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Claish, Stirling: an early Neolithic structure in its context

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ABSTRACT

The excavation of a long timber-built structure of the early Neolithic near Callander (formerly Perthshire, now Stirling Council area) is described. The remains appear to be those of a structure measuring a maximum of c 24m by 8.5m with roughly straight sides and curved terminals, both of which have entrance gaps. About 1m in from both terminals is an arc of five posts; the interior is divided into between five and seven sections by these arcs and by a further three to five transverse screens or lines of posts. The pattern of division closely resembles that observed at the Neolithic site at Balbridie, Aberdeenshire[1]*, and it is argued that Claish, like Balbridie, was a roofed building. At both sites a central area unencumbered by many posts was created, and a relatively greater density of posts in the southern part of the structure perhaps indicates the presence of an upper floor. The relatively clear area contained two pits in which fires had been set, in one case on a layer of pot sherds. Similarities to other, but probably un-roofed, timber structures of the Neolithic of Perthshire and Fife are noted and it is suggested that there was an architectural 'vocabulary' in use in the early Neolithic in east-central Scotland.*

Thirteen samples were radiocarbon-dated. One, from a pit to the north of the structure containing material that may be from the flat-rimmed ware tradition, produced a calibrated range at 2 sigma of 1380–1120 BC. The other dates are on two kinds of sample: short-lived material (hazel nutshells and an emmer wheat grain) and wood charcoal. The former produced calibrated ranges between 3940–3640 and 3790–3380 BC, with distinct clumping around c 3800–3500. The charcoal produced ranges from 3970–3780 BC (oak) to 3790–3640 BC (birch).

The remains of 60–68 pots were recovered, all but two being in the Carinated Bowl tradition. Only seven pieces of struck stone were recovered, but two of these were of pitchstone. The predominant charcoal recovered was oak, the likely main structural material, with hazel and smaller quantities of birch, alder and willow, present probably as part of the structure and as fuel. Carbonized hazel nutshell was present in some abundance. Cereal grains included emmer wheat with lesser quantities of six-row barley and rare bread wheat, and crab apple was also recognized. Fragments of burnt bone were identified as of pig, cattle and red deer.

The local archaeological context is discussed, in particular the very long cairn at Auchenlaich. It is concluded that, while the structure may have been lived in, it was not a large 'farmhouse' and that structures like Balbridie and Claish cannot be taken as 'typical' settlements of the early Neolithic.

In memory of Susan Mary Jane Green (1977–2002)

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INTRODUCTION

The structure lies in a bowl of fertile land surrounded by hills to the west, north and north-east. It is situated on the flood plain of the River Teith, in a bend of the river, which lies about 300m to the south-east, 400m to the east, and 450m to the north of the site (illus 1). In 1977 RCAHMS aerial photographic reconnaissance recorded a series of cropmark palisaded enclosures to the west of Claish Farm[2] near Callander in the former county of Perthshire (now Stirling Council area) (NGR: NN 635 065). Some 15 years later, during research on the newly recognized Auchenlaich long cairn, a review of archaeological aerial photographs of sites in the area by Sally Foster (then of RCAHMS) prompted a reconsideration of a group of cropmark features close to one of the enclosures (illus 2; Barclay & Stevenson 1992; Foster & Stevenson, below). Excavation has proved Foster's description and interpretation of the features to be very accurate: a coherent structure measuring about 23m from NNE to SSW by 8.5m transversely within the line of a 'wall' comprising a series of closely-spaced post-holes, with rounded terminals, the interior being occupied by six transverse settings of post-holes or trenches. Parallels were immediately drawn at the time of the discovery with the Neolithic structure at Balbridie, Aberdeenshire (Fairweather & Ralston 1993) and later with the probably un-roofed timber enclosure at Littleour, Perth & Kinross.

The Claish structure remained an enigma, particularly as it had never again been recorded from the air, its identification as a Neolithic building being regularly proposed and as often doubted. One very plausible alternative interpretation to the Neolithic structure (particularly using RCAHMS photograph PT/5525: illus 2b) was that the curved terminals were elements of two partly visible later prehistoric roundhouses, and a vaguely-defined curved mark to the west (the upper side on illus 2b) was part of a third (Maxwell, pers comm).

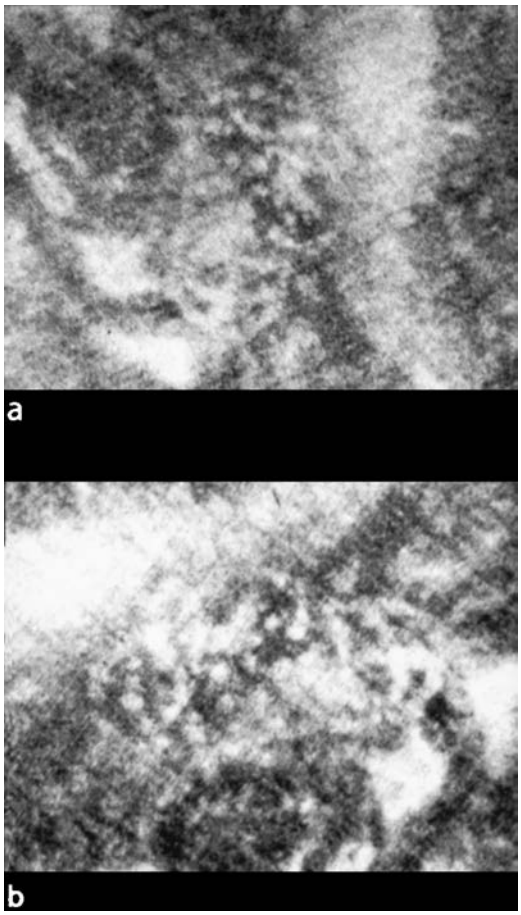
The excavation was undertaken by the Universities of Stirling and Glasgow, as part of the First Farmers Project, funded by the Arts and Humanities Research Board and based at Stirling. As one aim of the Project was to investigate the nature of settlement in the Neolithic of east-central Scotland, excavation of the Claish structure seemed a desirable element of that investigation. The entire visible extent of the structure and an area around it was stripped; a plan of all visible features was made, and a sample of features was excavated or half-sectioned (as we were anxious to leave substantial amounts of the structure for future investigation). The radiocarbon dates have been provided by Historic Scotland. Three interim statements were published (Barclay et al 2001; 2002a; 2002b); this report wholly supersedes them. At the end of the excavation and before backfilling by machine, the exposed sections in half-sectioned features were protected using geotextile and the excavated parts of the features backfilled carefully by hand.

The similarities between Claish and the Balbridie structure are such that it is appropriate to note them, and the significant differences, as the excavated features are described.

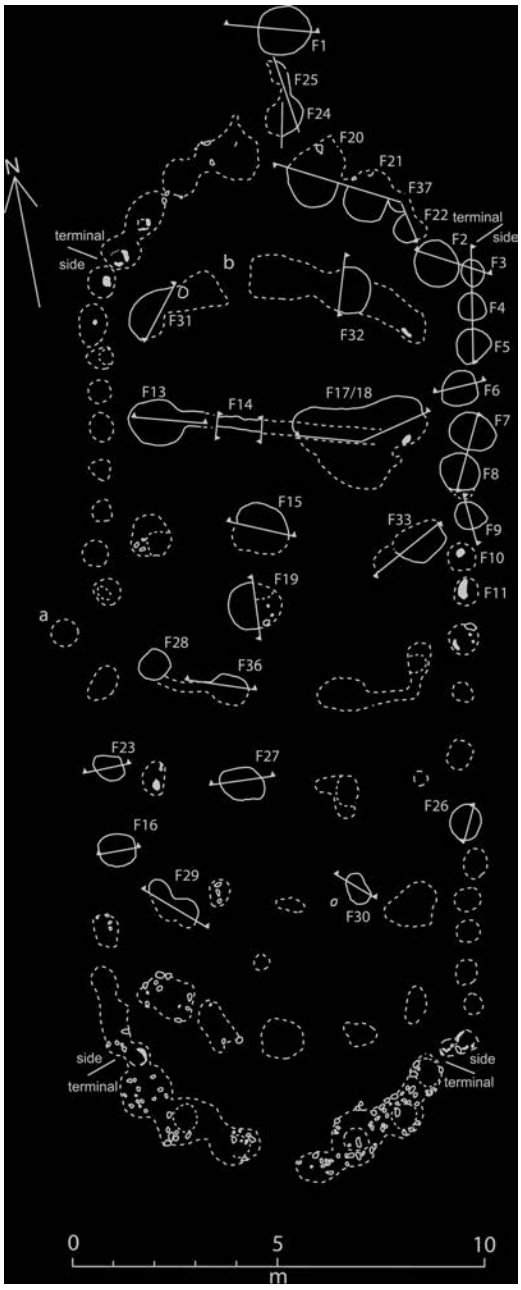
OBSERVATIONS

An area measuring 28m by 13m was machine-stripped using a toothless bucket and then hoed clean and trowelled. The removal of the topsoil revealed a mixture of fluvio-glacial sands and gravels, which made the identification of features or their edges difficult. Around 90 possible features were noted (illus 3), although it was not clear in all cases where a mark in the subsoil indicated a single feature or a group of linked features. Thirty-four numbered features were either fully excavated or half-sectioned; one was found to be of natural origin. No other archaeological features were found in the area cleared around the structure. It is impossible to know how much of the Neolithic surface and any underlying topsoil and subsoil has been lost to ploughing and erosion. The site is not in a particularly vulnerable topographical situation (for example on the edge of a slope) and experience has shown that arguments in the 1970s for very high

ILLUS 1 Location of the Claish building and the Auchenlaich cairn. The numbered dots on map 1 show the location of: 1 Balbridie, Aberdeenshire; 2 Sprouston, Scottish Borders; 3 Noranbank, Angus. On map 2 the shaded areas show land over 60m, 180m and 300m. The 'P' marked just south of the Forth on map 2 is the Parks of Garden platform. The 'B' marked near the eastern edge of map 3 is the Bridge of Keltie pit- or post-alignment (*Based on the Ordnance Survey map © Crown copyright*)



ILLUS 2 Details of the two aerial photographs of the site taken in 1977: (a) PT/5524, from the NNW; (b) PT/5525, from the SE (*Crown copyright: RCAHMS*)



ILLUS 3 Site plan. The lines at the four corners mark the excavators' interpretations of the boundaries between 'sides' and 'terminals'

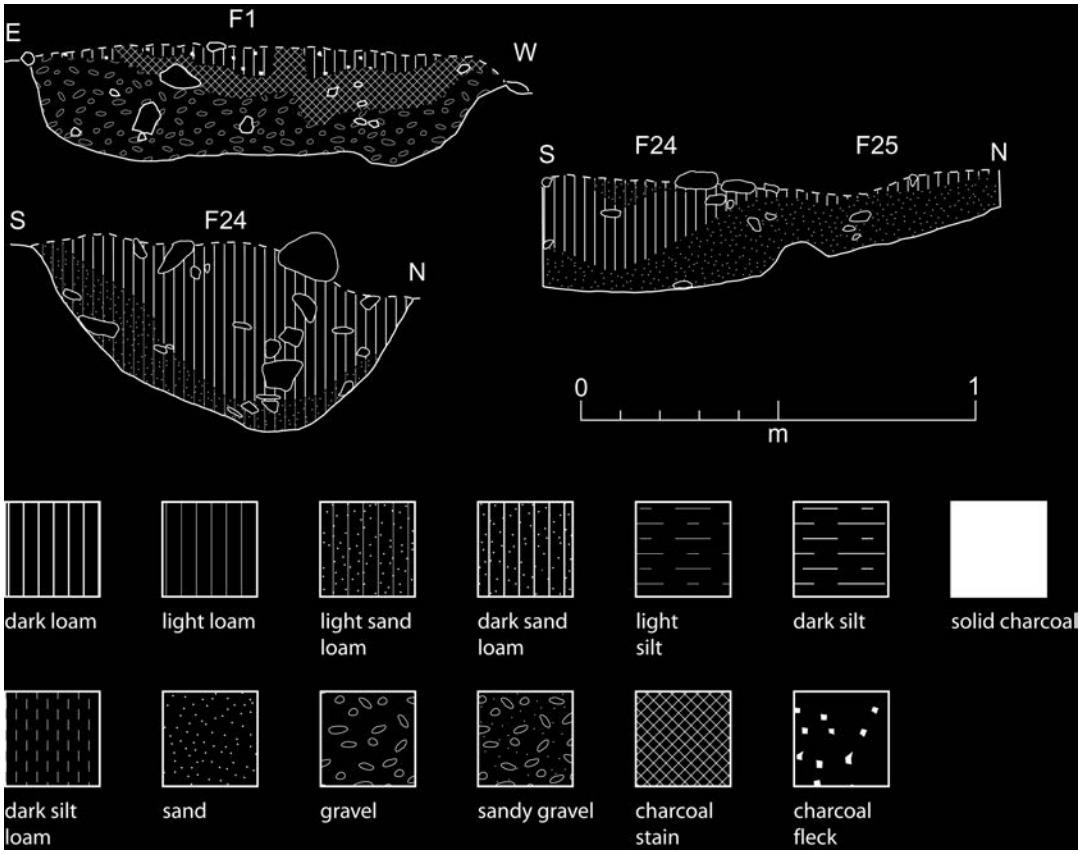
rates of loss (cf Burgess 1976, 155) were not uniformly applicable (eg the survival of the cairn under topsoil at Balfarg Riding School: Barclay & Russell-White 1993). Indeed, topsoil depth may have increased through the accumulation of vegetable litter in some locations. As fire-reddened subsoils were visible it is estimated that perhaps 20–30cm of archaeology (little more than the depth of the modern topsoil) has been lost at Claish.

The on-site observations and basic interpretations of the structural elements are set out in five sub-sections: 1 features to the north of the structure; 2 the terminals; 3 the side walls; 4 internal structural elements; 5 two pits with burnt deposits. The descriptive terms are predicated upon the interpretation of the structure as unitary, the evidence for which is presented below. The basic dimensional and other information on excavated features is summarized in Table 1. The pottery (see

TABLE 1

Feature dimensions and descriptions

No	Dimensions (m)	Depth (m)	Post-pipe diameter(s) (m)	Clear evidence of recut?	Pottery vessel nos	Weight of pottery (g)	Interpretation
F1	1.27x1.30	0.34	n/a	n	1, 2	463.8	Bronze Age pit to north of structure
F2	1.1	0.67	0.77	n	11	18.9	post-hole of north wall
F3	0.45	0.32	0.24	n	–	–	post-hole of east, but seems unnecessary between F2 and F4
F4	0.60	0.58	0.49	possible	12, 13, 14	38.1	post-hole of east wall
F5	0.80	0.31	0.34	n	15, 16, 17	34.2	post-hole of east wall
F6	0.80	0.50	0.39	n	18–23	165.4	post-hole of east wall
F7	0.85	0.56	0.56	n	24–28	203.1	post-hole of east wall
F8	0.94	0.81	0.58	y	18, 29, 30	62.0	post-hole of east wall. Clear line of burnt material marks break between first and second uses of post-hole
F9	0.70	0.36	0.36	n	31–32	4	post-hole of east wall
F13	1.20x0.75	0.53	(a) > 0.19 (b) 0.24 (c) 0.77	y	40, 54, 55, 56	131	post-hole of internal post-line 1; possibly with three phases of post
F14	1.10x0.21	0.29	n/a	n		–	slot supporting light partition
F15	1.33x1.25	0.92	n/a	n/a	18, 48, 49, 50, 51, 52	136	pit with burnt deposit
F16	1.2	0.41	0.44	n		–	post-hole of west wall
F17/18				y	49, 53	14.5	possible post-hole preceding structure; then post on internal post line 4 and transverse line II
F19	1.10	0.70	n/a	n/a	36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47	1186.1	pit with burnt deposit
F20	1.45	0.56	1.02	n	3, 4, 5, 6	22.8	post-hole of north wall
F21	1.0	0.62	0.8	possible	7, 8, 9	55.3	post-hole of north wall
F22	0.80	0.45		n		–	post-hole of north wall
F23	0.90	0.41	0.55	n		–	post-hole of west wall
F24	1.05x0.96	0.48		n		–	pit to the north of the structure
F26	0.75	0.53	0.38	n		–	post-hole of east wall
F27	1.04	0.56	0.7	n	33	12.3	post-hole on internal line 2
F28	0.75			n	34, 35	24.4	post-hole on internal line 1 and transverse division III
F29	1.4x0.50	0.45	(a)0.29 (b)0.31 (c)0.60	y		–	post-hole, possibly double, on internal line 1 and transverse V
F30	0.75x0.45	0.50	0.34	n		–	post-hole on internal line 4, and transverse line V
F31	2.40x0.80	0.74	0.5	y		–	post-hole on internal line 1 and transverse line I
F32	1.2 wide	1.18		n	58, 59	676.8	post-hole on internal line 1 and transverse line I
F33	1.15x0.95	0.54	0.95	n		–	post-hole on line 5
F35	0.25x0.15	0.12	n/a	n		–	slot joining posts
F36	0.90x0.60	0.70		n		–	post-hole on internal line 2 and transverse line III
F37	0.50	0.29	0.35	n	10	4.6	post-hole of north wall



ILLUS 4 Sections of the features to the north of the structure (F1, F24 & F25) and the conventions used on all the section drawings

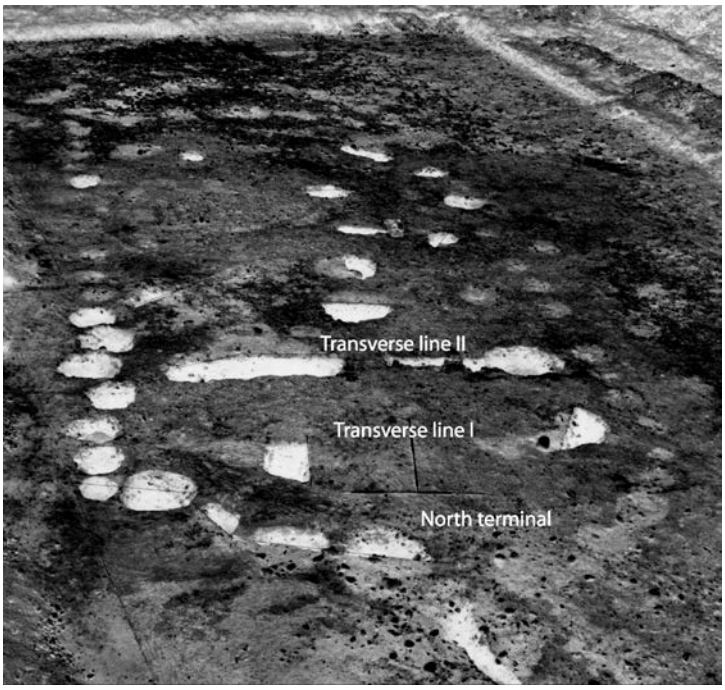
Sheridan, below) from the post-holes was from post-pipes or from close to the modern surface of packing, where material might have been disturbed. While it is possible that the pottery post-dates the structure, it seems likely that it can be assigned to the use of the structure, finding its way into the spaces left by the rotting of posts. The sherds of individual vessels were not found in more than one context, except in three cases: sherds of vessel 18 were found in F6 (wall post) and possibly also in F8 (wall post) and F15 (pit containing burnt deposits); sherds of vessel 40 were found in F19 (pit containing burnt deposits) and F13 (internal post); sherds of vessel 49 were found in F15 (pit containing burnt deposits) and the F17/F18 complex.

The description below is summarized from the 'data structure report',[3] part of the site archive deposited in the National Monuments Record of Scotland. In the text, numbers prefixed by 'P' are vessel numbers (Sheridan, below).

1: FEATURES TO THE NORTH OF THE STRUCTURE

Three features (F1, F24 & F25) lay immediately outside the northern terminal of the structure, in line with the possible entrance (illus 3 & 4). The calibrated radiocarbon date range from F1 suggests that these features are later than the structure.

F1 This sub-circular feature was notable for the amount of pottery found at the modern surface, but pottery was found in all three fills although concentrated at the edge of the cut. The pit seemed to have received a deposit or deposits of pottery and burnt material, perhaps after being open for some time or



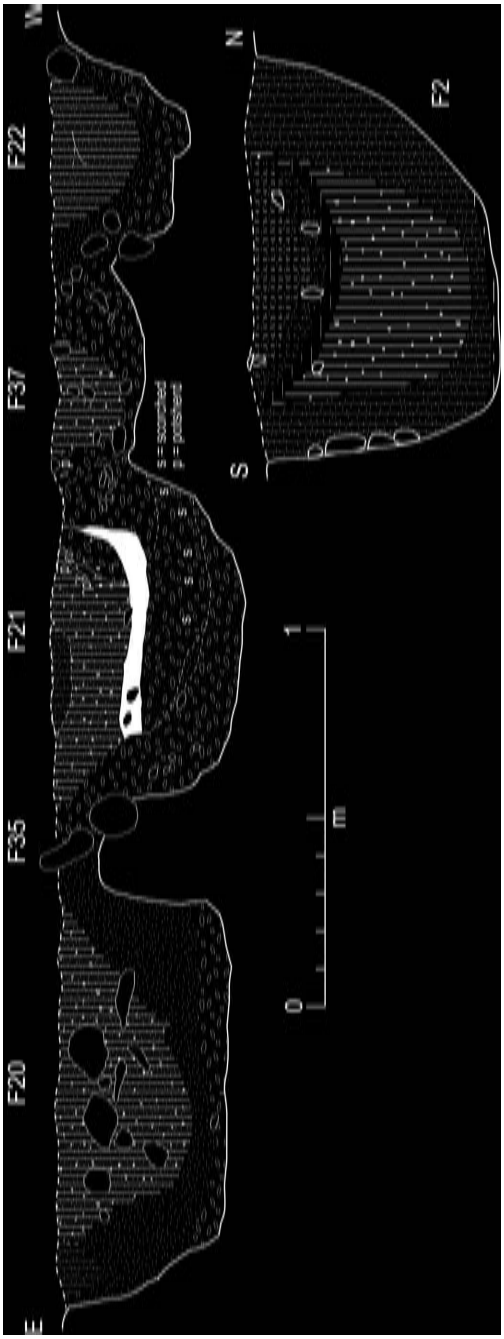
ILLUS 5 Site from north

being deliberately partly backfilled. A slight concentration of charcoal in the centre of the feature probably does not represent a post-pipe. A handful of hazel nutshells was recovered, with five cereal grains (one hulled six-row barley; the rest indeterminate). The charcoal from the pit comprised alder, birch, hazel, apple/rowan type, oak and willow. The palaeoenvironmental specialists (Miller & Ramsay, below) have noted the general similarity between the burnt deposits in F1 and the features of the north wall. The pottery comprised the remains of a coarse, flat-rimmed, possibly bucket-shaped vessel of a different fabric from the rest of the assemblage and sherds of another vessel in a similar fabric (P1 & P2 respectively). The dated sample was from the charcoal-rich fill near the centre of the pit (AA-49634); the calibrated range (1380–1330/1320–1120 BC) suggests that this feature is significantly later than the rest of the site. It is interesting that the feature lies on the axis of the structure, but the date, if representative of the whole fill and the pottery in it, would suggest that there is no relationship. The boundary of one of the palisaded enclosures visible on aerial photographs to the north of the Claish structure is only 15m away.

F24 was a sub-circular feature that could be interpreted either as a pit or (more likely) a post-hole. F25 was a slot apparently adjoining F24 and possibly related to it as part of the complex of features adjacent to the northern entrance. There is no certain connection to or relationship with F1 or with the structure. Fragments of oak charcoal were recovered from F24.

2: THE TERMINALS

It was difficult to be certain where the terminals ended and the sides began; the boundaries used in the following description are marked on illus 3. Before excavation the north terminal appeared as a clearly-defined arc (split in two by a roughly central gap) of darker, damper soils than the surrounding subsoil (illus 5). The eastern portion of the north terminal was excavated; a line was drawn over the apparently conjoined features and the southern half of the fills was removed. The eastern portion of the north terminal proper was made up of five post-holes (F20, F21, F37, F22, F2; illus 3 & 6), the first two and last of which were very much larger than the third and fourth. F20 and F21 were linked by a



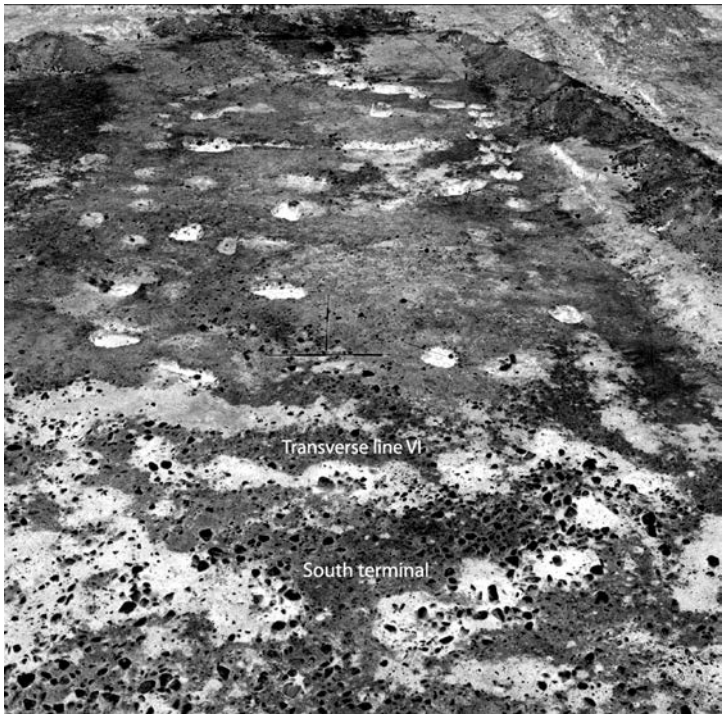
ILLUS 6 Sections of the excavated features of the northern terminal (F20–22, F35, F37 & F2)

shallow slot (F35: not numbered on illus 3). The post-pipe in F20 suggested that it had held a post about 1m in diameter (illus 6): the section, at the left end, may show the traces of a small subsidiary post. The fills of F21 indicated a considerable degree of in situ burning and the disturbance of the fills may be interpreted as indicating the removal of the post after burning, or even of two phases of construction. F37 had the most clearly-defined post-packing, and the impression was gained that the feature was an addition to the series. (Ralston (pers comm) notes that stone packing at Balbridie (also rare on that site) is in some cases associated with repair and could indicate a secondary post.) The section line was extended, at an angle, over a further post-hole, F22, which measured only 0.8 by 0.6m. F2, which lay in an odd position between the terminal and the east side wall, formed the east end of the north terminal. The fills of all the post-pipes showed clear evidence of intense burning. Early Neolithic Carinated Bowl pottery was found in the post-pipes of F20 (P3, P4, P5 & P6), F21 (P7, P8 & P9) and F37 (P10).

The western half of the north terminal was not excavated. From surface observations it appeared to comprise four post-holes, apparently conjoined in pairs. The post forming the western side of the northern entrance seems to be set a little further north than the equivalent post forming the eastern side of the entrance. This pattern is repeated at the south, and Ralston (pers comm) notes a comparable, but not so pronounced 'crab-claw' arrangement at Balbridie.

The southern terminal (illus 7) showed up as two arcs of damp soils against the drier subsoil, which in the southern part of the site contained a very much higher proportion of cobbles. It was not excavated and the description given is therefore provisional. As at the northern end of the structure an undisturbed area of subsoil separated the terminal into two parts. The eastern comprised, as far as could be told, four conjoined post-holes, in three of which possible post-pipes were visible. The post forming the eastern side of the entrance was set further south than its opposite number on the west. The western segment of the terminal once again seemed to comprise four post-holes, in which three post-pipes were visible.

The junctions of both terminals with the eastern wall seems awkward (illus 3); the easternmost posts



ILLUS 7 The southern terminal of the structure (*Crown copyright: RCAHMS*)

of both terminals seem to sit inside the line of the east wall.

