

Pictish Byre-houses at Pitcarmick and their landscape: investigations 1993–5

Martin Carver*, John Barrett†, Jane Downes‡ and Janet Hooper§
with research contributions by Alison Sheridan, Fraser Hunter,
Peter Rowe, Allan Hall, Mark Edmonds, Derek Hall and Matilda Holmes

ABSTRACT

‘Pitcarmick-type’ houses were identified by the Royal Commission in north-east Perthshire in 1988 and published in their survey of 1990. Long and narrow with rounded ends, they seemed to occur in a sequence between prehistoric roundhouses and medieval and post-medieval dwellings. They were therefore provisionally assigned to the later 1st millennium AD, a period associated in this region with the Picts. Excavations by John Barrett and Jane Downes at Pitcarmick (North) in 1993–5 defined the basic properties of two Pitcarmick-type houses and produced radiocarbon dates between the 8th and 11th centuries. A subsequent survey of the broader landscape by Janet Hooper offered a sequence of the main phases of occupation and their context. The Pitcarmick upland had been settled in the Bronze Age with circular stone-and-turf houses, thought to represent a series of self-supporting farmsteads using mixed farming and in touch with similar settlements in adjacent territory. Two thousand years later, Early Historic settlers inserted their dwellings into this relict landscape, also practising mixed stock and crop farming. In the Middle Ages, the land was settled by farmers who kept sheep and ploughed the earlier settlement areas. The post-medieval period is represented by a group of shielings on the eastern edge of the prehistoric and early medieval settlement area, where ploughing continued.

These investigations are here brought to press by Martin Carver, supported by Historic Scotland and a team of specialists who examined the quartz, charcoal, animal bone and pottery and produced a tighter array of radiocarbon dates. This account proposes that the Bronze Age roundhouses are of conventional type, with a central hearth, entrances facing south-east, and roofs supported by a post-ring. The two Pictish buildings are defined as longhouses with byres (properly byre-houses), constructed with turf-and-stone layered walls and timber roof-supports. Occupants sheltered round a hearth at the west end and animals were stalled either side of a paved drain at the east end. These houses are radiocarbon-dated to the period c AD 700–850. Both buildings had been reused between c AD 1000 and 1200 and both were subsequently flattened by later medieval and post-medieval ploughing, the effects of which severely inhibited subsequent interpretation. While Pictish in date and territorial affiliation, these longhouses exhibit strong links with preceding and contemporary practice across the North Sea. Their form currently stands in marked contrast both to their prehistoric predecessors and to contemporary neighbouring settlement in Britain.

* Department of Archaeology, University of York, King’s Manor, York YO1 7EP

† Department of Archaeology, University of Sheffield, Northgate House, West Street, Sheffield S1 4ET

‡ Orkney College, University of the Highlands and Islands, East Road, Kirkwall, Orkney KW15 1LX

§ Sunny Bank, Banks Head, Bishops Castle, Shropshire SY9 5JW

CHRONOLOGY

In this report, the following period definitions have been used:

Bronze Age 12–8th century BC; Iron Age 8th century BC to 6th century AD; Late Iron (early Pictish) 3–6th century AD; Early Historic (late Pictish) 7th to 10th century AD; medieval 11th to 16th century AD; post-medieval/early Modern 17th to 19th century AD. The word ‘Pictish’ is used to refer to material culture of the 3–9th century in the mainland of eastern Scotland.

DESCRIPTION OF THE INVESTIGATION

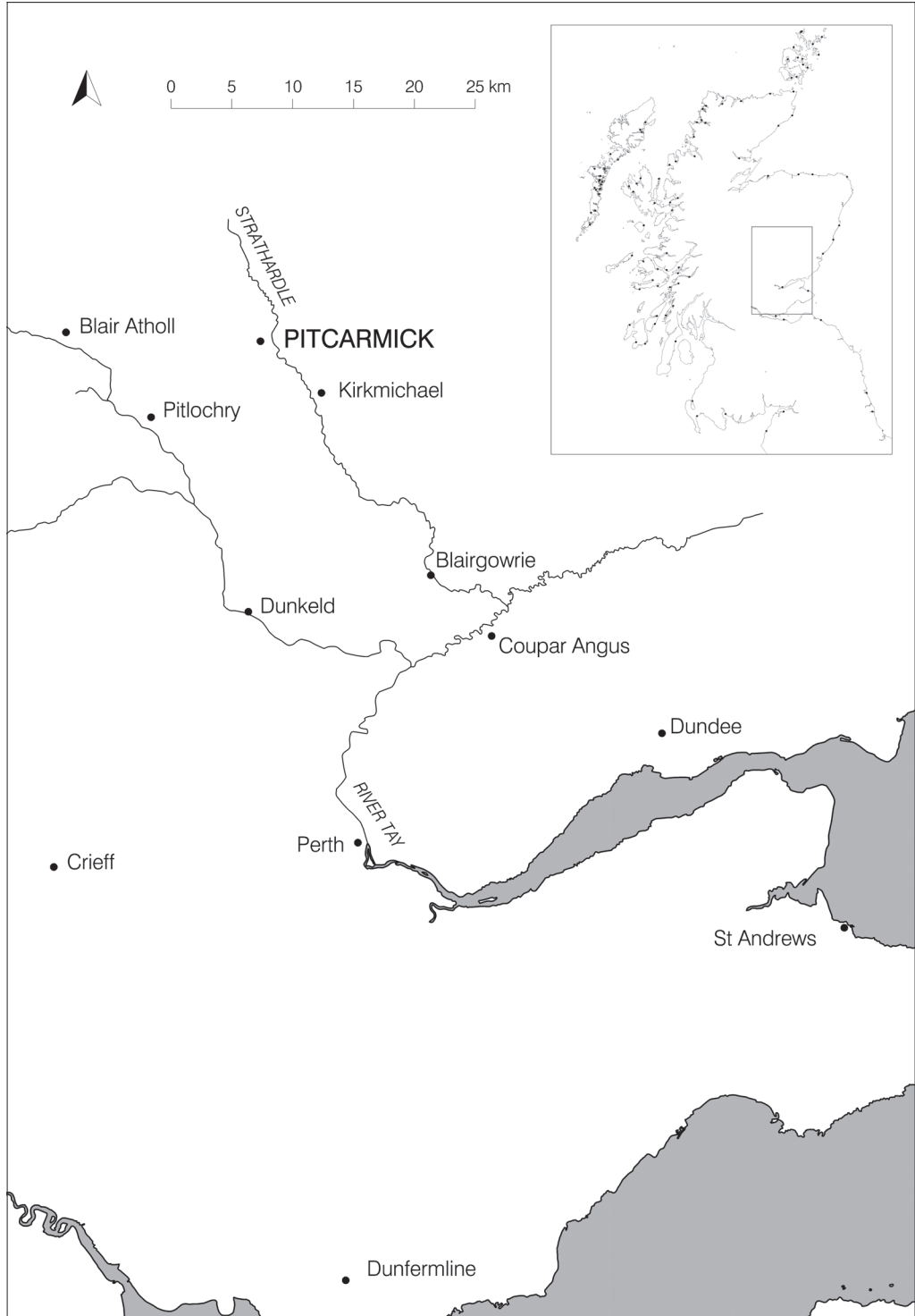
The Pitcarmick investigations were prompted by the publication of the Royal Commission’s survey for north-east Perthshire (1990), which revealed and mapped settlement sequences likely to have extended back from the 18th century into prehistoric times. One element noted on the

maps was a type of long building with rounded ends that occurred more frequently with hut circles than with farmsteads. In consequence, these buildings were tentatively attributed to the later 1st millennium and became known in archaeological literature as ‘Pitcarmick-type’ houses (RCAHMS 1990: 12–13, 154–5; Stevenson 1991; Foster 2004: 56).

A notable example of a group that included such buildings was seen on high ground to the west of Strathardle, in the area designated as Pitcarmick North or Site 154-4B (NGR: NO 054 568; RCAHMS 1990: 75–8; Location: see illus 1, 2; nearest village Cultalowie). It consisted of a number of roundhouses, longhouses and rectangular houses set among relict field boundaries and clearance cairns (RCAHMS 1990: 78). Following an initiative from the Department of Archaeology at Glasgow University, the area was the subject of an investigation by John Barrett (of Glasgow,



ILLUS 1 General view of the landscape of Pitcarmick (North), looking east, taken in 1995



ILLUS 2 Location map



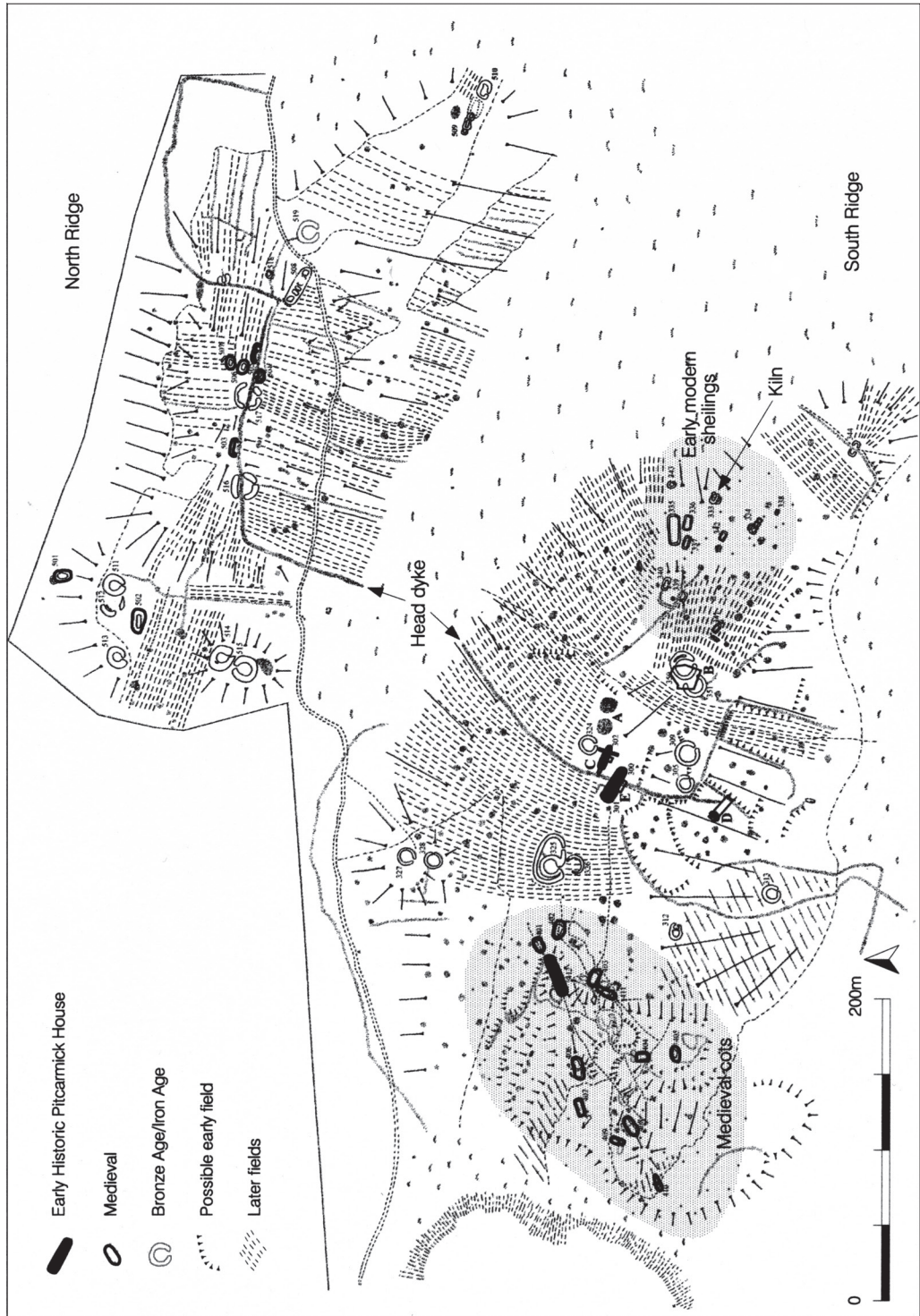
ILLUS 3 Plan of structures defined by the Royal Commission at Pitcarmick North, showing the targets of excavation, lettered A–E (RCAHMS 1990,77; monuments 154–4B)

now Sheffield University) and Jane Downes (of Glasgow University and now UHI).

As often observed, the archaeology of the Early Historic period in Scotland has been obscured by failing to study it as part of a prehistoric–protohistoric–medieval continuum (Hooper 2002: 23). Confronting this challenge, the stated goal of the Pitcarmick project was not merely to solve the riddle of the so-called ‘Pitcarmick buildings’, but to examine the multi-period landscape of which they formed part (Hooper 2002: 139–40). In general, it was expected that the cairns and roundhouses would belong to the later prehistoric period, the longhouses to the early historic period and the clusters of rectangular buildings, field boundaries and clearance cairns to the later or post-medieval period. Thus if the aim of the project was primarily to define and date

the houses designated as ‘Pitcarmick type’, the excavation programme was also intended to provide a diachronic and theoretically informed overview of upland settlement in Perthshire. Between 1993 and 1995, the project team excavated five sample areas, recording a

ILLUS 4 Survey of the area investigated. Two ridges (north and south) lie either side of a boggy zone, both ridges descending downwards to the east. The letters refer to the excavations. This plan also shows the areas of occupation as defined in this report: on south ridge, Bronze Age and early historic buildings are clustered in the centre, medieval to the west and post-medieval to the east. The rig and furrow is also thought to be post-medieval. The dark building to the NW of Area E is no 412, also thought to be early medieval (see p 187). (Survey and base map by Janet Hooper (2002))





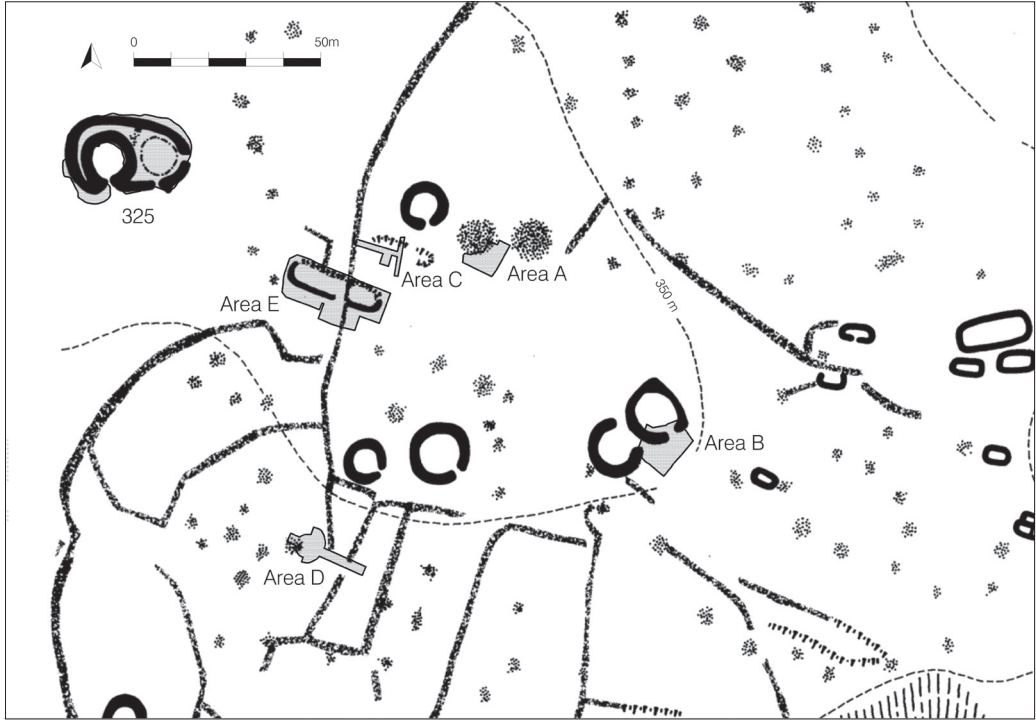
ILLUS 5 Field plan of earthwork 325 by Janet Hooper (for location see illus 4)

roundhouse dated to the late Bronze Age (Area B), three points of settlement with hearths and structures of the Early Historic (Pictish) period (Areas A, C and E), medieval activity (Area A, C and E), and a clearance cairn and lynchet, probably of the post-medieval period (Area D) (Barrett & Downes 1993; 1994); (illus 3).

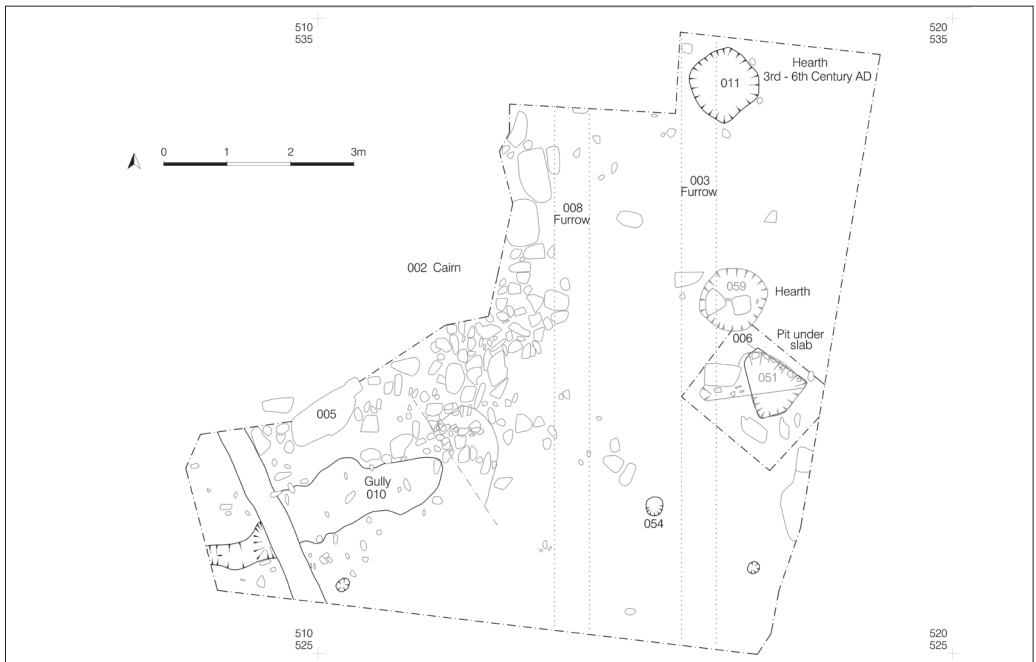
Following the excavation campaign, a detailed survey of the Pitcarmick North district was undertaken by Janet Hooper, who gathered data on the topography, the field boundaries, and the forms of unexcavated buildings (Hooper 2002; a summary of her findings is shown in illus 4). Some of the surface forms of the buildings were surveyed in detail; for example, the distinctive enclosed or double roundhouse 325 (illus 5). In addition, site surveys were undertaken which measured soil depth, phosphate concentrations (Banks 1996) and magnetic anomalies. Janet Hooper went on to examine the context of settlement in Strathardle

from the Bronze Age to the 19th century, and to explore cultural patterning in the upper Tay basin in Pictish times. This pioneering study has formed the basis for much of the broader commentary presented here. Thus, along with establishing the character and date of 'Pitcarmick type' houses, the programme was designed to investigate how much additional understanding of the complex, multi-period landscape could be gained by overlaying additional survey evidence onto the published survey (RCAHMS 1990), while resolving to keep the disturbance of earthworks to a minimum. The latter principle has clearly constrained some of the structural interpretations offered in this report.

