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Neolithic and later prehistoric structures, and early medieval metal-working at Blairhall Burn, Amisfield, Dumfriesshire

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ABSTRACT

The Centre for Field Archaeology (CFA) was commissioned by Irish Gas to undertake archaeological excavations on a number of previously unknown features identified during topsoil removal during the construction of the Southwest Scotland Gas Interconnector Pipeline, approximately 2 km north of the village of Amisfield, near Dumfries. Five separate areas of archaeological interest were identified, consisting of two burnt mounds, two round-houses, part of a ring-groove structure — a possible platform house — and a metal-working area, which together represent a palimpsest of activity dating from the Neolithic to the early medieval period.

INTRODUCTION

In 1993 Bórd Gas Éireann (Irish Gas) constructed the Southwest Scotland Gas Interconnector Pipeline between Moffat and Kirkcudbright (illus 1). Prior to its construction, several prehistoric and later sites within the pipeline corridor were identified as part of Stage 1 of the desk-based assessment for the project (Armit & Ralston 1991) and were avoided during the insertion of the pipeline.

Initial fieldwalking after topsoil removal of Section 40 of the pipeline swathe, some 30 m wide, by the Irish Gas Board Project Archaeologist, David Maynard, revealed a cluster of areas of archaeological importance (illus 1). These lay approximately 2 km north of the village of Amisfield, near Dumfries, and west of the A701 (NGR: NX 999 846, centred). The Centre for Field Archaeology (CFA) was contracted to excavate those sites located. These sites lay in rolling agricultural land within a restricted area traversed by the Blairhall Burn approximately 2 km south-west of the Water of Ae and 5 km north-east of the River Nith, within the Dumfries Basin.

ARCHAEOLOGICAL BACKGROUND

A number of prehistoric and later sites lie within a few kilometres of this area. These consist of two Roman camps, a Roman fortlet and Roman road, and a ring-groove house within a palisaded enclosure and settlement.

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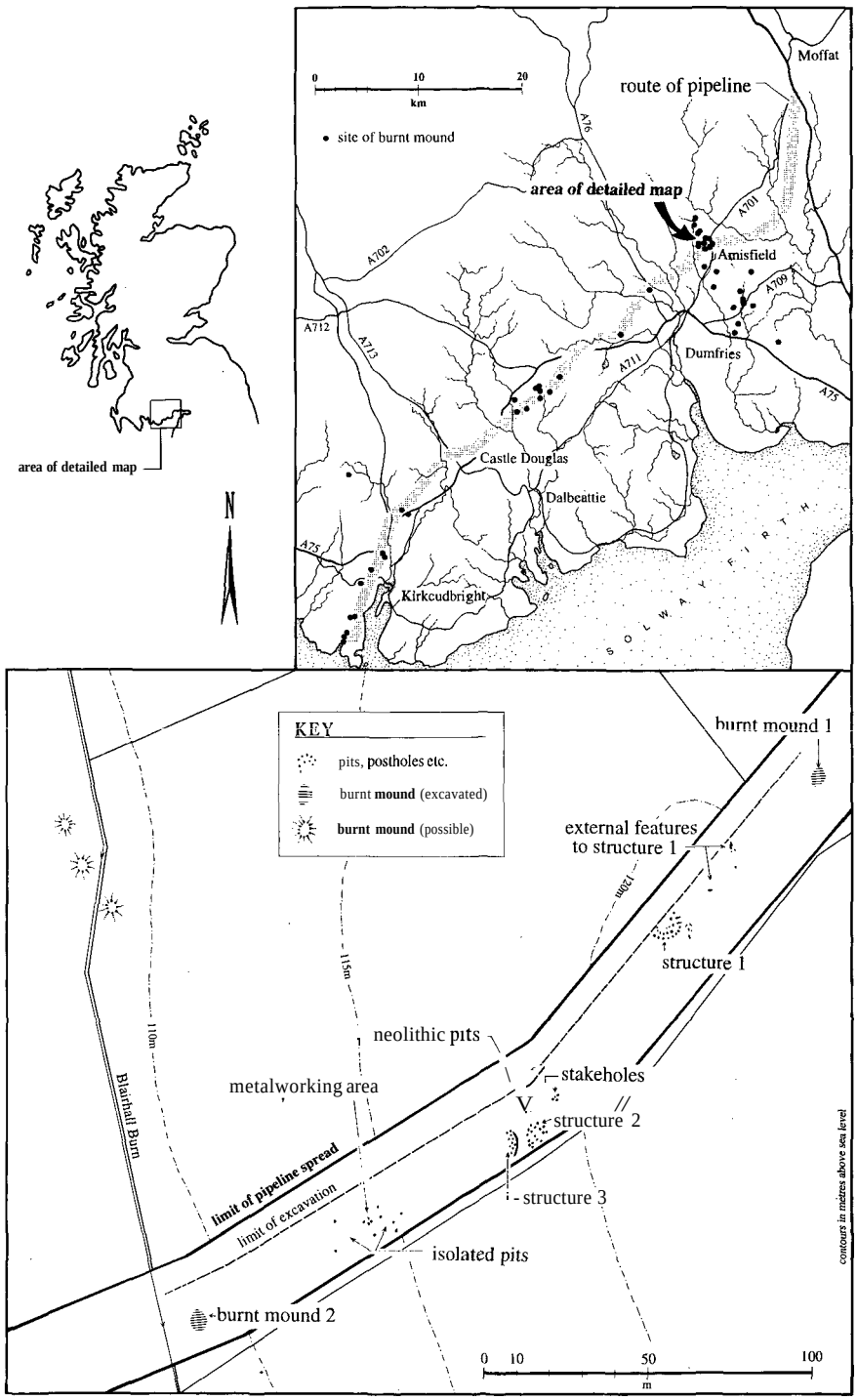


ILLUS 1 Location map, showing pipeline route, distribution of burnt mounds and areas of excavation at Blairhall Burn. *(Based on the Ordnance Survey map © Crown copyright)*

Other prehistoric sites in the vicinity of Blairhall Burn include the nearby hillforts of Barrshill and Whitehill, two probable ring-ditch houses, settlements and enclosures. A number of cairns and possible cremation cemeteries have also been recorded on nearby Duncow Common and on the Watchman and Whitestanes Moors. Findspots of note include a flat bronze axehead, a bronze spearhead and possible bronze cauldron handle and a Group VI stone axehead.

SUMMARY

The excavations recorded the remains of two burnt mounds (Burnt Mounds 1 & 2; illus 2 & 3), two round-houses (Structures 1 & 2, illus 4-8), part of a probable ring-groove structure — a possible platform house (Structure 3; illus 9-10), a metal-working area (illus 11) and a number of isolated features (illus 1, 9 & 11). Three extant burnt mounds lay adjacent to Blairhall Burn, c 100 m north of the pipeline swathe (illus 1). Additional burnt mounds, surviving as both extant monuments and ploughed-out remains, were also located along the pipeline route. A detailed account of these has been produced (Maynard 1993). Reference may be made to illus 1 for the location of the individual sites. Sections of all features excavated were recorded but are not reproduced here. They are included in the archive report (Strachan & Finlayson 1993), a copy of which has been deposited in the National Monuments Record of Scotland (NMRS).

METHODS

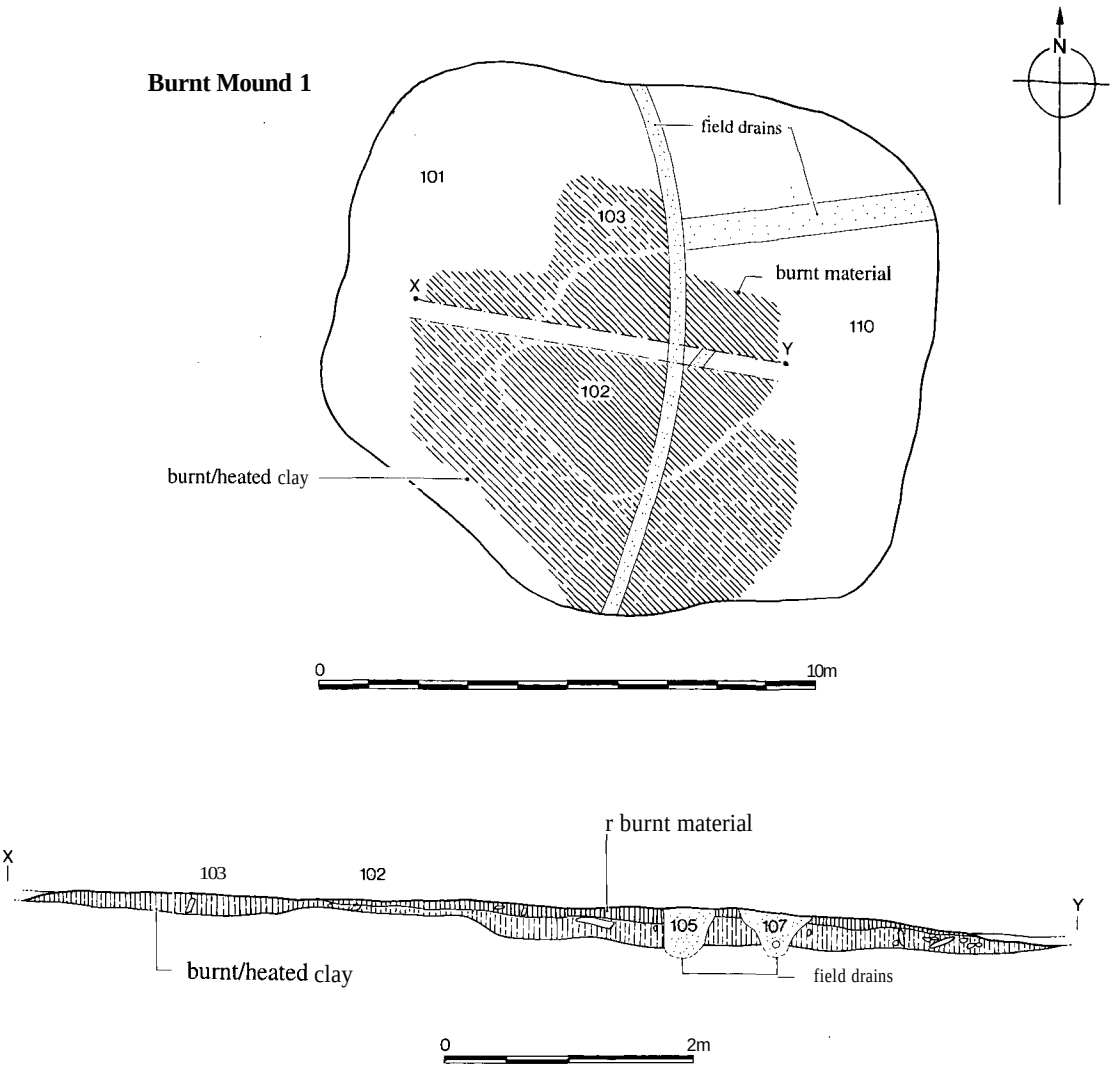
Approximately 1200 sq m were selected for excavation in agreement with the acting Regional Archaeologist for Dumfries & Galloway, Heather James, and with Project Archaeologist David Maynard. All of the excavated areas discussed below lay within 250 m of each other along the pipeline swathe. The whole 250 m of pipeline swathe was initially given a rapid clean. This revealed areas of concentrated activity which were then targeted for intensive cleaning. The areas between these sites were also systematically examined for the presence of additional isolated features. The principal structures and a number of isolated features of archaeological interest were all situated at 110–120 m OD on the west-facing slope of a hillock. The variable depth of the topsoiling, compounding the impact of previous ploughing, meant that many features had been heavily truncated; this was most apparent at Burnt Mound 1. Structure 3 had also suffered considerable damage owing to quarrying for hardcore, prior to its identification as a feature of archaeological interest.

EXCAVATION RESULTS

BURNT MOUNDS

Burnt Mound 1 (illus 2)

Burnt Mound 1 was situated on level, damp ground that would probably have been prone to flooding and/or may have formed a marsh prior to the cutting of the modern field drains which were seen to intersect it. The area had suffered considerable post-topsoiling damage from pipeline construction traffic and trample from livestock. Thus, when first identified, the feature consisted of a slight sub-oval mound of burnt material measuring approximately 5.5 m by 4.5 m and was in a degraded condition with minimal relief. The mound was formed of an abundance of charcoal pieces and approximately 60% burnt and fire-cracked sandstone (102) with a maximum depth of 0.13 m. The original extent of the mound was indicated by a large patch of burnt/heated clay subsoil (103), irregular in shape, and measuring approximately 8.5 m by 7.5 m. It lay partly below the surviving burnt mound material, but extended beyond it (see illus 2). No structural



