TAYSIDE AND FIFE ARCHAEOLOGICAL JOURNAL

VOLUME ONE 1995

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ARCHAEOLOGICAL
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GLENROTHES

VOLUME ONE 1995

The journal is published in November each year to coincide with the annual TAFAC conference. The journal is available by post from the Fife Archaeological Service, Department of Economic Development & Planning, Fife Regional Council, Fife House, Glenrothes, KY7 5LT.

Submission of papers:

Notes for contributors are available. Offers of papers are welcome, and intending contributors should in the first instance contact the above address. Books for review are also welcome.

Front cover: St Andrews Cathedral Priory, St Rule's Church with Castle in the background (Crown copyright: Royal Commission on the Ancient and Historical Monuments of Scotland).

Back cover: Meigle Cross-Slab, 9th century (taken from P. Chalmers, 1848, *The Ancient Sculptured Monuments of the County of Angus;* Crown copyright: Royal Commission on the Ancient and Historical Monuments of Scotland).

ISSN 1360-5550

typeset by CRUITHNE PRESS, Glendower House, 5 Eglinton Gardens, Skelmorlie, PA17 5DW, Scotland

text printed and bound by Antony Rowe

Contents

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Introduction

As a museum archaeologist involved in the conservation and interpretation of archaeological material, I depend upon numerous other individuals and professionals, to help put the flesh on the bones of history.

In its work of conserving and raising awareness of the archaeological heritage of the area, the Tayside and Fife Archaeological Committee has relied on the commitment of this same spectrum of individuals and organisations since it was established as a liaison group in 1977.

The partnership of local authorities, Historic Scotland, the Royal Commission, district museum services, local societies, field archaeologists and specialist researchers has succeeded in making TAFAC an effective consultee on archaeological matters and has made the annual conference held each November a highly regarded platform for papers on local archaeological subjects.

The launch of the Tayside and Fife Archaeological Journal is therefore a natural progression for the Committee, which has for many years benefited from high quality conference contributions on research and fieldwork, deserving of publication.

The Committee is grateful for the support of Fife Regional Council and Historic Scotland in launching this Journal as an annual publication for papers with a local theme, but nevertheless of national interest.

The present volume includes papers devoted to such diverse topics as prehistoric rock art, Pictish stones, medieval urban excavations and industrial remains. Such a diversity of subject matter reflects the rich archaeological resource upon which we can draw in the everyday work of the Committee, upon whom we continue to depend. It is therefore to be heartily welcomed and, I hope, richly enjoyed.

Mike King
Chariman, TAFAC

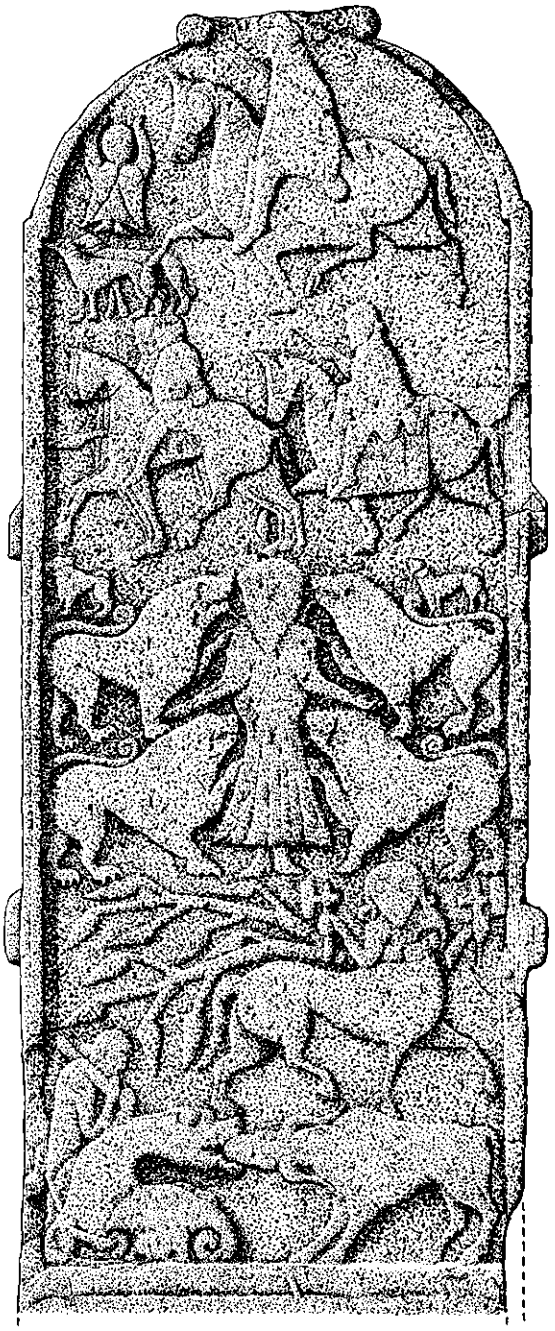
Meigle and lay patronage in Tayside in the 9th and 10th centuries AD

Anna Ritchie

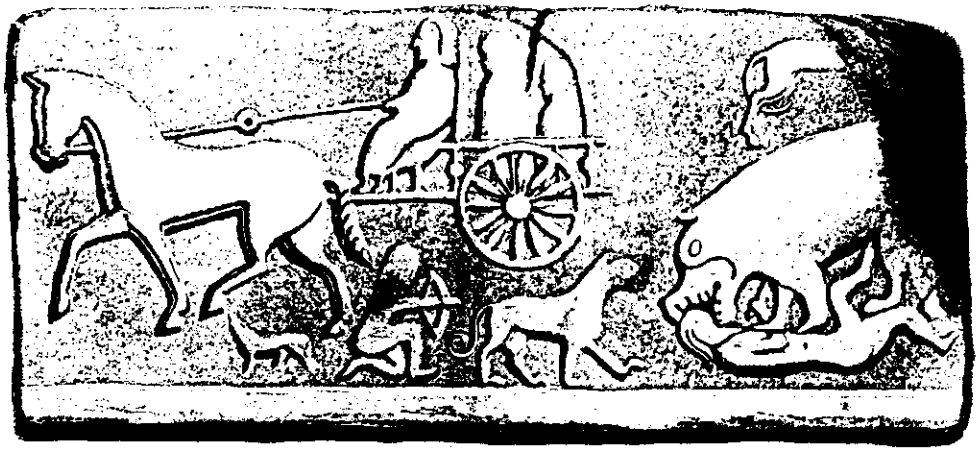
The recent publication of the Royal Commission's handsome volume on the archaeological landscape of South-east Perth rekindled my interest in the collection of sculpture at Meigle (RCAHMS 1994a). The fact that the two great cross-slabs are recorded as having stood on either side of the gateway into the churchyard prompted speculation as to whether anything remains to show the size and shape of the early ecclesiastical enclosure, and the Commission's superb drawings and photographs of the stones drew attention to the way in which some of them have been trimmed and even reshaped over the years. There was clearly more to this trimming than simply their transformation into convenient building blocks.

The assemblage of early medieval sculpture at Meigle is remarkable for the number of pieces that have survived, and the vicissitudes of fate that they have endured suggest that there were once many more. Romilly Allen listed nine Class II cross-slabs and twenty-one Class III stones, of which, by the time of his field-work in the late 19th century, seven were lost. The collection is now in the care of Historic Scotland and displayed in the old schoolhouse in Meigle. Since Romilly Allen's time, the number of known stones has increased by three fragments to thirty-three, comprising twenty-six cross-slabs or fragments of cross-slabs, three recumbent gravestones and one hogback, and two architectural panels (Allen and Anderson 1903, 296-305, 328-40). The size of the collection implies a considerable degree of patronage, and it will be argued that there was at Meigle a special form of lay patronage and that it was part of a wider picture of lay patronage in Tayside in the 9th and 10th centuries.

It is worth looking at the history of the collection in some detail, because it explains the condition of the stones and provides information about the sequence of churches at Meigle over the centuries from around AD 700 to 1869.



Illus 1. The back of cross-slab Meigle no 2; the central figure of Daniel under attack from lions was formerly interpreted as Vanora.



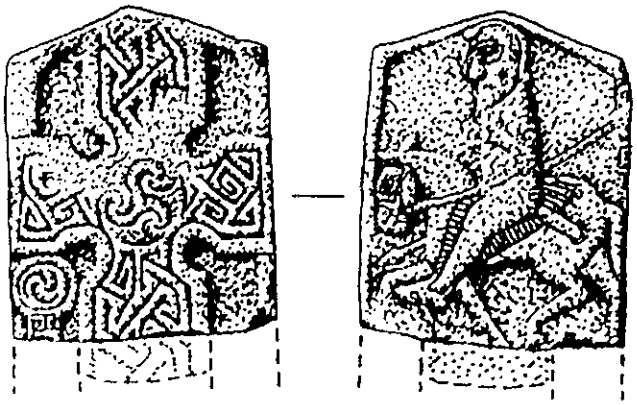
Illus 2. Stuart's drawing of the lost slab, Meigle no 10 (1856, pl LXXVI).

Early history of the carved stones at Meigle

Gordon mentions in 1726 that at Miggle, the delightful Tolkien-like name by which Meigle was then called, 'several stones are erected in the churchyard' which were traditionally known as Queen Vanora's grave-stones (162). This suggests that the stones were set close together, and an earlier reference by Hector Boece in the early 16th century implies some sort of grave-structure, for he records a tradition that, if a young woman walked over Vanora's grave, she would become permanently barren, like Vanora herself. (The folklore that has grown up around Pictish stones, including Meigle no 2, has been explored by McHardy 1994.) In 1772 Pennant wrote of the local belief that the grave had once been surrounded by three stones forming a triangle, although by the time of Pennant's visit the stones were 'removed to different places' (177-8); on balance, this triangular monument seems best ignored, since there is no supporting evidence.

Chalmers, writing in the mid 19th century, doubted not only Pennant's triangle but also the entire Vanora tradition at Meigle (1848, 10), preferring an attribution for the stones to the Thane of Glamis. This arose from his reading of John Pinkerton's record of a handwritten note by Henry Sinclair, Dean of Glasgow. Under the year 1569, Sinclair described a sculptured stone at Newtyle, south-east of Meigle, and Chalmers interpreted the description as relating to Meigle rather than to Newtyle (1848, 9). Chalmers was almost certainly wrong in his interpretation, and the lost stone from Newtyle, although very interesting, is irrelevant to this discussion of the Meigle stones.[1]

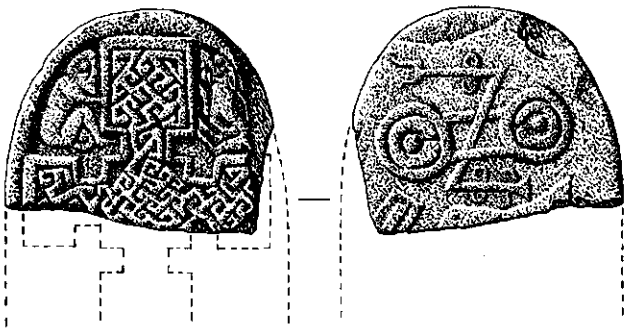
Returning to Meigle, the local minister, compiling his entry for the *Statistical Account* published in 1795, describes 'the remains of the grand sepulchral monument of Vanora'(506). 'That



Illus 3. The small cross-slab, Meigle no 3, was trimmed first with a basal tenon and later with a straight base.

monument seems to have been composed of many stones artfully joined, and decorated with a variety of hieroglyphical or symbolical characters, most of which are of the monstrous kind, and represent acts of violence on the person of a woman.' The latter remark seems over-zealous in the light of what survives at Meigle today, but its trigger was undoubtedly the popular interpretation of the central robed figure on the reverse of Meigle 2 as Vanora being torn apart by wild beasts (rather than the currently accepted biblical image of Daniel in the lions' den). Violence in the form of biting imagery has been identified by Isabel Henderson as the dominant element in the art at Meigle (1982, 94).

The tradition of Vanora's Grave relates to the Arthurian legends. Vanora was Queen Guinevere, Arthur's wife, who was locally believed to have been held captive on Barry Hill, near Meigle, and to have been seduced by a Pictish king, Mordred. When the hapless queen was returned to her husband, he was so enraged by her infidelity that he sentenced her to be torn apart by wild beasts. Her remains were then buried at Meigle and 'a monument erected to perpetuate her infamy' (*NSA*



Illus 4. The trimmed cross-slab, Meigle no 7.

1845, 234). This tradition may have derived from the early legend known among the Britons but is more likely to belong to the developed Arthurian cycle of the 12th century and later; it is one of the most northerly of the surviving traces of the legend, most of which are south of the Forth (Padel 1994, 30-1).[2]

The minister in the earlier *Statistical Account* records that 'Many other stones, which originally belonged to this monument, have been carried off, or broken in pieces, by the inhabitants of this place' (1795, 507). This local tradition of some sort of composite monument seems too strong to ignore, but what does it really mean?

At the very least it means that there were sculptured stones within the churchyard prior to the earliest record of Vanora's Grave in the 16th century, and therefore that they were in their original location, whether as tombstones or as part of an earlier church. They had been gathered up into a decorative monument, almost certainly beside the standing cross-slab no 2, regarded as commemorating Vanora's ordeal (Illus 1). One of the stones mentioned in the *Statistical Account* was no 10, the lost slab carved with a horse-drawn cart and an archer (Illus 2). This was found at the base of the cross-slab in 1805 (Jervise 1859, 245), apparently associated with one of two cists (Stuart 1856, xxiv); such an association seems unlikely, particularly as the slab had by then been trimmed to a neat rectangle, 3ft by 1ft 6in. The precise relationship between cists and the cross-slab is not clear from the note of the excavation, but the cross-slab appears to have remained in its original position, set into a stone base, until the late 19th century. Was the cart slab trimmed in readiness for its supporting role in the structure of Queen Vanora's Grave?

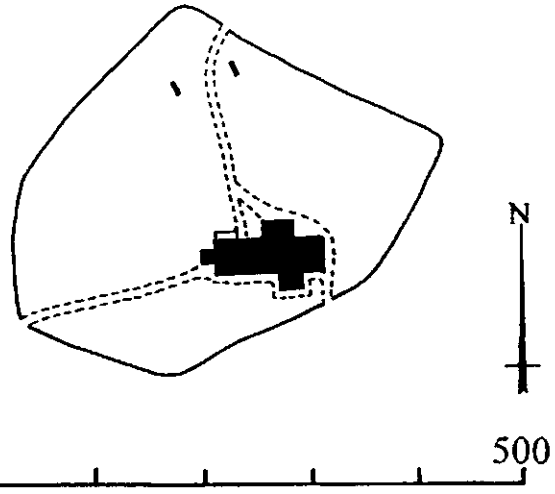
There is some evidence to support the idea that Vanora's Grave was a deliberate construction. The small cross-slab, no 3, is the upper part of what was once a taller monument. Today it has a straight cut beneath the horseman, but in the last century both Chalmers and Stuart illustrated a tenon beneath the line of the cut (Illus 3); the stone has thus been re-shaped twice, firstly to create the tenon and secondly to remove it. The tenon was presumably knocked off when the stone was incorporated into the wall of the parish church built in the late 18th century. The purpose of the tenon may have been to facilitate the incorporation of the stone into Vanora's monument. Another purpose is possible, for the size of the tenon appears to have been compatible with the slot carved into the recumbent monument no 26, but it is likely that the two monuments were too close in date for the re-use of the cross-slab to have been associated with the creation of the recumbent grave slab.

Several of the surviving fragments of other stones have been trimmed into convenient rectangular blocks, whether destined initially for Vanora's Grave or for later building. The heights of the trimmed fragments cluster between about 0.40m and 0.50m (the basal fragment of no 4 and nos 6, 7, 10). If they, and similarly trimmed stones, formed a kerb round a low monument set against the reverse of Meigle 2, their height would not obscure the 'Vanora' scene (Illus 4).

The early enclosure at Meigle

The great cross-slab no 2 stood in the churchyard to the left of the gateway on entering (Allen and Anderson 1903, 296). Around 1805, long after the monument had been dismantled, digging revealed two cists on the north side of the stone, and later excavation by Jervise uncovered burials on the south side of cross-slab no 1. The latter stood on the right-hand side of the gateway. This original gateway was to the north of the church, because both cross-slabs and the path between them are shown on the 1st edition Ordnance Survey 6-inch map of Meigle (1865); the two stones are shown with their long sides aligned south-west/north-east (Illus 5). It seems reasonable to assume that the cross-face of no 2 was set to the south-west facing the path and that 'Vanora's Grave' was to the north-east, where a grassy mound, more than a metre high, survives today. The churchyard is bounded on the north and east by buildings and modern roads and on the south by houses and by the old school which is now the Meigle Museum. On the west and south sides, the line of the original curvilinear enclosure is almost certainly preserved by the alignment of the existing churchyard wall.

The present church stands on the same spot as the 18th-century church and probably the original church, and they appear to have been approximately central to the original graveyard. The Meigle enclosure would thus have been about 100m across. A curvilinear enclosure of this size implies an importance beyond that of an ordinary rural churchyard (cf Thomas 1994, 21-3). There are two possibilities, either that this was the site of a



Illus 5. The plan of the church, churchyard and stones at Meigle in 1865; the curvilinear line of the churchyard wall on the west and south is likely to echo the early enclosure.

monastery, or that there was a major centre of lay power and patronage nearby, which was responsible for the church. The quantity of surviving sculpture has been interpreted as evidence of an early monastery (Macdonald 1984, 81; RCAHMS 1994a, 91-2, 130). There is an historical reference, in one version of the St Andrews foundation legend, to the work of Thana, son of Dudabrach, in the *villa* at Migdele (Meigle), in the time of King Pherath, son of Bergeth (Ferat/Wrad/Uurad, son of Bargoit), who reigned 839-42 (*Thana filius Dudabrach hoc monumentum scripsit regi Pherath filio Bergeth in villa Migdele*; Skene 1867, 188; Anderson 1922, i, 267; Davies 1982, 272, no 2; Clancy 1993, 349-50). This reference suggests that Thana was a scribe, perhaps a monastic annalist as Macdonald implied (1984, 73), but it is equally possible, and in the light of the reference to a *villa* more probable, that he was an ecclesiastical scribe in the royal retinue in the second quarter of the 9th century. Thomas Clancy has also come to this conclusion based on his work on the Drosten Stone at St Vigeans; the inscription on this monument includes the name of the same king, and Clancy suggests that 'both the centres of Meigle and St Vigeans were under his patronage' (1993, 350).

Monastic sculpture should show evidence of literacy or an interest in Christian iconography (Bailey 1980, 81-3; Craig 1994, 80). For such a large collection of sculpture, Meigle shows remarkably little biblical iconography. There are no images of David or of Paul and Anthony breaking bread in the desert, two of the themes most popular on Pictish monuments. Daniel and the lions on Meigle no 2 stand alone as a familiar salvation theme, and snake ornament is confined to the recumbent monument no 26. This sparing use of biblical iconography may support the idea that Meigle was a royal estate in the 9th century, but it also begs questions about the character and motivation of lay patronage, which are not currently answerable.

Later history of the carved stones at Meigle

In 1858, a malt-kiln was demolished at Templehall, some 70m north of the church, and proved to have four carved stones built into it, including the small cross-slab no 5. The parish church itself was destroyed by fire in 1869, and the ruins yielded a number of decorated fragments. The slab with the chariot (no 10) together with 'fragments of a beautifully interlaced cross' had by then been taken inside the church for safety and, ironically, were apparently destroyed in the fire, whereas stones built into the walls of the church were recovered (Jervise 1859, 244-5).

The place-name, Templehall, reflects the fact that the Knights Templar, the Knights of St John of Jerusalem, owned lands in Meigle in the 12th or early 13th centuries. Migdele is listed in a rental document of 1539-40 relating to the lands of the Preceptory of Torphichen; Torphichen belonged to the Hospitallers, who were given Templar properties after the abolition of the Templars in Scotland and England in 1312 (Cowan et al 1983, xxvi, lxxxiv, 28). According to Jervise, the church and its burial-ground were within the boundary of the Templars' lands (1859, 243), which may add support to the idea that Meigle was a centre of lay patronage rather than a monastery. It could also explain why Meigle appears not to have become a thanage, as did other places with notable sculpture, for example, Eassie, Glamis, Aberlemno and Monifieth, by the early 12th century. The function of a thanage was as a centre from which a royal official supervised the exaction of various dues from the areas of land tied to that centre, which would be inappropriate to lands held by the Knights Templar.

Records exist of the gift of the church at Meigle to the canons of St Andrews by Simon de Meigle, confirmed by King William the Lion c 1178x87 and by Pope Lucius III in 1183 (Stuart 1867, Notices of the Plates, 3; Cowan 1967, 145). The gift involved 'the church of Miggil, with its chapel and kirktoun, and the rents which Simon the lord of the ground and his predecessors used to draw annually therefrom'; this record confirms the lay character of the church prior to its gift to St Andrews. Its ecclesiastical patronage was then disputed in 1207 between the priory of St Andrews and the bishop of Dunkeld, and, once the right of Dunkeld was upheld, the Meigle teinds were granted by the bishop to the canons of Dunkeld (Cowan 1967, 145). Stuart records that the church at Meigle was dedicated to St Peter, but, if correct, this dedication may not go back beyond the early 12th century,

when, it may be surmised, a new church was built by the Knights Templar with the approval of King David I.

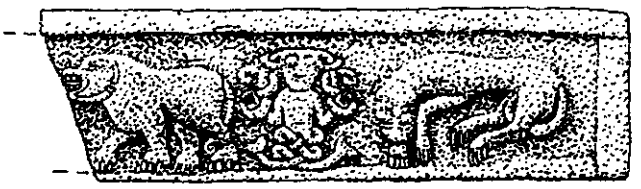
The original church was certainly replaced by a new church before the 16th century, by which time its architectural fragments were available for building Vanora's Grave. Its replacement was a cruciform building, the aisles of which were incorporated into the church built in the 1780s. There is no means of knowing whether any early sculpture was built into that church. At St Andrews in Fife, early sculpture was built into the walls of the 12th-century cathedral, but at St Vigeans in Angus, where a comparable body of sculpture to that at Meigle survives, much of the early sculpture seems not to have been incorporated into the walls of the parish church until the restoration of 1872. Indeed St Vigeans provides a graphic example of how carved stones can be shifted even within the confines of a kirkyard: the cross-slab no 2 was first discovered in use as a paving stone within the church, later seen upright in the kirkyard by Stuart in 1856, in 1872 built into the new north aisle of the restored church, and in 1960 removed to the St Vigeans museum.

From the evidence that we have, the following sequence of buildings at Meigle seems acceptable: a church was built in the 8th or 9th century; it was replaced by a cruciform church sometime before the end of the 15th century and probably in the 12th century; this in turn was replaced by a new church towards the end of the 18th century, retaining two aisles (presumably transepts) of the old church; the 18th-century church is shown on the 1st edition OS map but was burned down in 1869, and the present church was built soon afterwards.

Architectural sculpture

One of the extant Meigle stones and one of those known to have been lost represent architectural sculpture rather than free-standing or recumbent monuments. No 22 is one end of a narrow panel which may well have been part of a decorative string-course on the wall of a building (Illus 6). Flanked by beasts is an elaborated human figure which has been identified as a siren or merman (Hicks 1993, 149). This panel, carved on one side only and bearing a pronounced moulded frame, is only 0.09m thick and 0.25m high, and it seems best interpreted as part of a decorative string-course (the wear on the stone would be consistent with such a use). Evidence of similar string-courses, 0.23m to 0.30m high, which included animal motifs, exists at Hexham and elsewhere in England (Taylor 1961, 16).

Meigle no 10 is a decorative panel including a cart scene which is likely to have been part of a



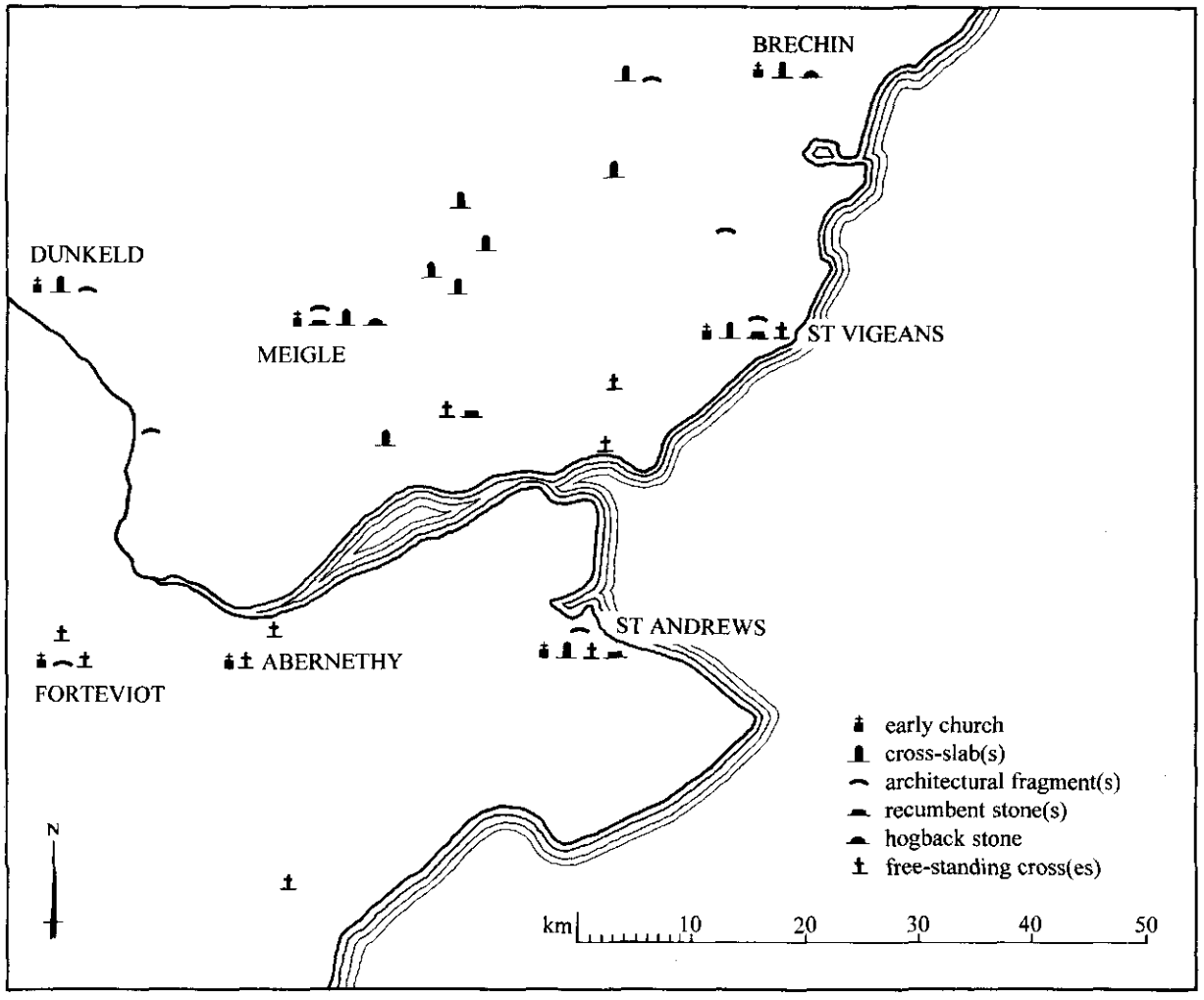
Illus 6. Meigle no 22, which may have been part of a decorative string-course.

frieze or perhaps part of a low screen, such as those used in early continental churches to separate the chancel from the nave (Taylor 1961, 17).

Both of these architectural pieces imply a church at Meigle with some architectural sophistication. Moreover, the great cross-slab no 2 is furnished with tenons at the top and sides, as if designed originally to slot into some internal screen. Little is known of the pre-12th century churches of Pictland, and some, as the RCAHMS notes, 'may have been fairly grand and elaborate buildings' (1994, 130). We may reasonably assume that none in southern Pictland was built in stone prior to King Nechtan's request by letter in the early 8th century to Abbot Ceolfrith for the help of Northumbrian masons to build 'a stone church' (Bede V, 21). By the late 8th and 9th centuries, however, stone churches built through wealthy lay patronage may well have rivalled those in northern England.

Other narrow decorative panels which may have belonged to architectural string-courses have been found at St Vigeans (no 8), Dunblane (no 2) and Kinnell (unfinished?), and parts of ornamented panels have been found at St Vigeans (no 20), Dull (with dimensions very similar to Meigle no 10) and Dunkeld (unfinished, no 1) (Illus 7). The architectural panel from Murthly in Perthshire has a deep lower border similar to that from Papil in Shetland, and both may relate to slab-built shrines or altars rather than to strictly architectural decorative friezes (Thomas 1971, 153-6; Thomas also identified a corner post from such a shrine from Monifieth in Angus, 1971, 152-3). The Murthly animal and human motifs belong to the same taste in sculpture as the Meigle recumbent monuments. The dejected horseman drinking from a horn on the slab from Bullion, near Invergowrie, Dundee, was seen by Stevenson as part of 'a sculpture in relief' (1959, 43-5), perhaps a frieze, but this is such a unique work that it is difficult to relate it to recognised types of sculpture.

Although Pictland lacks any evidence for decorated doorways or porches in the Northumbrian manner, there is the uniquely splendid sculpted stone arch from Forteviot. Its relatively unweathered condition suggests that it was perhaps the arch of the west door into a church,



Illus 7. Distribution map of 8th/10th-century sculpture in the Meigle area.

protected by a tower porch (Alcock and Alcock 1992, 226-7).

Any of the architectural pieces just described could have come from an important secular building rather than a church, but the latter application seems on balance more likely, particularly as there survives no sculpture from Scone, despite its known status as a royal site. Looking at the distribution of architectural stone carvings (Illus 7), Forteviot and Dunkeld are known from historical evidence to have been royal centres, while Meigle and St Vigeans possess unusually large sculptural collections and are both more likely to have been centres of lay patronage than to have been monasteries. The evidence for Meigle has already been discussed. In the case of St Vigeans, from the topography of the site one might infer that the church on the steep knoll is more likely to have accompanied an adjacent secular centre than a monastery, where, because of the lack of space on the knoll, the other monastic buildings would have been inconveniently distanced from the church. On the other hand, there is evidence of literacy at St Vigeans in the form of the inscription on the Drosten stone (Clancy 1993), and literacy is often an indicator of monastic sites.

There may be, however, an even more significant difference between St Vigeans and Meigle. The original dedication of the church is known at St Vigeans but not certainly at Meigle, where the later tradition of a dedication to St Peter cannot be taken back beyond the 18th century. Does this imply a break in the sequence of churches at Meigle? Is this why the early medieval sculptures were not used as building material until the late 18th century? Was this important centre of late Pictish secular patronage abandoned by the end of the 10th century, after the creation of the hogback monument?

The ratio of surviving sculpture to the original corpus of early medieval sculpture may vary somewhat between sites, but the major collections today are likely to reflect the major sculptural centres of the 8th to 10th centuries. In Strathclyde, for example, the Govan assemblage stands out as a reflection of a major ecclesiastical site, now considered to have been a lay cemetery and church

rather than a monastery; with a sarcophagus, two cross shafts, two early cross-slabs and thirty-six 10th-century cross-slabs and five 10th-century hogback tombstones, Govan remains, inexplicably, the early medieval church site most lavishly endowed with sculpture in the whole of Scotland. There are strong artistic links between the Govan sarcophagus and the Meigle assemblage, and the exuberance of the Meigle recumbent no 26 is such that the former existence of a comparable Meigle sarcophagus might almost be assumed if it were not for the fact that no two-piece sarcophagi have been found north of Govan (the hollows in the underside of the recumbent monument at Kincardine, Ross-shire, are surely later and unrelated to its original function; Allen and Anderson 1903, 85).

Abernethy is clearly another early ecclesiastical site where one might hope to find some trace of the original enclosure. As at Meigle, it is the west side of the enclosure that appears to have survived best, marked by the curvilinear line of the later churchyard wall; the rest of the perimeter can be no more than a best guess from the various domestic boundaries shown on the 1st edition OS map.

North of the Clyde and Forth rivers, the major assemblages of early medieval sculpture include St Andrews with its slab-built shrine, at least three cross shafts and some thirty-five cross-slabs, Meigle with nine symbol-bearing cross-slabs, twenty other sculptures and one hogback, and St Vigeans with six symbol-bearing cross-slabs and twenty-one other carved stones. Two of the extant Meigle stones are, as we have seen, likely to have been architectural pieces (nos 10, 22); two of the St Vigeans stones are also likely to have been architectural fragments (nos 8, 20), and at least two at St Andrews (nos 37, 38). The Forteviot collection is likely to be a mere fraction of what once existed: fragments of cross-slabs and free-standing crosses (nos 1, 3-6), the great arch (no 2) and the nearby Dupplin Cross.

Stones with protruding tenons suggesting use as part of internal screens are known from Meigle no 2 and St Vigeans no 10, while Menmuir no 2 with its basal tenon may have fitted into a socket in a recumbent tombstone. Oddest, perhaps, of all the trimmed stones is St Vigeans no 7; if the intention was to create a semblance of a free-standing cross, the job could have been better executed.

All these sites possessing architectural fragments are candidates for embellished stone churches. The presence of recumbent tombstones, four each at Meigle and St Vigeans and one at Strathmartine, are likely to indicate secular patronage.

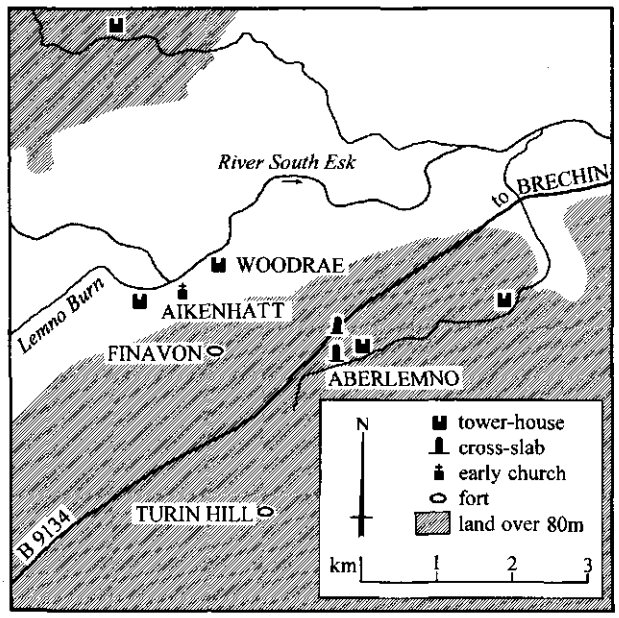
Absences can be as informative as surviving material. Why, given the strength of Scottish influence in this area from the 9th century, are there no free-standing crosses at Meigle or Brechin? Why are there no tall narrow slabs carved with crosses on bases, which Isabel Henderson has identified as characteristic of the 9th century (1978, 49, 52-4)? Yet the strong sculptural tradition of the Picts that dominates the Meigle collection survived the political takeover of Pictland by the Scots around 843 and even assimilated the new fashion for hogback tombstones in the 10th century. The animal head carved on the crest of the hogback is clearly derived from the animal heads at the foot of the cross on the cross-slab no 5, and there is no reason to doubt that the same workshop produced both monuments. There is need for intensive art-historical analysis of the Meigle collection, in particular to identify how much of the sculpture is likely to have been created after the Scottish take-over of southern Pictland.

Among other negative puzzles of the survival pattern of early medieval sculpture is the paucity of stones at Brechin and Abernethy, given the historical evidence for an ecclesiastical community at Brechin by the 970s and at Abernethy in the 8th century. Like the Strathmartine symbol stone, found at some distance from the later churchyard, the Pictish symbol stone at Abernethy should probably be regarded as quite separate from the later history of the ecclesiastical site, effectively commensurate with the lack of symbol-bearing stones from St Andrews. There is local knowledge of more sculpture built into houses and gardens in Abernethy, however, and the same may well be true of Brechin. Both would reward sympathetic field-work.

Aberlemno

At Aberlemno in Angus, there is evidence of a different sort of lay patronage to that at Meigle. The surviving stones comprise two major monuments alongside the modern road between Forfar and Brechin and a third in the relatively modern churchyard. Yet the name, Aberlemno, means the confluence of the Lemno Burn, which flows into the River South Esk to the north of the modern Aberlemno. The earlier church is likely to have stood at the confluence of the Lemno and the South Esk, where, on the 1st edition OS map (sheet 33, 1865), there is marked the site of a church known as Aikenhatt. The site lies on flat ground, overlooked by the fort on Finavon Hill, less than 1km to the south-east.

The minister compiling the report for the *New Statistical Account* came to the same conclusion (1845, 626). Although by then the Aikenhatt, or Aikenhauld, area had been annexed to the adjacent parish of Oathlaw, it had originally lain in Aberlemno parish; this may have been the site of



Illus 8. Map of the Aberlemno and Aikenhatt area.

the church granted to Jedburgh in about 1242, whose parsonage revenues appear to have been devoted to the use of the independent cell of Restennet by the 15th century (Cowan 1967, 3). The churchyard wall of Aikenhatt, 'in which were a number of monumental stones', was taken down and used to build an embankment along the Lemno early in the 19th century (*NSA* 1845, 302). These 'monumental stones' may have been the last vestiges of the earliest church of Aberlemno, perhaps including lost Pictish stones.[3]

If the original church at Aberlemno were in the valley below, why are the three extant Pictish stones on the higher ground to the south? Both the symbol stone and the early 9th-century cross-slab known as Aberlemno Roadside appear to be in their original position, and the cross-slab known as Aberlemno Churchyard from its position in the modern churchyard may have been moved there from the adjacent field, closer to the other stones. Why should these three stones be located here rather than where the earlier church was built in the valley to the north?

The answer is surely linked to the location on the same ridge of land of the forts on Finavon Hill and on Turin Hill, and of the route along that ridge eastwards to Brechin (Illus 8). There is no good dating evidence for the two forts on Turin Hill, but there are four thermoluminescence dates, clustering around AD 640, for the vitrified wall-core of the fort at Finavon, which suggest that it was used in early historic times (Sanderson, Placido and Tate 1988). In this context, the Aberlemno symbol stone could be seen as a boundary or route marker and the two later cross-slabs as prayer crosses along the ridge. In addition to the three Aberlemno stones, there are also, of course, the symbol stone from the adjacent farm of Flemington (RCAHMS 1994b, 21; Small and Thoms 1985, 12-13) and the cross-slab that was built into the foundations of the tower house at Woodwray (Allen and Anderson 1903, 242). The Woodwray (or Woodrae) cross-slab may have come originally from the churchyard at Aikenhatt.[4] Also shown on the map are the tower houses in this small area, markedly profuse and testifying to the continuing attraction of its fertile soils.

Conclusions

The consistent pattern of evidence discussed above suggests that there was a considerable degree of lay and even royal patronage in Tayside during the 9th and 10th centuries. The take-over of Pictland by the Scots in the mid 9th century appears not to have resulted in any great hiatus in the traditions of stone carving, whether for secular memorials or for church building, although in time the decorative and technical quality of the sculpture deteriorated (Henderson 1978, 54-5, 57-8). At Meigle there seems to have been a break between the end of royal patronage around AD 1000 and a new phase of lay patronage apparently connected with the Knights Templar beginning in the 12th century. Because of this chronological and cultural break, the great body of early sculpture at Meigle was not, as sometimes happened elsewhere, built into subsequent churches until post-Reformation times.

Local traditions about Vanora's Grave at Meigle are likely to relate to a low structure built using fragments of early sculpture and incorporating cross-slab no 2, built sometime before the 16th century; some stones appear to have been trimmed and even shaped for this purpose.

Fragments of architectural sculpture at Meigle and elsewhere imply that the fabric and furnishings of some of the early churches were embellished by decoration.

At Aberlemno, where two great cross-slabs are at some distance from the site of the early church, there is likely to have been lay patronage of a different kind, which resulted in the erection of prayer crosses along a major route to Brechin.

Acknowledgements

This paper was given at the TAFAC conference in November 1994, and I am grateful to TAFAC both for the invitation to speak and for the opportunity to publish here. I am very grateful to Katherine Forsyth, Isabel Henderson, Graham Ritchie, Patrick Ashmore and Sally Foster for their helpful comments on the draft of this paper. Unknown to me, Katherine Forsyth had written her undergraduate thesis on Meigle, and I am grateful to her

for her forbearance in going over old ground as well as new; she also drew my attention to the paper by Oliver Padel (1994). My thanks go to John Borland for drawing illus 5, 7 and 8, to Kevin Maclaren and Ian Fleming of NMRS for help with OS sources and to RCAHMS for allowing me to reproduce illus 1-4 and 6 (Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland).