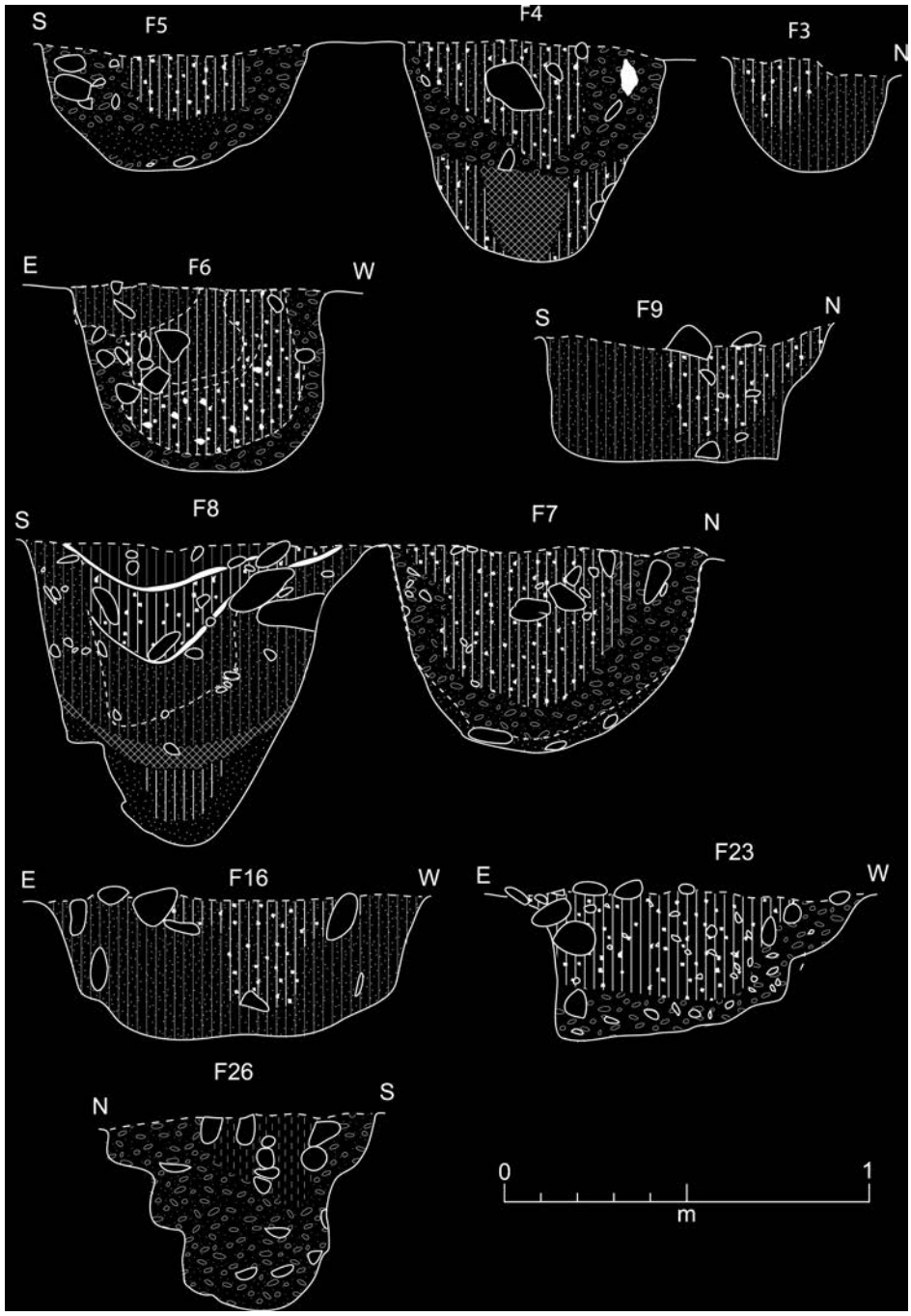
Hazel nutshells from the post-pipes of F21 & F37 were radiocarbon-dated and produced calibrated ranges of 3800–3630/3560–3540 cal BC (AA-49644) and 3790–3500/3430–3380 cal BC (AA-49646) respectively.

3: THE SIDE WALLS

Ten post-holes of the side walls were excavated (illus 3 & 8): seven in the north-west part of the structure (F3–F9); one in the south-east (F26); and two in the south-west (F16 & F23). The fills of the post-holes suggested the possibility that some of them had seen two phases of use; however, F8 was the only drawn section to provide any clear evidence (a band of burnt material sealed the top of a post-pipe and a new post was then inserted above; and there is a step in the south side of the post-pit that may suggest re-cutting). The discontinuity apparent in the drawn section of F4 is misleading – the pit was supposedly bottomed part way down, drawn, but then re-excavated, this time to its full depth. The fills of the post-pipes in the north-east part of the structure showed clear evidence of intense burning.

The eastern wall appeared to consist of 19 post-holes (including the awkwardly-placed F3), the western, 14 or 15 (excluding the possible post-hole ('a' on illus 3) offset from the wall about half way along its length). It is noticeable that the post-holes are not evenly spaced; for example, on the east wall the density of posts is greater near the northern and southern terminals than in the central portion. In the west wall, the density is greater in the northern half than in the southern. The possible significance of this is discussed further below. The spacing between posts is wide enough in places for there to be a formal entrance in the central portions of both side walls, and the offset post on the west could conceivably be part of such an arrangement.

Substantial quantities of early Neolithic Carinated Bowl pottery were recovered from the post-holes in the north-east part of the structure: F2 (P11); F4 (P12–14); F5 (P15–17); F6 (P18–23; material possibly from P18 was also found in F8



ILLUS 8 Posts of the east wall (F3–F9; F26); posts of the west wall (F16, F23)

and F15); F7 (P24–28); F8 (P29 & P30) and F9 (P32 & P33). Hazel nutshells from the post-pipes of F8 and F9 were radiocarbon-dated; the samples produced calibrated determinations of 3790–3630 cal BC (AA-49636) and 3780–3640 cal BC (AA-49635) respectively; the sample from F8 was from the lower of the two supposed phases of post-pipe.

4: INTERNAL STRUCTURAL ELEMENTS

The most clearly visible elements prior to excavation were first, an arc of darker, damper soil, apparently marking a screen (called 'transverse line I' in the discussion below) within the north terminal (illus 3 & 5), and second, an arc of separate pits or post-holes in a comparable position at the south terminal (transverse line VI; illus 3 & 7). The northern arc appeared to be broken by a deliberately-left undug gap (marked 'b' on illus 3), but this was not investigated. Two elements of the northern arc were excavated: F31 and F32 (illus 9). F32 in particular indicated a particularly massive scale of construction; it produced sherds from two pots (P58 & P59). (Ralston (pers comm) notes that no part of Balbridie was built using posts on this scale or set to this depth.) Post-hole F31 produced sherds of only one vessel (P57). Surface indications suggested that there had been five posts in transverse line I: two in the western portion (F31 and an unexcavated one to its east) and three in the eastern portion (F32 flanked by two unexcavated posts). The placing of the posts in continuous trenches may imply the presence of linking screens.

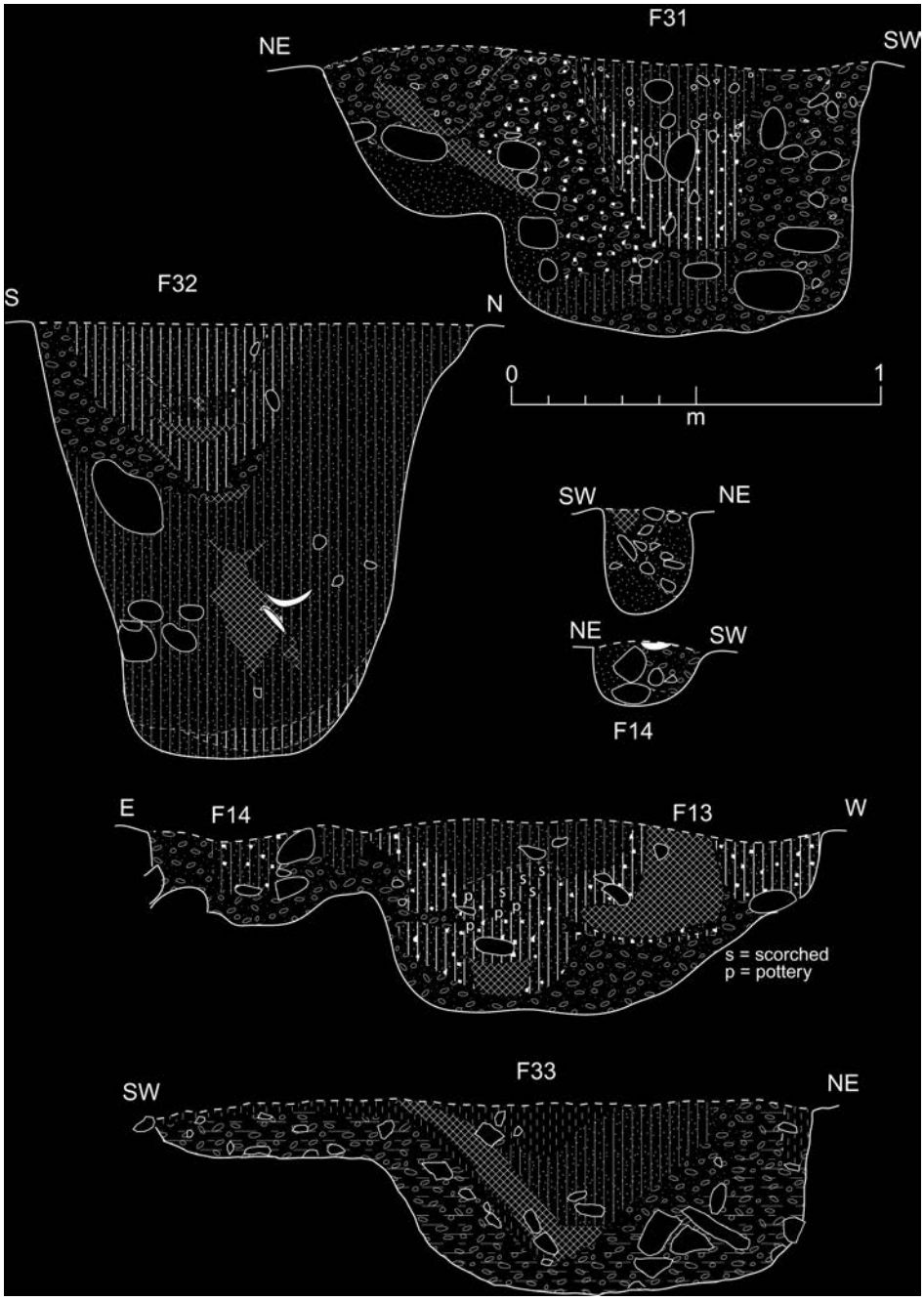
To the south another possible screen (transverse line II; illus 3, 5 & 23b), though of a different character, was clearly visible before excavation (illus 10). At its western end post-hole F13 was attached to a shallow slot (F14) (different in character from anything at Balbridie (Ralston, pers comm)) in which were found the burnt remains of light timbering – the subsoil was also scorched. F13 provided fairly clear indications of having held two posts at different times, the earlier slightly to the west of the later. Sherds of P54–6 were found in F13. A piece of oak charcoal in F14 (interpreted as a structural element burnt in situ) was radiocarbon-dated; it produced a calibrated range of 3970–3780 cal BC (AA-49638)). A hazel nutshell (one of 45 recovered) from F13 produced a calibrated range of 3790–3640 cal BC (AA-49637); this date probably relates to material in the structure at the time of its destruction which had later found its way into a post-pipe. F14 ran into the F17/F18 complex to the east.

The F17/18 sequence was difficult to interpret (illus 11). Before excavation it appeared as a large amorphous area of damp soil showing signs of burning. It seems likely that the section line had cut the north edge of a post-pipe at the eastern side (the right hand side of illus 11; post-pipe marked on illus 23b) which showed in plan; this post would have been the eastern equivalent of F13; the section did, however, run along part of the slot (F14), visible in section. The post-hole and slot were probably partly or wholly cut through the fill of a pre-existing large pit, probably a post-hole. The section might be interpreted as showing two separate phases of post-erection, both posts perhaps being burned; if they were free-standing posts this would have taken some doing. The amorphous mass of fill with signs of burning, visible on the surface before excavation, can perhaps best be explained as soils relating to the floor or burning of the structure that had survived in the slight hollow formed by the compaction of the fills of the underlying feature.

F33 was a post-hole of the line of posts paralleling the eastern wall (illus 3 & 9). It was mirrored by a post (unexcavated) on the west side.

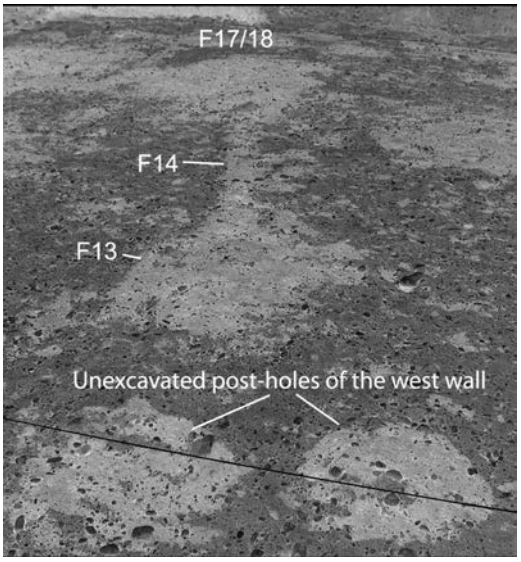
To the south, differential drying clearly indicated two similar feature groups: each an arrangement of two posts linked by a 'dog-legged' slot (transverse line III). The western set was excavated (F28 & F36 linked by an un-numbered slot). The excavated section of F28 was not drawn and the section of F36 seems to have been placed too far north, probably missing any post-pipe. There was no evidence for the gap between F28/F36 on the one hand and its equivalent on the east having being filled. The equivalent features at Balbridie were formed differently; the post of the aisle line was rounded and shallow-set while the dog-leg was formed by two large squared timbers (illus 25; Ralston, pers comm).

In the southern half of the structure there were three further transverse lines (illus 3): IV was formed by four separate posts, one of which (F27) was excavated. Transverse line V was formed by five features, two post-holes of which (F29 & F30) were excavated. F30 was unusual in having very clearly-defined stone packing and F29 perhaps represents a pair of post-holes, or the succession of



ILLUS 9 Sections of features in interior

one post after another. A piece of hazel charcoal from a bulk sample from F30 produced a calibrated range of 3950–3660 cal BC (AA-49645). The matching (but unexcavated) feature to F29 on the east side (just south-east of F30 on illus 3) is also large enough to be a double post-hole. Of the features from F28/F36 southward, only two produced pottery, and that in very small quantities: F27 (P33)



ILLUS 10 F13, F17/18 and the slot F14 linking them, forming transverse line II, before excavation (from the west)

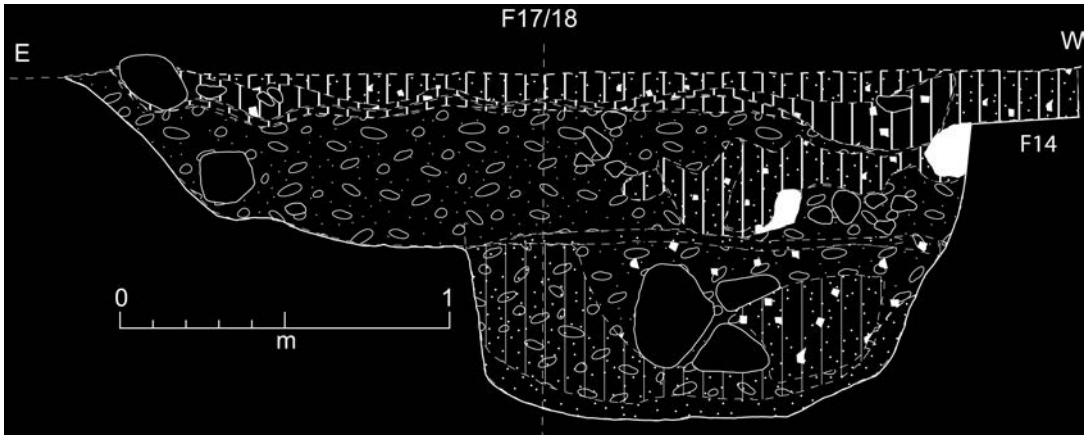
and F28 (P34 & P35). This reflects the paucity of pottery from the wall posts excavated in the southern half (F16, F23 & F26).

At the southern terminal a gently-curving arc of post-holes (VI comparable to the transverse line I at the north), appeared as a series of clearly-defined patches of damp soil. Unlike the northern arc, the individual post-holes or post-pipes seemed not to have been linked, although the very stony nature of the subsoil here made fine definition difficult. Although only the northern arc seemed to be broken by a gap, the probable five posts making up both settings were in comparable positions. It is interesting to note that these arcs are much further from the terminals than their equivalents at Balbridie (illus 25).

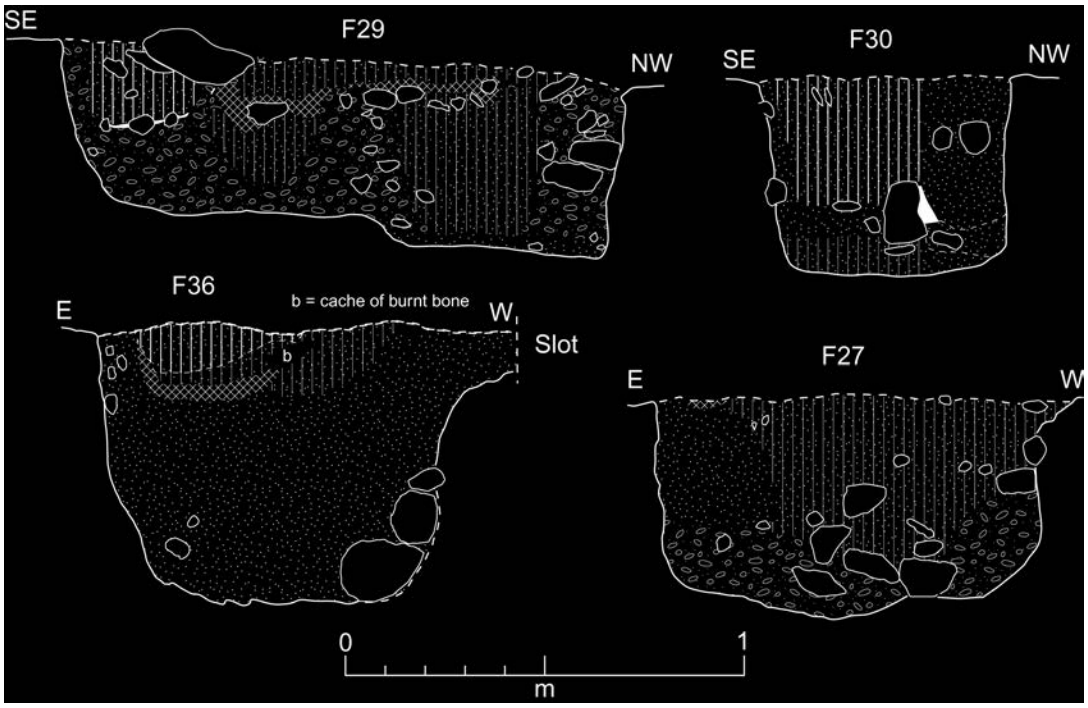
5: PITS WITH BURNT DEPOSITS

Two pits were excavated within the space defined by F13–F14–F17/18 on the north and F28–F36 on the south, near the centre of the structure (illus 3 & 13).

F15 appeared as a regular five-sided feature and measured a maximum of 1.33m by 1.25m across and 0.92m deep. This feature would appear to represent a pit that has been used, first, for the insertion of deposits that contained pottery and second, once about half-full, for burning in situ, as represented by the layer marked solid black on illus 13. Further more transient episodes of burning were noted in the fills above this point. Six burnt bone fragments were recovered, mainly from the upper fills. Over 300 hazel nutshells and fragments were recovered, as well as a small number of barley, emmer wheat and bread wheat grains. The charcoal from the pit was of birch, hazel, oak and willow. The half of the feature excavated produced portions of five pots (P48–52). The pottery was found in the upper half of the pit, mostly from the layer of heavy burning. A single sherd of P49 was found in the fill of F17, immediately to the north-east. What may be sherds of P18 (otherwise found in F6) were also found in F15 (and in F8). Three samples were



ILLUS 11 Sections of F17 and F18, with F14

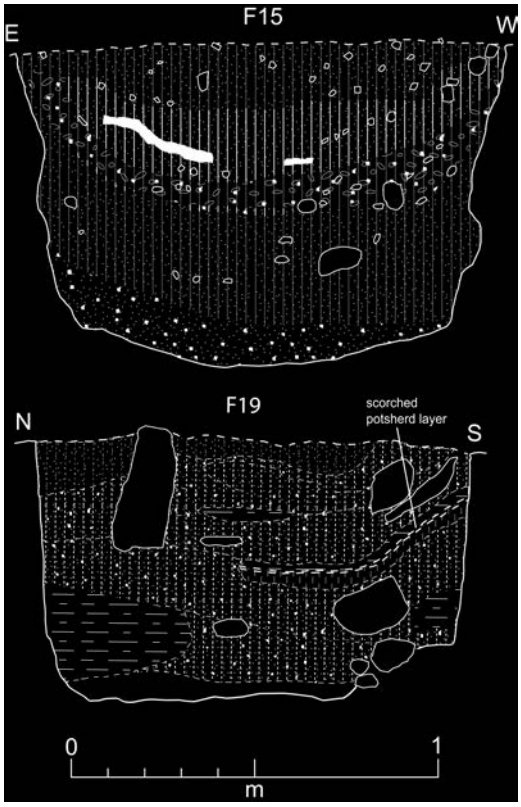


ILLUS 12 Sections of features in interior

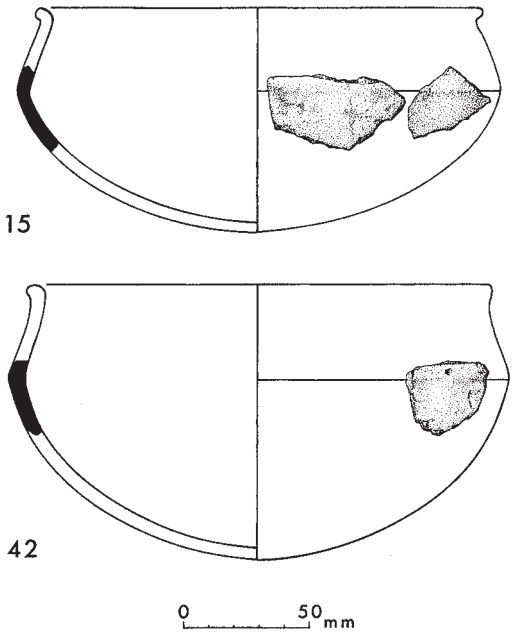
submitted for radiocarbon dating. All three were from the most pronounced burning layer within the pit, mentioned above; the samples chosen were hazel nutshell, birch charcoal and a grain of emmer wheat. They produced the respective calibrated ranges: 3770–3630 cal BC (AA-49639); 3790–3640 cal BC (AA-49640) and 3790–3620/3580–3530 cal BC (AA-49641).

F19 was a steep-sided pit measuring 1.1m in diameter and 0.7m deep, containing scorched and burnt soils indicative of in situ burning. The feature is remarkable for the substantial quantities of pottery that were recovered (c 1186g). At one point it would appear that the part-filled pit was almost completely lined with pottery prior to the setting of further fires (many of the sherds were heavily burned, like the hearth-bricks of a modern fireplace); the incompleteness of the pottery layer in the drawn section is rather misleading. Over 250 carbonized hazel nutshells were recovered, along with a small number of barley, emmer wheat and bread wheat grains. The charcoal from the pit was a mixture of birch, hazel and, predominantly, oak. Portions of 12 pots were found (P36–47). Sherds of P40 were found also in F13, close by to the northwest. Two hazel nutshells from the layer of burning on the pottery were radiocarbon-dated; the calibrated ranges were 3710–3620/3600–3520 cal BC (AA-49642) and 3940–3870/3810–3640 cal BC (AA-49643).

Sherds from vessels from both these features were also found in the post-pipes of structural postholes. Although there is no stratigraphic relationship and pottery from the structure could have found its way into the pits, or vice versa, that the pits lie within what seems to be the core space of the structure (see below) suggests that they were likely to have been used within the structure. Although both features may have functioned as hearths during their use, neither seems to have been dug primarily to provide a fireplace. In both cases the fires would have been burning well below ground level. The practicality of this has not been explored, but that there *were* fires appears to be an incontrovertible fact. One possibility is that the pits were for firing pottery; the presence of unfired potter's clay (Sheridan, immediately below) and the broken



ILLUS 13 Sections of the internal pits F15 and F19



ILLUS 14 Closed carinated bowls

pottery (wasters?) might support such an interpretation, although the firing of pots within a timber structure would surely have been problematic.

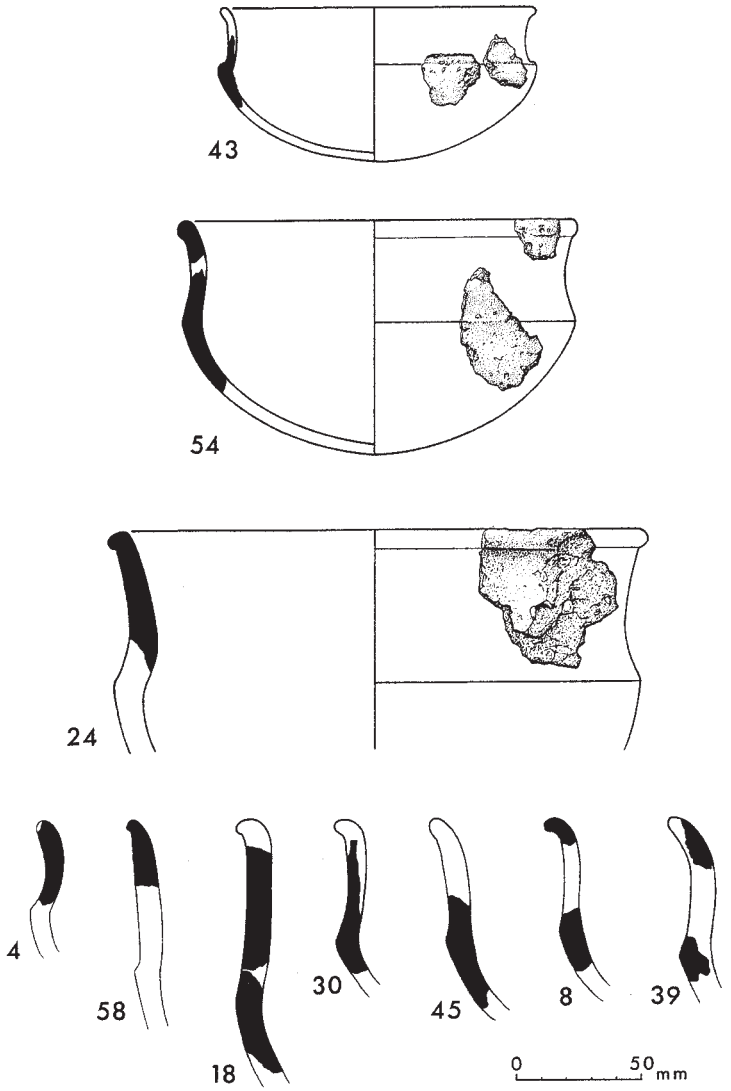
POTTERY AND OTHER CERAMIC FINDS

Alison Sheridan

INTRODUCTION

Some 2.66kg of pottery, representing the remains of between 60 and 68 pots, were recovered from various locations, mostly in the northern half of the structure. The vessels were substantially incomplete, and in most cases represented by just one or a few pieces; in no case was more than 15 per cent of a vessel present. Details of each identifiable pot are listed in the Appendix; no decorated sherds were found. The relative consistency in fabric and appearance of most of this assemblage accounts for the uncertainty in estimating the number of vessels present. Other ceramic finds comprised one lump of gritty daub (weighing 13.9g), found on the surface, and a lump of what may be unfired potter's clay (9g) from post-hole F20.

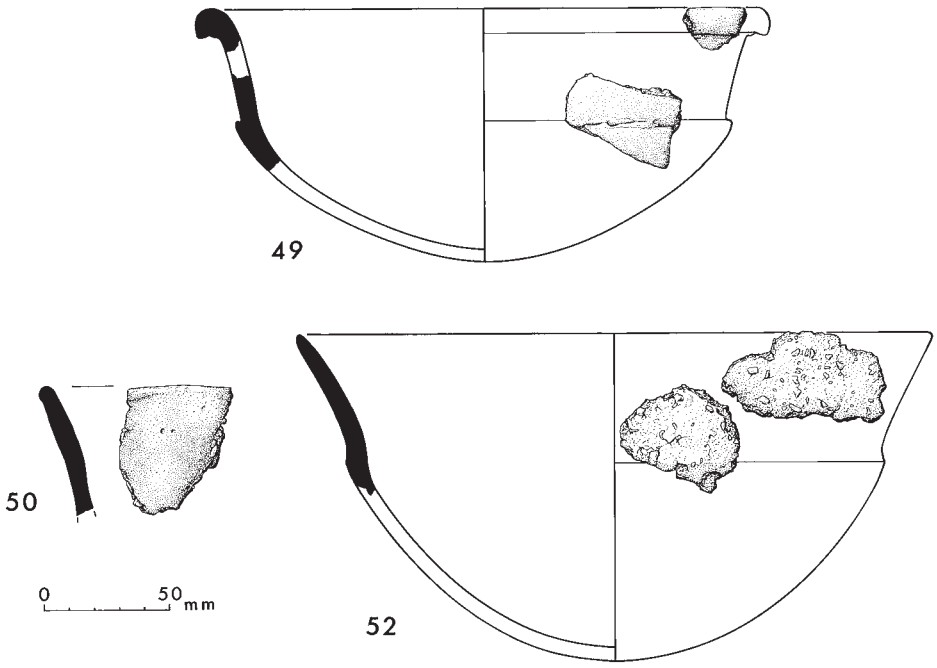
Almost half of the pottery by weight (1186g, representing parts of 12–13 pots) came from the central pit F19, where sherds from pots which had probably broken in situ had been used to line the pit. Smaller amounts of pottery were found in most of the other excavated internal features and in most of the wall post-holes. The sherds found in the post-holes were all from post-pipes rather than from primary post-packing, so they appear to have found their way into these locations after the posts had rotted. In one case (F8), where a post had been replaced after the original had burned down, one sherd from one pot (SF 114 from Pot 29) was found in the first post-pipe, sealed under a burnt layer, and further sherds (two of which may have been from the same pot, and the others from Pots 18 and 30) were found in the subsequent second post-pipe. The exterior pit F1 yielded parts of an unusual coarse vessel (Pot 1: illus 20), which contrasts in form and fabric with the pottery from all the other features, together with three small pieces of a second coarse pot.