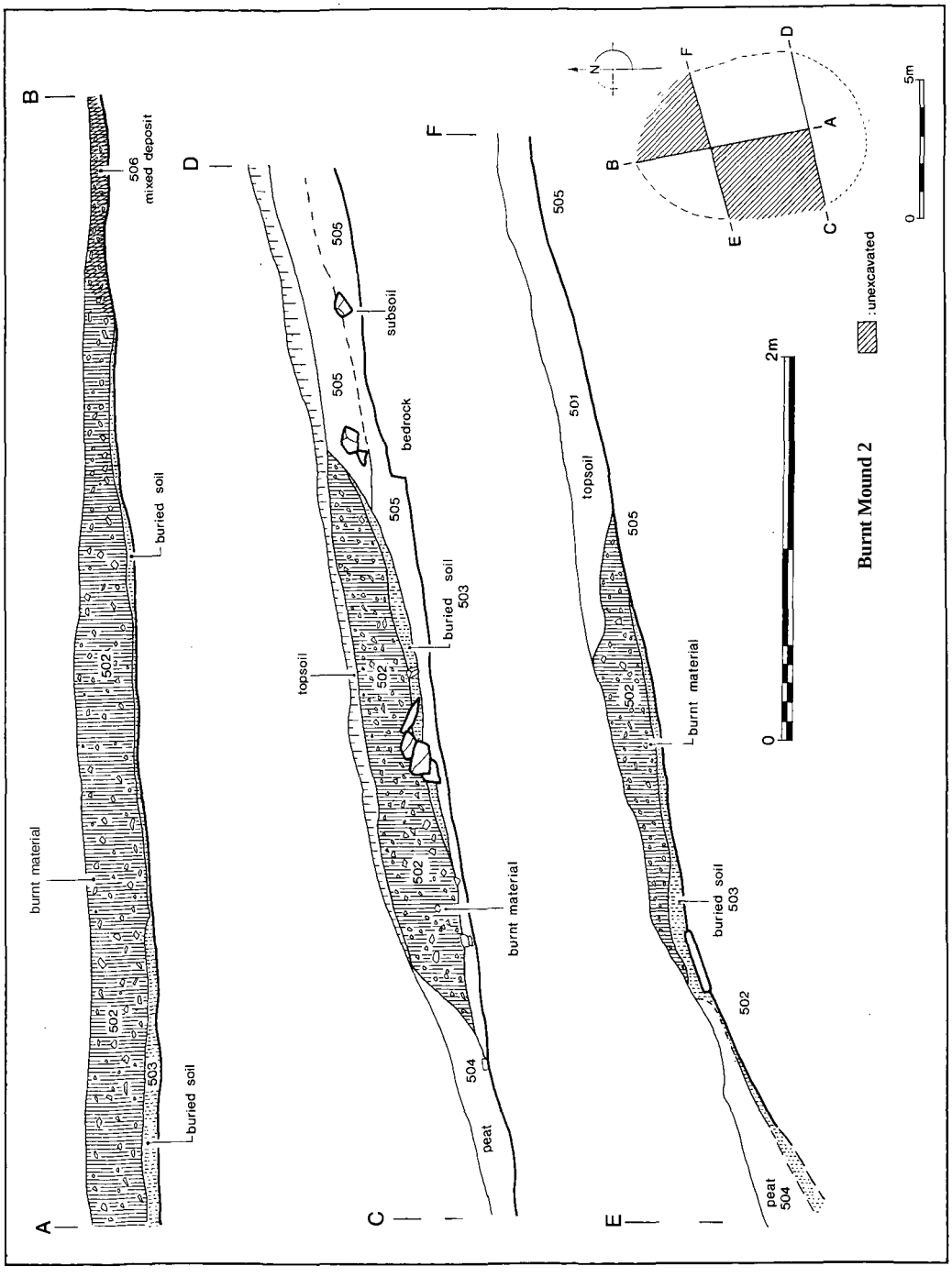
ILLUS 2 Burnt Mound 1, plan and section

elements were detected within the mound material, which had also been bisected by two modern field drains (105, 107) aligned north/south and SW/NE. The artefacts from this site — a chert flake and a small crescent-shaped piece of iron — were both surface finds and are, most likely, unassociated with the structural evidence.

A sample consisting of hazel, birch and oak taken from the main burnt mound material produced a radiocarbon date of 1700–1430 cal BC (2 sigma, Beta 74586).

Burnt Mound 2 (illus 3)

Burnt Mound 2 was situated on the eastern bank of Blairhall Burn, approximately 250 m south-west of Burnt Mound 1. It is one of at least three probable burnt mounds along a 200 m stretch of the burn here



ILLUS 3 Schematic plan and sections of Burnt Mound 2

(Maynard 1993, 42; nos 40.1, 40.2, 43). The others survive as field monuments with low relief outwith the pipeline swathe (see illus 1).

Its overall length is not precisely known due to the cutting of a machine trench, which had removed its southern end, prior to its identification. The excavated mound was c 6 m wide, 6-8 m long and orientated approximately north/south. Excavation revealed a deposit, 0.15–0.35 m thick, of burnt material (502) composed of charcoal pieces and fire-cracked sandstone. Sealed directly below the burnt mound lay a buried soil horizon (503) a few centimetres deep. The western edge of the mound appeared to have been eroded, most likely by the movement of water along Blairhall Burn, prior to the local formation of peat which built up over its western edge. No structural features were identified within or beneath the mound make-up. No finds were recovered.

Two samples, consisting of oak and hazel, were collected from the top and base of the burnt mound and produced radiocarbon dates of 1420-990 cal BC (2 sigma, Beta 73548) and 1510-1020 cal BC (2 sigma, Beta 73547) respectively.

ROUND-HOUSES

Structure 1 (illus 4 & 5)

Excavation revealed the remains of approximately two-thirds of a double-ring round-house (Structure 1). The remaining third of the structure is likely to survive beneath the location of the machine topsoil heap and outwith the pipeline swathe. The structure consisted of two concentric rings of post-holes with a narrow porch marking the entrance to the east. The outer ring, if extrapolated, would give the round-house a diameter of approximately 10 m. The lack of internal occupation deposits means it is impossible to determine any vertical stratigraphic phasing.

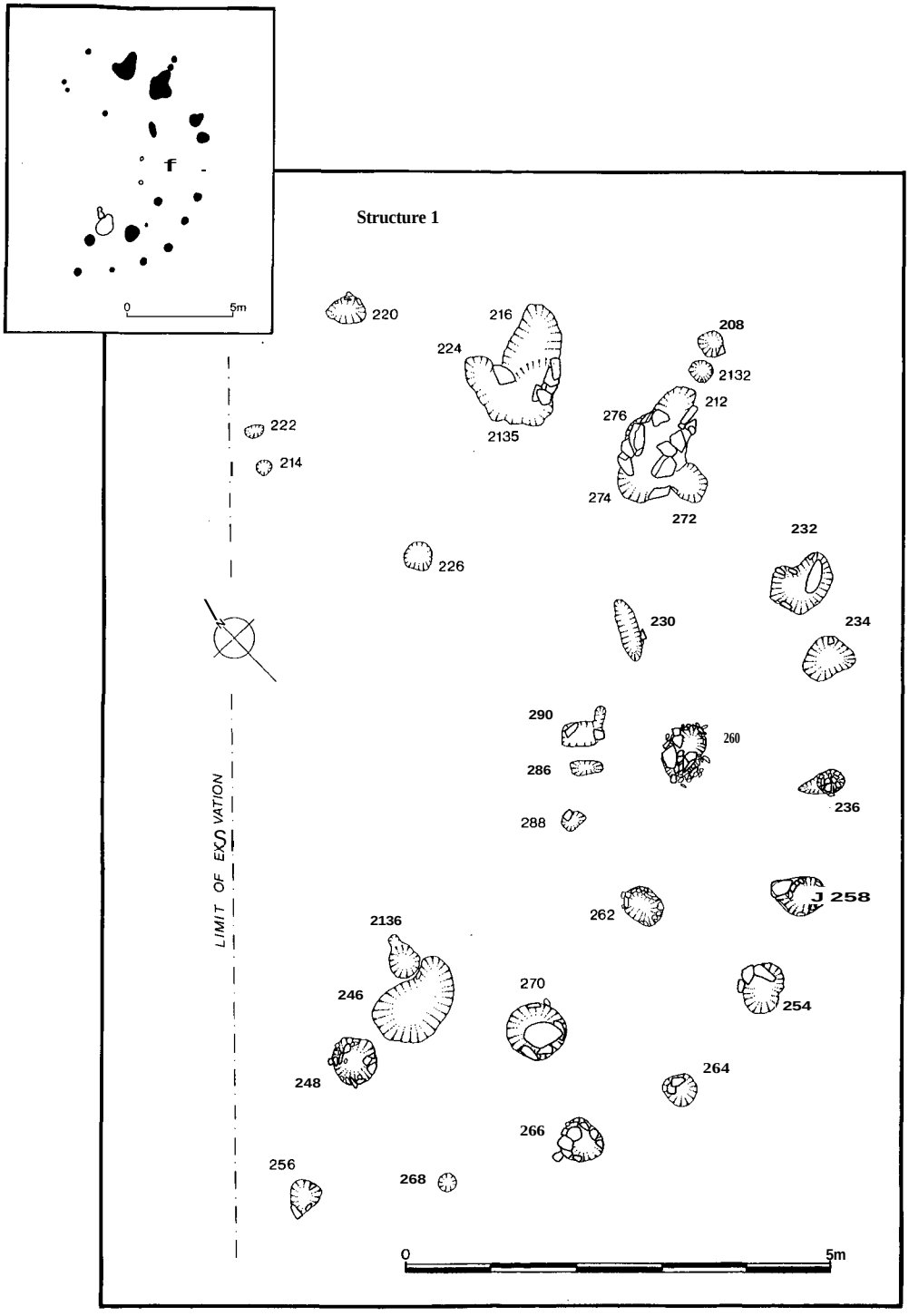
The outer ring of this structure, as revealed (illus 4), consisted of 14 post-holes (220, 224, 2135, 274, 272, 232, 234, 236, 258, 254, 264, 266, 268, 256) spaced approximately 1 m apart. Most of the post-holes in the outer ring were substantial with a mean depth of 0.25 m (the deepest being 0.40 m, the shallowest 0.05 m). Eight of the outer ring post-holes (220, 232, 236, 258, 254, 264, 266, 256) contained packing-stones.

The examined portion of the inner ring was made up of six post-holes, spaced approximately 1.5 m apart (248, 270, 262, 260, 230, 226), and aligned roughly with every second post-hole in the outer ring. Three of the inner ring post-holes (260, 270, 248) contained packing-stones.

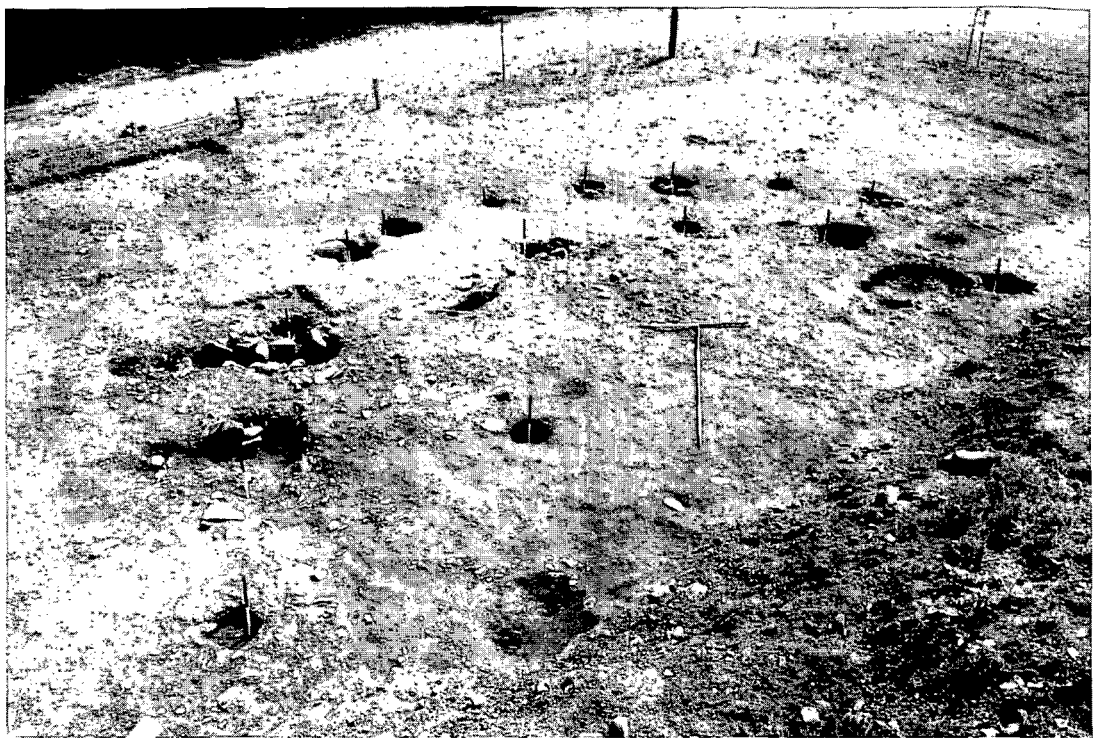
The post-holes of the inner ring were generally smaller and shallower than those of the outer ring. Those features closest to the excavation margin on the north-west had been heavily truncated during mechanical topsoiling and their surviving depths reflect this. The packing-stones found within the post-holes were sub-angular, medium-large in size, and appear to have been deliberately selected for their shape and dimensions. Most of them appeared to have slumped inwards, presumably after the post had rotted. A few of the post-holes retained a visible post-pipe, most notably post-hole 270, where the packing-stones indicated the position of a round post c 0.3 m in diameter.

A porched entrance, approximately 1-1.2 m wide, was identified in the eastern side of the structure (illus 4 & 5). This element comprised two short alignments of post-holes projecting externally from the wall-line. The northern of these lines consisted of two post-holes within a linear cut (216) set beyond two closely spaced post-holes of the perimeter of the structure (224, 2135). The southern porch line mirrored this arrangement, but also displayed two additional post-holes (2132, 208) extending this axis further beyond the outer wall-line. These perhaps represent the remains of external door-posts. The southern alignment was also the more substantial of the two. Here, two phases of construction could be identified: initially, this alignment took the form of a slot (with large stones lining the cut), which was replaced by the insertion of the post-holes at the same position. The external post-holes mentioned above cannot be tied specifically to either of these arrangements.

Internal features within Structure 1 were extremely few. A shallow oval pit (246) contained a small broken saddle quern stone; and burnt seeds (which were unfortunately misplaced during initial post-excavation work) were present inside the inner post-ring in the south-western half of the structure. The



ILLUS 4 Plan of Structure 1



ILLUS 5 General view of Structure 1, looking south

evidence for other internal features was restricted to a few shallow stake-holes. There was no surviving evidence for a hearth.

A single radiocarbon date from the primary fill of an inner ring post-hole (262) produced a date of 1880-1530 cal BC (2 sigma, Beta 73950).

Due to the lack of both stratification and diagnostic finds, detailed phasing of Structure 1 as a whole is difficult. The evidence from the porch suggests two phases to its construction. However, apart from the porch, none of the post-holes had been re-cut, and it would thus appear that the remaining post-holes visible on plan (illus 4 & 5) represent a single phase of construction. The arrangement of the southern alignment of the porch is thus most economically explained as a localized repair.

Four sherds of coarse plain pottery (and associated fragments) were recovered from a post-hole (254) of the outer ring, two post-holes of the inner ring (248, 260) and the pit (246) of Structure 1. Two joining fragments of a polished cannel coal 'napkin-ring' (illus 12) were found in the top fill of pit 246. A single flint flake (illus 14) was also recovered from a pit external to the round-house. This group of finds is discussed separately below.