Notes

1. The note for 1569 reads: 'At the Newtylde thair [is] ane stane, callit be sum the Thane Stone, iii eln of heicht, v quarteris braid, ane quarter thik and mair, with ane cors at the heid of it, and ane goddes next that in ane cairt, and twa hors drawand hir, and horsmen under that, and fuitmen and dogges, halkis and serpentis: on the west side of it, ane cors curiouslie grauit; bot all is maid of ane auld fassane of schap. It is allegit that the Thane of Glammis set thir tua stanis quhen that cuntrey wes all ane greit forrest' (Chalmers 1848, 9).

   Chalmers decided that Newtylde, or Newtyle, was a mistake for Meigle, probably on the grounds that a 'cairt' or cart was mentioned, which tied in with Meigle no 10 (although the Meigle cart contained two passengers rather than 'ane goddes), and that 'tua stanis' or two stones were mentioned, which he felt must relate to Meigle nos 1 and 2 (here, for clarity, the ECMS numbers are used in preference for Chalmers' own plate numbers).

   It seems clear, however, that the entry relates genuinely to two stones at Newtyle, a small village to the south-east of Meigle, of which one was already missing by 1569. The Thane Stone described in the entry was approximately 9 ft high, 3ft 10 ins wide and 9 ins thick ('iii eln of heicht, v quarteris braid, ane quarter thik'), with a cross at the top of the east face and panels of decoration below which included 'ane goddes' in 'ane cairt', and horsemen, footmen, hawks and serpents; the west face bore 'ane cors curiouslie grauit', probably a cross with interlace decoration. This description does not fit any stone at Meigle, although the former existence nearby of another chariot/cart carving comparable to that at Meigle is a reassuring confirmation of the latter, otherwise unique, depiction.

   A church was founded at Newtyle by William the Lion in 1178 (Cowan 1967, 157); it was replaced in 1767, and a new village on a grid-plan was laid out in 1832 (*NSA* 1845, 558-67). No trace of the earlier church or of the two cross-slabs survives, but the level of the churchyard is raised well above that of the surrounding land, suggesting some antiquity. The earliest visible gravestones date to the 17th century.
2. Oliver Padel also discusses the reference in the early 12th-century *Liber Floridius* to Arthur's palace in Pictland, which was decorated with sculpted scenes of his deeds and battles (1994, 6); Padel accepts the identification of this *palatium* with Arthur's O'on near Stirling. Arthur's O'on was, however, a plain, undecorated building (Brown and Vasey 1989), and its attribution to Arthur should not obscure the possibility that the *Liber Floridius* refers to another building. The likeliest candidate is the Pictish and Scottish royal centre at Forteviot (Alcock and Alcock 1992, 219-27), where the surviving sculpture is such that a highly embellished building such as that attributed in the *Liber* to Arthur would not be out of place.
3. Field-work failed to locate any sculptured stones apart from a very small fragment with a curving pecked line. The land here is some 5m above the confluence of the Lemno and the South Esk and has clearly suffered erosion, to the extent that a stone and concrete embankment has been built to contain the damage; there are stones gathered at the field edge, and larger slabs both on the slope below and below water-level. By the time that the Ordnance Survey recorded the site in 1865, it consisted of a small plot of fir trees and even this does not appear on subsequent maps.
4. This would add another phase to the recorded history of this stone, which, after its discovery at Woodwray, was presented to Sir Walter Scott and erected in his garden at Abbotsford in the Borders; Scott later gave it to the Society of Antiquaries of Scotland for their Museum of Antiquities in Edinburgh, now the National Museums of Scotland. According to the OS Name Book for Forfar (p. 38), two sculptured stones of similar height were discovered and sent to Abbotsford, but nothing is known of the second stone, if indeed it existed.

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Prehistoric rock-carving in Angus

John R Sherriff

Introduction

The contents of this paper were delivered in the form of a short lecture to the Annual Conference of the Tayside and Fife Archaeological Committee in Perth in 1993, the principal purpose being to highlight several recent discoveries of cup marks and cup-and-ring marks in Angus District, and to set those carvings into some form of historical context by providing a brief account of previous discoveries. Debated aspects of date and function were not examined, but the author favours the following opinion: that the practice of cup-marking began at least as early as the fourth millennium in eastern Scotland; that cup-and-ring marks are mainly a late Neolithic phenomenon, as outlined by Burgess (1991); and that the carving of both had largely died out by the end of the third millennium BC. That carvings exist on and within a range of monuments, including standing stones, stone-circles and cairns, cannot be ignored, but where evidence for re-use cannot be demonstrated, an early date for the monument rather than a later date for the carvings can be proposed with equal certainty.

Except in the most general terms, the subject of distribution was not discussed, but the research into both distribution and siting recently undertaken in Galloway (Bradley et al 1993) certainly provides a valuable pointer to the direction that future work in Angus might go.

All of the known Angus carvings have been brought together in a gazetteer at the end of this paper, and numerical references to carvings, both in text and in illustration, refer to this. When known, 8-figure national grid references have been given, as has the National Monuments Record of Scotland Record Number. Only the most useful bibliographic references have been given, and all dates mentioned are calibrated.

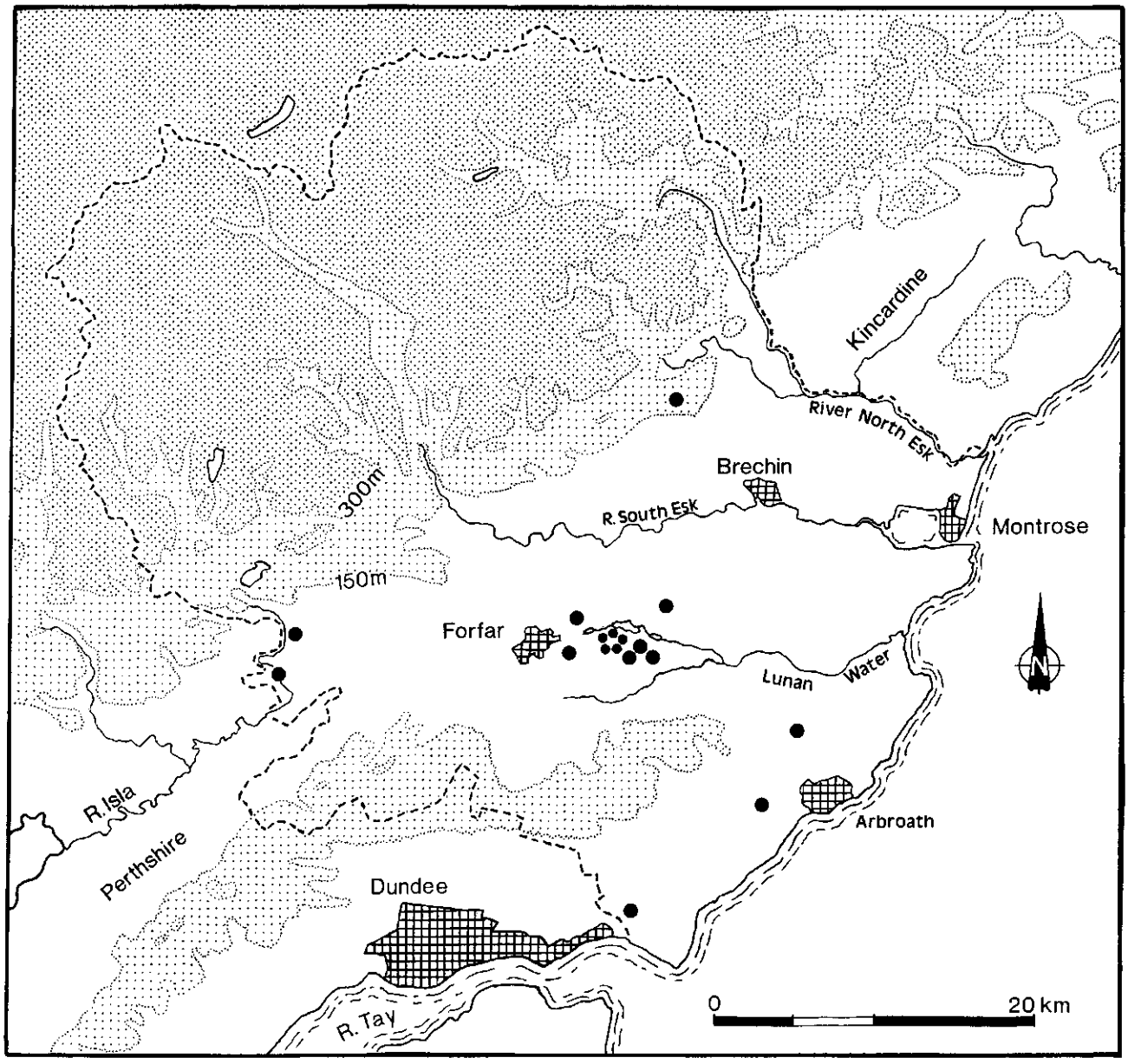
History

Until the mid-nineteenth century, there was little tradition of 'antiquarian' investigation in Angus, and when Simpson (1868) undertook his nation-wide survey of rock art, only seven examples could be cited from the area that is now Angus District. Of those, three (6, 20 & 32) had been found in souterrains, two others (7 & 42) may have been incorporated into a cairn and a cist respectively, and one (44) is a standing stone with cup marks. The seventh (10), alleged to have been found near Arbirlot, was unlocated until recently, but see below.

By 1882, when John Romilly Allen compiled 'Notes on some undescribed stones with cup-markings in Scotland', a further nine examples from Angus had been brought to light, and the distribution was beginning to hint strongly at the potential significance of the area immediately to the E of Forfar (Illus 1). Five of the discoveries (26–30) were made during agricultural work in the vicinity of Reswallie, 4km E of Forfar, where James Powrie, a noted geologist, had a family home and gathered the stones to form the collection which is extant today. Another of Powrie's collection (18), presumed to be of local origin, but apparently unknown to Romilly Allen, has found its way into Forfar Museum. Of the remaining discoveries, two (13 & 14) were discovered close to Dunnichen, a short distance to the S of Reswallie, another (47), a 'cup marked' boulder from near Woodhill, between Monifieth and Carnoustie (Jervise 1879, 331), is now lost, and the last (45), a massive, heavily cup-marked boulder, was found at the W end of the White Caterthun hillfort, near Brechin.

In the next ninety-eight years, discoveries of rock carvings were few and far between, with only twelve examples being reported up to 1980. There is no pattern to these discoveries, the methods by which they were found being as diverse as their distribution. Four (3, 4, 8 & 15) were found during the excavation of forts or souterrains; two (1 & 21) were noted on standing stones; one (12) derived from a demolished cottage; and another (2), with no known provenance but presumed to be local, was donated to Arbroath Museum. A further stone (16) was a surface find at the Finavon hillfort, and two (5 & 17) comprise decorated glacial erratic boulders.

A total of twenty-eight examples of rock art



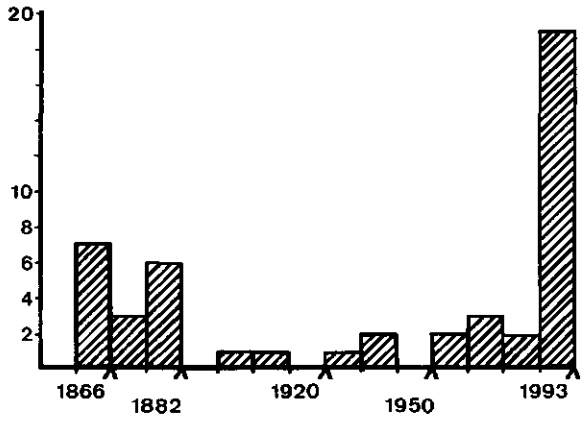
Illus 1. Distribution of recorded rock carvings in Angus in 1882.

found up to 1980 has since been augmented by a further nineteen, reflecting an increased interest in the subject by both amateur and professional (Illus 2). The effect of the more recent discoveries on the distribution map has been dramatic (Illus 4). The clustering of sites to the E of Forfar has to be acknowledged, even if that area has received more than its fair share of attention in recent years. That attention has been spearheaded by David Henry, who started the ball rolling in 1981 when he recognised a large cup-and-ring-marked boulder (22) built into the base of a dry-stone dyke close to his home at Mains of Balgavies, near Letham. Further discoveries were to follow on Mains of Balgavies (23 & 24), on the Hill of Finavon (19), at Restenneth Priory (25), and on Turin Hill (34–41), with a total of thirteen examples found by Mr Henry and the author between 1981 and 1986. Four examples (9, 11, 33 & 46) were found by other individuals and one (43) was reported by a farmer.

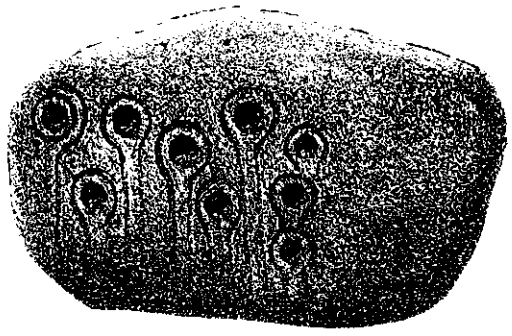
Another of the more recent discoveries (31) forms part of the collection of stones at Reswallie House. Evidently found after Allen's visit in 1882, but not included in subsequent Ordnance Survey Archaeology Division records or in the list of sites and monuments in the Lunan Valley and Montrose Basin (RCAHMS 1978), the stone was recognised by the author in 1988.

Professor Simpson

Notwithstanding the encouragement fostered amongst his contemporaries and, indeed, later generations, a potentially important legacy of Professor Simpson's work in Angus in the 1860s is his illustrations. Of the five decorated stones which



Illus 2. Bar chart showing frequency of discovery of rock carvings in Angus.



Illus 3. Simpson's illustration (1868) of rock carving at Craigend, Arbirlot.

he illustrated, one (32) is now inaccessible in a souterrain at Ruthven, two (7 & 42) are now missing, and a fourth (10), from near Arbirlot, has only recently been rediscovered. That particular stone is noted, rather unhelpfully, by Simpson as having been found 'about two miles from the Kirktown of Arbirlot', and his drawing (Illus 3) shows a distinctive grouping of cup marks accompanied by unusual key-hole-shaped ring marks. The stone was drawn by a Mr Gibb of Aberdeen, and it is more the configuration of the carvings than the accuracy of the drawing that allows the identification of a decorated stone (Illus 10:10) found recently on Craigend Farm, one and a quarter miles SW of Arbirlot, as that illustrated by Simpson (1868, plate 14:3).

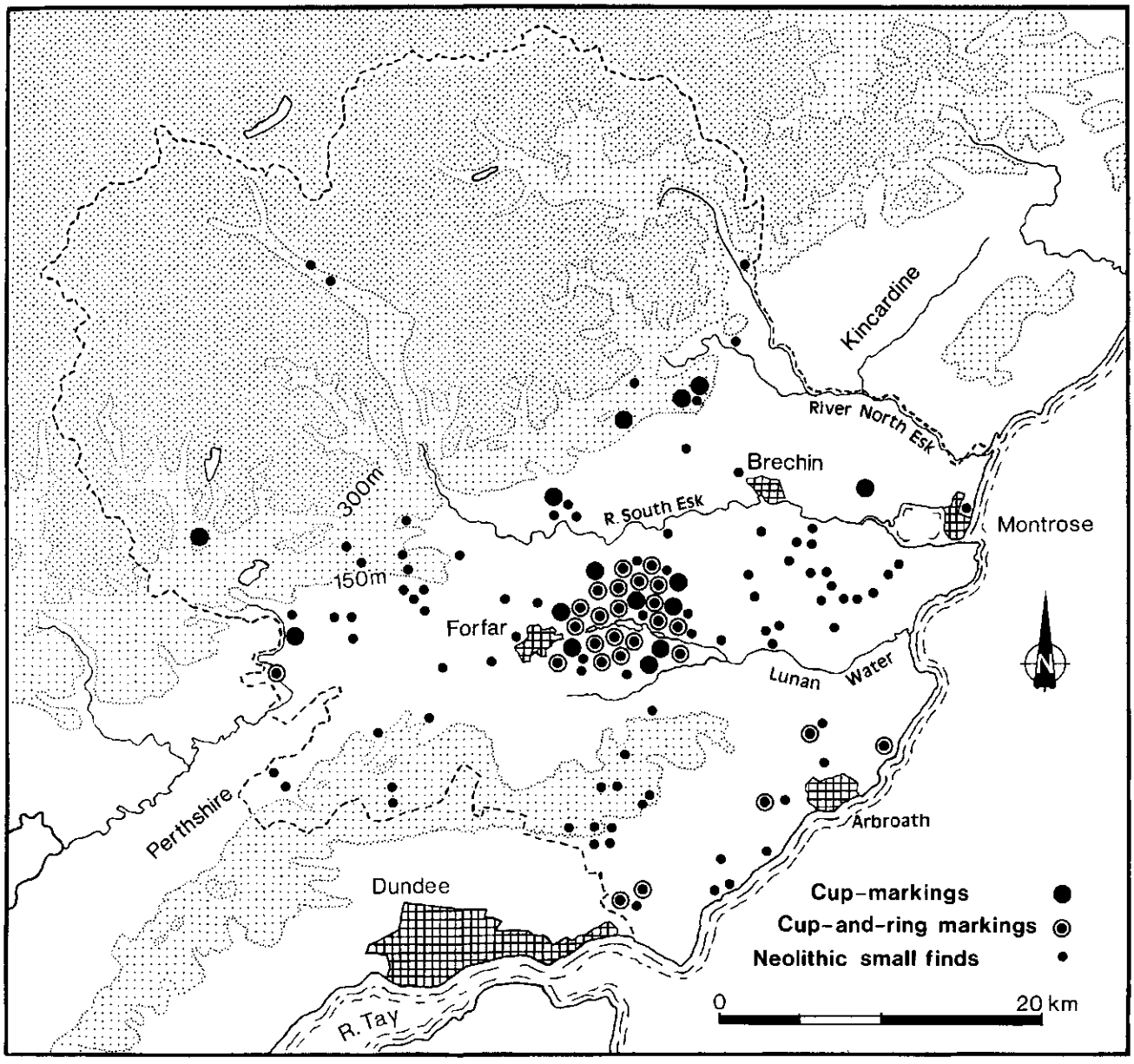
It would be wise to be cautious when using Simpson's illustrations, as absolute accuracy appears not to have been one of his priorities. For example, to illustrate a decorated slab from Welton (42), which may or may not have formed part of a cist, he used a drawing (Illus 5a) by a Reverend Shaw of Forfar, an illustration later re-used by Simpson and Thawley (1972). However, the clergyman was not a draughtsman or artist of any merit, and a later drawing (Illus 5b) by Romilly Allen illustrates how Shaw not only missed much of the detail of the decoration, but he also completely misrepresented the shape of the stone. We should, therefore, be equally wary when considering the accuracy of the drawings of the stones from Blackgate (7), a little to the E of Forfar, also drawn from an original sketch by Shaw, and from Ruthven (32), on the western boundary of the district. The Blackgate stone (Illus 6), allegedly found when a cairn in the centre of a stone circle was excavated, may have borne an un-cupped ring, a potentially early feature with affinities to some aspects of Irish rock art. This form of carving is otherwise unknown in Angus, though a recent example from Almondbank, W of Perth (Lowe 1988), provides some comparison. Unfortunately, the Blackgate carving has been lost for a number of years and Simpson's illustration, however accurate or inaccurate it may be, is the only record. Similarly, the precision of the drawing of the decorated slab which forms part of the roof of a souterrain at Ruthven Church cannot be assessed until some way can be found to enter the structure. Simpson's illustration of this stone was based on a sketch provided to him by a Dr Wise, an Irish friend perhaps best known for his 'excavations' at Dunsinane hillfort (Wise 1859).

Finally, there is the decorated roofing-slab at the Barns of Airlie souterrain (6), which Jervise (1865, 352–3) was inclined to think was natural, though he hedged his bets by stating that it could be artificial. Simpson, despite devoting a separate section to cup marks found in souterrains (1868, 39–42) appears to have been unaware of the site.

Romilly Allen

Rather more confidence can be felt about the work of John Romilly Allen, who illustrated a number of stones which survive today, with which his drawings may be compared. Allen was an engineer, well used to the concept of accurate draughtsmanship, who withdrew from that profession to follow his interest in recording carved stones. Though best known for his massive survey *The Early Christian Monuments of Scotland* (Anderson and Allen 1903), Allen had already worked on prehistoric material, publishing details of eight Angus stones (Allen 1882), seven of which had previously been unrecorded. His sketch-type illustrations belie their accuracy, and contrast markedly with the rather stylised drawings of Simpson. Allen's illustrations are particularly important with respect to the examples of rock art that are now missing.

In the spring of 1881 a cup-marked boulder (14) was found during ploughing near Dunnichen, about 2.5km S of Reswallie, and was recorded almost immediately by Allen (Illus 7). The stone is now missing and, coincidentally, a cup-marked boulder (31) has been added to the collection of decorated boulders at Reswallie since 1882, when



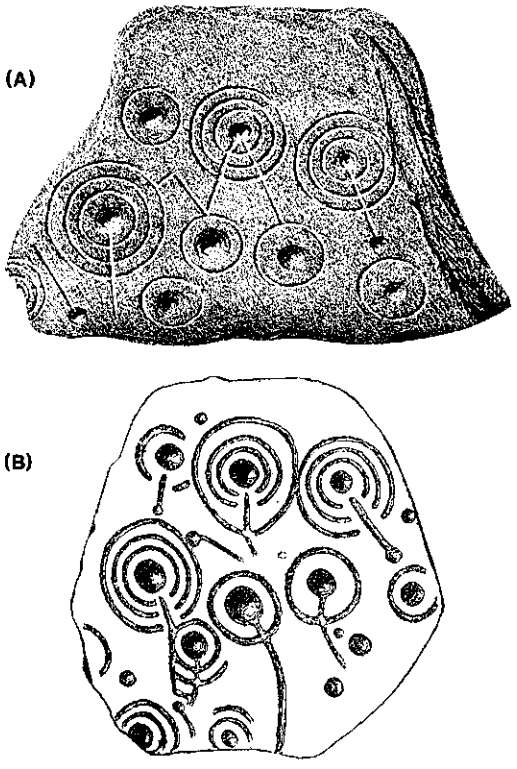
Illus 4. Present recorded distribution of rock carvings and Neolithic small finds in Angus.

Allen recorded the stones there. The accuracy of Allen's work, however, provides us with the evidence that demonstrates that the missing boulder is not the sixth Reswallie stone (Illus 10:31).

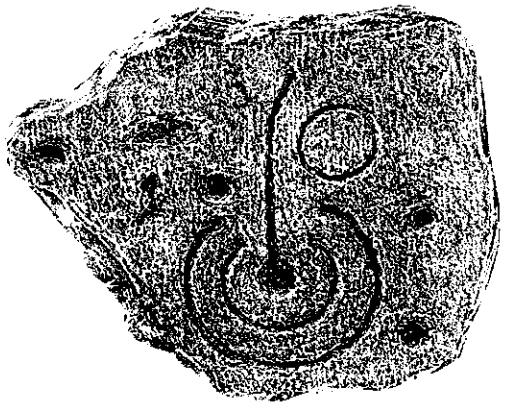
1882–1980

Between 1882 and 1980, rock carvings turned up infrequently with a total of only twelve examples being reported in that period. In 1897, a cup-marked stone (12), unusual in that it is a small pillar-shaped boulder which is decorated on three surfaces, including the top, was reported almost as an aside to the account of an excavation of a medieval midden at Dun, near Montrose (Lumsden 1897). The cup marks at the base of the class one Pictish stone (1) by the roadside at Aberlemno appear to have first been recorded by Allen and Anderson (1903), and it was fully twenty years later that the cup-marked boulder (5) at Balhall, W of Brechin, was noted during the planting of trees. Up to the Second World War, only a cup-marked erratic (17) on Forfar Golf Course, and a cup-and-ring-marked boulder, built into the wall structure of the Finavon hillfort (15), were recorded.

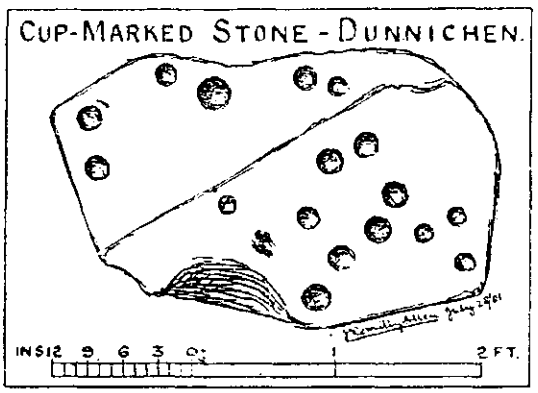
During the Second World War, in the course of undertaking marginal land survey, Childe and Graham visited the Barns of Airlie souterrain, where they noted the decorated roofing slab (6) and realised that the carvings upon it must be earlier in date than the souterrain. They appear, however, not to have realised the significance of the carvings which are clearly something quite different from the normal range of rock carving to



Illus 5. (A) Illustration by Simpson (1868) of rock carvings found at Welton, near Forfar; (B) the same carvings illustrated by Allen 1882.



Illus 6. Rock carvings (now lost) found at Blackgate and illustrated by Simpson (1868).



Illus 7. Rock carvings (now lost) found at Dunnichen and illustrated by Allen (1882).

be found across central and eastern Scotland. Indeed, there is a very real possibility that the slab, decorated with cup marks and wavy, serpentiform gutters, reminiscent of similar decoration in Irish and Welsh passage-graves (Shee-Twohig 1981, 115), has been robbed from a previously unsuspected Neolithic monument.

After the war, decorated stones were found during the excavations of the souterrains at Ardestie (3) and Carlungie (8), but one of the more interesting finds was made at Loups (21), near Tannadice, in 1963, where at least four cup marks were found on the flat upper surface of a newly discovered 2m high standing stone. The presence of cup marks so high off the ground immediately marks this site out as different from any of the other examples of rock carving in Angus. True, there are other standing stones which bear carvings – there is even one at Westerton (44) which has them on its upper surface – but only the Loups stone provides clear evidence that the carvings were not necessarily intended to be viewed by people. Indeed, the very fact that cup marks anywhere are visible at all may be entirely due to the medium on which they are carved, that is low-lying boulders and areas of outcrop. A second important point about the Loups carvings is that their position on the top of the stone means that it is highly unlikely that they were carved before the use of the boulder as a monolith. Carvings on erratic boulders tend to be executed on upward-facing relatively smooth surfaces, whereas the Loups carvings are on the more uneven 'end-grain' of the boulder. The implication of this is that if we accept a Neolithic date for the carvings, then we must also accept a Neolithic date for the erection of this and other standing stones.

The final carvings to be found before 1980 were on two small boulders found during the excavation of the promontory fort at Castle Rock, Auchmithie (4), in the early 1970s and as a surface find at the Finavon hillfort (16) in 1976. These stones are cup-and-ring marked, and together with the small cup-marked slab in Arbroath Museum (2), they introduce the concept of portability to the discussion.

1981–1993

Until the 1980s, decorated stones had turned up largely by chance rather than as a result of being deliberately sought. That changed, however, in 1981 with the discovery of a large cup-and-ring-marked boulder (22) which had been incorporated into the base of a stone dyke on Mains of Balgavies farm, near Letham. On removal from the wall, the boulder, which measures up to 1.4m in breadth, was found to be decorated with unusually large

cup marks (up to 120mm in diameter and 35mm in depth) and correspondingly large ring marks. The finder, David Henry, who had originally seen just a fraction of the decoration on a corner of the boulder, was, in the course of the next four years, to seek out and find a further eight examples of rock art including a significant number of bedrock carvings.

The first bedrock carving (33) had already been discovered on the summit of Turin Hill in 1980 by Professor Leslie Alcock. The hill, which lies a few kilometres E of Forfar, is probably best known for the multi-phase hillfort which crowns its summit, and the rock carving was found within the fort. It comprises seven cup marks, four of which have been set into rings which have been countersunk to a depth of about 10–15mm. This is an unusual feature, which is repeated on only one other decorated surface, that of a boulder (35) situated in the wall-tumble of a small ringfort about 160m to the SW.

In total, there are now nine examples of rock art on Turin Hill, six areas of decorated bedrock and three carved boulders. One of the more interesting points of note about the bedrock carvings is that parts of at least two must have been covered with soil relatively soon after their carving. The pristine condition of some of the decoration, which lay beneath turf at the time of discovery, contrasts with the weathered appearance of those parts which have been exposed for some time. Further, the rough, pitted surfaces of the decoration makes it clear that the customary 'pecking' technique, probably utilising a hard, pointed stone and a hammer, was used.

Two further discoveries made by Mr Henry on Mains of Balgavies are of particular interest. The first (23), a sandstone slab found on a stone-dump in 1984, may be identified as a probable former standing stone. The evidence for this is that one side, which is heavily weathered, bears seven well-formed cup marks, whilst the other, which is completely unweathered, bears three cup marks and a short length of channel. The 1.5m long slab is not an erratic but has been derived from the living rock, and if the presence of decoration on each of its two main surfaces is an indication that it originally stood erect, then the evidence of the differential weathering suggests that at least one face was protected from the elements soon after the decoration was carved. That is, the stone either fell or it was deliberately pushed over soon after it was erected.

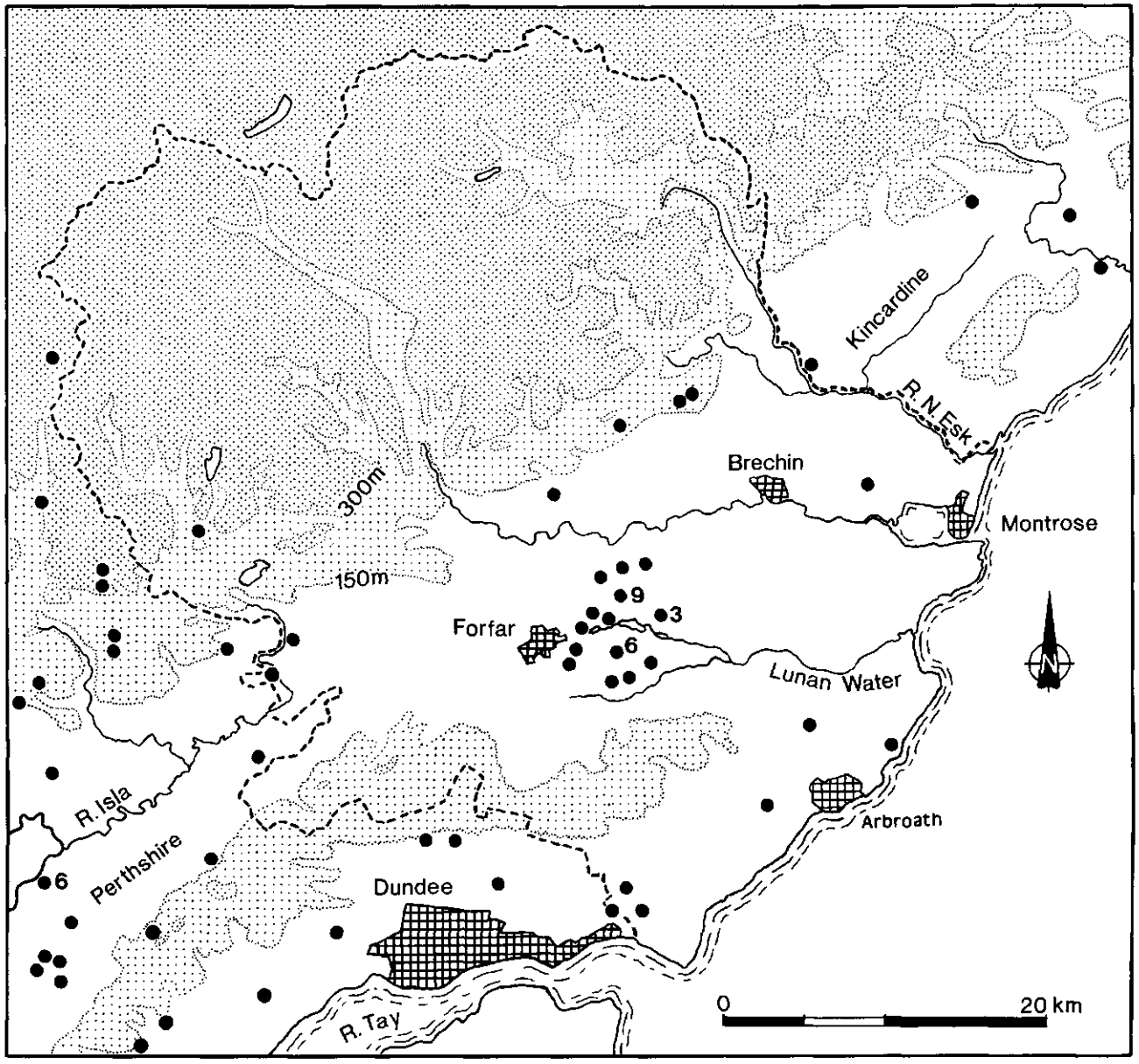
The other stone (24), also found in 1984, but discovered on another stone-dump, is a rounded erratic which bears eight cup marks on one face. The unusual aspect of the decoration is the apparent quest for symmetry along a line drawn from the centre of a row of three equal-sized cups through the middle of an oval cup to the mid-point of a further cup. However, as if to upset the theory of symmetry, that final cup is partly encircled by an eccentric ring and is ultimately connected to yet another cup by two meandering lengths of channel.

There is no space here to mention all of the more recent discoveries, but one which is of some significance is a small boulder (11) from Craiglee at the mouth of Glen Isla in western Angus. It is a small earthfast boulder and has three cup marks on its upper surface. As such it is fairly unremarkable, except that it is the first example of rock carving to be recorded north of the Highland Boundary Fault in Angus.

Date

Until fairly recently it was generally accepted that whilst rock carvings, comprising cup marks and cup-and-ring marks, had their origins in the Neolithic period, their occurrence in a variety of Early Bronze Age monuments, most notably cairns and cists, provided evidence for their continued manufacture in the first half of the second millennium. It is now generally accepted that the argument for a primary use of these carvings in the Early Bronze Age cannot be substantiated, and that most must date from the period c 4000 BC to 2000 BC. The re-use of old, redundant carvings can be seen in a wide range of Early Bronze Age monuments, and Bradley may well be correct in suggesting that rock carvings could have been connected with the communication of ritual knowledge and that the placing of already old rock carvings in burial-monuments performed some form of ritual function (Bradley 1992, 175).

In addition to the two Angus carvings (7 & 42) that may have been found in Early Bronze Age contexts, no less that thirteen were re-used in Iron Age structures: eight in forts or ringforts and five associated with souterrains. Where it exists, the evidence suggests that carved stones were used simply as a building medium by the fort builders, though there can be little doubt that the more elaborately carved stones appear to have carried some form of aesthetic appeal to the builders of souterrains. The carvings were often placed in prominent positions within those structures, but even in the middle of the nineteenth century, both Jervise (1865, 353) and Simpson (1868, 41–2) recognised that carvings built into the souterrains at Barns of Airlie and Letham Grange, were clearly in re-use. It is disappointing, therefore, to see that the old suggestion that cup marks may have continued to have been carved during the Iron Age has resurfaced (Hingley 1992, 29). The wholly utilitarian employment of carved boulders as a



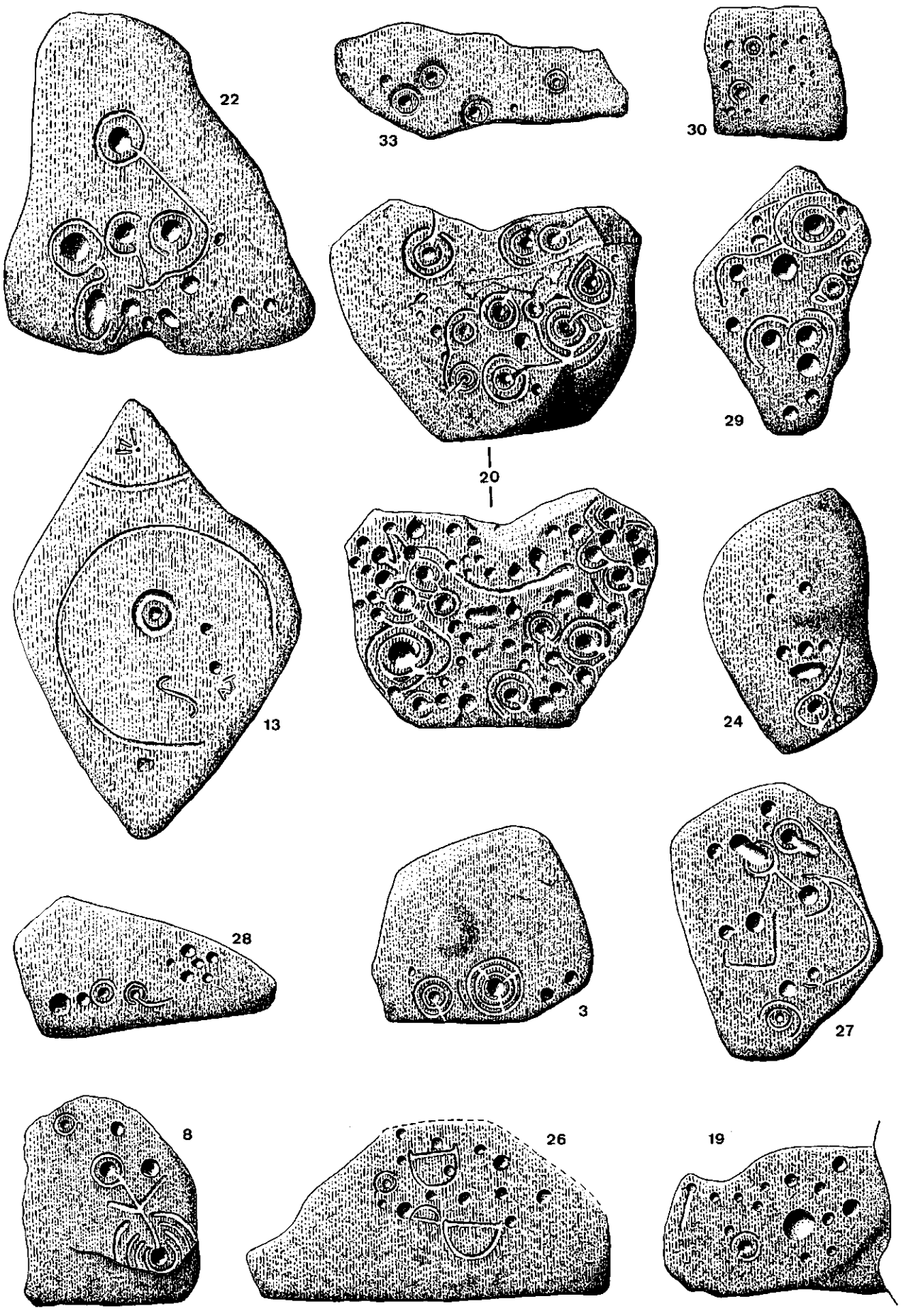
Illus 8. Distribution of rock carvings in Angus, south Kincardine, eastern Perthshire and Dundee.

building medium is reflected in their use either as foundation stones in the basal courses of souterrain passages or as roofing slabs, and there is little or no evidence to support Hingley's implication of a contemporary ritual or religious significance in their use. The evidence for the deliberate concealment of decorated stones within the structure of souterrains simply does not carry the same same conviction as the similar argument for passage graves (O'Kelly 1982).

