

## Excavations at Kaimes Hill, Ratho, City of Edinburgh, 1964–72

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### ABSTRACT

*Kaimes Hill, City of Edinburgh, has been the focus for both antiquarian and modern archaeological research since at least the mid-19th century and has produced evidence for activity dating from the Mesolithic through to the medieval period. This paper assimilates this evidence, provides a complete account of the excavations undertaken over the ramparts, 'hut circles', prehistoric ritual and funerary monuments by D D A Simpson between 1964–72, and presents the results obtained from recent artefactual analysis and radiocarbon dating.*

### INTRODUCTION

Close to the south-western outskirts of Edinburgh are two denuded basalt intrusions known locally as Kaimes (NGR: NT131 665) and Dalmahoy Hills (NGR: NT 135 669), between the modern arterial routes the A70 and A71 (illus 1). Over the course of the last century both of these hills were subjected to extensive aggregate quarrying, while in recent years Kaimes Hill has been used as a landfill site. Prior to this modern phase of exploitation these intrusions originally formed a striking feature of the lowland landscape, rising to over 250m OD. and commanding extensive vistas over the Lothian coastal plain to the north, and the Pentland Hills to the south. Indeed, it is this topographical prominence that was probably instrumental in attracting prehistoric and protohistoric activity on both hilltops which, in its more conspicuous form, consists of a series of earthworks, rubble walls, or 'fortifications', which effectively incorporate

the natural rock outcrops and precipitous slopes into their designs.

The respective designs of the two earthworks are not, however, comparable, as they are morphologically, and possibly chronologically, distinct. The visible remains on Dalmahoy Hill consist of a small 'citadel' enclosing the summit of the hill, with a number of sinuous and probably contemporary enclosures spreading out across the lower terraces. Stevenson (1949) originally identified these features in their entirety and introduced the term 'nuclear fort' in order to classify them and also a series of comparable sites in Scotland which he argued dated, in their final form, to the post-Roman period. While excavation over the last 20 years has largely confirmed this chronological argument, it also suggests that a major function of the associated 'defences' was to emphasise the hierarchical organization of space at these distinctive hilltop sites (cf Alcock et al 1989, 210).

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ILLUS 1 The location of Kaimes Hill (based on the Ordnance Survey map: Crown copyright)

In contrast, the surface remains on Kaimes Hill were more extensive and varied than those on Dalmahoy Hill and conformed to a pattern more commonly associated with a multivallate hilltop enclosure, or hillfort, which probably acted as a significant locale for the later pre-historic communities occupying this region. Although a large portion of these remains is now destroyed, it is fortunate that over the last 150 years the site has formed the focus for both antiquarian research and modern archaeological excavation. It is the purpose of this paper to assimilate this evidence, and also provide a complete account of a campaign of excavation directed by Professor Derek Simpson between 1964 and 1972. This research has never been published in its entirety, and has recently been supplemented by an analysis of the small finds retrieved from the site during the course of the 19th and 20th centuries, and a series of radiocarbon dates from a number of excavated deposits and structures exposed during the late 1960s. This recent phase of analysis has been generously funded by Historic Scotland, and it is anticipated that it will contribute to both the study of hilltop sites and prehistoric activity in the immediate and wider region.

## HISTORY OF INVESTIGATION

Richard Gregory, Eileen Murphy & Derek Simpson

### EARLY TOPOGRAPHIC ACCOUNTS

The archaeological remains on Kaimes Hill have been recognized since at least the mid-19th century, when topographic descriptions of the more prominent features were included within a number of antiquarian accounts. Due to the sustained phase of quarrying over the last 100 years these accounts now provide a unique record of the site in its original, undisturbed, form. The earliest of these dates to 1845 and was published by Rev James Clason in the *New Statistical Account of Scotland*. In describing the site Clason (*NSA*, vol I, 91–2) notes that the site was ‘about three acres in extent’ and was defined on its southerly side ‘by a double fosse and rampart’. Clason (*ibid*) also

identifies an easterly entrance and within the site’s interior a stone cairn and ‘at least ten circles’, which ‘are not improbably the remains of huts’.

In 1874 John Alexander Smith published a second description of the site that provides further, if somewhat similar, topographic and archaeological detail. Smith (1874, 149–50) also offered a cursory assessment of the geology of the hill and the function of the enclosure. In doing so he suggests that Kaimes Hill:

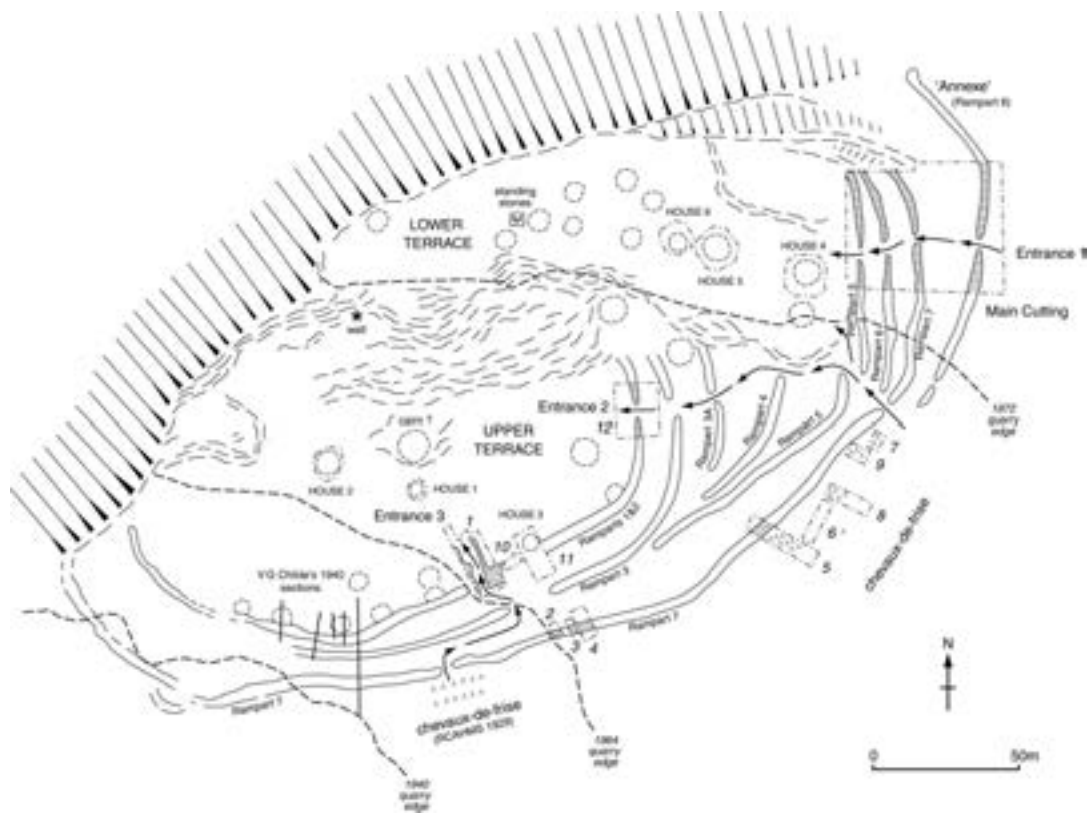
appears ... to have been ... the site of an early British occupation of considerable importance, and was probably a town corresponding to other ancient sites which occur in different parts of the country.

It also seems likely that aside from merely visiting and describing the remains on Kaimes Hill, Smith may have undertaken some form of excavation within the interior of the site. This excavation appears to have concentrated on one or more of the ‘hut circles’ as Smith’s (1874, 150) notes that:

The floors of the hut circles are covered by about a foot of soil, and appear at some places as if they had been flagged or roughly paved with thin stones, generally in those very partially examined by us, of sandstone, which in some places seemed to show marks of being blackened, possibly by fire.

In 1893 these descriptive accounts were supplemented through a planimetric survey of the site undertaken by J H Cunningham and F R Coles (Coles 1896). This plan, which appeared in Christison’s (1894) seminal work on the *Early Fortifications in Scotland*, was also supplemented by a detailed topographical description. In this account Coles (1896, 269–71) notes that the defences enclosing the site ‘consist of four fairly strong ramparts, composed in the main of stones’, and he astutely comments on the relationships between certain of the ‘hut circles’ and fort ramparts suggesting that they ‘are found very numerous’ with ‘three at least formed by using the rampart as part of the construction’.

A further survey and topographic description of Kaimes Hill was undertaken in the earlier half of the 20th century as part of the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) Inventory of the ancient monuments of Mid and West Lothian (RCAHMS 1929). The resultant plan was essentially similar to Coles’s



ILLUS 2 The surface remains on Kaimes Hill and areas excavated as compiled from: Coles (1896); RCAHMS (1929); Childe (1941); Simpson (1969); Rees (1999); Murphy & Simpson (2001) and aerial photographs held in the NMRS

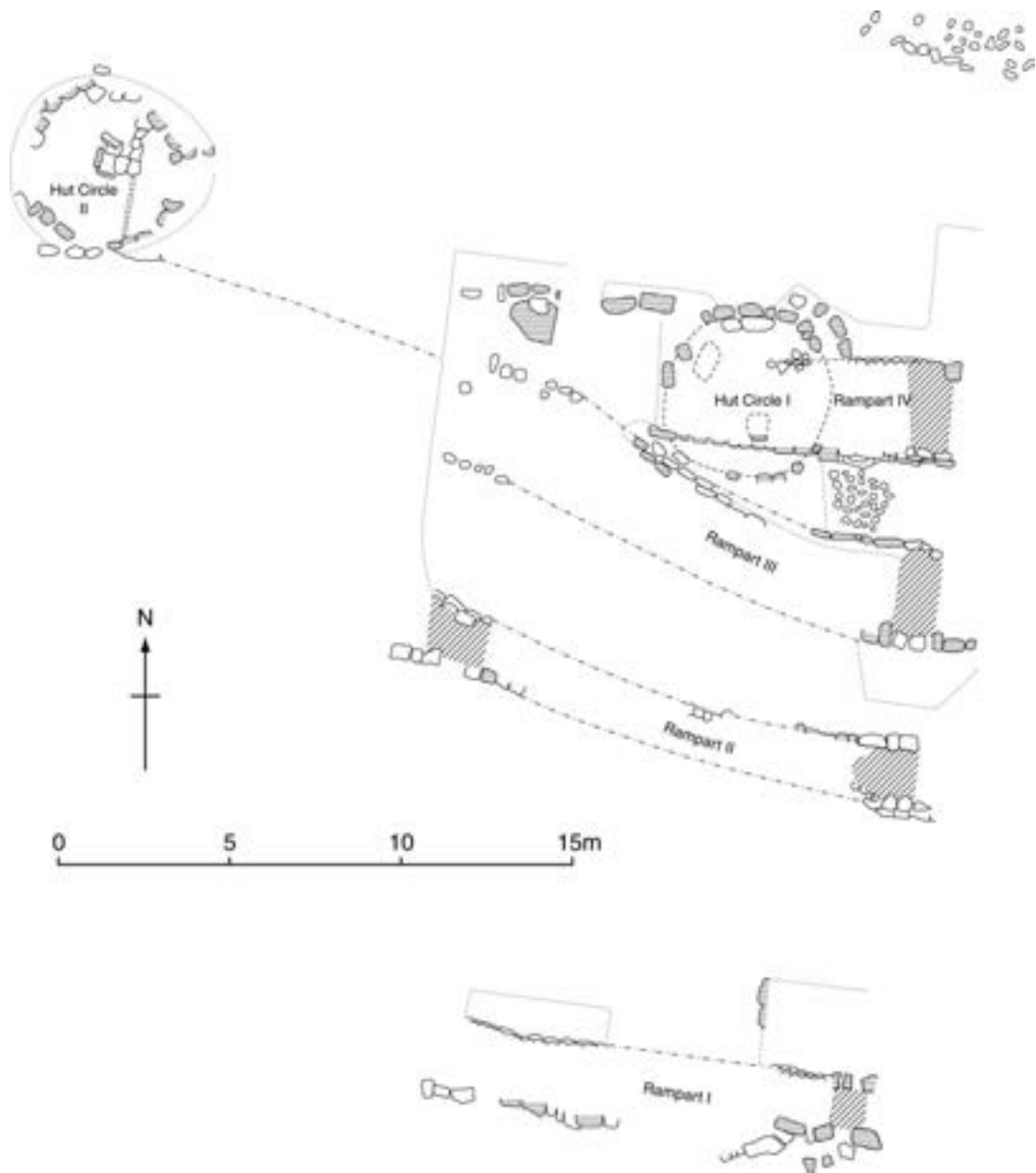
(1896), but does provide the first depiction of two discrete areas of *chevaux-de-frise* associated with the outer rampart, and the standing stones which were later excavated by Simpson in 1969 (RCAHMS 1929, 160–2). This plan, when allied with the later survey work, excavation and aerial photographs of the site, has also proved invaluable for reconstructing the original form of the surface remains, particularly at the western end of the hill (illus 2).