Approximately 30 m north-east of Structure 1 two adjoining stone-filled, shallow, curvilinear depressions (2126, 2128), a stone-filled pit (202) and two post-holes (2124, 2122) were identified (illus 1). A narrow, shallow, linear depression was also located midway between these features and Structure 1. The unburnt stony fills of the depressions and the pit were very similar, suggesting that these features, none of which had held upright timbers, should be considered together; the proximity of the post-holes suggests that these features too are related. However, their relationship to the round-house could not be determined. Furthermore, the function of these features is not immediately obvious from their contents and the absence of finds means that their date remains unknown.

Structure 2 (illus 6, 7 &8)

Structure 2 is represented by two roughly concentric rings of post-holes; the rings having diameters of approximately 5.4 m and 7.5 m. These features may represent either a double-ring round-house, or two separate, superimposed structures. The lack of occupation deposits or deposits above subsoil means that it was impossible to determine any stratigraphic relationships amongst the features during the excavation. The arrangement and spacing of the post-holes leads the excavator to conclude that a single building (illus 7 & 8) is represented. No hearth features were located.

The external setting of Structure 2 consisted of 11 post-holes (306, 334, 338, 356, 336, 324, 320, 350, 348, 312, 308) which were fairly substantial (0.14-0.40 m deep). All but two of these (312 & 338) contained packing-stones. The internal arrangement consisted of seven post-holes (342, 332, 354, 374, 318, 314, 344). These post-holes were less substantial than their external counterparts, being 0.08-0.26 m deep. All but two of the post-holes (374, 332) contained packing-stones, which appeared to have slumped inwards, thus giving no indication of post shape or size. The relative slightness of these posts, coupled with their small number, endorse the likelihood that the two series of post-holes represent components of a single structure, representing either roof supports or internal partition features.

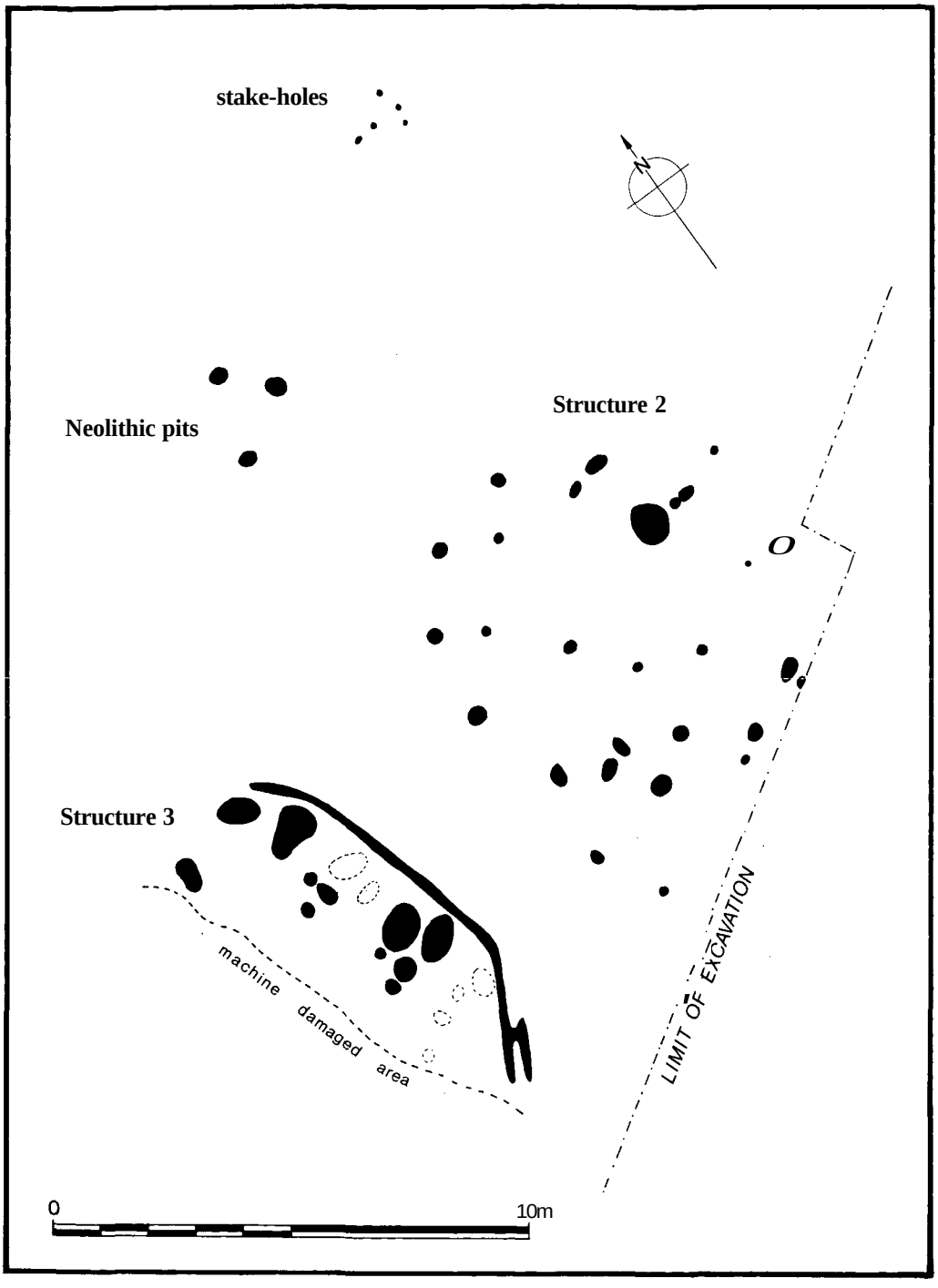
Within this structure, three additional post-holes (316, 358, 340) may represent the positions of upright roof-supports or internal subdivisions. A shallow oval pit (310) containing burnt grain (*Hordeum* sp) was also located in the eastern half of this structure. While no obvious entrance was apparent, the most substantial post-holes (324, 320) are located downslope to the west and may represent its position, although the greater size of these elements can also be explained in terms of engineering requirements to counteract the greater stress on the structure in this sector. Furthermore, the slightly elliptical plan of the house and the varying depths of the post-holes may both be due to the surrounding bedrock: while extremely hard, this fractures easily if irregularly, making the insertion of holes for upright timbers difficult and thereby perhaps contributing to the off-circular form of the building. A few slight depressions, occasionally containing charcoal, were recorded both inside and outside Structure 2. These existed as very shallow and slight features and it is difficult to surmise a possible function for them.

As in Structure 1, the majority of the post-hole fills contained some charcoal, but generally in insufficient quantities for a conventional radiocarbon date. Three radiocarbon dates were nonetheless obtained for this structure: samples of oak from post-holes 320 and 334 in the external ring produced dates of 1920–1590cal BC and 1580–1540 cal BC (2 sigma, Beta 73546); 1380–1340calBC and 1330–920calBC (2 sigma Beta 73952) respectively. A sample *of Hordeum* sp from pit 310 produced a date of 1310-940 cal BC (2 sigma, Beta 74587).

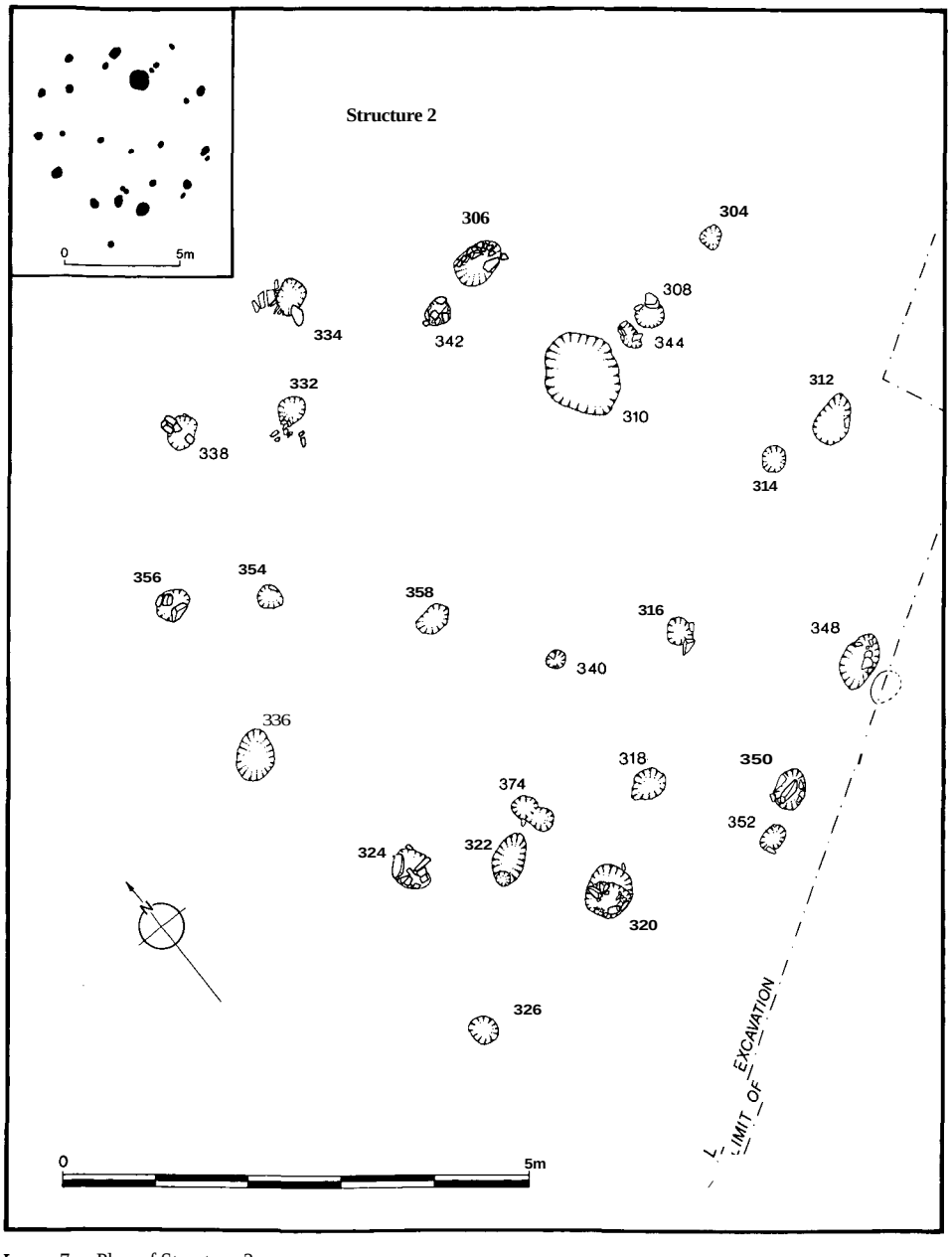
The finds recovered from Structure 2 are extremely limited. The pit contained three chert flakes (illus 14), while one post-hole (356) produced two sherds of decorated pottery. Other finds included a simple flint platform and a lump of slag from the topsoil.

Structure 3 (illus 6, 9 & 10)

Structure 3 is represented by a ring-groove remnant which may have formed part of a platform house. Prior to its recognition as being of archaeological significance, Structure 3 had suffered extensive damage: it was heavily truncated during topsoiling operations, and it had subsequently been quarried for hardcore. Occupation deposits nonetheless survived locally within Structure 3, but these were confined to its eastern part, most likely to represent the rear of the structure where it is slightly recessed into the slope. This survival pattern is similar to that encountered elsewhere in excavations of buildings within platform settlements, where it is often the case that occupation deposits are restricted to this position, eg Lintshie Gutter, South Lanarkshire (Terry 1995). Subsequent activities have often provoked the erosion of frontal deposits and of the levelled



ILLUS 6 Schematic plan of Structures 2 and 3, Neolithic pits and stake-holes



ILLUS 7 Plan of Structure 2

apron delimited by an external scarp on which they sat. In this case it is impossible to say how much of this structure had been removed by machine as opposed to natural erosion.

The remains of the constructional features of Structure 3 consisted of a single curvilinear groove (3100), 0.15–0.4 m wide by 0.09–0.16 m deep, excavated into the sub-surface bedrock, and orientated approximately north/south, with a second groove (3104), 0.17 m wide by 0.13 m deep, to the south-east (illus 9 & 10). Groove 3104 may indicate the position of the former alignment of groove 3100. Both grooves

ILLUS 8 General view of Structure 2 looking south-west

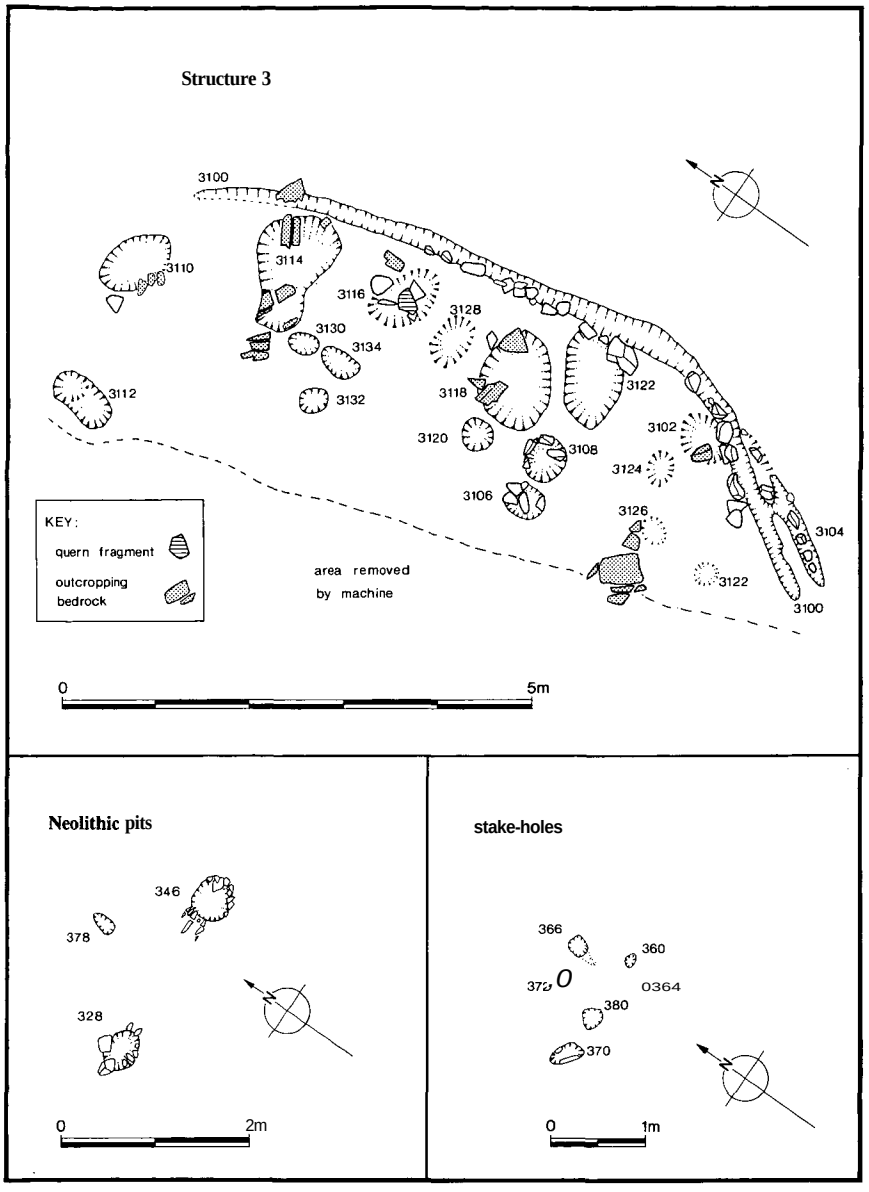
contained packing-stones, and thus were certainly intended to house timber uprights; they were not for drainage purposes. However, unambiguous evidence for the former positions of upright timbers within these grooves (ie post/stake-holes) was absent.