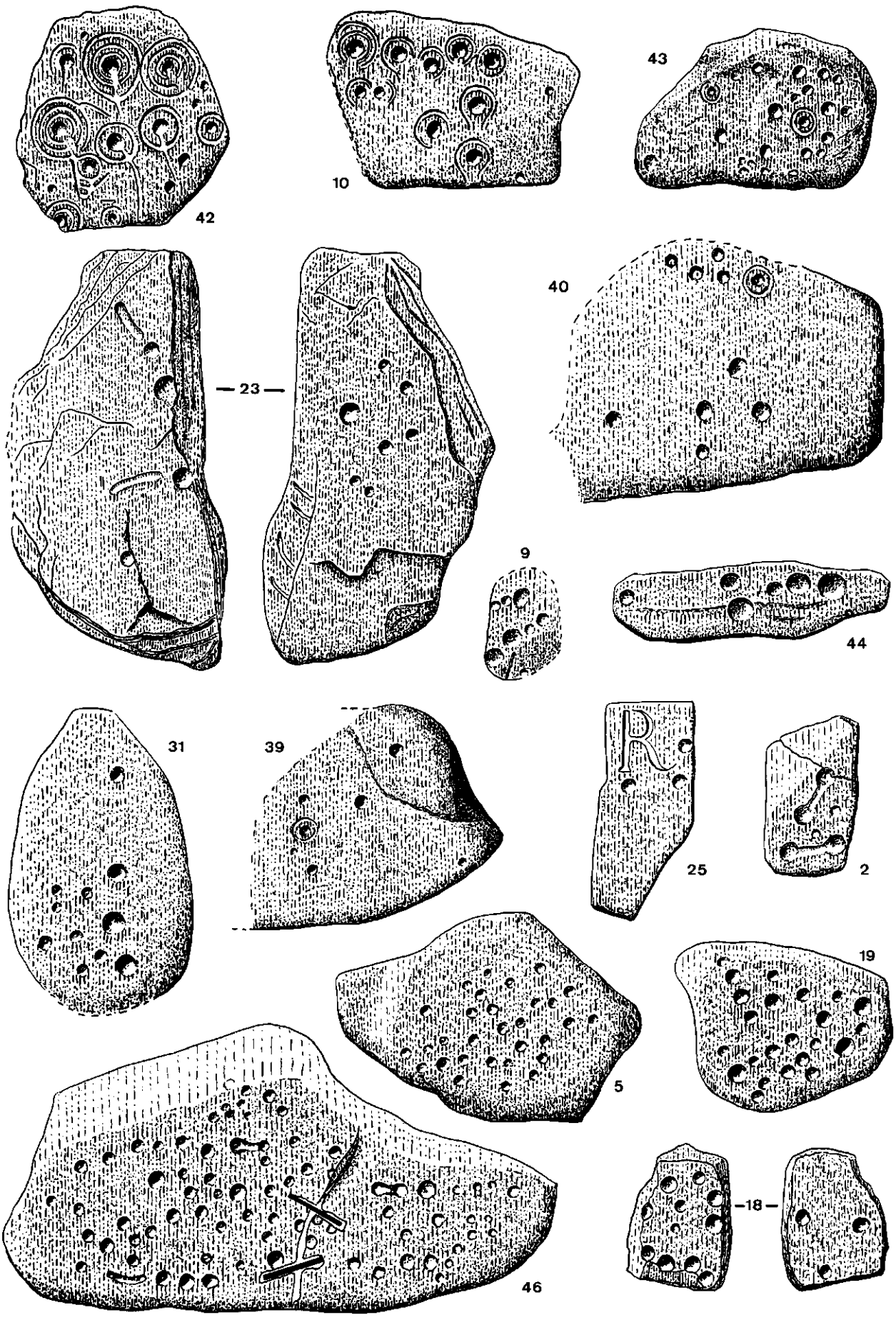
Distribution

Quite what the distribution of the carvings means is impossible to tell, and for the moment the subject is probably best dealt with by talking about generalities. In many ways, the study of the Angus carvings is in its infancy and more field-work, particularly in highland Angus, is badly needed. Without the basic data it would be premature and pointless to undertake any research along the lines of Bradley's Galloway model (Bradley et al 1993), though such work will provide useful reference to future operations in Angus.

One glance at the distribution map of rock carvings in Angus (Illus 8) demonstrates just how centralised that distribution is. A nucleus of carvings to the E of Forfar is complemented by one scatter of carvings along the N edge of Strathmore and another along the coastal plain. The absence of any recorded rock carvings from highland Angus must, in part, reflect the relative lack of field-work undertaken in that area, but it must also take into account original distributions. Recent work in NE Perth (RCAHMS 1990) has added to the number of examples of rock carving in the



Illus 9. Rock carvings in Angus.



Illus 10. Rock carvings in Angus.

highland glens of that county, and it would be fair to expect that distribution to spread into the Angus glens. However, in NE Perth, less than a quarter of the recorded examples of rock carvings include cup-and-ring marks, which are by-and-large restricted to the bottoms of the valleys and to the south-facing highland fringe. The tendency for rock carvings on high, relatively poor ground to comprise simple cup marks has also been borne out in SE Perth. Here, where over a third of carvings are cup-and-ring marked, those carvings associated with higher ground (in this case above the 244m contour) are all cup marks (RCAHMS 1994, 35, illus 35A). In Angus, over half of the recorded carvings are cup-and-ring marked, but all four examples from the southern edge of the highland zone (5, 11, 45 & 46) bear only simple cup marks (Illus 4). As a corollary, it may be noted that in Angus all of the most elaborately decorated carvings have been found to the SE of Forfar.

Context

Until the advent of intensive aerial photography in Angus from about 1977, evidence of Neolithic settlement patterns was restricted mainly to the distribution of stone axes and other portable artefacts including carved stone balls and diagnostic flints. However, despite its undoubted successes, in particular in the eastern part of the Lunan Valley, the aerial survey programme has not been particularly helpful with regard to the settlement pattern in the western part of that valley, in the area to the E of Forfar. Here, a patchwork of cereal, rootcrop and permanent pasture, interwoven with areas of woodland and wet-land, has, over the years, failed to produce the optimum conditions for productive aerial survey. In recent years, therefore, the most useful results from flying north of the River Tay have tended to be restricted to the cropmark yielding areas of Strathmore and the coastal strip from Perth to Montrose; arable areas in which stone axes and flints have been found for many years and in which Neolithic settlement could reasonably be inferred already. Therefore, it is in those areas where intensive aerial photography is not or cannot be practised, and from where there are relatively few small-finds or where surviving monuments betray little or no indication of prehistoric settlement patterns, that the importance of rock carvings is realised. Although some are undoubtedly portable and should strictly be considered as small-finds rather than sites, most rock carvings have probably not strayed far from their original locations and the overview of the settlement pattern thus provided is the important fact to consider. The significance of rock carvings in Angus is that, over most of the district, they provide a complement to other forms of evidence for a Neolithic presence, but that in those areas where other indicators are either absent or rare, they constitute the major form of evidence.

That the distribution of rock carving is a distinct and separate part of the overall picture of the settlement pattern in the late Neolithic is clear from Illustration 4, which compares the relative distributions of rock carvings and Neolithic small-finds in Angus. The rash of decorated stones to the E of Forfar is not matched by a corresponding cluster of small-finds, and in those areas where small-finds are most numerous, to the SW of Montrose, to the NE of Dundee, and to the W of Forfar, there are few carvings.

Conclusion

In a recent paper Burgess (1990) stated that one of the most important contributions made by amateurs to British archaeology in recent years has been in the study of cup and cup-and-ring marks. The recent discovery of so many examples of rock carvings in Angus is testimony to that statement, but it also provides stark evidence of the potential for further work. Local archaeological societies and individuals are superbly placed to examine areas of unimproved ground, stone-dumps and stone dykes, and David Henry has shown that enthusiasm coupled with a good eye and local knowledge can produce remarkable results.

Rock carvings in Angus have a local importance for reasons already outlined, but they also have a national relevance in constituting the largest and densest concentration of rock art outwith the highland area of Scotland. That this concentration is an indication of Neolithic activity is clear, and the probable ritual nature of the carvings means that it was no ordinary presence. The concentration of rock art in the area to the E of Forfar, centred on the hills around Rescobie Loch, may be comparable to other such concentrations, for example around the great monument complex at Kilmartin in Argyll (RCAHMS 1988), but its significance to the Neolithic population of Angus can only be guessed at just now. However, with the aid of further field-work, that guess should soon become a little more educated.

Acknowledgements

Many thanks to David Henry and others in Angus for aiding in the discovery of so many new carvings; to the Society of Antiquaries of Scotland who provided a grant for much of the original field-work, and to those colleagues who commented on various drafts of this paper.

This paper is published with the aid of a grant from the Royal Commission on the Ancient and Historical Monuments of Scotland.

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Gazetteer

1. **Aberlemno, cup marks**
NO 5228 5592 NO55NW 8
Allen and Anderson 1903, 205.

2. **Arbroath Museum, cup marks**
No provenance
A 1976 6m.

3. **Ardestie, cup-and-ring marks**
NO 5030 3444 NO53SW 1
Wainwright 1963.

4. **Auchmithie, cup-and-ring marks**
NO 6849 4416 NO64SE 4
Accession No A 1980 203i; Ralston 1987.

5. **Balhall, cup marks**
NO 5044 6421 NO56SW 1
RCAHMS 1983, 23, no. 181.

6. **Barns of Airlie, cup marks, serpents**
NO 3056 5153 NO35SW 19
Jervise, 1864, 352–5, plate 21;
Childe and Graham 1943.

7. **Blackgate, cup-and-ring marks**
NO 4844 5287 NO45SE 8
Simpson, 1868, appendix, 61–2, plate 16:4.

8. **Carlungie, cup-and-ring marks**
NO 5110 3597 NO53NW14
Wainwright 1963.

9. **Castle Hill, Dunnichen, cup marks**
NO 5058 4867 NO54NW 31

10. **Craigend Farm, cup-and-ring marks**
NO 583 398 NO53NE 53
Simpson 1868, 61, plate 14:3; DES 1993, 71.

11. **Craiglee Cottage, cup marks**
NO 2461 5765 NO25NW 25

12. **Dun, cup marks**
NO 6653 6052 NO66SE 2
Lumsden 1897.

13. **Dunnichen, cup-and-ring marks**
NO 5279 4985 NO54NW 10
Warden 1880–5, iii, 190; v, 101;
RCAHMS 1978, 14, no 78.

14. **Dunnichen, cup marks**
NO 5135 4865 NO54NW 9
Allen 1882, 103–4, fig 23.

15. **Finavon Hill, cup-and-ring marks**
NO 5065 5567 NO55NW 32
Childe 1935, 58–9.

16. **Finavon Hill, cup-and-ring marks**
NO 5060 5564 NO55NW 32
DUNMG 1987–372; DES 1988, 26.

17. **Forfar Golf Course, cup marks**
NO c. 477 507 NO45SE 45
NMRS Ms No 28(SAS 505).

18. **Forfar Museum, cup marks**
No provenance
F1978.70.

19. **Hill of Finavon, cup marks**
NO 4908 5478 NO45SE 74
DES 1982, 31.

20. **Letham Grange, cup-and-ring marks**
NO 6234 4584 NO64NW 19
Accession No NMS GA 5; Simpson 1868,
appendix, 233, plate 20.

21. **Loups, cup marks**
NO 4625 6002 NO46SE 18
DES 1963, 3–4.

22. **Mains of Balgavies, cup-and-ring marks**
NO 534 512 NO55SW 22
DES 1981, 44.

23. **Mains of Balgavies, cup marks**
NO 5300 5122 NO55SW 31
DES 1984, 36.

24. **Mains of Balgavies, cup-and-ring marks**
NO 5310 5117 NO55SW 22
DES 1986, 36.

25. **Restenneth Priory, cup marks**
NO 4809 5165 NO45SE 51
DES 1981, 42.

26–30. **Reswallie, cup-and-ring marks**
NO 5053 5154 NO55SW 11
Allen 1882, 105–8, figs 25–9.

31. **Reswallie, cup marks**
NO 5053 5154 NO55SW 11

32. **Ruthven Church, cup-and-ring marks**
NO 2868 4878 NO24NE 1
Simpson 1868, appendix,42, plate 25:3.

33. **Turin Hill, cup-and-ring marks**
NO 5150 5355 NO55SW 24
DES 1980, 37.

34. **Turin Hill, cup marks**
NO 5151 5356 NO55SW 23
DES 1984, 37.

35. **Turin Hill, cup-and-ring marks**
NO 5135 5350 NO55SW 25
DES 1984, 36.

36. **Turin Hill, cup marks**
NO 5135 5350 NO55SW 26
DES 1984, 36.

37. **Turin Hill, cup-and-ring marks**
NO 5131 5367 NO55SW 27
DES 1984, 36.

38. **Turin Hill, cup marks**
NO 5221 5370 NO55SW 28
DES 1984, 36.

39. **Turin Hill, cup-and-ring marks**
NO 5222 5369 NO55SW 28
DES 1984, 36.

40. **Turin Hill, cup-and-ring marks**
NO 5223 5369 NO55SW 29
DES 1984, 36.

41. **Turin Hill, cup-and-ring marks**
NO 5221 5370 NO55SW 61
DES 1986, 44.

42. **Welton, cup-and-ring marks**
NO c. 470 499 NO44NE 1
Simpson 1868, appendix, 30, plate 8:5;
Allen, 1882, 104, fig 24.

43. **Wemyss Farm, cup-and-ring marks**
NO 4910 5199 NO45SE 78
DES 1984, 35.

44. **Westerton, cup marks**
NO 5364 5209 NO55SW 5
Simpson 1868, appendix, 15.

45. **White Caterthun, cup marks**
NO 5460 6600 NO56NW 17
Allen 1882, 109, fig 30.

46. **White Caterthun, cup marks**
NO c. 546 660 NO56NW 17
DES 1980, 37–8.

47. **Woodhill House, 'cup markings'**
NO c. 521 344 NO53SW 9
Jervise 1879, 331.

Pre-Burghal St Andrews.
Towards an archaeological research design

Derek W Hall

This paper is based on a lecture given at 'Buried Burghs: A Decade of Urban Archaeology in Scotland' on 9th May 1987. The ideas in it developed as a result of post-excavation research on several excavations in St Andrews by the Urban Archaeology Unit and its successor the Scottish Urban Archaeological Trust Ltd.

St Andrews – early historical background

The earliest documentary evidence for a settlement at the town of St Andrews is in the Irish Annals, in an entry dated to 747 AD. This refers to the death of Tuathal, the abbot of Cennrigmonaid 'Mors Tuathalain abbatis Cinrighmonai' (Hennessy and MacCarthy 1887–1901). This shows an almost unique interest in a Pictish religious house, particularly as the document was written in Ireland and not on Iona. The place name, variously spelt Kinrimund or Kilrimund means either 'head of the kings mount' or, if the Kil element in the place name is taken literally, 'church on the head of the king's mount'. The headland above the harbour, now known as Kirkhill, may be the 'head of the king's mount' referred to.

Kirkhill

Stray finds. Large numbers of early Christian sculptured stones have been found in the area of Kirkhill, particularly reused in the foundations of St Mary's church and the east gable of the cathedral (Hay Fleming 1931). The stones include cross slabs, fragments of free standing crosses and two shrines. The decoration and style of the cross slabs suggests the presence of a notable school of masons, producing a mixture of Celtic/Anglian art. These have been dated to the 8th or 9th centuries (Cruden, Nd, 27).

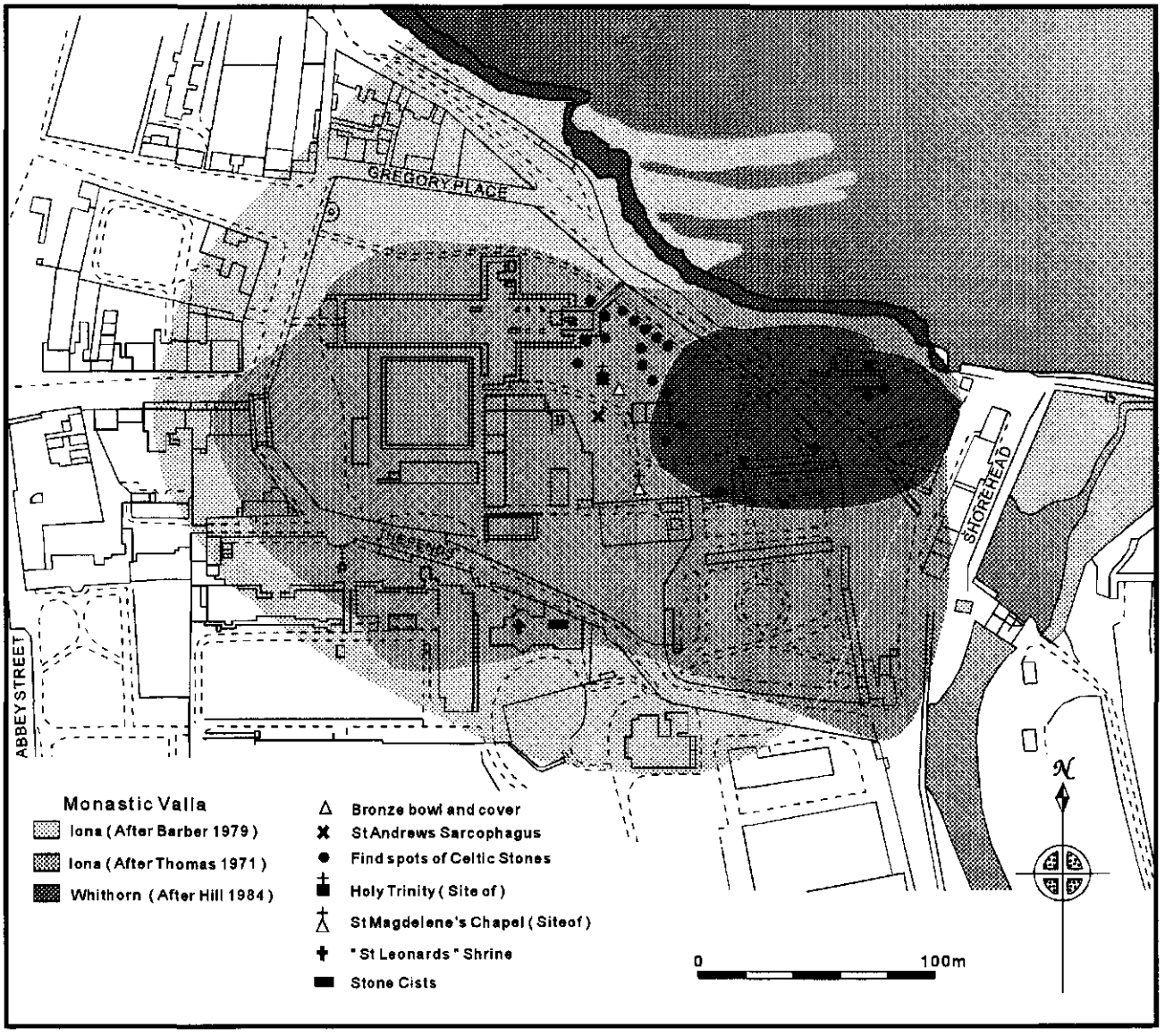
The two shrines come from the area of the cathedral precinct. The most impressive of the two, the so-called 'St Andrews sarcophagus', was found in the 19th century close to St Rule's Tower with its top at least seven feet below ground level, and may have been in situ (Henderson 1994, 71). It is of the corner post type and has been dated to the late 9th or early 10th centuries (Radford 1956, 55). It has been argued that this shrine may have held the body of Angus I, the supposed founder of the monastic community, or the body of St Regulus, or may even have been a relic altar for the relics of St Andrew.

The second shrine is a solid stone one discovered in 1895 during the clearance of St Rule's East, a building that lies in the southern half of the cathedral precinct (Lang 1972–74, 231). This shrine lay amongst a number of stone cists, and has been linked to a class of Anglo-Danish hogback tomb covers and is dated to the 11th century (Radford 1956, 59). In the same area that the sarcophagus was found, a bronze bowl and cover were discovered during grave digging in the 19th century and have been compared to Irish examples found with the Ardagh chalice (Simpson and Stevenson 1981, 19).

Archaeology. Some archaeological excavations were undertaken on Kirkhill in 1860, when several burials and numerous fragments of sculptured stone were recovered (Hay Fleming 1931). Further work was undertaken at Kirkhill by Jonathan Wordsworth for the Urban Archaeology Unit in 1980 in advance of consolidation work on the cliff face and located part of a cemetery. Approximately 350 human burials were discovered on the cliff top to the north of St Mary's church. These burials represented a mixture of sexes and ages, and some were buried in stone long cists. A representative sample of the burials were radiocarbon dated, giving a date range of the 6th to 9th centuries AD. The presence of women and children in the cemetery may suggest that the families of the Culdee monks were buried here or that it was a secular graveyard belonging to Holy Trinity church (Wordsworth 1980).

The precinct

The early precinct. From the available documentary and physical evidence there was certainly an early religious centre at Kilrymont, but the problem is to



Illus 1. Pre-burghal St Andrews: location plan of early Christian artefacts found and comparative plans of early monastic precincts.

decide its form and extent. For this paper it was decided that the easiest model to compare such a putative centre with is one of the Irish monastic centres such as Glendalough or Clonmacnoise. The precincts of these two important centres are still largely visible and the area enclosed by monastic valla at the two Irish sites (Anderson 1976) is broadly comparable with the area of Kirkhill and the find spots of sculptured stones lie, an area of about ten acres.

The precinct boundary. Two documentary references to the early centre at St Andrews indicate its possible nature. They both come from one of two foundation legends which developed after the Augustinian canons arrived in St Andrews in the 1120s. This version of the foundation legend states that the boundary of the Pictish monastery was defined by twelve free-standing crosses (Young 1969, 14). This reference may suggest that the boundary around the monastic centre was so defined rather than by a ditched enclosure. It is tempting to see such a type of boundary as the origin of the free-standing cross built into the east gable of the cathedral. The second documentary reference from the foundation legend records the building of seven churches at or soon after the foundation of the monastic centre (Young 1969, 14). When this version of the legend was written in 1279 there may still have been the remnants of these buildings standing.

Monastic sites in Ireland are normally enclosed by either a bank and ditch, the monastic vallum, or a stone wall, the cashel. Monastic valla have been located at the monastic sites at Glastonbury and Jarrow in England and at Iona and Applecross in Scotland (Thomas 1971, 30), while recent work at Whithorn may have revealed the presence of a cashel surrounding the early monastic site there (Hill 1984, 35). Cashels are often oval in shape, but

can vary according to topography. Within the enclosed area are numerous buildings: one or two churches, a round tower, an oratory and several high crosses. Transposing the outlines of the monastic enclosure at Iona and the suggested one at Whithorn on to a map of St Andrews gives an idea of the sort of area that may have been included by such an enclosure at St Andrews (Illus 1).

Another way of defining an area would have been to cut a ditch across the headland as seems to have been done at the monastic site at Old Melrose. The purpose of erecting these various types of enclosures was to make the enforcing of monastic rule easier and to shut out all but the heavens from the sights and thoughts of the monks.

St Rule's tower

Is it possible that 'St Rule's' tower (The church of St Andrew) represented a building serving the same function as a round tower or possibly a replacement of a round tower? It has been suggested that a round tower formerly stood at Kilrimont and that one of the precinct towers in the wall around the cathedral is built on its remains (Young 1969). This latter suggestion seems rather unlikely and unconvincing. Towers of a similar type to St Rule's exist at Dunblane, Muthil, Dunning and Markinch. Indeed St Rule's has been most closely compared with the example from Markinch (Donaldson 1985, 6). All these towers are similar in character to buildings in England of the Anglo-Saxon period or very early Norman type. St Rule's has been dated by HM and Joan Taylor to the first half of the 11th century although they did state that this dating is less reliable than it is in England (Taylor and Taylor 1965). In fact a more recent view would date the tower to no earlier than the early 12th century (Fawcett pers comm).

It has been suggested that at least two of these towers, at Dunblane and Muthil, may have originally stood with no attached church (Cruden 1986, 14). St Rule's appears to have been the western tower of a short choir church (ibid, 14).

The date of the building of St Rule's suggested by Taylor and Taylor coincides with the episcopate of Fothad II, who had professed subjection to the archbishop of York under guidance from Malcolm III. The seemingly English influenced design of St Rule's may reflect the king's English connections. It is possible that the impressive new building was erected to house the relics of the apostle. St Rule's may be the 'basilica Sancti Andree apostoli' that is compared with Jerusalem and Rome as a place of pilgrimage in Scotland by the eleventh century 'Life of St Cadog'. The English style of the architecture of St Rule's and the mixed Celtic/Anglian art of the early Christian stones may suggest the appearance of an Anglian influence on the early community to replace any Irish influence.

Secular settlement

Apart from an early religious centre on the headland, there may also have been a small secular settlement. This is suggested in two charters by Bishop Roger and Bishop Robert. In Roger's foundation charter of the burgh in 1144 he states 'we have erected a burgh at/by St Andrews in Scotland', 'burgum apud Sanctum Andream in Scotia statuisse'. The use of the phrase 'apud Sanctum Andream' is interesting as it may suggest the presence of a settlement by that name before the burgh was founded. The fact that it is 'Sanctum Andream' and not 'Kilrimont' that is used seems to add weight to this argument. However, as the charter was written by a bishop, he may have used the phrase to mean 'at the house of St Andrew', in other words he was founding a burgh next to the religious settlement of that name. In a later document of 1160, property in both St Andrews and Kilrimont was referred to, showing that Kilrimont were still regarded as a separate area at that time (Brooks and Whittington 1977, 292).

Any early secular settlement may have grown up around the perimeter of the early religious centre but its nature is difficult to define. References in the *Chronicle of Melrose* and Skene's *Chronicle of the Picts* and Scots describe the retiral of King Constantine into a life of religion as an abbot of the Culdees at St Andrews. These references are both supposed to have been written between 900 and 952 AD and refer to the town of St Andrews. However, they may both be later insertions that were written after the founding of the burgh (Anderson 1908).

In Bishop Robert's charter of 1189 he confirmed the transfer of the market cross from the place where 'clochin' had been to the 'land of Lambinus'. The use of the word 'clochin' is interesting as it may be a corruption of 'clachan', meaning a hamlet or 'kirktoun'. Dr Nicholas Brooks and Graham Whittington have suggested that the early burgh market occupied that part of the eastern end of North Street that fans out into a triangular area (Brooks and Whittington 1977). The other clue to the location of a pre-burgal settlement is the original location of the parish church of Holy Trinity. Until the 15th century it lay within the priory precinct to the south-east of the cathedral; when the church was moved to South Street in 1410 it was probably done to solve the problems of having a parish church within a priory precinct and to create an enclosed precinct for the Augustinians. It is hard to understand why it took nearly three hundred years to remedy this problem.

Dr Ronald Cant has suggested an original settlement running southwards down North and South Castle Street and Abbey Street (Cant 1971). This theory depends in part on there being an early version of the castle for which there is no physical or documentary evidence. An alternative suggestion for the early market place has North and South Street of equal date, with the entire space in between, eastwards of South Castle Street to the cathedral, forming a great market square. Excavations by SUAT Ltd at 29 North Street and 7 South Castle Street have neither confirmed nor disproved these two theories.

The founding of the burgh

The founding of the medieval burgh and at a later date the building of the cathedral and its associated precinct may have destroyed the early Christian centre. This may explain the presence of so many early Christian stones in the precinct and reused as building material in the cathedral. St Mary's church on Kirkhill, which was still occupied by a small number of Culdee monks, was excluded from the cathedral precinct and left to stand by itself on the headland. The Culdees were finally integrated into the Augustinian order in 1150 by order of David I, and St Mary's church was raised to the status of a chapel royal in the late 13th century.

One other establishment that may have been in existence before the foundation of the burgh was the leper hospital of St Nicholas. Excavation of the site by SUAT in 1986/87 (Hall this volume) revealed the size of the complex and the nature of one of the buildings within it. Its true date of foundation, however, remains unknown.

Conclusions

This paper has been written to build up a picture of what we already know about the early settlement at St Andrews. Using this information it has attempted to identify questions that require further research. For example if there was an early Christian precinct, what form did it take? What sort of buildings did it contain? And what was the nature of any attached secular settlement and where was it? By using the suggestions in this paper it should be possible to form the basis for a research design to help future decisions about how to tackle development threats in and around the town and identify areas that may answer some of the questions above.

For the postulated secular settlement, Brooks and Whittington's model seems a good one to test (Brooks and Whittington 1977, 292), and for the early precinct the areas as defined in Illustration 1 can also be tested. This may be by a combination of topographical survey, street plan analysis and excavation, although the latter relies very heavily on redevelopment providing the opportunity. One worthwhile step towards answering some of the questions posed about the size and nature of an early religious centre would be to carry out a non-invasive geophysical survey of the northern half of the cathedral precinct and Kirkhill. Although the area is heavily disturbed by numerous burials of many periods, it should still be possible to detect important large features, such as the course of any early precinct boundary and the foundations of early Christian buildings.

Archaeological work in the burgh has already shown the good survival of archaeological deposits, in some cases sealed by c 1.5m of garden soil. It therefore seems likely that the town of St Andrews may offer one of the best chances of tracing a link from an early pre-burghal settlement into a thriving medieval burgh.

Whilst this paper was never designed to be the last word on the subject of St Andrews it is to be hoped that it has provided some questions that need answers and theories that can be tested.

Acknowledgements

The author would like to thank Richard Fawcett, Philip Holdsworth, Pete Clark, David Bowler and Peter Yeoman for their valuable comments on earlier versions of this paper. The illustration is by David Munro.

This paper is published with the aid of a grant from Fife Regional Council.

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Excavations at Marketgate/Ladybridge, Arbroath

Charles F Falconer

with contributions by Adrian Cox & Derek W Hall

The Trust was granted permission to excavate this site by Baxter, Clark and Paul, on behalf of the Angus and East of Scotland Housing Association.

The site

Location and description. The site lies on the north-western corner of the junction of Marketgate and Ladybridge (Illus 1). It is bounded to the north by the retained frontage of the old baths and to the west by 51 Ladybridge. The site is close to both the harbour and Brothock Water, which forms the western limit of the Marketgate backlands. Historically, the Ladybridge frontage lay 60m east of the Lady Bridge, close to St Mary's Chapel. Ladybridge is an eastern continuation of Lady Loan and the shore road from Dundee.

The development. The Angus and East of Scotland Housing Association are to build 12 residential units on this corner site, and will convert the remaining baths frontage into a further 8 units.

Historical background

The first mention of a burgh of Arbroath occurs in an 1178 charter of William the Lion, who announced that he had founded an abbey church at Arbroath dedicated to Thomas Becket. The charter granted the Abbey freedom to found a burgh, to have a harbour and to hold a weekly market (Barrow 1971, 250). The founding charter of the abbey stimulated the rapid expansion and growth of the pre-existing settlement.

Marketgate is first mentioned in 1331, when the abbot granted feus on land there. From early map evidence it seems likely that Ladybridge ran no further east than Marketgate until the 1780s, making Marketgate the obvious main route from the Lady Bridge to the centre of town. Indeed, the routeway here may have strayed from the regular grid pattern now imposed and cut this corner; along the first 50m north of Ladybridge, the west side of Marketgate displays an irregular rig pattern with a badly aligned frontage. At its southern terminus, Marketgate had access to both old and new harbours via Old Shore Head.

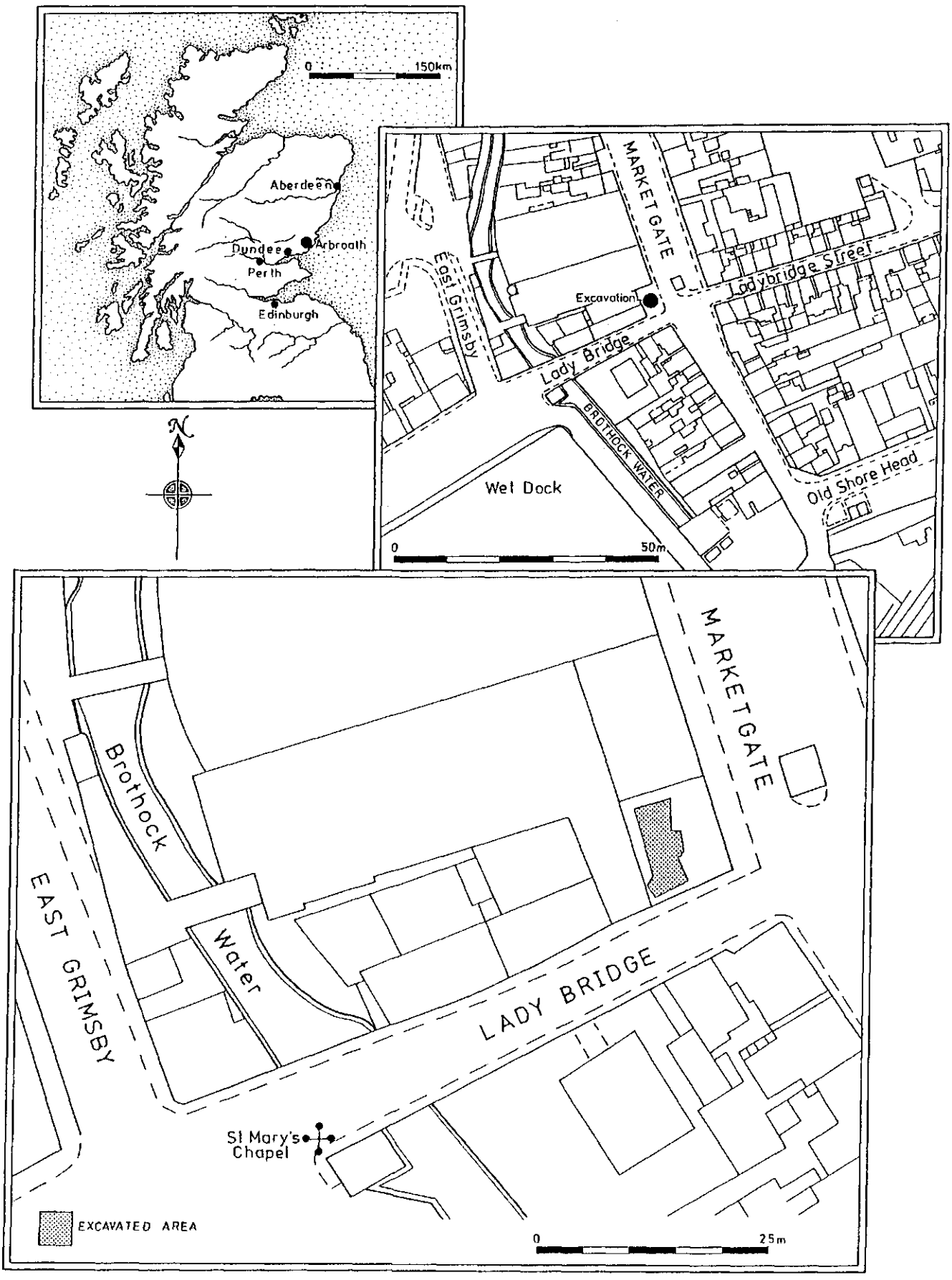
The excavation

Excavation objectives. The purpose of the excavation was to determine the date of the earliest structures and ascertain whether the Marketgate and Ladybridge frontages had shifted over the centuries. The cobbled surfaces encountered in the site assessment were also to be exposed and their usage dated. Information on activity prior to the laying out of Marketgate was also sought.

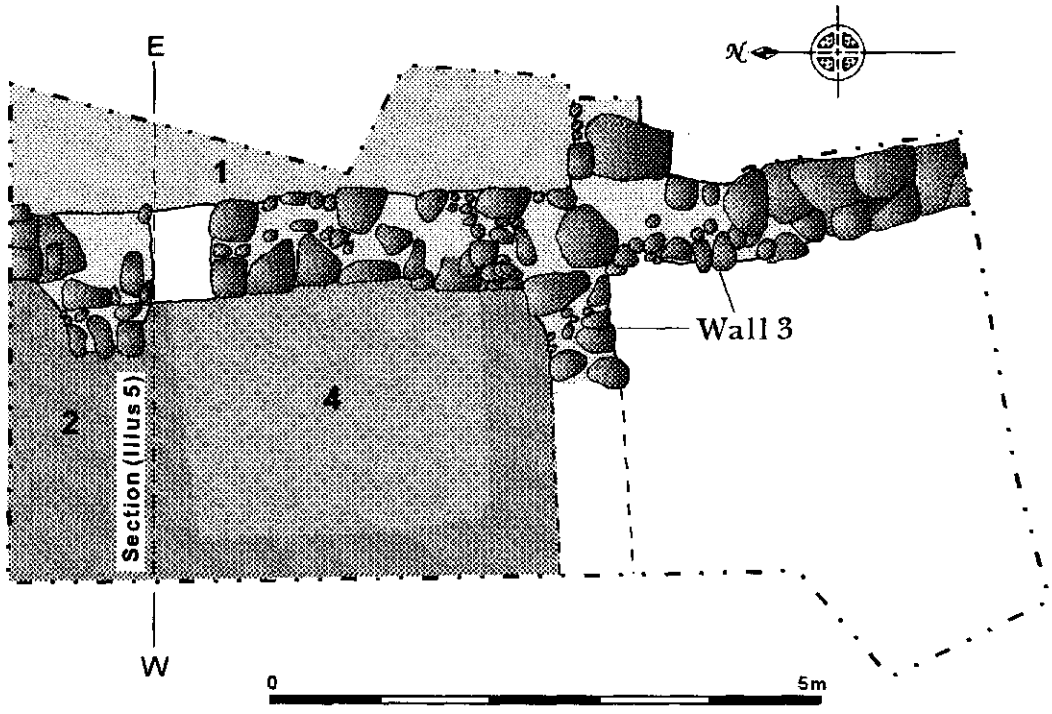
The excavation. A site assessment was conducted over two days in October 1993 and showed medieval deposits preserved under modern demolition rubble. Subsequently, an excavation was carried out by a team of four archaeologists over two weeks in late November and early December 1993. An area 5 x 10m was stripped of modern rubble, exposing wall stubs butted by disturbed cobbles in soil. The trench was positioned to take in the presumed frontages of Marketgate and Ladybridge, its long axis parallel to Marketgate.

Results. Removal of modern rubble revealed a double faced sandstone wall (3), 0.70m wide, running north to south (Illus 2). This formed the party wall between 47 Ladybridge and the property shown at the corner of Ladybridge and Marketgate on the 1903 OS town plan (Structure B), and continued north as the back wall of Structure A fronting on Marketgate, again shown on the 1903 map (Illus 6). Wall 3 was built of roughly dressed and squared sandstone blocks bonded with gravelly white mortar. A return to the east on wall 3 extended eastwards from the robbed out trench for the back wall of 45 Ladybridge, also agreeing with the 1903 plan. North of this return, wall 3 'dog-legged' slightly to the east.

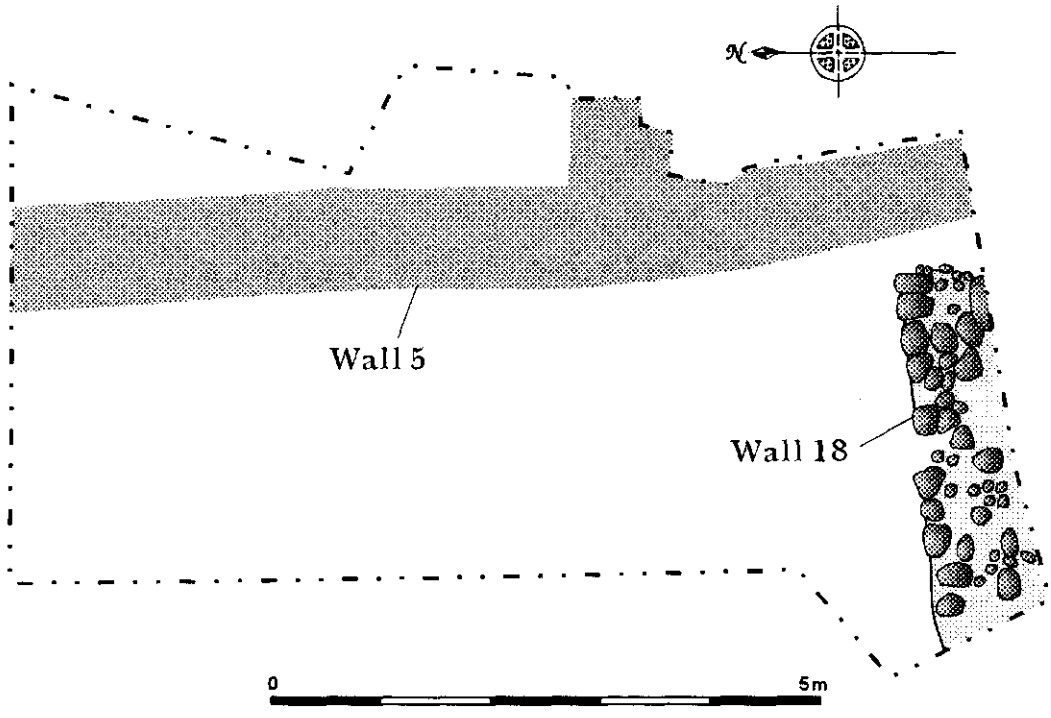
Butting the eastern face of wall 3, north of the



Illus 1. Site location plan.