ILLUS 15 'Neutral' carinated bowls

There appeared to be relatively little scattering of pieces from pots around the structure, and the distances involved are not great. Only three probable examples could be identified: pieces which probably all belong to Pot 18 (illus 15) were found in the second pit containing burnt deposits F15 and also in wall post-holes F6 and F8, while pieces from Pot 40 (illus 17) were found in the central pit F19 and in F13, and pieces which may all belong to Pot 49 (illus 16) were found in F15 and F17. The condition of the pottery varied, with 17 pots from various locations having abraded surfaces and with several of the pots in the pit F19 (Pots 36, 37, 42, 43 & 45) showing obvious signs of being burnt. Probable heat damage was also noted in three other pots from various locations.

With the marked exception of the material from the external pit F1, the assemblage appears to be relatively homogeneous in its style of manufacture (ie choice of raw materials, construction technique and surface treatment). There is indeed variation in the shapes, sizes and fineness of fabric among the



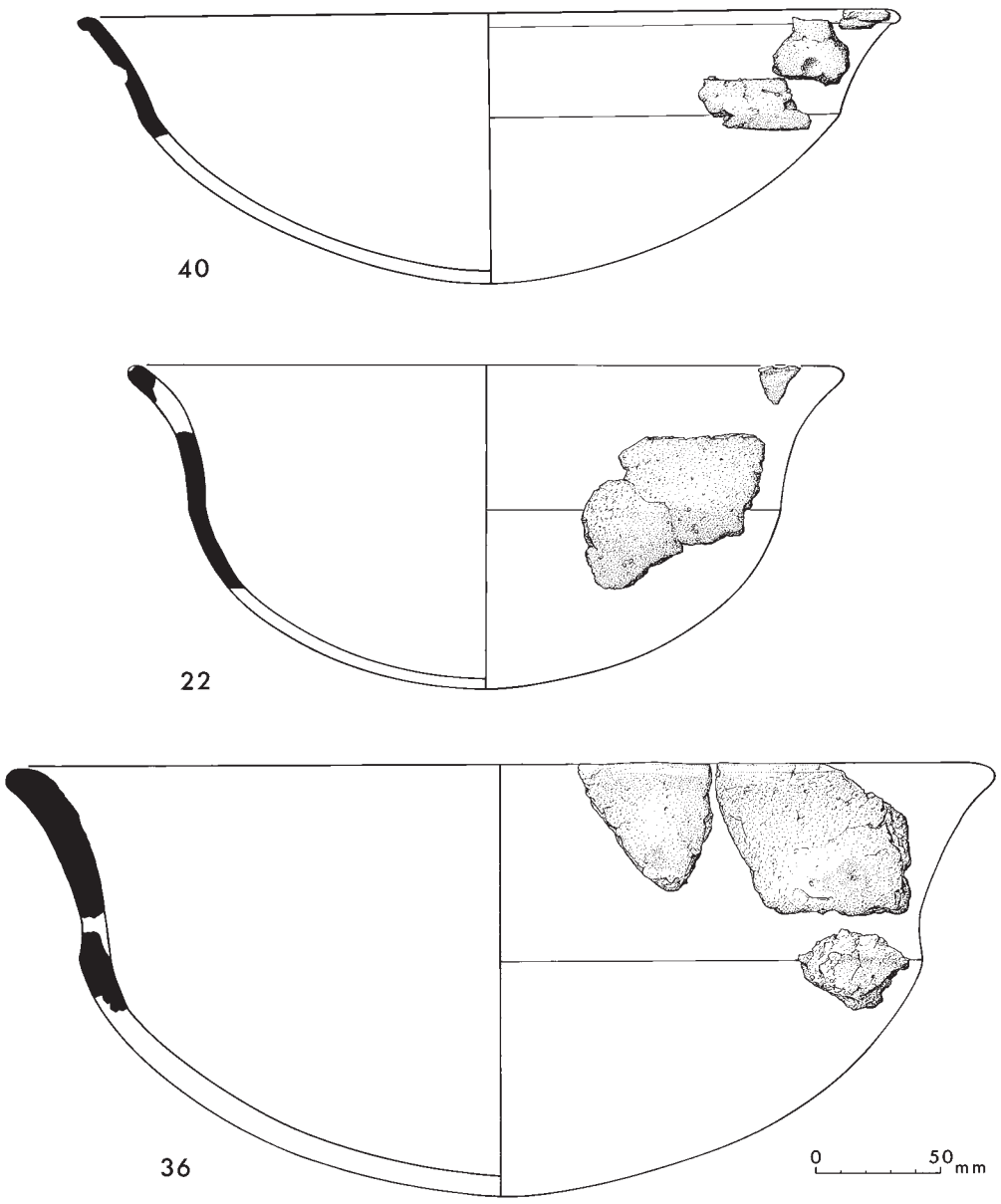
ILLUS 16 'Open' carinated bowls, with gently or more markedly splaying necks

pots, but they form part of a consistent assemblage, with no obvious groupings that might be taken as a sign of multi-period use (see below for discussion of dating).

Within the assumed population of ⩾60 vessels, some 49 can be classified as carinated bowls, and there are only three or four pots which are demonstrably not of this general form. Pot 1 (illus 20), from the external pit F1, is a large coarse pot, with a flattish rim and possibly bucket-shaped body. Pot 2 from the same feature is of similar fabric and may be a slightly thinner version of the same pot type, although it is represented only by featureless body sherds. Pot 11 (illus 19) is a simple open fineware bowl; and Pot 37 (illus 19) is a jar with upright, collar-like neck and sinuous upper belly. The remaining seven vessels are represented by featureless body sherds, most of which are of similar fabric and finish to the carinated bowls; the only possible exception is Pot 48 (not illustrated), a large, thick-walled (15.3mm), fairly coarse pot of indeterminate shape.

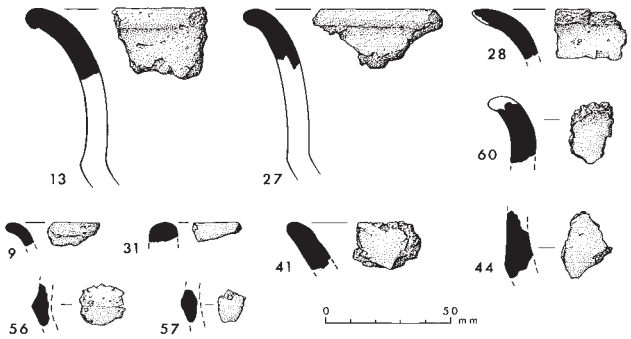
THE CARINATED BOWLS

These come in a variety of shapes, sizes and degree of fineness. The conjectural reconstructions presented in illus 14–18 are based on the profiles of feature sherds (ie rims, necks and carinations), together with diameter estimations. The bowl forms may be slightly closed (illus 14), neutral (illus 15) or open (illus 16 & 17) – in other words, the necks may be inturning, vertical or splaying – and the bellies may be deep (eg Pot 52: illus 16), medium (eg Pot 42: illus 14) or shallow (eg Pot 40: illus 17). Rims are generally simple and usually rounded and everted, occasionally rolled over; necks are straight, gently curved or (in a few cases) markedly curved; and carinations are usually gentle and sometimes barely perceptible. There are only a couple of sharply-defined carinations, with Pot 49 (illus 16) having a shoulder-like ledge. Pot 43 (illus 15) is the smallest carinated bowl, with a carination diameter of c 130mm and an estimated rim diameter of c 130mm. The largest, Pot 36 (illus 17), has an estimated rim diameter of c 400mm, and there are six other pots which have estimated (or extrapolated) rim diameters of 300mm or more (Pots 7, 13, 18, 27, 40 & 55). Wall thickness ranges from 4.1mm (Pot 28) to 13.8mm (Pot 58), and to some extent increases with the overall size of the pot, but there are some sizeable thin-walled pots. The thinnest-walled pot (Pot 28), for example, has a neck diameter of 200–220mm.



ILLUS 17 'Open' carinated bowls

The bowls all appear to have been coil-built, with the occasional breaks along horizontal coil joints confirming this. One pot (Pot 40) has, in addition to such breaks, a distinctive pattern of cracking and breaking that suggests that the clay had been slightly dry during manufacture. The fact that this pot must have started to crack during its use is indicated by an abortive post-firing repair borehole (illus 17): normally a pair of such holes would be drilled on either side of a crack, and a thread bound between them, but here the pot must have broken as the first hole was drilled. Parts of



ILLUS 18 Miscellaneous rim and carination sherds from carinated bowls

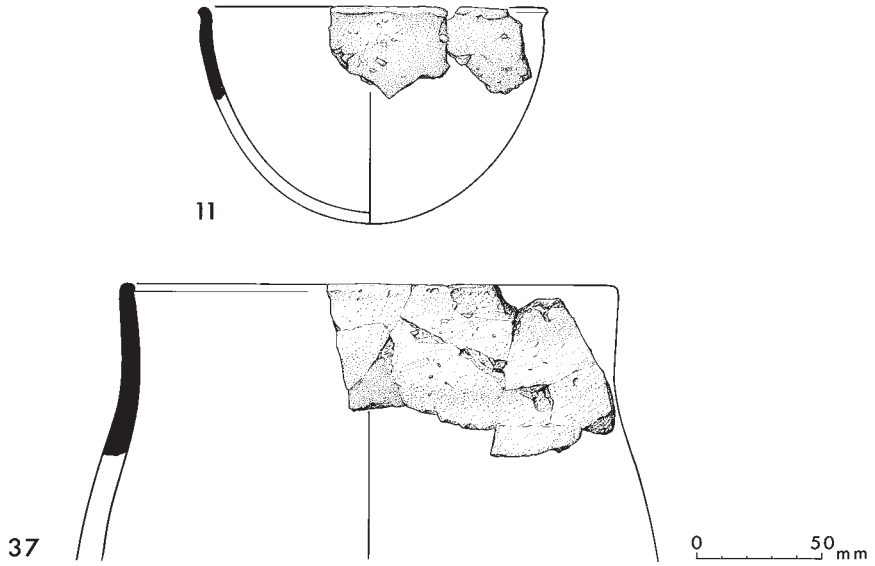
this pot ended in the phase of F19's use that saw the pit being lined with pottery, while other parts were found in F13.

Close attention had been paid to the surface finish of these bowls, irrespective of their size or fineness of fabric. All have carefully-smoothed exterior and interior surfaces, and most – if not all – appear to have been either slipped or wet-smoothed. Around two-thirds of these bowls had had their external (and, in many cases, internal) surfaces polished to a low or medium sheen, and in a few cases to a medium to high sheen; marks made by the polishing tool are occasionally visible. There are no examples of fingertip fluting or ripple burnishing.

Most of the carinated bowls are of a hard fabric. Some have hackly fractures and some have suffered spalling; in some cases, the latter is likely to relate to heat damage (see above). Tempering material, in the form of angular and sub-angular crushed grits, is present in all these vessels, in varying amounts: 24 of the 49 bowls have sparse tempering, constituting under 3 per cent of the fabric; 19 have medium amounts (3–10 per cent), and six have abundant grits (11–20 per cent; see Appendix for details). In most cases the grits are small (under 7mm in their maximum dimension); no bowl has grits consistently larger than this. The range of tempering material is remarkably narrow, with virtually every bowl containing a white mineral. This is suspected to be quartzite in most cases (and there are several instances of clear quartz being present as well); in 24 pots it occurs as an opaque white grit, accompanied with gold mica platelets or specks, and sometimes occurs as a speckled white and black grit. There are also occasional black mineral inclusions. It is likely that these white and black minerals and the mica all derive from a crystalline rock of local origin; this, together with the presence of a lump of probable potter's clay from F20, suggests that the pottery had been manufactured locally. Other kinds of stone inclusion are rare. There are also a few instances of accidental surface inclusion of organic material, which has burnt out (eg Pot 19). There is no example of a grain impression.

The colour of these pots varies within and between vessels, but in most cases there is a darkening of the fabric from the exterior to the interior, and sometimes a 'sandwich' effect with lighter surfaces and dark core. This is a very common feature noted on prehistoric pottery, and relates to the incomplete burning out of organic material in the clay during relatively rapid firing in an open bonfire (Haith 1997, 151; Varndell & Freestone 1997). Pots with darker interiors may well have been fired in an inverted position. The pots which had suffered post-firing heat damage are generally (but not always) of a lighter, variegated colour: Pot 36, for example, has areas of light orange-buff, pale grey and dark grey, varying over the surfaces and through the fabric.

Judging from the shape, size, condition and context of these pots, it is likely that they fulfilled a range of functions, from cooking to serving and storage. Those pots with black encrusted material on their interior and/or exterior surface (see Appendix for details) may have been used for cooking; this accounts for two of the pots from F15 and F19 and for a further 17 pots from elsewhere in the structure. That most sherds from F15 and F19 did not have this encrustation is worth noting.



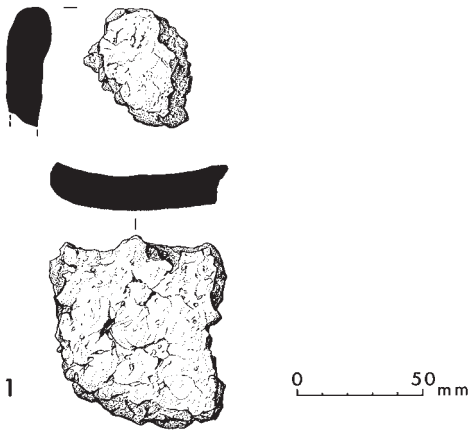
ILLUS 19 Plain bowl and jar with collar-like neck

THE OTHER POTTERY FOUND WITH THE CARINATED BOWLS

The small, uncarinated simple bowl, Pot 11 (illus 19), and the large jar with sinuous profile, Pot 37 (illus 19), are comparable in fabric and finish to the carinated bowls. Pot 37, from pit F19, has a relatively highly polished surface, with marks of the polisher clearly visible. The burning of pieces from this pot in the pit has created contrasting colours of sherds that conjoin. With these vessels, as with most of the pots of indeterminate shape, the types of grits present are the same as those seen in the carinated bowls. This is also partly true of the large, thick-walled, fairly coarse Pot 48, although it also contains large angular and rounded pieces of a different, dull grey stone, together with some soft buff-coloured grits as well. One sherd from this pot has a thin black encrustation on its interior and exterior surfaces, making it likely that this had been a cooking pot.

THE COARSE POTS FROM PIT F1

Pot 1 (illus 20) contrasts markedly with the rest of the assemblage, being a large, thick-walled (12–17mm) coarse pot with abundant large inclusions of a dark grey to blackish crystalline stone, up to 19.4 x 13.5mm in size and around 25 per cent in



ILLUS 20 Coarse pot from F1

density, as well as a rounded pebble of grey, quartzitic(?) stone. Some pieces of the crystalline stone contain mica platelets and/or the white mineral as noted above, so it may be that these grits are from a similar, locally available stone to those noted in other pots. As indicated above, its overall shape and size cannot be reconstructed, but the rim is thick, flattish and probably slightly inverted, and the body may have been bucket-shaped. There is abundant and thick black encrustation on the interior, extending up to just below the rim.

Pot 2 (not illustrated) is represented by only three small featureless body sherds, of similar appearance to those of Pot 1 but thinner (8.5–11mm). It is assumed that the wall thickness of Pot 1 would not have narrowed to this extent and that a second vessel is represented. These sherds have a thin black encrustation on their interior.

DISCUSSION OF THE POTTERY

With the exception of the material from pit F1, the Claish pottery is immediately recognizable as an early Neolithic 'Carinated Bowl' assemblage. The radiocarbon results confirm an early fourth millennium BC date for this assemblage, and also confirm its chronological – as well as stylistic – separation from the F1 material, which dates to the late second millennium BC. The latter can be left without further comment, other than to note that Pot 1, at least, may be comparable with the flattish-rimmed, bucket-shaped pottery of late second millennium date as seen, for example, at Duff House, Aberdeenshire (Eogan 1994).

Carinated Bowl pottery is remarkably widely distributed over Britain and Ireland. It is among the earliest pottery to be used on this side of the Channel or North Sea, appearing in many different areas around or shortly after 4000 BC, and it has been found in various contexts including pits, rectangular house structures (particularly in Ireland) and a variety of (initially) non-megalithic funerary monuments (for further details see Kinnes 1985, Herne 1988 and Armit et al 2003; and see Sheridan 1995 for an account of its subsequent development in Ireland).

Within Scotland, the closest comparanda for the Claish material include the following: the large assemblage (of c 200 pots) from Biggar Common, S Lanarkshire, and the smaller assemblage from Carwood Hill at the east end of Biggar Common (Sheridan 1997); the two pots from a pit at Carzield, Dumfries & Galloway (Sheridan 1993); the two pots from a pit at Newton, Islay (McCullagh 1989); and the gently-carinated bowl from the initial phase of Neolithic activity at the Cairnholy I, Dumfries & Galloway, funerary monument (Piggott & Powell 1949). Table 2 lists the radiocarbon dates relating to the Lanarkshire, Carzield and Newton material and shows their proximity to the Claish dates.

TABLE 2

Radiocarbon dates associated with close Scottish comparanda for the Claish pottery. Calibration: OxCal v3.5.

Findspot	Site type, context	Dated material (all burnt)	Date BP	Lab no	Date BC, 2σ
Biggar Common, S Lanarkshire	a) activity (just) prior to construction of non-megalithic funerary monument b) occupation area, pit fill	a i, ii) wood charcoal, mixed spp b) *malus sylvestris* wood charcoal	a i) 5250 ± 50 a ii) 5150 ± 70 b) 4880 ± 50	a i) GU-2985 a ii) GU-2986 b) GU-4276	a i) 4230–3960 a ii) 4220–3770 b) 3780–3530
Biggar Common East (Carwood Hill), S Lanarkshire	domestic, including probable cooking areas and structures	i) *corylus avellana* wood charcoal ii) *alnus* charcoal[1]	i) 4990 ± 110 ii) 4275 ± 70	i) GU-4279 ii) AA-18156	i) 4050–3500 ii) 3100–2620
Carzield, Dumfries & Galloway	pit containing burnt material	i) *corylus* nutshells ii) mostly *corylus* nutshells; small amounts *alnus, betula* & *corylus* wood	i) 5010 ± 70 ii) 4920 ± 110	i) Beta 68480 ii) Beta 68481	i) 3960–3660 ii) 4000–3350
Newton, Islay, Argyll & Bute	pit, probably hearth pit	*alnus, corylus* & *quercus* charcoal	4965 ± 60	GU-1952	3940–3640
Claish, Perthshire:	this article				
i) earliest date		i) *corylus* wood	i) 5000 ± 50	i) AA-49645	i) 3950–3660
ii) latest date		ii) *corylus* nutshell	ii) 4845 ± 40	ii) AA-49642	ii) 3710–3520

1 See *Discovery & Excavation in Scotland 1996,* 140 for other dates from this site

There are also numerous other parallels for the carinated and uncarinated bowl forms from the broader distribution area of Carinated Bowl pottery (see, for example, Newbigin 1937 for examples from Yorkshire, and Herne 1988 for a discussion of these and other Carinated Bowl assemblages). There are fewer parallels for Pot 37 – the vessel approaching a collared jar in shape – but examples are known from Carinated Bowl assemblages at Carzield (Sheridan 1993, fig 4) and Shane's Castle, Co Antrim (Sheridan 1985, fig 5.8), and also from the assemblage, discussed below, from Balbridie, Aberdeenshire (Cowie, in prep). Uncarinated forms are less common at Claish than at Biggar Common, and there are no cups at Claish.

Two obvious questions suggest themselves about the Claish material. First, what is the relationship between this pottery and the assemblage from Balbridie (Ralston 1982; 1984; Fairweather & Ralston 1993)? And second, does the Claish assemblage shed new light on the relationship between Carinated Bowl pottery and its possible Continental congeners?

In answer to the first question it should initially be made clear that the decorated closed bowls reminiscent of Unstan bowls (illustrated in Ralston 1982, fig 1) – wholly absent at Claish – are atypical of the rest of the Balbridie assemblage. The latter, while having many points of similarity with the Claish assemblage, also differs in key respects and is closer to the kind of Carinated Bowl assemblage that Audrey Henshall refers to as her 'north-east style' (Henshall 1984; cf Walker 1968; Henshall 1983). The Balbridie pottery is similar in its construction, fabric and finish – and indeed in some of its inclusions – to the Claish material, and it shares the simple rim forms and gentle carinations. As noted above, it also contains examples of jars with collar-like necks (Cowie, in prep, pots 6 & 17). However, it differs from Claish in having several vessels adorned with fingertip fluting (and, in one case, ripple burnishing – the same kind of elaboration, but involving a more highly polished surface). Furthermore, it includes a higher proportion and wider range of uncarinated vessels (including cups and a tiny container, around twice the size of a thimble) and some vessels have lugs (eg ibid, pots 7, 8, 51–4). Furthermore, at least two of the carinated bowls have decorative perforations below their rims – a feature also noted at Easterton of Roseisle, Moray (Henshall 1983, fig 3.19).

Table 3 lists those finds of this 'north-east style' pottery that have been associated with radiocarbon dates. It appears that the date range is closely comparable with that of the other dated Carinated Bowl assemblages. However, as the present author has previously discussed (Sheridan 1997, 219–20), the question remains as to whether the 'north-east style' represents an early regional development away from a 'classic' Carinated Bowl canon, or just a variant within that tradition. As the currently available dating evidence stands, it is impossible to prove the matter either way; indeed, both statements may be true to some extent. It is clear, for example, that some features of the 'north-east style' are not limited to north-east Scotland, but are shared among early Carinated Bowl assemblages over a wide area. Fingertip fluting has been noted on Carinated Bowl pottery from East Anglia (Fengate: Smith 1974), Yorkshire (eg Weaverthorpe XLII & Rudston LXI: Newbigin 1937), south-east Scotland (the Hirsel, Scottish Borders: unpublished) and Ireland (eg Ballynagilly, Co Tyrone & Shane's Castle, Co Antrim: Sheridan 1985, fig 5.12).

As for the second question – the relationship between Carinated Bowl pottery and its Continental counterparts – the Claish assemblage provides an important and reliably dated set of material that fits with a broader pattern. It confirms that this kind of pottery appeared relatively quickly (in radiocarbon terms) over wide parts of Britain and Ireland in the opening centuries of the fourth millennium BC. Inevitably, this poses the question of how and

TABLE 3

Dated examples of Henshall's 'north-east style' of Carinated Bowl pottery

Findspot	Site type, context	Dated material	Date BP	Lab no	Date BC, 2σ	Principal references
Balbridie, Aberdeenshire	Large timber structure (see discussion in text)	Burnt cereal grains:[1] i) bulk sample ii) *Avena* iii) *Linum usitatissimum* iv) *Malus sylvestris*	 i) 4745 ± 160 ii) 4820 ± 80 iii) 4940 ± 70 iv) 5010 ± 90	 i) GU-1421 ii) OxA-1767 iii) OxA-1768 iv) OxA-1769	 i) 3950–3000 ii) 3770–3370 iii) 3950–3630 iv) 3970–3640	Ralston 1982; 1984; Fairweather & Ralston 1993
Midtown of Pitglassie, Aberdeenshire	Non-megalithic funerary monument: contexts associated with its initial use	i & ii) Wood charcoal, *Fraxinus, Alnus, Betula, Fagus, Salix*	i) 4660 ± 50 ii) 4935 ± 105	i) GU-2049 ii) GU-2014	i) 3630–3350 ii) 4000–3500	Shepherd 1996
Boghead, Moray	Non-megalithic funerary monument: contexts associated with its initial use[2]	Wood charcoal: i) *Quercus* ii) *Quercus* iii) sp/p unspecified iv) sp/p unspecified v) *Quercus*	 i) 5031 ± 100 ii) 4950 ± 180 iii) 4898 ± 60 iv) 4959 ± 110 v) 4823 ± 60	 i) SRR-685 ii) SRR-683 iii) SRR-686 iv) SRR-689 v) SRR-684	 i) 4040–3640 ii) 4250–3350 iii) 3910–3520 iv) 3980–3520 v) 3720–3370	Burl 1984
Camster Long, Highland	Multi-phase chambered cairn: a) buried soil beneath long cairn; b) south-west forecourt	All charcoal/charcoal flecks, sp/p unspecified	a i) 4950 ± 80 a ii) 4915 ± 60 a iii) 4920 ± 125 b) 4780 ± 170	a i) GU-1707 a ii) GU-1708 a iii) GU-1709 b) GU-1706	a i) 3960–3630 a ii) 3940–3530 a iii) 4000–3350 b) 4000–3050	Masters 1997
Tulloch of Assery B, Highland	Chamber tomb with round cairn: dates cited are from burnt layer pre-dating construction of chamber & cairn, from which most of the pottery came[3]	i) charcoal, sp/p unspecified ii) animal bone	i) 4840 ± 65 ii) 4655 ± 60	i) GU-1339 ii) GU-1336	i) 3770–3380 ii) 3640–3130	Davidson & Henshall 1991; Sharples 1986

1 See Fairweather & Ralston 1993 for the dates obtained from wood charcoal
2 The anomalous and problematic dates from this context, 4124 ± 200 (SRR-688) and 6006 ± 60 (SRR-690), are omitted
3 The anomalous and problematic date from this context, 4095 ± 165 (GU-1335), is omitted
The slightly later and slightly different material from the Ord North chambered cairn (Sharples 1981) is excluded from consideration here.

why such pottery should have appeared in such a 'Diaspora'-like manner, and this in turn is linked to the question of how farming became established as a way of life on this side of the North Sea and the English Channel. There is a paradox, for while a degree of similarity with the Michelsberg pottery of the Netherlands and Belgium has long been acknowledged (eg Childe 1932a; Piggott 1932; Kinnes 1988), it has also long been argued (eg by Jacquetta Hawkes (quoted in Newbigin 1937) and more recently by Louwe Kooijmans 1976) that most Michelsberg pottery is too late to have been a prototype for the British and Irish pottery. Furthermore, precise Continental parallels for the whole of the British and Irish Carinated Bowl repertoire have remained elusive, even though individual elements – such as the (surely mis-dated) 'tulip beaker' from Auchategan, Argyll & Bute (Marshall 1978) and the globular collared jar-like vessels – are strongly reminiscent of Continental forms. Consequently, interpretation of the evidence in terms of the immigration of Continental farming groups has long been criticized (eg Kinnes 1988; Thomas 1991; 1999).

However, while exact counterparts or 'ancestral forms' continue to elude us, it is clear that there is still a lot more to be discovered about the ceramic repertoire (and general way of life) of late fifth-millennium communities between eastern Normandy and the Netherlands. A recent critique of the state of knowledge of the Belgian Middle Neolithic has concluded:

> The view on human prehistory in the Middle Neolithic of the Scheldt and Middle Meuse basins has long been chaotic. This is due to [there being] very little valuable data from excavations so far, generally not more than a few fragments of pottery and some flint artefacts from one or two refuse pits (Vanmontfort 2001, 139; cf Cauwe et al 2001).

Vanmontfort has identified a new regional grouping of pottery in this area, which he calls the 'Spiere group' and which is relatable to (but distinct from) Rhine Basin Michelsberg and northern Chassey/epi-Rössen pottery in north-east France. As with these other ceramic groupings, there are elements in Spiere group pottery that are reminiscent of Carinated Bowl features (eg carinated bowls themselves), together with other elements that are not seen on this side of the Channel. Vanmontfort's work serves to remind us that here, as in Normandy (where the increase of developer-funded and research-based excavations has substantially changed our understanding of Neolithic pottery over the past decade), the ceramic scene may well change with further new discoveries. Certainly, a fresh critical reappraisal of the Continental material is long overdue: the last serious attempt, by Alasdair Whittle, was a quarter of a century ago (Whittle 1977). As Vanmontfort has indicated (pers comm), close scrutiny of northern Chassey and Aisne Valley Michelsberg pottery may provide some further pointers towards (or indeed away from) our hypothetical area(s) of origin.

