits on the one hand and the Phase III/IV deposits on the other, are evident both quantitatively and in terms of the range of species represented.

#### *Phase I/II deposits*

Two Phase I deposits (contexts 1023 & 1030 from Pits 1017 & 1031, respectively), and one Phase II deposit (106), a medieval levelling deposit, were examined. Few carbonized plant remains were present. Cereal grains were represented only by the occasional oat, barley and wheat grain. No weed seeds or chaff fragments were recovered. Wood charcoal was also present, albeit in very low concentrations. Only two species, oak and willow, were present. The charcoal fragments were extremely small and generally represent twigs and branches, probably indicating their use as firewood.

This low concentration of charred debris is most likely indicative of small-scale domestic activities. These may have taken place within the immediate vicinity although it is also possible that they were charred outwith the excavated area.

#### *Phase III/IV deposits*

The bulk of samples examined were recovered from deposits associated with Phases III and IV. In comparison with the earlier deposits, these samples contained a large quantity and high diversity of cereal grain, weed seeds, chaff fragments and charcoal.

The cereal element present was very similar in composition to the Phase I/II plant remains, with black oat, bere barley and bread/club wheat all present. Grain and chaff fragments of rye were also recovered. The low concentration of grain recovered from Phase I/II deposits, however, makes direct comparison difficult. Documentary evidence from the 13th century indicates that oat, barley, wheat and rye were all being cultivated on monastic land in the Borders (Symons 1959). The recovery of all four cereal crops from Kelso, therefore, fits into a well-established pattern for this area.

Overall, the later medieval contexts contained a high quantity of plant remains. The extensive burnt horizon (context 221) merits particular attention.

#### *Corn drying or storage?*

The burnt horizon (221) extended across much of the eastern side of Building C. The sample contained an extremely high concentration of plant material, just over 1000 cereal grains per litre of soil. The assemblage was very mixed containing cereal grain, weeds of cultivation, flax seeds and occasional fragments of straw, rush and monocotyledon rhizome. Flax, rye, wheat, barley and oats were all present. The quantity of charred grain was such that some sort of accident during processing or storage seems likely. The two most obvious sources of such quantities of burnt grain are from the destruction of storage facilities by conflagration or through accidental burning during the drying of crops.

Lands owned by monastic orders were consolidated into compact blocks and then divided into estates with their own granges. The granges were farmed by the lay brethren to produce goods specifically for the Abbey. Each grange would include, for example, dwelling houses, administrative offices, barns, stores, brew houses, stables and byres (Symons

1959). It is also most likely that any corn-drying kilns would have been located in the granges and that most of the crop-processing and corn-drying would have occurred outwith the Abbey precinct itself.

The assemblage from context 221 contains only a small percentage of weed seeds and chaff fragments (4%), being dominated by naked (that is, processed) grain (96%). This indicates that the cereal crops had to all intents and purposes been cleaned, having had the majority of wild taxa and chaff removed by winnowing and sieving. No evidence has been found to suggest that crop-processing was taking place within the area excavated and it is probable that the cereal crops were cleaned before being brought to the site. This, therefore, suggests that the spread of burnt grain relates to a storage building, such as a granary or kitchen, which was burnt down at some point during its use.

#### *Pit fills and medieval levelling layers*

Carbonized plant remains were also recovered from a number of Phase III and IV pits and levelling horizons. The plant remains signature was similar to that noted for context 221, albeit that concentrations were markedly lower. It would be entirely feasible that the charred assemblages from these contexts represent reworked material from the grain-rich spread (context 221).

#### *Charcoal remains*

A substantial quantity of wood charcoal was also recovered from Phase III/IV deposits. The variety of species present was greater than that recovered from deposits associated with Phases I or II. Oak and birch were the most common species present with lesser quantities of alder, willow and heather (*Calluna/Erica* sp). Most samples were recovered from pit fills and medieval backfill deposits. Most of the charcoal recovered was very small in diameter, suggesting that the bulk of the material represented small branches and twigs. The most common use for these would have been as firewood and it would appear that willow, alder and birch were the major sources so used.