Within the sector defined by these grooves, a deposit 0.09–0.16 m deep and consisting of a black greasy soil, abundant in charcoal and containing burnt bone fragments and burnt pottery, lay within a shallow crescentic depression. A saddle quern was recovered from the surface of this deposit, above pit 3102. A sample of mixed oak, alder and hazel, obtained from the same deposit, produced a radiocarbon date of 1700-1390 cal BC (2 sigma, Beta 73549).

Below this occupation deposit a number of post-holes (3106, 3108, 3112, 3120, 3130, 3132,3134) and shallow, oval pits (3102, 3110, 3112, 3114, 3116, 3118, 3122, 3128) were present. These rock-cut features were confined on the east by the ring-groove, which suggests that they may be safely associated with it. They were in general extremely shallow, some being no more than a few centimetres deep. On the basis of their shallowness they were interpreted as pits, or shallow working areas. In contrast the post-holes found in the same sector were slightly more substantial: two (3106, 3108) contained medium-sized packing-stones. Despite the survival of internal features, there is little structural or stratigraphic evidence to suggest that these remains represent more than a single occupation phase. The possible slight realignment of groove 3100/3104 may be explained as a localized repair. There was no evidence for a hearth.

The finds comprise seven pot sherds and fragments, two saddle-querns (illus 13), two pot-boilers, and a heat-shattered stone. Eleven sherds and 16 fragments of plain coarse ware were subsequently retrieved as surface finds by the Project Archaeologist David Maynard in the vicinity of Structure 3 and appear to be associated with it. They are discussed separately below.

The truncated and partial remains of Structure 3 appear to represent the vestigial traces of a circular, timber-built, ring-groove house, seemingly constructed on an artificial platform cut into the slope, and comparable to those excavated at Green Knowe, Peeblesshire (Feachem 1963; Jobey 1980a & 1980b), and



ILLUS 9 Plan of Structure 3, the Neolithic pits and stake-holes

at Lintshie Gutter, South Lanarkshire (Terry 1995). The hard, impervious surface provided by the bedrock, the shallow oval pits and the recovery of saddle querns may imply a working area as opposed to a domestic function for Structure 3, although the latter is not precluded. The forms of the vessels and the quality of the fabric are consistent with a broad second millennium calBC date.

ILLUS 10 General view of Structure 3 looking north

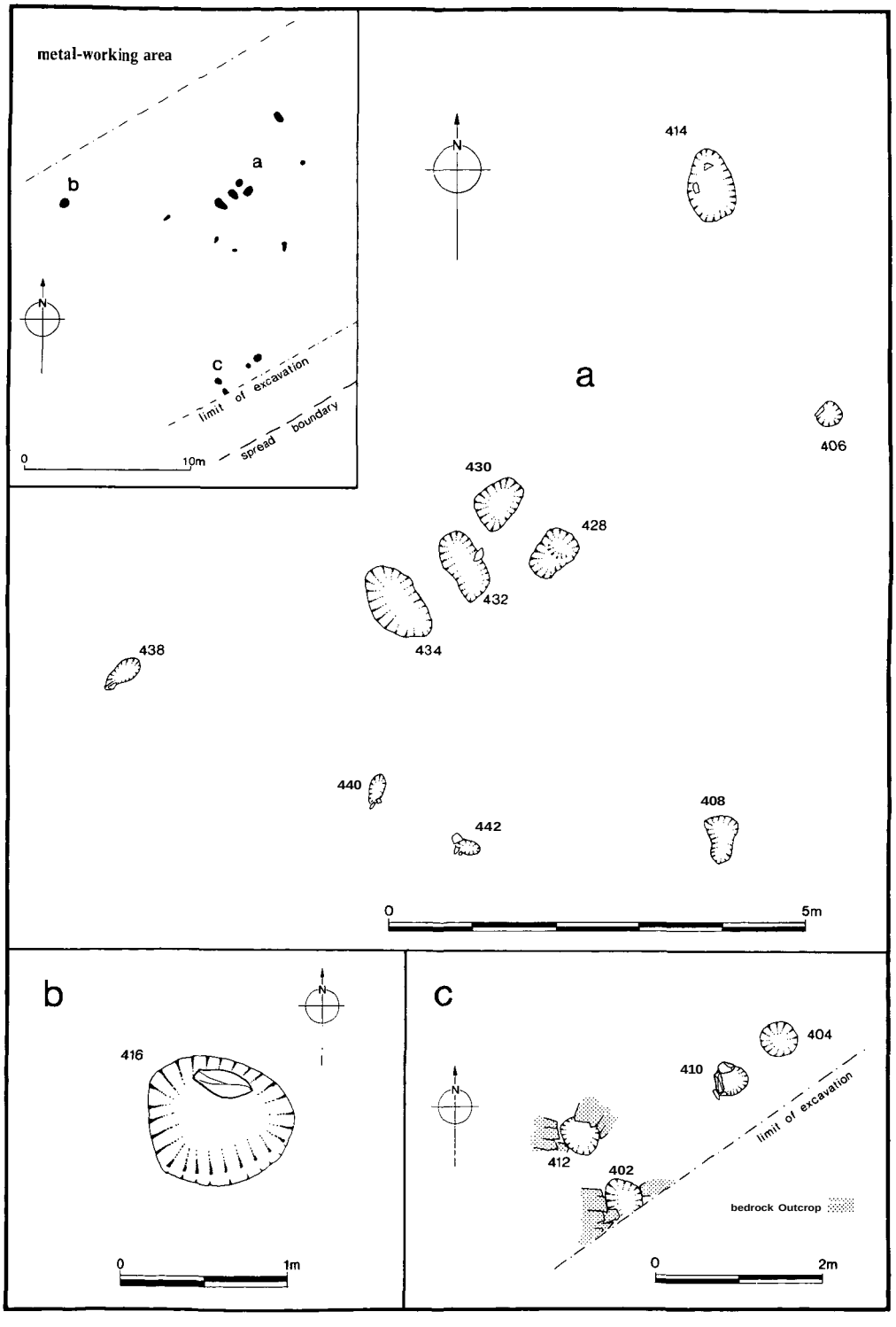
OTHER FEATURES AND THEIR INTERPRETATION

Elsewhere, several other groups of features, more or less isolated from the main series identified and discussed above, were revealed. These contribute to the overall impression that the pipeline swathe had revealed a palimpsest of features of diverse date.

Neolithic pits (illus 1, 6 & 9)

Two features (328 & 346) were located to the north-west of Structure 2 (illus 6 & 9). These appeared to be post-holes or pits. While their original function could not be determined with certainty, together they contained Neolithic pottery, a flake from a polished axehead, a cobble spall and an unfinished core of fine-grained stone (see illus 12).

The nature of the decoration and the quality of the fabric place the group of material firmly in the late Neolithic (see Cowie, below). A sample of hazel from the fill of post-hole 328 produced a radiocarbon date of 3500-3440 calBC and 3380-3070 calBC (2 sigma, Beta 73951). While early for this tradition of pottery, it



ILLUS 11 Plan of metal-working area, isolated pits and post-holes

does fall within the chronological span indicated by the radiocarbon dates obtained from Meldon Bridge, Peeblesshire (Burgess 1976).

The axehead flake is of suspected Cumbrian Group VI origin, and if this rock identification is correct, its presence in Dumfriesshire is entirely consistent with the known distribution for this Group. The above radiocarbon date indirectly attributes the polished axehead flake to the period of maximum Group VI axehead production (see Sheridan, below).

Stake-holes (illus 6 & 9)

A cluster of five stake-holes (360, 364, 366, 370 & 372) set around a post-hole (380) was revealed between Structures 1 and 2 and separated from the latter by some 8 m. No finds were recovered from these features and the lack of stratification prevents the establishment of any direct relationship with the nearby round-houses or the other isolated features. However, a radiocarbon date of 1970-1680 calBC (2 sigma, Beta 73953) was produced from an oak sample from one of the stake-holes (370). This suggests that they may be contemporary with Structure 1, perhaps forming the slighter earthfast elements of drying-racks or similar features, or less likely, given their very localized survival, the vestigial trace of an external stake-built enclosure associated with this structure. No finds were made.

Early medieval metal-working (illus 11)

A scatter of pits, shallow depressions, a bowl-shaped hearth and a post-hole were located within the pipeline swathe south-west of Structure 2. The larger pits in the centre of the distribution (428, 430, 432 & 434) were excavated by the Project Archaeologist David Maynard, prior to CFA's engagement. They contained a large quantity of slag, as did the southernmost pit (408). The range of iron-working debris indicate the dumped debris of a small-scale iron-working centre (see Cullen, below). The debris is indicative of the full range of the iron-working process, from the smelting of ores to the smithing of blooms into usable iron objects. The quantity of the debris does not suggest either a large or a long-term industry. A sample of mixed oak and hazel from one of the slag-filled pits (430) produced a radiocarbon date of cal AD 870-1030 (2 sigma, Beta 73954), and shows that the activity relating to these metal-working features is unrelated to any of the dated structures in the vicinity or to the burnt mounds.

Isolated features

A single and seemingly isolated shallow pit (416), which contained no finds, was located west of the focus of metal-working (illus 11). Its association with these or any of the other features could not be established.

Four shallow pits (402, 404, 410, 412) were located on the edge of the spread south-east of the metal-working pits and also appear isolated from the other foci (illus 11). While the fills of these pits were largely identical, pit 410 was packed with stones. Pottery recovered from one of these pits (402), like the surface finds of sherds from this area (see Cowie, below), appears to relate to the prehistoric activity attributable to the second millennium BC and is probably indicative of further prehistoric activity in the vicinity, which either has left no clear structural evidence in the pipeline swathe or is centred outwith it.

EXCAVATED MATERIALS

POTTERY REPORT

Trevor Cowie

The pottery recovered from the Blairhall Burn sites comprises a total of 33 sherds, 45 fragments (pieces lacking one or both surfaces) and about 60 miscellaneous crumbs, with a combined total weight of about 950 g. Most of the crumbs appear to be the result of disintegration of the more

friable sherds since recovery, rather than a reflection of the recovery of pottery comminuted in antiquity.

Structure 1

Only four sherds and a dozen fragments and crumbs of coarse plain pottery were retrieved from Structure 1 (Table 1). Variations in the fabric suggest that a minimum of two vessels may be present. One fragment appears to be from the basal angle of a flat base of unknown diameter, but the remainder of the material is featureless. The fabric is coarse, with profuse grits up to 10 mm across; in a number of cases, the external surface is absent due to the effects of heating and/or use. The wall thickness of the sherds varies between c 12-16 mm. Organic deposits are present on the internal surfaces of most of the sherds and fragments.

The ceramic evidence, such as it is, does not conflict with the single date of 1880–1530 cal BC (2 sigma, Beta 73950), and there seems no reason to doubt that this small group of sherds represents part of the domestic plain ware assemblage associated with this round-house.

TABLE 1

Summary of pottery from Structure 1

Context	Find no	Sherd	Frag	Crumb	Comments
Surface	3	1	-	-	
Surface	14	-	1	-	
260	16	–	4	–	
248	19	1	-	-	
248	21	2	-	-	
246	22		3	2	fragment of basal angle
254	23		2		two joining fragments
	Totals:	4	10	2	
	Weight:	120.85 g			

Structure2

Two sherds (made up of smaller joining fragments with fresh breaks) were recovered from Structure 2, post-hole 356: although uncertain owing to its worn, crumbling condition, the pottery appears to bear traces of jabbed ornament (Table 2, not illus). Similar pottery was recovered from the nearby pits (346 & 328) and is there clearly identifiable as late Neolithic. The sherds from post-hole 356 may be residual and is perhaps more likely to have been associated originally with the activity represented by the group of Neolithic features. In the light of this and the radiocarbon dates, the less distinctive post-hole pattern of Structure 2 may indicate that more than one period of occupation/activity is represented by these features.

TABLE 2

Summary of pottery from Structure 2

Context	Find no	Sherd	Frag	Crumb	Comments
356	25	2	-	-	sherds made up joining fragments; possible jabbed decoration
	Weight:	32.42 g			

Structure 3

The material from Structure 3 comprises seven sherds and 11 fragments (Table 3). A further 11 sherds and 16 fragments were subsequently retrieved from the surrounding area by Project Archaeologist David Maynard: their character strongly suggests that they relate to activity associated with Structure 3.