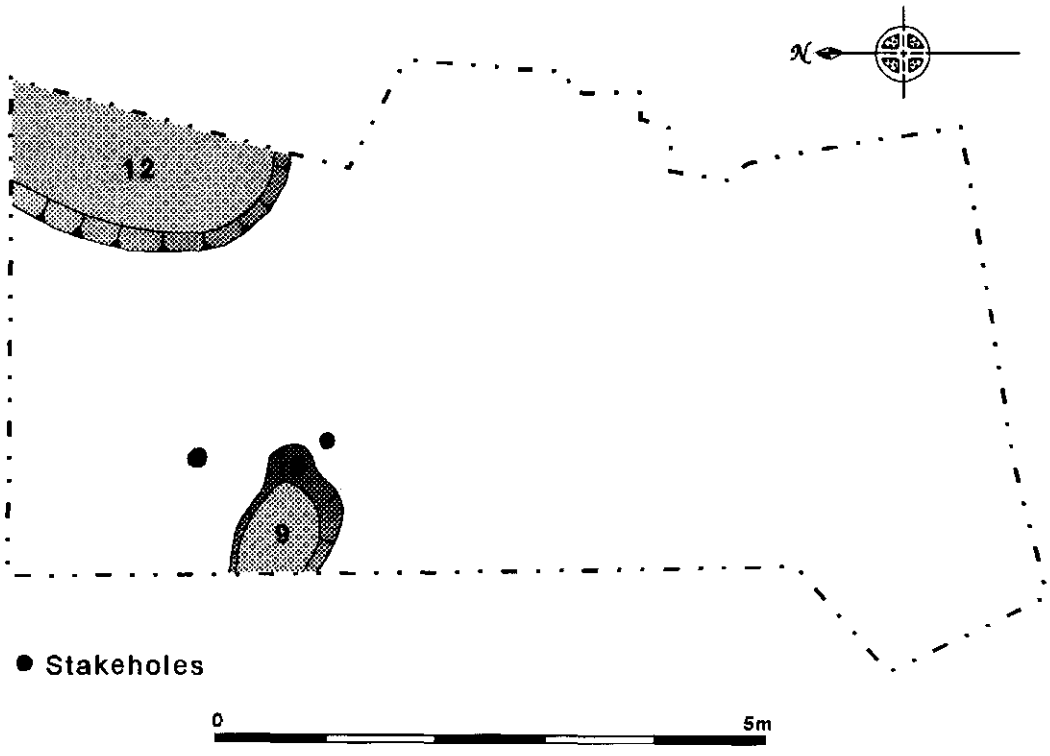
Illus 2. Plan of stone wall 3.



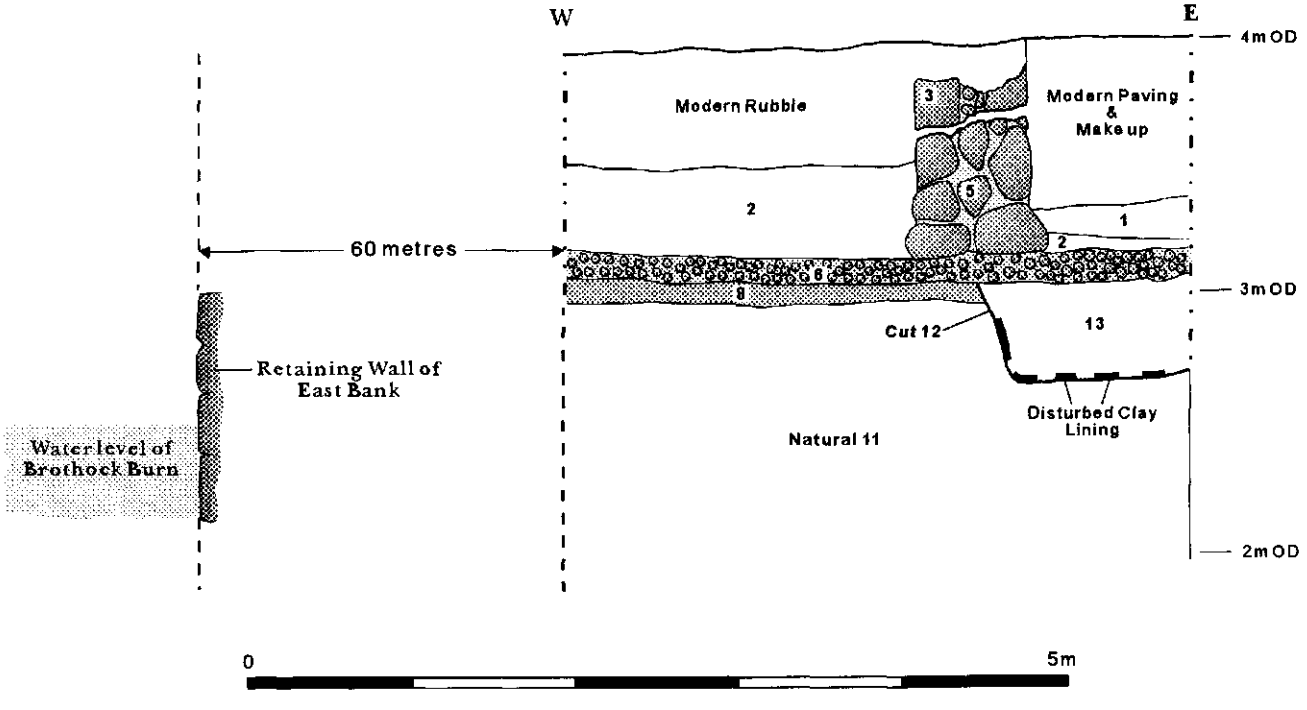
Illus 3. Plan of stone wall 5 and 18.

return to the east, was a deposit of pebbles in sand (1), containing modern pottery. This probably represents a make-up layer internal to Structure A.

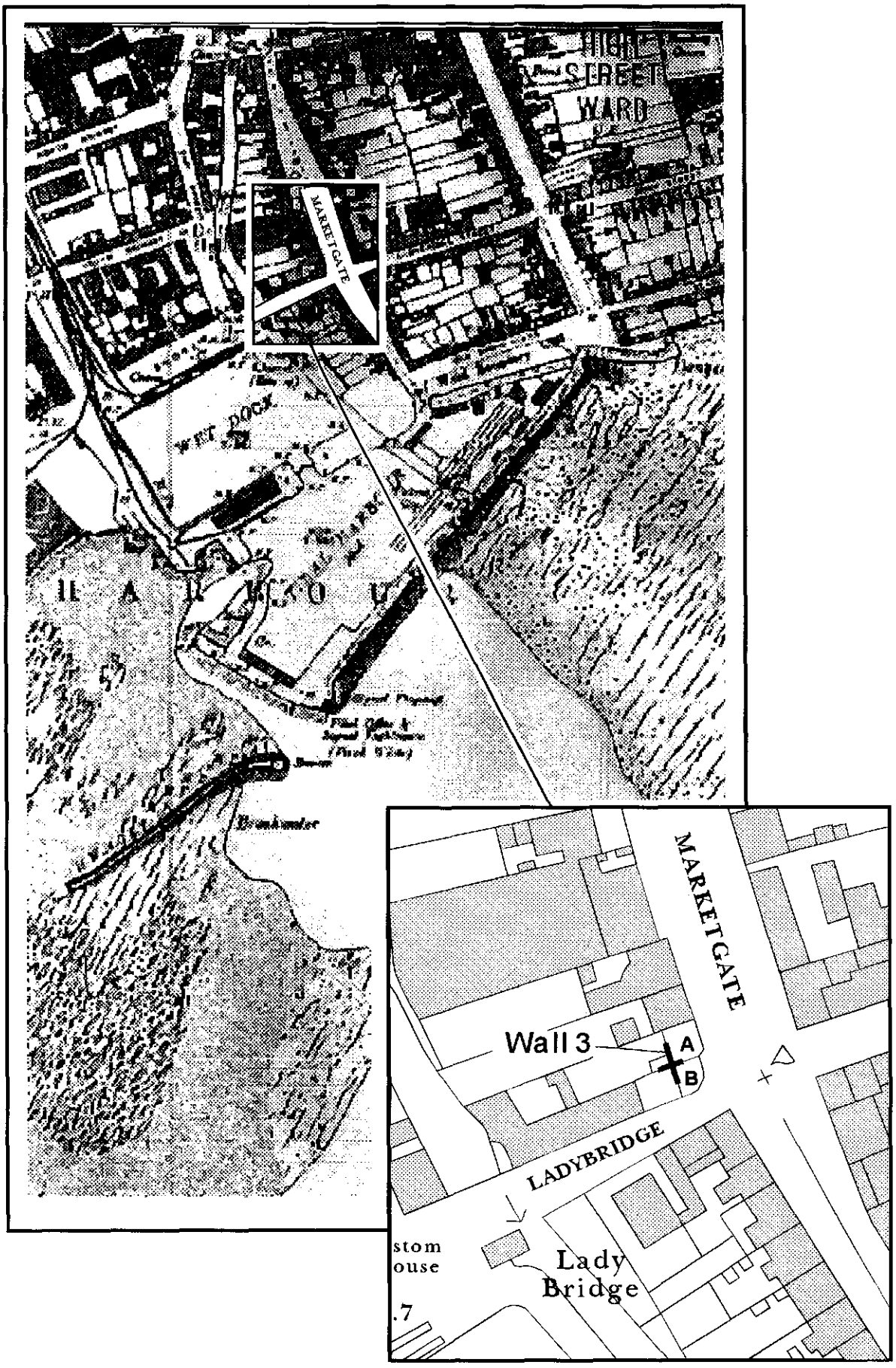
Butting the western face of wall 3 was a dump of beach cobbles and pebbles in clay soil separated by the cut (15) for the back wall of 45 Ladybridge. The northern dump (2) lay external to the walls, the southern dump (4) would have lain inside 45 Ladybridge. Thirteenth to 14th century pottery was recovered from Context 2, and 14th-15th century pottery from Context 4. Fragments and small spreads of pure orange clay were found throughout 4, probably discarded bonding material but possibly the remnants of a clay floor. These cobble dumps were 0.40m thick and were probably intended to raise the ground level above



Illus 4. Plan of cut features in natural sand.



Illus 5. South-facing section of excavated area.



Illus 6. Ordnance Survey town plan of 1903 showing position of wall 3.

that of the nearby Brothock Water when in spate. The present-day normal surface level of the burn, 60m east of site, is 2.64m OD. The surface on which 2 and 4 were dumped was between 0.40m and 0.60m higher (Illus 5).

When removed, deposits 2 and 4 revealed wall 3 as sitting on the stub of an earlier wall (5), three or four courses high and 0.70m wide (Illus 3). The lower courses were clay-bonded beach boulders and irregular sandstone blocks in a rough rubble build; the upper courses were similarly built, but with white shelly mortar. The northern half of this wall also dog-legged slightly to the east. The exposed, but unexcavated, return to the east noted halfway along wall 3 was reflected in the course of wall 5, at its dog-leg angle. The northern half of wall 5 with its return to the east, would have formed the south-west corner of a structure fronting on Marketgate.

Wall 18, 0.70m wide, butted by the southern edge of 4, ran west at right angles from the southern end of wall 5. It may originally have been a return on wall 5, left free-standing by the rebuilding of wall 5 as wall 3. Wall 18 lies slightly skew to the present alignment of Ladybridge but conforms to the alignment shown on a map of 1823. The south face of 18 could not be excavated, but, with wall 5 south of the dog-leg, appeared to form the south-eastern corner of a structure fronting on Ladybridge.

Where Contexts 2 and 4 butted wall 3, many fragments of early 19th century bottle glass were found and probably date the rebuild of wall 5.

Removal of wall 5, and cobble dumps 2 and 4 revealed a site-wide, slightly disturbed cobble spread (6) in a grey-brown sandy clay matrix. This contained 13th and 14th century pottery, and was probably the original surfacing of Marketgate.

This cobble spread had been laid directly on the levelled surface of the subsoil (8), which displayed several apparently truncated cut features (Illus 4). The south-west corner of a presumably circular, clay-lined pit (12) ran into section at the north-eastern site limit. There was no indicative staining of the underlying subsoil (11) along the base of the cut. The pit fill was sealed by surface 6 and contained one sherd of 14th century stoneware.

A possible truncated post-hole (9), with associated stakeholes was noted 3m west of pit 12. The natural exposed on the base of this feature was stained by a dark oily liquid, possibly derived from fish. This cut feature and the stakeholes, were too shallow to be structural, if originally cut through natural, and may be related to any activity suggested by the clay-lined pit.

The natural deposits were small rounded pebbles in a yellow-white coarse sand, overlain in places by thin patches of pale pink, slightly clayey sand, not quite brickearth, and probably deposited by Brothock Water in spate.

The finds

Adrian Cox

Although pottery of an earlier date was recovered from the excavation, no component of the artefact assemblage may be reliably dated to before the late 18th century. The assemblage includes two heavily corroded iron objects (both from Context 2), bottle glass and wall plaster.

Thirteen small fragments of bottle glass from a dump of cobbles (Context 4) are of 19th century date. Four fragments from Context 16, the backfill of a cut associated with the early modern phase of rebuilding on the site, are a little earlier in date, possibly late 18th or early 19th century. A bottle neck (1) was included in the latter assemblage. Also found in this backfill was a fragment of painted wall plaster (2), of similar date to that of the glass. Given the stratigraphic position of Context 16 in relation to Context 4, at least some of the material from the former is likely to have been redeposited.

Catalogue

1. Bottle neck. Surviving depth 125 mm; external rim diameter 32 mm; internal rim diameter 21 mm Cylindrical neck and part of the shoulder of a bottle in green glass. There is some surface deterioration. (Not illustrated.)
   Context 16; Find No 45.

2. Painted plaster fragment. Length 40 mm; width 35 mm; thickness 16 mm. Fragment of buff plaster with angular and rounded inclusions. The upper surface bears an orange wash or paint which survives in patches. Over this is a layer of yellow to brown paint, also surviving in patches. (Not illustrated.)
   Context 16; Find No 46.

The pottery

Derek W Hall

Although this is a small assemblage of medieval pottery, it does represent a fairly tightly dated group. A date range of the 13th to 15th centuries is suggested by the types of fabrics that are present. The largest group of imported pottery in this assemblage is of Yorkshire/Scarborough wares, the most commonly imported fabrics on the east coast of Scotland in the 13th to 14th centuries. A single sherd of German stoneware is also present. The vast bulk of the sherds are from glazed jugs rather than cooking pots and this may suggest the status of the inhabitants of this part of the Marketgate.

Context	East Coast Redware	White Gritty	Yorkshire/ Scarborough	Stoneware	Unident
1		2			
2	8	5	15		4
4	21	3	2		6
5					1
6	3	2	5		1
13	2		4	1	
16	4	1			
Total	38	11	28	1	12

Discussion

This excavation confirms that Marketgate was surfaced some time in the 14th century, soon after the feuing of the first plots in 1331. There seems little reason to doubt that the structures indicated by the early walls (5 and 18) are as old as the pottery finds suggest, and date to before 1500, although the structure fronting on Ladybridge may just be the younger of the two. This affords a convenient timescale for feuing to have proceeded southwards from the north end of Marketgate, gradually narrowing the cobbled width of the street, and accounting for the apparent discrepancies in the rig pattern. It also fits neatly with the commencement of feuing in 1331 and the opening of the first adequate harbour around 1400. Indeed, Marketgate south of Ladybridge may not have developed until the opportunities provided by the opening of the harbour became manifest.

The similarities in the pottery assemblages from the dumped deposits (2 and 4) and cobble spread (6) suggest that the dumped deposits may have derived from the partial clearance of the cobble spread or a similar deposit outwith the excavation area. The route from Dundee over the Lady Bridge may not originally have executed a 90° turn into Marketgate, but have cut this corner slightly, before the first structures were in place there. The high quality and imported nature of the ceramics suggests a thriving trade with Yorkshire and the Low Countries, if not local settlement by their respective denizens. Equal amounts of local and imported wares occur in deposits 6 and 2, while local pottery predominates in Context 4, an internal deposit with a slightly later pottery assemblage, suggesting a decline in foreign trade and/or an increase in the ability of the local potteries to compete.

The absence from the finds assemblage of anything c 1450–1800 suggests that the original buildings remained unchanged for around 400 years, presumably due to the initial quality of construction, before undergoing rebuilding shortly after 1800. They are most likely the structures shown on the Marketgate/Ladybridge corner on Wood's town plan of 1823. This longevity, together with the high quality of imported wares, suggests that the structures were first owned and built by wealthy merchants.

The name Marketgate, taken with a width compatible with a marketplace, suggests that here

was a second commercial focus for the town. This perhaps grew up around weather dependent marine trade and fishing, which were less amenable to fixed one-day trading as was conducted around the traditional location, the High Street tolbooth.

Confusion has arisen previously concerning the origins and applications of the names Neumarket-gate and Auld Marketgate, both found in 15th century burgh records. These may simply allude to the two presumed phases of development of Marketgate brought about by the opening of the harbour.

The early 19th century rebuild on Marketgate (Structures A and B) survived into the present century, possibly disappearing on construction of the swimming pool. The Ladybridge structure survived until July 1993.

The pits cut into the subsoil and sealed by the cobbled surface of Marketgate probably relate to small-scale activity associated with exploitation of the sea and/or shoreline prior to the commercial development of the area in the 14th century.

The laying out of Marketgate may have coincided with, and initially depended on, the construction of the Lady Bridge. This was built some time before 1529. Surprisingly, there is no recorded town port here. However, St Mary's Chapel exacted tolls on the Lady Bridge to maintain its secondary function as a light-house, and may have effectively functioned as a port.

Acknowledgements

The Trust is grateful to the Angus and East of Scotland Housing Association for funding this excavation. The illustrations in this report are by Dave Munro.

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

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Excavations at the Star Garage Montrose

James R Mackenzie

with contributions by Derek W Hall & Catherine Smith

In December 1992, the Scottish Urban Archaeological Trust Ltd carried out an archaeological evaluation of an area then occupied by the Star Garage, in advance of a sheltered housing development. Following the identification of stratified medieval deposits, a small-scale excavation was carried out in March 1993 within the confines of the still standing Star Garage. The archaeological work was entirely funded by Hillcrest Housing Association.

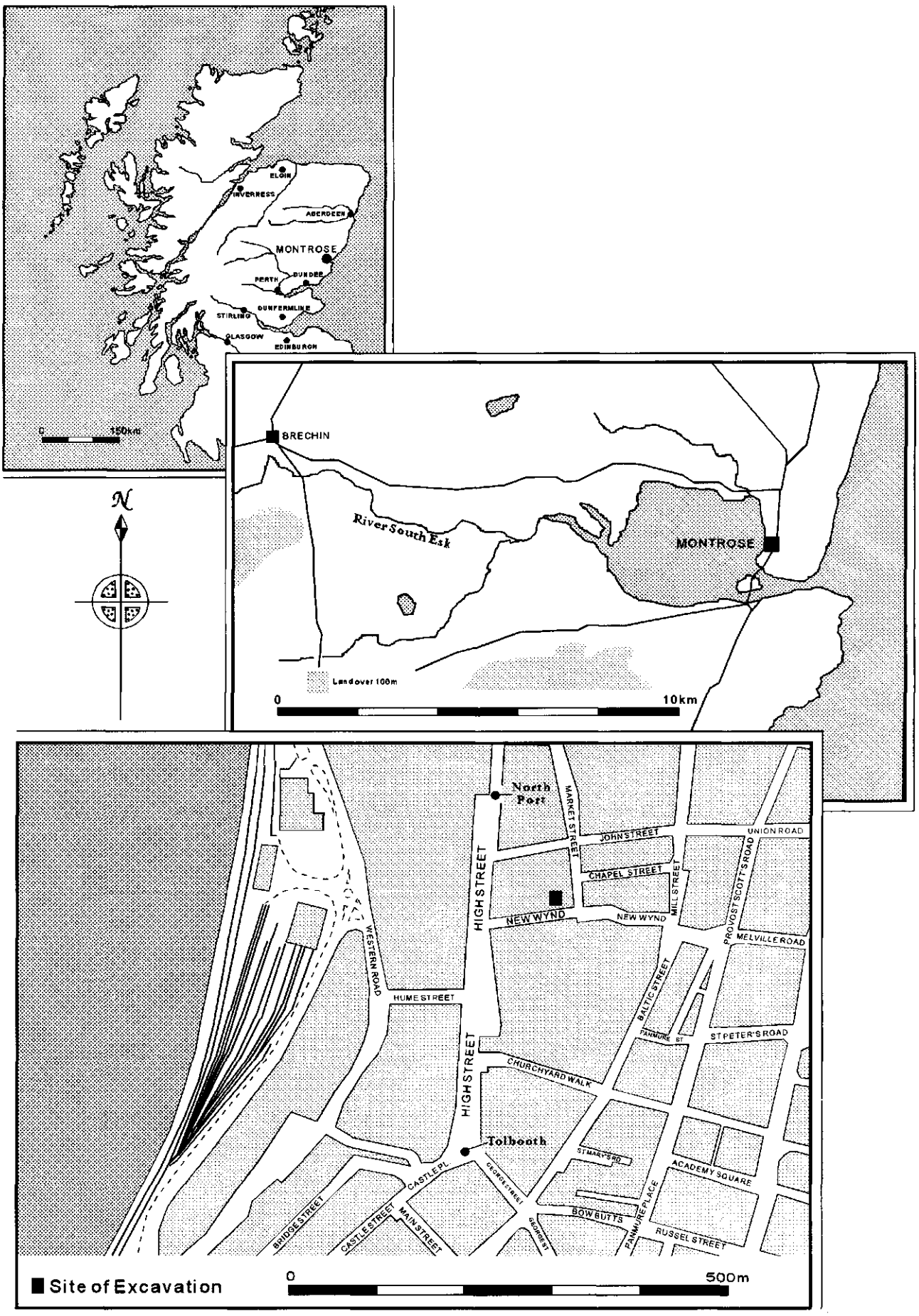
Historical and archaeological background

Montrose is situated on a peninsula formed by the North Sea, the River South Esk and the Montrose Basin, occupying a sheltered position on the east coast trade route midway between Aberdeen and Dundee (Illus 1). Montrose's burghal origins date back to the reign of King David I (1124–1153 AD), making it one of the earliest Scottish burghs.

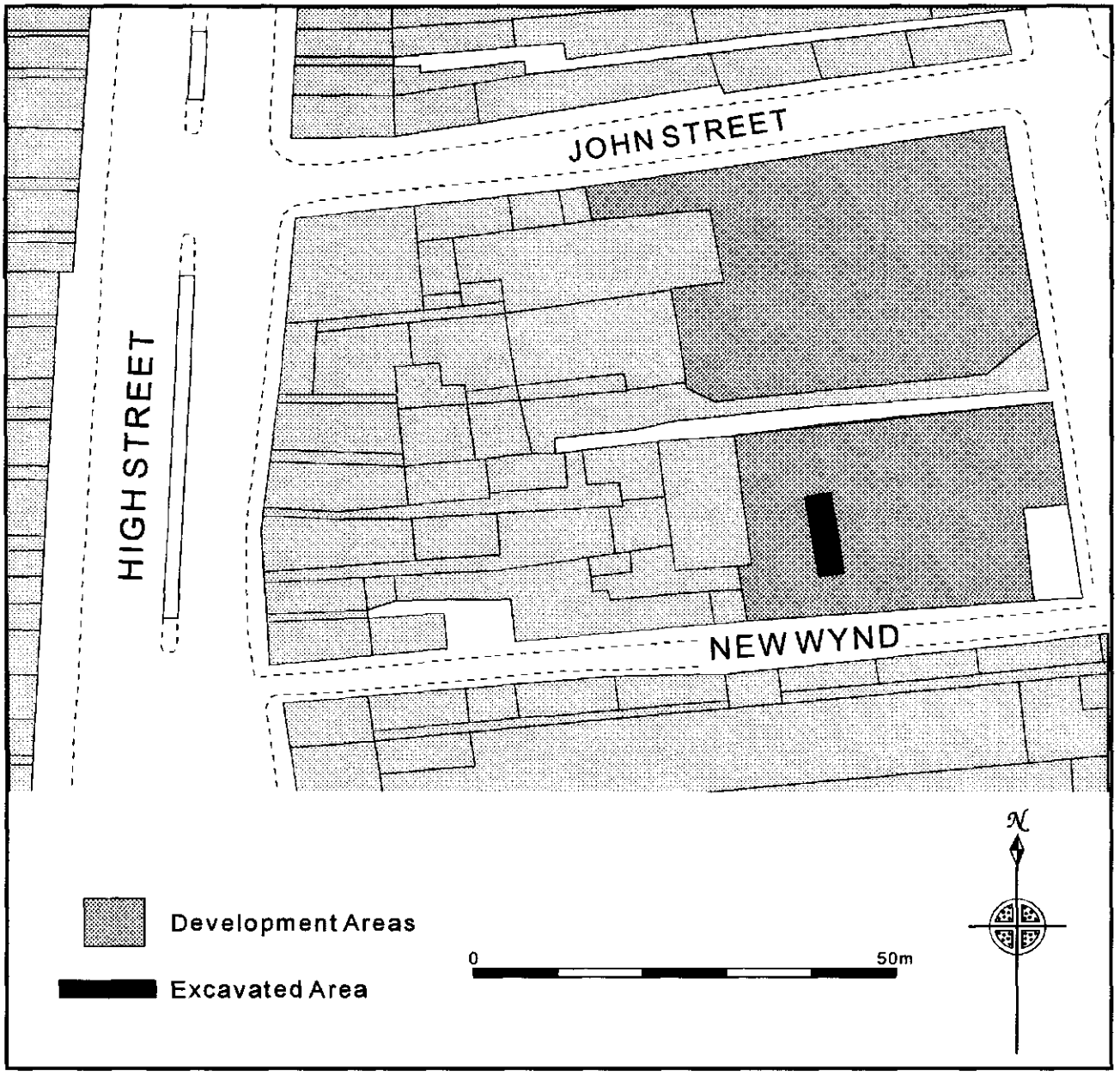
As one of a number of major trading burghs situated on the east coast, such as Perth, Aberdeen and St Andrews, it is an important centre for the understanding of urban origins. It is known that the burgh had an extensive trading influence over the east coast of Scotland in the Middle Ages, as demonstrated by a complaint made in 1289 by the 'provost and remanent burgesses of the community of Banff' that the burgesses of Montrose were troubling fairs established in Aberdeen for the use of the burgesses and other burghs north of the Mounth (Cramond 1893, 373). Montrose was also an important port with commercial links with the Low Countries. In 1330 the first customs accounts show the exportation of hides and wool, while by 1473 Montrose's trade had diversified to include fleece, salmon and woollen cloth (Gourlay and Turner 1978, 3). This economic success was sustained throughout the early modern period as the town outpaced its closest rivals, Brechin and Arbroath.

Montrose is particulary noted for its wide north to south aligned High Street. The appearance of this main thoroughfare altered during the early modern period. In 1684 the council allowed houses to encroach upon the High Street from its eastern side, between the Tolbooth and the North Port (Illus 1), providing the work was done in stone (Fraser 1967, 158). It was observed in the late 18th century that many of these houses had their gables to the street and so gave the street a vulgar appearance (Gourlay and Turner 1978, 8). A handful of gable ended houses still remain on the High Street today. An additional change to the appearance of the High Street focused around a row of houses, formerly called Mid Row, which occupied the centre of the High Street dividing it in two: Murray Street on the west and High Street on the east (Mitchell 1866, 79). In 1734 a resolution was passed to demolish this central row, restoring the street to its original form (Gourlay and Turner 1978, 5).

Although the archaeological potential of Montrose has long been recognised, not least because of the discovery of a number of coin hoards in the historic core of the town, dating from the 13th century and later (Gourlay and Turner 1978, 9: Stevenson 1974, 7), there has been little opportunity to examine this potential. There has been only one significant excavation in Montrose prior to the Star Garage project. This was carried out at 32 Castle Street, which is located to the south-east of the High Street (Illus 1). A series of features and deposits dating from the 13th-15th century were discovered overlying wind blown sand. This deposit of sand, in turn, overlay a fossil plough soil in which one sherd of prehistoric pottery was found (Sheriff 1993, 355–365). Closer to the Star Garage excavation, at 22D Market Street (Illus 1), a watching brief on contractors' groundworks revealed a considerable build up of 17th and 18th century garden soil (Coleman, archive report). Trial trenching conducted at Murray Lane to the west of the High Street identified a deposit of medieval garden soil. It was thought that this area was used for horticulture until recently (Cachart 1993, 96).



Illus 1. Site location



Illus 2. Trench location.

The excavation

The site of this excavation is situated well within the historic core of Montrose, in backlands on the east side of the High Street (Illus 2). It occupies the area between John Street and New Wynd, bounded on the east by Market Street. The development consists of two parts: the site of the demolished Playhouse Cinema to the north and the Star Garage to the south, the two parts divided by a close running off Market Street. In total the area involved is 2600m².

An initial trial excavation was conducted on this site as part of the archaeological evaluation in December 1992. Four trenches were excavated, three within the confines of the Star Garage and one in the area of open ground to the north, where the Playhouse Cinema once stood. Medieval deposits were found in all the trenches, but only in the area investigated by this excavation was there thought to be the likelihood of considerable disturbance to the archaeological resource as a result of the proposed development of a housing unit. Substantial deposits of stratified medieval garden soil were identified, containing significant quantities of medieval pottery and faunal remains (Cachart, archive report).

The objectives of this excavation were as follows:

1. to further investigate the medieval deposits encountered during the evaluation in order to gain a better understanding of their nature;
2. to investigate the possibility of medieval

features being present, which may help establish early land use activities in this part of the burgh (archaeological remains, in such forms as garden soils, midden deposits, pits, hearths, kilns, and ditches could reveal evidence relating to early industrial, horticultural or domestic use);

3. to investigate the possibility of early property boundaries or rigs representing burgage plots being present, which may aid understanding of the early burghs' development.

After removal of part of the Star Garage concrete floor surface, an area of 12 x 2.8m was opened for investigation. The excavation then progressed reducing the overall approximate level from 10.70m OD to 9.10m OD. For safety reasons the area was then stepped in; the excavation area reduced to 9 x 1m, effectively creating a north to south aligned slot trench through the centre of the excavation area. The approximate level of this trench was reduced from 9.10m OD to 8.25m OD. A 1m² sondage was excavated at the northern end of the slot trench to a depth of 7.10m OD in order to examine an interesting sequence of deposits representing the earliest phase of activity on the site.

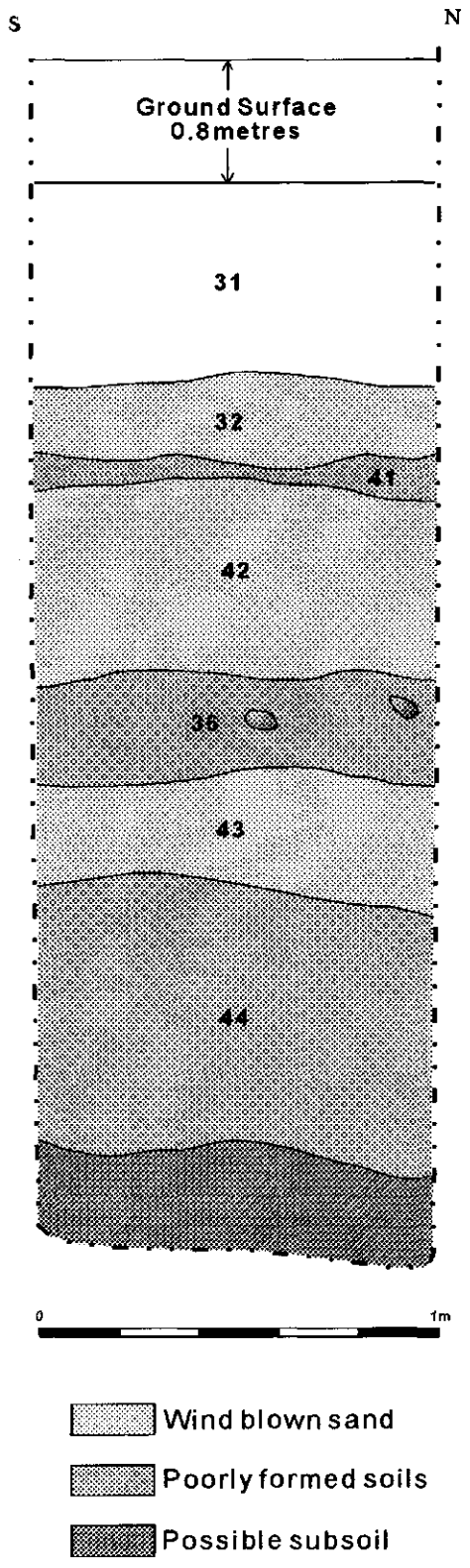
The results

Possible subsoil

A clean sand deposit was encountered at c 7.2m OD at the base of the 1m² sondage (Illus 3). Unfortunately it was impossible to confirm whether this deposit represented undisturbed subsoil as the maximum safe working depth had been reached.

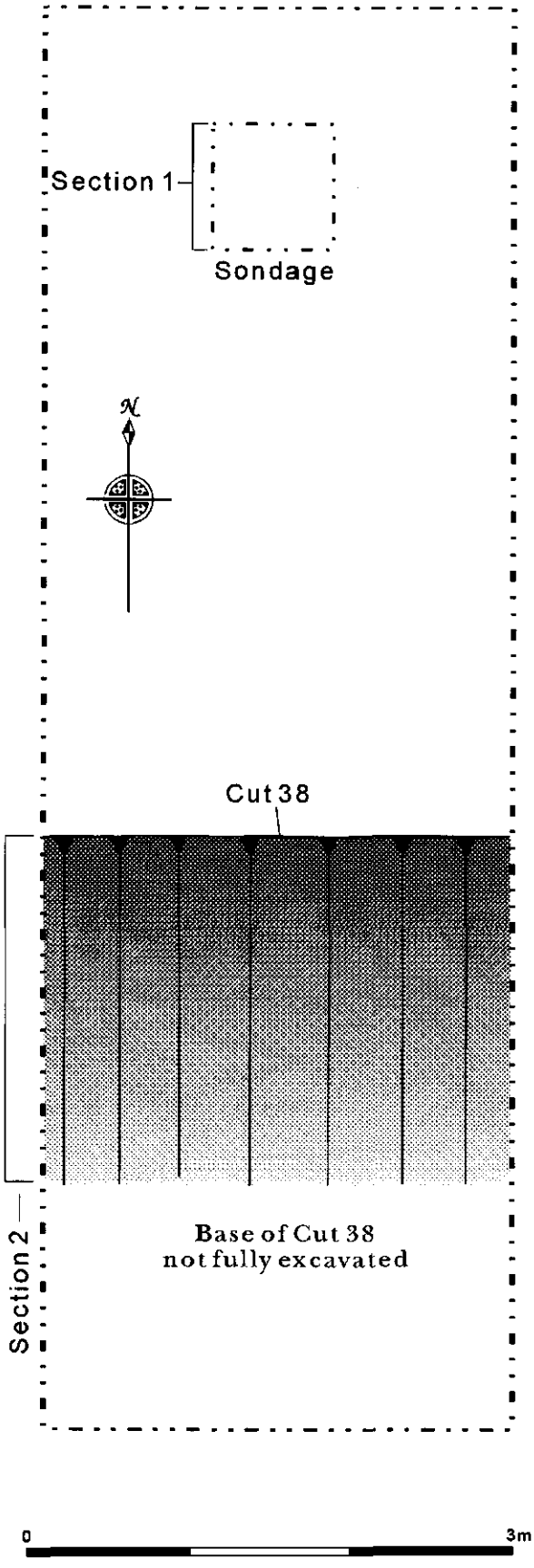
Phase 1 anthropogenic soils and aeolian sands

The earliest evidence of human activity on the site was found directly overlying the possible subsoil deposit and comprised a sequence of alternating bands of poorly formed soils (Contexts 36, 41 and 44) and wind blown sands (Contexts 32, 42 and 43) (Illus 3). Unfortunately these deposits could only be examined in the 1m² sondage because the excavation area had to be restricted for safety reasons. The layers reached a total depth of c 2m, accounting for a substantial rise in the ground level of the site. A small assemblage of pottery was recovered, dating to the mid to late 13th century. Five of these pottery sherds represented a local product, and two sherds, imported products (Hall, below). Some bio-turbation was evident throughout these layers, indicating that during this period the site had been used for horticulture. The presence of substantial deposits of wind blown sand sealing the poorly formed soils indicates that there were no adjacent structures on the site to impede its build up. It is likely therefore, that the



Illus 3. East-facing section of anthropogenic soils and aeolian sands, phase 1.

site was exposed to the east and that substantial quantities of sand could blow in from the coast. This may have happened gradually during periods of inactivity on the site or may have occurred as a result of several large storms.



Illus 4. Plan of property boundary, phase 2.

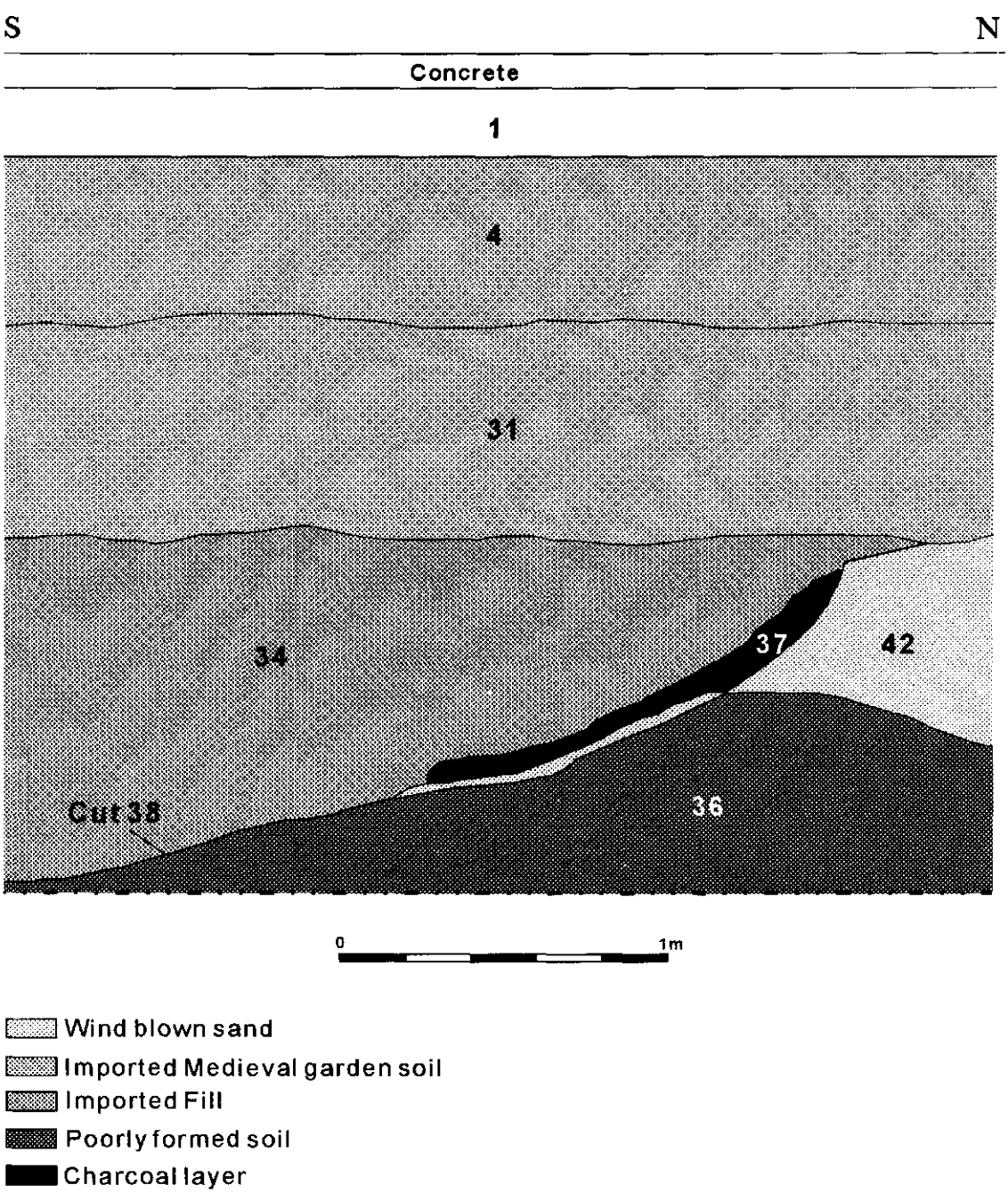
Phase 2 property boundary

A linear east-to-west cut (Context 38) truncated the sequence of alternating wind blown sands and poorly formed soils (Illus 4), representing the probable establishment of a property boundary. Unfortunately, the maximum safe working depth for the excavation had been reached before the base of the cut could be excavated, but it did have a minimum depth of 0.6m. It was filled with a homogeneous, loose, light brown sandy loam (Context 34), which slightly overlay the top of the cut and fully covered the southern half of the excavated area, indicating that the southern edge of cut 38 lay outwith the area of excavation. It is likely that this material had been imported to improve the soil quality for horticultural use. The seven pottery sherds recovered indicate a possible late 13th century date for this activity (Hall, below).