#### V G CHILDE'S 1940 EXCAVATION

In 1940 Professor Childe undertook the first modern excavation at the western end of the site in advance of quarrying (Childe 1941). In this area Childe excavated a number of sections in order to elucidate the structural history and arrangements of the ramparts. Two 'hut circles', which were located close to the innermost rampart, were also excavated as part of this examination (illus 2 & 3). This work identified four

ramparts which Childe designated Ramparts I to IV. Through a careful analysis of Childe's generalized plan it would appear that Rampart I corresponds to Rampart 7 on illus 2; Rampart II to Rampart 3; Rampart III to Rampart 2; and Rampart IV to Rampart 1.

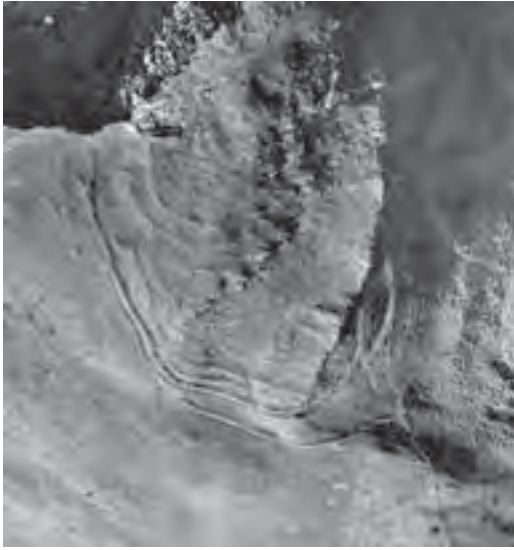
Childe (1941) argued that the four excavated ramparts belonged to two possible phases of construction. The first phase, Childe suggested, witnessed the construction of Rampart IV (Rampart 1). This rampart was c 3.4m wide and consisted of an outer and inner face of coursed flat slabs which contained a rubble and earth core. Due to the discovery of a possible post-hole it was also suggested that this rampart may have been reinforced near its inner margin by a timber breastwork. Based on the apparent horizontal relationships between the various ramparts Childe (1941) suggested that Rampart II (Rampart 3) was also constructed in this phase. This rampart was constructed of an earth and stone core contained within an outer and inner face of stone, and



ILLUS 3 Childe's plan of the ramparts and two 'hut circles' (modified from Childe 1941). The eastern edge of the trench is delineated by the longest, easternmost, Childe section marked near the bottom of illus 2; Childe's rampart numbers are used

it was thought that it may have originally supported a palisade due to the discovery of a rock cut post-hole. An occupation or 'midden' deposit, consisting of black soil and animal bone, was also found resting against the inner face of the rampart.

Childe (1941) envisaged that during the second phase of rampart construction Rampart III (Rampart 2) directly replaced Rampart IV (Rampart 1). This later rampart was composed of an outer face of coursed stones which Childe (1941) argued was supported



ILLUS 4 Aerial view of Kaimes Hill in 1964: west lies at the top of the photograph (*Photograph by Planair: Crown Copyright*)

by lines of timbers sealed within the earth core of the rampart. Childe (1941) also speculated that the outermost rampart, Rampart I (Rampart 7), was an integral element of this remodelled defensive system. In contrast Rampart III, consisted of an earth and rubble core which had an outer face of large undressed blocks and a packing of small stones to its rear. Childe (1941) postulated that this rampart was never higher than 0.6m and was probably designed to support a palisade that was driven into the rampart core.

Following the collapse of the Rampart III (Rampart 2) revetment, Childe (1941) argued that a third phase of activity could be discerned, in the form of two 'hut circles' (Hut Circle I & II) that were partly constructed over the collapsed revetment. Hut Circle I also sealed the degraded base of Rampart IV (Rampart 1). Both 'hut circles' were similar in form, with a diameter of c 4.2m, stone and earth bank walls and traces of internal paving. Hut Circle II also had the additional evidence of a hearth, an easterly doorway, and an interior drain, which ran through the southern wall of the structure.

A minimal quantity of small finds was also recovered during these excavations and included a small 'crumb' of pottery, six stone balls, described by Childe (1941) as 'sling-balls', and cattle and sheep bones recovered from the collapsed 'breast work' of Rampart III (Rampart 2). Hammer-stones,

or pounders, were found within Rampart IV (Rampart 1), and slag was found below the floor level of Hut Circle I. An object described as a 'corroded iron arrowhead of Roman-Caledonian pattern' was also recovered close to Rampart I (Rampart 7). All of these finds were donated to the then National Museum of Antiquities of Scotland (now the National Museums of Scotland) in 1941 by the Dalmahoy Trustees and some have been examined as part of the recent programme of artefactual analysis.

#### D D A SIMPSON'S 1964-72 CAMPAIGN OF EXCAVATION

By 1964 the western end of the hill, including the area examined by Childe, had been destroyed (illus 2 & 4) and the remaining portions of the site were still under threat from quarrying. The then Ministry of Works therefore initiated a campaign of rescue archaeology, directed by D D A Simpson, in order to re-survey the surface remains and excavate selected portions of the site prior to destruction. Following a topographic description and survey of the site (cf Simpson 1969, 7-8; fig 1) nine seasons of excavation were completed with the investigation of 20 trenches located over the ramparts, 'hut circles' and other features indicative of prehistoric activity (Murphy & Simpson 2001) (illus 2).

#### STRAY FINDS

Over the course of the 19th and 20th centuries a moderate-sized collection of stray finds was recovered from the hill, and this is now held by the National Museums of Scotland. The first finds were obtained from a rabbit scrape and were reported by Sir William F Douglas in 1881. In 1945 these finds were supplemented by a number of objects recovered by Mr Will Grant from a World War II look-out post that had been constructed on the site. Between 1966 and 1973 Mr C Hoy also retrieved numerous artefacts from a variety of locations on the hilltop. The last recorded stray find recovered from the site was a fragment of a rotary quern which was submitted to the National Museum of Antiquities by the Scottish Development Department in 1979.

#### HISTORIC SCOTLAND-FUNDED WORK

In 1999 Historic Scotland commissioned AOC Archaeology Group to complete a survey of the

remaining portions of the site which had not been destroyed by quarrying, and to determine whether the recent landfill works had impinged on the Scheduled Ancient Monument (Rees 1999). This survey indicated that only a small undisturbed portion of Kaimes Hill remained, comprising a c 50m-wide strip running approximately east/west from the southern edge of the 'Main Cutting' excavated in 1971 (illus 2). Although the trenches associated with the excavation of the 'Main Cutting' and House 4 were identified during this survey, the presence of extensive stands of bracken and regenerating scrub woodland precluded the recognition of any of the houses, originally identified during the 1960s.

In 2000 Historic Scotland agreed to fund a renewed program of post-excavation analysis and archiving of the 1964–72 excavations and the artefactual remains held in the National Museums of Scotland. This work extended over two years and aimed initially to assess the contents of the site archive and to formulate a suitable strategy to bring the excavation and the recovered artefactual remains to full publication (Murphy & Simpson 2001). Following this initial assessment appropriate specialists were commissioned and eight carbon samples obtained during the 1964–72 excavations were selected for AMS dating. This recent work, which forms the substance of this paper, greatly enhances the interpretation of the archaeological remains associated with Kaimes Hill and allows a

renewed assessment of the history of this important hilltop site.

## THE RESULTS OF THE 1964–72 EXCAVATIONS

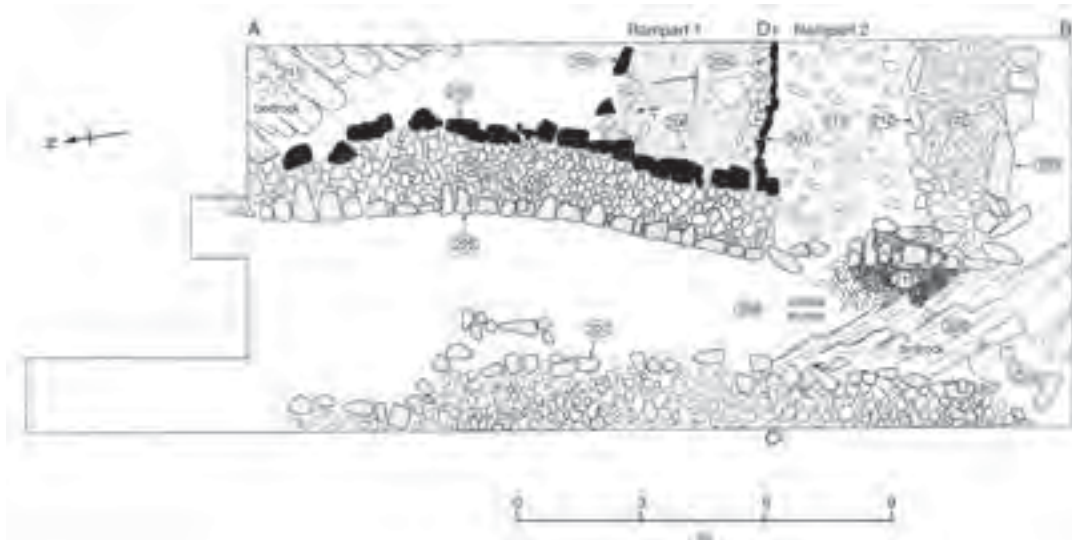
Derek Simpson, Eileen Murphy & Richard Gregory