The group includes three rim sherds (SFN 39 & SFN 40, illus 10) which are both of simple form, with flattened/slightly convex top, and probably derive from fairly straight-sided bucket-shaped vessels; the latter has a slight internal lip. The third sherd (SFN 50, illus 12) represents the uppermost portion of a vessel with a slight moulding below the rim where the wall swells out to a poorly defined shoulder. Some fragments of flat bases are present (mainly among the material recovered after the excavation), but these throw no real light on the vessels represented, although the impression that the vessels were not all simply straight sided forms tends to be reinforced by the curvature of several of the body sherds. The pottery from this area is all coarse, much of it in a noticeably compact gritty fabric with profuse medium inclusions. In a number of cases, the external surface is wanting, owing to the effects of heating and/or use. Organic deposits are present on the internal surfaces of most of the sherds and fragments.

While it is necessary to admit that we are in a position of near complete ignorance of the nature of domestic plain ware assemblages in this region, the forms of the vessels and the quality of the fabric would be in keeping with a broad second millennium cal BC date (cf Green Knowe, Jobey 1980a; Lintshie Gutter, Terry 1995). Unfortunately, therefore, the problem of interpretation of the Structure 3 features is not one that either radiocarbon dates or the ceramic evidence can easily resolve. A single date of 1700-1390 cal BC (Beta 73549) was obtained from the fill of context 3100; while possible, it would perhaps be unwise to accept this uncritically as an indication of the date of the group of pottery from the area given the known time-depth of occupation and other activity on the site. In this respect, the radiocarbon determinations obtained from post-hole 320 and pit 311 within Structure 2 may be equally relevant.

TABLE 3

Summary of pottery from Structure 3

Context	Find no	Sherd	Frag	Crumb	Comments
3102	39	1	–	–	rim sherd (illus 12)
3102	40	1	2	–	rim sherd (illus 12)
3122	41	–	5	>6	
3100	42	–	1	–	
3114	43	1	–	–	
3118	44	1	1	–	
3102	48	1	–	–	
3101	49	1	–	–	
3102	50	1	–	–	rim sherd (illus 12)
3118	52	–	2	2	
surface	78	11	16	>12	found after excavation by Project Archaeologist David Maynard
	Totals:	18	27	>20	
	Weight:	562.02 g			

Neolithic pits

Four sherds, six fragments, and over 18 crumbs of prehistoric pottery were recovered from pits 328 and 346 (Table 4). The group of material from this area is noticeably homogeneous in terms of its fabric — coarse, profusely gritted pottery with angular sandstone and quartz inclusions. The most distinctive pieces comprise part of the rim and upper body of a bowl with expanded, internally bevelled rim, ornamented with rows of jabbed-and-dragged and bone-end impressions (SFN 34, illus 12). Two body sherds with very worn traces of jabbed ornament appear to derive from a separate vessel (not illustrated).

The rim profile of SFN 34, the nature of the decoration and the quality of the fabric all place this group of material firmly in the late Neolithic. The features of SFN 34 relate it specifically to the northern counterparts of Peterborough pottery, the so-called 'Impressed Wares' of southern Scotland (McInnes 1969). The radiocarbon date of 3500-3440 and 3380-3070 cal BC (2 sigma, Beta 73951) is earlier than most of the dates associated with this general tradition of pottery, but it does fall within the overall range of dates obtained from Meldon Bridge, Peeblesshire, which run from 3649-3108 cal BC to 2882-2409 cal BC. There, the main cluster of dates suggested currency of the local 'Meldon Bridge style' mainly in the third millennium cal BC, but the excavator kept an open mind regarding the possibility that such pottery might have been as early as the second half of the fourth millennium cal BC (Burgess 1976; 1980). A recent discussion on this general pottery tradition has been presented by Cowie (1996, 93).

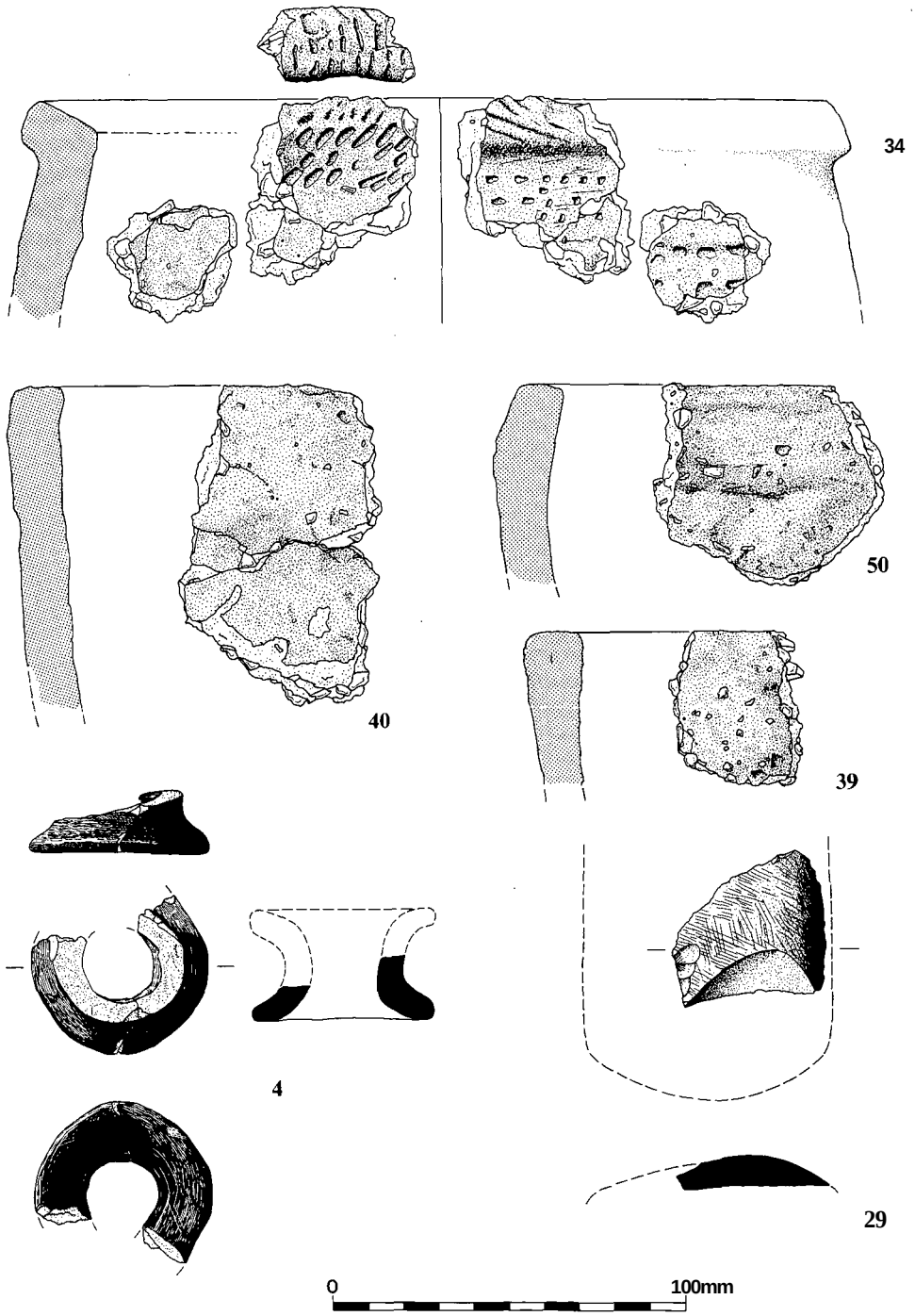
TABLE 4

Summary of pottery from Neolithic pits

Context	Find no	Sherd	Frag	Crumb	Comments
346	24	–	2	–	one fragment from rounded rim, possibly with oblique incision; very worn
346	30	1	–	>6	
346	33	1	2	–	includes fragment of rounded rim
328	34	1	2	>12	rim sherd; bone end and jabbed-and-dragged impressions (illus 12)
328	65	1	–	–	
	Totals:	4	6	>18	
	Weight:	128.44g			

Isolated pits

Four sherds, four fragments and about 20 crumbs of coarse plain pottery were retrieved from the isolated pits (Table 5). Two of the sherds have a markedly curved profile, but these are insufficient to provide any reliable clues as to the overall form of the vessel; one fragment may possibly be from the basal angle of a flat-based pot. A date of 870-1030 cal AD (2 sigma, Beta 73954) was obtained from the fill of context 430; however, given the known time-depth of occupation and other activity on these slopes, it seems most likely that the retrieval of these few sherds reflects the presence of outlying prehistoric features associated with the broad second millennium cal BC occupation of the site.



ILLUS 12 Small Find nos 34, 29, Area 3c: late Neolithic 'Impressed Ware' and polished axehead flake; 39, 40, 50, Structure 3: domestic plain ware; 4, Structure 1:cannel coal 'napkin ring'

TABLE 5

Summary of pottery from isolated pits

Context	Find no	Sherd	Frag	Crumb
402	9	1	–	–
404	11	3	-	–
409	54	-	2	-
surface	55	1	–	–
	Totals:	5	2	>18
	Weight:	110.09 g		

Summary

The ceramic evidence tends to reinforce the impression, presented by the radiocarbon dates, that the ridge and its slopes were the focus for occupation or more transient activity at various times in antiquity. The small size of the pottery assemblage, and the nondescript nature of much of it, belie the significance of this group of material as the first well contexted and dated group of domestic Bronze Age pottery from the region.

COARSE STONE ARTEFACTS

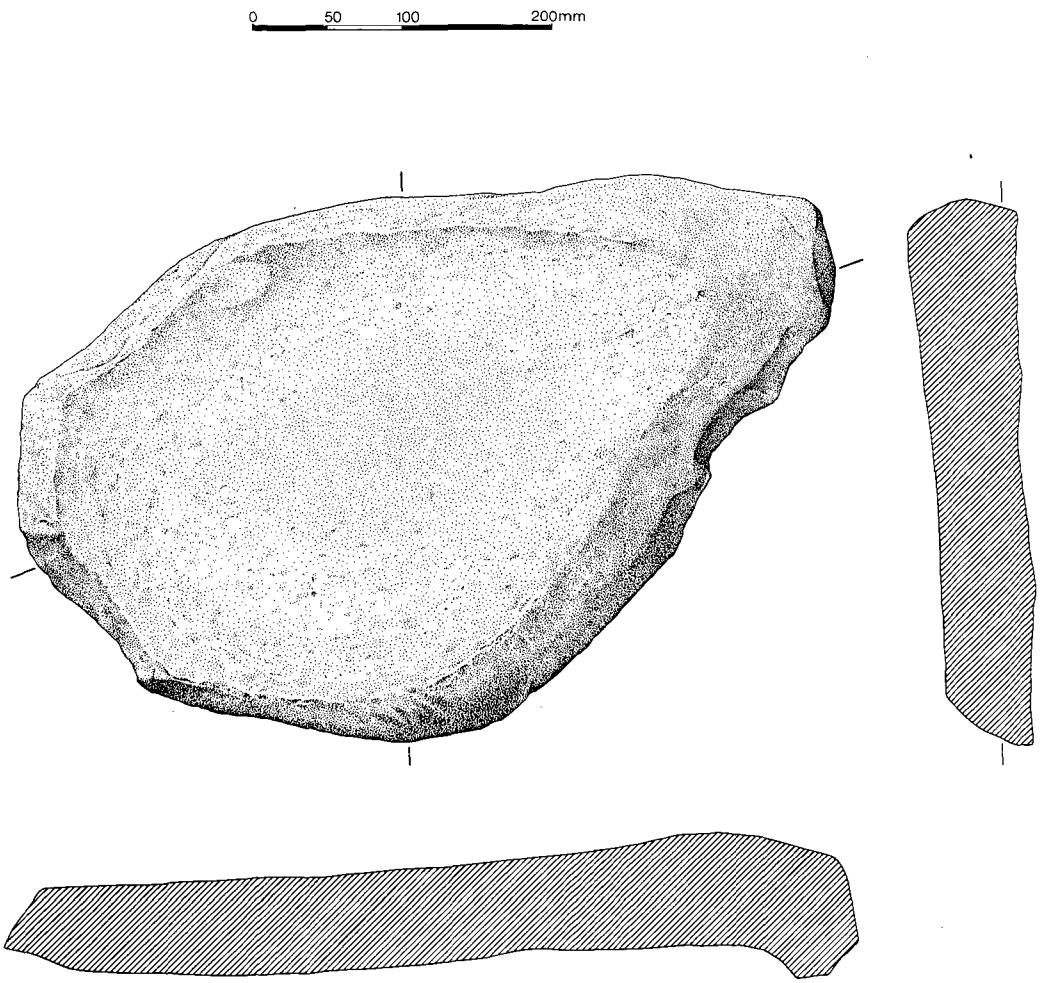
Caroline R Wickham-Jones

The coarse stone assemblage comprises 13 items, nine of which have been modified, and four of which are natural (Table 6). The modified items include: two flaked pieces (a core and a flake); three querns; three pot-boilers and one heat-fractured fragment, probably part of a pot-boiler. All of the objects are made on rounded cobbles, presumably carried from the burn and very different to the on-site gravels.

There are three quern stones, two from Structure 3 (see SFN 62, illus 13) and one from Structure 1; all are saddle querns. Each is well worn on the grinding surface, particularly SFN 62, which has a dished upper surface. All of the querns are broken: of two (SFN 57 & SFN 61) only fragments survive; SFN 62 has lost its lower surface, presumably through machine damage. It is likely that the querns were made on suitably shaped natural stones: there is no evidence that the surviving edges have been flaked, although their naturally rounded shape may have been emphasized by pecking. SFN 61 also has a small area of pecked damage to the grinding surface that may indicate its subsequent use as an anvil stone.

Only one of the pot-boilers survives intact, SFN 26, which is of a harder stone. All show signs of intense heat cracking. There is no indication of the deliberate modification of the shape of any of these stones. It seems that suitably sized and shaped material was available, presumably among the river gravels.

SFN 59i and SFN 59ii are interesting in that they demonstrate a different use for the coarse stones from the site. They are made of a slightly finer grained material which was flaked apparently using a conventional knapping technology. SFN 59i comprises a large core worked on a block of material; SFN 59ii is a small flake that rejoins. The core appears to have been abandoned while there was still the possibility to remove more flakes, but SFN 59ii is the result of a blow that has struck short suggesting that the knapper may have been having difficulties in removing desired flakes.