STRUCK LITHIC ARTEFACTS

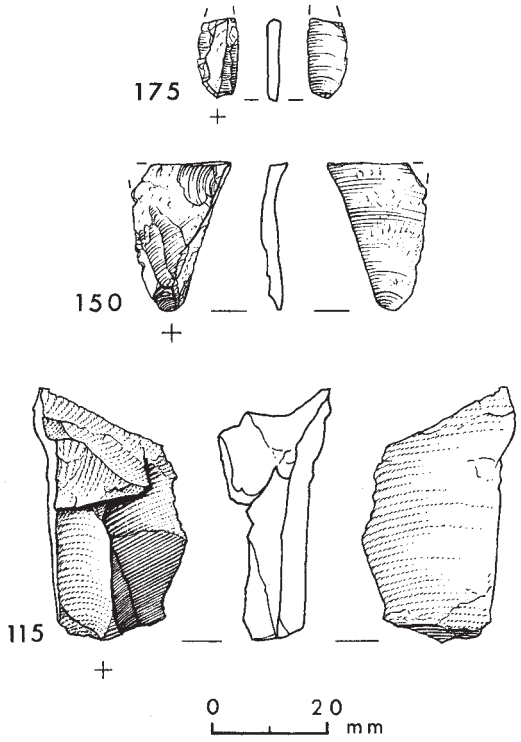
A Saville

DESCRIPTION

Only seven of the 15 pieces of potentially flaked stone were judged to be worked, as summarized in Table 4. Of the two unretouched quartz flakes, one (SF172) is a tiny broken spall, the other (SF50) is a

TABLE 4
Typology & raw material of struck artefacts

	White Quartz	Grey Quartzite	Pitchstone	?Flint	Totals
Unretouched flakes	2	1	1	1	5
?Core fragment	1	–	–	–	1
Retouched flake	–	–	1	–	1
Totals	3	1	2	1	7



ILLUS 21 Struck stone

primary flake from a smooth-surfaced pebble. The possible core fragment (SF139) is broken and it is not entirely clear if this is part of a bipolar anvil-struck core or a scalar flake from such a core. Quartzite is a relatively unusual raw material for deliberate knapping, but that has undoubtedly been the case with one flake (SF115: illus 21), which apart from a clearly defined striking platform and bulb of percussion, bears clear traces of previous flaking on its dorsal surface. The piece listed as flint is a tiny fragment of a small flake (SF174) and is so small and discoloured that it is not possible to be certain it is flint, rather than chalcedony or similar.

The two pitchstone pieces are very different from each other in colour. The unretouched flake (SF150: illus 21) is a near complete plunging flake of green-grey pitchstone, while the retouched flake (SF175: illus 21) is a small blade of dark grey/black pitchstone. The latter has inverse trimming on one edge below the absent distal tip, and the possible beginning of trimming on the opposite edge dorsally. The ventral surface of this blade is markedly scratched and striated.

All the struck pieces derive from the fill of features. Two are from pits: SF50 from F15 and SF174 from the possibly later F1, while the others are from post-holes of the east wall (SF115 (F8), SF172 (F6), SF175 (F4)) and from the interior (SF139 (F27), SF150 (F36)).

DISCUSSION OF THE STRUCK LITHIC ARTEFACTS

None of these struck lithic artefacts is inherently diagnostic as to period in terms of its typology, and by default there is therefore no reason why they should not be contemporary with the structure and its associated pottery. This is, however, a rather odd assemblage. The lack of flint (and chert) is notable, as is the presence of two pieces of pitchstone in such a small collection. Although the two pieces of pitchstone are visually very different and obviously derive from different cores, neither of which is present, they are not outwith the normal range of such raw material, almost certainly derived ultimately from the island of Arran (Williams Thorpe & Thorpe 1984).

The occurrence of single or small numbers of pitchstone flakes on Neolithic sites in Scotland is actually not uncommon, even as far north as Orkney (Richards 1992). The discovery of over 500 pieces of pitchstone on the Neolithic site of Ballygalley, Co Antrim, Northern Ireland, is quite exceptional in this regard (Simpson & Meighan 1999) and so far has no parallel for pitchstone use on this scale within Scotland, outside of Arran itself. Pitchstone, except when freshly struck, is not a particularly desirable raw material in purely functional terms, at least in comparison to flint, it is therefore often assumed that its presence can be better explained by virtue of its exotic, and thus perhaps prestigious, character (Saville 1994, 62). Otherwise the raw material at Claish, except the probable flint flake, is of local origin and presumably readily available.

As well as the raw material being odd, so is the fact that so few pieces were found in and around a structure that has produced a relative

abundance of pottery fragments. It might be that the production of struck stone was kept well away from the structure; or that the structure had a particular function which did not generally require the use of flaked stone artefacts within it. In other contexts, for example in the TRB-Culture of northern Europe, this absence of lithic debris would lead towards interpretation of the structure as a 'cult house' rather than anything domestic (Andersen 2000).

In fact, however, the situation at Claish is symptomatic of an apparently recurrent absence on Scottish Neolithic sites of regular assemblages of struck lithic artefacts. The low ratio of struck lithic artefacts to pottery sherds seems in marked contrast to the normal situation on Neolithic sites elsewhere in the British Isles. This contrast cannot be understood in terms of the relative absence of suitable raw material, since the same contrast does not occur in the Mesolithic period, and it remains a problem for Scottish Neolithic studies.

PLANT MACROFOSSILS

J Miller & S Ramsay

Plant remains pertaining to the site construction and occupation were collected from many features including post-holes and pits. The excavators have noted that virtually all the carbonized material was recovered from secondary contexts – mainly from the fills of post-pipes. The material therefore probably represents either floor deposits or structural elements finding their way into the spaces left by rotten posts, or in situ carbonized structural elements. The soil was free-draining, indicating that uncarbonized plant macrofossils from the site were unlikely to have survived. Consequently, bulk soil samples were floated for the retrieval of carbonized plant macrofossils, before laboratory analysis. Charcoal identification was facilitated by the photographs and descriptions in Schweingruber (1990). Cereals and other macrofossils were identified using Jacomet (1987) and Beijerinck (1947) respectively, and the extensive modern botanical reference collection at the University of Glasgow. Plant nomenclature follows Stace (1997) with the exception of cereals that conform to the genetic classification adopted by Zohary and Hopf (1993).

RESULTS

The results are discussed by group, as set out in the site description above.

Group 1: features outwith the structure to the north (F1, F24)

The charcoal assemblage from samples taken from F1 consisted of alder (*Alnus*), birch (*Betula*), hazel (*Corylus*), Maloideae (apple type), oak (*Quercus*) and willow (*Salix*). There are a few cereals, including one six-row, probably hulled, barley (*Hordeum vulgare* cf var *vulgare*) and some hazel (*Corylus avellana*) nutshell fragments. This deposit may be the product of more than one episode of burning. The non-food remains may include hearth deposits; these and the food remains may reflect either casual or more structured deposition. Material from F24 consisted of scant oak charcoal only.

Group 2: the north terminal (F20, F21, F22, F37, F35, F2)

Charcoal from these features was mainly oak, probably residual from the post uprights. Rare, tiny fragments of alder, birch, willow and (more frequently) hazel may have origins as floor sweepings from a hearth, although the hazel in particular might reflect the use of wattle screens. The assemblage has certain affinities with the burnt deposits in pit F1, suggesting a possible common origin, although the later radiocarbon date F1 casts doubt on this. Slot F35 contained only hazel and oak, which may be evidence of wattle between structural oak timbers. Hazel nutshell was recovered from most samples in this group, although only in small quantities indicative of general occupation scatter.

Group 3: the side walls (F3, F4, F5, F6, F7, F8, F9, F16, F23, F26)

As with group 2 post-holes, oak was predominant in group 3 and probably represents structural remains. Birch, hazel and occasional willow in the north-east post-holes may have been part of wattling, although they could just as well have been in redeposited fuel waste or floor clearance. Carbonized hazel nutshell was present in some abundance

TABLE 5

Carbonized wood and nutshell, by context

Context	Sample	*Alnus*	*Betula*	*Corylus*	*Corylus nutshell*	*Quercus*	*Salix*	Bark (nc)
001	015		1 (0.05g)	6 (0.7g)		23 (0.4g)	1 (<0.05g)	
001	016			5 (1.5g)		12 (6.3g)		
001	017			3 (1.1g)	1 (<0.05g)	10 (0.45g)		
002	073					8 (0.2g)		
002	087					1 (0.9g)		
002	089					>20 (2.2g)		
002	096					2 (4.2g)		
003	072					1 (0.1g)		
003	092					>20 (1.0g)		
004	021					1 (0.3g)		
004	025		1 (1.2g)			>30 (2.3g)		
004	046					10 (2.9g)		
004	047			3 (1.3g)				
004	048					>30 (0.5g)		
004	052					13 (0.95g)	1 (0.25g)	
004	054					>50 (3.1g)		
004	112					1 (0.75g)		
005	008				3 (0.2g)			
005	042					4 (0.5g)		
005	044				1 (0.2g)			
005	045					10 (1.2g)		
005	113			1 (0.1g)		3 (0.8g)		
005	115					3 (0.45g)		
006	012			1 (0.9g)				
006	013				1 (<0.05g)	24 (1.0g)		
006	014					>30 (0.7g)		
007	114					2 (0.4g)		
008	026					7 (0.7g)		
008	029					6 (1.0g)		
008	043					3 (1.8g)		
009	011					1 (0.1g)		
009	023							
013	022					>100 (38.8g)		
014	041	1 (0.2g)						
014C	074					>20 (0.6g)		
015	009				22 (1.2g)			2 (0.6g)
015	020		1 (2.7g)					
015	030				1 (0.3g) whole nut			
015	031					4 (2.9g)		
015	040				7 (0.1g)			
016	111					4 (<0.05g)		
017	055					13 (2.2g)		
017	110							
017	116							
017	117							
019	051				2 (0.3g)			
019	056		12 (0.6g)					
019	098					2 (2.4g)		
020A	070					15 (<0.05g)		
020A	088					5 (0.6g)		
020A	093					>20 (3.2g)		
021	090					20 (0.2g)		
026	091					11 (<0.05g)		
027	049				3 (0.25g)			
028	053				1 (0.35g)			
030	099					>50 (7.5g)		
032	071					>50 (12.2g)		
032	094					>20 (2.0g)		
032	095					>50 (6.0g)		
032	097				2 (0.1g)			
033	077					1 (3.5g)		

TABLE 6
Plant remains

	Context No	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**13**	**14**	**15**	**16**	**17**
	Number of samples	3	2	2	2	1	1	3	3	2	4	2	4	1	3
Taxon	**Common Name**														
Charcoal															
Alnus	alder	7 (0.85g)								1 (<0.05g)					
Betula	birch	4 (0.45g)		2 (0.05g)	4 (0.15g)	4 (0.2g)		5 (0.5g)	2 (<0.05g)	7 (0.5g)			21 (2.3g)		
cf *Betula* bark	cf birch bark												2 (0.95g)		
Corylus	hazel	20 (2.35g)	1 (0.15g)	1 (0.1g)	8 (0.45g)	1 (<0.05g)		4 (0.5g)	1 (0.15g)				8 (0.95g)		
Maloideae	apple/rowan type	1 (0.1g)													
Quercus	oak	21 (2.5g)	39 (0.6g)	37 (1.0g)	26 (1.0g)	14 (0.7g)	20 (0.35g)	49 (2.55g)	57 (2.6g)	32 (1.55g)	66 (1.35g)	32 (0.45g)	43 (5.25g)	17 (0.3g)	60 (6.6g)
Salix	willow	6 (0.7g)			2 (0.05g)	1 (0.2g)		2 (0.05g)					3 (0.2g)	3 (0.1g)	
Total carbonized material		190ml	35ml	65ml	125ml	70ml	20ml	300ml	225ml	100ml	150ml	20ml	210ml	50ml	100ml
Cereals & food plants (c)															
Hordeum vulgare cf var *vulgare*	hulled six-row barley	1													
Hordeum vulgare sl	six-row barley												6		1
Triticum aestivum ss	bread wheat												2		
Triticum dicoccum	emmer wheat					1							11		
Triticum cf dicoccum	cf emmer wheat												2		
Triticum sp	wheat												4		
cf *Triticum* sp	cf wheat										1		2		
Indet cereals	indet cereals	4											45		
Corylus avellana nutshell	hazel nutshell	12 (0.6g)	1 (0.05g)	14 (0.3g)	17 (0.4g)	23 (0.6g)	5 (0.1g)	59 (1.8g)	10 (0.3g)	12 (0.25g)	48 (0.7g)	23 (0.8g)	>300(11.1g)		5 (0.2g)
Malus sylvestris fruit	crab apple fruit												1		
cf Malus sylvestris fruit frags	crab apple fruit frags												5		
Malus sylvestris seed	crab apple seed												1		

TABLE 6 (continued)

Plant remains

	Context No	19	20	21	22	23	24	26	27	30	31	33	35	36	37
	Number of samples	4	3	2	1	1	1	1	1	1	3	1	1	1	1
Taxon	**Common Name**														
Charcoal															
Alnus	alder		1 (<0.05g)	1 (<0.05g)				1 (0.1g)							
Betula	birch	14 (0.7g)	2 (0.05g)	2 (0.1g)					1 (<0.05g)		2 (<0.05g)				
cf *Betula* bark	cf birch bark														
Corylus	hazel	17 (1.25g)	1 (<0.05g)	3 (0.2g)						2 (0.15g)	1 (<0.05g)		2 (<0.05g)	1 (<0.05g)	3 (0.2g)
Maloideae	apple/rowan type														
Quercus	oak	33 (3.15g)	38 (0.6g)	34 (6.4g)	19 (0.5g)	20 (0.15g)	5 (<0.05g)	20 (0.15g)	5 (<0.05g)	17 (2.3g)	53 (2.8g)	20 (0.7g)	10 (0.05g)	2 (<0.05g)	17 (0.25g)
Salix	willow		1 (<0.05g)	1 (0.05g)							4 (0.05g)				
Total carbonized material		185ml	80ml	275ml	15ml	5ml	<5ml	5ml	10ml	50ml	110ml	25ml	<5ml	<5ml	15ml
Cereals & food plants (c)															
Hordeum vulgare cf var *vulgare*	hulled six-row barley														
Hordeum vulgare sl	six-row barley	4													
Triticum aestivum ss	bread wheat														
Triticum dicoccum	emmer wheat	4													
Triticum cf dicoccum	cf emmer wheat	1													
Triticum sp	wheat														
cf *Triticum* sp	cf wheat														
Indet cereals	indet cereals	11													
Corylus avellana nutshell	hazel nutshell	>250 (12.3g)	5 (0.15g)	4 (0.4g)	2 (0.1g)			5 (0.2g)	7 (0.2g)		27 (0.7g)		2 (0.1g)		6 (0.15g)
Malus sylvestris fruit	crab apple fruit														
cf Malus sylvestris fruit frags	crab apple fruit frags														
Malus sylvestris seed	crab apple seed														

in many samples. Both F16 and F23, in the south-west part of the structure, contained primarily oak charcoal, and indeed F23 contained nothing but oak. This is strong evidence towards the structural significance of this find. The absence of hazel nutshell in both of these features contrasts with more northerly post-holes of the eastern wall. As the hazel nutshell, indeed virtually all the carbonized material, in post-holes comes from post-pipe fills the differences are likely to be caused by differences in the distribution of material on the surface at the time of the destruction of the structure. Unsurprisingly, the F26 assemblage on the south-east side has more in common with F16 and F23 than the finds from F3–F9 further to the north.

Group 4: internal structural features

The internal structural features are considered in two parts, northern (F13, F14, F17/18, F31, F33) and southern. Charcoal from post-holes F13, F17/18, F33 and slot F14 consisted almost entirely of oak, giving clear evidence of structural features burnt in situ. Hazel nutshell fragments and two cereal grains, a six-row barley and a possible wheat (cf *Triticum*), can be interpreted as loss from the events relating to F15 and F19. The charcoal assemblage from fills of F31 contained birch, hazel and willow, although oak was still predominant. This mixed deposit is similar to other post-hole fills from the north and north-east of the structure.

Of the southern features (F27, F30, F36) charcoal from F36 was scant although in keeping with the finds from the northern members of group 4 that were deemed structural. In this case hazel and oak were identified, although little can be interpreted confidently from such small amounts of charcoal. Finds from the fill of post-hole F30 were more prolific, giving a clear indication of an oak upright burnt in situ. Rare hazel and alder fragments may have derived from wattle and/or fuel waste.

Group 5: pits with burnt deposits (F15, F19)

Both pits showed clear signs of repeated burning but F15 in particular seems likely to have had an earlier use for deliberate deposition. Both are equally interesting, albeit for different reasons. Pit F15 contained seven fills, of which four (007, 010, 019, 028) were examined for carbonized remains. The upper fill (007) contained significant charcoal, including bark, of birch, an excellent fuel choice, as the high tar content of the wood means it burns well with a hot flame; it may have been collected selectively for this purpose. Bark is a very unusual find in archaeological hearth contexts, especially in such large fragments. The birch bark found was in large pieces, and could conceivably originally have been part of a bucket or container, although, given that the main charcoal component was also birch, this is perhaps unlikely. Fill 007 also contained abundant nutshell and two cereal grains, including one emmer wheat, although the lower pit fills were far richer in this latter respect.

The charcoal-rich fill (010) from lower in the feature also contained birch charcoal, although no bark, with small quantities of oak and willow. Together with hazel from fill 007, this assemblage indicates that fuel was collected from local open woodland sources, possibly incorporating oak construction waste or windfall deadwood. However, deliberate selection of oak for fuel cannot be ruled out, especially as several samples from pits F15 and F19 contain as much if not more oak than other taxa. Fill 010 also contained several cereals, including four emmer grains, and quantities of hazel nutshell.

Fills 019 and 028 of F15 were particularly significant, containing the greatest number of cereals from the site, as well as the only evidence of crab apple (*Malus sylvestris*). Their presence in a fill with cereals and abundant hazelnuts is very interesting. In this respect the findings from Claish mirror the discoveries from Balbridie (Fairweather & Ralston 1993).

Preservation of cereals was not good; only 40 grains could be confidently identified. The most frequently identified cereal was emmer wheat (*Triticum dicoccum*), with lesser quantities of six-row barley, and rare bread wheat (*T aestivum ss*). Importantly, no seeds of arable weeds were recovered, indicating that the cereals were from cleaned crops.

Pit F19 contained the only evidence from the site of burnt seeds of wild plants, other than the random incorporation of an occasional grass seed; several seeds of brown/oval sedge (*Carex disticha/ovalis*), tawny sedge (*C hostiana*), cf creeping buttercup (*Ranunculus* cf *repens*) and a violet (*Viola*) seed were recovered, indicating a more significant event. Apart from crab apple (absent from F19) the

carbonized assemblage was similar to that of F15 in all respects.

DISCUSSION OF THE PALAEOENVIRONMENTAL RESULTS

The charcoal assemblage

Oak (*Quercus*) charcoal was retrieved from every context examined, making it by far the predominant wood type. Fills of post-holes provide clear evidence for the burning of a structure built of oak uprights. Oak charcoal was also recovered from pits F15 and F19. Although oak would have been the dominant taxon in lowland broadleaf woodland in Neolithic times, such specificity of use, at least in construction, indicates deliberate selection, whether for reasons of durability and strength or for other, less pragmatic, significance. Oak is the timber of choice in the construction of monuments of both early and late Neolithic in lowland Scotland (eg Mills 1991) and it has been suggested (Thomas 1991) that the burning of these oak-built structures in the Neolithic of lowland Scotland (in some cases certainly deliberately: eg Inchtuthil, Barclay & Maxwell 1991) was the norm.

Remains of hazel (*Corylus*) were also prolific at Claish, both in the form of roundwood charcoal and nutshell fragments (for the latter see below). Much of the hazel roundwood is likely to represent wattle from internal partitioning, although some may have been used as fuel.

Other tree taxa represented in samples from the site include birch (*Betula*), willow (*Salix*), alder (*Alnus*) and apple type (Maloideae), present in descending order of abundance. Birch and willow may have been incorporated into wattle but are also likely to have been used as fuel, together with alder and apple type wood. Birch bark in pit F15 may have come from fuel or could have been part of a container, perhaps for cereals or hazelnuts. Apple type includes rowan (*Sorbus aucuparia*) and hawthorn (*Crateagus monogyna*), both of which also have their own ritual significance, at least in documented history (eg Mabey 1996), although small fragments of them cannot be separated confidently on the basis of their wood anatomy alone. Taken together, this entire charcoal assemblage indicates the collection of wood for construction and fuel from a native, mixed-deciduous, open-canopy woodland of the type characteristic of lowland Scotland in the Neolithic period.

The cereal assemblage

Of the 40 cereal grains identified to species, the ratio of wheat to barley was 7:3, emmer wheat (*Triticum dicoccum*) being the most frequently identified cereal. Smaller quantities of six-row barley (*Hordeum vulgare sl*), and a little bread wheat (*T aestivum ss*) were also identified. This is most unusual for a Scottish site, but is comparable to the material found at Balbridie, although at that site more than 20,000 grains were recovered (Fairweather & Ralston 1993, 316).

The presence of bread wheat is very interesting. Although extremely rare at Claish, this cereal was found in some abundance at Balbridie. Bread wheat is very rare in the Scottish prehistoric record, although abundant in Germany and Denmark for the period (van Zeist 1968; Dickson & Dickson 2000, 67). Wheat may have been a greater component of arable agricultural practice in Scotland in the Neolithic than has been previously recognized. However, it may never have been the dominant cereal type and the significant presence recorded at Claish and Balbridie may be related more to the status and function of these sites.

Carbonized seeds of arable weeds were extremely rare at Claish, indicating that the cereals were entirely cleaned before combustion. The one exception to the general lack of crop weeds was pit F19. However, the seeds found, sedges (*Carex*), buttercup (*Ranunculus*) and violet (*Viola*), are characteristic of wetter ground, perhaps less likely to have been

cultivated for cereals, especially for a wheat crop. Consequently this may suggest intentional incorporation, perhaps as a layer on to which burnt remains were deposited. The dearth of crop-processing waste was also noted at Balbridie (Fairweather & Ralston 1993, 317) and must be considered significant in the interpretation of the sites: there appears to have been no crop-processing within or in the immediate vicinity of the structure.

Other food remains

The only other food-plant remains identified from Claish were carbonized hazel (*Corylus avellana*) nutshell fragments and seeds, endocarp and fruit fragments of crab apple (*Malus sylvestris*). Carbonized hazel nutshells were recovered from the majority of samples examined, and must represent an abundantly used resource, whether in a ritual or domestic context. Small fragments would have been easily scattered underfoot from where they were burned, especially if several people were moving through the structure. As has been noted above, most of the carbonized material was found in post-pipes and it is consequently likely that the presence of nutshell in post-hole fills was accidental.

While hazel nutshells were ubiquitous, crab apple was identified only in F15. Unlike hazelnuts, which are well documented as a food source in prehistoric times, the remains of crab apple, especially fruit fragments, from this period are less frequently encountered. However, crab apple remains from Balbridie (Fairweather & Ralston 1993, 320) indicate that this valuable food resource was being exploited during this period. There are also finds from the later Neolithic, from Skara Brae, Orkney (Dickson & Dickson 2000), Balfarg Riding School, Fife (Barclay & Russell-White 1993, 93) and the Grooved Ware pit at Littleour, Perth & Kinross (Barclay & Maxwell 1998, 58). Ralston (pers comm) notes the absence from Claish of flax and berries (eg cranberry), both found at Balbridie.

Spatial differences within the site

There were differences in the carbonized assemblage in the various parts of the site. Despite the difference in date, the external pits (F1, F24) had much in common with the fills of the post-holes in the north-east part of the structure. The fills of the wall post-holes to the south-west and south-east were more structural in composition, and consequently more akin to fills of the internal post-holes in the central and southern part of the structure. These post-holes are close to the two central pits F15 and F19, both of which contained abundant evidence of fire waste and the scarcity of fire waste in these post-holes implies that the area must have been kept relatively clean, as any significant fire remains on the floor surface would have tended to trickle down into post-holes. The two central pits contained most of the cereals found on the site; but it is not possible to determine their precise function or significance solely on the palaeoenvironmental evidence.

CONCLUSIONS

The carbonized assemblage from the Claish timber structure bears such striking similarities to that from Balbridie that it tends to confirm the common architectural and social origins implied by the structural evidence. The presence together of hazel nutshells, bread wheat, emmer wheat, barley and crab apple point towards a varied diet of both gathered and cultivated food plants. However, Jones (2000) has set out the reasons why hazel nutshells will survive in far greater numbers than cereal grains and no conclusion can therefore be drawn about their relative dietary importance.

THE MAMMAL BONE

C Smith

Samples of bone were recovered from a number of hand-excavated contexts as well as from sieved soil samples. All of the bone fragments were examined using a binocular microscope. The fragments were

small in size, and all had been calcined by heat, which probably contributed favourably to their preservation. Unburnt bone did not survive at the site. The bone fragments were considered to be of animal, rather than human origin.

RESULTS

The majority of the bone fragments were very small and lacking in diagnostic characteristics, thus proving impossible to identify to species level (see the catalogue of animal remains in the site archive). These fragments could only be described as 'indeterminate mammal'. However, bones which probably came from pig, cattle and red deer were thought to be present, all recovered from the hand-excavated contexts.

Two bones thought to have come from pig were recovered from the upper fills of F17 (ie probably in floor deposits surviving in the top of the pit). These were the distal part of a third phalange and proximal part of a second phalange. Both of these bones are located in the animal's foot. Because of the small size and relatively poor condition of the fragments, and taking into account the shrinkage in mass caused by exposure to high temperature, the identification of the second phalange is slightly tentative. However, given that it was found in association with another bone from a pig foot of which the identity is more certain, it is most likely that both bones are from this species and probably the same individual. Whether the pig was the domesticated variety or the wild boar (both *Sus scrofa*) is impossible to say.

Two fragments from F36 (find no 151) probably came from red deer (*Cervus elaphus*). Both pieces originated from the metatarsal (hind cannon-bone) and consisted of fragments of the anterior part of the shaft, bearing the characteristic longitudinal groove. In red deer, as in the specimens from Claish, this groove is deeper than the corresponding feature in cattle. Although the Claish fragments did not conjoin, they are likely to have come from the same metatarsal and therefore the same animal.

Finally, a pisiform sesamoid, part of the carpal row of the front limb (corresponding to the human wrist), was recorded in F29 (find no 136). Somewhat problematically, this sesamoid did not entirely match the morphology of the modern Chilingham cattle bone used for comparison. It was also smaller than the modern comparative material. However, the bone was thought to be more dissimilar to deer species than it was to cattle. The amount of shrinkage in the bone caused by high temperature and subsequent loss of organic material cannot be known in this case, but experiments have shown that 5 per cent of the size and as much as 50 per cent of the weight of a cremated bone may be lost (von den Driesch 1976, 3). Thus the sesamoid from Claish may have come from a domesticated cattle breed.

DISCUSSION OF THE MAMMAL BONE

Uncertainties in identifying the bones to species level was mainly due to the small size of the surviving fragments and the shrinkage in mass caused by burning. As at the timber structure at Balbridie there was no evidence that unburnt bone had survived at the site (Ralston 1982, 240; Fairweather & Ralston 1993, 316). Experimental work involving the cremation of animal and human bones in furnaces and crematoria have shown that temperatures of over 645^0C are required to produce the white colour observed in the calcined bones from Claish (Mays 1998, 207–9). Such temperatures are readily achieved in a brightly burning open fire.

The range of species tentatively identified at Claish indicates that both pastoral farming and hunting were involved in providing food for the site's occupants. Although more substantial assemblages of animal bones have been recorded at sites in the Northern Isles, for example at Knap of Howar, Papa Westray (Noddle 1983, 92–100), there is little direct evidence of Neolithic animal husbandry for mainland Scotland. At Knap of Howar there was evidence that domesticated cattle, sheep and pigs had all been kept, providing the bulk of the meat consumed there, while wild deer contributed only a small proportion to the diet. With such a small sample of identified bones from Claish, it is impossible to draw any conclusions other than that domesticated cattle were probably reared and their meat eaten, and pigs, whether wild or domesticated,

were also eaten, as they were elsewhere in Scotland at this period.

RADIOCARBON DATING

G J Barclay, K Brophy & G MacGregor

Thirteen samples were submitted for radiocarbon dating. All were single entities and all but one were from bulk samples. The materials fall into two main categories: nuts/cereals and charcoal. The former comprised hazel nutshells from post-pipes and from the two pits containing burnt deposits (F15 & F19) and a single emmer wheat grain from F15. The charcoal was oak (from F14, a slot), hazel (F1 to the north of the structure; F30) and birch (F15). Table 7 and illus 22 summarize the results. The date from the sample from F1 (AA-49634) is significantly later than the rest of the series and may reflect either later disturbance to the feature, or the late date of the whole feature and its fill, possibly associated with the palisaded enclosures immediately to the north. The ceramic evidence suggests the latter.