One sample, forming a surface of possibly redeposited midden material (context 605) inside Building E, contained a very mixed assemblage with almost equal amounts of alder, birch, heather, oak and straw stem with small quantities of monocotyledon rhizome and rush stem (*Juncus* sp). Straw, heather and rush could have all been used as fuel, yet this material

was also collected for many uses such as thatching, bedding or packing material. In this case, however, it is impossible to distinguish between these functions as context 605 may contain a mixture of elements from a number of different sources.

A large number of birch fragments were recovered from a layer of burning (context 604) that overlay the north wall (603) of Building E. The birch fragments were 1–6cm in diameter and were the largest fragments recovered from the site. It is possible that these are either the remains of a firewood store or, perhaps more likely, the remains of a wattle superstructure.

## DISCUSSION AND INTERPRETATION

The limited nature of the fieldwork undertaken necessarily means that any detailed discussion or interpretation of the features observed can only be advanced tentatively. Nonetheless, there are three related key areas where the broader discussion of the site can be usefully advanced.

### ARCHITECTURE AND THE USE OF STONE

The earliest buildings on the Bridge Street site were provided with clay-bonded stone foundations. Those of Phase III, notably Building C, employed a sandy mortar bond. The same development was also noted in Tabraham's 1975/6 excavations where his earliest buildings, dated to the early 12th century, were formed of roughly squared sandstone blocks with stone pinnings set in clay. By contrast, the walls of the later infirmary building, dated to the period late 12th to 14th century, were set in a weak lime mortar mix (Tabraham 1984, 372–4). The extra-claustral buildings to the south-east and south-west of the Abbey church thus share certain constructional characteristics. There are, however, some important differences, most notably in the size and scale of the foundations of the Phase I structure, Building A. The sheer size of the foundation trenches for Walls 108 and 128, 2.5–2.7m wide, is paralleled only in the upstanding remains of the Abbey church itself and, archaeologically, in the foundation trenches

for the nave arcading which Tabraham (1972, 248, fig 2) identified in his 1971 excavation. The scale of these foundations, alone, would suggest that they must have borne a considerable weight, implying a structure of two stories or more in height.

The use of light blue or green sandstone is a recurrent feature of both the Phase I and Phase III buildings on the Bridge Street site. The same material was also used for paving. The stone, which probably derives from Sprouston quarry (RCAHMS 1956, 242; Simpson & Stevenson 1980, 23–4), 5km ENE of the town, was also used extensively in the construction of the Abbey church and was traced among the extra-claustral buildings investigated by Tabraham (1984) in 1975/6.

Spreads of this same material, in the form of green sandstone chippings, was also noted on both the Bridge Street development and during the course of the 1975/6 excavations. Noted there only in Phase I levels, Tabraham (1984, 399) suggested that the area to the south-east of the church may have been used as part of the building yard or masons' workshop during the primary construction period. The extensive nature of this deposit and the fact that it occurs both in Phase I and final Phase II layers, as a levelling off of the area prior to construction in Phase III, suggests an alternative explanation. It seems more likely that the material represents construction debris, undertaken *in situ* rather than prefabricated in the masons' yard, possibly augmented by material to form a constructed surface throughout parts of the precinct.