ILLUS 13 Structure 3: saddle quern

TABLE 6

Catalogue of coarse stone artefacts

Area	Context	SFN	Description	Dimensions (mm)
Structure 1	246	57	Quern stone well smoothed surface, sub-rectangular shape, rounded edges; fragment; two sides broken.	217:149:87
Structure 2	306	26	Pot boiler natural rounded stone, cracked, but not broken; possibly of volcanic origin.	82:50:39 170g
Structure 2	320	56	Natural rounded stone, broken, used as packing stone.	
Structure 2	356	58	Natural rounded stone.	
Structure 3	3114	46	Pot boiler: 9 pieces of heat-shattered stone that refit into one broken piece; naturally rounded: no sign of working.	76:76:46 300 g
Structure 3	3114	53	Heat-shattered stone, three fragments survive.	43:27:28 50g
Structure 3	3114	60	Pot boiler: oval, heat-shattered stone with rounded sides, broken: both ends and one side missing.	100:57:50 305 g

TABLE 6 *(contd)*

Area	Context	SFN	Description	Dimensions (mm)
Structure 3	3114	61	Quern stone: irregular shape, rounded edges, well smoothed surface, possibly used as an anvil; broken: both ends missing.	230:170:56
Structure 3	3102	62	Quern stone: oval shape, rounded edges, well smoothed and slightly dished surface, damaged: the lower half has been removed, presumably by machine.	580:362:75
Neolithic pits	346	31	Broken stone with unusual inclusion: natural.	
Neolithic pits	346	59i	Core on block of fine grained stone, single prepared platform, some cortex remaining, large flake removals; joins with 59ii, apparently not exhausted, but see 59ii.	122:93:75 970 g
Neolithic pits	346	59ii	Inner flake broken, joins to 59i and represents a failed removal.	31:21:06
Neolithic pits	346	32	Spall from an abraded cobble of fine grained, micaceous grey stone. Although similarly shaped but larger cobble spalls are known to have been produced deliberately and used as knives in Orkney, in this case it is more likely that the spall is the outcome of accidental breakage. It shows no sign of having been used.	62:46:14 9 g

CHIPPED STONE

Bill Finlayson

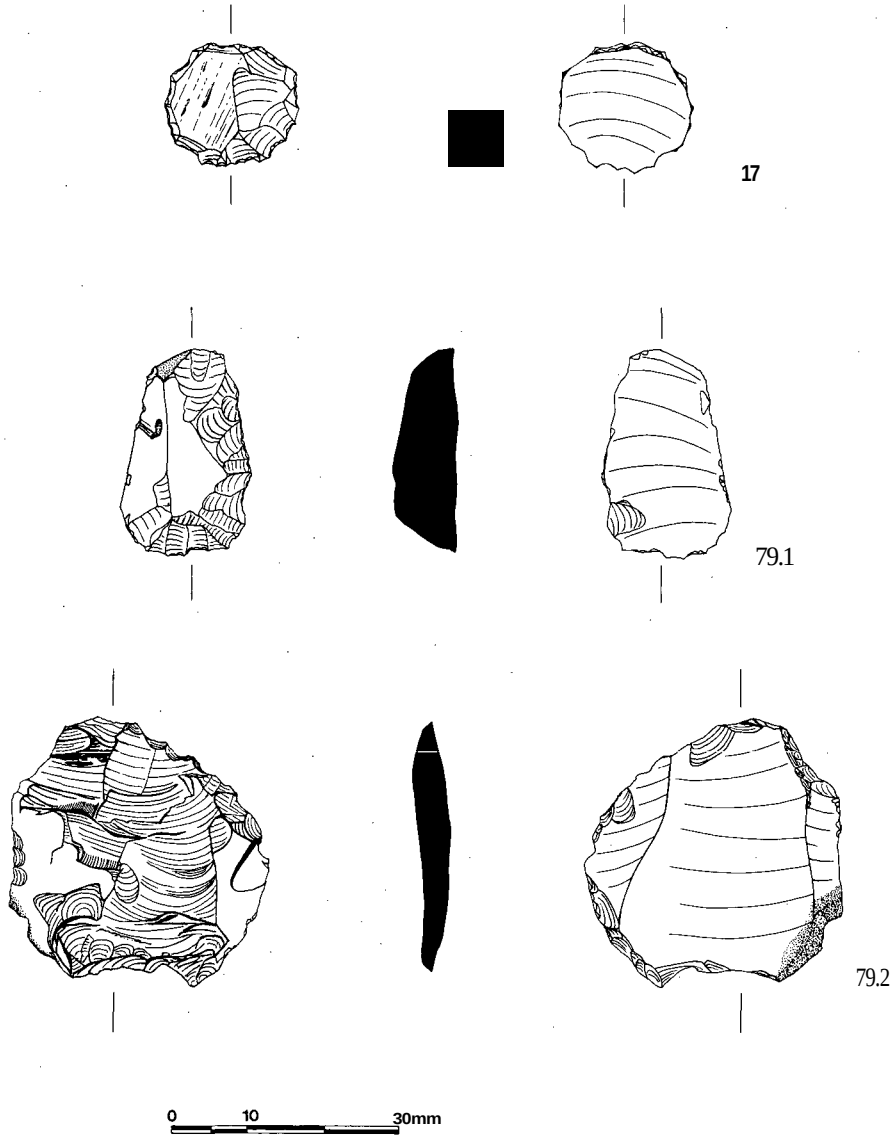
The chipped stone assemblage comprises 19 pieces in a variety of raw materials, mostly chert and a few pieces of flint, with one flake from a stone axe and another from a rhyolite block (Table 7). A complete range of pieces from a knapping sequence is represented, from unworked chert lumps to flakes and blades, a core rejuvenation piece, a broken and abandoned core, retouched artefacts and a retouched and subsequently reworked artefact. Despite this range of pieces, there is no clear evidence for knapping in the immediate vicinity of the excavated site, and the pieces present appear to represent casual losses during the course of occupation. The sample is small, and there are no clearly diagnostic artefacts present.

A full catalogue of the chipped stone has been deposited with the project archive at the National Monuments Record of Scotland (NMRS). The following describes the illustrated examples only (illus 14).

TABLE 7

Catalogue of chipped stone

Area	Context	SFN	Description	Dimensions L x B x Th (mm)
Structure 1	246	17	Circular scraper in grey chert (possibly flint)	16 x 17 x 6
Structure 2	surface	79.1	Core fragment of a dark grey chert with bedding flaws. This single platform core appears to have sheared in half along a bedding place during reduction.	27 x 16 x 8
Structure 2	surface	79.2	Secondary irregular flake of grey flint. This flake has been retouched to form an end and side scraper.	38 x 34 x 5



ILLUS 14 Small Find nos 17 (chert scraper), 79.1 (core fragment) & 79.2 (flint scraper)

STONE AXEHEAD FLAKE

Alison Sheridan

Description

This flake is from the lower part of the body of a polished stone axehead. It is made from a fine-grained, blue-green-grey stone which macroscopically matches Group VI tuff from the Great Langdale and Scafell areas of the Central Lake District, Cumbria (Keiller *et al* 1941).

The flake is from a medium-sized axehead (see illus 12) with an original width estimated at c 60 mm. The curvature of its dorsal surface suggests that in section it had a flattish, ellipsoid shape; there is no sign of

the edge faceting characteristic of the classic Group VI 'Cumbrian axe'(Fell 1964), although it may be that the edge of the flake does not coincide with the original edge of the axehead. The undamaged part of its dorsal surface is polished and bears numerous, multidirectional striations from the grinding and polishing process. Damage to the dorsal surface consists of small flake scars resulting from the blow which created the flake, plus part of a pre-existing flake scar (which may or may not relate to blade damage).

The flake derives from a blow to the side of the axehead, but not struck from its edge — meaning that this had already been removed. It is impossible to say whether the axehead had been in the process of a radical reshaping following blade damage, or was being deliberately decommissioned.

SFN 29 Flake from polished axehead of suspected Cumbrian (Group VI) origin. L 42.4 mm; W 43.8 mm; Th 6.8 mm; Wt 15.13g (illus 12)

Discussion

If the rock identification is correct, then the discovery of a fragment of Group VI axehead in Dumfriesshire is entirely consistent with the known distribution pattern for this Group (Clough & Cummins 1988, map 6). There is a fairly dense scatter of Group VI finds along the southern coast and major river systems of Dumfries & Galloway; the source area would have been relatively easily accessible across the Solway Firth.

Recent work on the exploitation of the Group VI rock sources (Bradley & Edmonds 1993) has suggested that the nature of axehead production and the extent of the distribution of Group VI products changed over time. Prior to c 3500 BC, the rock appears to have been exploited in a relatively non-intensive and opportunistic manner — perhaps during seasonal transhumance activities — and the distribution of the axeheads was relatively localized. A significant change occurred between c 3500-3300 BC, when axehead production intensified and became a specialized, large-scale operation, and when the distribution of Group VI products expanded greatly. After c 3300 BC, the popularity of Group VI axeheads seems to have declined and their distribution was less extensive.

Dating evidence for the present specimen is indirect — namely association with coarse pottery, similar to that dated in the adjacent feature 328 to 3500-3440 and 3380-3070 calBC (2 sigma, Beta 73951). However, it suggests that the Blairhall Burn flake belongs to the period of maximum Group VI axehead production. That Group VI axeheads had been used in Scotland in the previous, less intensive phase of production, is confirmed by a recent find of an axehead flake in a pit at Carzield, Dumfriesshire. This was associated with dates of 5010 +70 BP (3966-3649 cal BC at 2 sigma, Beta 68480) and 4920 + 110BP (3962-3503 and 3418–3383 cal BC at 2 sigma, Beta 68481: see Sheridan 1994 for details).

CANNEL COAL 'NAPKIN RING'

Fraser Hunter

Description

Two joining fragments of a 'napkin ring' (illus 12), a concave-sided ring with one face flared more than the other: one face, probably the narrower, is lost. The central perforation is circular, while the outer circumference is slightly irregular. The surviving face and its rounded edge are well polished, although some remnant circumferential polishing scars are visible near the perforation. The concave outer edge retains extensive circumferential abrasion scars from manufacture, implying that it would not be seen in use. Three deep circular grooves within the perforations are

presumably also remnants of the manufacturing process, as are the finer abrasion scratches preserved in the hollows where later polishing did not remove them.

SFN 4 L 50 mm; B 8 mm; H 17 mm; internal diameter 19 mm; 80% of circumference surviving from pit 246 in south-west corner of Structure 2.

The material is most likely to be cannel coal. Analysis by X-ray fluorescence and X-radiography indicated it was neither jet nor shale (X-ray translucent compared to shale standards; element profile different from jets, especially in its higher iron content — see Hunter *et al* 1993 for methodology), while its physical characteristics (conchoidal fracture, lack of obvious woody structure) are consistent with cannel coal (Davis 1993). The iron content was towards the lower end of the range for cannels, and apart from iron the spectrum was very clean; along with the high Compton:Rayleigh ratios, this indicates it lies towards the more organic end of the spectrum of cannels. It is not currently possible to identify precise sources for cannels, but they are most common in Carboniferous deposits of the Coal Measures series, which are found locally in the Thornhill area, only some 15km from the site (Greig 1971,fig 13).Hence, while these have not yet been examined analytically, a local origin for the material seems plausible.

Dating and distribution

'Napkin rings' can be characterized as concave-sided rings flared at each end, with one face wider than the other, although there is considerable diversity in details of profile within the type. Some display small perforations through the wall or one of the faces (generally the wider, as far as can be seen). The internal diameter of the rings ranges between 15–35 mm, but most are in the 20-25 mm bracket.

The dating is disputed, being variously given as Early Bronze Age (Scott 1967, 37) or Early Historic (Callander 1933, 31). Until recently, the evidence seemed to support an Early Historic date: there is an example from the Talnotrie hoard, dated to around AD 875 (Maxwell 1913; Webster & Backhouse 1991, 273), while Callander (1933, 31)argued that one from Yarrow Kirk was also of Early Historic date, as the site appeared to be a long-cist cemetery. Against this, Jobey (1980a, 93) suggested that a fragmentary object from Green Knowe hut platform 2 (with associated radiocarbon dates of c 1400-1000 cal BC (at 2 sigma) could be a variant of the type, but its partial nature made the identification uncertain. However, the later dating must now be reconsidered. The Blairhall Burn example comes from the top of a pit which is apparently an internal feature of a round-house dated by radiocarbon to 1880-1530 cal BC (2 sigma, Beta 73950), and two examples were uncovered in a decayed Early Bronze Age inhumation in a cemetery at Camps Water, Lanarkshire (DES 1994, 73). Enquiries have also revealed two examples from a Bronze Age tumulus at Lockton Pastures, N Yorkshire, found with a range of other jet objects (Elgee 1930, 112; information from E Hartley, Yorkshire Museum). While the associations are not impeccable, the evidence does suggest a Bronze Age date, and the Green Knowe example may be more readily accepted. The Yarrow Kirk specimen could also be Bronze Age, as the original accounts indicate a cairn and standing stones were present on the site as well as long cists, and sherds of Early Bronze Age pottery were found among the cists (Smith 1857) — the surviving sherd (NMS EQ 93) is from a Beaker/Food Vessel hybrid (A Sheridan, pers comm). Hence there appear to be both Bronze Age and Early Historic components to the site.

This leaves the question of the Talnotrie example, apparently the most firmly dated of all. On closer examination, it shows evidence for reworking: the narrower face has been flaked and cut away, areas have been cut and flaked from the circumference of the broader face, and the perforation appears to have been partly reworked. It seems that it was in the process of being

turned into another object, perhaps a ring, when it was buried. This suggests a possible explanation for this anomaly, with a Bronze Age 'napkin ring' being discovered by chance and attempts being made to turn it into a finger ring, more appropriate in an Early Historic context (cf Birsay: Curie 1982, 67), before it was buried with the hoard. While speculative, this would explain both the anomalous dating and the condition of the artefact.

The distribution of these rings is markedly regional, concentrated in southern and especially south-western Scotland, with a thin scatter in northern England. Manufacturing evidence in the form of unfinished objects comes from Luce Sands, Wigtownshire, Shewalton Moor, Ayrshire and probably also Stevenston Sands, Ayrshire.