In what follows, a description is given of the sequence as interpreted at each of the investigated areas (illus 6), together with a summary of the finds. The overall sequence is then summarised and the question of the nature and context of the Pitcarmick buildings is addressed. This account



ILLUS 6 Location of the investigations reported here



ILLUS 7 Area A, composite plan

of the excavations and their findings is confined to the data essential for the argument. A transcription of the site records for each area, including context descriptions, evidence for sequence and lists of drawings, photographs and finds and the full specialist reports will be found in the *Online archive*, which is hosted by ADS (see p 196).

RESULTS OF EXCAVATION

AREA A (illus 7)

Period 1 – Bronze Age burial cairns?

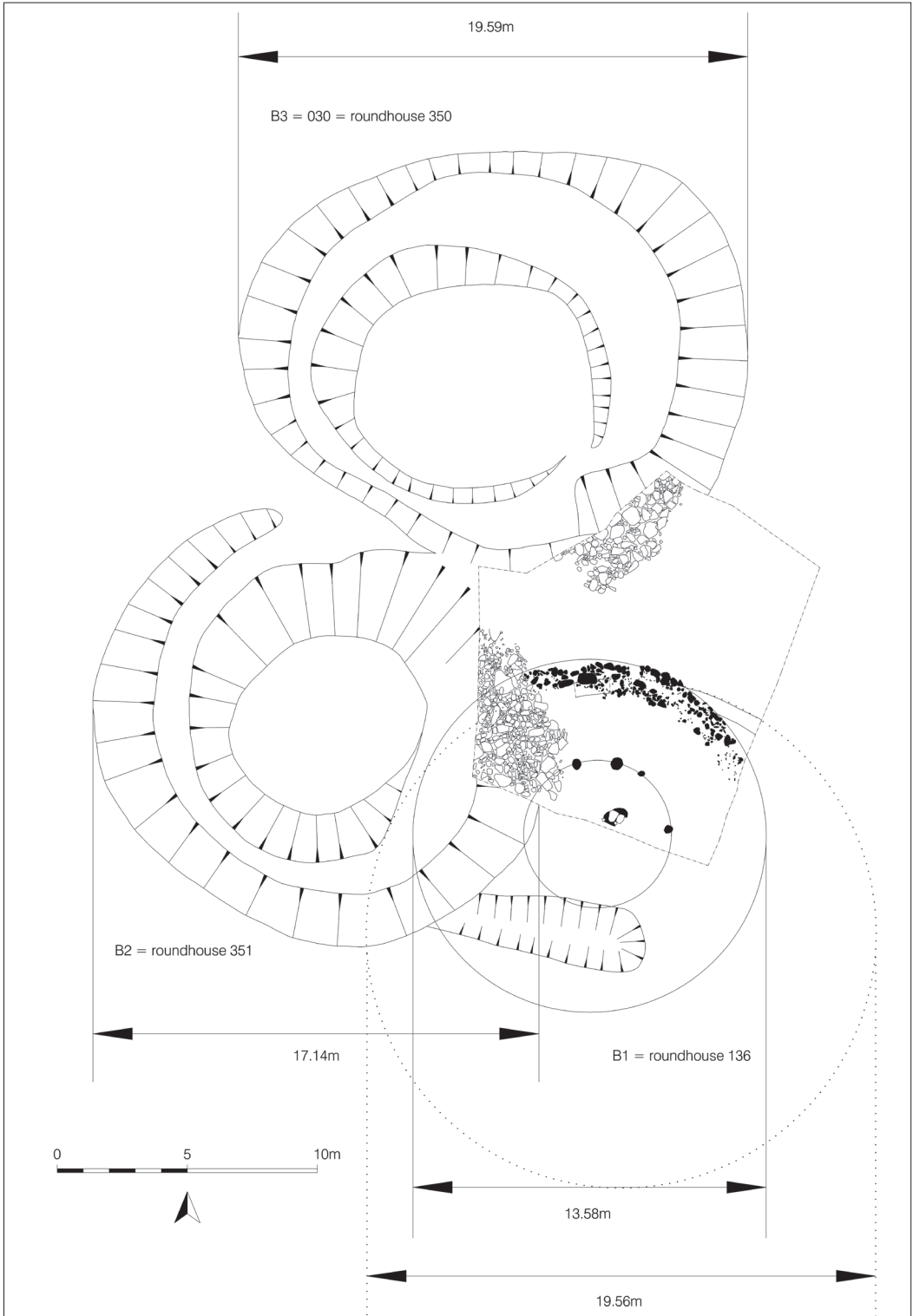
The target of the inquiry in Area A was the space in front of two cairns, neither of which was excavated. Cairn (002) was noted to consist of tightly packed stones with a kerb, but there were no indications of date. At 11m across, the cairns are of a size commensurate with Bronze Age burial cairns in the vicinity (RCAHMS 1990: 15–22). At Lairg, McCullagh & Tipping (1998: 88) found that burial cairns could be distinguished from clearance cairns by their kerbs of boulders. The Commission identified the Area A features as a pair of Bronze Age cairns, and identified kerbs for both. It was noted that the east edge of the east cairn was overlain by field clearance, which may account for the poor definition of the edge of west cairn, 005. Although not dated, the only feature sufficiently enigmatic to participate in a Bronze Age ritual was the stone-capped pit 051. There was no trace of wood stain, or packing. Similarly there was no trace of a burial.



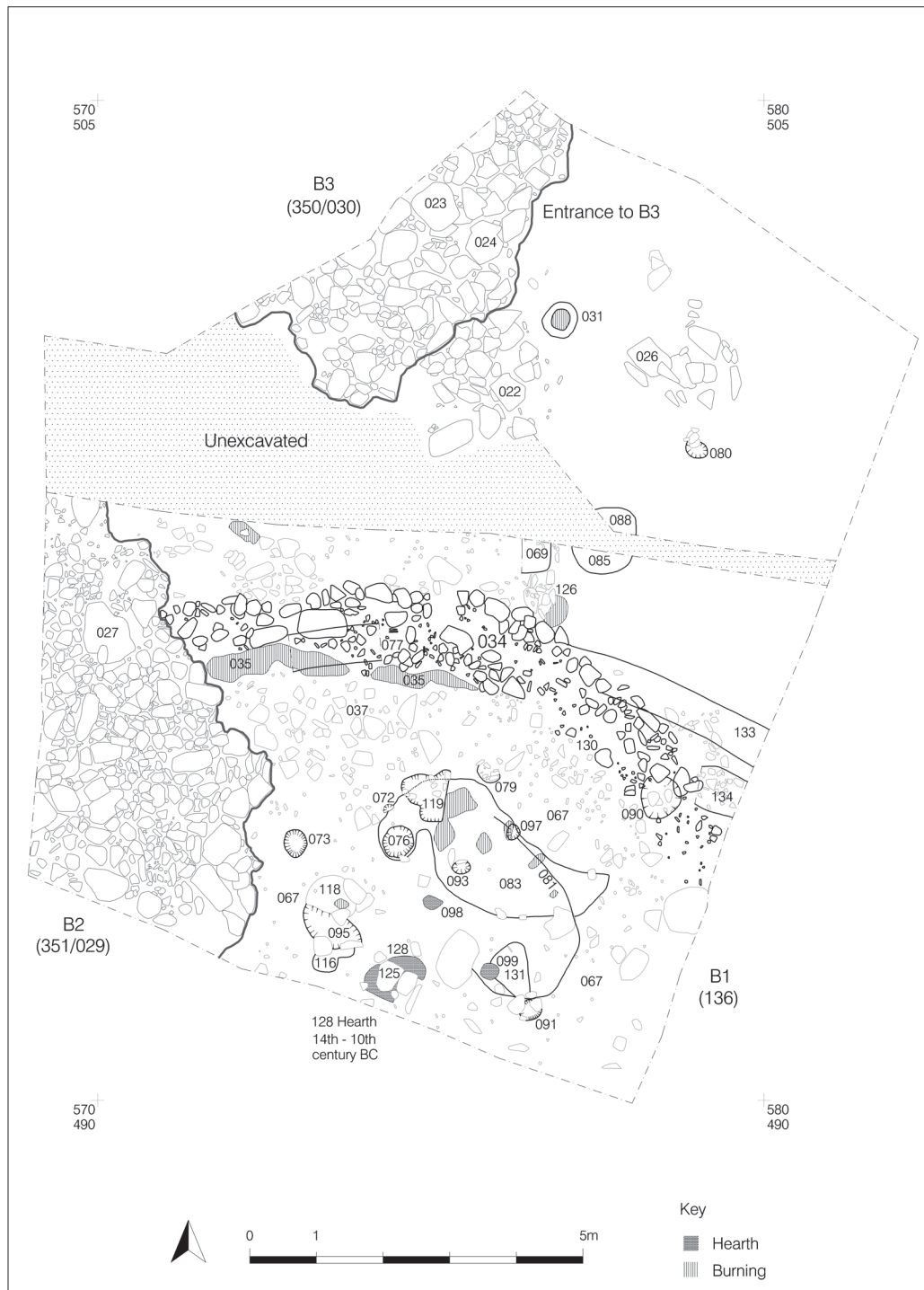
ILLUS 8 Area B during excavation, looking south-west. Roundhouse B3 in the foreground, B2 in the background (PK 93 2_6)

Period 2 – Late Iron Age

The intervention was powered by an initial theory that this space would report contemporary or posterior ritual activity, but the only two identified features were hearths of the Pictish late Iron Age. These took the form of shallow circular stone-lined depressions similar in shape and containing charcoal (011 and 059). The radiocarbon dates obtained from alderwood charcoal in 011 (Context 04) put



ILLUS 9 Area B. General plan showing B2, B3 and reconstructed form of B1



ILLUS 10 Area B. Map of excavated features



ILLUS 11 Area B. Wall of B1 in the process of definition (PK 93 3_7)

this (and by implication the other hearth) in the 3–6th century cal AD (Table 5). There were no indications of a structure, round or square, that would accommodate the two hearths, and their position could imply the use of the cairns as a wind-break. These circular hearths of the Pictish Late Iron Age can be contrasted with the square hearths of the Pictish historic period (8/9th century) in Areas C and E (below).

Periods 3–5 – Pictish to post-medieval

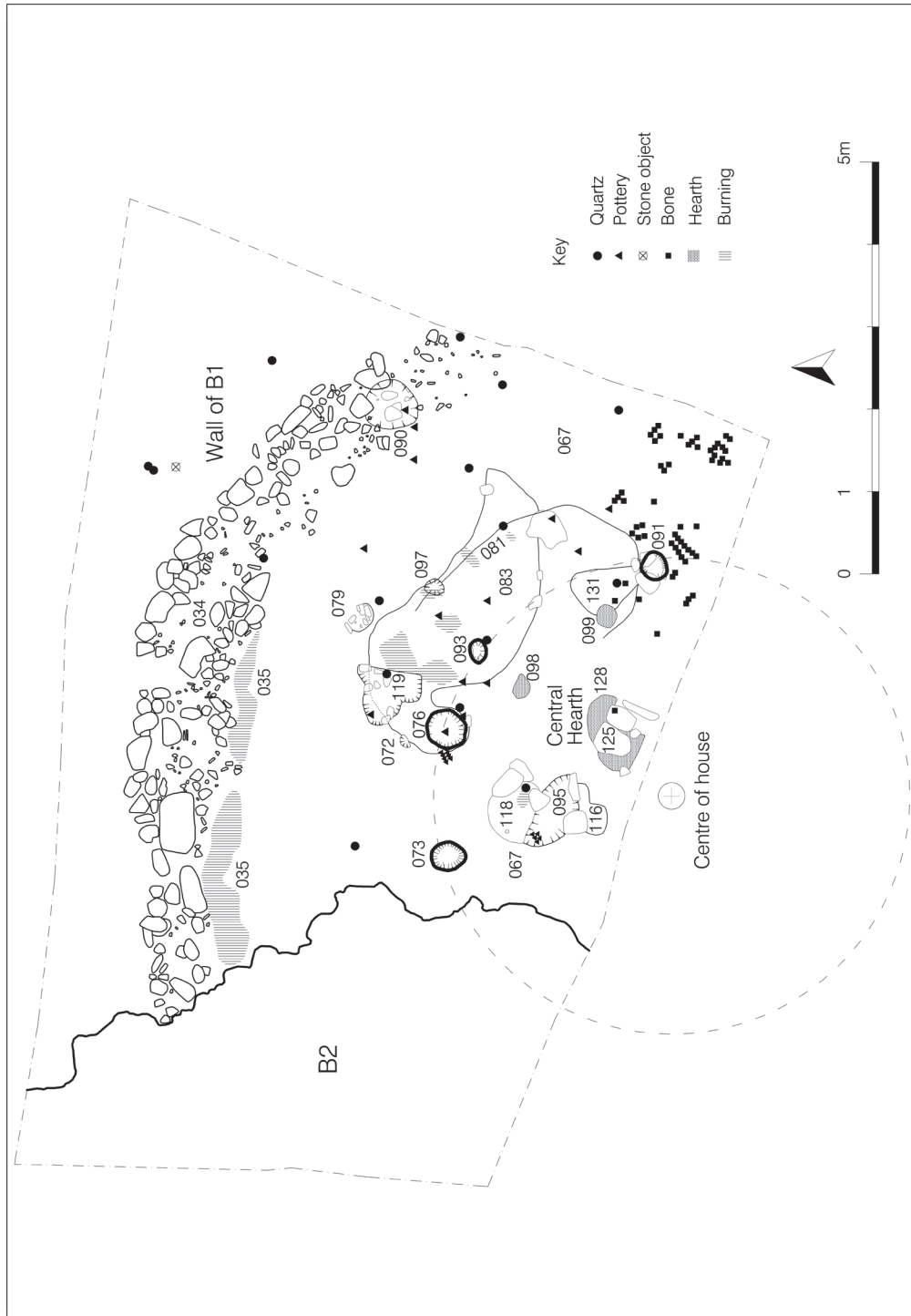
In the excavated area, turf and plough-soil up to 20cm thick (001, 007) lay over a hard gritty yellow subsoil (recorded in 059). There were two broad plough furrows (003, 008) and there is every reason to believe that the area had been ploughed, as had the whole adjacent hillside (illus 4). The disorderly apron of cairn 002 may represent the molestation of the plough or attempts to pile ploughed-up stones on a pre-existing heap. The finds, most of which came from the ploughsoil 007, offer a faint echo of

the vanished sequence: a strong background noise of worked quartz that probably originated in the Bronze Age (see Area B), stone pot-lids and 17 sherds of glazed medieval pottery from Yorkshire, denoting activity of some kind in the 13/14th century.

AREA B (illus 8–12)

Excavation

Area B was opened on the east side of two roundhouses that were visible at ground level: 350, in the north, here Building B3, and 351 in the south, here Building B2 (illus 8, 9). The excavation began east of B3 with the removal of peat and heather topsoil (021). The entrance to B3 was located and it was established that stones assigned to this roundhouse overlay stones assigned to B2. A number of features were identified: the (probably early) hearth 031, post-hole 080 and pit 088/085; and the (probably late) stone stacks 022 and 026 (see illus 10).



ILLUS 12 Area B: Plan of the interior of B1, with finds distribution

A baulk was left across the site, approximately east/west and the excavation then focused on the southern part, where a third and earlier house, B1, was defined. A large number of stones was planned and resolved into the remains of House B2 (west), the north wall of B1 (034, centre top) and tumble from this wall, 037 (illus 10, 11). South of the thinning tumble were a number of potential hearth-areas (eg 099 and 128), and a scatter of post-holes, scoops and hollows. Features that possibly predated House B1 included a gully 133/077 (illus 10), and some unidentified features (eg 126 and 069). Inside house B1, a general sequence was provided by stratified floor levels, but there were few indications that the features and finds recovered here belonged to other than a single phase in the Bronze Age (illus 12).

Sequence

UNASSIGNED, POSSIBLY EARLY FEATURES

Features north of B1 and east of B3 were not obviously connected to any of the three houses and may have been earlier. They include a gully 133/077, that underlies 034 the wall of B1. Alternatively this could represent the real edge of B1, with 034 as wall tumble, implying that B1 was a much larger house (see illus 9). But the excavators' identification of the 034 wall has been used to propose the more probable area occupied by the house (illus 9).

CONSTRUCTION AND USE OF B1

The surviving course of wall (034), said to be of stone and turf construction, was about 1.6m wide, its curve suggesting a diameter for the house of 13.5m (see illus 9). This would place the hearth 125/128 near its central point (illus 12). The area seems first to have been levelled into subsoil. There were four probable post-holes with stone packing (073, 093, 091, 097) and two other possible post-holes (072, 079). Of the four, three (073, 093, and 091) lie on an inner concentric arc appropriate to a roof support. 076, not claimed as a post-hole, but circular in its final form, also lay on this arc. These are indications

that the basic design was a ring of posts to support the roof, with a central hearth and a thick circular perimeter wall, likely to have been of turf and stone. At Lairg, McCullagh & Tipping (1998: 42, 104–5) assumed a turf construction for their excavated roundhouses, one of which, House 7 (dated to the late 1st millennium BC), had a diameter of 11m and an inner post-ring.