#### BUILDING ALIGNMENTS

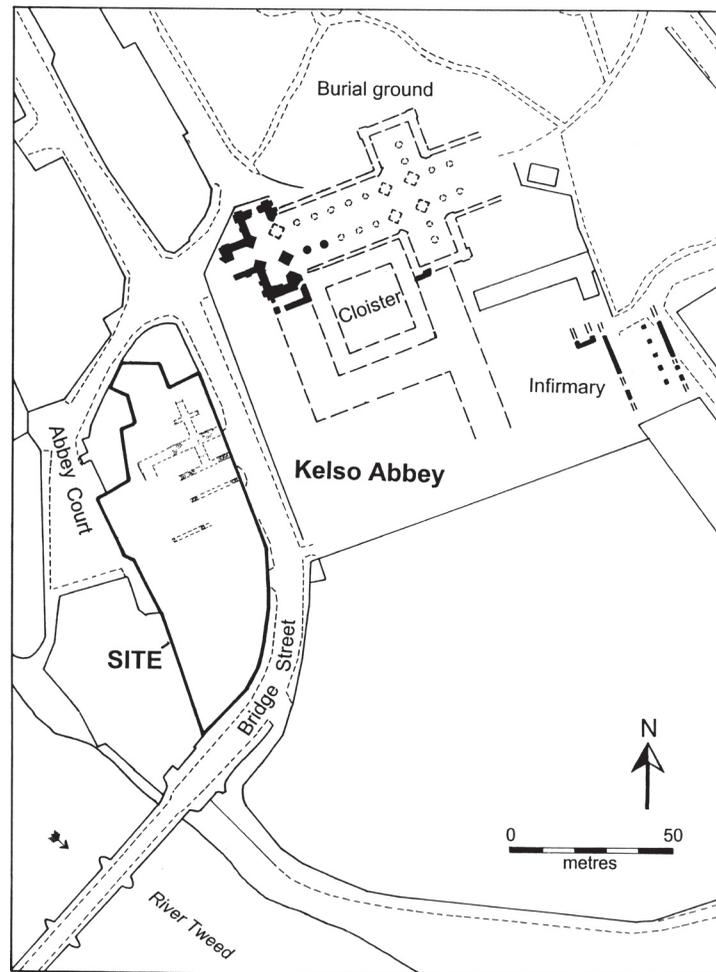
It is clear that the buildings of both construction phases were laid out on the same alignment, between roughly 66° and 68° east of north. This alignment lies parallel with or is perpendicular to the main body of the church and cloister to the east. The only significant departure from this trend was noted in Zone 9 where a robbed out foundation trench (807) extended across

the site at an angle of roughly 58° east of north. The feature is not later than Phase III, although it could of course be earlier. The feature is poorly understood. Its apparently anomalous orientation, however, is interesting given the regular layout that is apparent elsewhere on the site.

#### THE WEST RANGE AND WESTERN SECTOR OF THE PRECINCT

The identified buildings lie to the west of the cloister's west range. The west range of a medieval monastery typically accommodated the lodgings for the head of the house and guests on the first floor with an undercroft for the storage of provisions. In the south range was the refectory or *frater*, usually on the upper floor with a cellar underneath; meanwhile, the east range accommodated the *slype*, chapter house and warming-house with the monks' dormitory or *dorter* over. Ancillary buildings, such as the kitchen, pantry, buttery, bake-house, brew-house, barns, granaries and stables would tend to lie to the west or south-west of the cloister (Butler & Given-Wilson 1979, 68–71; Fawcett 1985, 21–3). Such an arrangement not only facilitated access between areas where foods were prepared and consumed, but also emphasized the essentially 'work-a-day' role of the south and west ranges; the west range in Cistercian Houses, for example, was given over entirely to the lay brothers who would have provided manual services to the community.

There was a general decline in the use of lay brothers after the 14th century; the Tironesians, in any case, given the emphasis that their Order placed on craft and industry, would presumably have had little use of such an arrangement. Nonetheless, there is something curious about the 1517 description of the cloister (quoted in the Introduction above) and its reference to two refectories, a greater and a lesser. It can be inferred, given the clockwise progression of the description, that these lay on the south and west ranges, respectively. Moreover, any idea that