### INTRODUCTION

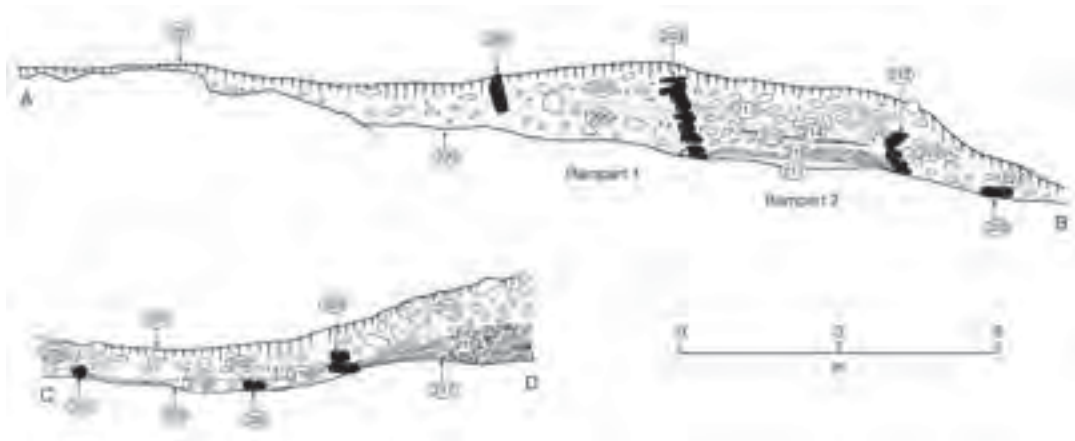
The excavation narrative that follows has been compiled from the surviving site archive originally held at Queen's University Belfast. This archive was catalogued and assessed in 2001, but was unfortunately found to be incomplete in a number of specific areas (Murphy & Simpson 2001). This incompleteness was particularly evident when analysing the archive for Trench 12, the stone cairn and the 'Main Cutting' as the written records from these respective areas appear to have been lost. Fortunately a number of plans, photographs and small finds records do survive and these allow a partial reconstruction of the excavated evidence.

### RAMPARTS

Between 1964 and 1972 six of the ramparts (Ramparts 1, 2 & 5–8) surrounding the hill, three of the entrances into the interior of the site (Entrances 1–3), and an



ILLUS 5 Plan of the south-western entrance (Entrance 3) through Ramparts 1 and 2



ILLUS 6 Sections through the south-western entrance of Ramparts 1 and 2

area of *chevaux-de-frise* associated with Rampart 7 were examined during the course of the excavations (illus 2).

#### *Ramparts 1 & 2*

Ramparts 1 and 2 were the innermost ramparts surrounding the summit of the hill, and these correspond with Childe's (1941) Ramparts IV and III originally located on the western side of the hill (illus 2 & 3). Prior to excavation the ramparts appeared as a single stony bank extending along the summit of the hill (illus 2 & 4). This bank stretched from the quarry edge for a distance of c 110m before terminating at the precipitous break of slope, which defined the north-easterly edge of the upper terrace. Two breaks in the bank, which had also been noted by Coles (1896) and RCAHMS (1929), suggested the presence of two possible entrances through the ramparts (Entrances 2 & 3), and two 'hut circles' appeared to be constructed either over the degraded remains of the ramparts or were truncated by the earthwork (illus 2). Four trenches (1, 10, 11 & 12) were therefore excavated in order to investigate the form and structure of the ramparts and their relationship to surrounding features (illus 2). Of these, Trenches 1 and 12 were positioned over the possible entrances, while Trenches 10 and 11 examined sections of the ramparts and a 'hut circle' (House 3) found to the rear of the degraded bank.

The relationship between the two ramparts was established with the excavation of Trench 1, which was positioned over the south-westerly entrance (Entrance 3) (illus 2 & 5). Here the sequence was best

represented on the eastern side of the entrance, as there had been considerable disturbance associated with the construction of a World War II military installation on the western side. Moreover, it was only possible to undertake limited excavation on the western side of the entrance due to the proximity of the quarry face. Excavation in this trench indicated that Rampart 1 was the earlier of the two ramparts as its outer face had been partially sealed by Rampart 2 (illus 6). This outer face had ten courses of stonework (203) surviving to a height of 1.5m, and was found associated with a mass of rubble and boulders (204) located immediately behind it. This face was traced eastward for a distance of c 9m through the excavation of Trench 10 (illus 2 & 7). It was also clear from the excavation of this trench that the bedrock rose steeply eastwards and the height of the rampart face was progressively reduced until it was only represented by a single course of stones. No trace of Rampart 1 had survived in the adjacent Trench 11 where the bedrock continued to rise (illus 7). It is therefore possible that Rampart 1 was not a continuous defensive structure, but rather that it occurred only where it was necessary to fill declivities and gaps in the outcropping bedrock. Alternatively, it is possible that the absence of Rampart 1 in Trench 11 may have arisen as a consequence of the robbing of stone in order to construct the later rampart (Rampart 2), or that the stone of Rampart 1 was used to build the stone footings of House 3, which lay on the projected line of Rampart 1 at this point (illus 7).

The inner face of Rampart 1 was identified in Trench 1 and was marked by a number of large slabs. These slabs, which were located c 3.6m from





ILLUS 7 Plan of Trenches 10 and 11 and north/south section through Trench 11

the outer face, were not set contiguously and only represented a single course (illus 6: 205). The rampart core (206) was composed of burnt earth, a mass of stones and boulders, some of which were vitrified, and occupation debris which included animal bone and slag (206). The incorporation of occupation debris into the core is significant as it may indicate that a probable phase of pre-rampart occupation occurred in this area. Two single-entity charcoal samples from the rampart core were submitted for radiocarbon dating and these returned dates of  $2170 \pm 45$  uncal BP (AA-51553) and  $2385 \pm 40$  uncal BP (AA-51552). Evidence of an old land surface was not, however, visible beneath the rampart, but traces of carbonized timbers were present at its base (207), lying on the undisturbed natural clay and weathered bedrock (208). The best-preserved

section of timber was represented by two lengths of approximately 0.9m which were set at right angles to one another indicating that the rampart was originally timber-laced. The existence of further timber-lacing in the core of the rampart was evidenced by the presence of vitrified stone fragments.

At the western terminal of Rampart 1 (illus 5), which was located adjacent to the Entrance 3 (Trench 1), the end face of the rampart consisted of a curving drystone wall revetment (210). This revetment extended into the interior of the fort for a distance of c 12m and butted against a rock outcrop (211). The corresponding face on the opposite side of the entrance was also inturned, but it is more probable that this side of the revetment relates to the construction of Rampart 2.



ILLUS 8 Plan of Ramparts 5, 6 and 7 as exposed in the 'Main Cutting'

The evidence from Trench 1 indicated that Rampart 1 was replaced and subsumed by Rampart 2, as Rampart 2 had been built in front of Rampart 1 and had effectively preserved the earlier rampart's outer face (illus 5 & 6). Two periods of construction were also discernible within the makeup of Rampart 2 (illus 5 & 6). The first phase consisted of a drystone revetted (212) rampart with a thickness of c 3.6m. Behind the revetment the rampart was composed of a mass of earth and rubble (213), and beneath this material was a layer of pale sand (214), which sealed a thin layer of carbonized wood (215). This carbonized material consisted of small branches and twigs with diameters of 20–30mm, and it was considered possible that the wood represented scrub which had been cleared from the area prior to the construction of the rampart. This layer was, in turn, located directly above a thick layer of grey clay (216) which sealed a former land surface (217). Associated with the initial phase of Rampart 2 was an area of carefully constructed cobbling (218)

situated close to the eastern side of the south-western entrance, which abutted the massive revetment slabs which faced the entrance (221). These cobbles had also been laid down on an accumulation of earth and rubble (219), and it is probable that this material had been deposited in order to fill up a declivity in the bedrock. The bedrock (220) provided a natural surface over much of the entrance area, however, and the smoothing of patches of this surface attest to the volume of traffic or longevity of use of the entrance during its successive phases.

In a second phase of construction Rampart 2 was enlarged. A further 2.4m of earth and rubble was added to the front of the original face (222), and this material contained a considerable quantity of wood ash. The extended rampart was also provided with a massive outer stone face revetment, which consisted of slabs up to 1.8m in length (223). At the terminal of the extended rampart a new rampart face (225) was also constructed in the entrance anterior to the Phase 1 face (210).



ILLUS 9 Plan of Trench 12

This latter phase was inturned for approximately 12m and butted a rock outcrop (211) in a similar manner to the inturned entrance associated with Rampart 1 (210), which it obscured. The area located between the entrance revetment of Rampart 1 and the later revetment was filled with boulders (226).

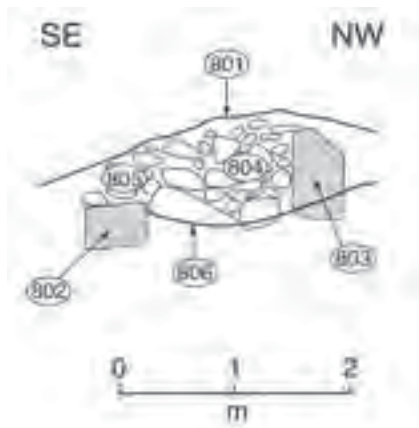
In Trench 11 (illus 7) Rampart 2 was a less substantial structure with a width of 1.5–1.8m. Only one phase of construction could be discerned within the fabric of this rampart. Within Trench 11 it also appears that the rampart builders made use of a natural step in the bedrock for the construction of the outer face of the rampart. This face only survived to a height of three courses, but this may in part account for the steepness of the slope at this point. No trace of an inner face was evident, but instead the core material butted against bedrock, and was found to contain a substantial quantity of pottery and animal bone as well as carbonized twigs. Of this material two charcoal samples returned radiocarbon dates of  $2315 \pm 90$  uncal BP (Gak 1971) and  $2215 \pm 40$  uncal BP (AA-51554).

During the 1969 season of excavation Trench 12 was opened in order to investigate the easterly entrance (Entrance 2) through Ramparts 1 and 2 (illus 2). Unfortunately, the only information surviving in the site archive is a generalized plan of the trench (illus 9). This plan suggests the entrance gap through the ramparts was c 4m wide, and that Ramparts 1 and 2 were in a better state of preservation in the southern

half of the trench. In this area Rampart 2 was c 4m wide, was revetted by an inner and outer stone facing and was the better preserved of the two ramparts, as only the degraded tails of Rampart 1 could be identified, set c 4m back from the inner face of Rampart 2. This enhanced preservation could possibly be a result of Rampart 2 incorporating the remains of the earlier rampart in its construction. The available plan of Trench 12 also suggests that extending from the terminals of Rampart 2, into the interior of the site for c 9m, was a drystone end face. Indeed it seems possible that this feature, although slight and heavily disturbed, particularly in the northern half of Trench 12, was comparable in design to the end face identified at Entrance 3 (Trench 1).

#### *Rampart 5*

Prior to excavation Rampart 5 appeared as a single stone and earth bank. This rampart was traced from the central area of the site, where it initially ran north-eastwards adjacent to Rampart 3, and then gently curved around the north-eastern corner of the hill in front of Rampart 4. The rampart terminated at the crest of the escarpment which defined the northerly edge of the lower terrace (illus 2). There were two breaks along the rampart course which allowed access to the lower and upper terraces (Entrances 1 & 2) of the hill. It may also be significant that at Entrance 2 the south-western terminal of Rampart 5 kinked inwards (illus 2



ILLUS 10 SE/NW section through Rampart 5

& 4), and it is possible that this kink was an intentional element of the entrance design and was unrelated to the topographical constraints of the hill.