The 2 sigma calibrated ranges from the nuts and cereal remains indicate that they probably died in the period 3800–3500 cal BC. The three dates from charcoal produced calibrated ranges of 3950–3910/3880–3800 cal BC (oak), 3760–3650 cal BC (birch) and 3920–3870/3810–3700 cal BC (hazel). The rather earlier dates for tree charcoal, with the oak oldest and the quick-growing birch youngest, and all earlier than the ranges for the nuts and cereals, are consistent with the expected pattern.

DISCUSSION

G J Barclay, K Brophy & G MacGregor

THE STRUCTURE

As with most cropmark sites, the excavation at Claish provides us with only a ground plan, and almost no clue as to what was erected on it. Consequently, only limited conclusions can be drawn about the relationship between the elements of the structure, or whether they formed, in whole or in part, a roofed building. Smith (1991) argued that the outer boundary of Balbridie was a free-standing structure surrounding a building formed by the 'internal' elements (this would translate at Claish to the sides being formed of post lines 1 and 5, and the terminals by transverse divisions I and VI: see illus 24c): we discuss this possibility further below. Ralston has argued that Balbridie was a unitary structure (Fairweather & Ralston 1993, 315–6); further, the fact that Claish and Balbridie have the same pattern of elements would tend to confirm the view that both structures were built to a plan and that the various elements were therefore part of single structures, rather than site-specific accumulations of elements. However, Hogg (below) has noted that Balbridie and Claish would function structurally perfectly well as buildings without the external wall.

In support of an argument for an unroofed interpretation, we can point to a number of broadly comparable early Neolithic structures that appear to be unroofed, which we discuss below; on the other hand, the plan would probably be accepted without demur as that of a roofed building in a later period (and Balbridie, it must be remembered, was dug because it was believed to be an Early Historic hall). The intensity of the burning seen in the features in the northern half of the Claish structure suggests that there was something more to burn than solely free-standing posts, and the presence of a piece of daub, and of charcoal of hazel and willow, might suggest something other than a mere pattern of posts.

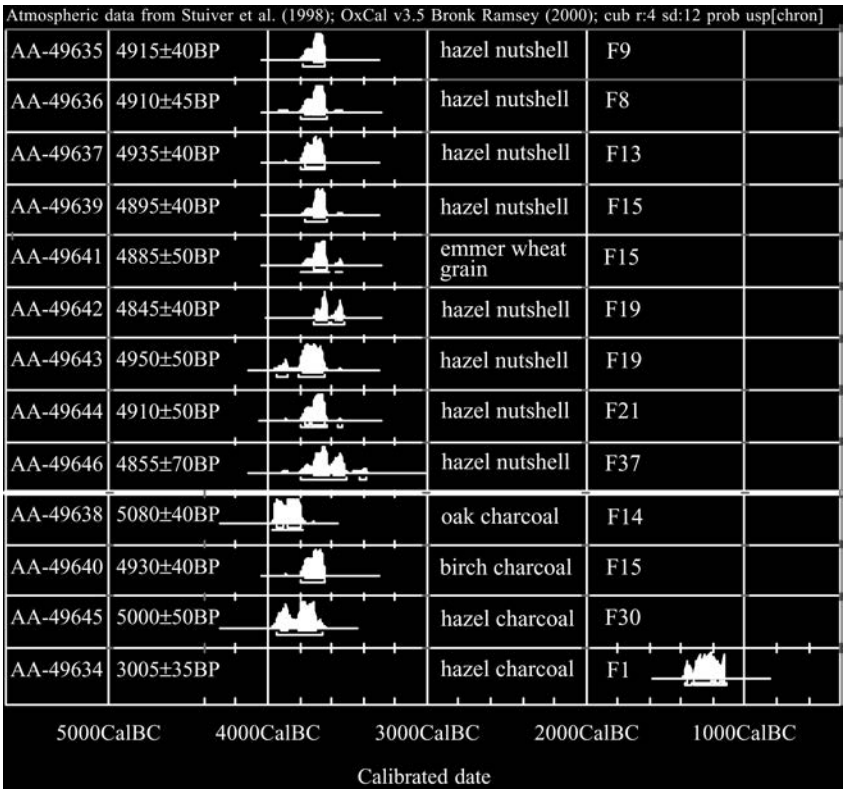
The structure has the following distinct elements (illus 23a & b):

- an outer boundary of posts, roughly straight-sided and round-ended;
- two main lines of posts set in about 1m from, and parallel to, the long axis of the structure (1 & 5 on illus 23a) (these posts are also in the main incorporated into the transverse settings I–VI);
- two further lines of posts parallel to the long axis, clearly identifiable in the southern part of the enclosure (2 & 4 on illus 23a) (these posts are also in the main incorporated into the transverse settings I–VI, below);

TABLE 7

Radiocarbon dates from Claish

Site sample no	F no	Feature type	Context	Material	Lab no	BP	δ13C	Calibrated range (BC) 95.4% prob
24	F9	Post of east wall	From bulk sample of post-pipe fill	*Corylus* nutshell	AA-49635	4915±40	-28.3‰	3780BC (95.4%) 3640BC
39	F8	Post of east wall	From bulk sample from lower part of post-pipe	*Corylus* nutshell	AA-49636	4910±45	-22.5‰	3790BC (95.4%) 3630BC
6	F13	Post of internal line 1 at end of screen (II)	One of 45 nutshells recovered from bulk sample in N half of feature	*Corylus* nutshell	AA-49637	4935±40	-23.2‰	3790BC (95.4%) 3640BC
19	F15	Pit with burning within space C	From bulk sample from layer of in situ burning	*Corylus* nutshell	AA-49639	4895±40	-24.0‰	3770BC (95.4%) 3630BC
19	F15	Pit with burning within space C	From bulk sample from layer of in situ burning	*Triticum dicoccum* grain	AA-49641	4885±50	-25.0‰	3790BC (88.4%) 3620BC 3580BC (7.0%) 3530BC
100	F19	Pit with burning within space C	From bulk sample of layer probably in situ burning	*Corylus* nutshell	AA-49642	4845±40	-25.2‰	3710BC (62.6%) 3620BC 3600BC (32.8%) 3520BC
107	F19	Pit with burning within space C	From bulk sample of layer probably in situ burning	*Corylus* nutshell	AA-49643	4950±50	-24.9‰	3940BC (6.4%) 3870BC 3810BC (89.0%) 3640BC
83	F21	Post of north end	From a bulk sample of heavily charcoal flecked/stained layer about half way down the fill.	*Corylus* nutshell	AA-49644	4910±50	-25.0‰	3800BC (94.3%) 3630BC 3560BC (1.1%) 3540BC
80A	F37	Post, possibly secondary, of north wall	From bulk sample from post-pipe	*Corylus* nutshell	AA-49646	4855±70	-27.1‰	3710BC (45.3%) 3620BC 3590BC (22.9%) 3520BC
74	F14	Slot for screen II	Lump of charcoal – burnt stake?	*Quercus*	AA-49638	5080±40	-25.2‰	3970BC (95.4%) 3780BC
19	F15	Pit with burning within space C	From bulk sample from layer of in situ burning	*Betula* charcoal	AA-49640	4930±40	-26.0‰	3790BC (95.4%) 3640BC
86	F30	Post of internal line 4 part of screen V	From bulk sample from post-pipe	*Corylus* charcoal	AA-49645	5000±50	-26.7‰	3950BC (95.4%) 3660BC
18	F1	Pit to north of structure	From charcoal-rich concentration in centre of feature	*Corylus* charcoal	AA-49634	3005±35	-26.4‰	1380BC (12.5%) 1330BC 1320BC (82.9%) 1120BC



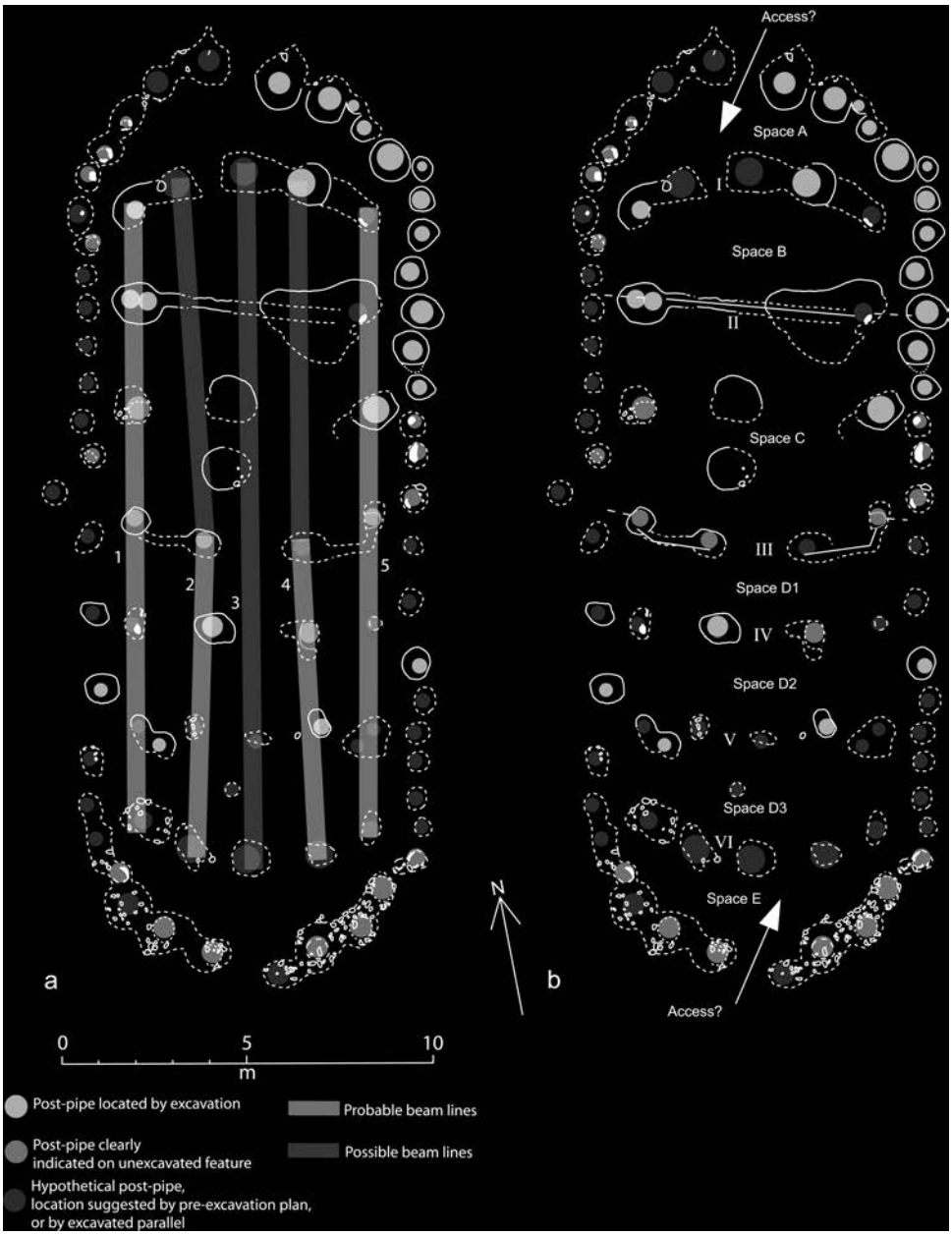
ILLUS 22 Radiocarbon determinations

less certainly, a line of three posts along the long axis (3 on illus 23a) (the end posts are central to the northernmost and southernmost internal transverse settings);
six curved or straight lines of posts/screens perpendicular to the long axis of the structure (I, II, III, IV, V &VI on illus 23b).

The outer boundary

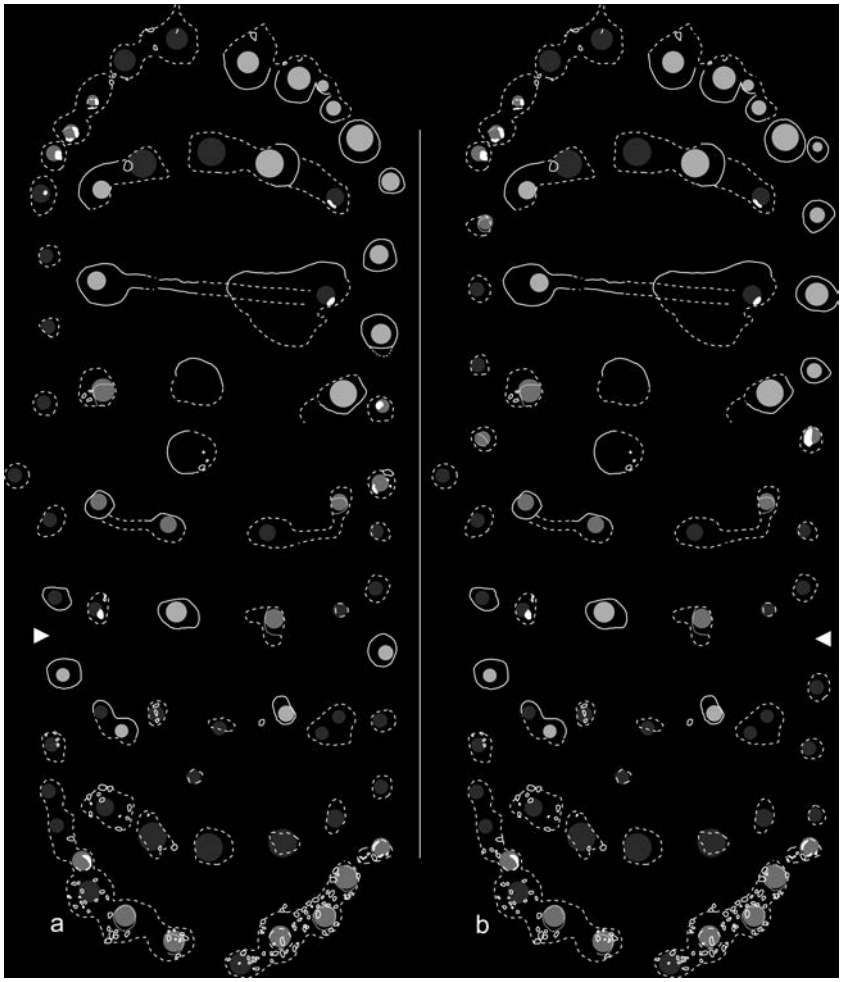
The entrance gaps in the north and south terminals are similar to each other; both are a little over 1m wide and in both the western post of the pair forming the entrance appears (from surface evidence) to be set slightly to the north of the eastern post; the result is that the entrances may be set at a slight angle to the curve of the terminals (the 'crab-claw' arrangement). Someone coming through the entrances might therefore not be walking along the long axis of the structure (illus 23b).

The post-holes forming the walls do not seem at first sight to be in straight lines, nor are the posts within them set at regular intervals. It has been noted above that on the east wall the density of posts is greater near the northern and southern terminals than in the central portion; in the west wall the density is greater in the northern half than in the southern. Further, the whole of the east wall seems to be offset to the east from the terminals (note the location of the northernmost and southernmost post-holes of the east wall on illus 23b). One possibility that must be considered is that the greater densities indicate the interpolation of posts in a second phase of construction or repair, rather than being the constituent parts of a single design. This possibility has been explored by preparing two speculative phase plans (illus 24a & b) in which a more regular spacing of posts is



ILLUS 23 Idealized plan indicating (a) possible beam lines and (b) possible internal divisions

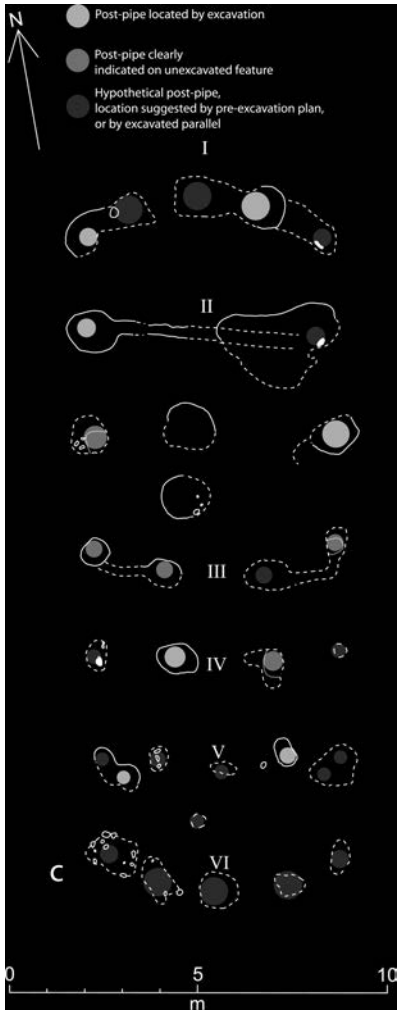
created by removing alternate post-holes in the 'crowded' areas. It is interesting to note that the irregularity of the line of the east wall, in its northern portion (visible very clearly in the left part of illus 5) is reduced and it may be that the perceived irregularity is caused by there being two slightly different wall lines. Of course, the situation may be less simple, and the interpolation of posts may have been more haphazard, relating to less wholesale



ILLUS 24 (Above and opposite) Plans created by removing alternate wall posts where 'crowding' may indicate two phases of construction: (a) hypothetical 'phase 1' (b) hypothetical 'phase 2'. The black arrows mark the approximate point at which the 'waisting' of the structure is most noticeable. Illus 24c reconstructs the structure as it might have appeared if the 'building' comprised only the internal timber elements, and the outer wall was merely an enclosure (cf Smith 1991 for Balbridie and Sprouston)

maintenance or reconstruction. Post-hole F8, as noted above, was the only feature to produce incontrovertible evidence for a post-hole having been used twice, but, looking at the patterns of possible interpolation, the F8 sequence may indicate further replacement/repair outside the simple two-phase hypothesis. Illus 24c is included to explore the possibility, suggested by Smith for Balbridie (1991) that the 'building' was erected on the foundations provided by the six transverse screens and that the outer boundary was only a fence around it.

Both side walls give an impression that the structure was 'waisted', at F23 on the west wall, and just north of F26 on the south (marked by black arrows on illus 24). This might be a product of the possible repair and



reconstruction discussed above; on illus 24 the waisting on the east wall is more pronounced in 'phase 2' than 'phase 1' and it may be that there was a minor realignment of the wall from this point north. An alternative explanation is that the waisting reflected a deliberate change in shape (perhaps, although not likely, to make it trapezoidal) or (with the increased post density) reflected an increase in height of the roof from that point to the north.

There was significant evidence for burning on the site, mainly in the form of charcoal staining in post-pipe fills and fire-reddened subsoils, which was largely restricted to the northern part of the structure. There was little evidence of the fire being so intense as to extend down into the post-holes and char posts in situ. The concentration of indicators of burning in the north might reflect a localized fire, perhaps the effect of the prevailing wind (from the south-west in modern times). It should be noted that there was limited evidence for post replacement in the interior (F29 may be a double post and the possible earlier post-hole in F17/18 may pre-date the structure). This is the exact reverse of the situation at Balfarg Riding School (Barclay & Russell-White 1993) where the pattern – considerable internal post replacement/no outside wall post replacement – was used to argue against the wooden structures being roofed buildings. It is possible to suggest that the Claish structure had perhaps been partly burnt and then repaired, and finally burned again. During the Neolithic period in Scotland fire is frequently associated with the ending of use of structures of ceremonial function – for example the Inchtuthil, Perth & Kinross, enclosure (Barclay & Maxwell 1991) which was burnt, rebuilt and burnt again, and the timber enclosure at Douglasmuir (Kendrick 1995). With such a background the Claish structure could have been burnt either deliberately or accidentally.

Lines of posts parallel to the long axis

Set in c 1m from the walls are two lines of posts, c 2.3–2.8m apart (labelled 1 & 5 on illus 23a). All the posts lie at the ends of the transverse post and screen settings that cross the structure, apart from F33 (on the east) and the un-numbered post-hole mirroring it on the west side (between F13 & F28).

Closer to the long axis are two further, less regular lines of posts, marked 2 and 4 on illus 23a, which appear to comprise four posts each (falling on transverse divisions III, IV, V and VI). It is possible that longer purlins were used on the larger unsupported spans in the northern half.

As suggested above, there may be a line of three posts along the long axis of the structure (line 3 on illus 23a), joining the northernmost and southernmost transverse settings (I & VI). This axial setting may have supported a ridge pole. It should be noted that, with so much weight possibly distributed on the walls and the four other longitudinal lines, a ridge pole might not have needed to be substantial.

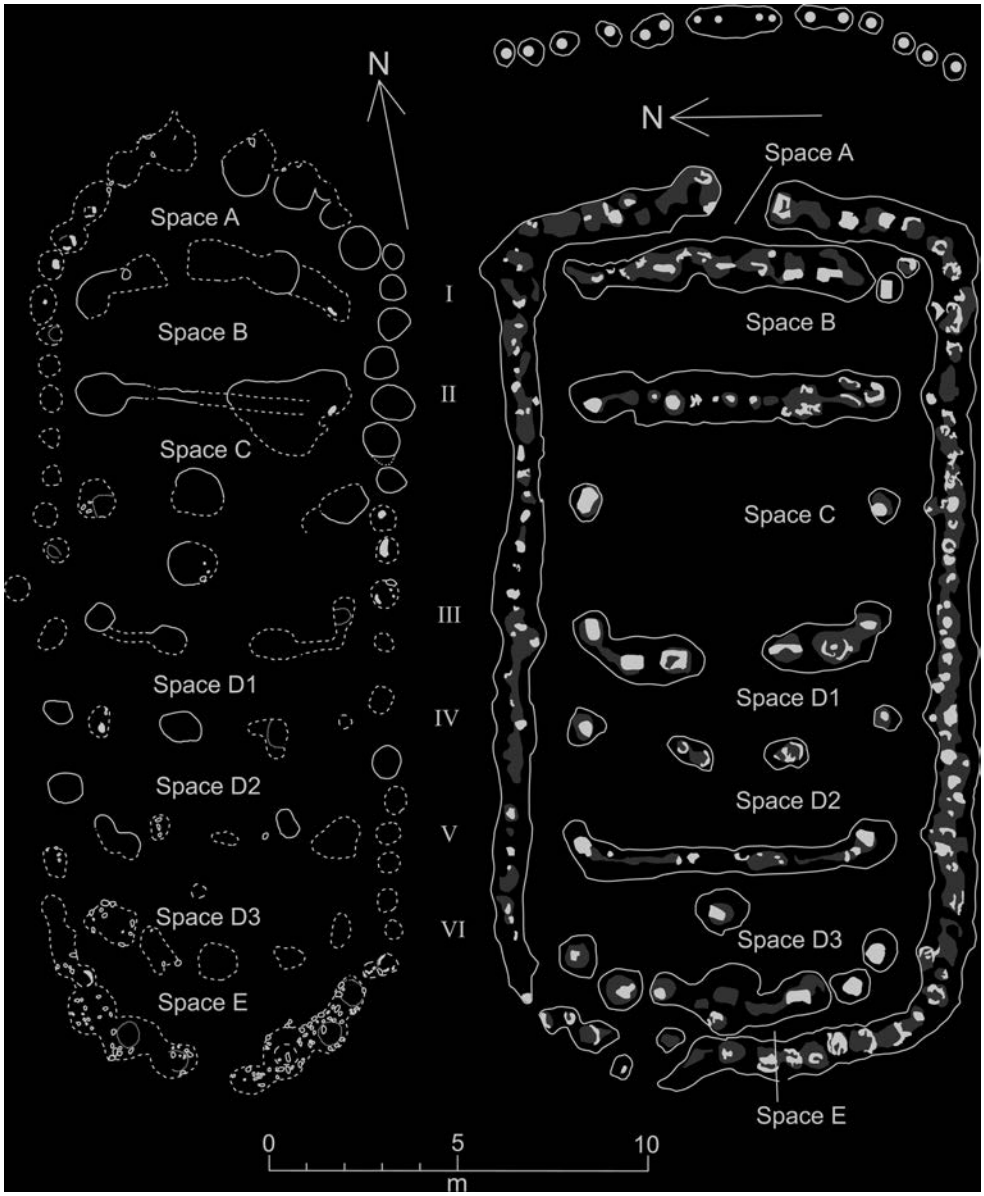
However the various posts were linked, it is clear that there are more internal posts in the southern half of the structure (south of line III) than in the north (15–17 and 9 respectively, excluding line III in both cases). Where such differential post densities have been noted, they can be explained by differences in function; for example, although we suggest no direct link, the typical long house of the LBK in continental Europe is divided into three parts and the portion containing the greatest density of posts has often been interpreted as indicating the presence of an upper floor, possibly for the dry storage of grain away from vermin (Modderman 1988). The main concentrations of cereals at Balbridie were found in the western half (Ralston, pers comm), where the post density was also higher. The greater post density in the western portion of Balbridie has already been tentatively interpreted as supporting an upper floor for grain storage (Fairweather & Ralston 1993, 320), and we believe the same may be the case at Claish. Ralston (pers comm) has remarked that the density of posts in the southern part of the structure would make it rather dark, 'like a forest with a roof'. We discuss this image further below.

The transverse lines and the division and use of space

The six transverse, east/west lines (I–VI) could be interpreted as dividing the interior into seven distinct spaces, but the different construction of the elements suggests that they were not equally penetrable, and that they provided different degrees of separation:

I an arc of massive posts, so closely set that they may indicate an impenetrable screen, but with an access provided through it; the existence of the gap in this arc was not confirmed by excavation;
II two posts linked by a screen set in a slot, and therefore probably an impenetrable physical barrier;
III four posts linked by two dog-legged screens, designed to leave a gap in the centre, probably intended to provide access between the spaces to north and south;
IV a line of four posts, all of which are also part of the four north/south lines (1, 2, 4 & 5 on illus 23a); we cannot tell if this was an impenetrable screen but at Balbridie the equivalent transverse line was the only one not to be set in a continuous slot (illus 25);
V a more substantial line of five posts, the two ends of the line perhaps being formed by double posts; the arrangement of the posts at the ends mirrors the 'kinked' shape of the ends of the equivalent line at Balbridie (illus 25);
VI an arc of posts probably mirroring I at the north terminal, but without any evidence of a linking slot (although this may be to do with relative levels of erosion). We cannot tell if this line of posts supported an impenetrable barrier: the gap to one side or the other of the central post could have mirrored the more definite gap in line I at the north.

If these interpretations are correct, then there are between five and seven defined spaces (illus 23b; 25):
A an area (c 20sq m) entered through the northern entrance;
B an area (c 25sq m) defined by I to the north and II to the south;
C probably the largest unencumbered space in the structure (c 50sq m), defined by II to the north and III to the south; there are no members of the innermost lines of posts; it contains the two pits containing burning deposits (F15 & F19);
D perhaps defined by III to the north and VI to the south (c 68sq m), but encumbered (and possibly sub-divided) by the posts of IV and/



ILLUS 25 Claish (left) and Balbridie, at the same scale. The feature above the Balbridie drawing is the timber façade of the Lochhill long cairn, the plan of which Ralston has noted can be overlaid on the plan of the east end of Balbridie (after Fairweather & Ralston 1993; Kinnes 1992)

or V; if IV was a boundary (unlikely in our view) the area to the north (D1) would measure 20sq m, the area to the south (D2) 22sq m; if V was (as is more likely) a boundary, then D3 would measure c 24sq m; E an area (c 19sq m) entered through the southern door and defined by VI to the north and the southern terminal.

Other less robust internal divisions may have existed. One might speculate, for

example, that the inner lines of posts parallel to the side walls (lines 1 & 5) were joined along all or part of their lengths, thus creating eastern and western corridors; at least east and west walls for Space C may have been provided, reducing its extent to c 40sq m. However, the usefulness of the 'aisle' between the walls and post-lines 1 and 5 is uncertain. If the walls were low, then limited roof height here might have made them useless as means of access. The small posts set in 'nicks' in the wall trenches at Balbridie (Ralston, pers comm) may be interpreted as posts designed to mount doors or other closing elements between the 'partitions' and the walls. These 'nicks' can be seen at all six points on the (better preserved) southern wall of Balbridie (illus 25). They are visible incontrovertibly at only three points on the (much less well-preserved) northern wall (opposite the ends of transverse lines I, II and IV). However, Ralston (pers comm) notes that if a complete barrier across the structure was intended, then the transverse construction slots could easily have been extended to the walls, and prefers an explanation related to the support of the roof. We believe that at Claish the interior divisions make more sense if the aisles were not used for routine access.

In calculating the height of a post above ground, it has been argued (Mercer 1981) that typically $\frac{1}{3}$ will be in the socket and $\frac{2}{3}$ above ground. Using this formula at Balbridie it was suggested that its walls could have been 2m high (Ralston & Reynolds 1981, 16; Ralston 1982, 242–3). However, the relationship between the depth of construction trench and the height of a post is not provable; absolutely contradictory explanations of the relationship between post-hole depth and post height on henge monuments have been put forward (Mercer 1981, 149–57; Barclay 1983, 181). There is therefore no reliable evidence for the height of the walls at either Claish or Balbridie.

The minimal internal division would be, in our opinion, the screens partly masking the doorways (I & VI) and the two screens marked clearly by slots (II & III). This arrangement would create an outer and inner space, or (if access was impossible along the 'aisles') into northern, central and southern spaces. Both the northern and southern entrances are relatively wide and it may be that the function of restricting access was fulfilled by screens I and VI. It seems likely that line IV was not impenetrable, but that line V was.