Below fill 34 and lying against the northern edge of the cut, was a charcoal-rich deposit (Context 37), 0.10m in thickness (Illus 4). This deposit possibly represents the spread remains of a burnt wooden fence that may have demarcated an earlier small boundary ditch. If this interpretation is correct, cut 38 may represent the line of a later boundary respecting an original boundary.

Phase 3 imported medieval garden soils

At the beginning of this phase the property boundary identified in phase 2 became redundant as it was sealed below a layer of dark grey-brown, sandy loam (Context 31), c 0.7m in depth. This layer covered the entire site creating a distinct horizon of garden soil. Contained within the garden soil were over 100 sherds of 13–15th century medieval pottery, the majority of which represented local products. There was also a small amount of sherds representing imported Low Countries fabrics and Yorkshire products, indicating probable trade links with these areas (Hall, below). This is not untypical as similar finds have been recovered from excavations in other east coast medieval burghs, such as at Meal Vennel, Perth (Cheer, forthcoming) and at 42 St Pauls Street, Aberdeen (Murray 1982, 125). Imported pottery has been found in such quantity as to clearly demonstrate trading links with the north east of England and the Low Countries during this period. Nearly 100 fragments of faunal remains, primarily from large ungulates such as cattle and sheep or goat were also recovered. These remains were within the size range typical of medieval domestic animals and many were characteristic of butchery refuse (Smith, below). In addition, a small assemblage of material possibly derived from semi-industrial use was recovered. This



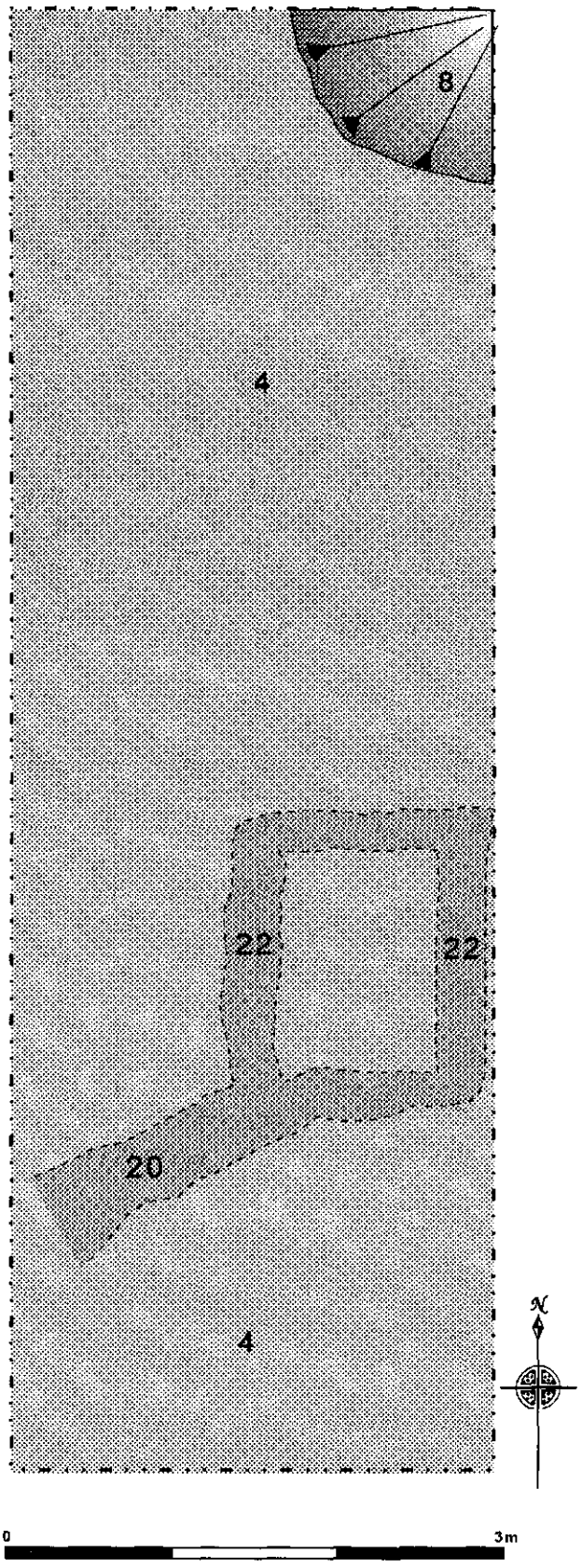
Illus 5. East-facing section of property boundary sealed by imported garden soils, phases 2 and 3.

assemblage comprised a large piece of vitreous, metallic slag and several pieces of coal. It is possible that these semi-industrial remains originated from the close proximity of the site or they may have been transported within the imported garden soil.

The garden soil could have been imported for one or more possible reasons. As the quality of the soil is better than the earlier deposits on the site, it may have been imported for soil improvement for horticultural purposes. It may also have been imported to raise the ground level as part of an overall attempt to reduce the effects of such inundations of wind blown sand as seen throughout phase 1.

A second layer of medieval garden soil (Context 4) was encountered throughout the excavation area, sealing layer 31. At the interface of the two garden soils there was a high degree of mixed yellow sand, although not identifiable as a separate layer. It is possible that this sand represents a small inundation of wind blown sand followed by the deposition of a further layer of imported soil (Context 4), in an attempt to further raise the ground level. The mixed nature of the sand may have resulted from bio-turbatory effects.

This second garden soil comprised a dark brown, sandy loam, some 0.5m in thickness. Over 200 slightly abraded sherds of late medieval pottery were recovered, again the vast majority



Illus 6. Imported medieval garden soils truncated by Victorian drainage, phases 3 and 4.

being of local products with a small number of imports (Hall, below). Over 50 fragments of faunal remains were recovered, this time indicating a domestic or mixed source, rather than butchery waste (Smith, below). There was a larger assemblage of material originating from semi-industrial activity within this second garden soil. The assemblage included fragments of metallic slag and partially burned fuel material which exhibited a higher degree of abrasion and weathering than the small assemblage recovered from the underlying garden soil 31. This may indicate a more prolonged exposure of garden soil 4 to weathering agents or the finds may have become abraded at the source of the imported soil (Cox, archive report). However, the quantities of semi-industrial waste recovered would appear to indicate that it most probably originated from the vicinity of the site.

Cut into the medieval garden soils, at the north-eastern corner of the excavation area, was a rubbish pit (Context 8) (Illus 5). This pit was mostly obscured by the section edge but it appeared to be circular, c 1.2m in diameter, and was c 0.7m in depth. It contained a single homogeneous fill of dark grey, silty sand, from which four sherds of late 13th to 15th century medieval pottery were recovered (Hall, below), and two fragments of cattle bone (Smith, below).

Phase 4 the Star Hotel

The beginning of this phase is represented by the encroachment of the first structural remains, demonstrating the expansion from the High Street properties into the backlands area. The earliest feature uncovered was a brick-built well, found in May 1993 by contractors during the redevelopment of the site. This well was located c 4m to the north of the excavation area and had a diameter of 1.25m and a depth of 5.26m (Benvie 1993, 97). The date of the construction of the well is uncertain but its type of build indicates that it may date from as early as the 18th century.

Within the area of excavation, truncating the imported garden soils, was a substantial stone-built septic tank (Context 22) and an associated inlet drain (Context 20, Figure 5). The tank was rectangular in plan, 3 x 1.6m, and was 2.15m deep. It had no base or foundation, enabling its contents to drain into the possible sand subsoil below. For this reason it is clear that the nearby well must have been redundant prior to the construction of the septic tank, probably during the mid to late 19th century. Finds retrieved from the backfill of the tank indicate that it became redundant in the early part of this century. These finds included ironwork associated with the lid of the tank and a fireproof ceramic bowl manufactured in Alloa (Cox, archive report). The inlet drain was built into

the top south-western corner of the tank and was aligned north-east to south-west and was 0.15m in depth. Overlying these drainage features were the heavily disturbed remnants of a cobbled surface (Context 1).

The well, the drainage features, and the cobbled surface are most likely associated with the neighbouring Star Hotel. In the late 18th century the Star Inn was established on the site of the present Star Hotel by a vintner named David Anderson. This Inn developed to become the principal stopping place between Dundee and Aberdeen (Low 1938) and early map evidence shows that the hotel had an open courtyard to the rear and a probable stabling area (Wood 1822; Boulton 1864). Later, this open courtyard became covered as the Star Hotel was added to and expanded (Ordnance Survey 1902).

Phase 5 the Star Garage

The final phase of activity is represented by the final development of the site, earlier this century. The Star Garage and the Playhouse Cinema were constructed over the courtyard of the Star Hotel, the site of an early 19th century fleshmarket and open ground to the north (Wood 1822). These structures remained in use until recently.

Pottery

Derek W Hall

These excavations produced a small assemblage of medieval pottery (393 sherds). The most common fabric is a glazed Redware that would seem to belong to a Scottish East Coast tradition which has been identified in excavations in Perth, Arbroath and Aberdeen (Hall, forthcoming, Murray 1982, 122). All the Redware sherds are from jugs, and there are several rod handles. This fabric may be a local product.

The remaining medieval sherds are in imported fabrics. There are sherds in Aardenburg type ware from the Low Countries and a small group of Redwares and Greywares of the same origin. There are five body sherds in Yorkshire ware, eight in East Coast White Gritty ware, and there are 19 unidentified imported sherds. The absence of Scottish reduced greywares suggests that this assemblage dates to no later than the 15th century, while some of the earlier deposits may be of mid to late 13th century date.

Pottery catalogue

East Coast Redware

1. Parrot beak spout from jug glazed purple brown (4).
2. Rod handle and rim fragment from jug with traces of yellow glaze (36).
3. Skillet handle with traces of amber green glaze on a red wash (31).

Aardenburg ware

4. Rod handle from jug glazed dark green brown (32).

Scarborough ware

5. Body sherd from jug glazed lustrous green with impressed pellet (32).

Low Countries Greyware

6. Base sherd with fragment of thumbed 'foot' from cooking pot (34).

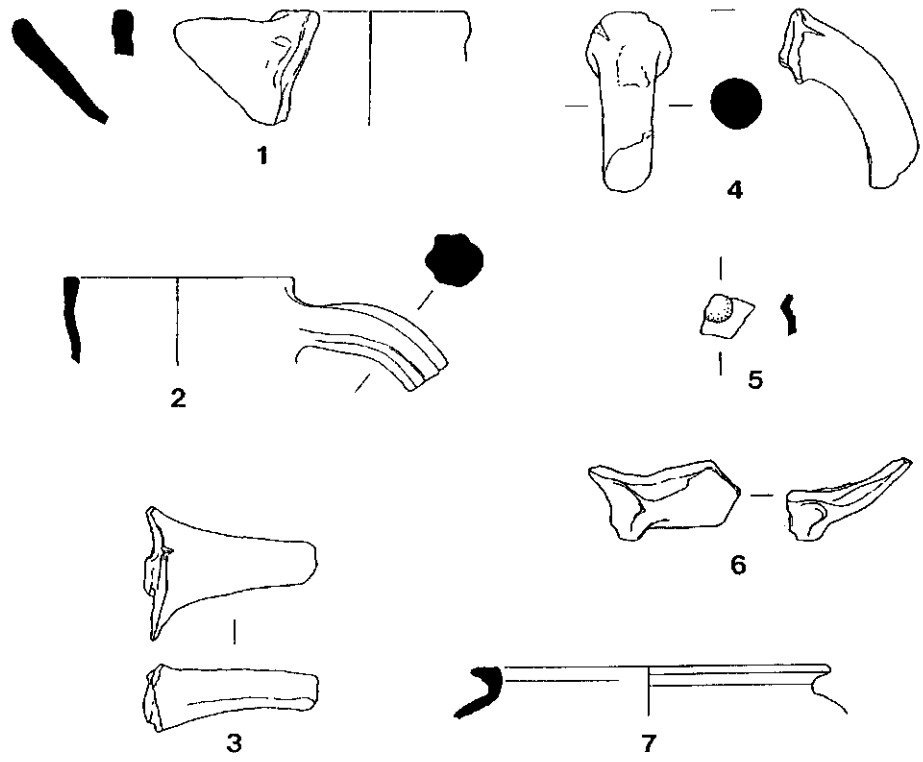
Unidentified

7. Rim sherd from unglazed cooking pot (4).

Table 1. Pottery quantification.

Context	EC	WG	LCR	LCG	Aard	Sc	St	Unid	Modern	Total
1	12	1					5		1	19
4	205	7	6				1	10		229
7	2	1					1			4
14	5								1	6
15									12	12
31	104	1	1	1	3	4	1	4		119
32					1	1		1		3
34	4			1		1		1		7
36	5								3	8
	337	10	7	2	4	6	8	19	14	407

Key: ECR East Coast Redware; LCG Low Countries Greyware; S Stoneware; WG White Gritty; Aard Low Countries Aardenburg; LCR Low Countries Redware; Sc Scarborough



Illus 7. The pottery (scale 1:4).

Animal bone

Catherine Smith

A total of 343 animal bones and teeth was recovered. The species identified were cattle, sheep/goat, pig, horse, dog, cat, probable domestic fowl and fish. Bones identified only as large ungulate (ribs and vertebrae of cattle and horse size), small ungulate (ribs and vertebrae of sheep/goat and pig size) and indeterminate mammal were also recorded.

The numbers of bones from each species and context are shown in Table 2. Minimum numbers of animals based on the most frequent bone in each context are shown in Table 3. It can be seen that cattle were the most frequently occurring animals at the site, followed by sheep/goats, pigs being third in importance. However, as the sample size was small, it may be ill-advised to try to draw too many inferences regarding dietary preferences of the site's inhabitants from these figures. Nevertheless, if the food-forming mammals only are considered, the percentage occurrence based on fragment count is remarkably similar to the pattern observed at other Scottish urban sites of medieval date: cattle 65.4%, sheep/goat 26.9%, pig 7.1% and horse 0.6%.

At least some of the animal bone may date to the medieval period, having been found in association with pottery of 13th-15th century date (Contexts 4, 31, 32, 36). Certainly the small size of the bones indicates that they could have come from medieval (or post-medieval) animals, which were generally much smaller than their modern counterparts. Indeed, no large bones of improved animals were present in the assemblage. All of the measurable bones of cattle, sheep/goat and horse fell within the size range of the large medieval collection found at the Marks and Spencer site, High Street, Perth (Hodgson 1983, 27–32), while a single dog bone, an innominate, was slightly smaller (by 1.2 mm) and a cat innominate slightly larger (by 1 mm). Dimensions of all those animal bones which it was possible to measure are available in archive.

Since the site was thought to have been located near to a flesh market pre-dating the early 19th century, the distribution pattern of different parts of the carcass was assessed in order to ascertain whether butchery waste may have been present. Only one context (31) was characterised by the high numbers of bones of the lower limbs (cattle tarsals and metapodials), which is typical of butchering refuse, although bones from other parts of the skeleton were also well represented. Bones

Table 2. Numbers of bones from each species, in context order.

	Context	1	4	7	14	15	31	32	34	36	Total
Cattle	Bone	10	34	2			52	1		3	102
	Teeth	3	5				4				12
Sheep/Goat	Bone	9	15				17		1		42
	Teeth	7	2				5				14
Pig	Bone	1	6				3			1	11
	Teeth				1						1
Horse				1							1
Dog			1				1				2
Cat			1			6	4				11
Bird cf fowl							1				1
Fish		1									1
Sub Total		32	64	2	1	6	87	1	1	4	198
Large Ungulate		4	12			1	25		1	1	145
Small Ungulate		1	2					4			7
Indeterminate		13	32		1	1	44	1	1		93
Sub Total		18	46		1	2	73	2	2	1	145
Total		50	110	2	2	8	160	3	3	5	343

Table 3. Minimum numbers of animals based on most frequent bone in each context.

Context	1	4	7	14	15	31	32	34	36
Cattle	1	2	1			5	1		1
Sheep/ Goat	1	4				1		1	
Pig	1	2		1		1			1
Horse		1							
Dog		1				1			
Cat	1				1	1			

of the feet were, however, not found in large quantities, as would be expected from butchering waste, perhaps indicating that they may have been overlooked during excavation. From other contexts, for example Context 4, the impression gained is that the bones may have come from a domestic or mixed source.

Long bones were butchered by roughly chopping across the shafts with axes or cleavers, in the medieval fashion. Only two bones had been sawn, as is the modern practice; these were a cattle innominate (Context 36) and a large ungulate rib (Context 15). Many of the long bones were further butchered by chopping in the sagittal plane in order to facilitate extraction of the marrow. Vertebrae were also chopped in half sagittally, indicating division of the carcasses into sides of beef or mutton. Other man-made marks on the bones of cattle, sheep/goat and pig included thin knife cuts which probably occurred when the meat was stripped off. Knife cuts near the distal end of a dog humerus were probably inflicted during skinning (Context 4). Dog bones with similar knife cuts have been found at sites in medieval Perth and Aberdeen (Smith, forthcoming) and although dogs may have been eaten when food was otherwise scarce, their main value when dead would have been for their fur. Indeed, dog skins were later exported from Scotland to France during the 17th century (Smout 1963, 218).

In summary, then, the animal bones indicated an assemblage with features not atypical of the medieval or immediately post-medieval periods, and almost certainly contained waste from both butchering and domestic sources.

Discussion

This excavation has proved very useful in furthering understanding of the development of the burgh of Montrose. The earliest archaeological activity found on the site dated from the mid 13th century, approximately 100 years after the burgh's inception. This appeared to consist of horticultural use of the backlands area to the east of the High Street.

Of particular interest are the substantial levels of wind blown sand sealed between the layers of poorly formed soils. It is clear that the early burgh must have been affected by substantial inundations of sand, which would have made horticulture difficult, especially on the eastern side of the High Street. In order for sediment to be transported by wind a threshold of 16 km per hour is sufficient (Stiegeler 1976, 4). Therefore short periods of strong winds blowing in from the North Sea would clearly be enough to transport large amounts of sand. Wind can move sand by three physical mechanisms: suspension, surface creep and saltation. Of these, saltation, where individual grains of sand bounce across the ground surface, accounts for the majority of transportation. If this is the process by which the wind blown sand found at the Star Garage has travelled then it is clear that the land between the eastern side of the High Street and the coast must have been exposed and unobstructed.

This phenomenon has been identified in some other medieval burghs. On the east coast, excavations at Forth Street Lane, North Berwick revealed substantial quantities of wind blown sand, sealed between 13th-15th century deposits (Cromwell, archive report). This also occurs on the west coast, where there is reference to inundations of wind blown sand affecting the economy of the medieval burgh of Ayr (Dodd 1971, 316–318).

The property boundary representing Phase 2 probably relates to a High Street burgess property. From the historical background it is known that the property layout on the east side of the High Street changed slightly during the early modern period. The location of this boundary does not appear to be respected by the modern layout of this part of the burgh.

At the beginning of Phase 3, it is possible that attempts were made to prevent or mitigate the effects of inundations of wind blown sand in this part of medieval Montrose by raising the ground level. This, combined with a need to improve such poor sandy soils, may account for the substantial amount of imported medieval garden soil. The significant number of faunal remains, characteristic of butchery waste, in the lower garden soil (31) may indicate that there was a fleshmarket nearby. From Woods town plan of 1822 it can be seen that a fleshmarket did stand on the site in the early 19th century. It may be possible that this fleshmarket represented a continuation of land use from the 15th century. It is also possible, although less likely, that the faunal remains were transported within the imported soil from another source. The increased amounts of semi-industrial derived material within the upper garden soil (4) may indicate a change of land use in the vicinity from purely horticultural to mixed domestic and semi-industrial activities.

There is a complete absence of evidence relating to the post-medieval period. This may be the result of the land being disturbed during the late 18th century development of the site for the Star Inn. Further disturbance may have occurred during construction of the 20th century Star Garage.

Conclusions

The excavation has shown archaeological activity on the site dating from the mid 13th century in the form of horticultural use and at least one property boundary. It has also demonstrated a possible later change in the use of the site, away from horticulture and towards a more domestic and possibly semi-industrial use. Finally, there was the gradual encroachment of structures as the backlands were developed in more recent times. The assemblage from this excavation provides an important opportunity to examine the material culture of medieval Montrose. The pottery from this site is of particular importance given the presence of imported fabrics such as Aardenburg type ware and Scarborough ware (Hall, above).

The presence of substantial quantities of stratified wind blown sand has been identified as a distinctive feature within the medieval core of Montrose. Such deposits have been identified at 32 Castle Street (Sheriff 1993, 355–365) and now here on the east side of the High Street. These deposits offer an opportunity to study the effects of wind blown sand inundations on property boundaries and land organisation. Further specialist study of these sands may help to determine whether the build up of sands occurred as a result of infrequent large storms, or whether the sand accumulated over a period of time. This type of study could provide a useful tool in understanding the early development of coastal burghs. For instance, it may be possible to determine whether there were periods of neglect within the backlands of the burgh, or whether the land was cultivated almost immediately after such events, which would provide an insight into the economy and life of the town.

The particularly deep nature of the

archaeological stratigraphy on the Star Garage site, up to 3 metres, demonstrates clearly that in Montrose there is great potential for the survival of very early archaeological remains. Every opportunity should continue to be taken to throw further light on the archaeology of historic Montrose.

Acknowledgements

The Trust would like to thank Hillcrest Housing Association for providing full funding for the excavation and also for contributing towards the publication of this paper. Grateful thanks are due to Rachel Benvie of Montrose Museum for providing additional information regarding the site at Star Garage. The illustrations in this paper are by Dave Munro.

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

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Archaeological excavations at St Nicholas Farm, St Andrews, 1986–87

Derek W Hall

Introduction

The proposed construction of a new leisure centre and associated car park at St Nicholas Farm (NO 5175 1585) provided the opportunity for an archaeological investigation (Illus 1). Following trial excavation and a resistivity survey a full-scale excavation was undertaken between 21st November 1986 and 15th March 1987. The three main research priorities identified were:
a) to confirm the site of the medieval leper hospital of the Blessed Nicholas;
b) to discover the size of the hospital complex and the nature and function of any buildings it contained; and
c) to ascertain the date of the hospital's foundation and its subsequent demise.

As such a large area was threatened by the development, c 4.22 acres (c 1.7ha), a programme of trial excavation was undertaken to identify a part of the site that would repay full excavation. Following the recovery of stone wall foundations between St Nicholas Farm and the treatment plant a resistivity survey of that area was undertaken. The survey suggested the presence of substantial buried remains and the main excavation trench (Area A) was opened between the farm and treatment plant. Area A measured 34m north to south by 21m east to west; towards the end of the excavation a 10 x 8m extension was added to the north-western corner of the area. A smaller trench (Area B), c 6m north to south by c 3m east to west, was opened in the middle of the field in a location where the farmer recalled hitting large stones with his plough (Illus 2).

Further information was recovered from a watching brief on the site during development work.

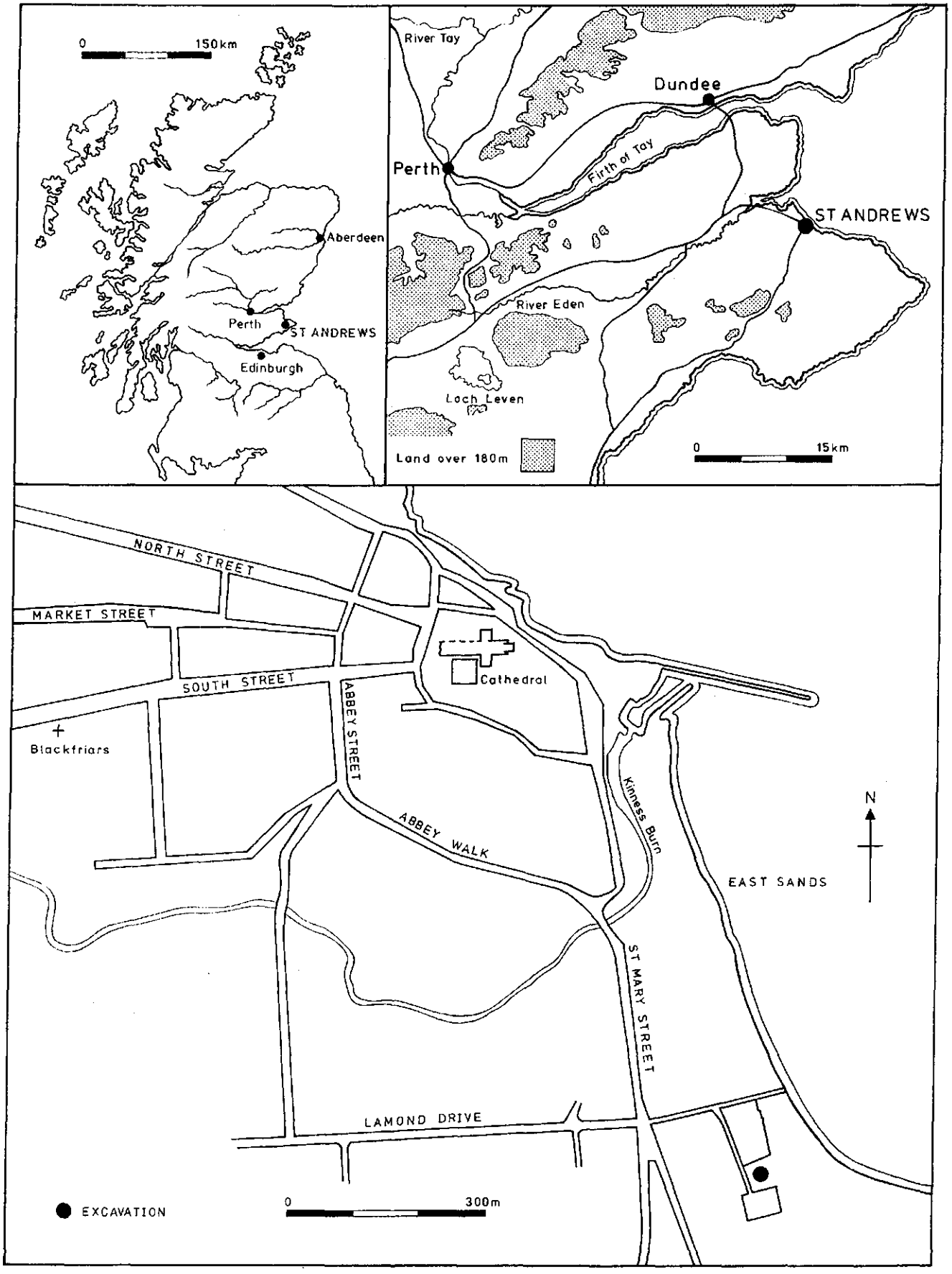
Historical background

Leprosy is a disease known to have been widespread in Scotland from at least the 12th century. It is generally assumed that the disease reached Britain with the Crusaders returning from the east, and Robert the Bruce is said to have died from it in 1329 (Barrow 1988, 323). Institutions to cater for those afflicted with leprosy were set up all over the country; Cowan and Easson (1976, 163) list 21 hospitals in Scotland (Illus 3). By the 16th century all the major east coast burghs possessed a leper hospital. Leprosy appears to have lasted in Scotland until the 1700s when it slowly disappeared from south to north (Hamilton 1987, 17).

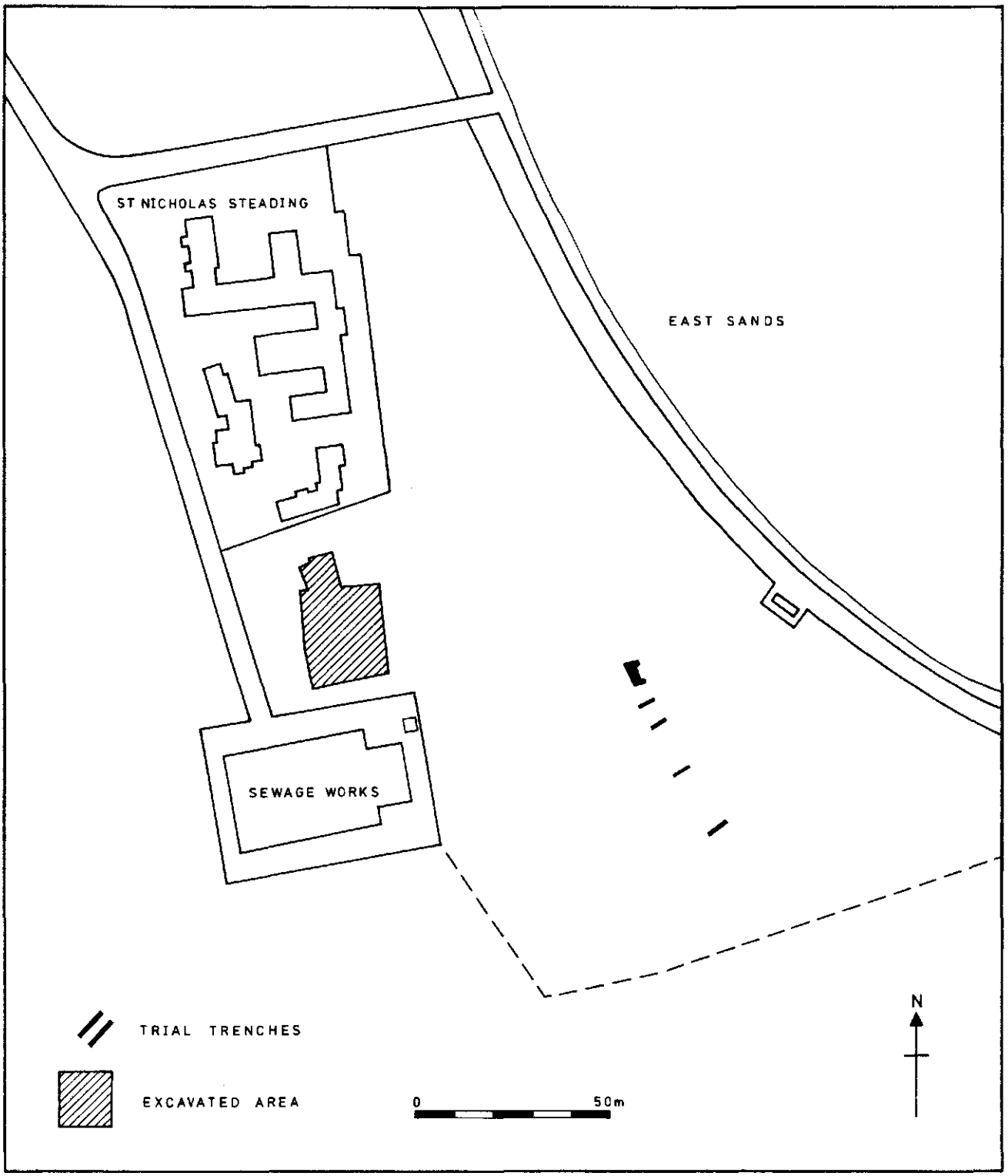
The earliest surviving documentary reference to the leper hospital of St Nicholas, St Andrews is in a charter of William I (King of Scots) confirming the gift of two oxgangs of land in Powgavie (Inchture, Perthshire) granted to the hospital by one Hugh Giffard (RRS II 1971, 255). This charter of confirmation is dated 1178, however, the identity of the founder and the date of the foundation of the hospital is not known. It has not proved possible to find the earlier reference of 1127 quoted in Cowan and Easson (Cowan and Easson 1976, 190).

In the charter of 1178 the occupants of the hospital are referred to as 'infirmis leprosis' – the leprous sick. In a later charter of 1195 confirming land at Putekin (Buddo, Fife) they are referred to as 'infirmis fratribus' – the sick brethren (RRS II 1971, 377). The latter description is interesting as it could be taken to imply that the hospital was under monastic control. However, in a supplication to the Pope dated 1429 a reference to the hospital states that 'for a long time (it) has been wont to be ruled by laymen or at least by secular clerks' (Dunlop and Cowan 1970, 58). In 1529 it was 'demitted' to the Blackfriars of St Andrews (MacFarlane 1900, 186), which may imply monastic control of the hospital from that date onwards.

There is the suggestion that the hospital may have been run by the *celi dé* monks of St Andrews. Two references of 1172–78 and 1199 refer to the *celi*



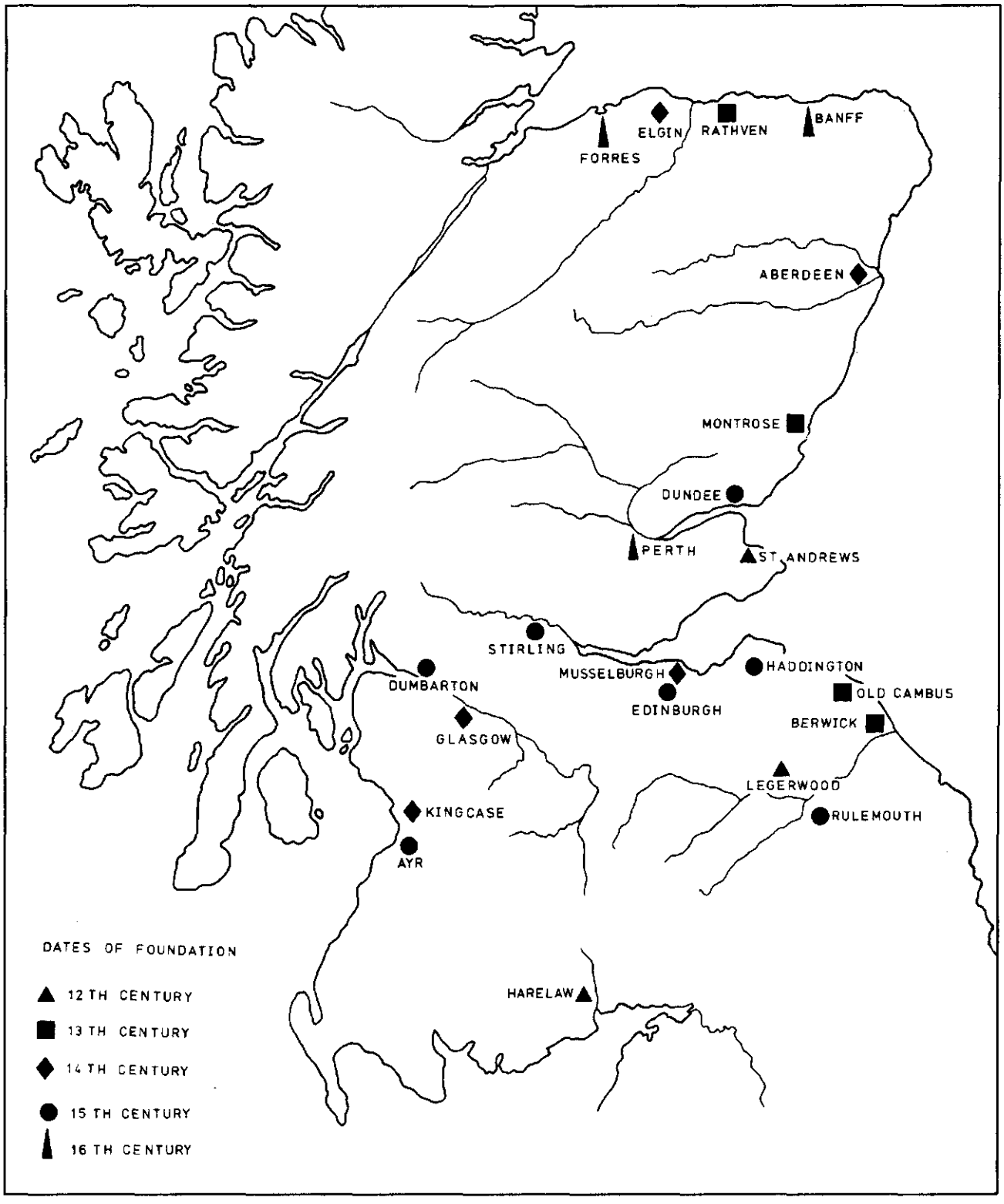
Illus 1. Site location map.



Illus 2. Trench location plan.

dé holding the lands of Kinkell (Barrow 1973, 221). A confirmation charter of 1480 refers directly to the hospital as 'S. Nicholai de Kinkell' (RMS 1984, 299). Whilst it is tempting to link these two references and infer *celi dé* control of the hospital, there is no further evidence to support this suggestion.

A reference of 1529 lists one George Martine as 'Preceptor, Master and Possessor of the Hospital or Leper House beside the City Of St Andrews (founded for the Honour and Worship of St Nicholas)' (MacFarlane 1900, 186). The same reference notes the 'Union and Annexation of that Hospital to the Place of the Friars Predicatores of the City of St Andrews' and states that the hospital was 'demitted' into the archbishop's hands and became part of the Patrimony of the See. The



Illus 3. Leper hospitals in Scotland during the 12th to 16th centuries.

transfer of the hospital's land holdings to the Blackfriars means that future references note the hospital rentals being given to the Blackfriars. For example, in 1561 a charter notes that a sum of money owed to the Blackfriars is 'ordanit to be gevin to the pouer of the hospitall of S Nicolace' (Donaldson 1949, 158). In 1567 St Nicholas is listed as one of the possessions of the Blackfriars that was handed over to the city of St Andrews. Indeed this charter refers directly to the 'capella' (chapel) of 'Sancti Nicolai' (Moir Bryce 1909, 203).

It is noticeable that references later in the 16th century no longer call St Nicholas a leper hospital but a poors' house. For example a reference of

1568–72 specifically mentions an annual rent paid for 'the crypellis, lamyt, blynd and pouir' of St Nicholas (Donaldson 1949, 241). This change to a poors' hospital presumably reflects the decline of leprosy as a major disease in this part of Scotland.

The latest surviving reference to St Nicholas is in 1583 when an endowment of victual is made to the 'poor folk present and to come' (Cowan and Easson 1976, 190). The date of the final dissolution and abandonment of the hospital is not known.

The true location of the hospital has been forgotten and is referred to as being 'probably to the south-east of the burgh, between the old coast road south from St Andrews and the sea, probably near the farm of St Nicholas' (Henry 1912, 194). In the 1950s the farmer ploughed up several dressed stones in the field to the south and east of the farm (OS Record Card NO51NW 28).

The archaeological sequence

Phase 1 - early activity

Three layers of soil were located overlying the natural sand. They appeared to represent some disturbance to the top of the natural ground surface, but produced no datable finds. Context 1175 produced fragments of disarticulated human bone.

Phase 2 - timber structure (Illus 4)

A group of cut features were dug into the natural sand and Phase 1 soils. The linear slots (1113, 1116 and 1128) with internal stakeholes (1118, 1120) and post-hole (1132) may form part of a timber structure, the arc of post-holes (1062, 1081, 1089, 1101, 1124) may also represent part of this structure. Two post-holes (1081 and 1101) contained post pipes (1083, 1140) that indicated square timber posts, and a third (1124) contained the preserved bottom of a timber that was plank-like in shape. This timber was radiocarbon dated and provided a date of 880±50bp (GU-2231), giving a calibrated date range of 1070 to 1120 AD. Contexts 1081 and 1101 also contained stone post pads that lay on the base of the cuts.