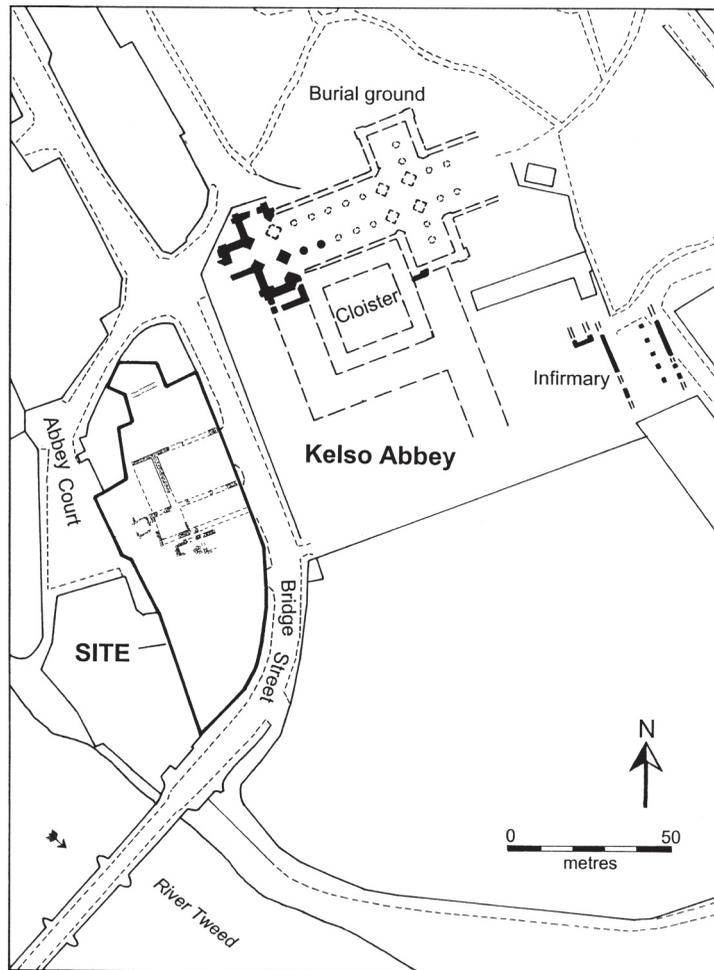


ILLUS 6 Block plan of Bridge Street Phase I structures, relative to the Abbey and the previously identified infirmary (after Tabraham 1984, illus 27, with additions)

the lesser refectory may have been the Abbot's can be dismissed as we are explicitly told that '(his) house is separate from that of the monks, but their table is in common'. Nor can the extra refectory have been required because monastic numbers were high: John Duncan tells us that, 'In the cloister there is usually the Abbot, the Prior, and the Superior; and in time of peace thirty-six or forty professed monks reside there' (RCAHMS 1956, 241), incidentally implying

perhaps that the monastic complement was then currently under-strength.

If the lesser refectory was not for the use of the Abbot or the monks, then some other element of the population must be looked to. John Duncan's references to 'many houses and lodgings' and the 'guest-quarters common to both English and Scots' would seem to provide the answer. It would suggest that the lesser refectory in the west range at this time was



ILLUS 7 Block plan of Bridge Street Phase III structures, relative to the Abbey and the previously identified infirmary (after Tabraham 1984, illus 27, with additions)

being used to service the guest-house, from which patronage and much-needed income could be derived. Servicing the refectories, and also providing a monetary or tithe income to the community, would have been the 'granaries and other places where merchants and the neighbours store their corn, wares and goods and keep them safe from enemies'. It seems likely, given what we know about monastic plans in general and what is known or can be inferred in particular at Kelso, that the granaries and stores would have

lain in the area to the south or south-west of the cloister. This is the context for the identification of the Phase III structure, Building C, as a granary. Located close to the river and adjacent to the ferry crossing, the building would have been well positioned to facilitate the uplift of goods brought by boat.

The eastern extent of the building is not known. Clearly continuing under Bridge Street, it possibly abuts the south-west external corner of the cloister, in line with the outside of the south

range. Although described by Duncan as ‘square in shape’ it should be noted that the precise extent of the cloister to the south, as depicted in illus 6 and 7 (after Tabraham 1984, illus 27), has not been determined archaeologically.

The Phase I buildings on the site may have performed a similar function. Evidence, however, is lacking and the notable differences that are apparent in the carbonized assemblages from Phase I/II deposits on the one hand and Phase III/IV on the other might suggest otherwise. Furthermore, it must be borne in mind that a community that was able and willing to completely re-landscape the site in Phase II would not necessarily have felt a compunction to replicate the design and layout of their earlier monastery but rather would have organized it to accommodate their current needs.

Little is known of the medieval topography of the site. The importance of the pre-modern river crossing has already been considered in connection with the granary but this was also the main access route into the precinct from the south. Possibly the gate-house which was destroyed in 1523 would have been located in this area. The route along Abbey Court would have led directly up to the imposing west-work of the Abbey church itself, with the granary to the right and probably the guest-house beyond. The guest-house possibly underlies Abbey Garden House, immediately to the north of the development area. Certainly a projecting range, accommodating the guest-house, was so located at both Arbroath Abbey and St Dogmael’s Abbey in Wales. Founded in 1178 and c 1115, respectively, both were Tironesian foundations.

## CONCLUSION

Much of the site has been preserved in situ. Any works in Bridge Street to the east, Abbey Court to the west or at the location of the former bridge and ferry crossing may, however, further elucidate the monastic ground plan and test

some of the ideas raised by this preliminary investigation.

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