PARALLELS FOR THE STRUCTURE

There are six structures in Scotland that appear so similar to Claish that they must be considered in detail before the more general context is discussed.

Balbridie, Aberdeenshire

The Balbridie structure (illus 25) was excavated in 1977–81. Although it has not yet been published in detail several interim reports have appeared (Ralston & Reynolds 1981; Ralston 1982; 1984; Fairweather & Ralston 1993) and the present authors have had the benefit of a considerable amount of information and comment from Ian Ralston. The Balbridie and Claish structures have similarities and differences. The most obvious differences are that the walls and partitions of the former are set in continuous trenches (although the walls at Balbridie are described as being supported by single posts joined by planking, and the finished effect might have been very similar); the proportions of the plan are different (Balbridie measures 22m by 11m and Claish 24m by 8.5m)[4] ; Balbridie's axis lies east/west while Claish's lies c north/south (although the long axis of both is parallel to the nearby river); there appears at first sight to be only one entrance at Balbridie. Other differences are: the presence of external features at Claish (although at Claish these seem to be later); the far more massive construction of the 'dog-legged' partitions at Balbridie; a greater range of size of timbers used in the construction of Claish (eg nothing at Balbridie on the scale of F32); the greater space, at Claish, between the terminals and the arcs of posts inside

the terminals; no features like F15 and F19. Ralston (pers comm) notes that, unlike Balbridie, the transverse divisions at Claish are offset from the adjacent outer wall-line post positions; he suggests the offset might be to allow cross-tying of the walls.

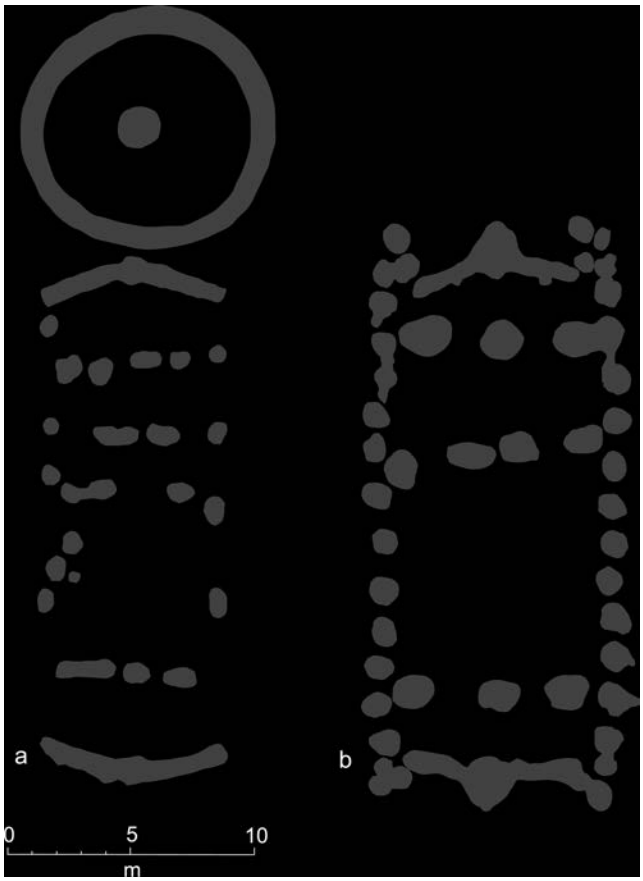
The similarities between the two structures are worthy of note. In particular the division of space, described for Claish above, is comparable: the four or five post lines parallel to the axis of the structure; the shape and arrangement of the transverse arrangements of posts and screens; the 'dog-legged' partial partition numbered III at Claish; the 'kink' at the ends of line V; the extra post lying between transverse lines V and VI is also possibly present. At Balbridie the transverse line V seems to be a continuous screen – we have taken this as an indication that the equivalent at Claish might be the same, although in neither case can the possibility of a gap through it be dismissed; in relation to the entrance, Ralston noted, 'it would perhaps be naïve to expect the entrance to be represented by a simple gap detectable at the level of the structure's foundations' (1982, 243–4); this is just as true of the internal partitions and it is possible that other gaps through them existed. It is our view that the similarity in plan and apparent intention would suggest that there was probably a second entrance at the west terminal of Balbridie. Ralston (pers comm) notes that the spacing of posts on the sides at Balbridie preclude the existence of an entrance there, as may be tentatively suggested for Claish.

The arrangement of posts in the southern half of Claish is paralleled by the arrangement in the west part of Balbridie, where off-ground storage of cereals has already been suggested, reflecting the concentration of cereals on that site (Fairweather & Ralston 1993). Although Ralston (pers comm) notes the difficulty of erecting a floor on the posts available, Hogg (pers comm) disagrees. The quantities of cereal surviving at Claish were too small for the identification of any spatial patterning.

The slight offset angle of both Claish entrances (the 'crab-claw'), noted above, is paralleled at the eastern entrance at Balbridie. The fragmentary arrangements at the west terminal of Balbridie are the result of plough damage but, as noted above, the presence of a continuous wall-slot does not preclude there being an entrance there. Also, as already noted, flatter terminal walls of Balbridie also result in a further difference between the two structures – there is considerably more space between the terminals and the screens (transverse lines I & VI) masking the doors at Claish than there is at Balbridie.

The post-slot construction of the walls at Balbridie and the very detailed, complete excavation recording undertaken, provided two types of information not available from Claish. First, there was incontrovertible evidence in some places of squared-off timbers and planking joining the mid-points of the main wall uprights. Second, there were indentations, already described, containing posts in the inner edge of the wall trenches opposite the ends of the six transverse divisions and the aisle posts and these were interpreted as being related to the support of the roof (Ralston, pers comm). Whether they supported lighter screening either permanently to close gaps, or to act as doors, between the transverse divisions and the side walls cannot be determined but this arrangement may hint at the closure of low 'aisles' beneath the eaves of the structure. Ralston (pers comm) sees the absence of these nicks and their posts as a significant difference between the two sites, as they offer a formal link, at least in plan, between the internal features and the walls, which does not exist at Claish.

There are no equivalents of the pits containing burnt deposits, F15 and F19, at Balbridie. However, magnetic susceptibility measurements were taken at that site along a line across the equivalent to Space C at Claish (Ralston, pers comm); there were raised readings in the central part. Although the presence



ILLUS 26 The possible building and ring-ditch at Sprouston and the Doon Hill A 'hall' (both after Smith 1991, illus 4 & 5)

of burning cannot thereby be proved, the observation is of interest.

Both Balbridie and Claish were destroyed by fire (Ralston 1982, 239). Both produced cereals (and wheat predominated at both), abundant hazel nutshells, crab apple, Carinated Bowl pottery and few lithics (more at Balbridie and most from topsoil: Ralston, pers comm) or coarse stone tools. At both sites the finds were almost exclusively restricted to secondary contexts, relating to the use and destruction, rather than to the construction of the building (Ralston & Reynolds 1981, 12). Interestingly, the only features at Claish which produced artefacts from what may be post-packing were F4 (potsherds and burnt bone) and F7 (potsherd). It may be that they belong to a phase of reconstruction and therefore incorporated material discarded during an earlier phase of use.

Four single entity radiocarbon dates were obtained from charred cereal remains at Balbridie. The calibrated ranges are as follows: 3770–3370 (OxA-1767); 3950–3630 (OxA-1768); 3970–3640 (OxA-1769); 3970–3640 all cal BC (OxA-1769). These dates appear to indicate that the two structures were broadly contemporary.

Sprouston, Roxburghshire

This structure is known only as a cropmark visible on aerial photographs taken of the

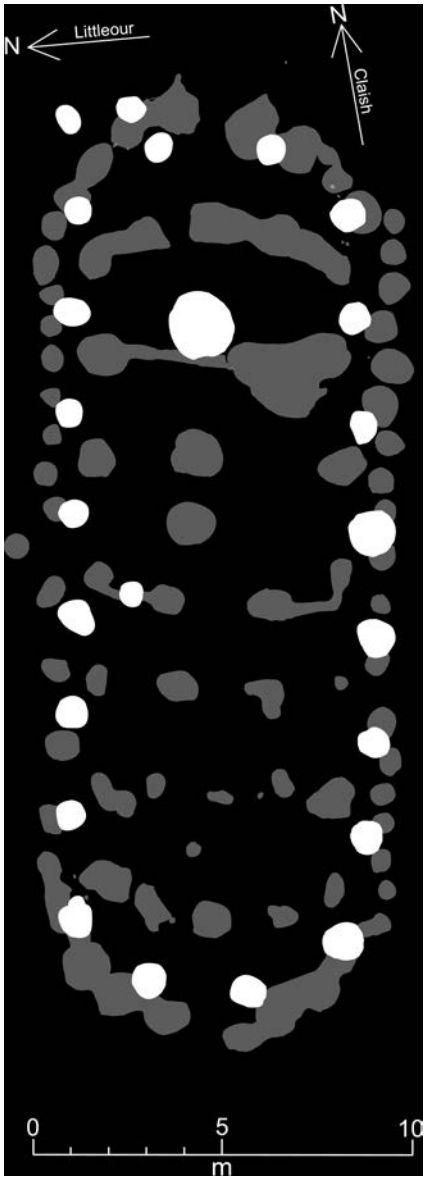
adjacent Early Historic royal complex; illus 26a is an extract from the best representation possible at present, the sketch plot of the complex published by Smith (1991). It is clear that the structure is superficially very similar to Claish. Smith described it thus:

> The structure is rectangular on plan, measuring about 21.5m from south-west to north-east by up to 7.3m transversely overall (a ratio of roughly 1:3), with end walls of . . . 'open-book' type; each end-wall comprising a central post-hole [a difference from Claish and Balbridie] and flanking trenches which are respectively drawn-in towards the outer angles of the building . . . The long walls of the building . . . appear to be defined by spaced post-holes which are broadly coincident with a number of internal, transverse post-settings which effectively divide the interior into six bays (Smith 1991, 265–7).

Smith was aware of the Claish discovery (ibid, 267) and discussed the possible relationship between Sprouston, Balbridie, Claish and Doon Hill A, E Lothian (illus 26b). He suggested that the ring-ditch at the south-west terminal of the Sprouston structure was a Bronze Age barrow. It is interesting to compare this relationship with that between Balfarg timber structure 1 and the ring-ditch, lying on the structure's axis and overlying its north-east terminal (Barclay & Russell-White 1993, 76–9), or indeed the Bronze Age pits containing pottery and carbonized plant remains just to the north of the Claish structure.

Littleour, Perth & Kinross

The timber structure at Littleour (illus 27) was investigated in the specific hope that it might be a Balbridie-type building. However, it was found to be of a very different character (Barclay & Maxwell 1998). First, its walls have a decided bend (Hogg *in* Barclay & Maxwell 1998, 60). Second, the interior was found to contain only two features – a large axial post-hole and a small, rather later, pit containing Grooved Ware. Two radiocarbon dates on oak charcoal place the death of the oak from which the structure was built around 3510–3108 (GU-4827) and 3650–3100 (GU-4379) (other dates relate to charcoal from later episodes of activity in the mid-late third millennium: Barclay & Maxwell 1998, 61). While



ILLUS 27 Simplified plan of Claish (grey) and Littleour (black) overlaid to aid comparison

roofing could not be ruled out, it was felt to be unlikely (Hogg *in* Barclay & Maxwell 1998, 60–1). The ground plan of Claish and Littleour, when overlaid, seem to show similarities of shape and size. The probably later date for Littleour may indicate the development of a new type of monument using some of the architectural 'vocabulary' of the old. In the context of Smith's hypothesis (1991) that the outer wall at Balbridie (and by extension, Claish) was an enclosing fence, Littleour could reflect the development of the role of that element alone.

Balfarg Riding School 1 & 2, Fife

Parallels have been drawn between the shape and size of the Littleour structure and the two structures at Balfarg Riding School (BRS) (Barclay & Russell-White 1993, 180; Barclay & Maxwell 1998, 120–2), in particular the presence of an axial post (in Structure 2 at BRS: illus 28b). At Balfarg this post appeared to have stuck up through the low mound of soil and stone (with Grooved Ware) that was placed over all the other internal features (Barclay & Russell-White 1993, 88). The Balfarg structures were interpreted as un-roofed enclosures containing sets of two- and four-post settings. There were three points that underpinned this interpretation; the arguments for and against roofing are set out elsewhere (Barclay & Russell-White 1993, 175–6; Barber 1997, 128–9; Barclay & Maxwell 1998, 121); Barclay still considers the un-roofed interpretation the more likely. It was suggested that the fences surrounded a changing pattern of two- and four-post structures; these were explained as platforms for the exposure of the dead (Barclay & Russell-White 1993, 182). The similarities between the Balfarg Riding School structures and Claish are shown on illus 28; the ends of Structure 1, the more completely surviving, lie over the inner screens I and VI of Claish, while the side walls are the same distance apart, and the post-spacing is not dissimilar (illus28a).

Three of the radiocarbon dates from Balfarg relate to what was interpreted as the later of the two structures (Structure 2, the one buried under a Grooved Ware mound and enclosed within a probable henge at the end of its use). All were mixed samples, one of alder, the other two of alder and oak, from the post-pipes; as these dates are from large conventional dating samples, not single entities, they are less likely to have provided accurate determinations. The calibrated ranges were: 3090–2680 (GU-1905: alder); 2900–2490 (GU-1906: oak and alder); 3350–2650 (GU-1907: oak and alder). It is possible that the dates may relate to the end of the use of the structure or the Grooved Ware-related activity on the site at the time of its 'closure' (cf GU-1904: 3330–2880 cal BC), and that Structure 2 and its predecessor Structure 1 were rather earlier; however, we must, as with Littleour, consider the development of a type of monument derived from, rather than in parallel with, the traditions exemplified at Claish. There was a significant amount of earlier Neolithic activity close to the structures at Balfarg, in the form of unusually-filled pits, which produced calibrated ranges 3640–3360 cal BC (GU-1903: mixed alder, hazel, ash), 3960–3530 cal BC (GU-2605: oak) and 4250–3700 cal BC (GU-2604: hazel, oak, willow).

Noranbank, Angus

Noranbank, like Claish, has been photographed only once, in 1976. It appears as an enclosure with slightly rounded terminals and possible transverse divisions, longer than Claish but about the same width; however, two of the most pronounced transverse lines can be interpreted as continuations of other, non-archaeological, marks in the crop, and its interpretation as a Claish- or Balbridie-type structure (rather than an Early Historic one) must remain in doubt until it is excavated.

ILLUS 28 Simplified plans of the two Balfarg Riding School structures in black (a structure 1; b structure 2) overlaid on simplified plans of Claish (grey)

ASPECTS OF THE CLAISH STRUCTURE

D J Hogg

Setting out

It was assumed that the partially excavated features follow the general character of the fully dug ones and that the features indicated as post-pipes or hypothetical post-pipes represent oak posts having a certain vertical extension above original ground level. No inferences are drawn from the detailed evidence of the excavation, for example the character of or distribution of materials within an individual post-hole. While it is accepted that the desired ends of the builders, could we know them, might appear to us to be totally

irrational, the means to obtain these ends are within limits, qualified by considerations of efficacy.

The plans of Claish and Balbridie were analysed, bearing in mind that the position of some post holes at Claish are estimated. Measurements were taken between features representing apparently significant structural elements, the intent being to determine whether there was any pattern in the setting out which might reveal a structural intent.

At Claish the average of the separations of the posts along lines A–A and B–B were taken (illus 29; Table 8); this was compared with the average of the spacings between the two families. From this procedure a putative unit of 686mm emerges. Illus 29 shows the fit between multiples of this unit and the actual dimensions between posts. Using this hypothetical 'unit' gives for Claish a width to length ratio for posts in the interior of the structure of 9:4 and a measurement of 24 of these 'units' long by 9 wide. Nothing in the analyses of the accuracy of the setting out suggests that Claish is anything other than a unitary conception. However, due to the variable positioning and sizes of the posts forming the outer wall of the structure and their proximity to lines A–A and B–B it is impossible to determine whether the 'unit' of measurement may also have been used in their setting out.

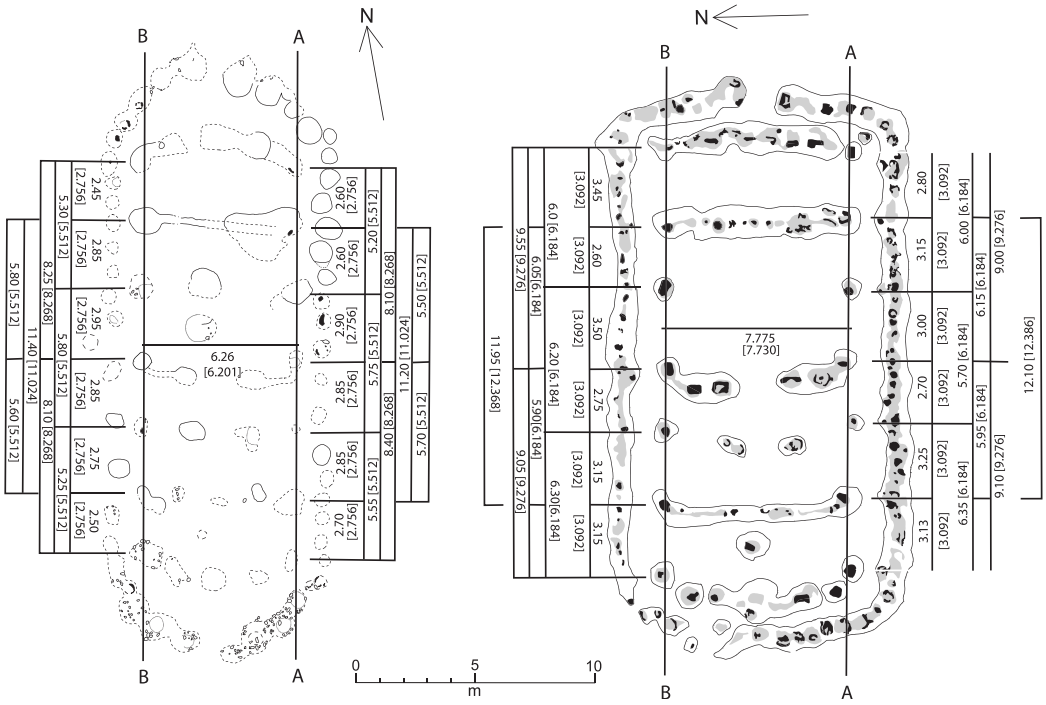
Applying the same procedures to Balbridie produced a 'unit' of 1.546mm (Table 8) giving a length to width ratio of the internal postholes 5:2 and a measurement of 12 of these 'units' to a width of 5 of them. It might be suggested from comparison with Claish that the figure emerging from analysis of Balbridie (1.546m) might in fact be twice a basic unit of 773mm, thus giving an overall measurement of the internal group of 24 long by 10 wide of these units. The likely errors in manhandling large masses of timber into holes and in the transmission of data since the event make it unsafe to search any smaller subdivision of postulated 'units'.

TABLE 8

Measurements between posts	Balbridie	Claish
Post line A–A (illus 29)		
2–6	12.10	11.20
1–4	9.00	8.10
4–7	9.10	8.40
1–3	6.00	5.20
2–4	6.15	5.50
3–5	5.70	5.75
4–6	5.95	5.70
5–7	9.10	5.55
1–2	2.80	2.60
2–3	3.15	2.60
3–4	3.00	2.90
4–5	2.70	2.85
5–6	3.25	2.85
6–7	3.13	2.70
Post line B–B (illus 29)		
2–6	11.95	11.40
1–4	9.55	8.25
4–7	9.05	8.10
1–3	6.00	5.30
2–4	6.05	5.80
3–5	6.20	5.80
4–6	5.90	5.60
5–7	6.30	5.25
1–2	3.45	2.45
2–3	2.60	2.85
3–4	3.50	2.95
4–5	2.75	2.85
5–6	3.15	2.75
6–7	3.15	2.50
A average	3.110	2.761
B average	3.072	2.752
Overall av	3.091	2.756
A–B	7.775	6.260
Span ratios		
A–B: A av	2.50	2.27
A–B: B av	2.53	2.27
A–B: ov av	2.52	2.27
Putative multiplying factor	2	4
Putative unit	1.546m 2 x 0.773m	0.689m

While it might appear that, by some mechanism, a definition of a unit of measurement and possibly number of units are transmitted over space and time, the applied 'unit' varies. It may of course be defined generally by reference to a particular human attribute, which will obviously have a different local real value, say a pace, or the length of a human arm.

The two sites therefore provide no evidence for a standardized unit of measurement as we



ILLUS 29 Plans of Claish and Balbridie, illustrating the measurements used to set out the structure; the actual measurements between elements are given alongside (in square brackets) the 'ideal' spacing, if the highest common factor was used

would understand it, such as the metre (as the 'megalithic yard' was postulated to be) but the plans of the structures might have been set out using chosen numbers of local units deriving from the general definition, such as a pace.

It is noted below that a roofed building could be constructed perfectly satisfactorily on the uprights within the outer boundary. That the outer 'wall' is not demonstrably set out using the system of measurement apparent in the interior structure might support Smith's view (1991) that, while part of the overall plan, it was not part of the roofed element.

Roofing

Attempts to make precise calculations on the basis of a ground-plan alone, and conscientiously to calculate stresses and weights of hypothetical members and the loading of a hypothetical roof, ignore first, the possibility that people in the past did not build from a desire to achieve a wholly practical and efficient structure, and second, that there are no data to support speculation about heights, and so on. Too many assumptions would have to be made and dressing up assumptions in hard maths does not make them reliable (cf Ruggles & Barclay 2000). Suffice it to say that the structure could have been roofed in a number of different ways. It would, for example, be possible to construct a pitched roof supported only by the outer perimeter of posts, if sufficiently substantial members were used. The load acting to push the tops of the wall posts apart would be large, but this could be countered by ties or indeed external stays (for which there was no excavated evidence). If we postulate linking beams between the posts on the lines marked 2 and 5 on illus 23a, the effective span would be reduced. This would permit smaller more handleable members. Beams spanning between the transverse 'partitions'

would further reduce the problem of roof support, except in the gap between screens I and III where the span of the purlins would be rather large. Alternatively, a structure would function perfectly satisfactorily based on the uprights inside the apparent outer 'wall'.

If having a roof were the first priority the pattern of posts is not the most efficient way to support it, but again as in other structures erected for other than pragmatic ends, there may have been an imperative for large clear spaces. From the excavated data there are no certainties. Other indicators are contradictory and ambiguous and no conclusion is possible except that the primary aim would appear to be the definition of plan spaces, roofed or otherwise, rather than an economical provision of weather protection. The present limited evidence does not permit the drawing of any firmer conclusions.

CLAISH IN CONTEXT

G J Barclay, K Brophy & G MacGregor

There is little in the way of local Neolithic context for Claish. The most numerous and best known features in the landscape are the burial monuments (described by Foster & Stevenson, below). Cowie's survey of finds of Neolithic pottery (Cowie 1993) notes none in modern Stirling west of Dunblane, and the situation has not changed in the last decade.

The closest known early Neolithic enclosures are the cursus monument and adjacent pit setting at Bannockburn, Stirling, south-east of Claish and further down the Forth valley. On excavation, the rectilinear enclosure (known as enclosure 2) was found to be defined by posts and interpreted as a cursus monument. A U-shaped setting of pits with a complex history recorded in their fills (enclosure 1) abutted its east end. The calibrated radiocarbon ranges from the fills of the pits of enclosure 1 lie in the earlier part of the ranges from Claish, and also produced pottery of the 'Carinated Bowl' tradition (Rideout 1997). The unexcavated L-shaped setting of pits or post-holes visible as a cropmark on the flood plain of the Keltie Water, only 1375m to the east of Claish (illus 1; Stevenson & Foster, below), may be comparable to one or other of the Bannockburn sites.

Exploration of the archaeology of Flanders Moss, the once vast but now much diminished bog to the south of Claish, has revealed a substantial timber platform at what would have been, in Neolithic times, the edge of the bog, at Parks of Garden, Stirling. Radiocarbon dating places the main elements of the platform about half a millennium later than Claish (Ellis et al 2002, 250); however, wood from below the platform, in the peat and on the underlying clay, has produced calibrated ranges of 4050–3800 (alder: OxA-9289) and 3970–3780 (oak: OxA-9613) (Ellis et al 2002, 250). The platform is interpreted as associated with hunting on the extensive marshes (Ellis et al 2002, 255).

Just as Claish is a striking and unusual structure, there lies nearby one of the most remarkable burial/ceremonial monuments in the region, the Auchenlaich cairn.

THE AUCHENLAICH LONG CAIRN

S M Foster & J B Stevenson

Introduction

Early in 1991 fieldwork by Lorna Main (Archaeologist of what was then Central Region) at Auchenlaich, to the east of Callander (illus 1), led to the discovery of a long, apparently artificial, stony mound. All that had been previously identified at the site was a 'cist' (Ordnance Survey record card, 1968), but subsequent examination by staff of the Royal Commission on the Ancient and Historical Monuments of Scotland confirmed Main's identification of the mound as the remains of a remarkable chambered long cairn. As noted above, the discovery of the Auchenlaich cairn led directly to the recognition of the potential significance of the Claish structure some 1.5km to the south-west.

Description

The much-disturbed remains of this unusual monument (illus 30, 31) are situated in improved pasture

ILLUS 30 Auchenlaich long cairn, aerial view from the north-east (*Crown copyright: RCAHMS*)

on a gravel terrace 110m east of Auchenlaich farm steading and 50m north of the Keltie Water (NGR: NN 6498 0751 to 6493 0747). It comprises a trapezoidal chambered cairn aligned NNW/SSE with a long stony mound attached to its NNW end. The cairn lies in an area of fluvio-glacial deposits and it has been built on the edge of a slight, unusually straight terrace on the side of a palaeo-stream channel (Donald Davidson, pers comm). For such a large monument, the long mound now forms a relatively inconspicuous feature in the landscape, and its low-lying position may have been deliberately chosen in order to reduce its visibility from the surrounding ground.

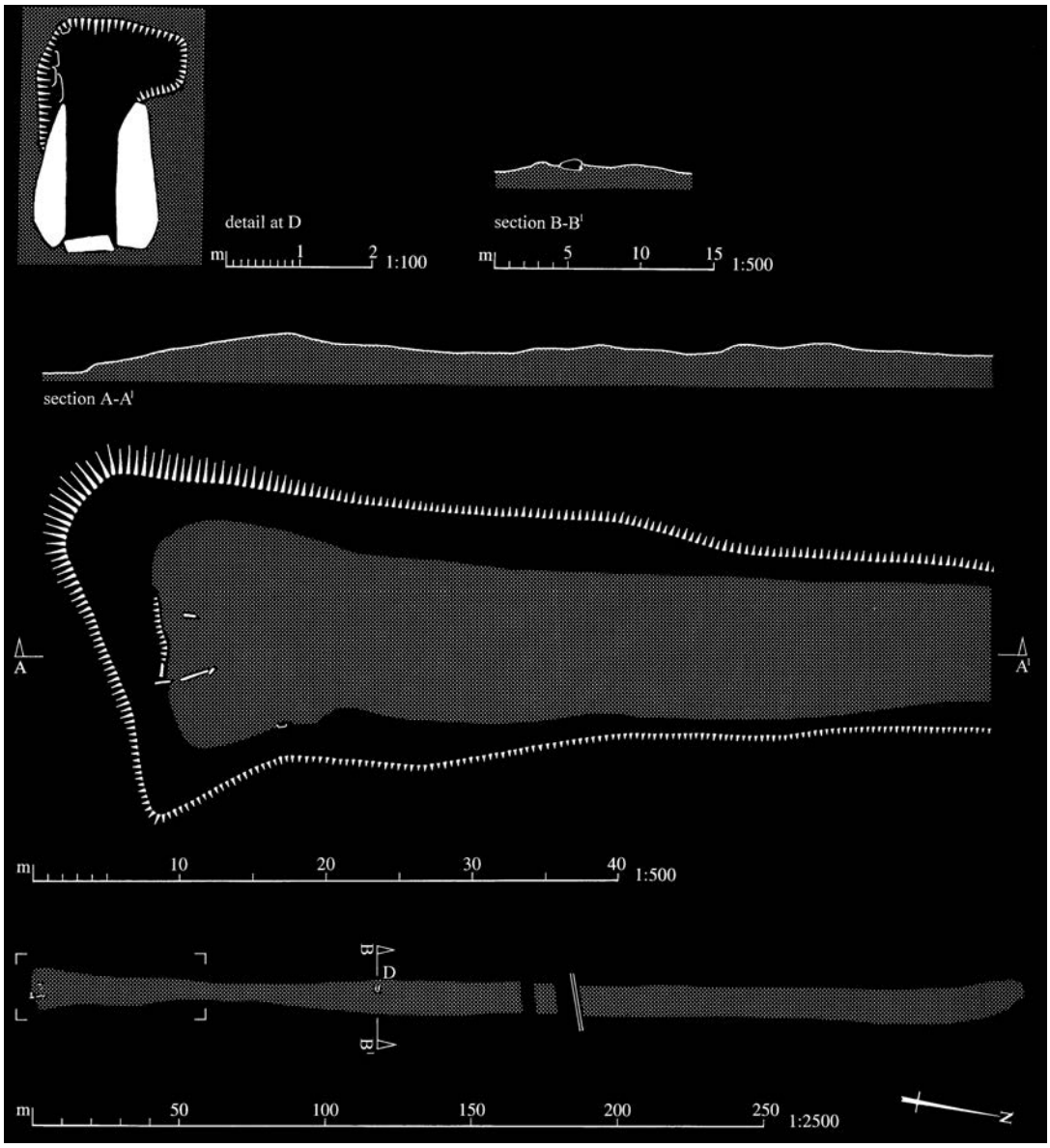
The mound (illus 31) measures 342m in length overall and varies in width from a maximum of 15m at the SSE end to 11m at the NNW, and one possible kerb-stone has been identified. Stone-robbing and field clearance have obscured the original profile of the mound which, apart from the chambered cairn at the SSE end, now stands to no more than 0.5m in height above the former ground level. The centre of the mound has been plundered for stone, presumably to build the surrounding field-walls, and dumping of field-gathered stones has, in places, added a raised rim along the perimeter. On the NNW the original mound appears to have been extended by about 20m, on a slightly different alignment, by the addition of a considerable amount of stone, which may be field-clearance, and at three points the mound has been breached by relatively recent tracks. For most of its perimeter the mound is surrounded by a modern plough-scar (up to a maximum height of 0.6m on the SSE), which has accentuated the height of the original mound.