Cut feature 1172, which contained fragments of disarticulated human bone of unknown origin, was only located in a sondage and its true shape is unknown. Cut 1160 may have been a rubbish pit as its fills contained burnt clay, charcoal and small fragments of animal bone. A small group of medieval pottery, including Scarborough ware, from the fills of 1128 and 1062 may suggest an early 13th to mid-14th century date for this phase.

Phase 3 - soil deposition

Three layers of soil overlay the backfilled cuts 1062, 1081, 1089, 1101, 1124 and 1172. A fourth lay on top of the natural sand. A few sherds of White Gritty pottery were recovered from two of these layers, but given the difficulties of tightly dating this fabric (Hall forthcoming), the sherds only confirm the medieval date of this phase. Fragments of horse bone and pig bone were also present in these soils and the soil sealing 1172 (1050) contained disarticulated human bone.

Phase 4 - boundary walls and cobbled surface (Illus 5)

Stone wall 1002 ran from north-west to south-east through Area A for a distance of c 35m, while stone wall 1022 ran parallel to it through Area B (Illus 8) and was traced for a distance of c 45m. A layer of rounded cobble stones (1075) ran along the inside face of 1002 and through a doorway in the wall.

The two walls were separated by a distance of c 70m and seem to indicate the enclosure of part of the field. It is possible that they represent the eastern and western boundaries of the hospital complex. The function of the path and doorway through wall 1002 is unknown.

Phase 5 - stone building (Illus 6)

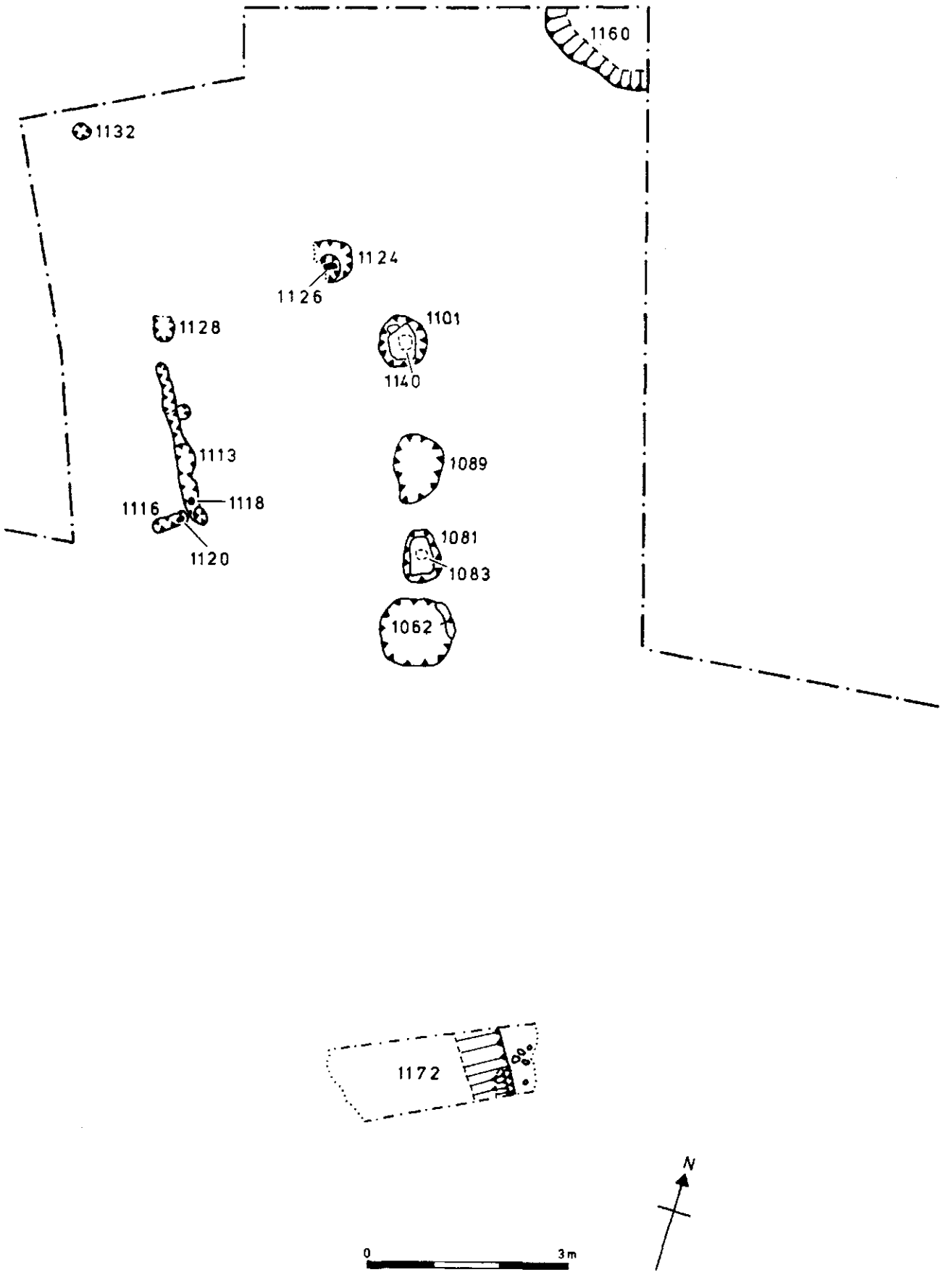
The doorway in 1002 was blocked by large stone blocks 1076 and a stone building was erected against its inside face. This structure had an entrance in its southern end between the western end of wall 1139 and the face of 1002. Its northern wall was represented by wall 1045. The former line of this building's eastern wall was indicated by a later robber trench (1056, Phase 9). A stone-built oven (1070) was constructed in the structure's south-eastern corner.

At the northern end of the building a clay-lined pit (1077) was cut through cobbling 1075. On the eastern side of this building the three linear slots (1038, 1107 and 1150) may represent a fenced enclosure. A few sherds of White Gritty ware were recovered from the fills of 1038, 1107 and 1150. Several fragments of disarticulated human bone were found in the fill of 1038. One of the fills of 1077 contained a utilised antler tine that may have been from the end of a wooden pole (Cat No 21).

The construction of this building, possibly the hospital bakehouse, blocks the Phase 4 doorway.

Phase 6 - remodelled stone building (Illus 7)

The Phase 5 stone building was remodelled. The entrance in the southern end was blocked by wall 1020, and a clay floor (1035) was laid inside the building. A new entrance (1055) was inserted in its northern end that lead out on to a courtyard (1143). This new entrance had a door pivot (1091) built against the outside face of 1045. On the eastern side of 1055, post-hole 1065 may have been a

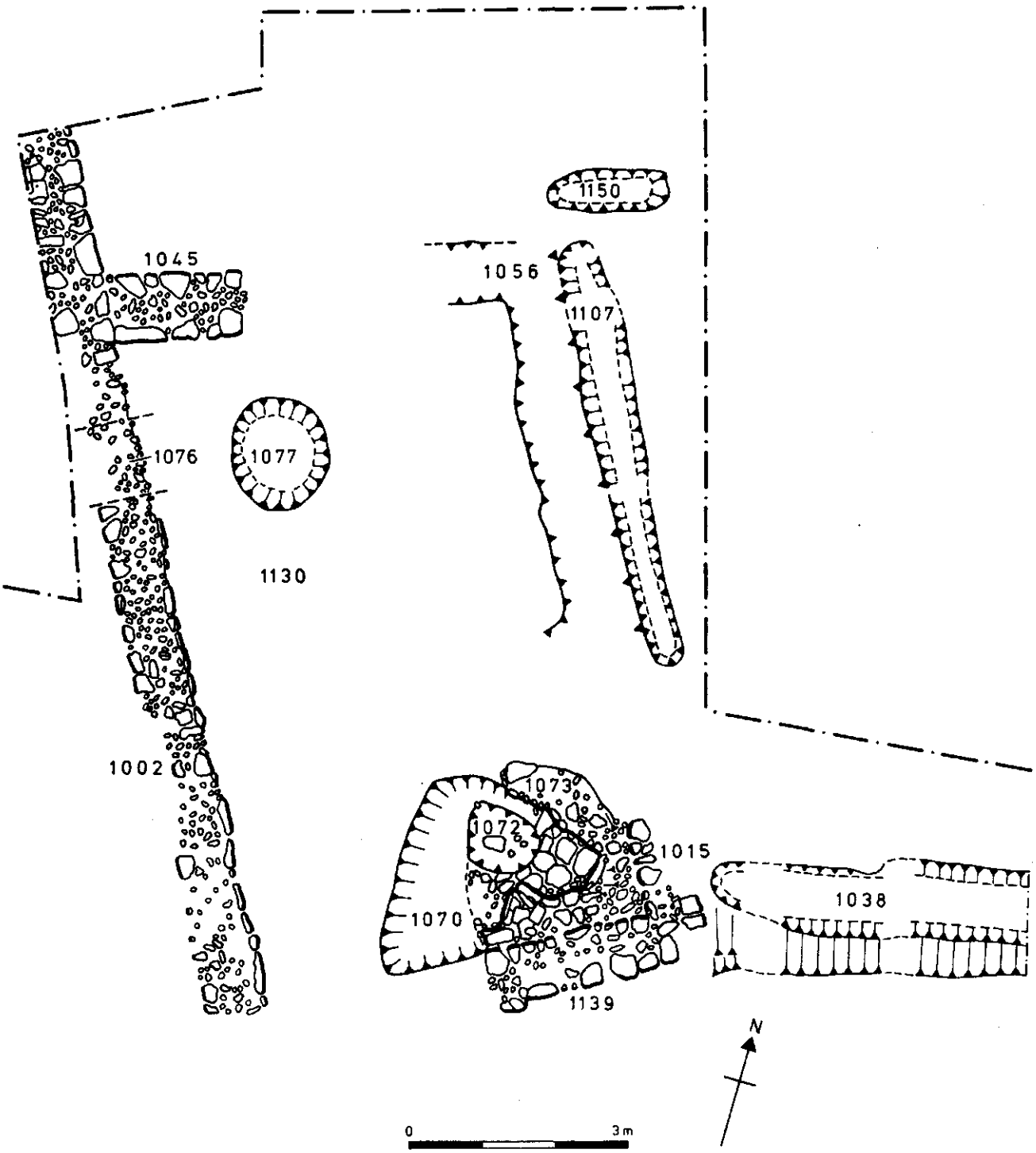


Illus 4. Phase 2 timber structure.

Illus 5. Phase 4 doorway and cobbled surface.

doorframe support. A sub-circular structure (1016), possibly a new bread oven, was built against the outside face of the remodelled building's southern wall. A layer of sand (1049) was laid in the interior of 1016, and a step (1185) was built against the southern face of 1020/1139. A clay-lined pit (1058) was cut into the new clay floor of the building and a linear hollow (1074) may have been caused by regular traffic between the doorway and pit 1058. The courtyard 1143 contained a small hearth (1163).

The pottery assemblage from this phase indicates a date of the late 13th/early 14th centuries which is supported by the date of a



Illus 6. Phase 5 stone building and enclosure.

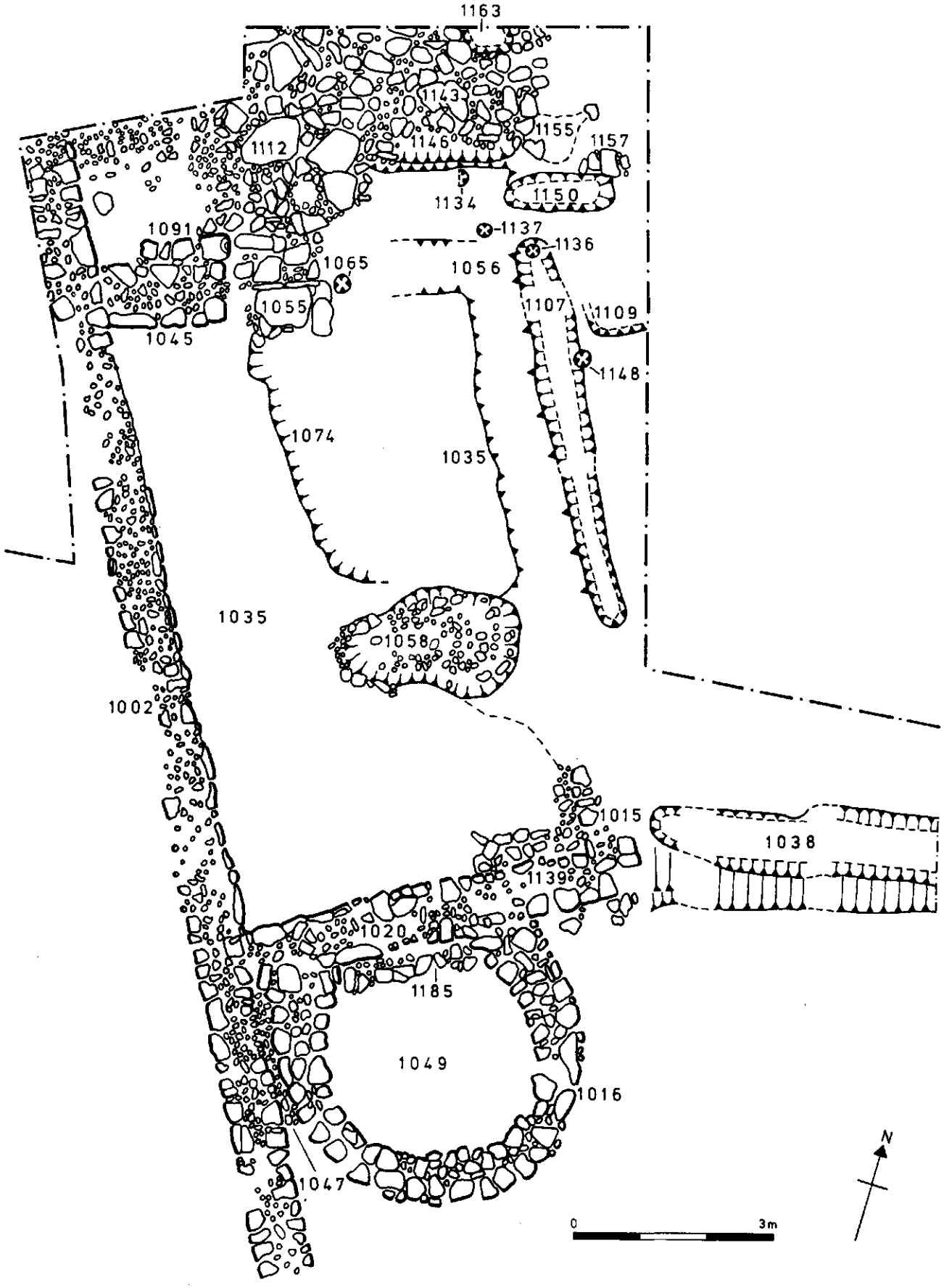
horseshoe nail from the fill of 1058. Context 1049 contained fragments of disarticulated human bone. Fragments of horse bone were retrieved from the fill of the hearth (1162), the fill of the trench for the courtyard (1147) and the fill of the trench for the step (1052). Context 1052 also contained fragments of cat bone.

Watching brief (Illus 8)

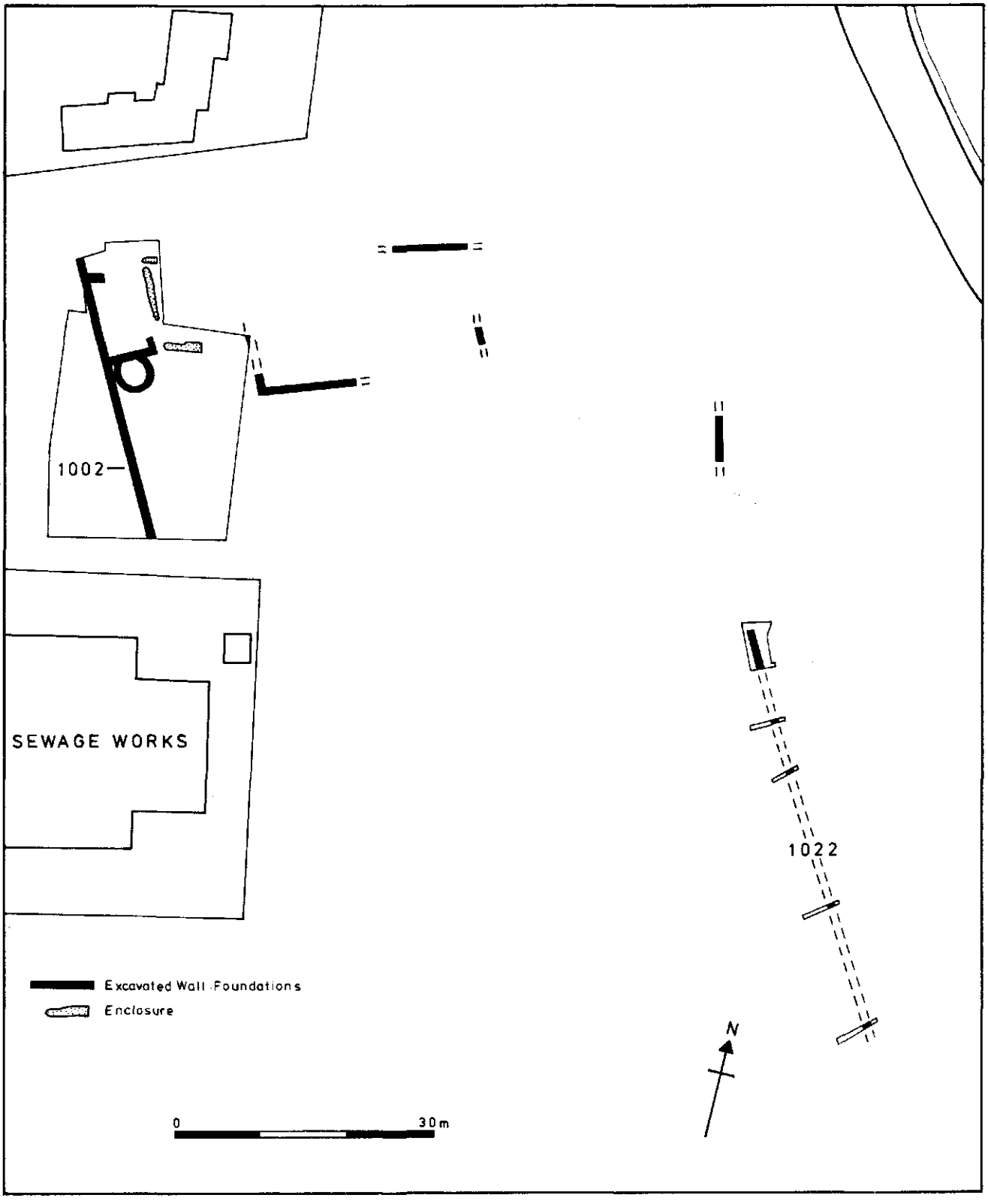
During the construction of the leisure complex in March 1987 several wall foundations were revealed. These were photographed and measured in relation to the site grid.

A 5m section of the eastern boundary wall (1022) was located c 23m north of the segment recovered by excavation. This length of wall ran on a slightly different alignment from the excavated segment. It turned slightly east to run north to south.

Directly to the east of the main excavation area, several walls were revealed during the removal of



Illus 7. Phase 6 stone building, courtyard and enclosure.



Illus 8. Excavated ground plan of leper hospital.

ploughsoil. They appeared to represent the side and end walls of a substantial stone building. This structure measured c 26m east to west by c 15m north to south. The outside face of the western end wall of this structure was located in the north-eastern corner of the main excavation area (1086).

It is possible that this structure represents a building that was separated from the excavated building by the Phase 5 enclosure. As no controlled excavation by hand was possible a function for this large structure is difficult to assign.

Phase 7 - disuse of building

A series of layers of soil were laid over the courtyard (1143) and in the interior of the building. One of these layers (1099) produced an annular brooch dated to the 13th to 14th centuries (Cat no 1). Two of these layers contained horse bone and a dog skeleton. These deposits appeared to represent the disuse of the building.

Phase 8 - demolition of building

A large area of sandstone rubble was produced by the demolition of the Phase 6 building. From the position and angle of these deposits it would appear that the building's walls had been pushed inwards.

All the pottery from these demolition layers is of a late medieval date and the absence of reduced Greyware suggests a pre-16th century date for the demolition of this structure. Demolition layer 1029 produced fragments of horse bone.

There was no rubble associated with the Phase 4 stone wall (1002) which may suggest that the demolition was confined to the building.

Phase 9 - robbing and levelling

The eastern wall and north-east corner of the Phase 6 building was completely removed by a robber trench (1056). A layer of clay, containing fragments of horse bone was laid above the demolition rubble, and this was in turn sealed by a deposit of silty clay with sand lenses.

Phase 10 - cultivation soil

A deep deposit of soil formed after the hospital had been abandoned; it contained the largest group of pottery and animal bone and may have been created by the ploughing of the field.

Phase 11 - late stone robbing

Three linear trenches represented the robbing of some of the walls of the Phase 6 structure for building stone. Vessel glass from the fill of one of the trenches suggests an 18th/19th century date for this robbing.

Phase 12 - modern plough soil

The site was finally sealed by a deep deposit of soil that represented the modern ploughing of the field.

Discussion

The excavations at St Nicholas Farm offered the first opportunity to examine the site of a medieval leper hospital in Scotland. Prior to the excavation nothing was known regarding the size or layout of these institutions. Since there is no record of any other medieval buildings in this area, the structural remains recovered by the excavation are thought to relate to the hospital.

The earliest features from the site (Phase 2) may include a timber building and relate to activities pre-dating the hospital or possibly during its early occupation. The presence of disarticulated human bone is very hard to explain but the group from the fills of 1172 and overlying soil 1050 (Phase 2/Phase 3) may represent pre-hospital burials.

The stone walls from Phase 4 are thought to represent the western and eastern boundary walls of the hospital complex. It also seems likely that the foot of Kinkell Brae at the southern end of the field formed the southern boundary of the hospital. The northern boundary has not been located but may lie under St Nicholas Farm steadings, or its former line may be represented by a trackway that now leads to the beach. The postulated hospital precinct may enclose an area of c 0.79 hectares.

Recent monitoring of development work for a new coastguard station on the northern side of the track to the beach c 40m north-east of the steadings (NO 5185 1602) located only ploughsoil on natural sand with no sign of any hospital related features. This suggests that the hospital complex was confined to the area now occupied by the leisure centre and its car park.

The western wall (1002) had a doorway in it and a cobbled path (1075) that ran up to and through this access point. The presence of this doorway is surprising as it was surely not normal to allow easy access into what was supposed to be an isolation hospital. This doorway was only wide enough to allow human access so was unlikely to represent a means of supplying the hospital with provisions. A 15th century Scottish Act of Parliament may suggest a function for this doorway. This gave the lepers permission to beg at their hospital as they were not allowed into the burgh (Henry 1912, 196). As the coast road from Crail used to run past the hospital there would have been a ready source of passers by to provide money. It is, therefore, possible that this doorway represents a 'begging gate'. The main entrance to the hospital was not located during the excavation, but may have been at the northern end of the complex. It must have been big enough to to allow access to wheeled traffic as one of the earliest documentary references to the hospital in 1189 is to a cart coming from the King's Muir at Crail carrying heath and whins (Barrow 1971, 367).

In the next phase the doorway was blocked and a building was erected on the cobbled surface. The new stone building may have been a bakehouse, as

it possessed a small oven in its south-eastern corner. It was then upgraded and given a much larger oven, the closest parallel for which comes from excavations at Grafton Regis in Northamptonshire. This site, a small Augustinian hermitage, had a small bakehouse with a large oven attached to the outside face of its western wall. This building has been dated by the excavator to the 13th/14th centuries (Platt 1978, 159). Ovens of similar style have also been found in Northumberland (Philipson 1977, 155).

A new clay floor was then laid inside the remodelled building and a new entrance was inserted through its northern end wall. The upgrading of this building may reflect an increase in the number of occupants of the hospital, and certainly the new oven would seem to indicate this. Hospital regulations for St Julian's hospital at St Albans in England specify that the lepers were forbidden from entering the bakehouse (Rotha Mary Clay 1909, 136). If this was the case at St Nicholas, the excavated building may have been frequented by the hospital staff and not by the patients.

The remodelled Phase 6 building had a stone courtyard outside its north-western end. This courtyard area may have separated the building from the hospital graveyard, which is assumed to lie under St Nicholas Farm steadings, following the farmer's discovery of skeletons there in the 1950s.

Wall foundations recovered in watching brief

During the development of the site the side and end walls of a large stone building were recorded (Illus 8). These walls lay directly to the east of the Phase 6 remodelled building. As this structure was not excavated it is difficult to accurately locate it in the excavation sequence. However, it would appear that the Phase 5 enclosure separated this large structure from the excavated building. The north-western walls of both structures were on the same alignment.

The Phase 8 demolition appears not to have involved the western boundary wall. This suggests that this demolition only marks the disuse of the Phase 6 building and not the demise of the whole hospital. Certainly there are signs of an attempt to level up the area over the demolished building in Phase 9. It is possible that the disuse of the building marks a change in the size and function of the hospital. This may relate to St Nicholas apparently becoming a poors' house in the 16th century. At this time some of the earlier hospital buildings may have no longer been necessary and were demolished. A group of disarticulated human bone was recovered from layers associated with the demolition of the excavated building. The origin of this bone is not known.

The Phase 10 soil build-up represents cultivation of the site after the hospital had ceased to function.

Conclusions

The excavations of 1986–87 have given some idea of the size of the hospital complex. As only one building was fully excavated its internal layout is not as clear. However, as only one more building was exposed during the redevelopment of the site, the general impression is of a large area enclosed by stone boundary walls containing a small number of buildings. A comparative example of this type of layout is the leper hospital of St Giles in England (Rotha Mary Clay 1909, 116; plate XII).

The largely open nature of the complex may reflect the existence of cultivated land within the hospital precincts. The leper hospital may have existed as a self-sufficient community, producing its own food. It seems to have been normal practice for hospitals to own farms, which were tended by their healthy members or by paid servants or were leased out (Richards 1977, 35). However, whether it was normal for these operations to take place within the hospital precincts is not known.

The stone walls recorded during development work had a fairly central location within the hospital precinct. If they all relate to a single building then this may have been the hospital's infirmary block. Large subdivided infirmary buildings in medieval hospitals seem to have been common in the eleventh and twelfth centuries and reflect an attempt to grant greater privacy to the patients (Thompson and Goldin 1975, 41). Ground plans of possible parallels for the structure recorded at St Nicholas Farm can be seen in 'The English Almshouse' by Walter Godfrey. These structures were often quadrangular with a central courtyard. It is unfortunate that the structural remains from St Nicholas farm were only located in the watching brief and the information they provide is therefore very limited.

No trace of the hospital chapel (see Historical Background) was found, but this would have probably lain close to the burial ground. As already stated this would appear to lie under St Nicholas Steadings.

It is not possible to give a firm date for the abandonment of the hospital from the excavated evidence. The site became farm land and the structures were very quickly buried under plough-soil. The hospital is still referred to in a document of 1583 (Cowan and Easson 1976, 190), but is not visible in Slezer's 17th century view of St Andrews although St Nicholas Farm is (Cant 1970, 81).

The excavations at St Nicholas Farm finally confirmed the site of the hospital. As the first excavation of a medieval leper hospital in Scotland

it has given us a slightly clearer idea of the nature of these institutions. This is particularly true as regards their apparent size and layout. When compared with more recent work at Soutra near Edinburgh (Ewart and Moffat 1988, 19) it is to be hoped that these excavations will form a useful basis for any further work on medieval hospitals.

The medieval pottery

Derek W Hall

The excavations at St Nicholas Farm produced a small assemblage of medieval pottery (804 sherds). The assemblage was dominated by sherds of Scottish East Coast White Gritty ware (95.1%). As this fabric has been described and discussed in another publication (Hall forthcoming) this report concentrates on the vessel forms present in this assemblage. All fabric types were identified by eye and no petrological analysis was carried out.

Scottish East Coast White Gritty Ware (Illus 9, 10)

Cooking pots and jugs are the most common vessel forms represented. These vessels are of a similar type to those recovered from sites excavated within the medieval burgh of St Andrews (Hall forthcoming). It is noticeable that jugs are slightly more common than cooking pots.

The largest assemblage of pottery (Phase 10) includes a small group of sherds from a vessel form not previously identified in this fabric. This new form is a flat-based open bowl (38). It has a diameter of 260mm and is 100mm deep. It is internally glazed green and externally smoke blackened. Internally glazed vessels are not very common in this fabric and one that is also externally smoke blackened is even more unusual. This vessel type may be closely linked with some type of food preparation or mixing process. The external smoke blackening suggests that the vessel was heated over an open fire, something done in the separation of cream from milk as clotted cream (McCarthy and Brooks 1988, 110).

The sherds from the open bowl were found in association with a large group of cooking pot and jug sherds in the White Gritty fabric. The forms of these vessels and the lack of imported wares may suggest a late 14th or early 15th century date for the Phase 10 pottery. There were no Scottish Reduced Greywares or post-medieval fabrics to suggest a later date.

The White Gritty cooking pots are globular in shape, possibly with two handles and similar to examples from excavations in the burgh. There are three frilled rims from a vessel type identified as a Fife regional variant (Hall forthcoming). There is one rim sherd from Phase 10 that has a pulled spout (3). This is the first definite example of a spouted cooking pot.

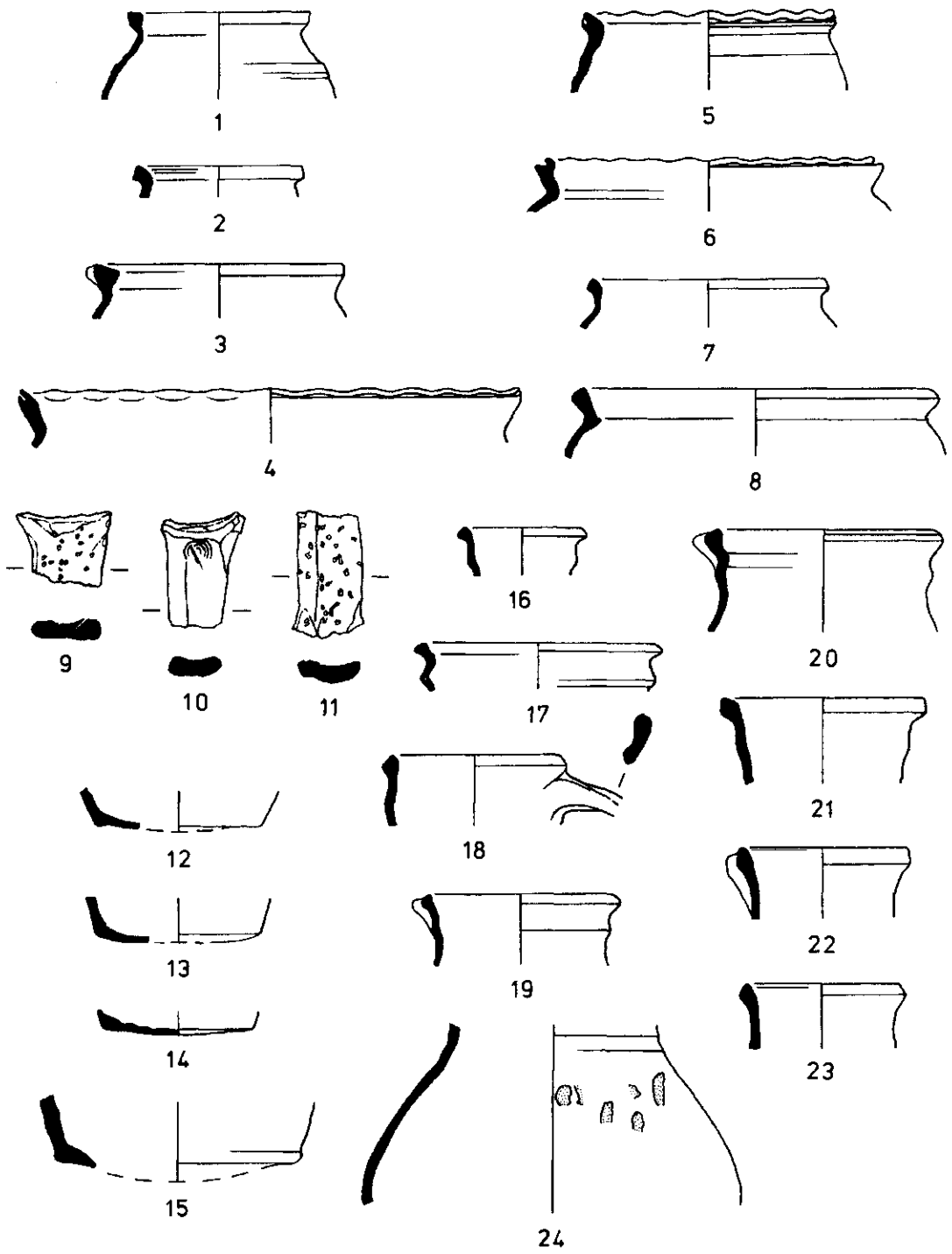
The jug sherds represent the common form of White Gritty jugs apart from a vessel from Phase 10. This vessel is fairly small and squat and is an unusual form (43). The same phase also contained a glazed tubular spout in the White Gritty fabric (25).

A slight variant to the normal White Gritty fabric is represented by nine body sherds from Phase 10. These sherds contain quartz inclusions similar to the common fabric but are a pinkish-red colour, presumably due to different firing conditions in the kiln.

Imported wares (Illus 10, 11)

As with previous assemblages from excavations within the burgh of St Andrews imported pottery is poorly represented. The most common imported fabric is Scarborough ware. Of the 34 sherds in this fabric, 19 are from the same vessel. The majority of these sherds are from a backfilled pit inside the Phase 6 building. The 34 sherds are in Farmer's Type II Scarborough ware fabric, which he dates to the early 13th to mid-14th centuries (Farmer and Farmer 1982, 66–82).

Other imported wares are represented by a small number of sherds. The profile of a small open bowl in an unidentified grey fabric (49) was found in the Phase 10 soils. This vessel was glazed green internally and externally with a rim diameter of 100mm. It had been heated on a fire and its outside surface was smoke blackened particularly on the base and very slightly on the basal angle. This vessel is much smaller than the bowls described in the White Gritty fabric and it is difficult to assign a function to it. It is interesting that it is yet another example of an internally glazed vessel from this pottery assemblage. The

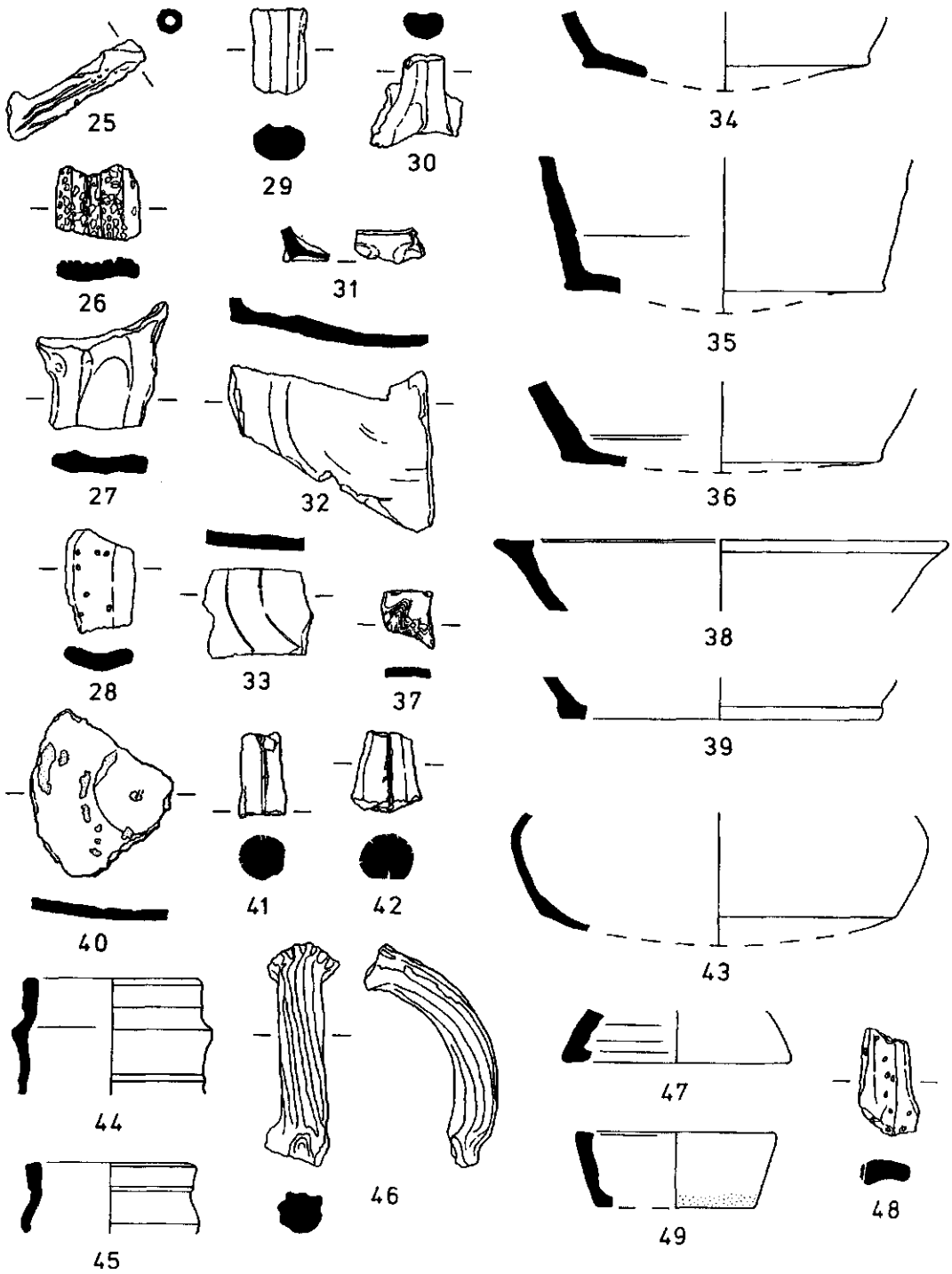


Illus 9. White gritty ware pottery scale 1:4.

Phase 10 levelling above the Phase 6 building contained a basal fragment from an alembic (47) (Moorhouse 1972, 107). Fragments of ceramic distilling vessels are very rare from medieval sites in Scotland and this is the only one known to the author. This sherd is in an orange-red unglazed fabric and may be an import. The modern ploughsoil on the site contained three body sherds in a pink sandy fabric that resembles the Perth Local wares (MacAskill 1987).

Discussion

The medieval pottery assemblage from St Nicholas Farm is similar to those from sites within the medieval burgh of St Andrews. New vessel types are present in this assemblage which could relate directly to the site's status as a hospital. These new forms come from a deep deposit of soil post-dating the disuse of the hospital, so it is not possible to suggest in which buildings they were used.



Illus 10. White gritty ware pottery (nos 25–43), Imported wares (nos 44–49) scale 1:4.

It is noticeable that jugs are as common, and in some cases more common, than cooking pots. This is a different situation from that encountered on sites in the burgh where cooking pots are in the majority. This may reflect the nature of the activities taking place in this part of the site. There was no sign that any other cooking, apart from bread production, took place in the excavated building. This assemblage is the first one to provide evidence for different vessel forms in white gritty and as such is very useful.

Pottery illustration catalogue

White Gritty ware

1. Cooking pot rim. (1104), Phase 7.
2. Cooking pot rim. (1142), Phase 7.
3. Cooking pot rim with pulled spout. (1001), Phase 10.
4. Frilled cooking pot. (1041), Phase 10.
5. Frilled cooking pot. (1041), Phase 10.