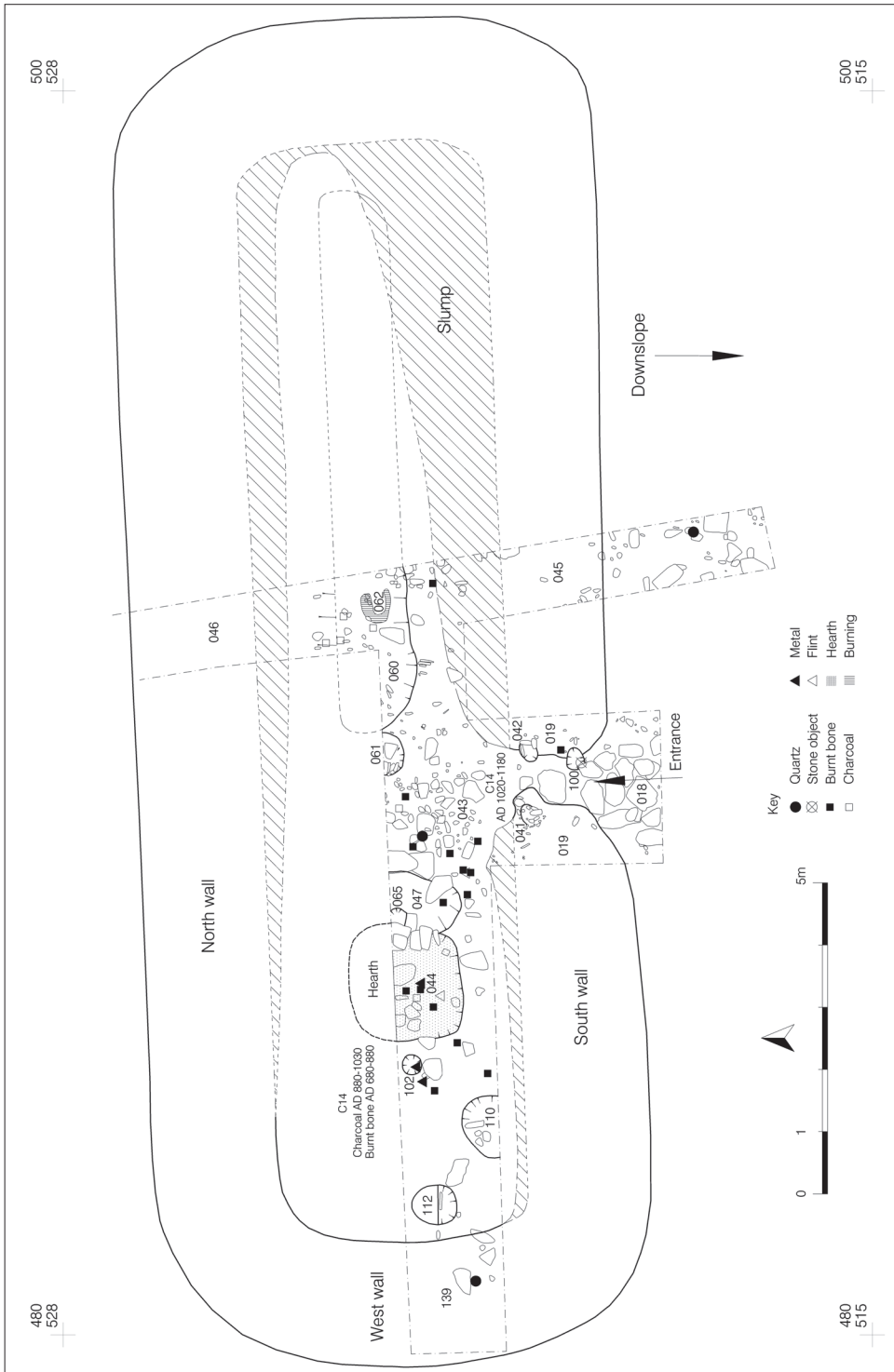
The occupants of B1 lived hard, churned up their floor and wore several scoops and hollows into it (116, 118, 119). The single radiocarbon date of 1398–920 cal BC was taken from the fill of the central hearth (128) (Table 5). Burnt bone was concentrated at the south-east of the hearth (128), perhaps between the hearth and an entrance. A secondary hearth nearby (099) was commissioned and raked out (131). Charcoal was dumped north of the post-ring (081, 083) unless this was an accidental fire of, say, a patch of heather bedding. Pottery was distributed on the north side of the building, though now much fragmented. Quartz had a more random distribution and was less thick on the ground (pp 167–76).

CONSTRUCTION OF B2

The disuse of B1 is marked first by the dumping (or burning in situ, 035) along the inner face of the wall 034, and then by its demolition (037, 130; illus 10). Building B2 (351) was constructed to the west of B1 and was apparently on a bigger scale at 18m in diameter. The wall thickness was said to be 1.2–3m and the entrance to lie to its south, but very little was excavated and its main manifestation was the wall tumble 027. This shows only that the demolition of B2 followed the demolition of B1 and does not strictly indicate the sequence of construction. However, the two buildings could not have co-existed (illus 9), so it is likely that B2 was a successor to B1. A stone spindle whorl was found at the east edge of B2 (illus 25A).

CONSTRUCTION OF B3

B3 (030, 350) is stated to have superseded B2, and was constructed on a still larger scale at 20m



ILLUS 13 Area C, composite plan of Structure C1, with identified contexts and distribution of objects. The hearth 044 is shown in its enlarged medieval form. The hatched area inside the wall lines marks the hypothetical extant of slumping

in diameter with a wall thickness of 1–3m. Its entrance was located on the south-east side with a run of paving (024) leading towards it. It too was eventually disused, with boulders falling from the walls (023).

DISCUSSION

All the identified activity in Area B took place in the Bronze Age (here Period 1). Examples of roundhouses of the form encountered at Pitcarmick have been more completely excavated in the locality. Roundhouse 1 at nearby Carn Dubh was built of stone and double-walled, had a paved entrance to the south-east, contained quartz artefacts, and was dated 990–870 uncal BC. Houses 2 and 3 at the same site, also Late Bronze Age, had walls of rubble and soil on a bank of turfs. There were ard marks in association with the houses, and environmental evidence showed intensive woodland clearance after 2050 cal BC, creating grassland with some barley cultivation. There were *muirburns* after 1100 cal BC and grazing persisted at low intensity throughout the later Holocene into the 1st millennium AD. Alder and hazel had been cleared within the last 1,200 years. Low level pastoral use in the Middle Ages was followed by a hiatus in occupation in the 14–18th century and renewed grazing in the 19th, including the use of shielings (Rideout 1995).

A suggestive structural parallel for house B1 can be seen at roundhouse S2 at Ednie, which was 15m across with an internal post-ring 9m in diameter and a central paved area with a stone-lined storage pit. The assemblage included burnt barley grain, flakes from knapping in the central area and 93 sherds of LBA pottery abraded by later ploughing. The building was radiocarbon-dated to 1520–1130 BC (Strachan & Dunwell 2003). Structure B at Lamb's Nursery had an outer ring ditch and an inner post-ring (12m and 7.5m in diameter respectively) and was dated to the 2nd millennium BC (Cook 2000). These roundhouses survived mainly as stone walls and post-holes, but the use of turf (or turf-and-stone

coursing as in B1), may be implied by slender slabs.

AREA C (illus 13)

Excavation

The smaller of the two Pitcarmick-type houses identified on the surface (C1) was investigated by means of two orthogonal trenches (illus 13). The western part was half-sectioned longitudinally and the southern part included an extension over the entrance. Farther east a north/south trench adjoined the east/west trench. The sections through the walls of the structure suggested them to have been constructed solely of turf (turves), lacking any stone foundation. However, the exterior of the downslope (south) side of the wall (045) included some flat slabs that might have originated in the body of the wall. Positioned to the left of the entrance was a large hearth, originally square in plan and measuring 1.70m wide (044). This hearth was constructed by the digging of a steep-sided flat-bottomed shallow pit, which was then roughly lined at the sides with one or two courses of medium-large irregular slabs. At the bottom, cut into the natural, were the charred points of three stakes. The hearth had become filled primarily with a mixed layer of pieces of burnt clay, friable charcoal, humus, burnt bone and chips of stone. Either side of the hearth, and probably central to the axis of the building, were two post-holes without packing, 065 and 102. Also on the long axis was 061, which measured 35cm wide and 15cm deep, and was possibly part of the roof support. Two substantial pits were located at the west end of the building. 112 was 70cm in diameter and 17cm deep; 110 was 1m in diameter and 17cm deep. It is possible that 112 was a post-pit as there were large stones in the fill, perhaps acting as packing. Its position suggests a function in supporting the roof at the curvilinear west end, an arrangement repeated at both ends of E1 (see below). Thin slabs of stone lining were also noted in Pit 110.

The entrance to the structure was paved by, for the most part, a single layer of large flat stones 018, forming a path 70cms wide, flanked by two small but deep post-holes packed with long stones, 041, 042. A third post-hole (100) lay to the exterior of these, on the east side of the entrance. Disturbed paving continued inside the building east of the hearth, and farther east ran over into a broad-bottomed linear depression 14cm deep and 70cm wide (060). This hollow depression, sump or drain was filled partly by small blocky rubble and some small stones angled down with the slope of the hollow. The remainder of its fill was similar to the rest of the house floor surface (043) – grey gritty trampled-in material with burnt bone and charcoal. Within the sump area and over its fill was an irregular ring or arc of burnt clay and charcoal c 40×40cm (062). The finds, which were plotted on the plan, were mainly burnt bones and charcoal.

Sequence

The radiocarbon dates show that this building had two periods of occupation. Two dates of 680–880 were obtained from burnt bone within the hearth (044). Two medieval dates were also obtained, the first (880–1020) from a mixed bag of charcoal in 044, which could thus include residual material, while a later date (1020–1180) was given by burnt bone from the final floor (043). The latter can be accepted as providing the more precise date of re-occupation (Table 5). In so far as the excavation determined, the remains of the early medieval building had been

re-exploited by the widening of the hearth (044) into a shallow pit, and the use of a temporary hearth (062) on the backfilled slump. These aside, the majority of features are held to refer to a disturbed early medieval house.

Interpretation: Period 3 – Late Pictish

The excavators experienced considerable difficulties with the definition of features in Area C, but their lack of success in defining the walls may be partly explained by a reluctance to excavate them. Silty loam, spreading as much

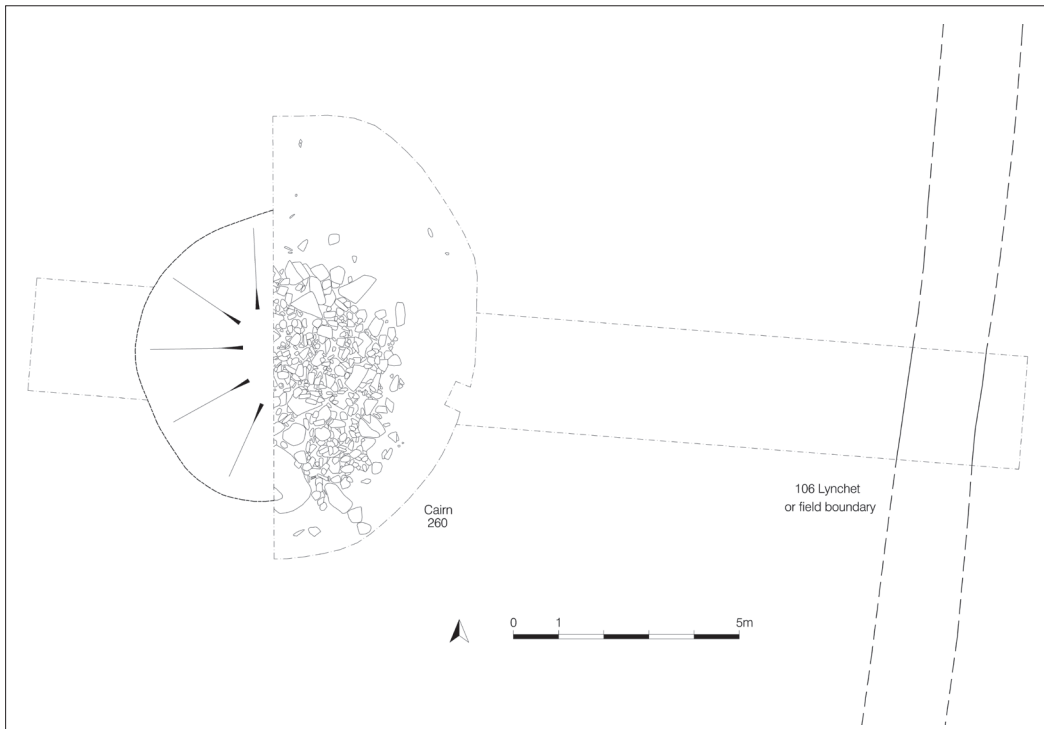


ILLUS 14 Area D. The cairn (260), as defined before it was half-sectioned

as 3.8m downslope, was attributed to ‘hillwash’. Like an earth barrow, the walls of C1 had plainly spread; but this rarely happens through ‘slump’ or ‘wash,’ even on a hill; it requires mechanical earth shifting – of which the most common agency is ploughing (see p 168; and Carver 2005: 465). It is certainly possible that the building was constructed in turf/earth, in which case, an original width of 2.5m is plausible. However, given the agency of the plough, pushing soil inwards (uphill) is just as likely as pushing it outwards (downhill), and the interior line of the turf wall (as planned, hatched in illus 13) has clearly encroached on the living space.

With the hindsight gained by analysing E1 (below) it is possible to propose a form for the construction and use of C1. Measured from the earthwork, C1 was originally about 22m long externally. It can be assigned a stone-lined hearth

(044), post-pits at the end (112) and centre (061) and a paved entrance on the south side (018) flanked by posts (041, 042). The occupants used animal bone as fuel (p 183). Although much disturbed, there is hard standing inside the entrance leading west to the hearth area, or east to the shallow ‘sump’. These features recall the layout of E1, with residence around a hearth to the west, and an animal stall, with central paved axial drain, to the east. The ‘sump’ thus probably originated as a stone covered drain and walkway between stalls. There is an expectation that the walls of C1 would be similar to others at Pitcarmick, whether Bronze Age or later, that is, turf and slab built. Stone slabs were reported at the south edge of the wall spread on the downslope (045, above), but they could hardly have acted as revetment there and so must have come off the wall itself. The position



ILLUS 15 Area D. Plan of cairn, showing excavation area



ILLUS 16 Area E. Opening of the excavation area, showing the late field wall (161), which crossed the house E1 (PK 94 1_5)



ILLUS 17 Area E during excavation, looking north-east across the E end of E1. In the foreground, right, is cobbling 167. Beyond it the low bank (176) marking the south wall of E1; beyond that the linear depression marking the central drain (169) and beyond that the low bank that marks the north wall of E1 (195). To the left is part of the rubble spread 152. (PK E 94 1_18)

of the entrance paving and posts suggest a wall thickness of about 2m (as at the west end (139)), and a span of 4m internally. Such dimensions would mean that the inward bulges of the walls as recorded actually consisted of (largely unexcavated) surplus material that had been pulled off the walls.

Assuming the interpretation of the internal slumping is acceptable, C1 measured 18m in length internally, of which about 8m was dwelling and 10m animal stalls, flanking an axial stone-capped drain. The radiocarbon dates obtained from burnt bone show that C1 was in use in the Pictish period, 7/8th century and thus one of the earliest byre-houses yet defined in Britain.

Period 4 – medieval

The radiocarbon dates show that this building had a second period of occupation in 1020–1180 (see above). This implies that the building stood empty for at least a century and a half. When

re-occupied, it was not rebuilt, so the building or its site must have been susceptible to reuse. The principal sign of re-occupation was the refashioning of the hearth. The hearth should have started out as a square stone setting, of a size commensurate with the building (see above and E1), but had been widened into a curvilinear form and the stones disturbed. The activities of the medieval squatters had also scoured the hard standing of the walkway into a shallow depression. They too used bone for fuel and set up a secondary hearth at the east end (062), previously occupied by animals.

Phase 5 – Late and post-medieval

A field wall passed immediately adjacent to the west end of C1, the same one that cut through E1 (illus 6). Only one plough mark was recorded in Area C, but if the east end of E1 was ploughed, in all likelihood the whole of C1 was ploughed as well, since both stood east of the field wall. This would have softened the building into a



ILLUS 18 Area E. Medieval building E2 (foreground), looking east (PK 94 2_21)

low protuberance, still just discernible from the air. It might be observed that a hillside of buildings composed largely of earth provides terrain of high potential for new ploughland. After initial demolition of the walls, an ox- or horse-drawn plough would slowly have reduced them, the stones in the make up being pulled out every now and again and carried away to make field walls or stacked as clearance cairns.

AREA D

Excavations in Area D were intended to discover the date of the extant field system. The investigation consisted of a section through a lynchet (D2, 1993) and the excavation of a cairn (D1, 1995) connected by a 20m trench (illus 6). The cairn was fully excavated (illus 14, 15). The results were inconclusive, but do not prevent the field system as a whole being assigned to the medieval or post-medieval period (see p 188).

AREA E (illus 16–24)

Introduction

The area marked out for excavation was sufficiently large to encompass the lozenge-shaped earthwork noted on the surface (illus 6; illus 4). As was soon recognised, this earthwork proved to consist of two superimposed structures, a sub-square stone building (E2) overlying the west end of a narrower building with a round east end (E1). The archetypical ‘Pitcarmick building’ was thus



ILLUS 19 Area E. Pictish building E1, looking west. The curve of the east wall (193) may be seen in the foreground, and beyond it the axial path and covered drain (164, 202, 169). Beyond that lies medieval building E2. (PK 94 2_6)

actually two, each of uncertain plan. Both had been disturbed by later ploughing. Arguments for the sequence, the character of the structures and their viability follow the description of the excavation given here. Comments on the significance and historical context of these structures will be found in the *Discussion* section on p 188.



ILLUS 20 Area E. Hearth 156 as excavated (PK 94 3_20)

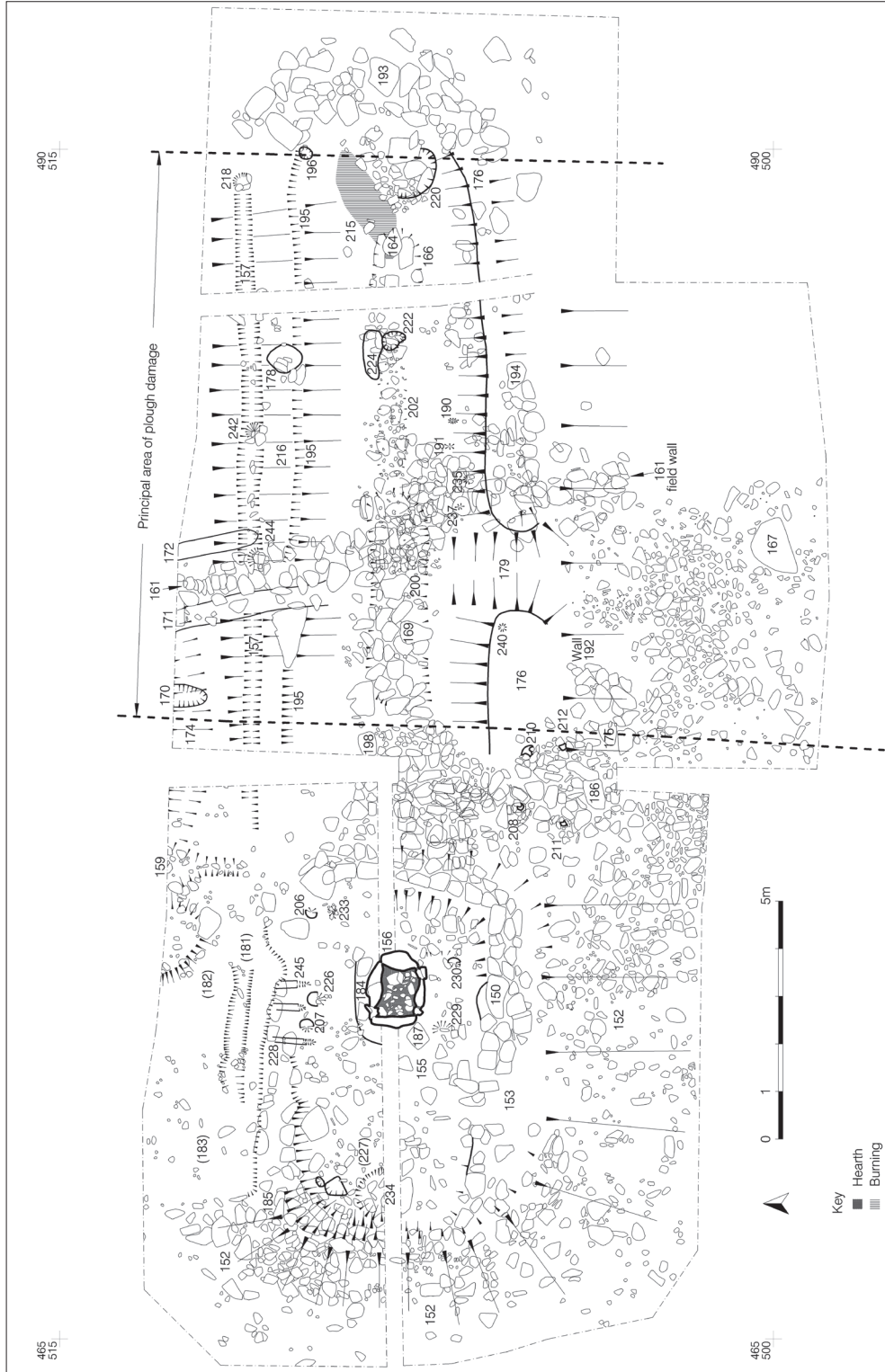
Excavation

The excavated area was divided into large quadrants, with baulks retained between them for access. Following the lifting of the surface vegetation and turf, the late field wall (161) was the first to be defined and removed (illus 16). The visible elements of the structures consisted of stone slabs, some pitched or dragged (by ploughing). By disengaging the stones from the thin rooty topsoil, it could be seen that some slabs lay flat, as in paving, while others were piled or clustered, as in walls (illus 17). The outline of building E2 emerged at the west end, directly under the turf (illus 18). The central baulk crossed over a hearth formed of slabs set in a square (156) which was later excavated (illus 20). At the east end, the remains of building E1 took the form of a central ribbon of stones, filling the gully (202), together with an arc of stones that marked the east end of the building (193). The north and south walls were marked beneath the turf by slight banks with the occasional embedded stone