The chambered cairn (illus 31), which forms the SSE end of the mound, has been much disturbed by stone-robbing, and its original length is difficult to determine, but it was probably trapezoidal on plan, measuring up to 48m in length by 15m in breadth at the SSE end, narrowing to about 11m on the NNW, and now standing to a maximum height of 1.6m. There is an apparent swelling of the cairn near its SSE end which corresponds with an increase in the height of the mound, but it is uncertain whether this merely indicates a section of the mound where less stone-robbing has occurred, or suggests that the cairn is of multi-period construction, parallels for which are not hard to find. A number of earthfast slabs are visible in the SSE end of the cairn, probably indicating the presence of a chamber, or chambers, but without excavation it is not possible to be certain of their function. A pronounced narrowing at about 80m along its length may mark a fourth stage of construction.

About 118m from the SSE end of the cairn there are the disturbed remains of a lateral chamber opening from the west side of the mound. The chamber was recorded by the Ordnance Survey as a cist (illus 31, B–B') but the large size of the side-slabs of the chamber and its position on the old ground surface suggest that it is Neolithic rather than Bronze Age in date. A former tenant of Auchenlaich recalls that the chamber was cleared out in the 1950s, but no finds were recorded.

Discussion

It has been shown above that the monument comprises three principal components: a chambered long cairn; a long mound; and a lateral chamber. In the absence of excavation it is not possible to be certain of the physical or chronological relationships between the three elements but it would not be unreasonable to suggest that the chambered long cairn represents the earliest stage of construction and that, at some later date, the long mound was added to it. The detailed investigation of the Cleaven Dyke may, however, hint that some of the irregularities in the alignment of

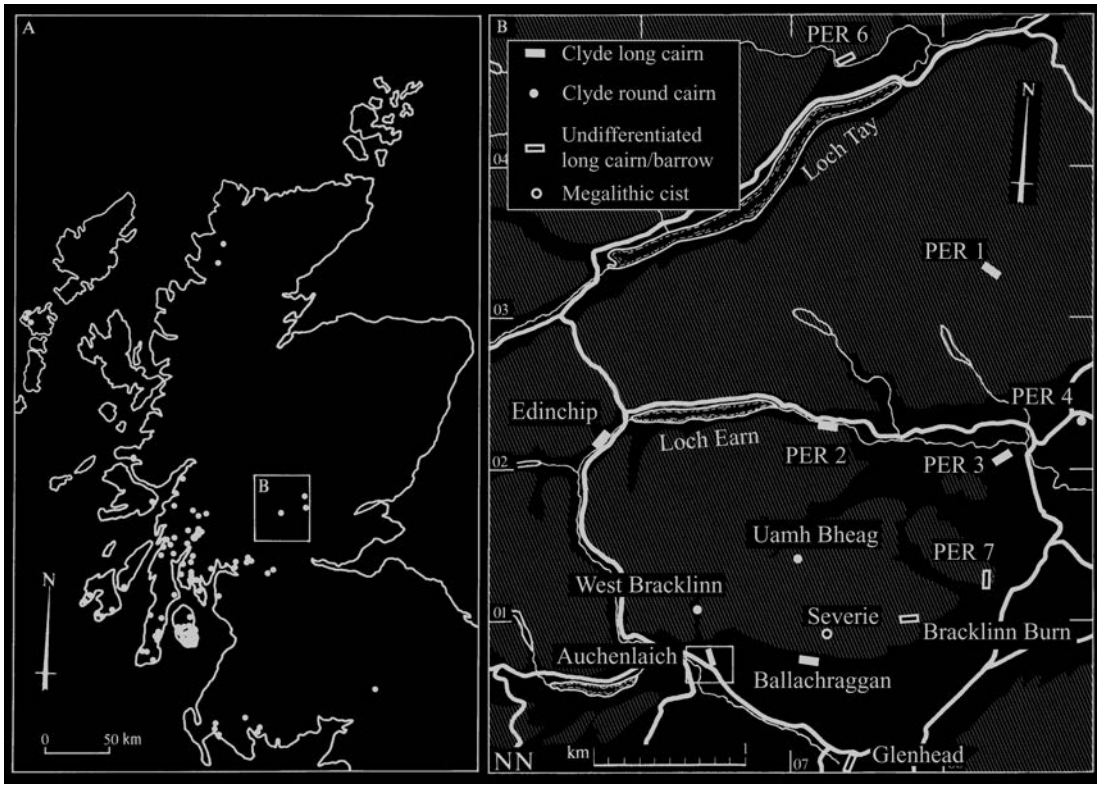


ILLUS 31 The Auchenlaich chambered long cairn (*Crown copyright: RCAHMS*)

the cairn may indicate more than one stage of construction (Barclay & Maxwell 1998).

The history of the lateral chamber is less easy to assess. At least three possibilities can be considered: it may either have formed the core of a free-standing cairn, similar in size to the small round cairn at West Bracklinn, which lies less than 2.5km to the north (RCAHMS 1994b, 6; illus 32), or have been part of the original design of the mound, or have been added to the mound at some time after its construction.

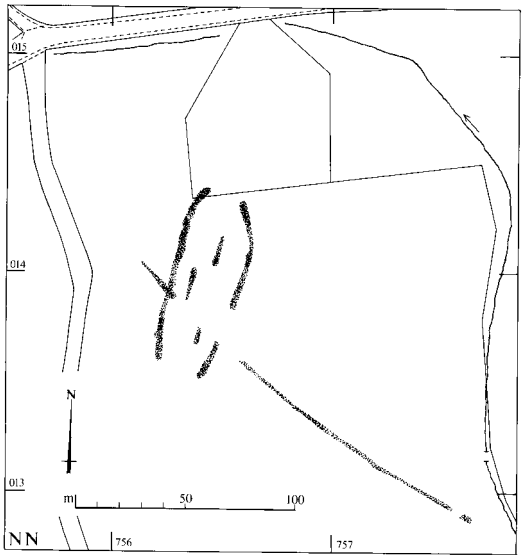
The structural remains of the chambered tomb are largely made of sandstone slabs (which could have been obtained from a short distance away), while the body of the cairn is



ILLUS 32 Location of sites mentioned in the discussion of Auchenlaich: A the distribution of Clyde Group Cairns (after Henshall 1972); B the distribution of long cairns, barrows and round cairns between Strathtay and the Forth; Clyde Cairns solid symbols: as named and PER 1 Clach na Tiompain; PER 2 Kindrochat; PER 3 Rottenreoch; PER 4 Cultoquhey (numbering after Henshall 1972). Severie is a 'megalithic cist' only. Other burial monuments: open symbols: as named and PER 6 Fortingall; PER 7 Cairnwochel

constructed of rounded stones derived from the underlying sands and gravels, their diameters suggesting that they would have constituted the larger end of the size range, and that they are thus likely to have been the first products of field clearance. Although there is more modern clearance on the northern section, the original composition of the mound appears to have been consistent throughout its length. On this basis it can be suggested that the original Neolithic monument was up to 342m in length, the builders having exploited a slight natural feature as the basis for the monument. The use of natural mounds to reduce cairn building is not unknown, for example Cultoquhey, Perth & Kinross (Henshall 1972, PER 4), where a chamber was placed on the side of a glacial mound to which a capping of cairn material was added.

The chambered tomb at the SSE end of the cairn, which probably formed the first phase of the monument, bears close similarities with the Clyde Group of cairns (illus 32; cf Henshall 1972; Scott 1976). The Auchenlaich cairn thus augments a cluster of Clyde Group cairns (illus 32a: Henshall 1972, PER 1–4; Edinchip: Davidson & Henshall 1983; remainder: RCAHMS 1994a) in western Perthshire, and which form a group geographically distinct from those in Dunbartonshire, about 50km to the south-east. In addition, there are a several other Neolithic cairns in this part of Perthshire: two unclassified long cairns (illus 32b;



ILLUS 33 Glenhead, long barrow, 1:2500 (*Crown copyright: RCAHMS*)

Henshall 1972, PER 6–7; RCAHMS 1994a), a number of large round barrows, some of which are certainly Neolithic (Coles & Simpson 1965, Appendix 1; Barclay & Maxwell 1998), a megalithic cist (Severie, illus 32; RCAHMS 1994a), and a possible ploughed-down long barrow at Glenhead (illus 33).

With the exception of the recently identified round cairn at West Bracklinn (illus 32b), all these monuments are situated either on gravel terraces on valley sides or, as in the case of Auchenlaich, they are to be found in agricultural land on the valley bottom, but close to hill pasture. In every case, but most particularly at Auchenlaich, it can be assumed that they were constructed in an open environment; this seems to have been so for most Neolithic ritual monuments where environmental evidence has been recovered (eg Coles & Simpson 1965, 40; Piggott 1972, 46; Barclay 1983, 232; Philips 1989, 181). The Auchenlaich cairn would have been difficult to construct, and its prominence and visibility severely curtailed, had it been built in a wooded environment. Furthermore, the most likely source of the stones used in the construction of the cairn would be field clearance from the surrounding land (cf North Mains, Barclay 1983). Whether turf was ever used to augment its height is not apparent.

The most extraordinary feature of the long cairn, as a whole, is its length which, at 342m, makes it by far the longest chambered cairn in Britain, longer than most long and bank barrows, with the notable exceptions of the Maiden Castle bank barrow (about 545m in length) and the Tom's Knowe/Lamb's Knowe earthwork in Dumfriesshire (RCAHMS 1998). Long cairns of the Clyde Group generally range from about 10m to 57m in length, but there are a number of unclassified long cairns which are longer (Henshall 1972: BRW 1, LNK 2 & ROX 2), ranging from 82–104m. Scottish long barrows also tend to belong to the 50–60m range (eg ibid, KNC 7–9). It is interesting to observe that, as a group, the Perthshire long cairns are the longest of the Clyde Group (Henshall's 'elongated cairns': 1972, 72, 160), although none reach the enormous scale of Auchenlaich. The Perthshire cairns appear to be least affected by the traditions of the Clyde Group (Henshall 1972, 72), to the extent that Henshall (1972, 239) suggests that they, and other trapezoidal and elongated cairns, belong to a separate tradition from the chambered tombs, owing more to the long barrows of the east and south.

The distribution of long cairns in this part of Perthshire (illus 32) is striking for their consistent location at the beginning and ends of lochs, or at the upper reaches of river valleys, that is, at focal points on major routes of communication, and for their more or less regular spacing. It is significant, therefore, to note that the possible long barrow at Glenhead (NN 7565 0140) both amplifies and accords with this distribution. It is therefore perfectly conceivable that each monument is peculiar to a defined set of loyalties, which may be territorial (cf Clarke et al 1985, 31).

The dating of the Auchenlaich monument must largely rely on information from the long barrow/bank barrow tradition, and

unfortunately many of these radiocarbon determinations must now have higher errors applied than when they were first measured (Ashmore et al 2000; the calibrated ranges below are the revised ones prepared for that publication). Although Henshall (1972, 279) argued that long cairns and long barrows appear in Scotland within a century to either side of 3000 BC uncal, the calibrated radiocarbon dates for timber structures preceding the long cairn at Lochhill (4250–3500 cal BC : I-6409: Masters 1973b), the long barrow at Dalladies (3700–3000 cal BC : SRR-289; 3650–2900 cal BC : SRR-290; Piggott 1972, 25) and the charcoal sample from the basal levels of late-developed cairn at Monamore on Arran (4350–3500 cal BC : Q-675; MacKie 1964; Henshall 1972, 280; MacKie 1973, 9), suggest that a date in the fourth millennium cal BC would be more probable. This is comparable with the postulated date of the Cleaven Dyke (Barclay & Maxwell 1998, 47). The dates providing a terminus post quem for the round barrow covering a Neolithic mortuary structure at Pitnacree, as adjusted by Ashmore et al (2000), are now no longer very helpful in this discussion (4300–2800 cal BC : GaK-601; Coles & Simpson 1965, 40).

The unusual length of the cairn, which has more in common with Neolithic cursus monuments and bank barrows (now generally dated to the earlier part of the Neolithic), may suggest that it is related to, and possibly even combined with, in common with the cursus tradition, 'the territorial role of a long barrow with the formalization of boundaries' (Kinnes 1985, 41). Bradley (1983, 16) speculates whether bank barrows and cursus monuments in Dorset were not in fact interchangeable, and hence contemporary (cf Barclay & Bayliss 1999).

The cairn at Auchenlaich is an extraordinary monument, all the more so for having lain unrecognized until so recently. Its interpretation is very problematic, and much can only be resolved by excavation. Its sheer scale and situation, in what we may with confidence assume to have been an open landscape, suggest that its physical presence must have been profound, extending well beyond the act of its construction. Its situation, close to the junction of hill-ground, and what we may assume to have been cultivated ground, may be especially significant. Within its vicinity there are also a number of probable Neolithic monuments, some of which may have been in contemporary usage: the structure at Claish; a pit-defined enclosure at Bridge of Keltie; and a stone circle at Wester Torrie (Christison 1902). Similar concentrations of Neolithic monuments (stone circles, long and round barrows/cairns and a Littleour-type structure) are to be noted in the vicinity of Fortingall and Carsie (Coles & Simpson 1965, 44), the latter example being distinguished, as here, for its siting at the junction of several waterways. The localized concentration of Neolithic cairns and barrows juxtaposed with timber and stone ritual monuments in this area contrasts with the picture in the adjacent valley of the lower Earn where recent aerial photography has revealed a rich assemblage of ritual monuments but few surviving accompanying barrows and cairns (RCAHMS 1994a).

THE 'DOMESTIC' CONTEXT

G J Barclay, K Brophy & G MacGregor

The nature of the Balbridie structure has been a matter of debate since its excavation – whether roofed or un-roofed, 'domestic' or 'ritual'. Topping has noted (1996) that British rectangular structures ranged (at the time he was writing) in internal area from 16.3sq m to 94sq m while Irish examples ranged from 13.7sq m to 112.55sq m, in considerable contrast with Balbridie, which he calculated at 329.6sq m. Within Britain and Ireland Balbridie and Claish have no obvious excavated parallels. While Ireland is rich in the coherent remains of Neolithic buildings, none is on the scale of Balbridie or Claish, but there are broad parallels in the division of internal space, for example at Ballyglass 1 (illus 37c; Ó

Nualláin 1972) and, less clearly, at Tankardstown 2 (Grogan 1996). Two rectangular timber buildings have been discovered in southern England since Topping wrote, at Yarnton in Oxfordshire (Hey 2001) and at White Horse Stone, Kent (Oxford Archaeological Unit 2000). Both are large and the Kent site has superficial resemblances to longhouses in northern France, but there is no apparent commonality of tradition between Claish or Balbridie and these sites.

'Balbridie-type' structures are rare – only two have been excavated and only one or two more are suspected. Other round-ended structures of superficially similar appearance are known from aerial photographs. Until the excavation in 2002 of the structure at Carsie Mains, Perth & Kinross, 1.2km north of Littleour, they seemed more likely (from the lack of visible internal complexity) to be Littleour-type structures (above). Carsie measures 17m by 5m, and is defined by two straight lines each of five large posts, both rounded terminals being defined by three posts (Brophy & Barclay forthcoming; illus 36e). About 1.5m in from both walls are lines of five 'aisle' posts. There is a possible curved screen at the western terminal. No radiocarbon dates are yet available, but it seems possible that this is yet another variation on the architectural 'vocabulary' seen at Claish and Littleour. There is also a class of similar long structures visible on aerial photographs usually interpreted as of Early Historic date, related to the upland 'Pitcarmick-type' houses (RCAHMS 1990, 12; 1994a, 75; Barrett & Downes 1993); Ralston (pers comm) notes that the Crathes Castle, Aberdeenshire, structure, on the other side of the Dee from Balbridie, falls into this broad category. Given the intensity with which much of eastern Scotland has been photographed from the air by archaeologists, we must conclude that, although others almost certainly remain to be found, Balbridies and Claishes are really rather rare.

Throughout lowland Scotland the typical trace of Neolithic activity not immediately identifiable as associated with burial or formal ritual structures is a scatter of pits which can sometimes be resolved into the plan of what might be a relatively small and slight rectangular or oval building (Barclay 2003). It seems likely that this is the typical remnant of settlement or activity of the Neolithic in these parts, and perhaps also elsewhere in the UK.

The nearest probable Neolithic settlement is at Cowie, Stirling, 26km to the south-east of Claish (Atkinson 2002). The site could not be more different: the site has a long history of use beginning in the Mesolithic; there are many coarse stone tools that could have been used for crop processing, but no surviving cereals; and the structures that may belong to the early Neolithic are extremely slight. Calibrated radiocarbon ranges from Pits II and VII at that site overlap with those from Claish.

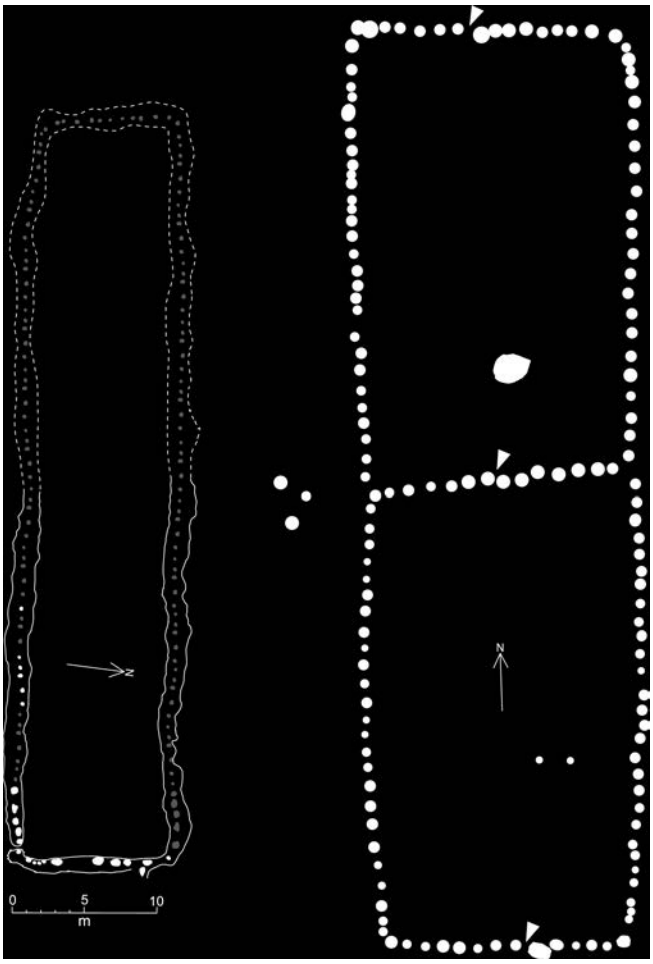
THE CEREMONIAL AND FUNERARY CONTEXT

'Mortuary' monuments

Closest in scale to Claish and Balbridie are structures more probably associated with mortuary practices – sub-rectangular 'monumental' forms of timber constructed during the fourth millennium BC (Kinnes 1992a; 1992b; Scott 1992) with distributions overlapping the Balbridie- and Claish-type structures.

In the main, structures beneath burial mounds are either 'mortuary houses' and/or 'long mortuary enclosures'. The classic two- and three-point-supported 'mortuary houses' of eastern Britain (Scott 1992), are not considered further here, although it should be noted that, at Dalladies, Aberdeenshire (Piggott 1972), Slewcairn, Dumfries & Galloway (Masters 1981), Lochhill, Dumfries & Galloway, (Masters 1973a), Eweford, E Lothian (MacGregor 2002) and Pencraig Hill, E Lothian (McLellan 2002) the mortuary houses were all deliberately burnt down, in common with many other structures discussed in this paper.

'Long mortuary enclosures' have previously been defined as 'rectilinear ditched enclosures, on a scale similar to a long barrow



ILLUS 34 The Inchtuthil 'long mortuary enclosure' (left) and the enclosure at Douglasmuir. Note that in the Inchtuthil drawing only the post-pipes marked in black were recorded during excavation. The post-pipes shown by the lighter tone are a speculative reconstruction based on the size and spacing of recorded post-pipes. On the Douglasmuir plan the 'crab-claw' entrances are marked by arrows (Inchtuthil after Barclay & Maxwell 1991 & RCAHMS 1994a; Douglasmuir after Kendrick 1995)

but with closed off ends and no trace of a mound' (Barclay & Maxwell 1998, 120). As Kinnes has pointed out such sites rarely have traces of burial, but their general resemblance to long barrows in size and shape has encouraged the idea that they are part of the same tradition, and attempts to re-classify them using neutral terms like 'oblong ditch enclosures' have been unsuccessful (Loveday & Petchey 1982). The only excavated classic 'long mortuary enclosure' (Kinnes 1992b) in east-central Scotland is at Inchtuthil, Perth & Kinross (illus 34: Barclay & Maxwell 1991) although it might be argued that Douglasmuir, Angus (Kendrick 1995) and more recently, and more convincingly, Castle Menzies, Perth & Kinross (Halliday 2002) are both related to the tradition. The trapezoidal ditched enclosure at Inchtuthil had held a timber fence that had been burnt and replaced by a second fence, in turn also burned. Oak from the fencing produced calibrated date ranges of 3970–3710 (GU-2761) and 4220–3780 (GU-2760) both cal BC. Inchtuthil, as previously mentioned, has a particularly close resemblance to other long-barrow-related features, like Pencraig Hill, E Lothian (McLellan 2002), a sub-rectangular mortuary enclosure, in this case open to the west end, but which also contains a classic 'mortuary house', combining the façade feature and 'mortuary house' seen at Lochhill (Masters 1973a). The Castle Menzies

monument seems to combine characteristics of both linear mortuary enclosures and long barrows (and even cursus monuments), in having a long post-defined enclosure on three sides with, as its fourth, an in-curving façade of more massive posts. It was burnt down. Oak charcoal from the arc post-holes has produced calibrated ranges as follows: 3950–3700 (OxA-9814); 3970–3660 (OxA-9816); 3970–3790 (OxA-9987) all cal BC (Halliday 2002).

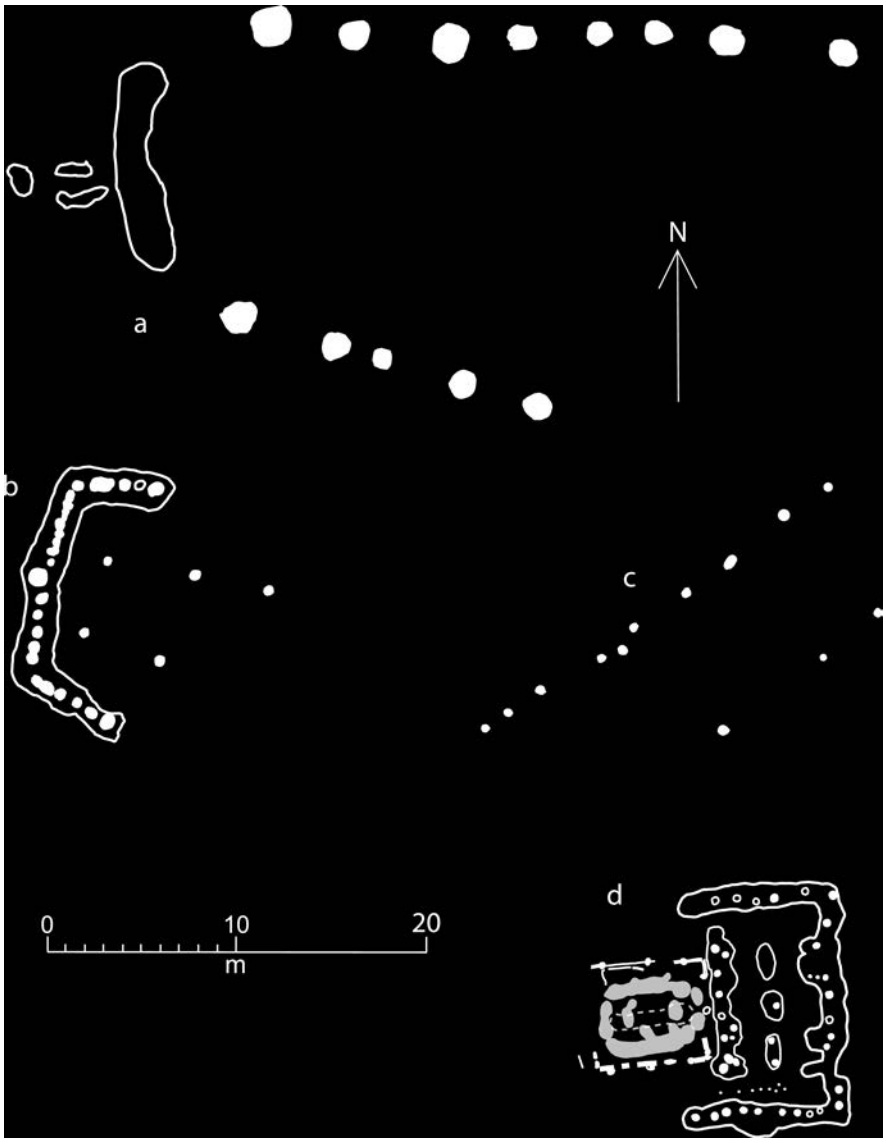
What is apparent is that the constructional techniques and architecture deployed in mortuary houses and 'long mortuary enclosures' represented a tradition or knowledge shared across not only much of eastern and southern Scotland but also south to Yorkshire and beyond, although individual communities expressed the tradition in different ways. These choices were frequently made to create what was externally a visually imposing monument to which only limited numbers of people could have access. In essence, this is also what the builders of Claish and Balbridie achieved.

Ralston (pers comm) has noted that the flattened arc of the west terminal of Balbridie is the same size and shape as that forming the façade of the Lochhill long cairn (Masters 1973a). This observation provides further strength to the argument that the Claish and Balbridie structures were related to other uses of the same architectural 'vocabulary'. Could the Balbridie structure be intended to mimic the arrangement at a tomb, or vice versa? In such a case the western entrance would equate to the entrance of the 'mortuary house' and the relationship between supposed exposure structures (at Balfarg Riding School) and the contents of the long mounds becomes more explicit. Balbridie would, symbolically, be in the forecourt area, and we can find numerous examples of rectangular and trapezoidal settings in forecourts (illus 35), at, for example, Street House, Kilham and Kemp Howe in Yorkshire, and further afield, at Fussell's Lodge and Wayland's Smithy, Wiltshire (cf Kinnes 1992b) and at Nutbane, Hampshire (Morgan 1959). Interestingly, free-standing post-settings of similar shape and dimensions, but as yet undated, are known from aerial photography in east-central Scotland (eg Ardmuir: RCAHMS 1994a, 29).

Pit- or post-defined cursus monuments

Pit- or post-defined cursus monuments have only been identified in Scotland since the 1970s (Maxwell 1979) but already over 20 have been recorded across the country, mostly concentrated in river valleys and surviving only as cropmarks (Brophy 1999). These enclosures share the same morphology as earthwork cursus monuments – elongate rectangular form with squared or rounded terminals – but were defined in the Neolithic by a pair of parallel alignments of standing timbers. Their morphology superficially recalls the 'long mortuary enclosures', although on a far larger scale, with lengths ranging from 65m to over 500m, and widths usually in the range 20–30m. Loveday and Petchey noted (1982) that 'long mortuary enclosures' and the ditched cursus monuments were a continuum; the same might be said of the smaller and longer post-defined structures/enclosures.