The excavated section of this rampart was confined to the 'Main Cutting'. This was a large trench excavated in order to examine the ramparts defining the eastern boundary of the site, and to expose the entrance gap through these features (illus 2). Within this trench approximately 30m of Rampart 5 was excavated, including the associated entrance gap (illus 8). The south-western area of the rampart was the better preserved section, and it appeared to have had a rubble core (804), with a thickness of approximately 2m, and an external (802 & 809) and internal (803 & 810) drystone wall facing, which added a further c 0.75m to the total thickness of the rampart (illus 10). In the area exposed over the break through the rampart, the entrance gap (808) had a width of approximately 3m and a length of around 2.5m and both sides of this entrance were faced with three large stones (807 & 811). A depression (812) was also identified located immediately adjacent to the inner face of the rampart, close to the north-eastern side of the entrance, although the function of this feature is not particularly clear. Scattered stone (813), which probably represented collapse from the rampart, was located in the enclosure interior near the south-western internal wall (803) of the rampart, and this was associated with a single sherd of medieval pottery.

#### Rampart 6

Rampart 6 was a short earthwork sandwiched between Ramparts 5 and 7, which ran between Entrances 1

and 2 in the north-west of the enclosure (illus 2). A c 26m stretch of this rampart, and its entrance gap (Entrance 1), were investigated during the excavation of the 'Main Cutting' (illus 8). Although within this trench the south-western section of the rampart was in a better state of preservation than its north-eastern counterpart, generally the rampart was c 4m wide and was composed of a rubble core (904), with an external (902) and internal (903) stone revetment. The entrance gap through the rampart had a width of approximately 3–3.5m and a length of around 3.5–4m, and the better preserved south-western entrance face (906) consisted of stones similar in size to those employed in the internal (902) and external (903) faces. A stone-lined alcove (905) was also evident in the south-western external wall (902) of the rampart (illus 11). Although the function of this feature is not particularly clear, the alcove had a depth of approximately 2.5m and a breadth of around 0.75m.

#### Rampart 7 and the chevaux-de-frise

Rampart 7 originally surrounded the complete southern circuit of the hill and formed the outermost rampart over the majority of this circuit (illus 2). It appears to correspond with Childe's (1941) Rampart I excavated at the western end of the site. Prior to excavation in 1964 this rampart was c 3m wide and stood to a height of c 0.9m, and was the most conspicuous of the earthworks associated with the hill. Based upon the available topographic surveys of the site this rampart also appears to have had three breaks along its course,



ILLUS 11 Alcove in the outer face of Rampart 6. View from the west

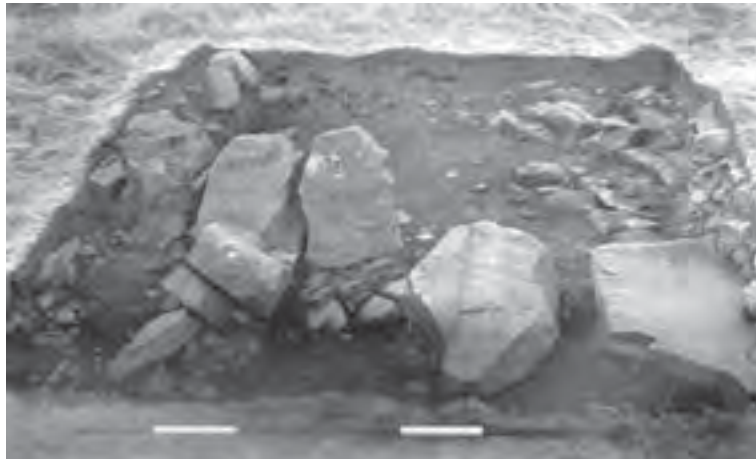


ILLUS 12 SE/NW section through Rampart 7

which correspond to Entrances 1–3. Two discrete systems of *chevaux-de-frise* were also associated with the southern face of this rampart. One area was located to the south-west of Entrance 2, while the other area was located across the front of Entrance 3 (illus 2).

Between 1964 and 1972 Rampart 7 was examined in five areas (Trenches 2–5 & ‘Main Cutting’), and the *chevaux-de-frise* was exposed in four areas (Trenches 5, 7, 8 & 9). In the north-eastern area of the site a c 30m stretch of Rampart 7 and an associated entrance gap through the rampart were exposed in the ‘Main Cutting’ (illus 8 & 12). Following excavation the south-western portion of the exposed rampart was found to be in a better state of preservation. It consisted of a rubble core (1005), with an external (1003) and internal (1004) stone revetment and had an approximate width of 3.5–4m. The north-eastern excavated portion of the rampart also comprised a rubble core (1015) and an internal (1014) and external (1013) revetting wall. In this area the entrance gap (1011) through Rampart 7 had a width of c 2.5m and a length of c 2.5–4m, and was located in a comparable position to the breaks observed in Ramparts 5 and 6. It was also faced with stones (1010 & 1012) and these were of a similar size to those used in the internal (1004 & 1014) and external (1003 & 1013) faces. An insubstantial ditch (1007), with a flat bottom, was also located exterior to the external wall (1013) and entrance wall (1012) of the north-eastern part of the rampart. This ditch had a depth of around 0.4m, a width of approximately 2.2m at the top and 1m at the bottom, and contained stones (1008) which presumably represent collapse from the overlying rampart (illus 12).

In the southern and south-western area of the site four trenches (Trenches 2–5) were also excavated over Rampart 7. In these trenches the outer face of the rampart comprised a clearly defined drystone wall (105), although no more than three courses survived in situ and the stones varied in both size and the manner in which they had been positioned. In Trenches 2 and 5, for example, the in situ stones appeared to have originally stood with their long axes in a vertical position (illus 13). The same was also true of those stones which had been pushed forward and down the slope as a result of the pressure exerted from the collapse of the rampart core material. The opposite was found to be the case in Trench 4 where one of the stones was bonded into the rampart core with its long axis positioned horizontally (illus 14). In all areas investigated the facing stones had a variety of lengths, however, ranging from 0.3m to 0.9m, and a number of the facing stones were found positioned either directly on bedrock or were resting on a thin layer of soil or weathered bedrock. In a number of places small wedging stones were also forced beneath the bottom course (107) (illus 14). Beyond the outer face of the rampart rubble a number of large stones, similar in form and size to those present in the surviving course of the outer face, extended downslope for a distance of c 3–4.5m. The height of the outer face, and by extension the entire rampart, could therefore be estimated at c 1.8m through the number of collapsed facing stones. It is also possible that additional protection may have been achieved through the provision of a wooden parapet on top of the stone wall, although no evidence for such a structure was discovered. This estimated rampart height of 1.8m should be considered as a minimum,



ILLUS 13 Outer face of Rampart 7 as seen in Trench 2. View from the south

however, since a number of possible collapsed facing stones were also discovered at the southern edge of Trench 3, and it is probable that if this trench had been extended more facing stones would have been discovered.

To the rear of the outer face was the rampart core. In Trench 3 this core was composed of a mass of stones located immediately behind the outer face. A deposit of turf and earth, which contained a number of small stones, was then found behind this dump. In Trenches 2 and 5 a similar dump of rubble was also identified behind the outer face, but the material to the

rear of this dump was more mixed in nature and not so clearly of turf construction (illus 15).

To the rear of the rampart core an inner rampart face (illus 16: 106) was also identified. In Trench 4 this facing was found to consist of a single course of randomly placed stones each with a length of approximately 0.3m to 0.6m. These stones, although largely insubstantial and poorly defined, appeared to mark the tail of the rampart in this area. Conversely, in Trenches 2 and 5 the face was continuous and consisted of two courses of stones, though generally the paucity of stones at the rear of the rampart



ILLUS 14 Outer face of Rampart 7, as seen in Trench 4. View from the south



ILLUS 15 Section through Rampart 7, as seen in Trench 5. View from the north-west

suggests that this inner face never stood to any considerable height.

The *chevaux-de-frise* found to the south of Rampart 7 was exposed in Trenches 5–9, where it had been visible as a series of projecting stones through the turf running up to Entrance 2. The excavated areas indicated that the *chevaux-de-frise* was formed by setting slab-like and pointed stones into a series of stone-holes (illus 16). These stone-holes were edged and packed with smaller stones which ensured that the stones projected upwards and were angled slightly downslope. The excavated trenches indicated, however, that the *chevaux-de-frise* was not a continuous and regular setting as was first suspected. In Trench 5, for example, the *chevaux-de-frise* was located c 3m from the outer face of Rampart 7, where it then ran for c 12m (illus 16). A gap of c 18m then separated this group of stones from those situated in Trenches 7–9 to the east. Furthermore, although the stone settings located in the northern part of Trench 8 appeared to be set in regular rows (110) (illus 16), the majority of the stones of the *chevaux-de-frise* were randomly positioned (109).

#### Rampart 8

Rampart 8 was described as an ‘annexe’ in the RCAHMS (1929) survey of the site, presumably because it was the outermost rampart enclosing the lower terrace of the hill (illus 2). Prior to excavation this rampart was composed of a single earth and stone bank, stretching for c 135m, which had one clear entrance gap corresponding with the breaks through Ramparts 5, 6 and 7 in the north-eastern portion of the site (illus 2; Entrance 1). During the excavation

of the ‘Main Cutting’ in 1971–2 a c 55m stretch of this rampart and its associated entrance gap was exposed. Unfortunately, no plans, sections or written descriptions of this rampart could be located within the site archive (Murphy & Simpson 2001).

#### ‘HUT CIRCLES’

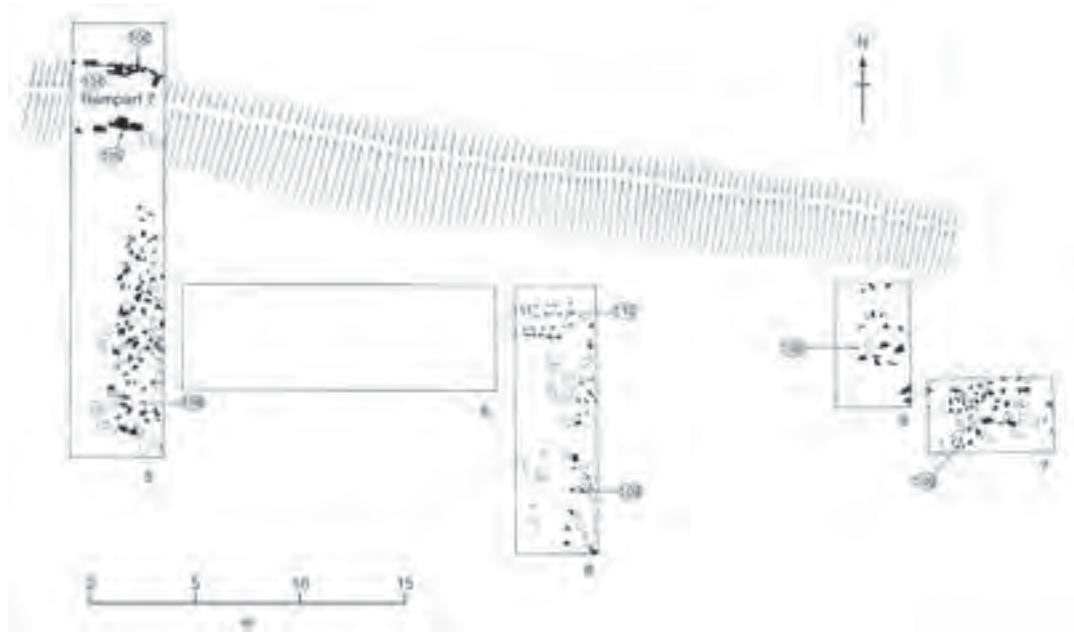
During the course of the excavations six ‘hut circles’ (‘Huts’ 1–6, hereafter ‘Houses’), were examined. Three of the houses (1–3) were located on the upper terrace, with one of these (House 3) seemingly constructed over the remains of Rampart 1. The remaining excavated examples (Houses 4–6) were located on the lower terrace (illus 2).