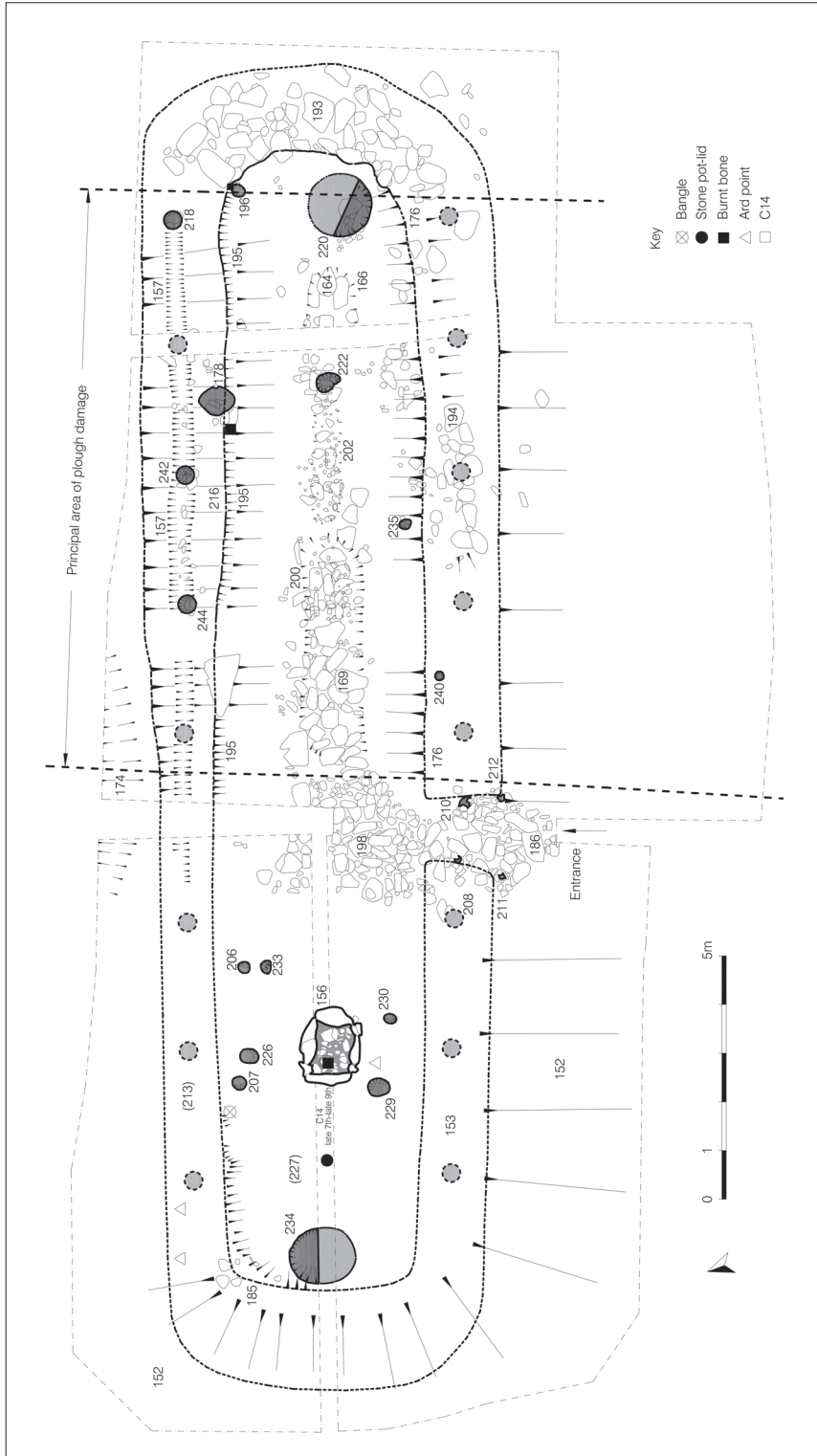
(illus 19). Subsequent excavation at the west end defined and removed an occupation or floor layer within E2 (155). At the east end, context 168 was defined and removed as an occupation layer within E1 (see below). These operations exposed pits, post-holes and plough marks. The position of all recorded stones, banks, gullies, plough marks and other features are shown on the composite plan (illus 21).

Sequence

Although the complete earthwork was examined and recorded in area, the east end of building E1 was incompletely excavated and the later building E2 was left in place at its west end. This meant that key details of the structure of the Pictish building, such as its foundations and roof supports, remain uncertain. For the same reason, a previous Bronze or Iron Age phase was not demonstrated, although given the quantity of quartz (see below, p 173), some form of prehistoric occupation is likely.



ILLUS 21 Area E. Composite plan



ILLUS 22 Area E, contexts relating to Period 3 (late Pictish). The plan assembles all the features deduced to have been part of the structure E1. The likely limits of the turf wall and the conjectural locations of roof supports are indicated with a dotted line

The long building E1 in its ruinous state was therefore the earliest occupation to be defined in this area.

The basis for phasing was spatial, stratigraphic and inferential, the latter particularly supported by samples with radiocarbon dates of two different periods, 7/9th century and 11/12th century. Spatially, building E2 was clearly defined, and building E1 could be seen in outline, thanks to the earthwork banks of its walls, the features that had led to its discovery. The carpet of stones lay thickest on the south (downslope) side, the most random being those probably displaced by ploughing.

Stratigraphically, building E1 was overlain by building E2 at its west end and by field wall 161 at its east end. Some stratigraphic information was won from the ploughmarks, all of which were aligned with the field wall (161) and with each other. One defined ploughmark had cut the south wall of E1. Three were thought to continue beneath the north wall of E2. Three others lay beneath the field wall. The scatter of stones from the walls of E2 suggests a vigorous late ploughing. There could be no certainty about a pre-house ploughing without removing the walls of E1 and cleaning beneath them, although the presence of quartz (p 173) and ard points (p 176) might indicate prehistoric cultivation.

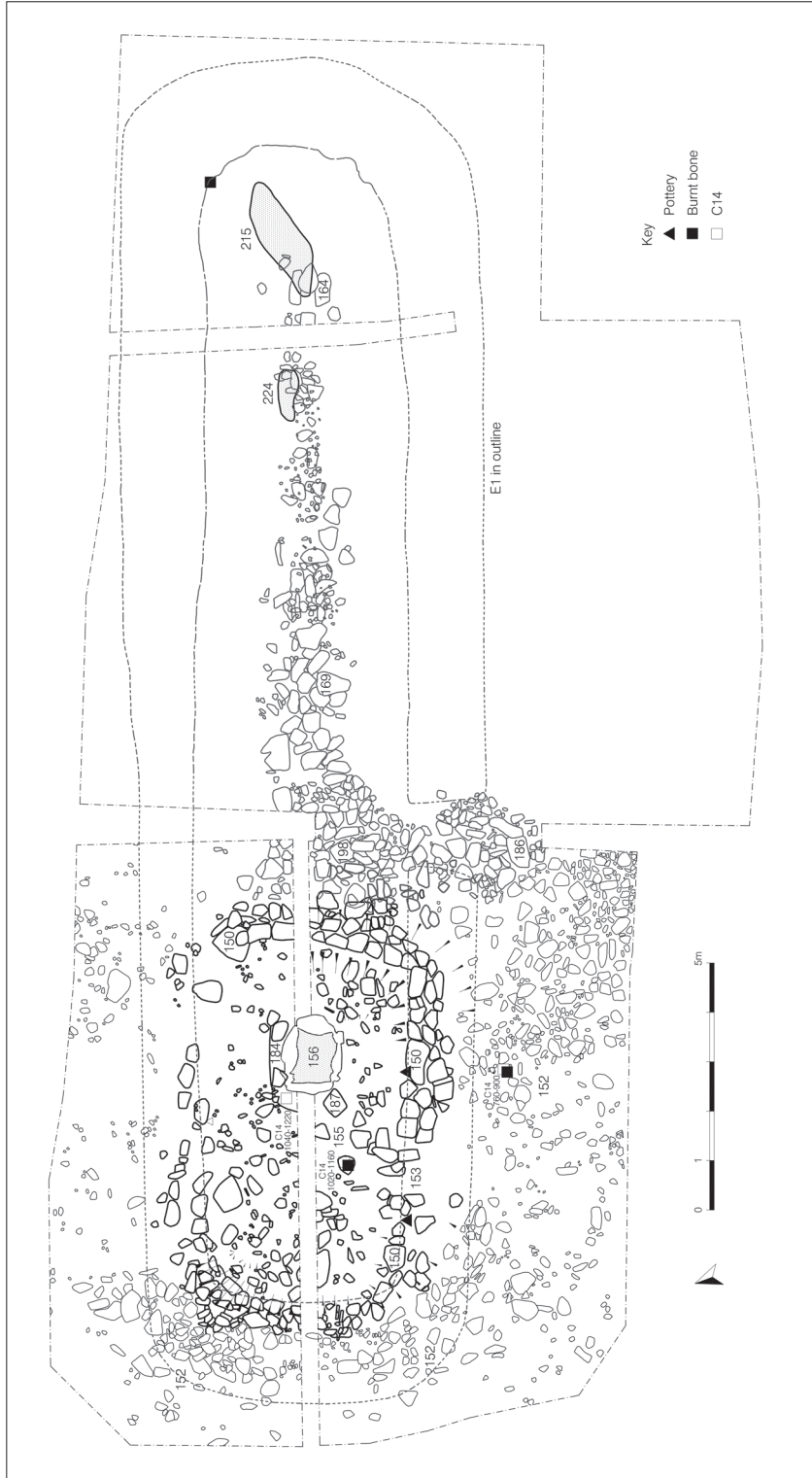
A case can therefore be made for ploughing after the disuse of E1 and before the building of E2, after the demolition of E2, and before the erection of the field wall. The stratigraphy does therefore allow for two ploughing regimes: one, responsible for the plough marks, took place after E1 and before E2 (ie between the 9th and 11th centuries), and a second, responsible for the scattering of E2 and the building of the field wall would be post-12th century. Janet Hooper's map of extant rig shows a single system in the vicinity of Area E aligned with the field wall, which she identifies as a head dyke (illus 4). Given the exiguous nature of the plough marks, a single regime of the later Middle Ages or later is also an acceptable interpretation.

Each phase of occupation in Area E represented a modification of the one before, often using the same stones. The nature of E1 and E2 therefore depend on which features were assigned to each by the post-excavation analysis. Broadly, following the reasoning given in this section, Building E1 is assigned to the later Pictish period (Period 3: 7/9th century), building E2 to the earlier medieval period (Period 4; 11/12th century) and the ploughing episodes are assigned to the later or post-medieval period (Period 5).

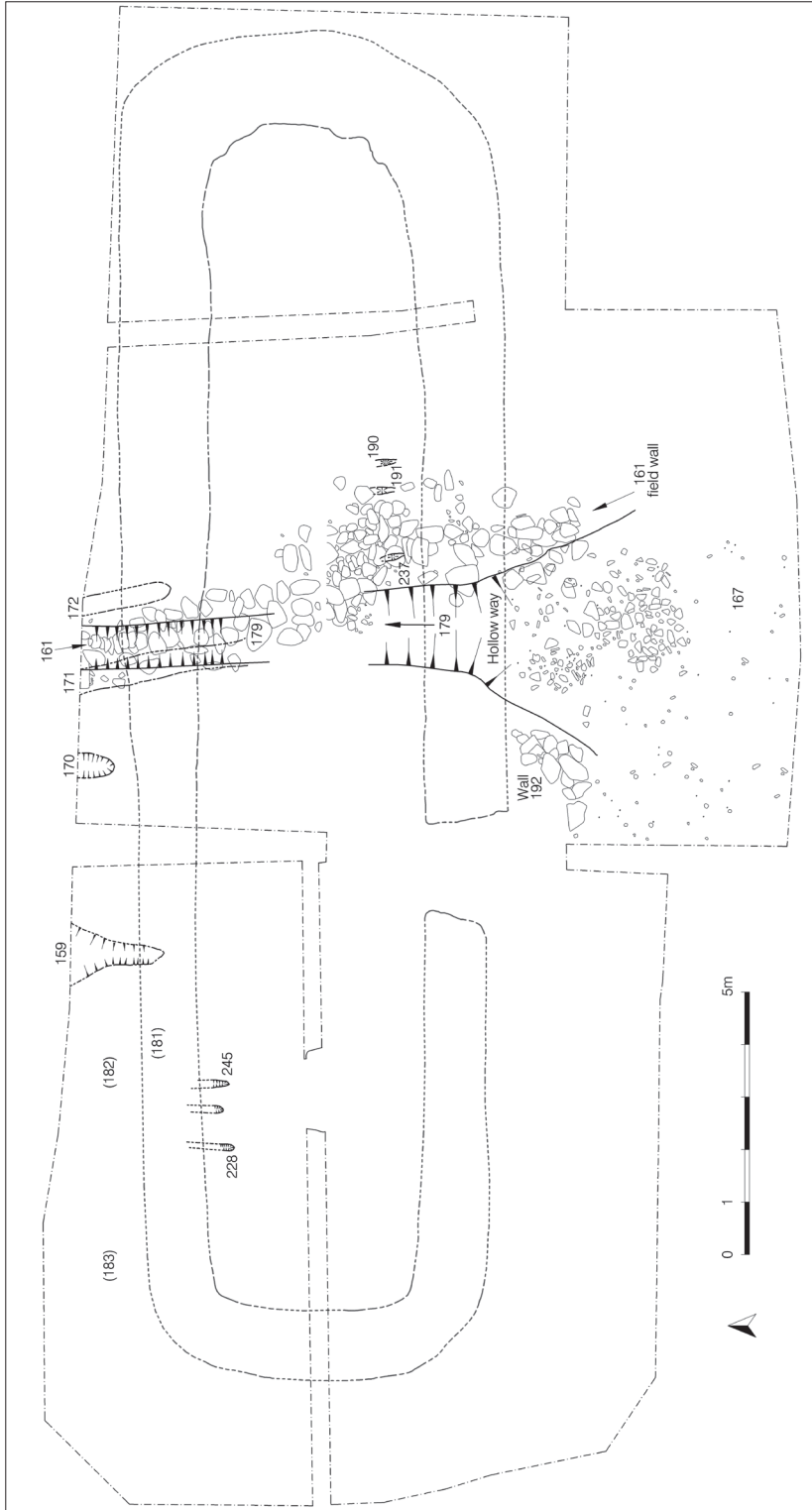
Period 3 – Early Historic/Late Pictish

Although the east end of Building E1 had been deeply ploughed and its west end was concealed beneath the later building (which was not removed), its overall shape and components were reasonably clear (illus 22). Where a wall was well defined (eg the rounded east wall, 193) it consisted of blocky or rounded boulders sitting on or within a matrix of orange-brown clayey silt (see *Online archive 4* for context descriptions). It will be argued below that this represents a wall constructed of layers of turf and stones, degenerating under the plough to a bank with a stone scatter (as also in the case of C1, see p 161). At the east end, the south wall conforms to this description, with rounded boulders (194) sitting on a stony bank (176). The north wall had largely disappeared, but its removal (through ploughing) had exposed a number of post-holes (244, 242 and 218) and a shallow gully 157, all of which appear to relate to its probable location. It is proposed that this represents the degraded foundation of a stone and turf wall in which were set vertical posts or crucks to support a roof. The arrangements at the west wall were hidden beneath E2, but there is some indication of a similar construction. The west wall (185) was described as consisting of large blocky stones under wall 150 (the west wall of Structure E2).

Two large pits also deserve consideration as components of the structure. That at the east end (220; 1.3×0.9m×0.23m deep) contained



ILLUS 23 Area E, contexts relating to Period 4 (medieval). Building E2 is the rectangular structure at the west end. Other features shown are those believed to have been exposed while E2 was occupied



ILLUS 24 Area E, features relating to Period 5 (post-medieval). The principal features are the north/south field wall 161 and the hollow way 179

large stones and the one at the west end (234) was noted as have a fill of ‘charcoal and tip lines’. Neither was defined on site as a post-pit, but their size and location would render them suitable as seating for supports for a hipped gable roof. Their location resembles that of the so-called stabiliser posts seen in the reconstructed *Craftsperson’s House* at the Highland Folk Museum at Kingussie (cf Carver, forthcoming). In this experimental house, these posts were found necessary to stabilise the roof of a building with half-round ends and no gable. It seems likely that a number of posts would have provided support for the ridge of the roof along the central axis of the building. Feature 222, designated as a sump, is well positioned and may have been a post-hole, but others were not defined.

Of the post-holes at the west end interior, only 230 and 233 were certainly under the floor of E2. These and the other posts surround the hearth (156) and may have been connected with it. The hearth measured 1m east/west by 0.75m north/south and was constructed of stone slabs set in a thin clay lining, apparently narrowing its perimeter with small gritty stones in its final use. Radiocarbon dates taken from the four stratigraphic layers remaining in the hearth are consistent with all belonging to the Pictish phase: 670–870 (bone in 188); 690–980 (charcoal in 189); 680–890 (bone in 232); 540–690 and 640–890 (charcoal in 246). In its primary phase, the hearth was thus in use some time between the late 7th to the late 9th century (Table 5). Finds relating to this phase include several ard points, a stone pot lid and a cannel coal bangle (p 175–6).

The entrance to E1 (186) divided the south wall in approximately the ratio 1:2, west/east. It was marked by a walkway of large flat stones with rounded edges laid as paving (186), passing through a gap in the wall 1.2m wide, flanked by four post-holes (208, 210, 211 and 212). The paving continues as 198, leading into the body of the house, and offering a choice of a left turn into the residential area with the hearth, or right

where the paving continues (as 169) towards the east end. At the eroded east end interior, the paving (sometimes supported by slabs set on end) was seen to be capping a shallow gully. The gully was from 1.1m to 1.3m wide, with gently sloping sides (200, 202) and was traced beneath the length of the walkway until it terminated at the east end in a stone-lined sump (164, 166). Rather than a covered drain, the arrangement suggests a well-used animal path consolidated with stones, but it may have functioned as both. The east end may thus be seen as divided into three aisles c 1.5m, 1.1m and 1.5m wide.