6. Frilled cooking pot. (1041), Phase 10.
7. Cooking pot rim. (1043), Phase 10.
8. Cooking pot rim. (1044), Phase 10.
9. Cooking pot strap handle with stabbed holes. (1142), Phase 7.
10. Cooking pot strap handle fragment. (1003), Phase 10.
11. Cooking pot strap handle with stabbed holes. (1000), Phase 12.
12. Cooking pot base. (1061), Phase 2.
13. Cooking pot base. (1067), Phase 3.
14. Cooking pot base. (1104), Phase 7.
15. Cooking pot base. (1003), Phase 10.
16. Jug rim. Externally glazed light green. (1049), Phase 6.
17. Jug rim with spout fragment. (1027), Phase 8.
18. Jug rim with strap handle fragment. (1029), Phase 8.
19. Jug rim with pinched spout. Externally glazed light green. (1036), Phase 9.
20. Jug rim and neck with pinched spout. Externally glazed yellow-green. (1054), Phase 7.
21. Jug rim. Externally glazed light green in patches. (1001), Phase 10.
22. Jug rim with pulled spout. (1041), Phase 10.
23. Jug rim with pinched spout fragment. (1041), Phase 10.
24. Conjoining fragments of jug side wall and neck. Glazed light green on a white slip. Decorated with scales glazed brown. (1142/1153), Phase 7.
25. Conjoining fragments of a jug tubular spout. Externally glazed green with incised lines. (1000/1003), Phase 10/12.
26. Jug decorated strap handle fragment. Glazed light green with incised lines and stabbed holes. (1042), Phase 8.
27. Jug strap handle and junction. (1041), Phase 10.
28. Jug strap handle. Externally glazed green on a white slip. (1000), Phase 12.
29. Jug rod handle fragment. (1003), Phase 10.
30. Jug rod handle and junction. (1041), Phase 10.
31. Thumbed jug base. (1156), Phase 3.
32. Jug base with spots of yellow-green glaze and incised lines on external surface. (1041), Phase 10.
33. Jug base sherd with incised lines on external surface. (1041), Phase 10.
34. Jug basal angle. (1041), Phase 10.
35. Jug basal angle and side wall. (1043), Phase 10.
36. Jug basal angle and side wall. (1044), Phase 10.
37. Jug body sherds decorated with incised wavy lines. (1041), Phase 10.
38. Conjoining fragments of an open bowl rim. Glazed green internally with external smoke blackening. (1014/1033), Phase 10.
39. Conjoining fragments of an open bowl. Basal angle and side wall glazed green internally with slight external smoke blackening. (1003/1044), Phase 10.
40. Open bowl base sherd. Internally glazed light yellow-green. (1041), Phase 10.
41. Skillet rod handle with incised lines. (1001), Phase 10.
42. Skillet rod handle. Glazed yellow-green externally with incised lines. (1003), Phase 10.
43. Basal angle and side wall from squat vessel. Glazed green externally, internal red wash. (1003), Phase 10.

Scarborough Ware

44. Jug rim. Externally glazed green. (1104), Phase 7.
45. Conjoining fragments of a jug rim and neck externally glazed green. (1041/1043/1059/1060), Phase 6 and 10.
46. Conjoining fragments of a jug twisted rod handle. Externally glazed green. (1059/1061) Phase 2 / Phase 6.

Unidentified

47. Basal fragment from pottery alembic. (1019), Phase 9.
48. Jug strap handle in pinkish-red fabric. External white slip and stabbed holes. (1003), Phase 10.
49. Complete profile from small bowl. Glazed green internally and externally. (1043), Phase 10.

The finds

Adrian Cox

The artefact assemblage recovered from the excavation is discussed by material type below. For each material type, a brief discussion of the artefacts is followed by a numbered catalogue. Measurements are expressed to the nearest 1mm, except where they are less than this, when they are expressed to the nearest 0.1mm.

Copper alloy objects

An annular brooch (1), possibly used as a fastening at the neck of a tunic (Goodall 1981, 68), was recovered from one of a series of soil deposits overlying the Phase 7 courtyard surface. Annular brooches with half-frame decoration may be dated to the mid-13th to mid-14th centuries on the basis of evidence from recent excavations in London (Egan pers comm).

The precise function of 2, found in a deposit of demolition rubble in Phase 8, is unknown. It may possibly be a repair patch from the rim of a wooden vessel. The internal coils or loops of wire may represent an original repair to the vessel wall which was later superseded by a rivetted plate.

3, a residual find in modern ploughsoil, may possibly be a broken ferrule from a wooden staff as at Northampton (Oakley 1979, 255, Fig 110, No 70). Elsewhere, similar objects have been tentatively interpreted as chapes, for example at Inverkeithing (Wordsworth 1983, 545, Fig 11, No 3) and Kirkhill,

St Andrews (Maxwell forthcoming). 4 and 5 are offcut sheet fragments.

1. Brooch. Diameter 31mm; thickness 3mm. Complete annular brooch, decorated by equally spaced grooves around one half of the circumference. The decoration may be incised as there are linear file marks in each groove. Alternatively it may be moulded decoration which has been modified or improved by tooling. The other half of the circumference is plain. The pin swivels on a recessed bar, and has a shoulder just below the hinge. Context 1099; Find No 4; Phase 7.
2. Repair patch? Length 49mm; width 47mm; thickness 5mm. Plain, rectangular plate, folded along its central axis and enclosing a thin piece of wood, only fragments of which survive. The two sides of the plate are secured by triangular, sheet metal rivets, five of which survive in situ. There are further, unoccupied rivet holes. Coils or loops of wire are wrapped around some of the fragments of wood between the sides of the plate. The precise form of these cannot be determined. The object is curved, with four of the five rivets having been driven through from the convex side. Context 1027; Find No 35; Phase 8.
3. Sheet. Length 20mm; width 18mm; thickness 0.8mm. Rectangular sheet with opposing ends folded inward to meet at the centre. Traces of solder survive on one side of the object. An XRF analysis revealed no difference in composition between the soldered and unsoldered areas. Context 1000; Find No 2; Phase 12.
4. Sheet. Length 52mm; width 20mm; thickness 0.5mm. Plain, roughly diamond-shaped sheet with knife trimmed edges. (Not illustrated.) Context 1054; Find No 3; Phase 7 5. Sheet. Length 46mm; width 5mm; thickness 0.5mm Fragment of offcut sheet. (Not illustrated.) Context 1104; Find No 1; Phase 7.

Iron objects

The iron objects recovered include two bars (6 and 7), a possible staple (8) and nine nails. Two of the nails are horseshoe nails. 10, found in the fill of a clay-lined pit in Phase 6, is a possible example of Clark's transitional type, dating from the late 13th or early 14th century (Clark 1986). 9 is of a later type.

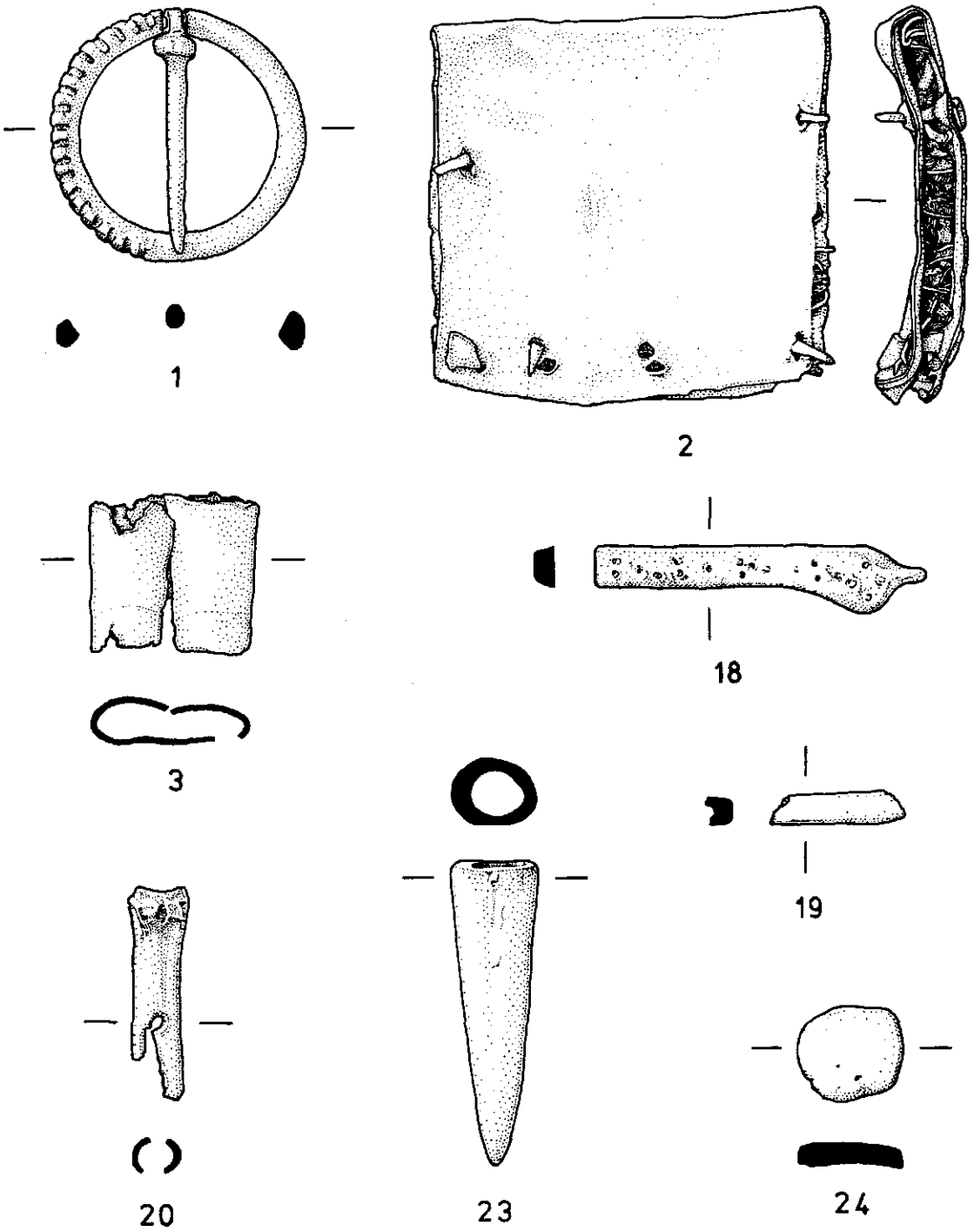
6. Bar. Length 69mm; width 8mm; max. thickness 5mm. Rectangular cross-sectioned bar, now bent. (Not illustrated.) Context 1032; Find No 10; Phase 10.
7. Bar. Length 178mm; width 11mm; thickness 5mm. Rectangular cross-sectioned bar. (Not illustrated.) Context 1043; Find No 5; Phase 10.
8. Staple? Length 70mm; width 62mm; thickness 8mm. Possible staple made from a square cross-sectioned bar, tapering towards the missing terminals. (Not illustrated.) Context 1003; Find No 6; Phase 10.
9. Horseshoe nail. Length 35mm. Transitional or later type. (Not illustrated.) Context 1003; Find No 16; Phase 10.
10. Horseshoe nail. Length 41mm. Transitional type. (Not illustrated.) Context 1059; Find No 9; Phase 6.
11. Nail. Length 38mm. Nail with a square head and a square cross-sectioned shaft. (Not illustrated.) Context 1003; Find No 14; Phase 10.
12. Nail. Length 49mm. Nail shaft only, square in cross-section. (Not illustrated.) Context 1013; Find No 15; Phase 11.
13. Nail. Length 22mm. Nail shaft only, square in cross-section. (Not illustrated.) Context 1018; Find No 13; Phase 11.
14. Nail. Length 83mm. Nail with a square cross-sectioned shaft. The heavily corroded condition of the head obscures its form. (Not illustrated.) Context 1033; Find No 17; Phase 10.
15. Nail. Length 67mm. Nail with a circular head and a square cross-sectioned shaft. (Not illustrated.) Context 1054; Find No 12; Phase 7.
16. Nail. Length 58mm. Nail with a circular head and a square cross-sectioned shaft. (Not illustrated.) Context 1104; Find No 8; Phase 7.
17. Nail. Length 100mm. Nail shaft only, square in cross-section. The tip is curled. (Not illustrated.) Context 1144; Find No 7; Phase 10.

Bone and antler objects

18 is part of the handle of a scale tang knife, decorated by small copper alloy pins. Three late 14th century knife handles from London are decorated in a similar fashion by copper-zinc alloy rivets, tubes and pins (Cowgill et al 1987, 93, Fig 63, No 116; 95, Fig 64, Nos 125–6). 19 is possibly a fragment of a handle.

20 is a pig metatarsal, modified by a single hole through the centre of the shaft. These objects are common finds on medieval sites and have been variously interpreted as bobbins, clothes fastening devices and musical toys. The latter interpretation gives rise to the term buzzbone (Lund 1981, 256–7), and Fenton (1978, 503–4) describes the custom in the Northern Isles for children to claim pig metapodials for making a toy called a snorie bane, so called because of the snoring sound it made when rotated quickly by means of a twisted cord fastened round it. Further examples of these objects have been found in excavations at Cinema House, St Andrews (Maxwell forthcoming) and in Perth (Ford 1987; Cox forthcoming).

Modified antler tines such as 21 have been found at York (MacGregor 1982, 99, Fig 53), Durham (Carver 1979, 25, Fig 14, No 189) and Perth (Ford forthcoming). Unlike 21, none of these examples has been hollowed out. The function of this object is unknown. One possibility is that it



Illus 11. Artefacts (nos 1–3 scale 1:1; nos 18–24 scale 1:2).

was used as a pointed end to a wooden pole. It was recovered from the clay lining of a possible well within a structure for which a radiocarbon date of AD 1070–1120 was obtained.

18. Handle. Length 82mm; max. width 16mm; max. thickness 6mm. Scale from a scale tang knife, derived from a large ungulate long bone shaft. The medullary surface of the bone is exposed on the reverse side. Remnants survive of three iron rivets, used to attach the scale to the tang. There is iron staining on the reverse side. Sixteen small, copper alloy pins have been inserted into the upper surface for decorative effect. The scale terminates in a small horizontal projection and turns down towards the end. Context 1012; Find No 21; Phase 11.

19. Handle? Length 33mm; width 7mm; thickness 7mm. Possible handle fragment, possibly derived from a large ungulate long bone shaft, shaped and polished. The object would originally have been sub-rectangular in cross-section and evidence survives of a central socket. There is possible iron staining within the socket. Context 1044; Find No 20; Phase 10.

20. Toggle or buzzbone. Length 52mm; max. width 19mm. Derived from a pig metatarsal III. A circular hole (diameter 5mm) has been bored through the midshaft in an antero-posterior direction, and the object has broken across the hole. The shaft is slightly polished. Context 1096; Find No 22; Phase 8.

21. Utilised antler tine. Length 73mm; max. width 21mm. Red deer antler tine, sawn at the base. The outer surface has been scraped smooth with a knife and polished. Internal medullary material has been removed. Numerous small scratches occur on the surface. Context 1094; Find No 23; Phase 5.

Glass

Two small fragments of vessel glass were recovered. 22 is probably of 18th century or later date. 23 may be of an earlier date, but is possibly an intrusive find in Phase 7 deposits.

22. Vessel. Length 38mm; width 19mm; thickness 3mm. Fragment of green vessel glass with a slight surface patina and broken edges. (Not illustrated.) Context 1009; Find No 29; Phase 11.

23. Vessel. Length 37mm; width 27mm; thickness 1mm. Fragment of pale green vessel glass with a slight surface patina and broken edges. (Not illustrated.) Context 1054; Find No 28; Phase 7.

Ceramic object

Ceramic counters such as 24 are often interpreted as gaming pieces. Two other examples of counters in the East Coast White Gritty fabric were recovered from excavations at Cinema House and Auction Hall, St Andrews (Maxwell forthcoming), and a counter in Perth Local fabric was found at Mill Street, Perth (Ford forthcoming).

24. Counter? Max. diameter 26mm; thickness 5mm. Possible counter made from a modified sherd of East Coast White Gritty pottery. The edges of the sherd have been rounded and smoothed. The curvature of the original sherd is evident. Context 1043; Find No 19; Phase 7.

Coin

A single coin of early 19th century date was recovered from a modern ploughsoil deposit.

25. Shilling. Silver. George III, 1819. Shield in garter on reverse. (Not illustrated.) Context 1000; Find No 34; Phase 12.

Ceramic building material

A small, corner fragment of a glazed floor tile (27) was residual in silty clay deposits formed after the abandonment of the site. The brick and tile fragments (26 and 28) were also recovered from these clay deposits.

26. Brick fragment. Length 31mm; width 21mm; thickness 14mm. Fragment of brick in a coarse, orange to red fabric. There are no surviving edges and the fragment is weathered. (Not illustrated.) Context 1003; Find No 32; Phase 10.

27. Floor tile. Length 40mm; width 26mm; thickness 24mm. Corner fragment of a floor tile, in a red, sandy fabric of medium coarseness, with rounded and angular inclusions. A whitish-yellow glaze survives in patches on the upper surface of the tile, and splashes of glaze are present on one side. (Not illustrated.) Context 1044; Find No 30; Phase 10.

28. Tile fragment. Length 31mm; width 23mm; thickness 4mm. Flat tile fragment in a fine, reddish fabric with one surviving surface and broken edges. (Not illustrated.) Context 1003; Find No 31; Phase 10.

Leather

C Thomas

The leather consisted of two stitched fragments, possibly parts of shoe uppers. No date can be assigned to either fragment.

29. Upper? Length 98mm; max. width 60mm; thickness 2mm. Approximately triangular fragment of leather, cut across base of triangle. Grain to flesh stitching channel, (hole diameter c 0.8mm, stitch length 304mm) on two long edges. Edges have been folded slightly. Apex of triangle now folded over. No grain surface. Suede-like finish. Possibly toe of elongated, pointed vamp. However, the stitching channel is not a typical lasting margin as the stitch holes are too small and the stitch length is too short. It is most likely part of some other object. (Not illustrated.) Context 1000; Find No 24; Phase 12.

30. Upper? Dimensions c 52mm x 15- 27mm x 2mm. Irregularly-shaped fragment with one edge-flesh stitching channel, (hole diameter c 0.8mm, stitch length 3mm). Upper type of edge-flesh stitching channel. Other edges are torn or cracked. There are also six or seven irregularly spaced holes which appear to be tunnel stitch holes from the flesh side. They have now perforated the grain surface. Not typical of attachment of stiffener; probably a scrap of upper re-used for patching. (Not illustrated.) Context 1097; Find No 25; Phase 5.

Clay pipes

Two fragments of clay pipe were recovered. Both are plain stem fragments.

31. Stem fragment. Length 30mm; bore diameter 3mm (8/64"). Plain stem fragment. (Not illustrated.) Context 1000; Find No 26; Phase 12.

32. Stem fragment. Length 30mm; bore diameter 2mm (4/64"). Plain stem fragment. (Not illustrated.) Context 1044; Find No 27; Phase 10.

The animal bone

Catherine Smith

Summary

A total of 1085 animal bones and teeth was recovered from the site of the medieval leper hospital at St Nicholas Farm, St Andrews. Bones of cattle and sheep/goat predominated while those of pigs occurred only infrequently. Horse bones, some of which were butchered, were relatively well represented, suggesting that horse flesh may have been eaten at the site. Evidence from carcass analysis indicated that the bone assemblage was domestic in origin.

Documentary sources indicate that part of the meat supply for the hospital may have originated from rotten food condemned at the burgh market and donated to the lepers.

Method and measurements

Mammal and bird bones were identified by direct comparison with modern reference material. Bones of sheep and goats were in the main indistinguishable due to fragmentation, but in a few cases it was possible to differentiate between them using Boessneck's (1971) criteria. Vertebrae other than the first two cervical vertebrae, as well as all ribs, were defined as being either cattle-sized (large ungulate) or sheep-sized (small ungulate) but were excluded from the identified fragment count. Loose teeth were not included in the total number of bones identified. Fish and amphibian bones were merely recorded as such but were not identified as to species, with the exception of one specimen identified by staff of the Royal Museum of Scotland.

All measurements cited are in millimetres and are in accordance with the scheme of von den Driesch (1976).

Condition and size of the sample

A small quantity of animal bone was examined. The bones were fairly heavily fragmented, damage probably having been caused as much by post-depositional breakage as by butchery. Erosion rendered anatomical measurement inappropriate for many of the fragments.

The collection comprised some 391 fragments identified to species, 704 fragments identified only as large ungulate, small ungulate or indeterminate mammal or bird and 49 loose mammalian teeth. Slightly more than half of the bone (53.7%) came from Phase 10, which, although corresponding to the time of abandonment of the hospital, probably represents medieval deposits. Medieval Phases 1 to 9 together produced 45.3% of the bone, while a further small quantity (1.0%) derived from post-medieval Phase 11.

Relative frequencies of species

Species identified were cattle, sheep/goat, sheep, pig, horse, red deer, dog, cat, domestic fowl, goose, oystercatcher (*Haematopus ostralegus*), amphibian sp., angler fish (*Lophius piscatorius*) and other fish.

Table 1 shows the total numbers of bones from each species found in Phases 1 to 11. Minimum numbers are set out in Table 2. Table 3 compares the percentages of food forming mammals from St Nicholas Farm with two sites within the burgh of St Andrews.

Bones of domestic animals apparently predominated at St Nicholas Farm. The sole evidence of wild mammals was a modified antler artefact which does not necessarily represent a slaughtered animal, since it may have been made from a cast antler.

Cattle and sheep/goats were the most frequently occurring domesticates, although cattle would have provided the bulk of the meat. However, comparison with other sites located within the burgh of St Andrews may show a proportionately higher consumption of mutton with respect to beef at St Nicholas Farm.

Pigs occurred infrequently, while bones of horse, although not one of the main food forming mammals, were found in relatively greater numbers than at other sites in either the medieval burghs of St Andrews or Perth (Smith forthcoming).

Dogs were present at the site, the high number of bones in Phase 7 being due to the recovery of a

Table 1. Total numbers of identified bones, arranged by species and phase.

		phases	1	2	3	5	6	7	8	9	10	11	total
cattle					2	6	3	14	14	8	93	3	143
sheep/goat			1	1		13	9	9	10	5	75	1	124
pig					1	1	3	2	5	2	14		28
horse					6		3	6	1	1	17		34
red deer						a							a
dog								10	4	2	7	1	24
cat							2				1		3
bird	fowl						1			1	1		3
	goose								1		1		2
	oystercatcher										1		1
	other						2		1				3
amphibian											1		1
fish				2				4	4		16		26
sub total			1	3	9	20	23	45	40	19	227	5	391
large ungulate				3	14	23	23	44	53	19	189	2	370
small ungulate				1	3	11	7	23	16	12	65	2	140
indeterminate mammal				6	7	9	12	29	9	7	102	2	183
total			1	13	33	63	65	141	118	57	583	11	1085

Table 2. Minimum numbers of animals present based on most frequent bone in each phase.

		phases	1	2	3	5	6	7	8	9	10	11
cattle					1	1	1	2	1	2	4	1
sheep/goat			1	1		1	1	1	4	1	3	1
pig					1	1	2	1	1	1	3	*
horse					1		1	1	1	1	1	
red deer						a						
dog								1	1	1	2	1
cat							1				1	
bird	fowl						1			1		
	goose								1			
	oystercatcher										1	
amphibian											1	

Table 3. Percentages of food forming mammals, based on fragment count.

	St Nicholas Farm phases 1-11	Cinema House St Andrews	134 Market Street St Andrews
cattle	43.47	60.2	61.1
sheep/goat	37.69	31.0	26.6
goat	✧	✧	0.3
pig	8.51	6.5	10.3
horse	10.33	2.3	1.3
deer	a	a	0.3
total	100.00	100.00	99.9

Table 4. Number of cattle bones by age category.

	total	%
F		
J		
J/I	7	17.07
I	1	2.44
I/A	15	36.59
A	18	43.90
total	41	100.00

Key to Tables 1–9: a = worked antler only; * = tooth only; ✧ = because of difficulty distinguishing, sheep/goat expressed as one figure; F = foetal; J = juvenile; I = immature; A = adult

Table 5. Sheep/goat mandibles by wear stages of Payne (1973) and Grant (1982).

phase	context	approximate age	Payne stage	Grant tooth wear stage
6	1059	2–12 months	B/C	
10	1003	1–3 years	D/E	23–30
10	1033	4–8 years	G/H	
10	1032	6–8 years	H	42

Table 6. Number of sheep/goat bones by age category.

	total	%
F	1	2.17
J	3	6.52
J/I	9	19.57
I	4	8.70
I/A	9	19.60
A	20	43.48
total	46	100.04

Table 7. Number of pig bones by age category.

	total	%
F		
J		
J/I	6	50.00
I		
I/A	5	41.66
A	1	8.33
total	12	99.99

Table 8. Expected and actual numbers and percentages of cattle and sheep/goat bones in phases 1–9.

bone	expected no.	expected %	cattle no.	cattle %	sheep/goat no.	sheep/goat %
horn core	2	2.15				
skull	1	1.08	1	2.13	2	4.17
maxilla	2	2.15	2	4.26	2	4.17
mandible	2	2.15	5	10.64	1	2.08
atlas	1	1.08	1	2.13		
axis	1	1.08	1	2.13		
scapula	2	2.15	5	10.64	4	8.33
humerus	2	2.15	6	12.77	4	8.33
radius	2	2.15	1	2.13	3	6.25
ulna	2	2.15	2	4.26	1	2.08
carpal	10	10.75				
innominate	2	2.15	2	4.26	4	8.33
femur	2	2.15	5	10.64	1	2.08
tibia	2	2.15	5	10.64	10	20.83
patella	2	2.15				
os malleolare	2	2.15				
astragalus	2	2.15	1	2.13	1	2.08
calcaneum	2	2.15	3	6.38	1	2.08
naviculo-cuboid	2	2.15			1	2.08
lateral cuneiform	2	2.15				
metapodial	4	4.30	6	12.77	7	14.58
1st phalange	8	8.60			2	4.17
2nd phalange	8	8.60			2	4.17
3rd phalange	8	8.60	1	2.13	2	4.17
sesamoid	18	19.35				
hyoid	2	2.15				
total	93	99.99	47	100.04	48	99.98

Table 9. Expected and actual numbers and percentages of cattle and sheep/goat bones in phase 10.

bone	expected		cattle		sheep/goat	
	no.	%	no.	%	no.	%
horn core	2	2.15				
skull	1	1.08	1	1.08	2	2.67
maxilla	2	2.15	1	1.08		
mandible	2	2.15	7	7.53	4	5.33
atlas	1	1.08	1	1.08	2	2.67
axis	1	1.08			1	1.33
scapula	2	2.15	7	7.53	4	5.33
humerus	2	2.15	4	4.30	10	13.33
radius	2	2.15	5	5.38	7	9.33
ulna	2	2.15	5	5.38	1	1.33
carpal	10	10.75	4	4.30		
innominate	2	2.15	6	6.45	8	10.67
femur	2	2.15	9	9.68	7	9.33
tibia	2	2.15	8	8.60	12	16.00
patella	2	2.15	2	2.15		
os malleolare	2	2.15				
astragalus	2	2.15	2	2.15	2	2.67
calcaneum	2	2.15	7	7.53	2	2.67
naviculo-cuboid	2	2.15	4	4.30		
lateral cuneiform	2	2.15				
metapodial	4	4.30	6	6.45	9	12.00
1st phalange	8	8.60	10	10.75	4	5.33
2nd phalange	8	8.60	3	3.22		
3rd phalange	8	8.60	1	1.08		
sesamoid	18	19.35				
hyoid	2	2.15				
total	93	99.99	93	100.02	75	99.99

single skeleton. Cats were less numerous than dogs as seems to have been the case at many medieval sites in Scotland.

Bones of domestic poultry (both fowl and goose) as well as wild birds, were infrequent, as were those of fish although this may be a consequence of the recovery technique which comprised hand excavation only.

A single amphibian bone from Phase 10 may indicate the availability of a freshwater habitat in the vicinity of the site.

Age of animals at death

Cattle

Unfortunately no cattle mandibles were preserved in such a condition as to allow them to be assessed for tooth eruption and wear. Evidence from the state of epiphysial fusion of long bones, shown in Table 4, was thus the only information available. The majority of the bones examined fell into the immature/adult or adult age categories, while just over 17% were juvenile/immature. However, since the available sample was small (41 bones) it would be wise to treat the data with a degree of caution.

Sheep/goat

Four sheep/goat mandibles were assessed as to tooth eruption and wear pattern (Payne 1973; Grant 1982). The findings, summarised in Table 5, give widely ranging ages since three of the mandibles were unfortunately incomplete. However, one juvenile/immature animal and possibly two old adults must have been present.

On the basis of epiphyseal fusion evidence (see Table 6) it would seem that more young sheep died than was the case for cattle. However, it is not necessarily wise to assume that this was so, since cattle bones, even from young animals, are much larger than those of sheep and require rather more butchery to reduce them to a manageable size for cookery. The effect of increased fragmentation is augmented by the natural porosity and fragility of young bone; hence butchered bones of young cattle may be more likely to decay or become unrecognisable than are those from young sheep. In addition, the sample size for sheep/goat was not large.

Pig

One pig mandible (Context 1033) was estimated to fall between the ages of eight and 13 months, based on Habermehl's data for late maturing modern pigs (Bull and Payne 1982, 70).

Epiphyseal fusion evidence for pig long bones is shown in Table 7. Half of the animals which died or were killed appeared to have been in the juvenile/immature category.

Horse

Two horse mandibles (Contexts 1059 and 1156) bore third molars. According to Silver (1963, 257) this tooth erupts at between three and a half to four and a half years therefore both animals were at least three and a half years old at the time of death. All recovered bones of horse had fused epiphyses, indicating adult or immature/adult animals.

Dog

One dog mandible (Context 1053) bore an erupted third molar, indicating an age of over six months (Silver 1963, 265). A partial dog skeleton (Context 1054) which included a mandible containing the third molar, and in which all surviving epiphyses were fused, probably came from an animal of at least 11 months (Silver 1963, 252–3).

Cat

There was no evidence that young animals had been present.

Carcass analysis

Tables 8 and 9 show the expected and actual numbers and percentages of cattle and sheep/goat bones in Phases 1 to 9 and Phase 10, respectively. The expected numbers of bones are those which would be found if the entire skeleton was recovered. The actual numbers reflect the taphonomic factors such as butchery, redistribution of fragments by scavengers, conditions of preservation, etcetera, which have served to modify this ideal number.

A comparison was made of high meat-yielding bones (the total number of humerus plus femur fragments) with low meat-yielding metapodials. High meat-yielding bones of cattle appeared to be in the majority in Phases 1 to 9, although the small sample sizes should be noted. Lower meat-yielding fragments of sheep/goat appeared to be relatively better represented than was the case for cattle. However, in Phase 10 the trend was towards good representation of high meat-yielding bones of both species.

Butchery

Cut and chop marks on the bones may be interpreted as resulting from primary, secondary or tertiary butchery.

Primary butchery

Removal of head and horns. A cattle atlas vertebra (Context 1096) bore a knife cut on its caudal articulation, possibly indicating severance of the animal's neck between the atlas and axis. Further evidence of this operation may be seen in a cattle axis vertebra (Context 1009) from which the odontoid process had been struck, presumably with a chopper or cleaver.

Carcass splitting. The direction in which vertebrae are divided may provide clues as to how carcasses were divided, whether into equal sides of beef or mutton (indicated by vertebrae split in the sagittal plane) or by some other method (Armitage 1982, 98).

However, in Phases 1 to 9, no clear preference in the method of division was apparent, due to the small number of vertebrae which was found. One probable end product of division into sides was a sheep/goat innominate (Context 1104) which was chopped at the pubic symphysis.

In Phase 10, there may have been a bias towards dividing the carcass while it lay on a flat surface, rather than while hanging up, as is the modern practice. Here, most of the cattle vertebrae (12 examples) were chopped along their lateral edges rather than through the centre of the vertebral body in the sagittal plane (four examples).

Removal of feet. Evidence of disarticulation of the lower limbs, which are usually removed from the carcass at an early stage of butchery, may be seen in the presence of knife cuts on the anterior surface of a naviculo-cuboid tarsal of a sheep or goat (Context 1031) and on the distal articulation of a pig astragalus (Context 1019). Presumably this type of disarticulation took place using a knife which would have been inserted into the joint between the tarsals and metatarsals. A cruder method of removing the feet would be to chop across the shaft of the metapodial. A cattle metacarpal (Context 1019) had been hacked several times in this way.

Secondary butchery: production of major cuts of meat

Evidence of secondary butchery often overlaps with that produced by both earlier and later stages of the fleshing process, rendering interpretation

difficult. Thus the distal portions of chopped sheep/goat tibia shafts (Context 1027) may have resulted either from severance of the lower limb (primary butchery) or may have been the result of production of mutton shank joints (secondary butchery).

Rather more positive evidence of joint production was seen in four sheep/goat innominates from Phase 10 (Contexts 1003 and 1044) which bore knife cuts on the ventral aspect of the ilium. These cuts are similar to those illustrated by Binford (1981, 113), which he equates with dismembering of the carcass.

Tertiary butchery

Cutting of flesh from bone. Bones from cattle, sheep/goat and pigs in Phases 1 to 10 bore knife cuts which may have occurred during filleting, that is, removal of flesh from the bone. A lengthwise hack on the blade of a cattle scapula (Context 1096) suggests that meat may have been removed roughly with a cleaver, rather than with a knife. Evidence for this practice has been found at a number of archaeological sites in Britain (Rixson 1989, 50).

Marrow splitting. Long bones from cattle, sheep/goat and pigs in were split in the sagittal plane, probably to facilitate removal of the marrow.

Brain removal. A sheep skull fragment (Context 1153) was split sagittally, the presumed intention having been to extract the brain. Similar evidence is frequently encountered at Scottish medieval sites.

Butchering implements

Apparently, joints and sides of meat had been prepared using choppers or cleavers. Occasionally, meat was removed from the bone using the same implements, but metal knives were also used for this purpose. There was no evidence that saws had been used.

Abnormal bone

Abnormal cattle phalanges

Two cattle phalanges were seen to bear Type 1 non-pathological depressions (Baker and Brothwell 1980, 109–112) in their distal articular surfaces (Contexts 1003, 1041). Similarly affected phalanges occur at medieval sites throughout Scotland and are also found in modern, intensively reared cattle (Noddle 1985, M8.F10), although the aetiology of this condition is unclear.

Joint abnormalities

Two cattle naviculo-cuboid tarsals out of a total of five specimens were affected by small interarticular lesions. One example (Context 1003) displayed only one such lesion on its lateral distal facet, while the other was affected on both lateral and medial distal facets. These lesions were similar to the depressions in bovine phalanges described above.

One cattle distal metatarsal (Context 1046), in addition to exhibiting interarticular lesions on both the medieval and lateral condyles, was splayed, perhaps as a result of the animal having been used to do heavy work. Two articulating horse tarsals, a lateral cuneiform and cuboid (Context 1156) were affected by interarticular lesions and slight roughening of their opposing surfaces. A further horse navicular tarsal (Context 1003) exhibited eburnation (polishing) of the proximal joint surface and interarticular lesions of both proximal and distal surfaces. The extent of the abnormalities shown by these horse bones was, however, insufficient to allow a diagnosis of osteoarthritis.

Other abnormality

A fragmentary pig scapula (Context 1043) was suffering from erosion, pitting and new bone growth along the length of its existing caudal edge. The bone may have been destroyed by some process of infection, perhaps introduced by trauma. An alternative explanation may be that the cause of the lesions was a decubital ulcer or bed sore arising from the animal being unable to raise itself from a recumbent position. However, this being the case, it would be more likely that the affected part of the scapula would be the spine, rather than the blade (Baker and Brothwell 1980, 75).

Size of animals

Unfortunately no long bone of any of the domestic mammals was complete enough to be used in assessing withers height.

Individual bones fell mainly within the ranges previously published for other medieval sites in Scotland. The main exceptions were several measurements of horse which were slightly larger. Bone size summaries are available in the SUAT site archive.

Discussion

It is possible that the animal bones may represent the remains of meat eaten by the occupants of St Nicholas Leper Hospital; certainly carcass analysis seems to show that many of the bones were those of the meatier parts of the animals, while cut marks on the bones were more indicative of

butchery than of bone working. That the bones were industrial refuse is thus unlikely.

Livestock was probably kept by the leper hospital in order to provide meat and milk, the open nature of the site suggesting that there may have been grazing land within the hospital precincts. In addition, animals pastured some distance away could have been brought to the hospital as rental payment in kind. Thus a late 12th century act of William I confirms the grant of 'two oxgangs of land in Powgavie [in Inchture] with pasture for twenty beasts and six horses' to St Nicholas Leper Hospital (Barrow 1971, 255).

Another source of meat for leper hospitals is documented in the Fragmenta Collecta (a collection of early Scots laws whose exact date is not known). All rotten pork and salmon sent to the burgh market was to be removed and sent to the 'lipperfolk' (Thomson and Innes 1844, 199; Innes 1868, 183) while the Forest Laws directed the flesh of any game animal found dead or illegally wounded was to be sent to the leper house (Gilbert 1979, 307). Meat judged unfit for consumption by the burgh citizens was thus deemed suitable for the unclean denizens of the leper hospital.

Although bones of pig were not plentiful at the site, boned salt pork, which would leave no archaeological evidence, may indeed have been eaten. Neither was there any evidence of the consumption of greater game or venison. However, the relatively numerous bones of horse, some of which bear knife cuts, may be evidence of meat normally held in low esteem having been donated to the lepers. It has always been difficult to ascertain whether similarly butchered horse bones found at medieval sites throughout Scotland were the result of consumption by humans or preparation as dog food, since the early Christian church proclaimed horse flesh to be unfit food for its members (McCormick 1981). Whether it was considered ungodly for lepers to eat horse is perhaps another matter, since they were expected to show gratitude for gifts of rotten pork and animals found dead. Indeed, there was a belief, current in the 14th century, that eating rotten meat or measled hogs (that is, pork infested with tapeworm cysts) actually predisposed to the contraction of leprosy (Clay 1909, 61). Hence perhaps the idea that donating such foodstuffs to existing sufferers could do no further harm. However, it is interesting to contrast the situation at the English hospital of Sherburn where it was forbidden to eat the flesh of any animal which had died of disease (ibid, 167). It must be stressed, however, that it is not known how largely meat figured in the daily diet of the lepers. Although it is not known whether the hospital of St Nicholas was run under the auspices of a particular religious order, it is probable that there would have been adherence to the precepts of the church. Thus during Lent, and on certain fast days, religious observance required abstinence from meat, and fish, whether rotten or not, would have been substituted if available. (Bones of fish, including angler fish, were found at the site). However, the inmates' more usual daily diet may have been largely vegetarian, as at Roland Blackadder's hospital for the poor in Glasgow whose warden was provided with a 'kist of meal to make white gruel when there was no garden produce and a broth when there was' (Durkan 1959, 269).

Certainly a diet of oats and vegetables must have been more wholesome than one of putrid beef, rotten salmon and measly pork.

The human remains

J F Cross (edited by A Cox)

The following is a summary report on the human remains recovered from the excavation. A full report, including a detailed catalogue, is available from the National Monuments Record (Scotland).

Condition of skeletal material

The human skeletal material is in a poor state of preservation. Metric data could only be recorded for three of the adult femora.

Number of people represented

The material comprises disarticulated, conmingled remains from a number of contexts. It has been possible to build four Matched Bones specimens, in which two or more bones were found to articulate with one another, thereby representing an individual. There are also nine Possible Match specimens, in which there is strong, but insufficient, evidence to show that two or more bones belong to a particular individual.

In order to estimate the number of people represented by the material, a minimum element count was performed. The count is based on the most commonly occurring identifiable skeletal parts. There are two immatures present, one foetus and one of juvenile age. At least four adults are represented; two adults may be female, based on the evidence of sex from the two female-type left innominates (hip bones). A male-type skull suggests that there is at least one adult male.

Pathological conditions

Two specimens show evidence of a pathological condition. One mandible (lower jaw) has a large, healing dental abscess at the roots of the right lateral incisor and canine. These teeth are missing. One of the right rib heads shows an area of eburnation (polishing) on the facet where it articulates with the thoracic vertebra. Eburna-tion occurs when the joint surfaces have been damaged and bone rubs against bone. This may be painful and is consistent with age-related, degenerative change (osteoarthritis) or trauma.

There is no evidence of leprosy. This may be due to a number of reasons. Firstly, it may be explained by the absence or poor preservation of the skeletal components affected by leprous changes. A second reason may be that the people represented by the bones found on this site may have suffered from the less severe forms of leprosy which did not involve any destruction of the skeleton. The skeletal changes associated with leprosy only occur during the most severe form of the disease. A third possibility is that the lack of evidence of leprosy may be accounted for because the people represented by the disarticulated remains did not suffer from this disease. If they are indeed associated with the leper hospital, then they may have been patients suffering from other diseases, e.g. eczema.