#### House 1

House 1 was found close to the summit of the hill and was a small, roughly constructed circle, which had a diameter of c 6m. It was defined by a low stone bank with an average thickness of 0.6m (303). Neither proper coursing nor a clearly defined entrance could be identified. It is possible that a number of flat stones located in the interior of the structure may represent paving (304). The artefacts associated with this house included a number of stone rubbers, or pounders, which were found incorporated in the wall and on the ‘floor’ of the structure.

#### House 2

House 2 was located c 35m north-west of House 1 (illus 2) and occupied one of the highest points on the hill. This house was constructed within a sheltered



ILLUS 16 Plan of Trenches 5–9 showing Rampart 7 and the *chevaux-de-frise*

natural hollow which sloped gently north-north-east. It had an external diameter of c 11.4m and appeared to be one of the largest ‘hut circles’ present on the site (illus 17 & 18).

The foundations of this house partially utilized the outcropping rock face (407). This was most notable at the western end of the structure, where only an inner wall face (404) survived, with the outcropping rock acting as an outer face. In the southern and north-eastern area of the trench the stone footings of the house were found to rest upon soil and weathered bedrock; they were c 0.6m thick and had a well defined inner and outer (403) face. It also seems likely that a gap in the footings on the south-west marked the position of an entrance into the house which was otherwise undifferentiated (408).

No floor surface was evident within the interior of the structure, with the exception of a short stretch of paving (406), positioned in a small area located near the north-eastern edge of the house. The ‘floor’ was therefore largely composed of a dark occupation layer containing small fragments of carbonized wood, burnt bone, animal bone, potsherds and other artefacts (409). This layer was found to extend beneath and outside the stone footings in the northern part of the trench, which probably indicates that it belongs, in part, to a pre-house phase of occupation. A single-

entity charcoal sample recovered from this layer was submitted for radiocarbon dating and returned a date of  $2965 \pm 60$  uncal BP (AA-51547).

No indication of the presence of a hearth was evident within the house. In addition, no post-holes were located either inside the area of the wall footings or in the wall itself. A variety of small finds was, however, retrieved from the house interior which are indicative of domestic occupation. The majority of these were Iron Age in character and included potsherds, fragments of shale, stone pounders, stone spindle whorls and corroded iron objects. Moreover, this suspected occupation is in keeping with the dating evidence and associated artefacts recovered from a number of the other ‘hut circles’ located on the hilltop. A proportion of the finds recovered from within and outside of the house, particularly the flint flakes, burnt bone and charcoal, may however have been originally associated with the occupation layer located beneath the house, which appears to date to the Middle/Late Bronze Age.

### House 3

House 3 was an insubstantial structure that lay immediately behind Rampart 2 and on the assumed line of Rampart 1 (illus 7). It, therefore, seems possible





ILLUS 17 Plan of House 2



ILLUS 18 House 2 after excavation. View from the south

that this house was constructed at a similar time to the two 'hut circles' (Hut Circles I & II) excavated by Childe (1941), as these structures shared a similar spatial and stratigraphic relationship to Ramparts 1

and 2. It is also possible, however, that the house was an earlier feature which was originally sealed by Rampart 1, and this would be in keeping with the surprisingly early radiocarbon date of  $3141 \pm 90$  uncal



ILLUS 19 Plan of House 4



ILLUS 20 House 4 during excavation. View from the south

BP (Gak 1970) obtained from a lump of carbonized wood recovered from within the house wall. This wood was overlain by a large stone that appeared to be in situ, suggesting that the wood was not the remains of a post. Alternatively, the carbonized wood may have been originally associated with an earlier phase of occupation at the site and was incorporated into this wall during its construction.

Within Trench 11 the northern, southern and western portions of House 3 were excavated. The house was found to be defined by the remains of a stone wall which was best preserved in the northern half of the house. In this area the wall was c 0.6m thick, had an inner and outer facing and rested directly on bedrock. Conversely, the southern wall was less substantial and was found to seal a thin layer of soil which may conceivably represent the remains of Rampart 1. No entrance into the structure was identified, although it is possible that this was located within the unexcavated easterly area of the house. There was also an absence of post-holes and flooring associated with the structure. An attempt to produce a more level surface had been made, however, by filling declivities in the bedrock with stones (232).

The small finds associated with the interior of this house included animal bone, iron objects, potsherds, a carved shale object and stone balls. These small finds, particularly the pottery and the stone balls, are distinctly Iron Age in character and appear therefore to contradict the Early to Middle Bronze Age date obtained from the wall of the house. This may either suggest that the radiocarbon date is erroneous or that the small finds were derived from Rampart 1, which contained similar finds in its core, and may have originally sealed the house site before its destruction.

#### *House 4*

House 4 was located on the lower terrace approximately 10m west of Rampart 4 (illus 2, 19 & 20). It had an external diameter of c 5.7m, and was defined by a low bank with a thickness of approximately 0.5–1.5m. A possible entrance was situated in the south-eastern area of the structure, and this had a width of c 0.75m (506). Although not indicated on the field drawings of the structure it is probable, due to the structure's similarities with House 2, that the low bank defining the house had a stone core (505) which was contained within an external (503) and internal face (504). Although no paving or other features, such as post-holes, are evident on the plan of the house (illus 19), an entry contained in the

catalogue of finds for 1972 states that charcoal was recovered from below paving slabs (507) found on the floor (508) of the house. Small finds associated with this structure include a number of stone balls and fragments of slag. A single-entity charcoal sample from Context 508 located below the paving slabs was also submitted for radiocarbon dating and returned a date of  $2180 \pm 40$  uncal BP (AA-51551).

#### *House 5*

House 5 was situated on the lower terrace immediately adjacent to House 6 (illus 2). It had an external diameter of c 4.5–5m, and was defined by a low bank with a thickness of around 0.75m (illus 21, 22 & 24). Stone collapse was present both in the interior (614) of the structure and exterior to its demarcating wall (603). A layer of brown colluvium (602) also overlay the stone collapse in the region exterior to the southern wall footings of the structure.

The wall of the house had an exterior (604 N & 607 S) and interior (605 N & 608 S) drystone face and a stone core (606 N & 609 S). A grey clay subsoil (612) was located beneath the southern wall footings (607 & 608). A single-entity charcoal sample from the core of the southern wall (609 S) was submitted for radiocarbon dating and returned a date of  $2170 \pm 40$  uncal BP (AA-51549).

Two gaps in the house wall were identified on the north-eastern (613) and the eastern (615) margins of the structure, and it is probable that one of these gaps represents an entrance. Patches of paving were also evident in the north-eastern and south-eastern quadrants of the house (610), and areas of bedrock, which presumably acted as a floor surface, were present in all four quadrants of the structure (611). Two single-entity charcoal samples recovered from this 'floor' were submitted for radiocarbon dating and returned dates of  $2170 \pm 40$  uncal BP (AA-51548) and  $2110 \pm 40$  uncal BP (AA-51550).

Numerous finds were associated with House 5, including potsherds, pebbles, stone pounders, stone balls, a stone disc, a whetstone, slag, burnt and unburnt animal bone, carbonized wood and vitrified material.

#### *House 6*

House 6 was situated in the north-eastern area of the enclosure, and was immediately west of House 5. Unfortunately, this house was in a very poor state of preservation, and it was therefore difficult to identify



ILLUS 21 Plan of House 5



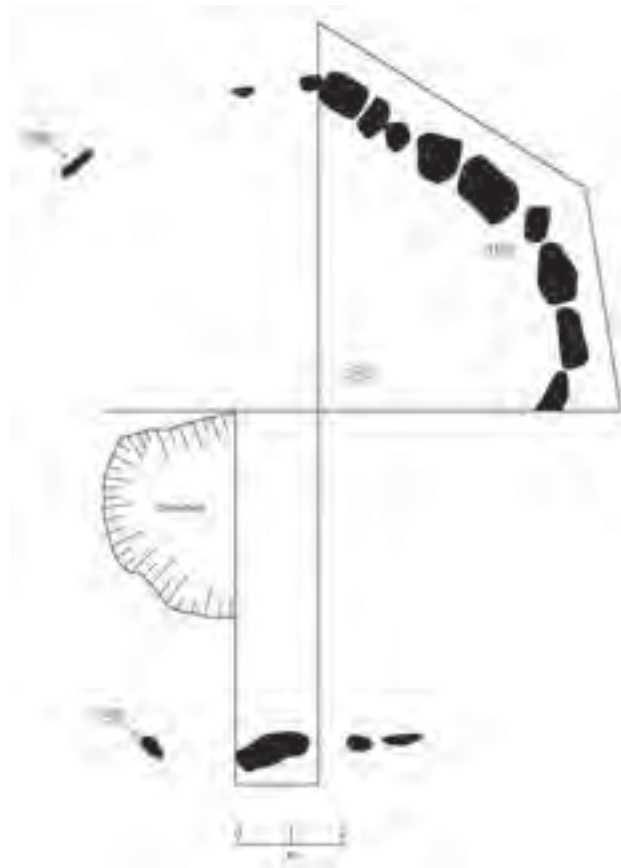
ILLUS 22 House 5 during excavation. View from the east



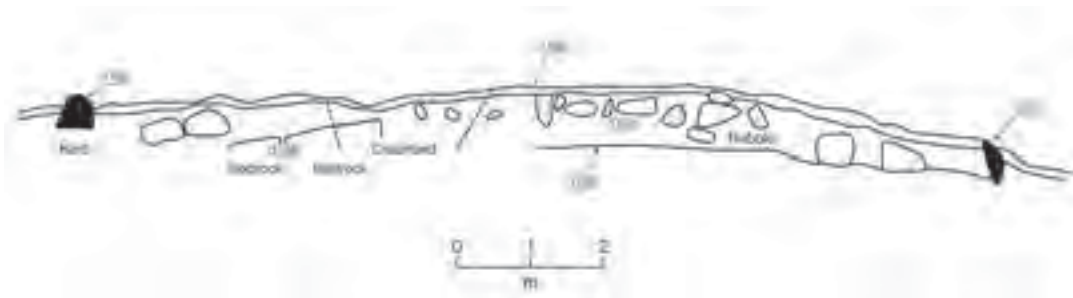
ILLUS 23 Plan of House 6



ILLUS 24 'Huts' 5 and 6 during excavation. View from the east



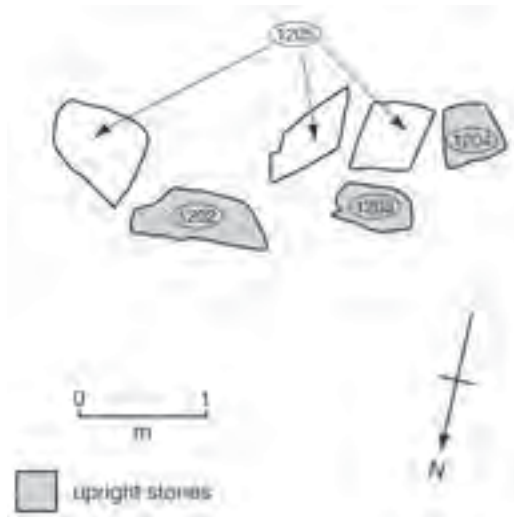
ILLUS 25 Plan of the kerbed cairn (The orientation of the structure is not known)



ILLUS 26 Section of the kerbed cairn (Section orientation is not known)

its structural components (illus 23 & 24). It would appear, however, to have an external diameter of approximately 4m as defined by a disturbed wall (703), the form of which was largely obscured by stone collapse (702). Patches of bedrock (704) were evident in the interior of the structure, and it is probable that

they were used as part of the flooring. The nature of the remainder of the floor (705) is unknown. Although it was difficult to interpret the architectural details of this structure, it was associated with a rich collection of small finds. These included animal bone, slag, charcoal, potsherds, a possible shale belt ring, a stone



ILLUS 27 Plan of the standing stones

ball, a stone disc, stone pounders, a stone sharpener and stone spindle whorls.