Period 4 – medieval

Structure E2 was a small rectangular building at the west end of the site, measuring about 7.5m×3.5m internally (illus 23). Its walls were about 1.2m wide and built of flat slabs measuring up to 50cm×50cm, bonded with turf or earth (150). There was an entrance on the south side (153). The depletion of the north wall and the spread of unstructured rubble downslope to the south (152) probably indicate that the walls had been partly dispersed by ploughing. Burnt bone radiocarbon-dated to AD 760–900 (Period 3) from this latter context suggested that 152 contained material residual from E1, and that the builders of E2 had quarried the walls of E1. Within the confines of E2 was a compact orange-brown matrix interpreted as its floor (155). It included large charcoal pieces and small stones (20cm in diameter) but no slabs. There were three sherds from a jar of smoke-blackened Scottish white ware (see p 179), and a fragment of burnt bone west of the hearth gave a radiocarbon date of AD 1020–1160. Although the hearth (156) was a primary feature of the earlier building E1 (see below), it was still apparently useable and served the medieval building: a series of spreads from ‘rake-out’ (184) included burnt bone with a radiocarbon date of 1040–1220. The two burnt patches defined at the east end of E1 (215, 224) lie above the axial drain and are assigned to the medieval period. As in building

C1 (above), these small heating episodes imply a medieval use of the ruined Pictish structure.

Period 5 – late and post-medieval (illus 24)

In its original form, the field boundary (illus 16) consisted of a wall (161) on a bank. The stones used for this wall suggested that they had been recycled from the house E1. The southern run of the wall was eventually scattered and worn down by a hollow way (179), which had cut through the remains of the south wall of the Pictish house, E1. Plough marks were encountered at the north edge of the excavation area, inside E2 and at the south-east side of E1. Features 159, 170, 171, 172 were identified as furrows, and 190, 191, 228, 237 and 245 as ardmarks, although both types have the same north/south orientation, and the difference may be due to the depth at which they were defined. At the west end, plough-mark 228 (associated with two others nearby) was recorded as lying under the north wall of the smaller, later building E2. Features 171 and 172 were found beneath the field wall 161. Furrows 159, 171 and 172 were reported as cutting the north bank of the house E1, and ardmak 191 as cutting its south bank. Ardmaks in the eastern sector of building E1 (190, 191, 237) were sealed by a compact loamy silt (168, not on plan), defined as an occupation level or trample which had filled the central drain. Even discounting the cutting of the south wall by 191, this need not imply that there was a cultivation episode preceding the house E1, since the same effect would be produced if 168 was itself ploughed at a later date.

The stone scatter (167; with ‘wall’ 192) has the appearance of rubble used to cobble the hollow way (179), and could have been derived from the field wall, absent at this point. Alternatively, it was hard standing contemporary with E2, or may have formed part of the entrance paving to E1, with which it was contiguous (illus 21). These latter interpretations would require 167 to be laid down before the hollow way, which seems less probable.

Summary of the interpreted sequence at Area E
Building E1 is seen as constructed with turf and boulder walls, and probably roofed by means of posts locked within the walls, with a large stabiliser post to east and west, enabling the roof to turn a half circle at each end – as in a roundhouse. It had a residential zone with a hearth at the west end, and a byre, with an axial drained path at the east end. There is an entrance on the south side at the point where animal and human zones meet. Human and animal quarters divide the house in the proportion 1: 2 by length. The internal width was about 4.5m and the internal length 22.5m, a use area of about 100 sq metres. Building E1 therefore resembles a longhouse of continental type, but dated to the 7/9th century and situated in Perthshire. This proposal and its context are discussed below (p 188).

The west end of the footprint of E1 was re-occupied in the 11/12th century. A small rectangular building (E2) was constructed of flat stones, probably recycled from E1, bonded with turf or earth. The new building, measuring 7.5m×3.5m internally, was orientated a few points north of west to a few points south of east. Although the hearth of E1 was not central to its successor, it appeared to have been incorporated into the floor plan and its location also provided the focus for heating E2. Features also likely to belong to this phase are patches of burning 224 and 215, suggesting the shelter provided by the ruin of the byre area was still useable. Given the long term endurance of earthworks at Pitcarmick (the Bronze Age roundhouses are still visible today), it will be argued that the locus of E1 provided a recognisable platform for the builders of E2, who may have also been familiar with the likely location of its hearth (see below, p 186). Neither here nor in Area C is it suggested that there was structural (or social) continuity between the Pictish and medieval periods.

It is not excluded that there was an episode of cultivation between the abandonment of E1 and

the building of E2, but the evidence is uncertain: ardmarks at the west end appeared to lie beneath the north wall of E2, but only their southern tips were seen. More certainly, the remains of both buildings were deeply ploughed in the later medieval or post-medieval period, removing walls and cutting into floors. After a period of ploughing, a field wall was built across the former byre, and degenerated with subsequent use into a hollow way. All indications of cultivation, whether furrows, ardmarks, the field wall or the hollow way followed a north/south orientation, suggesting, as the least complex interpretation, that they all belonged to the same post-medieval regime.

ASSEMBLAGES

Worked stone

Peter Rowe

The excavations produced 82 knapped lithics, comprising two cores, 36 flakes, 40 debitage and an 18th century gun-flint. There were three flint flakes with characteristics of Mesolithic or early Neolithic working, all residual (SF86 from 043 and SF157 from 044, both from the hearth in Area C; and SF74 from 070, the ploughsoil in Area A). Otherwise, the principal raw material present is quartz, understanding of which (as a component of the Scottish Prehistoric tool kit) has greatly developed in recent years (Saville & Ballin 2000; Ballin 2008). Both cores were of quartz; one (SF512 from 155, a medieval layer in Area E), is probably residual. The other, SF9 from 025 was under the entrance slabs to B3 (Area B).

Unfortunately, other than the gun-flint, there are no tool types present which are chronologically diagnostic in their own right. However, generally speaking, the quartz assemblage is characteristic of later rather than earlier prehistory. Use of the bipolar technique (Mesolithic–Neolithic) was not noted, the core being of the single platform variety (Bronze

Age or later). Chronologically earlier items such as blades, bladelets, microliths and platform rejuvenation flakes are absent.

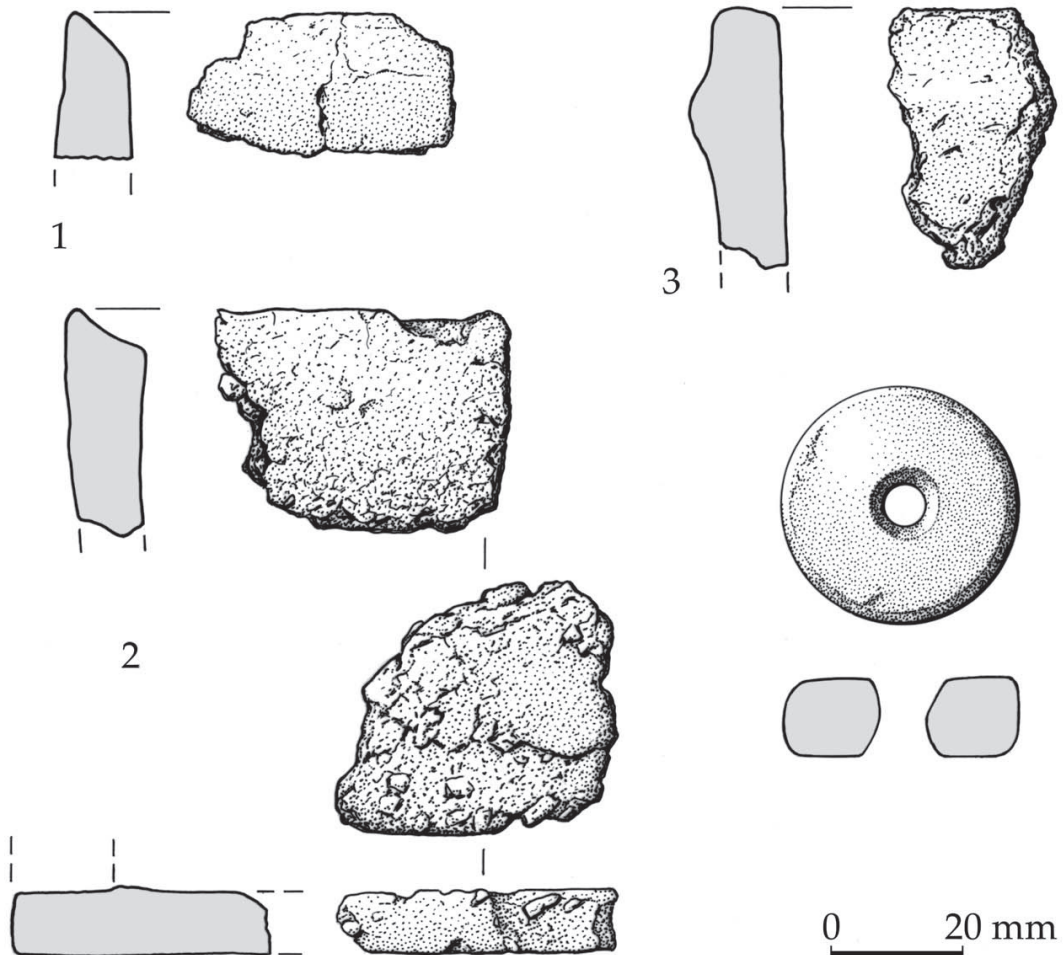
In terms of spatial distribution, the majority of lithics from Area A were from the ploughsoil (070). A single chunk of debitage from the fill (058) of a hearth (059) was not diagnostic. Area B produced a high count of burnt quartz fragments, many from Context 022 (threshold to B3). Structures B1 and B3 both had associated knapped quartz (025 & 032). Area C produced the two Mesolithic or early Neolithic flint flakes from a Pictish hearth (043, 044). The 31 lithics from Area E were spread across 14 different contexts with a further three possibly being surface finds (SF282–284). There does not seem to be any spatial relevance to the lithics from this area (for full report see *Online archive 7.1*).

Bronze Age pottery (and a spindle whorl)

Alison Sheridan, National Museums Scotland

Only a small amount of prehistoric pottery was found at Pitcarmick, all of Middle to Late Bronze Age date. The sherds are all from the interior of roundhouse B1 in Area B, with a notable cluster next to (post)-pit 076 (illus 12). The assemblage comprises 32 sherds, around 30 fragments (ie pieces smaller than 10 mm but larger than 5 mm) and crumbs, all undecorated; the overall weight is just under 150g. Sherd size is small, with the largest sherd measuring only c 45mm × 36 mm. The degree of abrasion varies from slight to heavy, and includes some damage due to scrubbing the sherds after excavation. The minimum number of identifiable pots is five, but there could have been more. In each case, less than 5% of the pot is represented.

Pot 1 (illus 25A) (SF15, 032, occupation layer in B1) had been a large cooking pot with an upright, pointed, internally bevelled rim, with a diameter perhaps as large as 300mm. Its overall profile could have been cylindrical, bucket-shaped or a combination of these.



ILLUS 25A Objects from Area B. Potsherds 1–3, and (lower right) stone spindle whorl found in association with B2 (*Online archive SF1,028*)

Pot 2 (illus 25A) (SF18 (032), 105 (095), 106 (076), 120 (067), 127 (084)) had been a smaller cooking pot with an upright rim (SF105) with concave internal bevel; its rim diameter may have been *c* 180mm. If, as seems possible, the base sherd SF120 and the curving body sherd SF106 belong to the same pot, these suggest that its walls tapered very slightly to a base *c* 150mm in diameter, and confirm that it had been flat-based (as all the pots in this assemblage are suspected to be). All the sherds lay close to the centre of B1.

Pot 3 (illus 25A) is represented by a single rimsherd plus associated sherds, SF115, from context 076. It is upright, with a flat top and a low, cordon-like feature on the exterior just below the rim-top; it ranges in thickness from 11.9mm to 13.9mm and is too small to allow an overall rim diameter to be estimated, although this will have been at least 120mm. It could have come from a cylindrical pot.

Pot 4 (not illustrated) is defined by a featureless body sherd (plus associated fragments),



ILLUS 25B Ard points from Area E

SF19 from context 032, which appears not to match the other pots in the assemblage; the small, worn and possibly burnt sherd and fragment, SF34 and 35, from the same context, may belong to the same pot. The presence of a small patch of very thin blackish encrustation on the interior, suggest that this pot had probably been used for cooking.

Pot 5 (not illustrated) is represented by a single small sherd, SF36, from context 032, which is significantly thinner (at 6.3mm) than the other sherds in the assemblage. Like the others, it appears to have been from a cooking pot, as there is a thin black encrustation on the exterior.

This small, clearly domestic, assemblage is characteristic of the pottery in use in Middle to Late Bronze Age Scotland, which goes by the unhelpful (and inaccurate) yet persistent term of ‘flat-rimmed ware’ (cf ‘bucket urns’ for the corresponding funerary pottery, and see Halliday 1988 for a discussion of the use of the term ‘flat-rimmed ware’).

This tradition is well represented in Tayside and Fife and north-east Scotland, being found, for example, in domestic contexts at Oldmeldrum, Aberdeenshire (Johnson 2010); at Deer’s Den, Kintore, Aberdeenshire (MacSween 2008); at Barflat, Rhynie, Aberdeenshire (Sheridan forthcoming a); on the Culbin Sands, Moray (Coles & Taylor 1970); at Powmyre Quarry, Glamis (Sheridan forthcoming b); and at Ormiston, Fife (Halliday 1988). Farther north, a sizeable assemblage was found associated with roundhouses at Lairg, Highland (McCullagh & Tipping 1998). It has also been found in funerary contexts in north-east Scotland and Tayside, including a grave inside a stone circle at Sandy Road, Scone, Perth & Kinross

(Sheridan 2007) and as secondary deposits in a number of Early Bronze Age monuments (as discussed in Bradley & Sheridan 2005).

Many of these assemblages date within the 1200–800 BC bracket, which is comparable with the date obtained for the hearth material (128) from Building B1. It is clear, however, that undecorated, flat-based pots with flat or bevelled rims were in use throughout the second half of the 2nd millennium BC, with assemblages that date



ILLUS 25C Cannel coal bangle from Area E

nearer to the middle of the 2nd millennium BC including that from Barflat, Rhynie; from Deer's Den Roundhouses 25 and 26; from Houses 2 and 3 from Oldmeldrum (which date to the third quarter of the 2nd millennium); and, farther south, from a recently excavated Middle Bronze Age roundhouse settlement at Meadowend Farm (Upper Forth Crossing), Clackmannanshire (Sheridan forthcoming c). The Meadowend Farm assemblage included a mixture of very large jars and smaller pots. As the number of assemblages of this pottery tradition grows, this highlights the need for – and also facilitates – a reassessment, to determine whether chronological and regional variability can be defined.

Coarse Stone Tools

Mark Edmonds, University of York

RAW MATERIALS

With a small number of exceptions, the bulk of the assemblage reflects the use of schist, a metamorphic rock which is rich in mica and hornblende, minerals whose frequent parallel orientation give the stone a laminar quality. As noted elsewhere (Clarke 2006; Rees 1979), this property has a profound impact on patterns of coarse stone tool production and use, and accounts for at least some of the characteristic patterning identified on most of the artefacts reported here. Principal amongst these is a clear tendency for many of the larger tools to be made of large natural flakes, often plano-convex in cross-section.

FORMS, TASKS AND TIME

Given the relatively small size of the assemblage, there is not a great deal to be said regarding the character and chronology of coarse stone tool use at Pitcarmick. On the basis of wider parallels, the presence of several ard points, some of them complete, attests to the working of land in the immediate area, most likely in the Bronze Age (Rees 1979) (illus 25B). The majority of these ard points were identified in Area E, where

excavation revealed the presence of Pictish and later structures. The most convincing and regular of the stone 'pot-lid' discs was also found in this area, as was a flaked stone bar. Later use of local schist for the production of coarse stone tools cannot be ruled out, and the simpler smoothers, pot lids and faceted pebbles are entirely consistent with assemblages from 1st millennium AD and later sites. However, it is also likely that at least some of these artefacts are considerably older than the evident structures. This possibility gains weight from the presence of an assemblage of worked quartz in the same area (p 173).

For descriptions see *Online archive*, 7.3

The cancell coal bangle from Area E

Fraser Hunter, National Museums Scotland

The fragment of a large bangle (SF335) was recovered from context 213 in Area E (illus 25C). It has a thick and tall D-sectioned profile, slightly asymmetrical and slightly rounded internally, and is made of a black, organic-rich stone. It is well-finished, polished to a medium lustre, with scratches from use externally. The inner surface has residual polishing scratches, vertical and diagonal, overlying a few deeper circumferential scratches from an earlier stage in manufacture. After breakage, the bangle was repaired. Both ends were cut square: they show knife-trimming facets, distorted in one place by an accidental conchoidal fracture. One edge also shows faint fine knife-facets along the outer circumference and more severe trimming of what was presumably damage on the top edge. A couple of deep curved abrasion marks on the inner surface may relate to this phase, as accidental damage from a tool slipping. There are a few scattered pock-marks around the ends, their origin unclear. Slight rounding and polish on the inner edges of both ends derives from rubbing in use, implying that the repair was successful.

L 68.5mm; W 15mm; H 15.5–17.5mm; internal D 80–85mm (23% survives).

TABLE 1
An initial categorisation of D-sectioned bangles

<i>Group</i>	<i>Term</i>	<i>H (mm)</i>	<i>W (mm)</i>	<i>H/W</i>	<i>Notes</i>
1	D	<14.5	5.5–13.5	1–2	Found at various times from early Bronze Age to Viking
2	Fat D	various	various	<1	Structural adaptation for strength in larger bangles
3	Large D	15+	14+	1–1.5	This paper
4	Narrow D	<20	<9	2+	Later 1st millennium AD. Precise division with tall ones needs further investigation
5	Tall D	20+	9+	2+	Very tall ones are early Iron Age
6	Lentoid	various	various	various	Not yet studied in detail

This is a locally unusual find, as raw material sources are distant. The bangle had a large internal diameter of 80–85mm, which suggests it was a male ornament. It could have been worn on a female upper arm, but the bimodal distribution pattern of the internal diameters from 160 examples suggests that sexual dimorphism lies behind it (see *Online archive* fig 7.4.1). If bangles were intended for different positions on the arm, a more continuous diameter range would be anticipated (Hunter 2008: 107). X-ray fluorescence analysis and visual characteristics identify the raw material as cannel coal. This area of Perthshire is bereft of suitable raw materials: while a precise source cannot be identified, the nearest outcrops lie at least 50km away, in the central Scottish coalfields (Cameron & Stephenson 1985: 84–91, fig 25). This local rarity is reflected in the repair of the item when it broke: the ends were cut square and damaged areas were trimmed off, presumably to fit repair collars. Wear on these ends shows that it continued in use. Later prehistoric/Early Historic black organic bangles are rare in northern highland Perthshire: the only ‘jet’ items known to the writer come from

Oakbank crannog, Loch Tay (EIA ring pendant; unpublished); Aldclune (a very battered ?LIA bangle; Cool 1997: 443, illus 20 no 97); and Allt na Moine Buidhe (reused bangle; Cox & Hunter 1999). A bangle fragment was found at Kintore (Cook & Dunbar 2008: 247).