Acknowledgements

The author would like to thank David Bowler, Richard Fawcett, Philip Holdsworth, and Richard Sermon for their comments on earlier versions of this paper.

Permission to excavate the site, prior to redevelopment, was granted by North East Fife District Council, to whom the Trust is very grateful for their help and co-operation.

Thanks are also due to Walker Contracts and Miller Construction for their interest and co-operation when the development commenced.

The excavation team were Martin Brann, Philip Brierley, Lynne Casebow, Moira Laidlaw, Bryan McMaster and David Perry. Thanks are also due to local volunteers from the University of St Andrews Archaeology Society.

Adrian Cox would like to thank Geoff Egan for his comments on brooches from London. Catherine Smith would like to thank staff at the Royal Museum of Scotland (Natural History) for their identification of a fish bone specimen. The illustrations in this report are by Dave Munro. Conservation of finds was carried out by Paul Harrison.

The excavation was funded by Historic Scotland and North East Fife District Council.

This paper is published with the aid of a grant from Fife Regional Council and Historic Scotland.

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The survival of industrial remains in Fife, from OS maps to survey

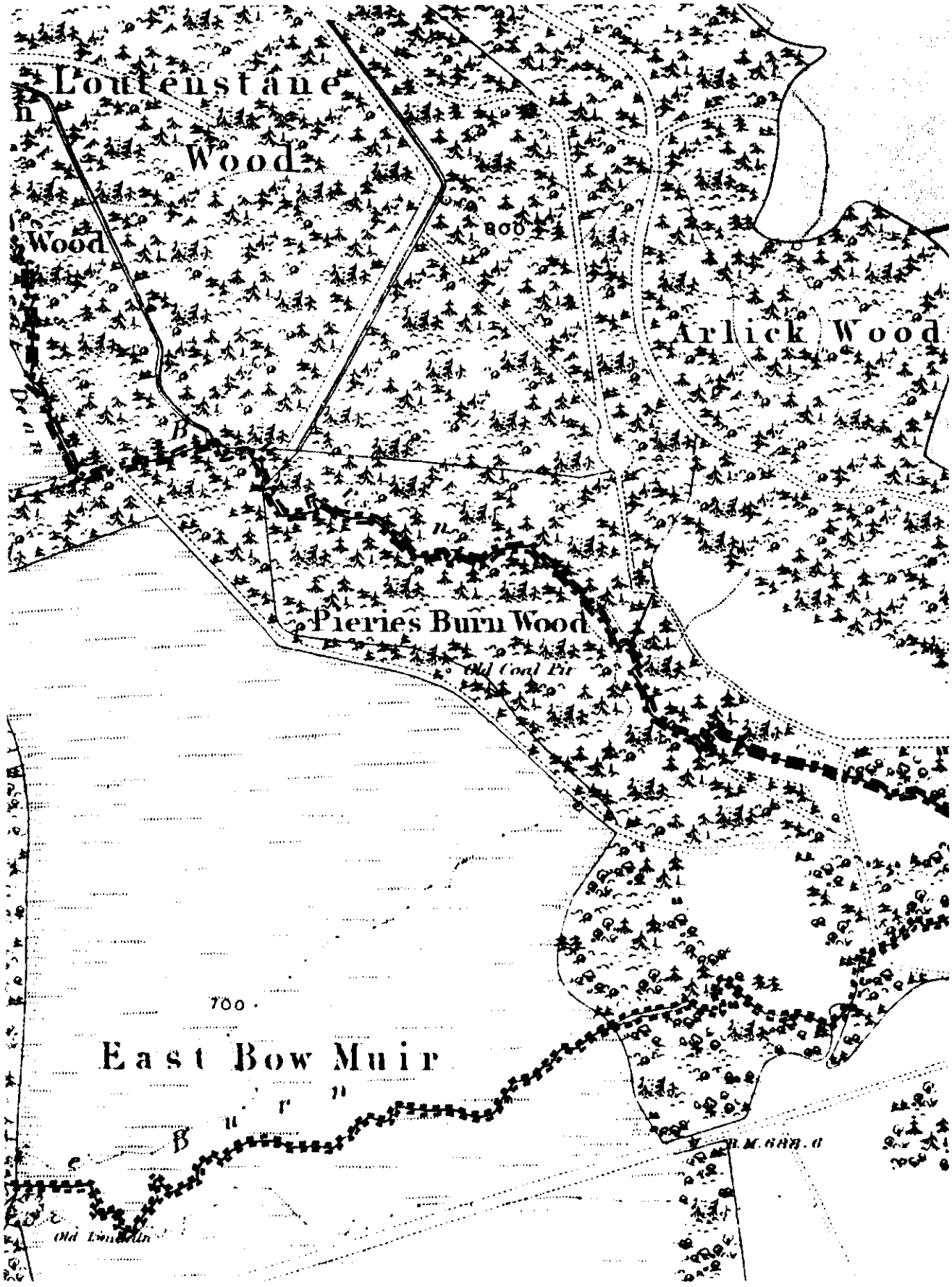
David Easton

Industrial archaeology has tended to be associated with upstanding monuments, working buildings or redundant machinery within buildings, taking little or no account of the vast tracts of land containing the derelict remains of machinery plinths, the footings of miner's villages, shafts, bings and the network of abandoned railways, tramways and waggon-ways. In recent years, however, the landscape approach to field archaeology has brought a much higher profile to these remains. Old mines, tramways and other manifestations including earlier industrial landscapes are now attracting more interest amongst both the general public and field archaeolgoists.

Over the past five years field investigators of the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) have surveyed the field remains of industrial monuments around the Muirkirk ironworks in Ayrshire, Central Scotland, part of the Cleish Hills in Fife, and in Eastern Dumfreisshire. The 1991 survey of the Muirkirk area explored the problem of recording heavy concentrations of sites within extraction fields that had been in use for over 200 years. Detailed survey at 1:2500 revealed the potential of such sites but it also became evident that only a very small area of industrial dereliction could possibly be surveyed at this scale without devoting a large amounts of time and scarce resources to the project.

Subsequently, the Afforestable Land Survey (ALS) team of RCAHMS surveyed an area in Fife which included what was a heavily industrialised part of the county. The area took in the whole of the Cleish Hills, and covered some 200km^2. It provided an opportunity to attempt a different approach to the problem, and to make use of on-site electronic data gathering. The area included a large number of the early extraction sites in Fife along with their associated industries. As part of the preparation work for the area, it was decided to create a database of industrial sites and farmsteads shown on the first and second editions of the Ordnance Survey 6-inch maps, a criterion that was in the end to prove too narrow, as recourse had to be made during the survey to the later editions and revisions of the maps. It should be borne in mind that the period covered by the OS second edition of 1896 was one of great development and change in the coalfields of Scotland; many of the earlier coal and ironstone mines had been worked out and higher capital investement was leading to larger-scale mining operations, with better equipment, 'purpose-built' miner's villages and a scale of operations not previously seen in Scotland. This edition therefore was invaluable to the creation of the database. The use of a pre-survey database in the field can be fraught with dangers; without care, it can form a straightjacket for the field investigator, concentrating recording and observation in the field to those areas where sites are already recorded. In this case, however, the survey was carried out to take account of a wider range of sites than simply industrial monuments and thus the problem was avoided. Prehistoric sites such as forts on Dummiefarline (1) and Dumglow (2) were examined, together with Killearnie Castle (4) near Saline and extensive cultivation remains at Outh Hill (3).

The area of the Cleish survey comprised the eight OS 1:10,000 sheets in map squares NT09 and NT19, encompassing an area from Saline and Knock Hill in the west to Cowdenbeath in the east, and Loch Leven in the north to Mossmorran in the south. The creation of the pre-survey database and some initial field-work provided the ALS surveyors with an early impression of fairly extensive remains of industrial dereliction in certain areas, but not in others. The field surveyors therefore became aware in advance of some of the problems that might have arisen. Not surprisingly it was remains in areas not developed in the last 30 years that survived best, many of the later 20th century large-scale extraction sites having already disappeared under new housing or reclamation as at Lochore or in Lochgelly and Cowdenbeath or in open-cast operations as at Westfield. Over the last few years, Fife Region has conducted an extensive



Illus 1. Enlargement of 1st edition OS map (Fife & Kinross), sheet 30, 1856 showing Old Coal Pit at Pieries Burn Wood. Reproduced from the 1856 Ordnance Survey map.

programme to upgrade areas of dereliction contaminated by the waste products of the 19th and early 20th century industry.

Coal and iron

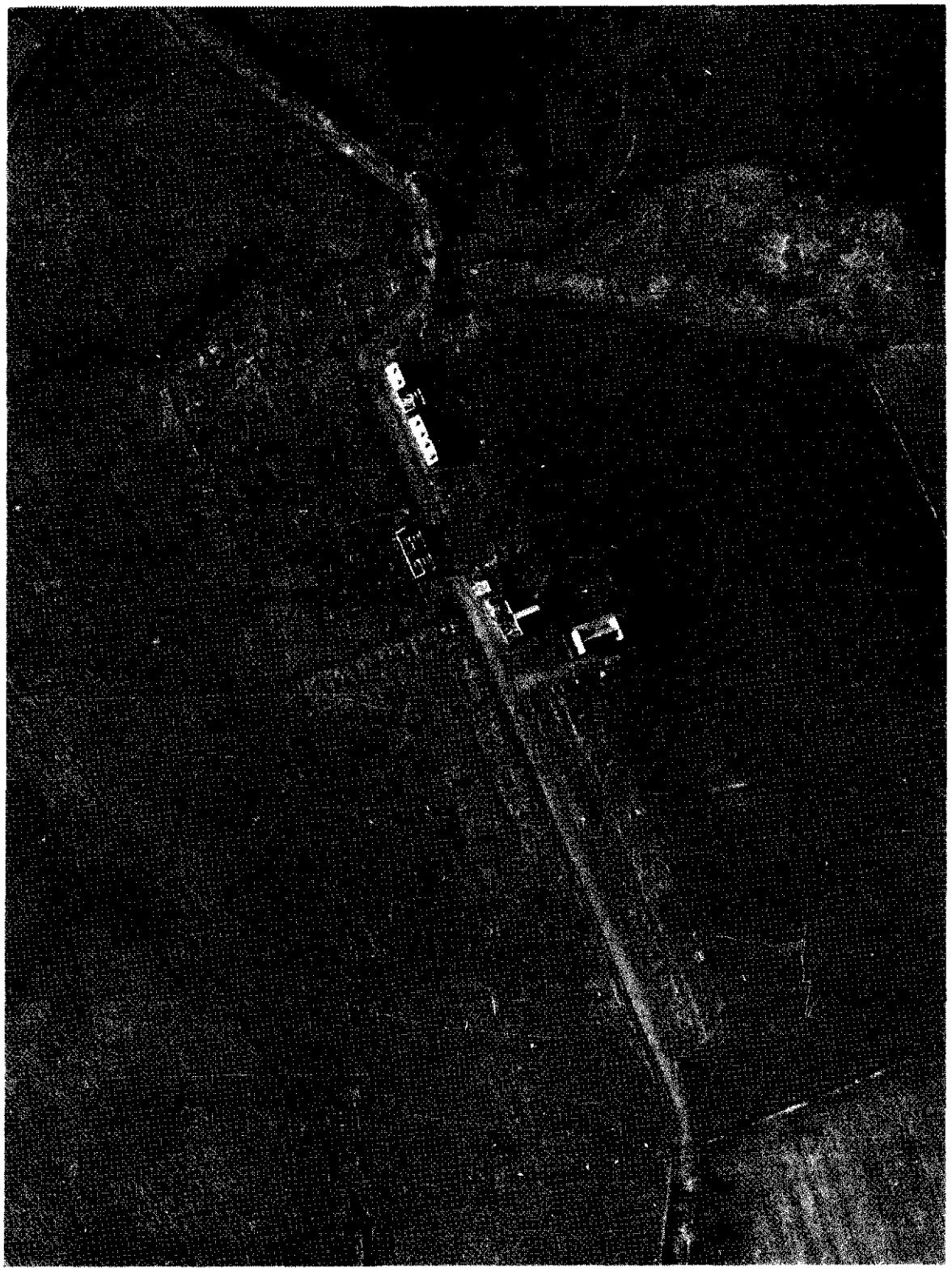
Several relict early industrial landscapes do survive, often in small patches alongside roads. At Kelty, for example, where an area of small-scale coal extraction can still be seen on the north side of the Back Road, near Blairadam Bridge (5), while those recorded on the first edition of the OS map on the south side of the road have been obliterated by modern farming. This well illustrates the patchy survival in some areas, often dependent on the vagaries of later development and farming. The dead area alongside modern roads can often hide many of the small industrial sites. Another small-scale extraction site lies just to the N of a landscaped golf course in the adjacent Lochore Country Park on Harran Hill (22), overlying an extensive system of rig-and-furrow cultivation remains. At least six bell pits and two drift mines can be identified with traces of a trackway running obliquely across the area; two other clusters of bell pits survive in the plantation to the W. Bell pits were also found to the N of Blair Mill (30), where there were additonal adits cut into the side of the small valley formed by the burn. These small extraction sites probably relate to the earliest mining recorded in the survey. At Pieries Burn Wood (23) (Illus 1). The first edition of the OS map annotates a shaft amongst trees as an 'old coal pit'.

The depiction is shown in Illustration 1. It is difficult to find on the map, even when enlarged. The area has been replanted with a dense blanket of conifers and the chances of locating the mine appeared remote. Nevertheless, a systematic search of a section of dense forest revealed this small shaft partly filled with fallen branches and dead vegetation. It is stone lined and the small amount of surrounding spoil gives the impression that it is of no great depth. This small shaft does pose a question: since it is well away from the main coalfield and the other groups of small-scale coal pits noted on the first edition map, why so much expenditure and effort for what must have been a very small gain? The most probable explanation is that it was a test or trial shaft. This is a good illustration of how the use of the map evidence alone is not enough, documentary research, existing archive and oral tradition can all play their part in filling in the gaps between the map editions.

More extensive remains of extractive workings can be found in several areas to the W, such as those that lie to the east of the village of Saline, on the flanks of Wester Cairn and Knock Hills N and W of the remains of the farm of Steelend (6). Set amongst extensive rig systems, the main concentration of workings are situated on the south-facing slopes of a valley between the two hills and clearly demonstrate what can survive in the field. There are clusters of small spoil heaps, collapsed shafts, levels and adits, together with one or two brick buildings. The function of the latter is unclear. Many of the coal and ironstone mines are connected by tramways, though some of the evidence on the ground would make us suspect that their construction was very slight. They would also have been difficult to work as there are large differences in height between the farthest points on the system and those close to Steelend farm, so one must assume that horse traction was used or possibly a stationary steam engine using cable haulage though this would seem less likely as there is no evidence of the winding engine houses, either from map evidence or on the ground. Some of the buildings are known from map evidence, but these can pose more questions than answers. An example of just such a building stands to the north of the ruins of Steelend (6). Constructed of concrete and stone, it incorporates a datestone of 1774 probably from the adjacent farm, and may have been used for processing ironstone extracted from the nearby mines.

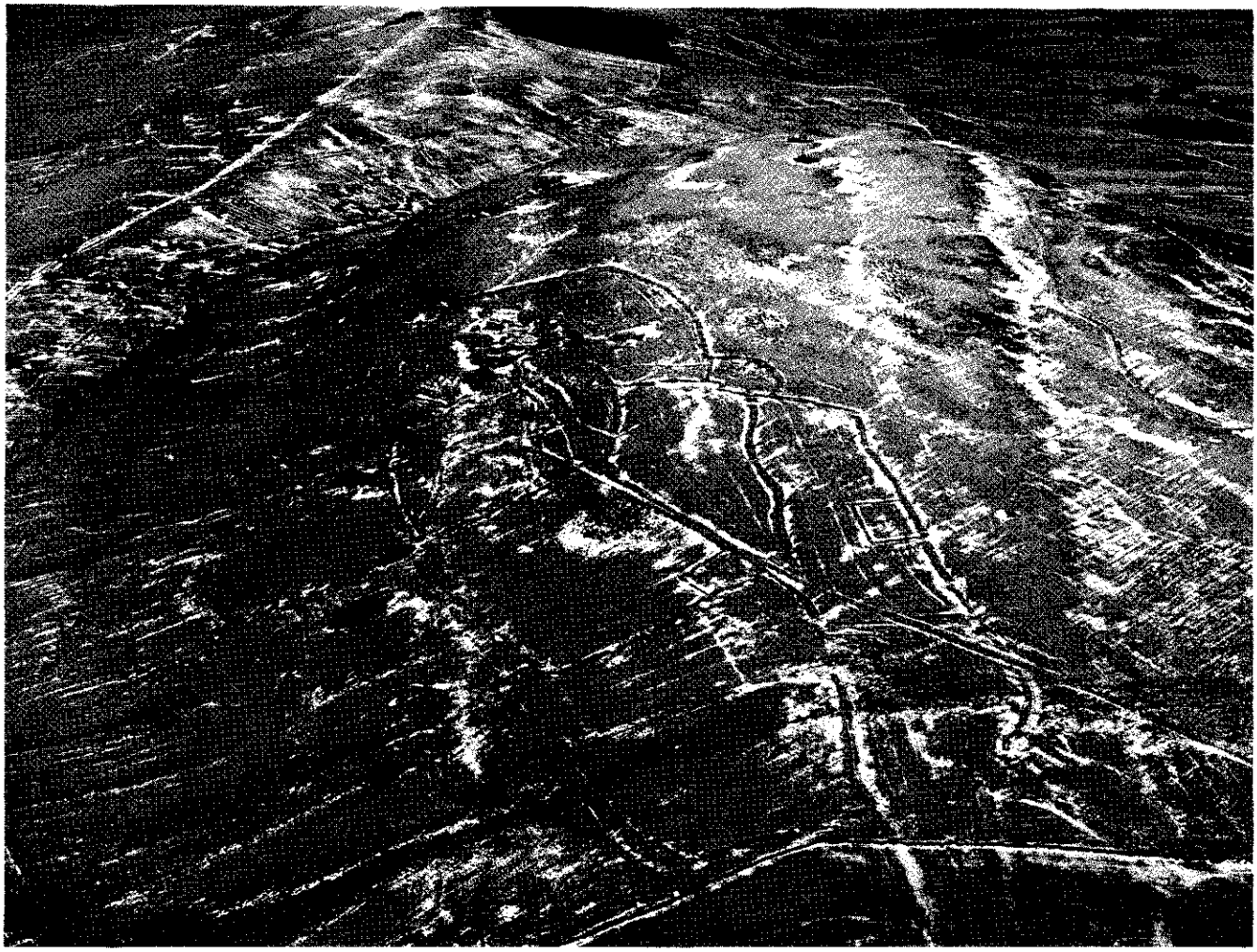
The pre-survey study of the map evidence suggested that in some areas there would possibly be a higher concentration of survival than turned out to be the case. Whilst much has survived at Lassodie (8), the area was frustrating for the loss of several major sites over the last few years. Lying to the SW of Kelty and within sight of the M90 motorway, this shallow valley runs from Greenbank Farm, which lies between the dismantled railway and the motorway, to Gaskie Hill in the west. At the end of the nineteenth century the area must have been a hive of industry, with several coal-mines and three villages, one of which, Fairfield (9), must have been almost the size of a small town. The depiction of villages such as this on the later editions of the OS maps is often the only clue as to how the miner's rows were organised. With a population, at its height, of approximately 1000 people, nothing can now be seen of the rows, though the RAF vertical photographs of 1947 held in the photographic library of the National Monuments Record of Scotland, shown in Illustration 2, show the very last stages of decline.

Though Fairfield (9) supplied the workforce to the pits of Lassodie, local information and references suggest that it also provided the manpower at the more modern mines at Kingseat (12) to the SW as these expanded in the late 1920s whilst the Lassodie pits were worked out or succumbed to the financial problems following the General Strike. There were two other smaller villages in this valley, although only one of them, Parley (10),



Illus 2. Enlargement of vertical air photograph of Fairfield village in final stages of decline (RAF 106G/Scot/UK93 4298, 1947) (Copyright RCAHMS).

population c 500, is named on the maps. Slight traces of both survive on the ground, with not only the miner's rows, but also ancillary buildings such as a school and an inn. The manse and a pre-industrial farm were still occupied at the time of survey, but of the actual coal industry little remains. Best preserved is Lassodie Pit No 4 (11) where there is a collection of both brick and stone machinery plinths surrounded by several other brick-built buildings. The Lassodie Colliery group



Illus 3. Knock Hill, ironstone mine and trackway leading to Weighing Machine House at West Lethans (F/13120) (Copyright RCAHMS 1983).

was owned by Messrs Thomas Spowart & Co Ltd, but by the late 1930s what little remained was taken over as a result of the many amalgamations of the time. The machinery plinths for one other pit survive further west in the valley, along with, enigmatically, the front porch tiles of the Post Office. This valley must have provided work and housing for an almost self-contained society at one time with shops, inns and a church.

Development continued after the Second World War with the opening of Pits 9 and 10 in 1947, but by the late 1950s and early 1960s even these had closed. The mine-heads have since been landscaped and much of the surface evidence for the workings destroyed.

The valley at Lassodie is interesting in that it is mainly a late nineteenth century development, which is illustrated on the OS second edition of c 1896 and the revision of 1913 only; prior to this period, the OS map only notes one or two small-scale coal-mines, probably single shafts perhaps with a horse engine.

The association between coal and iron geologically is known and at many sites in Fife: this can be seen on the ground. The spoil heaps of both coal and ironstone mines lie in close proximity, the geological strata meant that it was the ironstone that was worked initially, then as the workings were required to go to a greater depth the coal seams would be gained. Due to the greater depth of working, the coal seams required more sophisticated equipment and machinery to extract the mineral. This can be seen to best advantage at West Lethans, where the horse-gang worked shaft of the ironstone pit lies close to the late nineteenth, early twentieth century coal-mine.

Mines with horse-engine platforms are relatively rare in the area surveyed. Two are still extant amongst a series of ironstone mines depicted on the OS first edition map on the north side of Knock Hill at West Lethans (16), which had by the second edition of 1896 developed into a sizeable coal-mine. On the better preserved platform it is possible to detect the concentric rings of the horse walk next to the weed-choked shaft. This mine lies immediately adjacent to the extensive remains of the later coal-mine, West Lethans Pit no. 1 (17), with its brick footings, shuttered-

concrete machinery plinths and fixing bolts; in addition a large brick-built fan-housing survives to full height next to the filled ventilation shaft. The bing from this mine is steadily being removed to make roads and tracks in the area, demonstrating another method by which removal of evidence for past industrial activity is taking place. This mine lies at the very extremity of the Fife coalfield, standing as it does amongst an area of earlier rig and furrow cultivation remote from any modern settlement. Close by are the footings and gardens of Lethans Village (18), which is only depicted on the 1913 edition and two subsequent editions of the OS maps, a good example of how some sites have been occupied for very short periods of time.

About 70m N of Lethans Village (18) are the footings of another enigmatic long building, noted on the first edition and all subsequent OS editions of maps right up to the 1983 edition of the 1;10,000 map, which still depicts the N wall. Its use is not immediately obvious: it may quite simply be a row of worker's cottages, possibly the predecessor of Lethans Village (18) or, like the building at Steelend, something to do with the processing of ironstone. The function of another building adjacent to the village is more certain, since it is depicted on the first edition as the Weighing Machine House (34) (one gable end survives) at the end of a track from the ironstone mine near the summit of Knock Hill (7). It is a pointer to a pre-railway industrial system. One can envisage cart-loads of ironstone being taken to the Weighing Machine House (34) and then on to some unknown destiny for smelting or possibly to the building to the N for some form of processing.

About 1.3km to the west is a group of buildings which represent a discrete but complementary element of the industrial exploitation. Shown as a large farmsteading, named The Loups (19) on the first edition of the OS map, by the second edition it had been renamed Devonshaw (19) and what is believed by the local farmer to be the mine manager's house had been added. Constructed with bricks using the cavity wall technique, the building must be an early example of this type of construction; additional features include the brick-built garden pond and iron gate pillars which display the moulded foundry name 'Patrick Munro & Co, Glasgow'. An interesting aspect of this site is the standard gauge railway which ran from Dunfermline through Steelend and ended at the manager's house. Was this for his personal use only? Fairly heavily engineered, the railway was carried on an embankment with at least two bridges for the distance beyond West Lethans Pit no. 1 (17), no other purpose can be seen for this extension. This is a good example of how information can be confirmed by both documentary and verbal evidence. In some instances, members of the public can supply invaluable information about when and where buildings were located and how they were used. It is also a good illustration of how maps cannot tell the researcher the whole story, they must be used with caution and it is not unknown for the OS surveyors in the past to 'get it wrong'.

Later coal mining

In stark comparison to the above, the surviving remains at collieries dating from the turn of the century and the mine-heads of the more modern coal-mines have fared less well. A good example of this can be found at Comrie Colliery (20), where two corrugated roofed sheds and a large bing, are the only above-ground remains of this mine which closed in 1983. Little survives on sites such as these, and it is often here where most of the redevelopment has occurred with either factory units or heavy landscaping. Of the Lochore Mary Pit (21), which opened in 1908 and closed in 1966 and was owned at one time by the Fife Coal Company, only the pit-head winding gear survives as a park attraction and monument. In other areas, such as to the east of Cowdenbeath or at Lumphinnans, a few desultory spoil heaps and some modern industrial units provide the only physical clue to the heavy industries of Fife. The almost total destruction of the above ground remains of the twentieth century coal industry in Fife is a salutory story. It would appear that the location of major coal-mines was in most cases close to the population centres which supplied the manpower. Once the land was released or became derelict as the mines were closed, the site has been used for new housing or factory units, whereas those sites which fall farther away from the population centres have suffered much less disturbance.

Limestone industry

The limestone industry is usually associated with agricultural improvements, but in places such as Fife, with extensive coal and iron deposits, the expansion of the iron industry was dependent on the large quantities of lime that was used as a flux in the smelting process. It led to the development and expansion of some fairly substantial lime quarries and kilns throughout the Fife area. The depiction on the early OS maps of the limestone industry have provided the modern researcher with some of the most useful information, revealing a 'slice in time' on the shape, size and organisation of the many quarries, kilns and ancillary buildings in the Fife area. There are still many remains of this industry, partly due no doubt to their location, in many cases sufficiently far away

Illus 4. Roscobie Limekilns showing arched draw holes (A44303) (Copyright RCAHMS 1984).

but not remote from the coal and iron deposits; they have therefore avoided redevelopment or open-cast mining that befell these industries.

Some fine examples still survive in Fife. At the western extremity of the Lassodie valley at Gaskie Hill (13), there is a series of limestone quarries with their associated clamp-kilns cut into the spoil heaps. Clamp-kilns are recorded throughout Scotland, where their survival tends to be better for the reasons given above. A further example of this can be seen at Greenknowes (15) where the topographical shape still replicates the depiction on the first edition map of 1856. A survival as complete as this is unusual and aerial photographs in the RCAHMS give excellent confirmation, providing information which would not be revealed from normal ground survey, unless it had been surveyed in considerable detail. Another example of a very large lime-extraction complex survives at Cults Hill (14) in eastern Fife, which, though outside the survey area, is discussed below.

Of particular note, the development of the industry involved the earlier clamp-kilns being replaced by large stone kilns. This has been observed at several sites, notably at Roscobie (24), although here the evidence of the earlier clamp-kilns shown on the first edition of the OS map along with the internal tramway which once extended through most of the quarry had been removed by later development. In the final phase there were three large stone-built kilns with a complex arrangement of arched draw holes, and the height of the kiln-bank had been raised with shuttered concrete presumably to increase the capacity of the kilns. Sadly the stone kilns were destroyed recently before any detailed recording could be done. To the NW is another limestone quarry at Scaurhill (25) (the hill is named Scaur Hill on the first edition OS map), which is arguably more interesting in that both stone kilns and clamp-kilns still survive, although some of the latter have been destroyed by the construction of a forestry road. Slight traces of what must have been the cottages of a small community of quarry workers can also be seen, and are identified on the first edition OS map as 'Tankcer Hall' (26). The use of 'hall' in the name illustrates how historical research into map names must be treated with caution: this building could hardly be classified as a cottage let alone a 'hall'. The large quarry cut into

Illus 5. Scaurhill Limeworks showing stone kilns and clamp-kilns some of which are now destroyed (F/8785) (Copyright RCAHMS 1981).

the hillside, the lower part of which is now filled with water, is the other more obvious sign of the workings at this site.

Though not in the original survey area, the large limestone quarries at Cults Hill (14) are now the subject of a separate investigation by the RCAHMS. This quarry has a long history and is better documented than many of the limestone quarries within the Cleish survey area. Mentioned in both the *Old Statistical Account* of 1797 and the *New Statistical Account* of 1845, the quarry was reputed to produce some of the purest lime in Scotland and was much sought after by the eighteenth and nineteenth century improving farmers. There are records of it supplying places as far away as Perth and Dundee, a not inconsiderable distance in the days before good roads and railways had been built. The quarry itself is extensive, both in area and depth and though some of the buildings have been destroyed by landfill, enough remains to give a good impression of what it must have been like. The workings lie to either side of a public road, but the depiction on the first edition OS map shows that originally it consisted of three separate quarries, with many series of banks of clamp-kilns. Many of these are still traceable on the ground, some with vitrified stone remaining in situ at one end of the clamp. Two large stone-built kilns also survive, one of which was rebuilt in 1925. The quarry was large enough to warrant the construction of an internal tramway system, of which traces survive and its own standard gauge branch railway, which joined the main system near Pitlessie. The quarry is still active and hidden shafts in the dense vegetation make parts of it particularly dangerous.

Brick and tile industry

The brick and tile industry is also related to the mining of coal. Not only was coal required for the kilns, but bricks could be made from the dumped waste from the mines. Of the brick and tile works shown on the first edition of the OS map, only at Easter Craigduckie (33) works to the W of Lassodie are there any visible earthworks. Of the others, few remains survive: the original Blairadam (27) brick and tile works, now lying under a forestry planta-

Table 1. Sites plotted from OS historical maps and survival in field.

Type of site	No of sites		Surface remains		% survival	
	1st ed	2nd ed	1st ed	2nd ed	1st	2nd
Coal	98	46	18	8	18	17
Coal village	8	6	5	3	62.50	50
Ironstone	38	8	8	0	21	0
Iron Works	2	0	0	0	0	0
Lime	20	2	15	2	75	100
Quarry	8	0	5	0	62.50	0
Ochre	1	0	0	0	0	0
Brick/Tile	10	1	2	0	20	0
Farms	35	1	29	1	82.85	100
Mills	10	0	2	0	20	0
Gasworks	2	1	0	0	0	0

tion; the old Devonshaw (28) tile works has been reduced to a quarry pit and a few mounds; and though the drying shed of the Lassodie Brick Works, later the Fife Fireclay (29) Works, is still standing, it is now being used as a base for four-wheel drive competitions. Here again we can record the almost complete destruction of the remains of what was once an important industry in Fife. Its demise is of course closely linked to that of the coal industry, but it should be noted that unlike the limestone industry, little trace remains of brick and tile works even where they lie in areas removed from the population.

Historical implications

The sites that have been described above reveal something of the potential of this sort of archaeology, but the survey has also shown the almost total removal of evidence of industrial activity from numerous areas. Around Lumphinnans, Cowdenbeath and Lochore, for instance, we can only reconstruct what has occurred over the last 150–200 years by examination of the documentary and OS map evidence with the additional assistance from estate plans where they are available. The OS second edition maps of c 1896 are especially useful, for this period coincides with the approximate apex of Britain's industrial development. However, use of the maps must be undertaken with some reservation, for numerous sites were both developed and abandoned between editions, especially at the end of the 19th century, and these were never shown on any edition of the OS Maps. Nevertheless the maps reveal a very different landscape from that which we see today. Within living memory, Fife has moved from being one of the principal areas of coal and iron production to one of industrial dereliction. The industrial landscape is being returned to agricultural use and modern factory units, by open-cast mining and reclaimation schemes, thus removing much evidence of the past.

As stated earlier it has been those areas that have been heavily developed in the last 30–40 years which have suffered the greatest removal of industrial remains, but the threat is no less in the post-industrial world. Those areas of early working are often the very sites into which modern open-cast developers are hoping to extend their operations. This applies especially to the coal seams fairly close to the surface, as they have often been worked inefficiently so leaving large deposits of coal for the modern open-cast miner to exploit. We can already see this process at Benarty (31) where an expanding open-cast coal-mine is steadily removing the evidence of the traditional shaft and drift mine which once existed here.

A statistical breakdown of those sites plotted from OS historical maps (Table 1) and those where there is some form of survival on the ground reveal some interesting patterns. The table below shows sites plotted from both the first and second editions against their survival either as upstanding bings and buildings or just ephemeral traces on the gound, in either case counting as survival. In all, from maps and field-work some 255 old mines and shafts were identified in the area surveyed. It must also be pointed out that the recording practices for the survey were not set up with a 'view to extracting statistics' (Landscape Conservation Studio Limited, paper given to the Conference on the Cultural Environment 1993) and though the figures will be of the right order they are only approximate. As the table reveals the majority are coal and ironstone pits, the figures are those shown both disused and in use on the first edition of the OS map. It should be noted that field-work added a further 15 examples, probably abandoned by the 1856 date of the first edition OS map.

It is indeed ironic that sites such as bell pits, six of which retain their horse-engine platforms, which are possibly some of our oldest industrial remains, have survived better than many of the later mines. Very few of the associated buildings connected with mining, such as engine houses, winding houses and pit head gear survive. The most striking aspect of the table is the survival of first edition farms, many still upstanding to roof height. It would appear that domestic sites have survived very much better than the industrial sites. The high survival rate of the lime industry remains should also be noted. The mines dating from after 1856 have been reduced substantially in number, many examples having been landscaped, and now can be found below golf courses and parks. Of the mines opened in the 1920s and 1930s, perhaps the sites of as few as half a dozen are only marked by massive bings. The survey also revealed that only at 14 sites could any evidence of pit-head machinery, mainly of shuttered concrete, be found. It is a sad fact that one the sites which shows evidence of an earlier phase of machinery plinths, dressed masonry, is possibly to disappear due to open-cast operations. The condition of these remains, often only footings or robber trenches, but occasionally upstanding elements such as machinery plinths, is very often the only evidence left on the ground that there ever was a coal-mine.

There can be little doubt that the surface archaeology of industrial remains in Fife is under threat either from further extraction or redevelopment or infilling which in many cases removes the evidence completely.

Future work

The creation of the database prior to the survey of the Cleish area for the ALS survey team of RCAHMS provided a useful trial for what has become known as the Central Scotland Woodland project. This covers an area of 2000km^2 between Glasgow and Edinburgh where Central Scotland Woodland hope to carry out large-scale forestry development, particularly areas of industrial dereliction. These areas fall on the major nineteenth century industrial extractive fields of the Central Belt, in effect the cradle of Scotland's industry. The project involved the creation of a large database nearing 6,000 entries. Additional features such as transport links have been digitised onto a computerised map base. The use of three editions of the OS maps, first, second and second edition revision of 1910–1915 provide a much more comprehensive database, especially when coupled with the examination of two periods of vertical air photographs from the RCAHMS collection. The whole project has now moved on, and has been placed into a Geographical Information System allowing much more flexible use of the data, creating the opportunity to analyse the data against other map-based data-sets, and, in time will improve public access to the information.

Conclusion

This article has attempted to illustrate how both the use of the early OS maps and documentary evidence can assist in the preparation of field-work, and in understanding the results of survey. The key element in the survey has been the examination of the early OS maps. The pre-survey work soon revealed that the first edition was only a starting point. It became clear that no work on the industrial past of Fife, or any area for that matter could ignore the second or subsequent editions. Here lay a vast source of information concerning the development of Scotland's industrial past, providing 'slices in time' at key periods at the end of the nineteenth century and just prior to the First World War. It became clear that the comparison between the second edition of c 1896 and the subsequent revision of c 1915 was just as important as that between the first edition of c 1856 and the second edition. Between the second edition and the revision, the last major burst of development in the coalfields of Fife occurred and it is here that are found some further but more subtle changes to the OS maps. At a micro level, the depictions on the maps can reveal some of the more subtle changes such as additional railway sidings, new buildings or the spread of the large bings. This kind of evidence is vital to the researcher trying to equate what is found on the ground today. Even armed with this information there are many cases of the evidence in the field being totally at odds with any edition of the OS maps. Examples were found of smaller waste tips, shafts, levels and even quite large buildings which do not appear on any of the editions of the maps. In instances such as these, recourse has to be made to oral evidence and the mining records of the National Coal Board. In a few cases even this did not solve the problem and further research is impossible, leaving evidence in the field for which no explanation could be found.

Through the surveys described here we are beginning to quantify the extent of the archaeology of the extractive industries, and identify the dire peril that threatens many of the sites. We are also beginning to discover the relationship between map evidence and survival. From the data recorded in the field and the office we can also attempt to reconstruct what might be termed 'slices in time, by judicious use of maps and vertical aerial photograph. From these, a fairly comprehensive picture can be built up of the rise and fall of not only the nineteenth and twentieth

century extractive industries, but also the associated transport links. Other industries which have not been discussed here, such as milling, ochre mining, and quarrying, can all be explored in the same way, as can the roads, docks and railways linking the Fife industrial scene to the rest of the British Isles.

Acknowledgements

This paper is published with the aid of a grant from the Royal Commission on the Ancient and Historical Monuments of Scotland.

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Gazetteer

List of sites in text

1 Dummiefarline	NT09NE 1	NT 0877 9682
2 Dumglow	NT09NE 2	NT 0762 9650
3 Outh Hill	NT09NE 19	NT 060 951
4 Killearnie Castle	NT09SW 7	NT 0321 9243
5 Blairadam Bridge	NT19NW 37.00	NT 1456 9547
6 Steelend	NT09SW 55.00	NT 051 931
7 Knock Hill	NT09SE 6.01	NT 0565 9360
8 Lassodie	NT19SW 30.00	NT 125 925
9 Fairfield Village	NT19SW 30.07	NT 125 925
10 Parley Village	NT19SW 30.04	NT 1241 9251
11 Lassodie Pit No 4	NT19SW 30.05	NT 1265 9241
12 Kingseat	NT19SW 31.00	NT 125 910
13 Gaskie Hill	NT19SW 45.00	NT 1087 9261
14 Cults Hill	NO30NE 23	NO 352 089
15 Greenknowes	NT19SW 28	NT 1105 9330
16 West Lethans	NT09SE 20.00	NT 055 944
17 West Lethans Pit 1	NT09SE 20.01	NT 055 944
18 Lethans Village	NT09SE 21.02	NT 0593 9431
19 The Loups	NT09SW 48	NT 0430 9421
20 Comrie Colliery	NT09SW 31.00	NT 005 909
21 Lochore Mary Pit	NT19NE 27	NT 1703 9647
22 Harran Hill	NT19NE 22.00	NT 168 967
23 Pieries Burn Wood	NT19NW 38	NT 1142 9511
24 Roscobie	NT09SE 8	NT 0927 9276
25 Scaurhill	NT09NE 27.00	NT 052 959
26 Tancker Hall	NT09NE 27.01	NT 0527 9593
27 Blairadam	NT19SW 29	NT 1200 9360
28 Devonshaw	NT09NW 24	NT 0045 9850
29 Fife Fireclay Wks	NT19SW 40	NT 115 931
30 Blair Mill	NT19NE 11	NT 1529 9617
31 Benarty Colliery	NT19NW 43.00	NT 149 960
32 Steelend Farm	NT09SE 51	NT 0551 9323
33 Easter Craigduckie	NT19SW 23	NT 1080 9210
34 West Lethans	NT09SE 21.03	NT 0606 9431

(Weighing Machine House)

The Tayside and Fife Archaeological Committee is the area liaison group which aims to conserve the historic environment of Tayside and Fife. TAFAC brings together individuals and organisations that share a common interest in promoting and protecting the archaeology of the area. A constant monitor is kept on all archaeological and historic developments in Tayside and Fife. TAFAC is an established consultee on both regional and national issues.

The journal is the first in the series of annual volumes to be published by the Committee, aimed at bringing the results of recent archaeological work to the public.

This volume includes papers devoted to such diverse topics as prehistoric rock art, Pictish stones, medieval urban excavation and industrial archaeology.

Cover sponsored by the Russell Trust