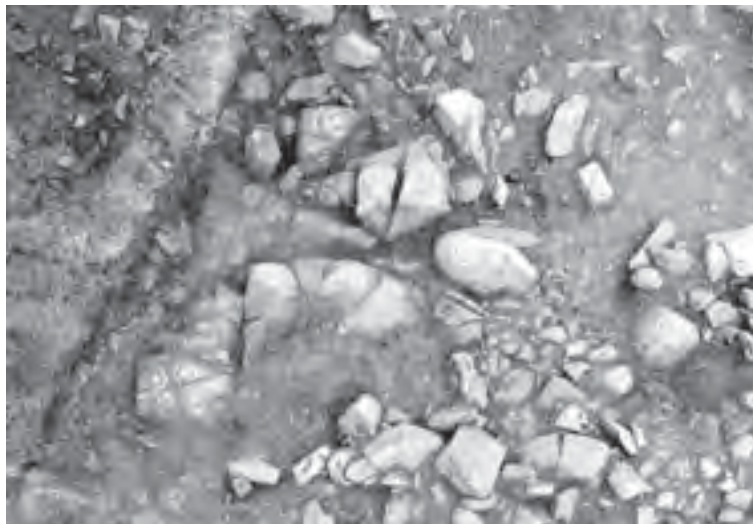
#### THE KERBED CAIRN

A stone cairn located on the summit of the hill was partially excavated (illus 2, 25 & 26). The cairn had a diameter of approximately 13m, and its exterior margins were demarcated by a stone kerb (1101,

1102) which sealed an old land surface. The stone kerb was best preserved on one half of the structure (1101), but since no compass points are marked on the plan or section it is impossible to orientate the structure more precisely. The interior of the structure was filled with rubble (1103), although the central area of the structure had been disturbed by World War II-related activity (Ritchie 1970, 58). The rubble core overlay patches of bedrock (1104) and the original ground surface (1105). No small finds were recovered from the excavated portions of the cairn.

#### THE STANDING STONES

Three standing stones were located on the eastern end of the lower terrace (illus 2). The easternmost standing stone (1202) had a maximum length of 1.9m and a width of c 1m, and stood above the ground surface to a height of c 1.2m (illus 27). The central stone (1203) had a maximum length of 1.9m, and a width that ranged from 0.4m to 0.7m. It was positioned above the ground for a height of c 1.2m. The most westerly stone (1204) was the smallest of the three, having a height of 0.7m above the ground surface (1201) and a width of approximately 0.6m. Its full extent was not, however, excavated. Three large stones (1205) were also located posterior to the three standing stones and these appear to represent collapse of some form. The standing stones appear to have been dug into stone-rich earth (1206).



ILLUS 28 View of the in situ cup-and-ring marked stones



ILLUS 29 View of the in situ cup-and-ring marked stones

#### CUP-AND-RING MARKED STONES

Margaret McCartney

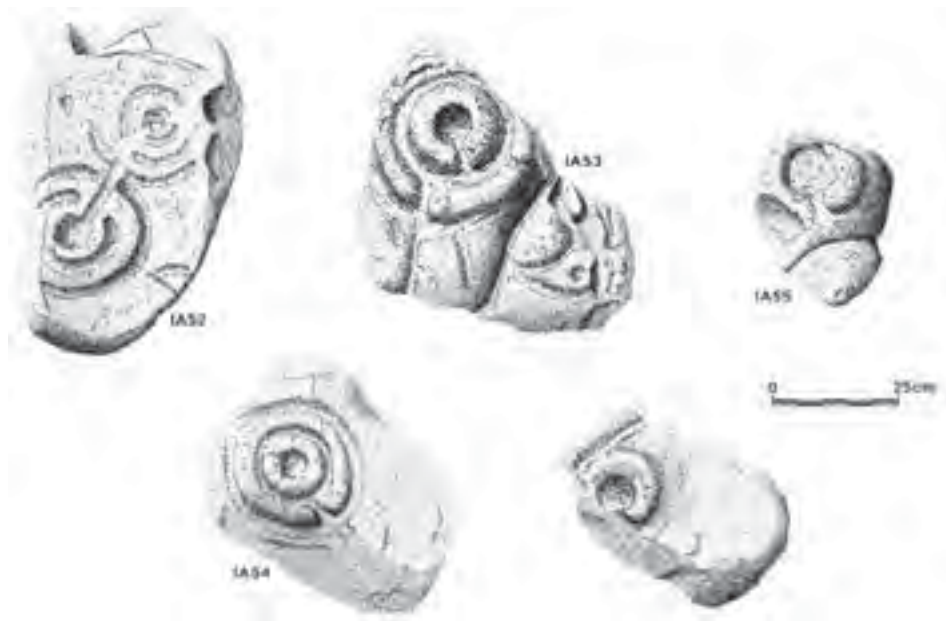
During the 1972 season of excavation a series of cup-and-ring marks was identified on both natural rock surfaces and on a number of stones incorporated into the fabric of the ramparts in the 'Main Cutting' (illus 28 & 29). Unfortunately, the exact provenance of the rock art is not clear from the site archive, but it is probable that it was associated with Ramparts 5, 6 or 7. Illustrations 30 and 31 have been drawn by Alan Braby from plaster casts made of these rock carvings in 1972, which are now stored in the National Museums of Scotland (X.IA 50–56).

The carvings consist of at least five cup-marks, at least 18 cup-marks surrounded by one concentric ring each, four cup-marks surrounded by two concentric



ILLUS 30 Cup-and-ring marked stones drawn from plaster casts stored in NMS





ILLUS 31 Cup-and-ring marked stones drawn from plaster casts stored in NMS

rings each, and one cup-mark surrounded by three concentric rings. The most frequently employed design consists of a cup-mark surrounded by a single ring, some of which are gapped, although none of these have linear grooves, or radials running from the central cup. Some of the motifs are carved in unusually heavy relief. Two examples of particular interest are the unusual 'dumb-bell' design (IA52), consisting of a cup-mark surrounded by two rings, joined by a radial line to a cup-mark with three rings; and a deeply carved 'key-hole' cup-and-ring mark, with two, diverging radials, in which the gaps are unaligned (IA53).

The appearance and layout of the motifs are consistent with the style of rock carving found throughout southern Scotland, although, as with most rock-art sites in the east of Scotland, the Kaimes Hill carvings rarely make use of multiple rings (Morris 1981, 165). The rock-art is unusual, however, in the very heavy relief of some of the carving. In this respect, the Kaimes Hill rock-art is unlike most of the motifs recorded in the principal collections of Scottish rock-carving compiled by Morris (1977; 1979; 1981; 1989).

While rock-art is difficult to date directly, the inclusion of weathered examples of cup-marked stones in cists, suggests that the tradition dates at

least to the Early Bronze Age (Simpson & Thawley 1973). It should also be noted, however, that a cup-marked slab was associated with the Phase II mortuary structure at Dalladies, Aberdeenshire, and this appears to indicate, for the less complex designs at least, a tradition beginning in the early Neolithic (Piggott 1972). The setting and nature of the Kaimes Hill carvings compare well with a study pertaining to rock-art and territoriality in Galloway, undertaken by Bradley et al (1993). This study concluded that rock-carving sites of greater complexity tended to be sited on high ground, often with exceptionally wide views across the surrounding landscape. In the Galloway study, 'complex' motifs were defined as having four rings or more. The less frequent use of multiple rings generally in eastern Scotland, together with the use of unusual forms and deep carving would seem to justify defining the Kaimes carvings as complex. The relationship between carvings on prominent hilltops and motif-complexity, has already been seen to apply to the rock-art at Traprain Law, which also commands wide and specific views of important, contemporary sites (Edwards 1935; McCartney 2003). The ritual milieu of the rock-art at Kaimes Hill also shares some characteristics with Traprain Law, as both appear to have been broadly contemporary with cairns, cremation deposits and funerary urns, although

TABLE 1  
Radiocarbon dates

Sample Number	Sample Details	Radiocarbon Age BP	$\delta^{13}\text{C}$ rel PDB	Calibrated date probability	Calibrated date probability
Gak-1970	Carbonized wood sample from within the wall of House 3	3141 ± 90 BP	–	1520–1310 BC (66.8%) 1280–1260 BC (1.4%)	1700–1100 BC
Gak-1971	Bulk sample of carbonized twigs from the core of Rampart 2 (Trench 11)	2315 ± 90 BP	–	520–340 BC (40.2%) 330–200 BC (28.0%)	800–150 BC
AA-51548	<i>Corylus avellana</i> (hazel) from the floor of House 5 (611)	2170 ± 40 BP	–26.1‰	360–290 BC (33.4%) 260–160 BC (34.8%)	380–90 BC
AA-51547	<i>Quercus</i> sp. (oak) from the midden layer beneath House 2 (409)	2965 ± 60 BP	–25.6‰	1300–1050 BC	1380–1330 BC (5.9%) 1320–1000 BC (89.5%)
AA-51549	<i>Corylus avellana</i> (hazel) from the core of the southern wall of House 5 (609 S)	2170 ± 40 BP	–25.6‰	360–290 BC (33.4%) 260–160 BC (34.8%)	380–90 BC
AA-51550	<i>Corylus avellana</i> (hazel) from the floor of House 5 (611)	2110 ± 40 BP	–27.2‰	200–190 BC (2.5%) 180–50 BC (65.7%)	350–310 BC (5.3%) 210–40 BC (88.2%) 30 BC–AD 0 (1.9%)
AA-51551	<i>Corylus avellana</i> (hazel) from below the paving slabs in House 4 (508)	2180 ± 40 BP	–25.5‰	360–280 BC (35.8%) 260–170 BC (32.4%)	380–110 BC
AA-51552	<i>Quercus</i> sp. (oak) from the core of Rampart 1 (206)	2385 ± 40 BP	–25.4‰	520–390 BC	760–680 BC (17.3%) 670–640 BC (1.8%) 550–380 BC (76.3%)
AA-51553	Rosaceae type (cherry/blackthorn) from the core of Rampart 1 (206)	2170 ± 45 BP	–26.5‰	360–280 BC (31.8%) 260–160 BC (34.4%) 130–120 BC (2.0%)	380–90 BC
AA-51554	<i>Corylus avellana</i> (hazel) from the core of Rampart 2 (Trench 11)	2215 ± 40 BP	–26.1‰	370–340 BC (7.8%) 330–200 BC (60.4%)	390–170 BC

the Kaimes Hill rock-art lacks the linear carvings associated with the later phases at Traprain Law.