The bangle was recovered from context 213 in Area E, described as ‘turf under wall of E2’. It could therefore belong to E1, the Pictish building, or be residual from a previous period. It could easily be Iron Age; for example, evidence for the manufacture of bracelets in shale and cannel coal dating between 770–400 BC was found at Braehead (Ellis 2007). But it is unlikely to date to a later occupation, as bangles had fallen from use by the 12th century, except in Norse areas. Such bangles are often dismissed as ‘chronologically insensitive’ (eg McLellan in Rideout et al 1992: 102, 124), but this underestimates their value. Chronology is not the only story they can tell: varying patterns of regional accessibility, as noted above, mean that their social value was rather different in different places. However, in this case the question of chronology is worth pursuing.

TABLE 2
 Parallels for large D-sectioned bangles. LBA, late Bronze Age; IA, Iron Age; RIA, Roman Iron Age; EH, early Historic. NMS = in the collections of National Museums Scotland (+ registration number). Dimension followed by + indicates it is incomplete

<i>Findspot</i>	<i>County / island</i>	<i>W×H (mm)</i>	<i>Internal D (mm)</i>	<i>Ref</i>	<i>Date</i>	<i>Notes</i>
Allt na Moine Buidhe	Perth	19×18	75–80	Cox & Hunter 1999	?	Reworked
Alt Chrisal	Barra	16×15+	78	Gowans 2000, 188, fig 4.40	RIA	
Clatchard Craig	Fife	16.5×10.5+	80–95	Close-Brooks 1986, 166 ill 28 no 115	IA?	Unfinished
Dunagoil	Bute	14.5×17	65–70	Bute Museum	IA	
Glenluce	Wigtown-shire	18×19.5	90–95	NMS unreg	?	Very round section
Howe	Orkney	15×20.5	85–90	Ballin Smith 1994, 188, ill 107	EH (C4–C7, phase 8)	Published as sandstone, but examination suggests highly inorganic shale
Keir Hill	Stirling	17×19	65–70	Maclaren 1958, 82, fig 3.1	RIA?	
Pitcarmick	Perthshire	15×17.5	80–85	This paper	IA/EH?	Repaired
St Andrews	Fife	13×16	75–80	Cowie et al 1991, pl 8	LBA	Very slightly narrower than the strict definition of the type
Traprain Law	E Lothian	14×17	80–85	NMS GV 1533B	LBA/IA	Ends collared for reuse
Traprain Law	E Lothian	15×16	65–70	NMS GV 119	LBA/IA	Very round section

Our starting point is a sample of 117 Scottish bangles of various dates that preserve their complete sections. Analysis of the size range of their height and width, smoothed by running average, show one or two main peaks, with a group of larger bangles separated out (*Online archive* fig 7.4.2). The height/width data can also be expressed as a ratio (*Online archive* fig 7.4.3), revealing groups where height is between one and about two times the width, and a group where height is more than twice the width. We can start to subdivide the D-sectioned bangles on this basis (Table 1).

Looking at the height/width ratio in terms of this initial typology seems to separate Groups 1 and 3 from 2 on the one hand and 4–6 on the other, and these may be compared with the bangle diameters (*Online archive* fig 7.4.4, 7.4.5). This shows that the fat D bangles are larger than the norm, although the extra width was probably designed to strengthen the bangle rather than being a style per se. The lentoid bangles fall into the smaller end of the diameter range, suggesting they were primarily female ornaments, whereas the large D bangles fall generally into the upper part, representing a group of bangles larger in all dimensions.

Some of the type 5, broad, relatively narrow bangles, are typical of later Hallstatt and early La Tène contexts on the Continent, and this is supported by examples from east Yorkshire burials of middle Iron Age date (eg Venclová 1998: 289; Rochna 1962; Stead 1991: 90, fig 66.2). Narrower, thin D-sectioned or lentoid bangles (type 4 and some 6) seem to be a later 1st millennium AD phenomenon (Hunter 2008: 105–6). Thus some types seem to be chronologically diagnostic, but is this true of the large D-section bangles? Table 2 summarises the parallels known to the writer. They are notably rare: in the assemblage from Traprain Law, for instance, only two are known from an assemblage of over 160 bangles. The wide range of dates is immediately clear, from the late Bronze Age until the Early Historic period, although many are from insecure

contexts. Thus the Pitcarmick bangle (type 3) was a valued object worn by men, but not chronologically diagnostic.

For full report, see *Online archive* 7.4.

Medieval Pottery

Derek Hall

Three contexts produced a total of 24 sherds of medieval pottery, each context featuring a different type of pot.

The floor (155) of building E2 in Area E produced four sherds, comprising one rimsherd and two body sherds (SF220), and one basal angle (SF327) from a smoke blackened jar in a hard fired gritty fabric. These sherds belong to the Scottish White Gritty Ware tradition, which is Scotland's earliest native pottery industry. It is currently believed to have started in the 12th century with the distinctive straight-sided jars of the Scottish Borders being the diagnostic vessel type (Haggarty 1984; Jones et al 2006: Fig 1a Types 1a and 1b; Haggarty et al forthcoming). The recent study on the chemical sourcing and typology of this industry identified production concentrated in those areas of Scotland with white firing clays (Fife, Lothian and Scottish Borders) with a possible outlier farther north in Moray (Jones et al 2006: 81). The sherds from Pitcarmick, in particular the basal angle from Context 155 (SF327), seem to relate to the 13th/14th century tradition of more rounded jars which have been recovered from excavations in the Lothians (Jones et al 2006: 47 and Fig 1d Type 3), currently dated between the 12th and 15th centuries (*ibid*).

The plough soil (070) in Area A produced 17 small sherds deriving from a well-glazed redware jug with visible rilling marks under the glaze. These sherds are too well glazed to be Scottish Redware, and are likely to come from an imported source, possibly Yorkshire. Yorkshire Type wares are among the most popular imported pottery type in the east coast burghs of Scotland in the 13th and 14th centuries and have a marked effect on the local Scottish

redware industries (G Haggarty pers comm; Jennings 1992; Hall 1996: 128).

A strap handle from a rabbit burrow in the wall of building 408, was found during survey in 1995. This fragment of an unglazed narrow strap handle with vertical incised lines is in a Scottish Redware fabric and is liable to be of 13th or 14th century date. Scottish Redwares were manufactured in proximity to the major Scottish river valleys and recent analysis has indicated that there were many production centres for this fabric type (Haggarty et al 2011).

Although this is a very small assemblage of medieval pottery, it represents the first real evidence for ceramic use in the 13th/14th centuries at a rural site in Scotland. Other rural excavations of comparable date, such as Springwood Park, Kelso, were in very close proximity to major medieval burghs (Roxburgh) and other rural sites have tended to be aceramic until the post-medieval or Early Modern periods (Dixon 1998; Atkinson forthcoming).

Full report in *Online archive 7.5*.

Charcoal

Allan Hall, University of York

The samples ranged from a single fragment to a group of the order of 30 fragments, usually about 10–15mm in maximum dimension,

but occasionally as large as 30–40mm. The provenance and identifications are shown in the *Online archive 7.6*.

As might perhaps be expected for a relatively remote site at 200m above sea level in north-east Scotland, there was a rather limited range of taxa, presumably largely of local origin. Most of the fragments seemed to have originated in small branches or logs – there were no twigs – but some of the hazel fragments were evidently from quite small roundwood, perhaps up to about 20–30 mm in diameter and may represent material from woven structures or small poles.

The range and proportions of taxa show some differences between the samples for Area B (late Bronze Age), Area A (late Iron Age), and Areas C and E (Early Historic), primarily in the predominance of hazel at the earlier period and its near absence later on. Alder charcoal predominates in the assemblages from Area A (most of which was from hearths – contrasting with the material from the (modern?) gully 010, where the assemblage is much more diverse), but alder is almost absent from Areas C and E where willow/aspen and birch, respectively, are the most frequent taxa. It is difficult to know, from such relatively small assemblages, how far such differences between periods are significant.

TABLE 3
Species representation (fragment count)

<i>Species</i>	<i>Area B</i>	<i>Area C</i>	<i>Area E</i>
Sheep/Goat		4	
Large mammal	1		2
Medium mammal	5	134	32
Unidentified mammal	172*	161*	23
Total	178	299	57

* minimum number

TABLE 4
Skeletal elements identified

<i>Element</i>	<i>B</i>	<i>C</i>	<i>E</i>
Mandible		1	1
Skull	1	6	2
Rib	10	18	
Longbone	19	133	44
Phalange		2	
Unidentified	148*	139*	10
Total	178	299	57

* minimum number

Animal bone

Matilda Holmes

A small quantity of calcined animal bone was recovered from Areas B, C and E. The majority measured less than 1cm in length, and their colour and surface texture were consistent with being heated to temperatures of around 600–700°C (Nicholson 1993). The lack of unburnt bone may be a combination of aggressive soil and the use of bones for fuel once they had been utilised for meat and marrow.

Few bones could be identified to species or element (Table 3). However, of those that could be categorised to size class, the majority were medium-sized mammal (from dog, sheep or pig) with very few large mammal (from cattle or horse) sized fragments observed. A few sheep/ goat bones could be identified to species. Of the fragments identified to skeletal element most were from long bones, although a number of ribs were observed as well as occasional mandible, skull and phalange fragments (Table 4), suggesting that bones from all parts of the carcass were accessible for burning – there was no evidence for redistribution of particular elements, or

a restriction in the body parts available. See *Online archive 7.7*.

Overall Model of date ranges from second series dates:

- Period 1: Late 2nd/early 1st millennium BC [Area B]
- Period 2: 3–6th century AD [Area A]
- Period 3: 7–9th century AD [Area C and E]
- Period 4: 11–12th century AD [Area C and E]
- Period 5: 13th century and later

THE OVERALL SEQUENCE AT
PITCARMICK NORTH

Prehistoric Period

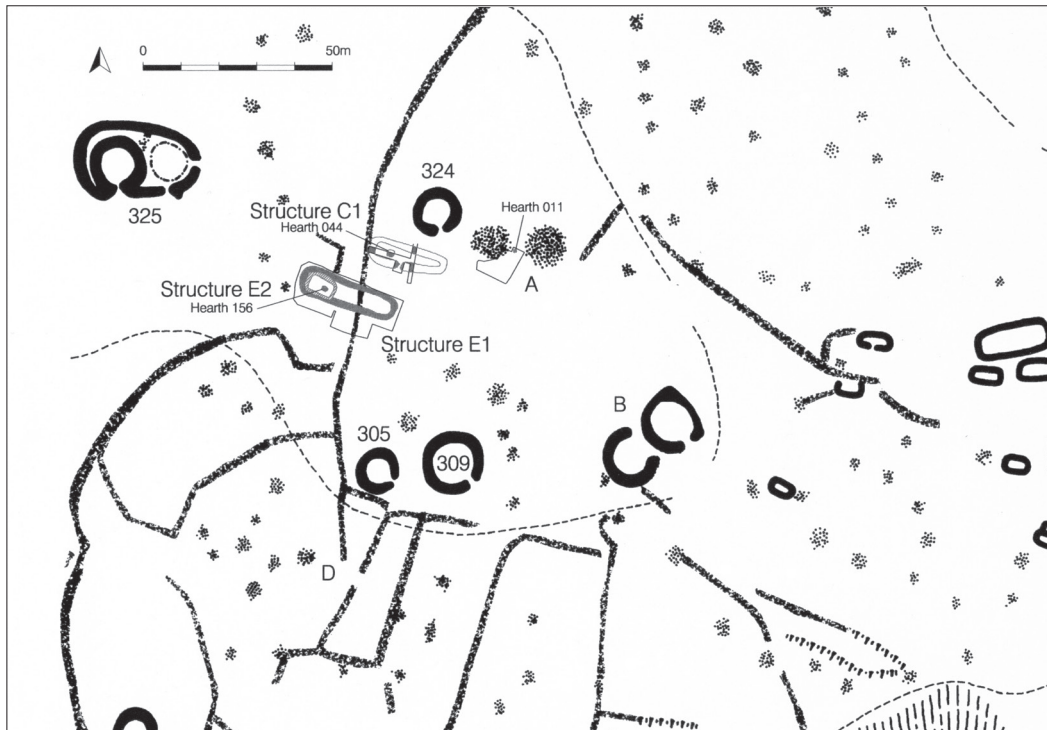
Three flint flakes hint at some Mesolithic or early Neolithic activity at Pitcarmick, but the first settlement belongs to the middle to late Bronze Age (late 2nd to early 1st millennium BC). The earliest features are probably the unexcavated twin cairns at Area A. If burials, they are likely to cover cist graves, as in the example excavated at Beech Hill, Coupar Angus, which contained a food vessel (Stevenson 1995). No other ritual monuments were defined at Pitcarmick North.

At neighbouring Balnabroich, on the other side of the strath (RCAHMS 1990, site 1.1, 9, 59), a stone circle, two ring cairns (the exceptionally large Grey Cairn and another cairn) are, in turn, surrounded by hut-circles, walls and field cairns. Although this close physical association need not imply contemporaneity, such juxtapositions of settlement and ritual landscapes may be typical of north-east Perthshire (Hooper 2002: 195).

The annular or penannular structures at Pitcarmick North have been shown by excavation at Area B to be roundhouses built of stone, or stone and turf alternate coursing, with a roof supported by a post-ring, a central hearth and south-east facing entrance. Quartz was exploited for lithics and there was a variety of undecorated cooking pots and a stone spindle

whorl. Charcoal fragments showed a marked use of hazel. The assemblage is consistent with the radiocarbon date of 1398–920 cal BC, from birch charcoal in the central hearth. The three successive buildings appear to form part of a Bronze Age hamlet of half-a-dozen houses, in a broad swathe of settlement along the top of both the north and the south ridges, in what was then presumably a clement upland (illus 3).

There is an assumed association with field boundaries, implying cultivation or the management of stock. A survey by Jane Harris in south-east Perthshire suggested to her that hut circles and field systems clustered around the 320–380m contours and were particular to the uplands. The association between the two was uncertain, but from their location the field systems would have had weak exposure to the



ILLUS 26 General plan of early historic (Pictish) features (Structure C1, E1 and Hearths in Area A) amid the relict Bronze Age landscape

TABLE 5
 Table of radiocarbon dates

<i>Date of Sample</i>								
<i>Area</i>	<i>report</i>	<i>no</i>	<i>Context</i>	<i>Material</i>	<i>Date BP</i>	<i>Date BC/AD</i>	$\delta^{13}C$ ‰	<i>Lab Code</i>
PK93 A		005	014 fire-pit	Charcoal Alnus	1687–1400	263–550	27.2	GU-4526*
PK93 A		004	014 fire-pit	Charcoal Alnus	1546–1415	404–535 (1)	27.2	GU-4527*
PK93 B		164	128 hearth	Charcoal Betula	3332–2869	1398–920 BC	26.8	GU-4525*
PK93 C		115	044 hearth	Charcoal (Alnus 0.12g; salix 0.8g; betula 3.1g; corylus 0.2g; unident 11.8g)	1070–920	880–1030	26.4	GU-4530*
PK93 C	2011	6	043	Burnt bone	975–905	1020–1180	25.0	SUERC 36053
PK93 C	2011	7	044 hearth	Burnt bone	1265–1215	680–880	26.2	SUERC 36057
PK93 C	2011	8	044 hearth	Cremated bone	1275–1215	680–870	29.4	SUERC 36058
PK94 E		315/1	246 hearth	Charcoal: corylus 0.3g; sorbus 0.16 (?); salix 0.46g; alnus 0.35g; unidentified 4.48g	1410–1260	540–690	26.0	GU-4528*
PK94 E		315/2	246 hearth	Charcoal Betula 10.06g	1310–1060	640–890	26.2	GU-4529*
PK94 E		292	189 hearth	Charcoal. Betula 10.5g.	1260–970	690–980	28.1	GU-4531*
PK94 E	2011	1	155 floor layer in E2	Burnt bone	980–920	1020–1160	27.9	SUERC 36048
PK94 E	2011	2	152 wall of E1	Burnt bone	1240–1180	760–900+	27.1	SUERC 36049
PK94 E	2011	3	188 in hearth 156 in E1	Burnt bone	1285–1225	670–870	27.3	SUERC 36050
PK94 E	2011	4	232 in hearth 156 in E1	Burnt bone	1260–1200	680–890	26.6	SUERC 36051
PK94 E	2011	5	184 burnt layer around hearth 156 E2	Burnt bone	915–855	1040–1220	29.9	SUERC 36052

All cal and 2 sigma, except (1) 1 sigma + 83.2%

*Dates previously reported uncal. in Barrett & Downes 1996

winter and spring sun, and she deduced that ‘in such areas clearance had been made with pasture predominantly in mind’ (Harris 1985: 213). Denis Harding notes that houses occur as high as the 450m contour in north-east Perthshire and their location between fields ‘looks like a planned pattern even if it has been subject to modification over time’ (Harding 2009: 136). Hut-circles 3 and 4 at Carn Dubh appear to have been built on land that had already been cultivated for arable, since traces of ard marks remained underneath them (Rideout 1995: 149, 161). Dunwell and Ralston note that a move to the uplands was well under way in Angus in the 2nd millennium BC in the form of stone roundhouses with single and double walls and cultivation areas defined by low rickles of stone and clearance cairns, ‘although some relict field systems seem to be more recent than some of the houses’ (Dunwell & Ralston 2010: 51–2). While the evidence for Bronze Age cultivation and enclosure at Pitcarmick North was elusive, it could not be argued that it was certainly absent. The quartz fragments and schist ard points in Area E might indicate Bronze Age cultivation, although, in theory, these objects might have been employed in the 1st millennium (p 171).

Janet Hooper has pleasantly evoked the nature of the local Bronze Age environment: ‘A forest of pine, elm and alder (visible around Carn Dubh: Tipping in Rideout 1995: 181ff) would create a world of small clearings and broken vistas, a landscape of few landmarks apart from the trees themselves. It would probably have been quickly cleared, scattered trees surviving in isolation and in small groups on the higher slopes and perhaps on the lower, wetter ground ... To begin work in the morning, one would look out over these fields [in the valley], before walking down into them. The return home in the evening would be to come up the hill, the houses melting into the hillside, lost in the browns and greens of the surrounding vegetation, distinguished only by the muddy scar of the yard and the shape of the roof, with its spiral of smoke, breaking the skyline’ (Hooper 2002: 194, 197).

Late Iron Age and Pictish Periods (3–9th century) (illus 26)

The next period of activity (3–9th century) was contacted in three areas: A, C and E. Area A featured two hearths beside the presumed prehistoric cairns, with radiocarbon dates of cal 263–550 and cal AD 404–535 (Table 5, Context 014). The activity in Area A, which technically belonged to the Late Iron Age (3–6th century AD), was not otherwise defined. The hearths were round, and produced charcoal of alder, in contrast to both the preceding Bronze Age and the 7/9th century phase that followed – and with which there was no evident connection.

The later Pictish phase consists of two adjacent and parallel long round-ended buildings. That in Area C (C1) gave two radiocarbon dates lying between cal AD 680 and 880, and that in Area E (E1) gave three radiocarbon dates lying between cal AD 640 and 890. These buildings are proposed (below) as longhouses or byre houses, constructed of turf and stone in alternate coursing. Each had a residential area with a hearth at the west end and a byre for animals with an axial stone gutter at the east end. The paved entrance on the south side lay at the junction of dwelling with byre. Both buildings had walls proposed as about 1.5–2m thick. C1 measured 22×7.5m externally and 18×4m internally; E1 measured 27.5×7.5m externally and 22.5×4.5m internally. There were few finds recovered in context, although a stone pot lid and a cannel coal bangle, together with bones of sheep and other medium-sized mammals, were present and could probably be attributed to this phase. The preferred wood, as suggested by charcoal, is now birch and willow.