Use

Contextual evidence for the use of 'napkin rings' is given by their association with burials, suggesting they were personal adornments, perhaps clothes fastenings. The best evidence is from the Camps Water burial: although the body had disappeared, the rings were arranged in a pair in the neck region, suggesting use to fasten a cloak or tunic. The broader side lay towards the body. The lack of concern with polishing the concave outer edge suggests this was covered in use, and it seems most likely that a strap was looped or tied round this edge, with a joining strap being passed through the ring and tied. A wide range of fastening uses (eg in tying belts), is possible for other examples. Some have small perforations through the wall or the broad face which were probably additional measures to secure the strap round the edge by sewing.

A provisional catalogue of napkin rings

NMS = National Museums of Scotland

Scotland

Stevenston Sands, Ardeer, Ayrshire — four examples, NMS BMC 331-2, BMC 333 (unfinished?),FN 171 (Callander 1933, 27, 30-1).

Shewalton Moor, Ayrshire — nine examples, Kilmarnock Museum — AR/A 287, 298, 306, 321, 324 & 325 (both unfinished), 348, and probable examples AR/A 307 and 335.

Blairhall Burn, Dumfriesshire — this report.

Morton Loch, Fife (East Fife Museum 1977.638, unpublished).

Talnotrie, Kirkcudbrightshire — NMS FC 225 (Maxwell 1913).

Fall Kneesend, Lanarkshire (Downes, forthcoming).

Lesmahagow, Lanarkshire (?) — *(J Brit Archaeol Assoc,* 20 (1864), 344); Evans (1897, 456) suggests this was a 'napkin ring', but certainty is impossible as it was not illustrated and its current whereabouts are not known.

Camps Reservoir, Lanarkshire — two examples.

Green Knowe, Peeblesshire (Jobey 1980a, 93).

Fairnington, Roxburghshire — NMS FN 201.

Yarrow Kirk, Selkirkshire — NMS EQ 92 (Smith 1857).

West Mains, West Calder, West Lothian — NMS FN 8 *(Proc Soc Antiq Scot,* 9 (1870–2), 538).

Kilfeddar, New Luce, Wigtownshire — NMS FN 142 (Callander 1916, 220–1).

Luce Sands, Wigtownshire — NMS unreg, 12 examples; Glasgow Art Gallery & Museum, one example (Scott 1967, fig 17b); Dumfries Museum, one probable example.

Wigtownshire — Wigtown District Museum, three examples; 1988.882; 1988.883 (x2).

South-west Scotland — Glasgow Art Gallery & Museum, one example.

Sim Collection (south central Scotland) — NMS FN 9.

Location unknown — NMS EQ 99.

Location unknown — East Fife 1984.546.

England

Hepburn Moor, Northumberland (Jobey & Weyman 1981, 40-2, fig 8.16) — the original authors were uncertain whether this was a napkin ring, but it is the most plausible identification.

Lockton Pastures, N Yorkshire — Yorkshire Museum (Elgee 1930, 112).

BURNT AND INDUSTRIAL DEBRIS

Irene Cullen

The debris presented for examination was cleaned, visually examined, weighed and sorted. Magnetic testing and microscope examination were carried out where necessary. No compositional analysis was undertaken.

Within the metal-working area (illus 1 & 11) the majority of the slags were recovered from the fill of one pit (434). Much smaller amounts were recovered from three pits close by (408, 428, 430). Two smithy bottoms were recovered from pit 434 and have diameters of 65 mm and 140 mm, although the former is fragmentary.

Slags representative of both stages of the metal-working process (smelting and smithing) were found mixed together in the same features and must be redeposited. No slags were recovered from the ashy fill of the sunken bowl-shaped hearth (414) located nearby to the north-east. However it seems likely that this is associated with the metal-working industry. One piece of tapslag was identified adhering to a fragment of straw-tempered burnt daub. The small quantity of tapslag recovered form the site suggests that simple bowl, non-tapping furnaces were being used. Similarly the small pits excavated to the south may be in association but it should be stressed that no clear evidence exists to positively link any of these features.

Fragments of burnt daub, a piece of furnace lining and some vitrified rock, one piece of which was vitrified to a green translucent glaze, are all that remains to give an indication of the structure of the furnace that was used.

Both flaked and spheroidal hammerscale were present on the slags recovered from the pits at Blairhall Burn. These slags seem to indicate the dumped debris of a small-scale iron-working centre. The debris is indicative of the full range of the iron-working process, from the smelting of ores to the smithing of blooms into usable iron objects. The quantity does not suggest either a large or long-term industry. That the industry was possibly short term is also suggested by the ephemeral nature of the associated features and by the small apparent build up of smithy floor material and lost and discarded iron objects amongst the slags.

No connection can be demonstrated between the round-houses, the ring-groove structure and the metal-working area. The low quality iron bloom recovered from Structure 2 was found in the topsoil and the vitrified rock found in Structure 3 cannot be positively linked with a furnace.

TABLE 8

Catalogue of burnt and industrial debris

SFN	Context	Description	Weight (g)
2	surface	iron object	46.3
36	377/1	bloom (diam. 127mm)	773.2
63	3103	vitrified rock	6.9
64	surface	bloomery debris	3.7
69	surface	bloomery debris	138.0
		bloomery bottom (diam. 90 mm)	156.0
		bloomery debris (with hammerscale)	311.3
		smithy concretion	17.7
		daub	17.9
		iron rich fragment with furnace lining	38.9
70	435	bloomery debris (one piece with daub)	190.0
		bloomworking debris	34.0
71	435	bloomery debris	687.8
		bloomworking debris	218.0
		smithy bottom (diam. 140 mm)	429.3
		smithy concretions	25.6
		cinder	24.4
		vitrified stone	104.7
72	435	bloomery debris	305.1
		tapslag adhering to daub	64.7
		bloomworking debris	154.2
		smithy concretions (concreted with charcoal/ straw/wood/stone/hammerscale)	52.7
		cinder/vitrified stone	12.3
		daub (one piece with hammerscale concretions)	43.2
73	435	bloomery debris	269.8
		bloomworking debris	23.9
		smithy bottom (diam. 65 mm)	107.4
		smithy concretion	10.7
74	409	bloomworking debris	104.9
		smith concretion/daub	7.2
75	431	bloomworking debris	132.7
		iron object	0.9
76	429	bloomery debris	48.1
77	429	bloomery debris	39.4
		bloomworking debris	26.3
			6.0
S273	435	bloomworking debris	1237.2
		bloomery debris	109.2
		cinder	36.6
		furnace lining	107.4
		smithy concretions	94.8
		daub	15.7
		TOTAL WEIGHT	6234.1

ENVIRONMENTAL EVIDENCE

BONE

Bone preservation from all areas excavated was extremely poor, with only minute burnt fragments being recovered. The initial analysis of the bone by Nicola Murray showed the bone to be too fragmented to be identifiable to element or to species.

PLANT MACROFOSSILS

Macrofossil analysis of samples processed for radiocarbon dating by Anne Crone showed the presence of *Quercus* sp (Oak), *Betula* sp (birch), *Corylus avellana* (hazel) and *Alnus glutinosa* (alder). Oak was by far the most dominant species represented, occurring on every area. Hazel and oak were represented in both burnt mounds and Burnt Mound 1 also contained birch. Features associated with Structures 1,2 and 3 all had oak and hazel represented, while Structures 1 and 3 also produced evidence of alder. All of these species are consistent with timbers fulfilling different functions in post-ring structures. It is interesting that alder is represented only at Structures 1 and 3, which produced comparable radiocarbon dates, and this selection may be indicative of similar building techniques and thus possibly of contemporaneous structures.

The grain recovered from the pit 310 in Structure 2 was identified by R Pelling. The assemblage consisted of predominantly *Hordeum* sp hulled grains (2651 grains) with *Hordeum* sp indeterminate grains (391 grains), *Hordeum* sp hulled assymetric grains (112grains) and *Hordeum* sp six-row rachis internodes (13 items). The assemblage also contained indeterminate cereal grains (631 grains).

PALYNOLOGICAL ANALYSIS OF BURNT MOUND MATERIAL

Ciara Clarke

To assess for the presence, quality and significance of palynomorphs from the burnt mound material, subsamples were subjected to routine palynological analysis. Two subsamples of bulk samples from Burnt Mound 2 were analysed, one from the top of the mound and the other from the bottom (Sample 268, Context 502 top and bottom).

Methods

One cubic centimetre of each subsample was processed according to standard palynological extraction procedures — Potassium hydroxide/Hydrofluoric acid/Acetolysis, as detailed in Moore *et al* (1991)— with the additional stage of spraying each tube with ethanol between centrifugations. This stage reduces surface tension and minimizes the possibility of more buoyant forms being lost to the supernatant. Samples were strew-mounted in silicon fluid of 60,000 cs, using 22 mm by 40 mm coverslips. Slides were sequentially traversed along the 40 mm axis, for palynomorphs.

Results

Only skeleton counts were attainable, as, although present, palynomorphs were not in abundance. Both pollen grains and fungal spores were recovered from each subsample. Preservation was highly variable with some grains rendered unrecognizable through degradation and others showing little to no sign of deterioration. Charcoal was abundant in both subsamples. The results are presented in Tables 9A and 9B below. The classification of fungal palynomorphs follows Clarke (1994).

Discussion

Palynological assemblages from both samples have many common pollen and fungal spore elements, indicating that the material is likely to be of the same provenance. The pollen assemblages suggest a damp environment with the aquatic component intimating the proximity of a body of water. The low arboreal component alludes to a relatively open environment.

The fungal spores are, on the whole, non-diagnostic, being non host-specific and having wide ecological amplitudes. Type ASD 024 has been identified as belonging to the family Sordariaceae, members of which colonize dung and rotting vegetation (Lundqvist 1972), although some can occur on seeds (Cain & Groves 1948) and burnt ground (Petersen 1970). Type ASI 020 has been identified as belonging to the family Endogonaceae, members of which form symbiotic relationships with plant roots. Their presence can thus be interpreted as indicating the existence of soil or/and plant roots. Type ASM 014 has been identified as the rhizopod *Centropyxis ecornis*, by comparison with Type 530 of van Geel *et al* (1983), which is associated with wet environments, although a recent study showed an apparent connection between its recovery and the presence of hay or/and straw (Clarke 1994). Type ASP 006 has been identified as belonging to the genus *Gelasinospora* (Dowding 1933), a member of the family Sordariaceae. Nothing is known of the ecological preferences of any of the other fungal taxa.

Of greater interest is the varying proportions of pollen to fungal spores between the bottom and the top of the mound. At the top of the mound the percentages are 54% pollen and 46% fungal spores whilst at the bottom the figures are 25% pollen and 75% fungal spores. Huikari, in van Geel (1972), and Aartolahti (1965) have shown that a higher percentage of fungal spores, as compared with the number of pollen grains, is indicative of moist conditions at the time of peat formation. While this obviously cannot be the case here, the elevated fungal palynomorph component at the base of the mound probably reflects a higher water content at this level.

Conclusion

In conclusion palynomorphs are present but not abundant and demonstrate variable preservation. On the basis of the palynomorph assemblages the material constituting the mound is apparently homogeneous. The pollen indicates a damp, relatively open environment with an aquatic influence, perhaps attributable to the nearby burn. The fungal spores are ecologically heterogeneous although their abundance in the material from the base of the mound may reflect an elevated water content at this level.

TABLE 9A

Palynological results from Burnt Mound 2

	Context 502: raw counts	
Pollen		
	Top	Bottom
Alnus	2	3
Calluna	20	15
Caryophyllaceae	1	1
Compositae indet.	5	
Compositae liguliflora	7	3
Coryloid	19	4
Cryptogram indet.	1	1
Cyperaceae	2	
Ericales undiff.	4	
Filicales undiff.	5	1
Ilex type	2	

Myriophyllum sp	1	3
Pinus	1	
Plantago lanceolata		1
Poaceae	24	7
Polypodiaceae	6	1
Pteridium aquilinum	6	3
Ranunculaceae	1	
Sphagnum		2
Crumpled	2	2
Degraded	8	3
Exotic	2	8
Total Counts	119	57

TABLE 9B

Fungal palynomorphs from Burnt Mound 2

Fungal palynomorphs		
	Top	Bottom
Aggregation	4	6
Ampelomyces quisqualis	2	
ASD 024	2	1
ASI 012	36	39
ASO 020	16	4
ASI 068	6	71
ASM 001	1	
ASM 007	4	2
ASM 014	1	
ASP 006	1	
MOI 014	2	1

DATING EVIDENCE

Richard Strachan

RADIOCARBON SAMPLES

The majority of the features excavated contained some charcoal, but despite bulk sampling, charcoal was generally present in insufficient quantities for a conventional radiocarbon date to be obtained. Similarly, six of the dates obtained were from charcoal samples of mixed species, due to insufficient quantities of charcoal of single species. Individual dates and ranges are shown in Table 10 and graphically by illus 15.

RADIOCARBON DATES AND OTHER EVIDENCE

Burnt Mounds

Three radiocarbon dates were obtained from the two burnt mounds: a single date from Burnt Mound 1 and two dates from the top and base of Burnt Mound 2. These dates are roughly compatible and show either an overlap in use of both burnt mounds or consecutive use, with Burnt Mound 1 being the earlier.

Round-houses

The single radiocarbon date obtained for Structure 1 is consistent with the pottery assemblage (Cowie, above) and the 'napkin ring' (Hunter, above) recovered from this structure.

Three radiocarbon dates were obtained from Structure 2. Two determinations are mutually consistent and, when calibrated, indicate a date towards the end of the second millennium BC, whilst the third result, obtained from the primary fill of the substantial post-hole 320, is much earlier. It would appear likely that this third determination has been contaminated form charcoal relating to an earlier phase of activity.

A single radiocarbon date from the charcoal-rich deposit was obtained for Structure 3, and is consistent with this type of building. The problems with this date and the associated pottery assemblage have already been identified (Cowie, above).

Neolithic pits

A single radiocarbon date was obtained from one of the pits. While the date is earlier than several of the dates associated with the general tradition of pottery, it does fall within the overall range of dates obtained from Meldon Bridge, Peeblesshire. The radiocarbon date also indirectly dates the axe flake and is consistent with the maximum production of Group VI axeheads.

Metal-working area

The single radiocarbon date obtained from a pit within the focus of the metal-working are clearly separates this activity from the rest of the site, and shows it to be much later in date.

TABLE 10

Radiocarbon dates

Supplied by *Beta Analytic Inc.* Miami, Florida. Species identification by Anne Crone except for Beta 74587 by Ruth Pelling.