## RADIOCARBON DATES

Richard Gregory

### INTRODUCTION

During the late 1960s one bulk and one single-entity charcoal sample were submitted for radiocarbon dating at the Gakushuin University in Tokyo (Simpson 1969). These dates were supplemented in 2002 through the submission of eight single-entity charcoal samples, which had been identified to species level (Cressey 2002), to the SURRC for AMS dating. The samples were subsequently measured by the University of

Arizona AMS Facility as part of a long-term research programme funded by Historic Scotland.

### RESULTS AND DISCUSSION

The results of the 1960s radiocarbon dating and the more recent programme of AMS dating are set out in Table 1. Dates are tabulated in conventional years BP (before 1950 AD), and the error is expressed at the one sigma level. The dates have also been calibrated using the OxCal v3.5 calibration programme.

#### Rampart 1

Two AMS dates were obtained from single-entity samples of carbonized *Quercus* sp (AA-51552) and Rosaceae (AA-51553) recovered from the core of

Rampart 1. These samples provided calibrated dates which are statistically separable at both the 68.2% and 95.4% confidence levels. This marked statistical difference may be due to the nature of the *Quercus* sample, as this was possibly a fragment of heartwood which might, in turn, provide an earlier date than the sample of Rosaceae. These charcoal samples were also associated with occupation debris which had been incorporated into the rampart core during its construction and, as the source of this material is not known, it is possible that it was ultimately derived from a series of chronologically differing contexts. In this sense the dated charcoal samples merely provide a terminus post quem for the construction of Rampart 1. On the basis of the calibrated date range provided by the Rosaceae (AA-51553) sample the construction of this feature must, therefore, lie at some point after 380 cal BC at the 95.4% confidence level.

#### Rampart 2

Two radiocarbon dates were obtained from the core of Rampart 2, as exposed in Trench 11. One of these dates was obtained from a single-entity sample of *Corylus avellana* charcoal (AA-51554) while the other was from a bulk sample of unidentified charcoal (Gak-1971). Due to the inherent problems connected with the radiocarbon dating of bulk samples (Ashmore 1999) the accuracy of this latter date is not, however, certain, and it is highly possible that this bulk sample contained mixed charcoal of differing ages, which represents the residues of occupation debris derived from a range of chronologically differing contexts. Furthermore, it is also possible that the actual radiometric date of this sample is unreliable due to laboratory errors. The Gakushuin radiocarbon laboratory is known, for example, to have produced anomalous results during the late 1960s and early 1970s (cf Lane 1990; Spriggs & Anderson 1993). In these circumstances it seems sensible to rely on the single-entity *Corylus avellana* sample (AA-51554), which provides a terminus post quem for the construction of Rampart 2 falling at some point during or after 390 cal BC at the 95.4% confidence level.

#### Occupation layer beneath House 2

One radiocarbon date was obtained from a single-entity *Quercus* sp sample (AA-51547) retrieved from an occupation layer (409) located beneath House 2, which was probably also associated with burnt animal bone. This sample returned a date which calibrates to 1380–1000 cal BC at the 95.4% confidence level,

and suggests that a phase of Middle-Late Bronze Age activity occurred in this area. It is also likely that this activity preceded the construction of House 2 by a considerable period of time due to the discovery of the ‘typical’ repertoire of Iron Age artefacts from the interior of the house.

#### House 3

One radiocarbon date was obtained from a 10cm<sup>3</sup> single-entity sample of unidentified carbonized wood (Gak1970) recovered from the wall of House 3. This sample appeared to be in situ and therefore provides a terminus post quem for the house falling at some point during, or after, 1700–1100 cal BC at the 95.4% probability level. This date is, however, surprisingly early and suggests that the house site was possibly constructed during the Early or Middle Bronze Age. While unenclosed platform house sites are a feature of this period (Ashmore 2001), to date only Late Bronze Age house platforms have been identified on hilltop sites in southern Scotland, such as at Eildon Hill North (Owen 1992). At Kaimes, the Early to Middle Bronze Age date is also questionable as House 3 appears to have been constructed over the degraded remains of Rampart 1, and was possibly associated with artefacts, which are characteristically Iron Age in date. An erroneous radiocarbon date for the sample would also not be surprising given the possibility of laboratory errors in the early Gakushuin dates, which appears particularly problematic prior to Gakushuin sample number 4500 (cf Lane 1990; Spriggs & Anderson 1993). An alternative explanation is that the wood was burnt during a Bronze Age phase of occupation at the site, and was fortuitously incorporated into the wall of the house during its construction. Furthermore, the presence of an Early Bronze Age phase of occupation at the site seems highly probable based on the presence of the cup-and-ring marks, the standing stones, kerbed cairn and due to the recovery of an enlarged Food Vessel Urn and barbed-and-tanged arrowhead.

#### House 4

One AMS date was obtained from a single-entity *Corylus avellana* charcoal sample retrieved from beneath a series of paving slabs located within the interior of House 4. This sample, in turn, provides a terminus post quem for the structure which may fall at some point after 380 cal BC. Due to the discovery of stone balls associated with the interior of the house,

an artefact type which might date to the latter part of the first millennium BC, it also seems probable that this structure was occupied during the Late Pre-Roman Iron Age.

#### House 5

Three AMS dates were obtained from single-entity charcoal samples associated with House 5. Of these, a sample of *Corylus avellana* (AA-51549) from the wall core of the house provides a terminus post quem falling at some point after 380 cal BC. This date is confirmed through the two remaining samples of *Corylus avellana* (AA-51548 & AA-51550) recovered from the floor of the structure. These samples calibrate to between c 380 BC–AD 0 at the 95.4% confidence level and suggest occupation of the house during the Late Pre-Roman Iron Age.

## PREHISTORIC POTTERY

Catherine McGill

The prehistoric pottery assemblage from Kaimes Hill (Table 2) comprises 422 sherds weighing 7952g. A minimum number of eight individual vessels were identified by grouping sherds according to fabric, rim form, sherd thickness and surface treatment (illus 32). Seven of the vessels date to the Iron Age with the eighth, an enlarged Food Vessel Urn, probably dating to the late third to mid second millennium BC.

The assemblage was analysed using the pottery recording system recommended by the Prehistoric Ceramics Research Group (PCRG 1991; 1992). The sherds were constructed from four fabrics (Table 3).

Fabric 4 is particularly notable due to the inclusion of an organic temper in the form of grass blades.

Three different basic vessel forms occur in the assemblage. Vessel 1 is fairly straight-sided, smoothly finished and is c 10mm thick, more carefully constructed and marginally finer than the remainder of the assemblage (illus 32: 3). This very basic form, first described by Cool (1982) as her Type 2 pottery, is frequently encountered in late Iron Age contexts. In addition to Cool's examples of comparable vessels from Broxmouth, Traprain Law, Marygoldhill, Easter Langlee, Edgerston, North Berwick Law, Craig's Quarry and Cockburn Law (ibid, 85), occurrences can be identified in assemblages from sites such as the Auchlishie souterrain (SF189, A M Dick, pers comm) and the native assemblage from Cardean Roman fort (McGill, forthcoming) which did not appear to significantly pre-date the fort itself. Cool's date of approximately 200 uncal BC to uncal AD 100 for the currency of this form still seems appropriate.

Vessels 2–7 are all distinctly inturning and very coarse, thick, largely poorly-finished pots with large circumferences (>280mm). These equate to Cool's (1982) Type 1 pottery, predating her Type 2. These forms are of the type most common in the non-Atlantic Scottish Iron Age. Cool's (1982) original date band of c 450 uncal BC to 200 uncal BC is perhaps a little tight, as occasional examples appear a little later as at Carlungie souterrain (SF80). However, the bulk of excavated examples do come from sites that fall approximately into Cool's (1982) Type 1 period. It is notable that this form of pot is most common on hillfort sites and more often than not constitutes the only form in the assemblage.

TABLE 2  
Summary of prehistoric pottery assemblage

Vessel	Fabric sherds	Rim sherds	Base sherds	Body	Total	weight (g)	Max thickness (mm)	Residue (no of sherds)	Soot (no of sherds)
V1	1	3	0	4	7	143	10	7	0
V2	1	4	4	65	73	1094	11	6	0
V3	2	4	0	65	69	926	25	0	5
V4	2	8	1	64	73	2048	15	0	0
V5	2	1	0	2	3	47	18	20	5
V6	3	0	0	0	8	70	>10	0	0
V7	4	11	3	155	169	3354	20	0	0
V8	1	6	0	14	20	270	12	5	15



ILLUS 32 Prehistoric pottery. 1–6=Iron Age pottery;  
7=Food Vessel

Vessel 8 (NMS accession no X.HH 739) is an enlarged Food Vessel Urn, normally dated to the late third to mid second millennium BC (Alexander 2000). It has an internally-bevelled rim with neatly spaced fingertip impressions on the bevelled surface, and tiny round impressions around the outer edge of the rim.

The remains of this single vessel were recovered from overburden removed from the summit and cannot be related to any features, although the vessel may have originally been associated with a small assemblage of cremated bone which was recovered from a similar area (Murphy, below).

With the exception of those from Vessel 8, many sherds displayed internal organic residues and/or external sooting, indicating domestic use.

The pottery assemblage clearly indicated an Iron Age date for the construction and occupation of the hillfort at Kaimes. Sherds from Vessels 2 to 7 appear throughout the site, and these may pre-date the construction of some of the ramparts, as indicated by their presence in the core material, and deposited within occupation levels within four of the excavated houses (Table 4). If the Vessel 1 sherds do indeed post-date the bulk of the assemblage, their occurrence in Houses 2 and 3 alone indicates the continuation of activity in these structures later than the remainder of the site.

MEDIEVAL POTTERY

Sarah Gormley

Seven Medieval pottery sherds weighing 95.9g were recovered from Kaimes Hill during the 1967 and 1972 excavations. Two sherds were recovered during the 1967 excavation (Nos 3 & 4). They were found in the topsoil of Trench 1. The remaining five sherds were recovered during the 1972 excavation from tumble at the rear of Ramparts 5–7, in the ‘Main Cutting’. Three sherds (Nos 5, 6 & 7) were recovered in the tumble at

TABLE 3  
Description of fabrics

<i>Fabric</i>	<i>Description</i>
1	Slightly gritty clay with moderate quantity of well sorted grit inclusions, less than 3mm across. Also very few poorly sorted granite and basic dark igneous inclusions, up to 10mm across. Very uneven firing, varying from dark buff throughout to orange exterior with dark grey interior and core.
2	Very fine, smooth clay with very few, poorly-sorted angular granite type inclusions, up to 15mm across. Core mid grey, interior and exterior pale orange. Evenly fired.
3	Fairly coarse clay with few, poorly-sorted quartz sandstone and granite type inclusions, sub-rounded, up to 10mm across. Exterior orange, interior and core mid grey.
4	Fairly fine clay with few grass blade inclusions and few, very poorly sorted quartz pebble and chunks, up to 15mm across. Unevenly fired. Gritty patches.