In her survey Janet Hooper proposed a third Pictish building to the west, of lozenge shape and oriented south/west–north/east (2002, 214–15; illus 4). Although on the ridge, it is not aligned with the known Pictish buildings and is rather close to the ‘cots’, thought to be medieval (below). There are other candidates in the centre of the north ridge. But even if these are included, the group does not amount to a village, but rather

to a zone of dispersed farmsteads. The pre- and protohistoric sequence reported here may apply also to the clusters mapped at Pitcarmick West, East and South, all of which feature the building types found at Pitcarmick North (RCAHMS 1990: 71–8; Hooper 2002: 189).

The exiguous evidence suggests that the Picts at Pitcarmick were engaged in the husbandry of sheep and probably cattle, and perhaps had part of the land under cultivation. A number of field boundaries, furrows and clearance cairns were recorded (illus 3, 4) but it remains uncertain which, if any, relate to the prehistoric or Pictish periods.

At the neighbouring site of Pitcarmick West, the longhouses are situated within the areas of field walls and clearance cairns, assumed to be connected to the hut-circles that lie on their fringes (Hooper 2002: 217; her figs 46, 47). Hooper sees grounds here for assuming that at Pitcarmick North too there were Bronze Age field enclosures which were re-used by the Picts (ibid: 215). A possible Bronze Age cultivation was inferred from a build-up of soil (ibid: 206).

Geographically, most field boundaries appear to integrate with the major north/south field wall that crosses over Building E1. The rig recorded by Janet Hooper (illus 4) also aligns closely to this ‘head dyke’. There are hints of terracing south of the south ridge and between the sites of roundhouses, and yet these too may relate to the system of rig associated with the head dyke. Prime facie, therefore, the field boundaries and rig should belong to the Middle Ages or later.

Medieval and later at Pitcarmick

Area C produced two medieval radiocarbon dates from its hearth (044), cal AD 880–1030 from charcoal and cal AD 1020–1180 from burnt bone. Area E produced two medieval dates from burnt bone, cal AD 1020–1160 from layer 155, a floor layer of E2, and cal AD 1040–1220 from 184, ‘a spread from the hearth’. The ploughsoil at Area A produced 17 sherds of glazed redware jug, possibly from Yorkshire, and the occupation layer in E2 produced four sherds of Scottish

White Gritty ware; all these sherds are attributed to local and imported wares of the 13/14th centuries (pp 179–80). Given the difficulties of identifying the upper layers on both sites, it is possible that the sherds and samples all derive from medieval ploughing. However, together with the two-phase structure in Area E, pottery and burnt bone do offer cumulative evidence for renewed settlement beginning in the 11th or 12th centuries.

The case for a cluster of medieval small stone buildings, referred to as ‘cots’, at the west end was made by Janet Hooper in her thesis (pp 220ff; see here illus 4, west side). These buildings are characterised by their squat plans ‘almost as broad as they are long’ with rounded corners, sited on level ground. The implied construction is of turf over stone footings, and the presence of hearths was implied by magnetometry. These buildings are seen as similar and contemporary to E2, the medieval structure at Area E.

The group of small buildings at the east end of the south ridge (illus 4) has been assigned an early modern date. The cluster includes a kiln and the small and subdivided forms of some buildings led to their identification as farms for the supervision of summer pastures (Hooper 2002: 231–4). However, it can be noted that the occupants are also concerned with cultivation, running their ploughs and field boundaries over the earthworks of former settlements.

Houndtor offers a west country analogy for the Pitcarmick sequence:

Here on Dartmoor a sequence of rectilinear houses with turf walls superseded Bronze Age stone hut circles and were superseded in turn by stone buildings in the 13th century, including four longhouses with byres and three kiln-barns. One barn and an animal pen had been contrived from Bronze Age ruins. The turf longhouses, seen by Beresford as belonging to a ‘Celtic tradition’, may have begun as early as the 8th century. Their ground plans were indicated by rows of stake holes, visible in a gravel subsoil, that marked out the interior revetment of a turf wall, parts of which survived as a spread 4–5ft

(1.2–1.5m) wide. The round ends were read as hipped rather than gabled. Bronze Age cultivation had been practised up to 1,500 feet (*c.* 450m) and discontinued around 500 BC. Cultivating farmers returned from AD 400 to 1200, with a peak of activity up to 1300 feet (*c.* 400m) between 800 and 1000. The site began to be abandoned in the late 13th century.

(Beresford 1979)

Nearer home, contemporary investigations at Lairg in Sutherland (1988–95) effectively provided an upland narrative of the kind that was sought at Pitcarmick. Sixty hectares were explored and 55 hut circles located, of which six, of Bronze Age date (Houses 1–6), and two of the Iron Age (Houses 7–8) were fully excavated. Thirty-two rectangular buildings were also located of which two were fully excavated (Houses 9, 10). One of these was a turf-built long byre-house superficially like E1 and the other a square dwelling like E2. However, these gave dates in the 15–17th century (McCullagh & Tipping 1998: 67). The glen and its flanks were visited intermittently, short periods of intense activity being separated by long periods of desertion, from the late Neolithic in 2900 BC, from the late Bronze Age in 1000 BC and between *c.* AD 600 and 1100 (*ibid.*: 214).

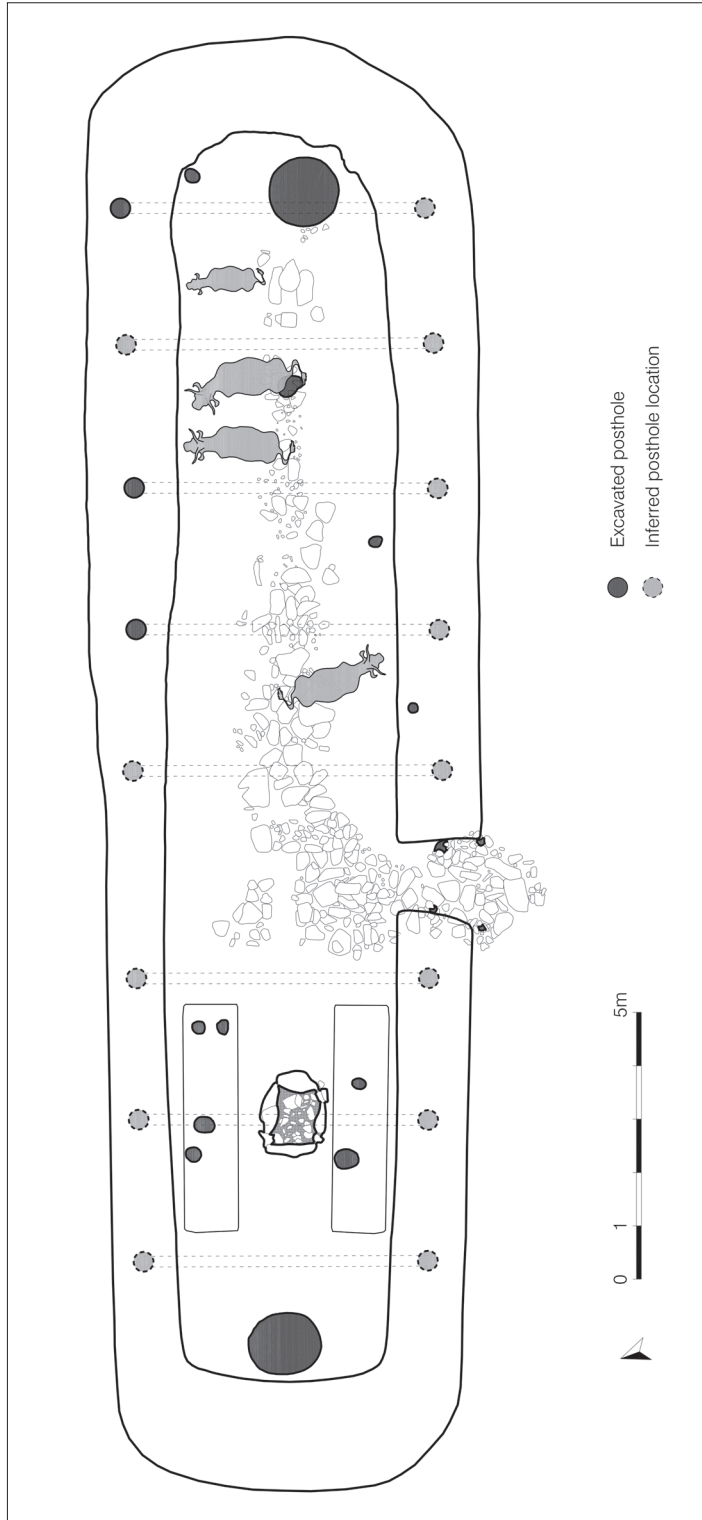
Longevity

The medieval use of both C1 and E1 gives rise to questions about their longevity. The footprint of occupation between the two periods up to 300 years apart is precise and included the reuse of the Pictish hearths. At the least, medieval people encountered something recognisable as a longhouse, even if they did not require its byre. It would be useful to discover whether they walked into it and modified it, or used it as a platform for a new building of a different type. An oak post 1m across theoretically lasts for 300–500 years, and one 30cms across, 100–150 years (Webley 2008: 39). Turf walls are vulnerable to be undermined by burrowing

by rodents, and liable to slumping (sideways) and settlement (downwards) so should have degenerated into a bank (Walker 2006). But at Langhusholl in Reynistathur (Iceland) is a turf wall built in AD 900–1000 preserved under tephra from an eruption of Hekla in 1104, *ie.* 100–200 years later (Sigurthardottir 2008: 8). It can be seen in Areas C and E that the true agent of destruction of the turf walls was the plough. We might conclude that the survival in some measure of a turf and stone building for 200–300 years is not impossible, and its footprint has lasted until today.

Research by John Barber, Anne Crone and Strat Halliday has enhanced the agenda on continuity and longevity in an interesting new way. Precision dating of crannogs has shown that they were not occupied continuously, but intermittently for short periods, during which the structures might experience frequent modification. On dry land too, houses were occupied for short periods separated by significant intervals, and the same spasmodic use of land can be extended to settlement, as at Lairg (McCullagh & Tipping 1998; Barber & Crone 2001: 69–78). At the multi-period site of Kintore extensive excavations could justify the claim that the period 3–7th century was indeed missing (Cook 2011: 211). With the aid of radiocarbon dating, Halliday (2007) has shown that a number of replacement houses in the same area need not be an indication of long-lived settlement. Houses may have been occupied for as little as ten years. By the same token, an extensive spread of houses may not be a sign of a large settlement but of a place revisited and reoccupied at intervals.

Intermittent reuse implies the long term storage of appropriate knowledge of the prehistoric landscape and what it had to offer. This could refer not only to the location of springs and grazing across generations, but the construction of abandoned earthworks, how they could be dug out, where the hearths were and what materials could be recycled. At Pitcarmick we have examples of refurbishment by medieval



ILLUS 27 Imaginative reconstruction drawing of E1 in use

people and can infer reuse of Bronze Age roundhouses and cairns by the Picts, as in Area A. The footprint of the abandoned building (which endures until today) was an adequate platform for informed exploitation and there is no need to suppose a surviving roofed structure.

The picture of spasmodic land use perhaps applies particularly to the uplands and the prehistoric period, before people came down from the hills around 1000 BC to a more sedentary habitat beside the water, where they live today (Halliday 2007: 55). However, similar drivers must have punctuated later history, including the Pictish period and the 11/12th centuries. This encourages us to look upon the Pictish and some Medieval farmers at Pitcarmick as experiencing episodes of experiment, alienation or stress. The real Pictish centres are no doubt still to find, perhaps also beside the waterways, where we can guess that structured and multi-functional settlements should have been laid out, probably in association with monumental sculpture.

THE EARLY MEDIEVAL BUILDINGS AND THEIR CONTEXT

Structure of the Pictish Houses

Both C1 and E1 are proposed as long-houses in the continental sense, with a residential zone (west) and a byre to the east. A suggestion that E1 had contained a byre was mentioned by Dunwell & Ralston (2012: 137), but the case for a structure currently so exotic to 8th century Scotland has still to be made and more importantly, explained. Both structures had reasonably clear limits, so that the long building with round ends seen from the air was confirmed by excavation. The square hearths, curbed in their original form, were well-defined – although little more was gleaned of the character of the residential end. The byre could be identified, clearly in the case of E1, less so in C1, as having a paved drained walkway running axially along the centre of the east end. In both buildings, the byre occupied the greater length,

and there was an entrance on the south wall, at the point of their junction.

That said, neither building was structurally viable as excavated and we are left to infer the character of the walls, roof and floor. Strong analogies from later ethnological practice and from experiment allow us to propose that that the crucial factor was the use of turf. Turf and earth houses are noted in medieval Europe, particularly in cold and windy areas with clay soils, ie Scandinavia, Ireland and Britain (Chapelot & Fossier 1980: 265–6). A thick turf jacket wall was hypothesised at the Viking period house at Bornais mound 3, deduced from an entrance passage that was 1.7m long. The interior dwarf stone wall (25cm high) is thought to have supported a timber revetment wall (Sharples 2005: 183). The traditional use of turf in Scotland, both for walls and roofs, is a recurrent theme in the literature of vernacular architecture. The use of alternate layers of turf and stones to make a wall was noted by Alexander Fenton and has since been recorded in gable walls in Angus, Aberdeenshire, Perthshire, Cromarty and a church in Sutherland at Ach-na-h'uaidh (Fenton & Walker 1981: 27; 73–7). The walls are founded on a course of stones and made up with two layers of turf to each layer of stone, to form a 'many-decker sandwich' (ibid). Stone and turf alternate coursing has also been noted at Skatastathir in Austurdalur, Iceland, a method said to be preferred if cows or horses were to be stalled (Sigurthardottir 2008: 20–1). Walls built in this way were used to enclose stock in the Highlands in recent times in order to more easily collect the manure (Hooper 2002: 82). Roof supports that have been noted in traditional buildings include the 'Highland cruck' (or *cuppils*), a pair of single trunk and branch supports, bound to a ridge. Fenton and Walker note that their uprights may be embedded inside the turf wall: 'It is more common to find the lower portion of the cruck built into the wall and standing on a large stone in the base of the wall to form some protection from rot' (Fenton & Walker 1981:

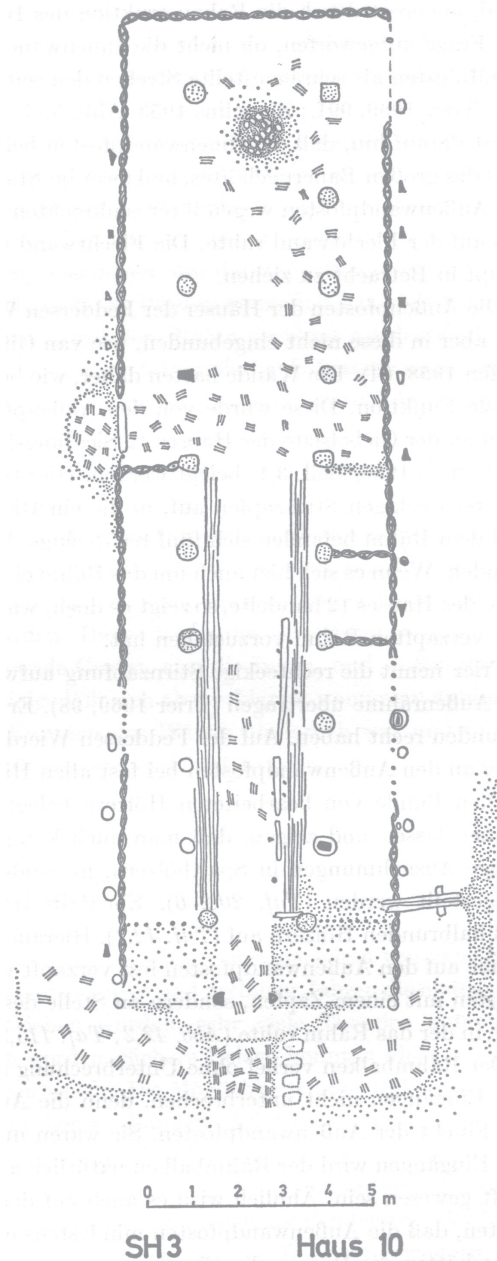
45). This was also observed by John Dunbar (1957) in surviving vernacular architecture in Perthshire.

These examples inspire the proposed structures of E1 and C1 and enhance their plausibility: walls 1.2m thick were made from turf and boulders or cobbles laid in layers. The thickness of the wall is endorsed by the entrance, which is not a porch but a doorframe through the width of the turf wall, as at Bornais (above). The fact that the superstructure of the buildings was not excavated on this occasion means that we are largely ignorant of the post-hole array and therefore of how the roof was held up. The suggestion that the roof supports were 'locked' within the walls of E1 is supported by ethnography and experiment (above) but its use at Pitcarmick is based only on three post-holes. The large pits at the three excavated ends prompt the thought that a major structural timber was there employed to support a roof line turned through a half circle. The walls and floor in both buildings were greatly disturbed by ploughing, and although the central drained walkway was out of reach of later ploughing, it had already suffered some scrambling through use.

The vulnerability of organic building materials to reuse and dispersal present a challenge to any excavator, and we are fortunate that the exiguous exposure of C1 and E1 does allow them to be credited with the essential properties of a longhouse, more properly a byre-house, with a residential end with hearth and a byre indicated by a paved and drained walkway (illus 27). It remains to consider the relation of these buildings to the better known continental types (see below).

A context for the Pictish houses

At the present state of play, early medieval housing in the north British peninsula has two principal regional traditions, to which we can now add a third. The west and north is dominated by circular or lobed stone buildings, recently reviewed by Tanja Romankiewicz (2011) under



ILLUS 28A Example of a longhouse from Feddersen Wierde (Netherlands), House 10 (Haarnagel 1979, abb. 28)

the generic term CARs (*Complex Atlantic Roundhouses*). In the south and east, Iron Age roundhouses survive in less robust forms (Harding 2009). The Pitcarmick longhouses may indicate a third tradition, and, together with two other newly defined buildings (at Portmahomack and Rhynie), may start to define an architectural response that typifies the Pictish heartland (Carver, forthcoming). In the discussion that follows the first task is to examine whether it is legitimate to seek an origin for the byre-houses in Perth in the local and neighbouring roundhouse traditions. The second task will be to see whether the inspiration for such buildings came from overseas, and if so, to speculate a little on the reasons for its adoption.