Lab no	Material dated	BP	$d^{13}C$(‰)
Beta 74586	*Corylus avellana, Betula* sp, *Quercus* sp from Burnt Mound 1 matrix 102	3300 + 60	−25
Beta 73548	*Quercus sp, Corylus avellana* from Burnt Mound 2 matrix 502, (top)	3000 + 80	-25
Beta 73547	*Quercus* sp, *Corylus avellana* from Burnt Mound 2 matrix 502 (base)	3060 ±90	-25
Beta 73950	*Quercus sp, Corylus avellana, Alnus glutinosa* from Structure 1, primary fill of inner-ring post-hole 262	3420 + 60	−25
Beta73546	*Quercus* sp from Structure 2, secondary fill of post-hole 320	3450 + 70	-25
Beta74587	*Hordeum* cereal grain from Structure 2, primary fill of pit 310	2940 + 60	-25
Beta 73952	*Quercus* sp from Structure 2 secondary fill of post-hole 334	2940 ±70	-25
Beta 73549	*Quercus sp, Alnus glutinosa, Corylus avellana* from Structure 3, occupation deposit	3260 + 80	−25
Beta 73951	*Corylus avellana* from fill of post-hole 328	4560 + 60	-25
Beta 73953	*Quercus* sp from fill of stake-hole, 370	3520 ±60	-25
Beta 73954	*Corylus avellana, Quercus* sp from metal-working area pit 430	1090±50	−25

Source of Calibrations: Stuiver INT93CAL (1993)N Hemisph.

OVERALL SITE PHASING

The radiocarbon dates and the artefactual evidence show that three clearly separate periods of occupation or activity are represented within the areas excavated at Blairhall Burn. These occurred during the late Neolithic, the Bronze Age and the early medieval periods.

The earliest activity is represented by the two Neolithic pits adjacent to Structure 2. Whether these pits are isolated remains or part of a larger Neolithic complex centred outwiththe excavated area, such as that identified at Meldon Bridge, Peeblesshire (Burgess 1976), is impossible to tell without further fieldwork and excavation.

The majority of the excavated evidence appears to represent settlement and associated activities broadly encompassed by the second millennium BC. These activities are represented by the three principal structures and the burnt mounds, which may be contemporary with any or all of the timber buildings. The pottery recovered from the seemingly isolated features in the vicinity of the area of metal-working confirms the possibility that further activity extends outwith the area of excavation, and that settlement within this area is more extensive than first thought. Such groupings of structures would be consistent with other known sites.

The latest activity identified within the pipeline swathe is clearly represented by the metal-working debris from the pits. These features contain evidence for a relatively short term and non-intensive phase of iron-working activity dating to the early medieval period.

DISCUSSION

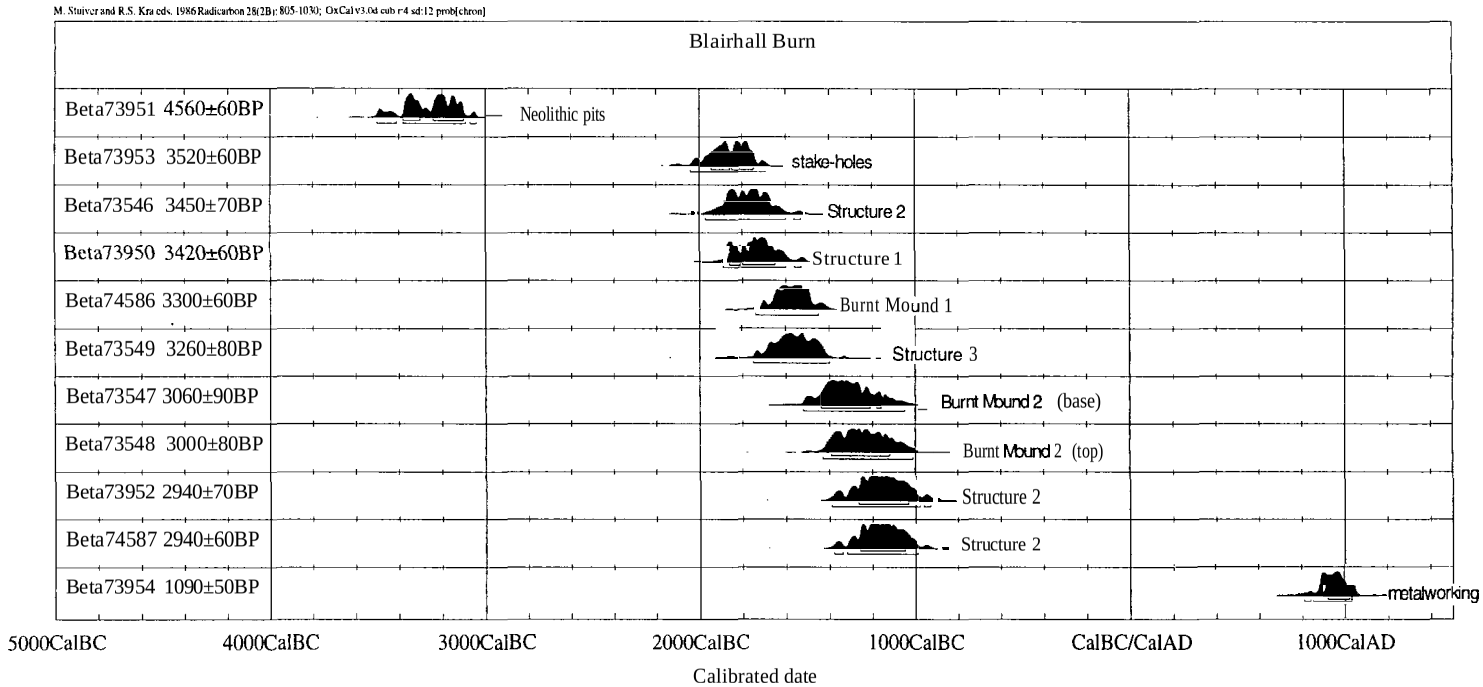
NEOLITHIC PITS

Whether these pits are chance isolated remains or part of a larger Neolithic complex centred outside the excavated area is impossible to determine without further excavation. The radiocarbon dates discount the possibility that these represent features associated with Structure 2 that containing 'heirloom' artefacts.

BURNT MOUNDS

A total of 19 burnt mounds was located as a result of fieldwalking associated with the pipeline construction over some 75 km between Moffatand Kirkcudbright (Maynard 1993, fig 1).Three of the four burnt mounds located within the Amisfieldarea were identified adjacent to Blairhall Burn. These burnt mounds, on surface inspection, appear to be relatively simple in form and would therefore belong to Barber's Class 2 (Barber 1990, 98). If, however, Burnt Mounds 1 and 2, and the three post-built structures, are envisaged as chronologically overlapping, then that association would indicate that the burnt mounds belong to Barber's Class 3 (Barber, *ibid).* It is not unreasonable to envisage, on the available evidence, that the land around Blairhall Burn was recurrently used by a group of people during the second millennium BC.

While Burnt Mounds 1 and 2 appear superficially to have been more or less identical to each other, and not dissimilar to some other burnt mounds that have recently been excavated in the East Rhins of Galloway (for example: Mound 6, Gabsnout Burn, 1; NGR: NX 1968 6103: Russell-White 1990, 76) and the Machrie North and Glaister sites on Arran (Barber & Lehane 1990), there appears to be a possible difference in function between them. As has been noted previously, the clay subsoil underlying Burnt Mound 1 showed signs of exposure to considerable heat, whereas Burnt Mound 2 appeared to be no more than a dump deposit of charcoal and stones, with no signs of subsoil burning. This lack of *in situ* burning was also noted at Mound 4,



ILLUS 15 Graph showing distribution of calibrated radiocarbon dates from Blairhall Burn

Cruise 1, NGR: NX 1881 6314 (Russell-White 1990). It would appear therefore that the Burnt Mound 1 does not consist simply of a dump deposit, but is more likely to represent the remains of the fire used to heat the stones, even if subsequently it was also used to discard debris from the process. In both areas no structural remains such as a trough, post- or stake-holes were recorded.

The remains are thus consistent with the heating of stones preparatory to the boiling of water. The association with water is a recurrent one noted for such sites. A number of purposes have been proposed to lie behind such evidence. Cooking in skins is one favoured explanation; this is seen to accord with communities which lacked ceramic or other containers for food preparation that could withstand direct heating, which does not seem from the evidence presented above to have been entirely the case at Blairhall Burn. Alternative views centre on the use of heated stones to boil water for saunas or sweat-houses, both of which are attested in the ethnographic record (Barfield & Hodder 1987).

STRUCTURE 1 & STRUCTURE 2

Structures 1 and 2 both appear to be of double-ring construction. Structure 1 is slightly larger and more complex in that it has a projecting porch entrance, and slightly deeper-cut features. Structure 1 is not immediately comparable to any other house structures of similar date within the region or indeed Scotland. Such sizeable, double-ring, post-built structures with porches are more often associated with the succeeding millennium and the Iron Age (for which considerable examples are recorded), although porched Bronze Age examples do exist (eg among the several structures excavated at Black Patch in Sussex, where the outer walls are considered to have been founded on spreads of flint nodules (Drewett 1979; 1980). There are more conventional, large, double-ring post built structures of Bronze Age date from a number of sites in England, of which the most celebrated southern examples are at Itford Hill (Burstow & Holleyman 1957) and Shearplace Hill (Rahtz & ApSimon 1962), both in Sussex. More recently the site of Paddock Hill, Thwing, Yorkshire revealed a substantial double-ring circular structure set centrally within an enclosure of Bronze Age date (Bewley 1994, 82, fig 51). Much further south, at Longbarrow Crossroads, Winterbourne Stoke near Stonehenge, a Bronze Age settlement of timber round-house includes three with — at first sight — exaggeratedly long corridor-like porches, explicable because of the removal of all earthfast traces of the slighter outer walls of these buildings *(ibid,* fig 59).

The less complete remains of Structure 2 are comparable with other structures fairly recently excavated, most notably at Green Knowe, Peeblesshire (Feachem 1963; Jobey 1980a). In this instance, if we envisage the post-holes of Structure 2 as being the inner and outer rings of a single structure, this would have created a cavity or an aisle between the circumference of these rings of c 0.40-0.75 m wide. Although narrow, this dimension is comparable to that encountered on other sites (eg Platform 4 at Green Knowe, Peeblesshire: Feachem 1963, 82, illus 3; Jobey 1980b, 16). It should, however, be noted that the ceramic evidence (see Cowie this report) does not exclude the possibility that these traces may correspond to more than one building.

STRUCTURE 3

The remains of Structure 3 exhibit some considerable similarities with other structures recently excavated in the unenclosed platform settlement group of central southern Scotland. This type of structure appears consistently to exhibit a number of features, namely: single or double grooves with packing-stones; post-holes which frequently do not form coherent plans; and, perhaps most

significantly, a large number of very shallow oval pits set within the buildings. Excavated examples also often reveal the remnants of an occupation deposit of black greasy soil, abundant in charcoal, and containing burnt cereals and fragments of pottery, as at Green Knowe, Peeblesshire (Jobey 1980b), and Lintshie Gutter, South Lanarkshire (Terry 1995). More often than not, artefactual finds also include a variety of stone rubbers, possibly used in food preparation *(ibid).* However, Structure 3 differs from the usual altitudinal band in which these sites are located, in that it is sited distinctly lower, at approximately 110m OD. In Peeblesshire and Lanarkshire, the classic areas where unenclosed platform settlements have been detected, the majority of extant examples have been identified on or near to the 310 m contour (Jobey, 1980b, 13). This is, according to Jobey *(ibid)* 'probably no more than a survival pattern in face of more intensive landuse of the lower slopes'. The Blairhall Burn example thus provides an indication of their construction, as might be anticipated, at lower altitudes and in areas where structures of this type have been eradicated as surface features by subsequent cultivation practices.

METAL-WORKING

Small-scale rural metal-working sites are difficult to detect from the surface and in many sectors of the Scottish landscape are usually identified by chance through ground-disturbing works such as afforestation (eg Aitken 1969) or pipeline construction (eg *DES* 1992, 69; Boghall and Scabgill). Such sites are, therefore, poorly represented in the archaeological record and most of the evidence for first millennium AD iron-working occurs on enclosed or other sites, many of which have aristocratic associations. The Blairhall Burn excavations have increased the archaeological database of evidence on un-enclosed sites of this type and period. It is possible that more extensive evidence of metal-working, including structures associated with this activity, lies outside the area available for excavation.

CONCLUSION

The excavations at Blairhall Burn have produced a variety of features and structural remains representing both industrial and domestic activity. These form a number of spatially distinct archaeological foci providing evidence for a range of activities from the later Neolithic to the early medieval period, with a hiatus of activity from the later Bronze Age for almost two thousand years.

The excavated archaeological remains represent a transect through a palimpsest of features comprising a more extensive multi-period archaeological landscape now much reduced by subsequent agricultural practices.

The radiocarbon dating sequence of nine overlapping dates taken from four individual structures (or structural elements), as well as the presence of the two burnt mounds, appears to indicate long-term recourse to the area. While the radiocarbon dates are broadly supported by the sparse artefactual evidence recovered, phasing within the sequence is less structurally specific, ie the internal phasing of this sequence does not suggest a neat succession of structural types.

The excavation of the round-houses in particular has a wider regional significance, as no archaeological remains similar to Structure 1 have been investigated in this area. For the Border counties, the importance of the type site represented by Green Knowe was recognized by Jobey (1980a, 94) in these terms:

> The importance [of Green Knowe] must lie in the fact that we now have a northern upland settlement broadly contemporary with some better known settlements having Deverel-Rimbury contexts in the South (eg Barrett 1976) and at least some of the burnt mound sites in Orkney away to the North (Hedges, J 1975).

The Blairhall Burn excavations furnish unprecedented excavated evidence of a lowland settlement complex from one of the basins which drains into the Solway. They have provided a suite of evidence which allows the tentative integration of distinctive structural types and artefacts. Such integration may be indicative of a continued recourse to a 'special' area, spanning at least the second millennium BC, of which only a portion has been identified by these excavations. It is considered likely that a much larger and potentially more complex settlement was active here, whose origins may date to the Neolithic.

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