As more of these sites have been discovered, so it has become apparent that there is a distinct eastern tradition of post-defined cursus monuments, concentrated primarily in Angus (Brophy & RCAHMS, forthcoming) with outliers in Perth & Kinross, Stirling and Aberdeenshire, which share similar characteristics – squared terminals, frequent internal divisions, and mis-matching corners suggested phased construction. They are surprisingly regular in scale, all around 25m wide and apparently consisting of a series of conjoined enclosures each 100–130m long (with few exceptions). Claish and Balbridie, as well as Noranbank, lie within the distribution of these structures, and may be the product of the same regional tradition. Only Douglasmuir has been excavated (Kendrick 1995). Using revised standard deviations (Ashmore et al 2000)



ILLUS 35 Post structures in forecourts: (a) Kemp Howe, Yorkshire; (b) Street House, Cleveland; (c) Kilham, Yorkshire; (d) Nutbane, Hants (all after Kinnes 1992)

calibrated ranges for three samples of oak from its post-holes can be calculated: 3950–3350 cal BC (GU-1210); 4000–3350 cal BC (GU-1469); 4000–3350 cal BC (GU-1470). It is interesting to note that the indirect 'crab-claw' entrance arrangement seen at Claish and Balbridie is also visible at Douglasmuir (illus 34, at the mid-points of the three transverse screens, and the phenomenon of uneven sides and different numbers of posts on either side is found at several cursus monuments (Brophy & RCAHMS, forthcoming).

CLAISH: COSMOLOGY AND THE USE OF SPACE

The significance of the spatial layout of buildings and enclosures has been a recurrent theme

of Neolithic studies in the past decade (eg Bradley 1993, ch 4; Richards 1993, 147–8; Topping 1996, 157). The contention has been that aspects of the architecture and internal divisions of such enclosed spaces represent anything from a metaphorical representation of the surrounding landscape (Richards 1996; Brophy 2000) to a medium for control of movement and access (Tilley 1994; Thomas 1996, ch 4–6). Such ideas have a resonance when dealing with Claish and similar structures in the discussion, above, and perhaps of most significance is the idea that buildings can embody symbolically the cosmological structures of a society (Parker Pearson & Richards 1994).

Archaeologists have increasingly drawn on ethnographic analogy to illustrate such architecturally embedded cosmologies (Parker Pearson & Richards 1994: Boivin 2000), and the 'reading' of social structures and even beliefs have been taken from humanly-constructed spaces from prehistory (eg Oswald 1997) to modern times (eg Buchli & Lucas 2001, fig 14.1). These studies elevate the architectural detail of buildings from the status of the functional or even the aesthetic to the socially significant and symbolically-loaded. At Claish and Balbridie specific features such as the 'dog-legged' partition (transverse line III) or the 'kink' at the ends of transverse line V might be interpreted in this way.

The significance of a cosmological interpretation of architecture is that it allows one not merely to look at the floor plans of buildings, but also at the ways that the spaces created could have been used in the past. Richards (1993, 144) argued that spatial organization in architecture could be seen as a 'product of Neolithic people's understanding and knowledge of their own world'. He has argued persuasively (ibid) that many structures of the middle to late Neolithic on Orkney were constructed around a single cosmological model reflected in the floor plans at the settlement at Barnhouse, the burial mound Maes Howe and the Stenness henge. Here architecture within a group of apparently completely different structures (both visually and functionally) embodies certain themes or concerns ranging from exclusion of movement to emphasis on certain directions and forms of movement. This 'monumental choreography' connected many diverse areas of life through the use of metaphor and provided both a cue for actions, reminders of social position and a sense of identity. Elements of life we classify as domestic, ritual and funerary were linked and encountered through ritualized activity in prescribed and appropriate places, and perhaps here we can begin to explain the relationship between the timber monuments that superficially appear similar in plan to Claish or share timber posts as the main structural component (above).

Richards (1993, 163) notes, 'on entering House 2 [at Barnhouse] the subject has no immediate visual contact with any of the activities to the most inaccessible portion of the inside area' (1993, 163). We can imagine that whatever happened within the central space at Claish (Space C) was not intended to be accessible by anyone outside the structure, or indeed, in other parts of the structure. The similarities between, on the one hand, Claish, and on the other the probably unroofed structures at Littleour and Balfarg Riding School, suggested to us at first broadly contemporary construction by related communities, using a shared 'vocabulary' of architecture to provide spaces with different functions. However, when the radiocarbon dates for Claish became available it was clear that the unroofed timber structures had been built several hundred years later, but their similarities in plan still imply a shared cosmology, albeit Littleour and Balfarg Riding School as later developments within it.

This shared cosmology could be seen as working at local levels or more regionally. Recent Neolithic studies have attempted to emphasize and identify regional Neolithic traditions within the British Isles (Barclay 2000).

These studies have tended to draw on similarities in material culture and monument forms. We can perhaps consider instead how spaces were used in the past, and identify regional traditions in these different use-patterns, perhaps transcending our modern typologies. The cosmological tradition embodied by Claish and apparently reflected by related but different monuments several hundred years later, appears to have had a relatively discrete distribution, concentrating in the eastern lowlands of Scotland.

FUNCTION OF THE CLAISH STRUCTURE

Ralston has suggested that Balbridie, 'had been laid out so as to provide two substantial blocks of space with little in the way of structural encumbrances' (Ralston 1982, 242). The two spaces referred to (Ralston, pers comm) are the equivalent of Spaces C and D1/D2 at Claish. Topping notes (1996, 163) that 'Balbridie's ground plan illustrates a degree of structural elaboration and complexity which is currently unique'. Topping, in identifying three spaces in the interior, perhaps underestimates the complexity of the internal arrangements, and particularly the significance of the partial barrier formed by the dog-legged partitions (transverse line III at Claish). He (ibid, 166) considered the area at the western end of Balbridie (which would translate as Space A at the northern end of Claish) to be a 'western ritual sanctum', comparing the implied exclusivity with the likely restrictions on seeing into the interior of henges. However, with more detail of the interior arrangements present at Claish and the presence of a second entrance, perhaps a greater degree of complexity must be considered, and a different view has been presented above, with the central unencumbered Space C at the core. Topping concludes that, 'The sheer scale of the Balbridie hall suggests it was something beyond the ordinary in its regional context. If the hypothesis outlined above is correct in suggesting a ceremonial or ritual function for the hall, it follows that we may be seeing some form of cult house with a regional importance'. It seems likely to us that the Claish structure indeed served a larger role in its society, and possibly within a wider area. The remains of cereals and hazelnuts, and to a lesser extent the fragmentary remains of burnt bone, suggest the consumption, or at least the deposition, of food, particularly in the area unencumbered by posts, and we have suggested that food storage may be implied by the possible presence of an upper floor in the southern part of the structure and the presence of large quantities of cereals in the equivalent area at Balbridie. The palaeoenvironmental report, however, offers little to suggest that any crop processing was going on in the immediate vicinity. The plan relationship noted by Ralston between Balbridie and Lochhill, and the possible mortuary function of the later Balfarg Riding School structures, may imply that Claish and Balbridie, while having important roles in the society of the living, may also have had a role in mediation with the dead; perhaps the growing predominance of this role over time led from Claish/Balbridie to the construction of the Littleour and Balfarg Riding School structures.

If it is agreed that the core of the structure lies in Space C, then it is likely that the main approach to this space may have been through the south entrance, through Space D (which, however, may have been subdivided). A purely ceremonial function for the structure would see this as the route for a limited number of participants to approach Space C, in which some special activity was to take place. The northern access might allow further, but differently qualified, participants into Space B, where they might overhear or have a limited view of activities in Space C; we should not assume, however, that such 'participants' necessarily had a physical existence (cf the apparent relationship between the west terminal of Balbridie and the Lochhill burial mound façade). That the builders took great care in defining Space C to a pre-determined

pattern is implied by the dog-legged shape of the elements of screen III – a shape paralleled at Balbridie. It is interesting to note that, if the southern part of the structure did indeed have an upper floor, as is tentatively suggested above, then someone moving from Space D to Space C might also be moving into a room with a higher ceiling; the same might be said of someone moving from the passage of a tomb into the chamber. The transition from Space D to Space C (and the equivalents at Balbridie) would also involve moving from an area relatively densely packed with uprights (the timbers of transverse lines IV and V, and their equivalents at Balbridie) – 'like a forest with a roof' (Ralston, pers comm) to a 'clearing' with relatively few uprights.

An alternative interpretation (cf Rowley-Conwy 2002) would see Space C as the main living space of a house, with different activities (sleeping, eating, stock shelter) taking place in other areas; the second entrance might be related to the allocation of, or access to, space by age, gender or relationship. In any scenario the anomalous possible post-hole at the mid-point of, but offset outwards from, the western wall could be seen as part of an entrance providing more direct access to the central part of the structure and would radically alter the nature and use of the spaces within. It is interesting to note that the possible post is on the line of the short axis of the structure, but that no parallel feature was noted at Balbridie. Ralston (pers comm) has suggested that at Balbridie the restricted access around or through the screens inside the entrance(s) would make difficult the use of the building for sheltering stock. The more generous space around the terminals and entrances at Claish would make such a use less difficult.

Another view might allow the structure to be not only the dwelling of a significant group (women, men, a family) but also, because of that group's prominent role in its society, the location of specific activities (whether termed religious, ceremonial or political) related to the functioning of that society, perhaps including the storage of communal supplies of grain. On the analogy of other periods (for example medieval hall houses), we should not assume that spaces set aside for semi-public or general use during waking hours should not be used for sleeping at night.

Jones (2000) has noted that the relative paucity of cereals in the early Neolithic of Britain, in particular in comparison with numerous finds of hazel nutshells, and the consequent playing down of the contribution of cereals to the Neolithic diet, has been one factor in the development of the 'mobile Neolithic' hypothesis (eg Thomas 1991). She notes that the difference in quantities is a reflection of survival, and of retrieval strategies. Claish and (particularly) Balbridie are both associated with cereals, and almost every Neolithic pit group or settlement in Scotland produces at least some cereals (Barclay 2003).

Fairbairn (2000), in discussing how cereals became widely distributed across Britain in the first half of the fourth millennium, notes the polarization between explanations of cereals as, on the one hand, mere sources of calories, and on the other, as sources of 'symbolic power'; he suggests that it is 'disappointing that [the latter] account explicitly denies that any domesticates had calorific importance' (ibid, 111). He argues convincingly for a more complex situation, in which cereals not only had symbolic importance and calorific value, but also may have had an important role in exchange, as a medium of display of accumulated 'wealth'. Discussions of the adoption of agricultural processes do not often compare the qualitative difference between the domestication of animals – perhaps a gradual process (as with dogs) which does not transform the essential nature of the animal – and the introduction of cereals. Growing one's own plants, that would otherwise appear at random, in a place of one's choice, could have seemed as magical as the later transformation of ore into shining metal, and been treated with as much circumspection and awe in the

early Neolithic, imbuing the those who had access to and control over this process, through the storage of seed for the next harvest, with considerable authority. It may be that Claish and Balbridie, in part, grow out of the power of this transformation and control over it.

CONTEXT & ORIGINS

Richard Bradley (1998, 9) has tellingly written of the problem of the northern European Neolithic as, 'a Neolithic that failed to live up to what was expected of it' – that is, it did not reflect the existence of stable settled farming, of the kind expected on the basis of the characteristic earlier Neolithic of the loess areas to south. He continues, 'What they find instead of houses are monuments, and these are generally of two kinds [enclosures, some fortified, and mounds/cairns]' (1998, 10). In Scotland there are mounds and cairns, and there may be enclosures, although not, on the basis of aerial photographic evidence, of a 'classic' causewayed type (see Barclay 2001 for summary). However, we also have, in the form of Balbridie and Claish, structures whose existence is used to argue for a Neolithic in which they may be seen as typical settlements of their area (eg Rowley-Conwy 2002, 24).

As yet we know of no earlier indigenous tradition in Britain or Ireland from which these major timber constructions could spring (the only evidence for Mesolithic use of large posts is near Stonehenge, where three massive posts and a possible tree-hole were found in an alignment (Cleal et al 1995, 41–56)); on the other hand, no *exact* parallel for the Balbridie and Claish structures in their entirety can be demonstrated in mainland Europe. It is certain that significant elements of the Neolithic way of life (cereals, domesticated animals and the making of pottery) had to be brought from the mainland, carried either by farmers coming to settle here, or by indigenous peoples bringing them back. Although there is no artefactual evidence for contact, we believe that some form of pre-existing contact is implied in either eventuality: Mesolithic peoples would have to have some mechanism by which to obtain access to farming technologies and their accompanying social contexts, and Neolithic settlers are unlikely to have launched themselves into the unknown without some prior knowledge of their destination; Fairbairn (2000) has usefully summarized the arguments about continued Mesolithic contacts across the North Sea. Whichever explanation is correct, or whether Neolithic lifeways came to Britain by a combination of these circumstances, we must consider how much of the cultural traditions associated with these lifeways came too.

The origins of the farming societies of the eastern lowlands of Scotland have been considered either at a very general level, or in detailed consideration of monument and artefact typologies. What might be termed the traditional view, that the Neolithic of the eastern lowlands arrived by way of the Channel and southern England, has not been re-examined in any detail nor replaced by a coherent alternative. Kirk (1957) suggested, for example, that the Neolithic of the eastern lowlands had originated in a combination of Mesolithic peoples and colonists arriving from the south via, on the one hand, the Irish Sea, and on the other, via a long 'trek' up the east coast from Yorkshire. More recent discussion of the 'origins' of the Neolithic is submerged in generalization; no-one leaves a particular place in continental Europe or arrives on any particular part of the British coast (eg Whittle 1996, 231–3). However, just as Childe's 'megalithic colonization' of the west is finding new life in a new form (Sheridan, pers comm), the parallel explanation, of the impulse for change (or the advancing wave of colonists, if preferred) moving northward along the east coast, is still a viable hypothesis, given the traditions in artefact and burial structures along the eastern seaboard that imply close contact or common origins. However, the realization of the Neolithic date of Balbridie,

and the character of the cereal assemblage ('closer to continental European practices than has normally been identified in the British Isles': Fairweather & Ralston 1993) has contributed in the last decade or so to the tentative consideration of more direct contact across the North Sea (eg Parker-Pearson 1993; Ashmore 1996 – the latter author being rare in attempting to consider the process in any detail).

The distribution of Balbridie-type structures seems to be restricted to northern Britain. It may be that, as with the apparent absence of classic causewayed enclosures, there is some difference in need for, or practice in, the construction and use of monuments between areas, and it is possible that these result from differences in origin. However, supporters of the colonization hypothesis have looked in vain for exact parallels for the structures on either side of the North Sea or the Channel, and the lack of such comparanda has weakened the perceived contribution of incomers to the process of change implied by the 'Neolithicization'. On the other hand, dismissal of colonization because of the lack of evidence for direct contact across the North Sea and the Channel seems to be predicated upon the data on both sides being tolerably complete and reliable, which of course they are not (cf Sheridan, above, for the pottery). That comparable structures are not being found in, for example, Belgium, may be the result of the very limited role that aerial photography has had in that country until recently (Bourgeois et al 2002).

It must be accepted that some elements of the economic and social transformation implied by the 'Neolithicization' had to be imported; these must have been brought from specific points on the eastern coast of the North Sea and will have come from specific cultural contexts; it seems inherently unlikely that the elements of this economic and social transformation arrived here shorn of the social constructs surrounding them. Even if these external elements were brought across the North Sea by indigenous hunter-gatherers living in Britain, from similar groups, perhaps in the process of transformation themselves, the elements do not arrive value-free. Thus, the architectural tradition of the massive timber structures, and the underlying social and/or religious practice that demanded them and circumscribed their design, could be part of that social context, whether reflecting first-, second- or third-hand the social context of Neolithic practice further to the south and east, or further back in time. Bradley (1998) has summarized the arguments for a similar process in the origins of the long mound tradition in Britain.

The hypothesis is therefore that: the origins of the external elements of the Neolithic of eastern Scotland (certainly cereals, some, probably all, domesticated animals, the practice of making pottery and polished stone axes, the traditions of burial and an architecture of massive timber-built structures) lie across the North Sea to the east or ESE; these elements will necessarily have come with aspects of the social context in which they were used in the place(s) of origin; these contexts may themselves reflect (however faintly) practice further back in time, or in the social contexts from which the Neolithic of the north-western seaboard of Europe developed. Thus, while direct parallels for Claish and Balbridie may be lacking, there may be indications of commonality of intent and practice as reflected in that part of the north-west European mainland facing eastern Britain – Denmark, the German Länder of Niedersachsen and Schleswig-Holstein, the Netherlands, Belgium and northern France. The occurrence of three traits has been considered: a tradition of constructing substantial timber structures; a pattern of complex internal subdivision of these structures; and specific common constructional characteristics (for example, the rounded-ended, straight-sided tradition exemplified not only by Claish but by Littleour and Balfarg).

Starting at the north, Eriksen has usefully brought together the data on early Neolithic

houses in Denmark and southern Sweden and has defined an 'early Neolithic housetype' (Eriksen 1992). The type is defined as follows: 10–18m long and 4–6m wide; three to five axial roof-support posts; rounded terminals; straight or lightly curved sides; most aligned east/west but some SSW/NNE. The southern Scandinavian buildings share some characteristics with the Claish/Littleour tradition: they approach them in size; they are round-ended; and can be straight-sided. However the majority are bow-walled, the arrangements for supporting the roof are far simpler and there is little evidence for internal subdivision. House FH at Limesgård (illus 36b) shows greater similarities, but Eriksen sees it as unusual (for example in having a greater number of axial posts, although their arrangement might hint at more than one phase of construction). A broadly similar TRB building has been excavated at Schwarzen Berg in Lower Saxony, which measures 15.6m by 6m (illus 36d: after Schirnig 1979) although it seems to have two internal partitions.

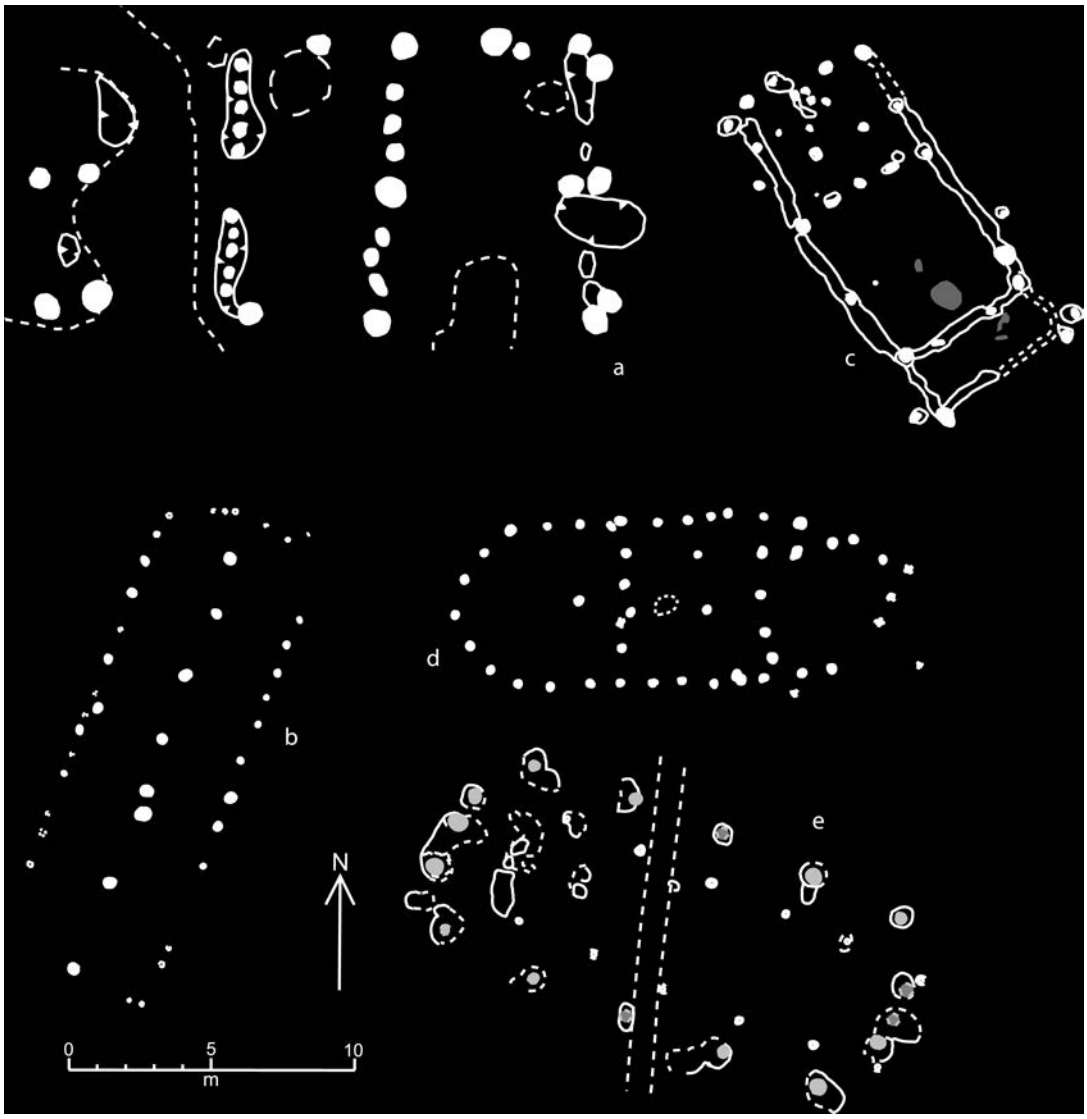
Saville (above) has noted that Danish 'cult houses' share a characteristic with Claish and Balbridie, abundant pottery and little struck stone. While there are clear shared characteristics in aspects of the long barrow tradition between eastern Britain and Denmark, and a pattern of complex internal partitioning is clearly visible in such sites as Østergård (cf Madsen 1976), the 'cult houses' of the kind excavated at Tustrup and Ferslev seem to share no physical characteristics with the Scottish sites and moreover, date from about half a millennium later (Kjaerum 1966; Andersen 2000). In the context of possible contacts across the North Sea, it should be noted that the supposed find of TRB pottery in Co Durham (Childe 1932b) is probably from an antiquarian collection (Trechmann 1936, 168; Piggott 1954, 321).

The range of Neolithic houses of northern France and Belgium is considerable, from small oval huts (Villes 1999, 33) to immense rectilinear buildings with many subdivisions (eg Villes 1999, 35; Marolle 1988). However, while the overall shape is not paralleled there is a more pronounced tradition here of internal complexity, and structural elements seen at Claish and Balbridie can be paralleled, for example the appearance of dog-legged partitions, like transverse line III at Claish, at Berry-au-Bac, Aisne (illus 36a; Dubouloz et al 1982, 201).

Although structural evidence from as far north as Denmark has been considered, Sheridan in her discussion of the possible continental origins of the Carinated Bowl tradition (above), suggests that its origins, and perhaps those of the timber structure tradition in Scotland, are unlikely to lie north of Belgium. The appearance of structures like Claish and Balbridie, and possibly also Sprouston and Noranbank, all beside major rivers flowing into the North Sea, facing continental Europe, may provide further hints of relations between the peoples on either side of the North Sea, although the apparent similarities in burial monuments may indicate, if not Kirk's (1957) 'long trek' from Yorkshire to south-east Scotland, then a coastal distribution from a point of contact in north-eastern England.

CONCLUSIONS

The writing and refereeing of this report have brought home to the authors just how polarized is discussion about the inception of the Neolithic, and therefore how contentious the interpretation of structures like Balbridie and Claish can be. If this report had been written in the 1970s it would have been long on description and probably short, but more conclusive, on discussion. Unfortunately no amount of detailed work on assumed wall heights and hypothetical roof-loading under snow, or analysis of the nature and location of the pottery, or speculation about the virtual absence of lithics and the complete absence of coarse stone tools, or the presence or absence of cereals and wild foods, would answer the question, 'was it a house?' We reject this



ILLUS 36 Structures in France, Denmark, Ireland, Germany and Scotland; (a) Berry-au-Bac, Aisne (after Duboulez et al); (b) Limensgård house FH (after Eriksen 1992); (c) Ballyglass: post- and stake-holes in black, fire-reddened areas toned (after Ó Nualláin 1972); (d) Schwarzen Berg (after Schirning 1979); (e) Carsie Mains, Perth & Kinross (after Brophy & Barclay forthcoming)

positivist approach. We excavated only a small damaged part of what was probably a larger system of occupation and land-use; we therefore have only hints of the nature of the structure; the fires could have been lit for many kinds of gathering or other purposes; pottery could have been brought to the site for many reasons; flint-working and food processing may have taken place away from the structure, with evidence of the latter scattered by subsequent land-use.

In discussing Balbridie and Claish it is possible, on the one hand, to be seduced by similarities in the ground plan, and on the

other to compile quite a list of detailed differences. Going beyond the ground plans, we can consider the relationship between the design or aim of the builders, and the actual construction. We believe that the aim of the builders was to provide two structures with the same broad range of spaces, some perhaps of greater significance than others; for example, the spaces between the terminals and the screens just inside them are much larger at Claish and the proportions of length to width of the structures were different, and we may suggest that these aspects were not vital to the purpose of the structure. There were also specific details in the design that appear to have been deliberately incorporated: for example the design of Space C and the screens that delineated it, the crab-claw arrangement of the entrance and the 'kinks' on transverse line V. It is in the techniques used in erecting the structure that the greatest differences appear; continuous slot construction; the different distribution of size of structural member across the plan; different forms of slot at transverse divisions II and III; poor correlation at Claish between the transverse divisions and post positions on the side walls.

However, we argue that the aim was to create two structures with certain shared characteristics, hence the overall close similarities. Some elements seem to have been more important than others and therefore more care may have been taken to make them conform to what was needed. However, we argue that the structures sprang from different traditions of timber construction, and that different ways of addressing the structural problems raised by such large and complex buildings emerged from those traditions. Thus, two groups of people, apparently with different approaches to the building of large timber structures, were impelled, presumably by some strong social or ideological impulse and by a shared cosmology, to provide structures for themselves incorporating specific features and characteristics. We have to consider the transmission of the information that allowed two widely separated communities to build structures with considerable similarities. Hogg provides some clues – both Balbridie and Claish were built in multiples of local 'units', probably nothing more complex than a pace or the length of a human arm, Balbridie measuring 24 of the local 'units' by 10, Claish, 24 'units' by 9. Were the instructions transmitted on dimensions no more complex than '24 arm-lengths', and did the builders of Claish or Balbridie get the width wrong, with one 'unit' too few or too many? Specific design features would be easy to demonstrate to someone on a standing example.

The close resemblances between Claish and later round-ended timber structures (apparently of different design and purpose) suggest the existence of an architectural 'vocabulary' that developed to articulate different aspects of that cultural tradition. While parallels between Claish, Littleour and Balfarg are obvious, other more subtle relationships can be observed; as for example the possible relationship between the designs of Balbridie and a tomb façade.

It is clear that Claish-type structures are not the most usually encountered form of 'domestic' features – these are more varied, with no apparent sign of the influence of shared cosmologies, represented by Kinbeachie, Ross-shire (Barclay et al 2001), Cowie, Stirling (Atkinson 2002), Spurryhillock, Aberdeenshire (Alexander 1997) or Biggar Common, S Lanarkshire (Johnston 1997). The conclusion of the present authors, the most probable in the light of the limited evidence from the site and its ill-understood context, is that Claish was a roofed building, but it was not a normal 'farmhouse'. It may have been used in part for storing grain and, as Claish at least had two pits which may have been used as hearths, which contained remains of cereals, nuts and meat, for permanent or periodic occupation. The role of Claish, and by extension Balbridie, very early in the Neolithic of lowland Scotland, may be associated with the

social or religious context of agriculture, whether brought by colonists or developed by indigenous populations with contacts along the east coast of Britain and across the North Sea. Possibly at the time of their construction these structures reflected in some way the shape and nature of mortuary monuments, and over time the architectural 'vocabulary' came to be used more on probably unroofed monuments with a ceremonial or funerary association.

The investigation of 'big-houses' in the Neolithic in Scotland began at Balbridie, with what was expected to be the excavation of an Early Historic hall, a high status dwelling; perhaps it was only the date that was wrong, and the title 'hall' might approximate the status and functions of these enigmatic structures fairly well.

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NOTES

1 Modern, post-1995, Council Area names are used throughout.

2 The original name in the National Monuments Record for the Claish site was 'The Clash', the name used on the Ordnance Survey 1:10,000 map at the time of the discovery. However, local usage is 'Claish' (Gaelic, 'hollow') and this form

is now being used by OS as map sheets are re-published.

3 The 'data structure report' is defined in Historic Scotland 1996, 9.

4 Balbridie is variously described as measuring '24x12m' (Fairweather & Ralston 1993) or '23m in length' (Ralston 1984, 75), or 26m long and 13m wide (Ralston & Reynolds 1981) but measurement to the mid-point of the wall trench, rather than its outer side, at Balbridie appears to give a measurement of 22x11m for the area within the walls, which can be compared to 24x8.5m at Claish, measured to the centres of post-holes.

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