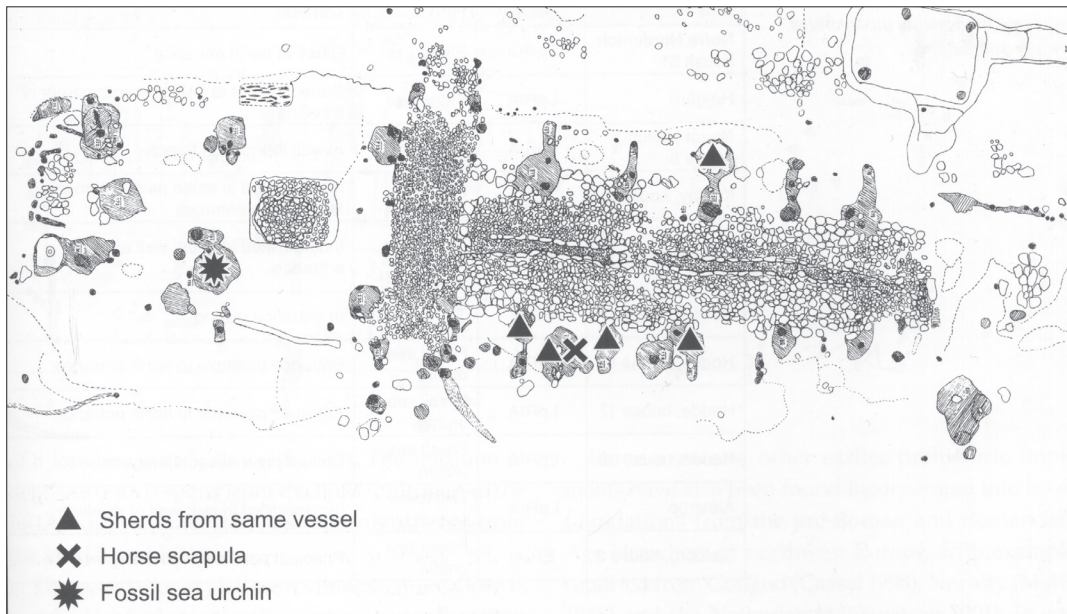
Neighbouring roundhouses

It can be assumed that local roundhouses were the immediate predecessors, if not contemporaries of the Pitcarmick longhouses: in eastern Scotland ‘variants of roundhouses survived well into the

1st millennium AD’ (Harding 2009: 186). At Aldlune in Atholl the latest roundhouse was oval in plan and ringed with a stone wall 19×5m in plan, within which was a ring of post-holes providing support for a roof. The building was constructed in the 2/3rd century AD but could have been used [or re-used] well into the later Iron Age (Hingley et al 1997). East Kinnear was an oval stone-lined scoop, dated 6–8th century (Driscoll 1997: 85). Another late Iron Age building that took the form of a subsurface oval scoop terraced into the slope was Hawkhill R (Fife); it measured 10×8m and had no obvious superstructure (ibid: 91–5; Dunwell & Ralston 2010: 102–4). Harding refers to these buildings with oval plans as the ‘final manifestation of the Iron Age roundhouse’ (Harding 2009: 186).

Fortified roundhouses

Neighbouring and distinctive roundhouses, thought to be late Iron Age or later, approach the Pitcarmick area closely in Atholl, distributed



ILLUS 28B Plan of a longhouse excavated at Sjelborg (Jutland) showing the deposition of ‘spiritually charged’ objects (courtesy of Leo Webley. Source Webley 2008, fig 7.5; the house measured 21×5m)

along the straths of Tummel and Tay. These versions of CARs are circular, *c* 15m in diameter, stone built and thickwalled and termed ‘fortified homesteads’ (Taylor D B 1990). Such robust structures are likely to attract frequent reuse and this has no doubt obscured their dating. The finds at Queen’s View included two stone disks, two halves of rotary querns, a stone lamp and a yellow bead, pronounced AD 700–900 by Peggy Guido. The stone lamp has a parallel at Crossnacreevy, Co Down, there found in a context dated to 7/8th century AD. At the fortified farmstead at Litigan, a radiocarbon date of 840 × 1020 uncal. just above the subsoil should mean a levelling after that date and a construction before it (ibid: 17). Harding sees the circular wall as being the wall of a house, roofed overall, and ‘consistent with occupation in the later 1st millennium AD’ (2009: 186). On the face of it, the fortified homesteads are near neighbours of the longhouses and contemporary with them, inviting the definition of two cultural areas east and west of the River Tay, distinguished not only by their architecture and site types, but by place names, church dedications and standing stone sculpture (Taylor D B 1990; Taylor S 1996, 1997; Ralston 1997: 26; Hooper 2002: 261–3 and her Appendix 9, plan 5; and see Carver, forthcoming, for discussion).

Rectilinear houses

Given the proximity of roundhouse architecture in time and space, the first task in determining the origin of the byre-house is to attempt to derive the one from the other. Even if no more roundhouses were being built in the locality, the robust Bronze Age roundhouses were still there and the Pitcarmick longhouse builders may have learnt the techniques of stone and turf walling by examining them. At Carn Dubh the relationship was more direct, since early medieval House 8 (dated *c* AD 600–900) had been contrived from two adjacent Bronze Age roundhouses (House 2 and 3) resulting in an elongated D-shaped plan (Rideout 1995: 153–5, 175, illus 6). The house had rubble and soil

walls, a central slab-built hearth and a paved south entrance. Stratigraphically, the latest structure at Hawkhill was Building J, a poorly preserved narrow rectilinear outline of rounded boulders, termed ‘longhouse’ by the excavator. It was undated, but probably constructed with stones recycled from adjacent Building R. Pottery indicated that the site had been (re-)occupied in the 12–15th century (Driscoll 1997: 95–8). These constructions need not be wholly serendipitous. A case has been made that the 8th-century bag-shaped building at Portmahomack had its architectural, or at least its engineering basis in roundhouse technology (Carver et al, forthcoming). These sparse examples of ‘elongation’ will surely multiply, since the expectation is that eastern Scotland will follow Ireland and the Atlantic zone in the introduction of the general rectilinear tendency, seen there after AD 800 (eg Camlin 3, Flynn 2009; O’Sullivan et al 2010: 34; Harding 2009: 192–5).

Continental links?

If the longhouse is not to ‘evolve’ from the roundhouse through some quirk of autogenesis, it behoves us to consider whether the idea was introduced from beyond Pictland, and, if so, on what imperative? The absence of the longhouse in pre-medieval western Scotland, England and Ireland seems to disqualify these regions as sources, and the nearest contemporary practitioners of the art, as the boat rows, are in Jutland, the Rhineland and the Netherlands (Hamerow 2002: 50; 2012: 17; O’Sullivan et al 2010: 33; Harding 2009: 193–4). This might seem a somewhat remote comparison, but the find of an 8th-century Frisian sceat at Portmahomack means that a link between Pictland and the continent across the North Sea should not be prematurely discounted (Carver 2008: 197).

On the continent, the longhouse is a feature of settlement in the northern European Neolithic, Bronze Age and the Iron Age up to AD 600. The Bronze Age longhouse, very long

and narrow, appeared around 1300 BC and was built everywhere from Scandinavia to Northern France, disappearing just as suddenly after 1000 BC (Arnoldussen & Fokkens 2008: 13). The longhouse that re-appears in the Iron Age (here 500 BC–AD 600) is generally shorter and wider. Seven phases of a longhouse settlement, featuring some 80 buildings, were defined at Feddersen Wierde in the Netherlands, dated with the aid of good stratification to the 1st to the 4th centuries AD (Haarnagel 1979). Rectangular houses were initially arranged in parallel rows aligned east/west, but in the 3rd century, these were joined by rows of houses aligned north/south and north/west–south/east. All the rows converged on an empty open space. The longhouses were up to 25m long and 5m wide, and arranged with a dwelling area with a hearth at one end and a byre divided into bays or stalls at the other (illus 28A). Stalls around 2m wide and 2m deep could accommodate two cows side by side; the largest buildings (around 22m long internally) had 12 stalls and provided stalling for up to two dozen cows, 12 a side (House 10 and 27) (ibid: 97, 250–1). An axial clay path led along the length of the house between the stalls. There were two inner rows of timber posts supporting the roof, while two outer rows, infilled with wattlework, provided the revetment for a clay jacket; this gave the exterior of the building the appearance of a lozenge shape with rounded ends. In theory, the clay could have derived from turf, but on this site, turves (they were used to build banks) were very well preserved and visible as striped or mottled heaps (eg taf 159, 160), so they would have been evident if used in building houses. Hearths were circular and made of clay, or rectangular and built of stone slabs. There was one doorway (or sometimes two, one each side) at the point where byre met dwelling. Ancillary buildings included short dwellings with one door, and sunken-floored huts. In its size, layout and the axial walkway at the east end Pitcarmick E1 closely mirrors some of the Feddersen Wierde longhouses (see, for example, Haus 40 (ibid: 140).

In Jutland, the longhouses of their Early Iron Age (500 BC–AD 200) provide evidence for the working of the later longhouse culture in unusual detail (Webley 2008). These houses also have the dwelling at the west end and the byre at the east, and are of similar dimensions, 10–25m in length and 5–6m in width. The roof is supported on one or two rows of internal posts, making two or three aisles. The dwelling area has a hearth in the centre, which was of clay, sometimes decorated, and may be round or rectangular; the byre has animal box partitions and a central gutter (ibid: 48). The buildings were generally orientated east/west (as are the graves in Jutland), although this can be varied in favour of the terrain, since the byre has always to be placed downslope of the dwelling (ibid: 59). The byre was susceptible to deepening through mucking out. The construction could employ turf: ‘In north and west Jutland, the “true” wall was often augmented by an outer wall of turf, up to 1.3m thick ... In a few instances the turf wall was laid on stone footing’ (ibid: 53–4). Turf-walled houses were built in north-west Denmark until the 5th century AD (ibid: 101). Examples of EIA longhouses destroyed by fire provided enriched evidence for their contents. At Ginnerup, the burnt-down byre contained the remains of four sheep, one pig and one cow; at Nørre Tranders, seven cattle, five sheep, two lambs, two horses and one pig, which raises caution about the presumed economic or ideological centrality of the cow (ibid: 62; and see below). Pots, some sunk into the floor as storage vessels, contained barley (dominant), oilseed, woad, and sheep and cattle bone. Other finds include perforated pots for making cheese, loom weights, whetstones and iron knives (ibid: 76, 78, 80, 101). The burned cellar at Overbygård contained c 60 vessels and over 100 litres of grain – also ten balls of clay, five burnishing stones, two swords, two iron axes and some wooden objects, including the remains of a stool. Outbuildings have indicated usage for food storage, grinding grain, cheese-making and smelting (ibid: 115, 116, 123). As with the

Bronze Age longhouse, other ancillary features are expected: four, six or nine-post granaries; enclosures, cattle paths, and drinking pools (Arnoldussen & Fokkens 2008: 34).

The deposition of some unusual artefacts in unusual places has suggested spiritual responses: eg pots with food, animal bones, odd shells found in foundations, under floors, under hearths and in post-holes, or an axe, dog skeleton and sea urchin fossil at entrances (guarding it) (illus 28B). These are seen as house offerings to *vaetter* and *nisser* (spirits of hearth and home) and there is some evidence that the practice increases in intensity during the Roman Iron Age (AD 0–200). Thereafter, bog offerings increase up to AD 500, after which spiritual deposition returns to the extended longhouses or hall houses, as indicated by the *guldgubbe* at Gudme, Fyn (Webley 2008: 137–48). Webley sees the advent of the EIA house as a sign of investment in the immediate family group and as coincident with the abandon of the (communal) Celtic field system. Longhouses again increase in length in the later Iron Age (AD 200–600), something that could ‘indicate new landless people with limited rights’ (Webley 2008: 50).

These examples indicate not only the continental kinship of the Pitcarmick longhouses, but something of the vivid and detailed patterns of living they may yield in future excavations. Equally vivid indications can be drawn from later history. By whatever route and circumstance the longhouse entered Scotland, its progress was to be triumphant, eventually trumping the roundhouse in the east and west. Later medieval (13/14th century) longhouses excavated at Kelso were thought to have been cruck-framed with stone walls bonded with earth or clay (Dixon 1998: 742–5). House 9 at Lairg (dated to the 15–17th century) was built of turf laid directly on the ground and interpreted as a byre-house ‘typical of the main form of the vernacular architectural tradition of the Highlands in recent centuries’ (McCullagh & Tipping 1998: 67). Although later in date, House 9 strongly recalls Structure E1 and House

10 Structure E2 at Pitcarmick. There were longhouses on the Black Isle in the 18th century with a common door for people and cattle and no internal partition between them. It was said that beds might be slung above the cattle. The walls of blackhouses recorded in western Scotland in the 19th century were 1.5–1.8m high, the lower half of stones, the upper of turf, and the walls revetted internally with coursed stones (Fenton & Walker 1981: 75). By the 1840s, longhouses in Gairloch parish still had a common door for men and beasts, but there was a partition with a door separating their quarters. In Stornoway, doors with a very low lintel led to a room with no windows, a hearth in the centre, a smoke hole in the roof, and an opening for light near the wall top that was stuffed with straw at night. In 19th century Sutherland, longhouses built with the byre on the downslope had the hearth and the entrance paved with stones, but otherwise the floor was earth. Cattle were tied to stakes by birch withies around their necks (Fenton & Walker 1981: 140–2).

Uses of a longhouse

The association between the longhouse form and the management of cattle, while probable, is not always easy to prove in prehistoric contexts. In early Bronze Age South Scandinavia, where bones are largely absent, grazing is implied by deforestation, otherwise the argument is dependent on the house plans. Five types of building are recognised, none of which need imply animals, although they are assumed to do so, and to refer mainly to cattle (Rasmussen 1999: 283, 286). The Roman Iron Age saw the first examples of the *stenbroläggnigar*: a stone-paved raised pathway in the byre. Here an average of 10–16 cattle were housed (Olausson 1999, 326). The EPRIA house at Grøntoft, which had stalls for 12 cows, was less than 5m wide internally (Webley 2008: 50), and since the average length of a stall in the later prehistoric longhouses was often 2m or less, it may be wondered how cattle could be accommodated in them. One likely answer is that these cattle were

a good deal smaller than modern breeds. Cattle of the Iron Age and early medieval periods were less than 1.2m at the withers (compared with 1.4m today) (Royman 1999: 296). Dexter cattle (originally from Ireland and now bred in the USA) are 42–44ins (1.07–1.12m) at the shoulder (modern breed description in www.dextersfor.com). Although the position of the inner edges of walls of C1 and E1 is uncertain, the overall span is at least 4m, comprising a stall length of about 1.5m either side of the gutter, which should be adequate for a Dexter. Comparing the dimensions of the cited examples from Feddersen Wierde and Jutland, the byre of C1 could theoretically house five double stalls each side, or 20 animals; and E1 six stalls a side or 24 animals. Other permutations were of course possible, as for example fewer cows, but in calf, and the accommodation would be still more comfortable for calves or sheep.

Why were cattle brought indoors?

Among the many reasons advanced for the use of byres are the protection of animals from thieves, predators or from the cold, preventing the milk drying up and the managing of breeding. Cattle were undoubtedly precious, and were assessed as units of capital wealth, used for exchange, marriage alliances and tribute (Royman 1999: 294–5). Bede (HE 1.1) associated byres with overwintering – which is why they were not needed in Ireland (or parts of England) where ‘the snow rarely lies longer than three days’. The climate must be a factor, since Anglo-Saxons had longhouses on the continent but not in England (Zimmerman 1999: 315; Hamerow 2012: 21). Cattle are thought to have been useful in warming the building – and thus its inhabitants who resided on an upper floor – as was observed in 20th century English farms by A G Street (1932). But this arrangement did not require a longhouse. Harding (2009: 24) argues that cattle may be as readily stalled on the lower floor of a roundhouse (eg a broch) in order to use their warmth (and use it more effectively). Haio Zimmerman (1999: 312) points out that cattle are

actually healthier when they overwinter outside, and they would do little to warm an uninsulated house if housed on the same floor. The purpose of the longhouse may be rather to warm the cattle: cattle need less food when they are warm, and will continue to give milk. It is also a convenient way of applying a breeding strategy and delivering and rearing calves (Rasmussen 1999; Olaussen 1999: 326). Cows are also seen as having a personal link to the householders, were treated as part of the family and may have been assigned roles in supernatural mediation (Rasmussen 1999; Zimmerman 1999: 312). But be it ere so loving and deep, this relationship was failing in Scandinavia between AD 700 and 900, and by the Viking period man and cow had divorced and were living apart (Olaussen 1999: 321). In a similar, but much later trend on the west coast of Scotland, separate byres became more common in 19th century (Fenton & Walker 1981: 140–2).

An alternative use of the longhouse as a summer habitation, the shieling, has been well documented in Sweden. All shielings were dedicated to milk production and operated by women otherwise based in a village (Nyman 1993). The shieling might be far off, in which case the women were resident there, or a ‘half-shieling’ closer to the village where the women would go to milk the cows, stay overnight and return with the milk in the morning. In Sweden there was a ‘shieling zone’ running from Uppland to Bohusland, which represented a transitional region between cattle herding in the north and arable farming in the south (ibid: 108, 109). In this case, the longhouse was a temporary working unit, providing accommodation for milk cows and milkmaids and equipment to turn milk into transportable and enduring forms (butter and cheese). Farther south in Skåne and Sjaelland, sheep’s milk was boiled, salted, spiced and strained and made into a thick spread that lasted all winter (Bringéus 1993: 146). We can be sure that the ingenuity of dairymen did not end there.

The significance of the byre-house in Pictland

At a general level, the Pitcarmick buildings raise expectations that some motors of climate, husbandry, food production and social and economic strategies were operating, similar to those sketched above. Small changes of circumstance may mean large differences in custom. The Perthshire buildings may be milk-processing stations used in summer as a type of shieling remote from a main village down in the strath. Or they may reflect the efforts of marginal settlers to maintain a foothold on difficult terrain through the winter, in which calves and lambs would need protection from severe cold and wolves. An upland location would suit sheep, and if the land were cultivated, then this provided local fodder, from stubble or railyard. If we follow Webley's analysis for early Iron Age Jutland, the short longhouses (that the Pitcarmick buildings most closely resemble) signal the advent of land ownership in family plots (2008: 50). This might reinforce the notion that these upland buildings are not signs of transhumance but of smallholders clinging to difficult land, people who were presumably attached to some richer and more permanent settlement system in the straths – one we have yet to see.

It is possible to argue that this type of early medieval building, at present more or less unique in Britain at that date, evolved from local architecture and was prompted by imperatives of natural crisis or human aggression. Nevertheless the close resemblance to earlier continental models is striking, and ought to be significant given the uniformity, longevity and ubiquity that the type enjoyed in north-west continental regions. On the continent, these attributes are seen as more than a determinist reaction to climate: 'The standard house layout can be taken to represent a set of concepts of the "proper" organization of domestic space that was shared by communities across the region' (Webley 2008: 49). That region was a North Sea zone that excluded Britain where the rustic houses were

(then) predominately round, or southern Europe where buildings were rectangular but without animal stalls. With no sign of exemplars nearer home, and the contrast with the circular fortified farmsteads in adjacent territory to the west, it is tempting to propose the Pitcarmick Pictish buildings as evidence for direct or indirect adaptation of a long-lived cultural marker on the other side of the North Sea.

However it would be wise to regard the project reported here as only the first encounter with a genre of Pictish settlement that has yet to be comprehensively addressed.

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An assessment of the records from each site and the arguments for the sequence and interpretation, together with the full specialist reports, will be found in the ADS Online Archive at <http://dx.doi.org/10.5284/1021677>. The field records will be deposited with the Royal Commission of Ancient and Historical Monuments and the finds have been allocated via Scottish Treasure Trove to Perth Museum & Art Gallery, Perth & Kinross Council, Scotland.

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