TABLE 4  
Summary of vessels by find area (by no of sherds)

<i>Vessel</i>	<i>Rampart 1 core</i>	<i>Rampart 2 core</i>	<i>Rampart 3 core</i>	<i>House 2</i>	<i>House 3</i>	<i>House 5</i>	<i>House 6</i>	<i>Overburden</i>	<i>Total</i>
1				3	4				7
2	3			65				5	73
3				1	2	31	35		69
4								73	73
5								3	3
6		3	1		1		1	2	8
7	9	160							169
8								20	20
Total	12	163	1	69	7	31	36	103	422

the rear of Rampart 5. One sherd (No 2) was found in the tumble of the rear of Rampart 6 and a further sherd (No 1) was found in the tumble at the rear of Rampart 7.

The sherds are glazed but otherwise undecorated and contain fine quartz inclusions. Although it is not possible to establish parallels for vessel form as no diagnostic sherds (eg rims, bases or handles) are present, the fabrics from Kaimes are comparable to other assemblages recovered from south-eastern Scotland.

Clay fabrics, of the 'White Gritty' tradition, recovered from the kiln site at Colstoun, East Lothian, are comparable to the pottery from Kaimes. Quartz is the dominant inclusion in the Colstoun fabric (Brooks 1980, 394). It is likely that this kiln site dates to the later 13th century (Brooks 1980, 387). The fabrics from Kaimes are also comparable to pottery recovered during the 1996/7 excavation at Traprain Law, East Lothian, where again, rounded and sub-rounded quartz is the dominant inclusion type (Dean 2000, 426–7). Pottery recovered from the excavated kiln site at Stenhousemuir, Falkirk (Hall & Hunter 2001), is of the 'East Coast Redware' tradition which dates to the 13th–15th centuries. The fabric is fairly soft, very smooth and has very fine rounded quartz inclusions and some haematite. The fabric from the kiln at Throsk, Stirlingshire, is similar, but harder (Dean, pers comm; Caldwell & Dean 1992). These fabric types are comparable to the assemblage from Kaimes. It is difficult, however, to differentiate more definitively between fabrics within this area or to assign sherds to a particular kiln without thin-sectioning.

## LITHICS

### Eiméar Nelis

Seventy-three lithic artefacts have been recovered from Kaimes Hill. The assemblage mostly comprises flint (70 pieces, 95.9%), with a small number of chert pieces (3 pieces, 4.1%; Meighan, pers comm) (Table 5). Most of the flint (and all of the chert) is light to dark grey (49 flint pieces: 70%; 3 chert pieces: 100%), with the remainder comprising red (4 pieces), honey (4 pieces), brown (3 pieces) or black (1 piece) coloured flint. A small number were orange-coloured, as a result of patination (4 pieces), or grey to red through burning (5 pieces).

A small number of artefacts were found during the excavation of the houses (9 pieces: 8 flint, 1 chert), with the vast majority of the assemblage being found

TABLE 5  
Basic composition of lithic assemblage showing material

<i>Types</i>	<i>Material</i>		<i>Total</i>
	<i>Flint</i>	<i>Chert</i>	
Unworked/pebble	2	–	2
Thermal shatter	2	1	3
Core	4	2	6
Flake	12	–	12
Blade	11	–	11
Flake/blade shatter	26	–	26
Angular shatter	1	–	1
Modified	12	–	12
Total	70	3	73

TABLE 6  
Context and distribution of lithic assemblage from Kaimes Hill

	<i>Material</i>								<i>Total</i>
	<i>Unworked/Pebble</i>	<i>Thermal shatter</i>	<i>Core</i>	<i>Flake</i>	<i>Blade</i>	<i>Flake/blade shatter</i>	<i>Angular/shatter</i>	<i>Modified</i>	
<b>Huts</b>									
1967 House 3: SE quad	–	–	–	–	1	–	–	–	1
1969 House 5: NW quad – floor [254]	2	–	–	–	–	–	–	–	2
1968 House 2: NE – Black layer below wall [54]	–	–	–	1	–	–	–	–	1
1968 House 2: Occupation material beneath floor	–	–	–	2	–	–	–	2	4
1968 House 3: Lying on bedrock [57]	–	–	1	–	–	–	–	–	1
<b>Total</b>	<b>2</b>	<b>–</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>–</b>	<b>–</b>	<b>2</b>	<b>9</b>
<b>Ramparts</b>									
1970 [237] to north of enclosure inside ramparts	–	–	–	–	–	–	–	1	1
1970 below enclosure and extending east inside ramparts	–	2	1	3	4	19	1	6	36
1970 [244] below enclosure and extending east inside ramparts	–	–	1	–	–	–	–	–	1
1970 [245] below enclosure and extending east inside ramparts	–	–	–	1	1	–	–	1	3
1971 below enclosure and extending east inside ramparts	–	–	1	–	–	3	–	–	4
1971 [161] below enclosure and extending east inside ramparts	–	–	–	–	–	–	–	1	1
1971 [162] below enclosure and extending east inside ramparts	–	–	–	4	1	4	–	2	11
1972 [77] [2]	–	–	1	–	–	–	–	–	1
1972 [78] [10] Main cutting Rampart IV – tumble at rear	–	–	–	–	–	–	–	1	1
1972 [79] [8]. Rampart IV – tumble at rear	–	–	–	–	–	–	–	1	1
1972 [80] [19] Main cutting Rampart VI – Upper ditch fill	–	–	1	–	–	–	–	–	1
1972 [81] [18] Main cutting Rampart VI – Upper ditch fill	–	1	–	–	–	–	–	–	1
<b>Total</b>	<b>–</b>	<b>3</b>	<b>5</b>	<b>8</b>	<b>6</b>	<b>26</b>	<b>1</b>	<b>13</b>	<b>62</b>
<b>Indeterminate</b>									
	–	–	–	1	–	–	–	1	2
<b>Total</b>	<b>2</b>	<b>3</b>	<b>6</b>	<b>12</b>	<b>7</b>	<b>26</b>	<b>1</b>	<b>16</b>	<b>73</b>

in the vicinity of the ramparts by Mr C Hoy during the destruction of the site through quarrying (62 pieces: 60 flint, 2 chert); the context of two artefacts is unknown (Table 6).

The assemblage includes unworked material, in the form of abraded pebble fragments and thermal flakes (3 pieces: 1 chert, 2 flint), but most is debitage resulting from the primary reduction of flint and chert. A small number of flint cores and chert flaked pieces were found, mostly from the vicinity of Ramparts 1 and 2, with one chert flaked lump being found during the excavation of House 3. Both platform and bipolar reduction techniques were evident on the flint cores, whereas the chert pieces were randomly flaked and

are better described as flaked chunks rather than formal cores (Table 7). None of the cores or flaked pieces could be conjoined with the remainder of the assemblage.

Flakes and blades, both complete (23 pieces) and shattered (26 pieces), constitute most of the assemblage (67.1%), and all are flint (illus 33). Although the assemblage is quite small, a number of observations can be made. Platform and bipolar technology is evident on both complete and shattered pieces, with the former being prevalent. There are comparable numbers of flakes and blades, but the dimensions of many of these pieces are similar, with a proportion of the complete flakes being just outside the



ILLUS 33 Lithics

standard 2:1 (Length : Breadth) ratio which defines a blade. A component of the flake and blade assemblage indicates a reduction strategy primarily aimed at the production of microliths, indicative of Mesolithic activity on the hill. With very few exceptions, these were recovered from the vicinity of the ramparts, whereas the larger, broader flakes tended to be found during the excavation of the houses.

Modified tools account for a large part of the assemblage (12 pieces, 16.4%) (Table 8). With the exception of a damaged barbed-and-tanged

arrowhead (illus 33: 12), a retouched blade fragment (illus 33: 9) and a utilized blade (illus 33: 10), which might all be of Bronze Age date, all modified tools were microliths, some of which were fragmentary and of inconclusive type. Obliquely-blunted blades were most commonly found (4 pieces: illus 33: 5–8), and there was a small number of scalene triangles (2 pieces: illus 33: 1–2), as well as a possible crescent fragment (illus 33: 4), a microburin (illus 33: 3) and a possible invasive point (illus 33: 11). In addition to these, it is possible that a number of the blades and flakes within the assemblage could have been utilized without further retouch.

While the total assemblage is the resulting debitage of multiple knapping and tool use/production events, at least some of the artefacts have a strong Mesolithic character, and the assemblage appears to represent residual material assimilated into the later periods of occupation.

## COARSE STONE ARTEFACTS

Ann Clarke

### ARTEFACT TYPES

There are 128 artefacts of coarse stone from the site representing a variety of tasks as well as including some decorative pieces (Table 9; illus 34–6). The artefact types are described below followed by discussions on function, context, dating and comparison with other assemblages.

#### *Cobble tools (total = 55)*

Quartzite is the preferred stone for these tools with over 75% made from cobbles of a red quartzite.

TABLE 7  
Types of cores, showing material, as well as extent of cortex

Types	Flint			Chert	Total
	Prim	Sec	Tert		
Core					
Single platform	–	–	1	–	1
Bipolar	–	–	1	–	1
Possible bipolar fragment	–	–	2	–	2
Flaked chunk	–	–	–	2	2
Total	–	–	4	3	6



TABLE 8  
Detailed composition of modified assemblage

Types	Flint			Total
	Prim	Sec	Tert	
<i>Microliths</i>	–	–	9	9
Obliquely blunted blade	–	–	4	4
Scalene triangle	–	–	2	2
Possible micro burin/crescent fragment/point	–	–	3	3
<i>Other modified tools</i>	–	1	2	3
Barbed and tanged arrowhead: fragment	–	–	1	1
Edge retouched blade: fragment	–	1	–	1
Utilized blade	–	–	1	1

Sandstone was also used and there was one cobble of a vesicular volcanic rock. Faceted cobbles and pounder/grinders are by far the most common tool types (Table 9). The pounder/grinders are typical of their type having broad facets worked on one or both ends and often with a face that has been worn flat and smooth. In most cases the faceting is isolated on the ends and on one stone (No 23) the faces have been pecked to roughen the surface slightly. On two pieces (no find number (A) & No 38) the faceting extends around the whole or most of the perimeter. The faceting is usually very smooth (No 14) and was most probably produced through a grinding motion, but occasionally one end has been used in a rougher way to cause pecking and flaking (No 30). In addition to the use wear there are traces of a brown glossy residue on the surface of some of the tools (Nos 14 & 38). This is most probably an organic residue from the substances being worked by these tools and has been observed on other cobble tools from Iron Age contexts (see below).

The faceted cobbles are more varied in size and shape than the pounder/grinders and have smaller areas of faceting. No 1 is a heavily worn piece with additional pecking on the sides and on both faces, but in general the wear traces are much lighter than those on the pounder/grinders. There are no traces of glossy residue on the faceted cobbles.

The plain hammerstones are cobbles with simple, undiagnostic wear traces which may simply have been cobbles picked up and used in passing, or else cobbles that have not been used to the extent that would begin to leave a particular wear pattern. The cobble tool fragments are undiagnostic of a particular tool type due to their breakage.

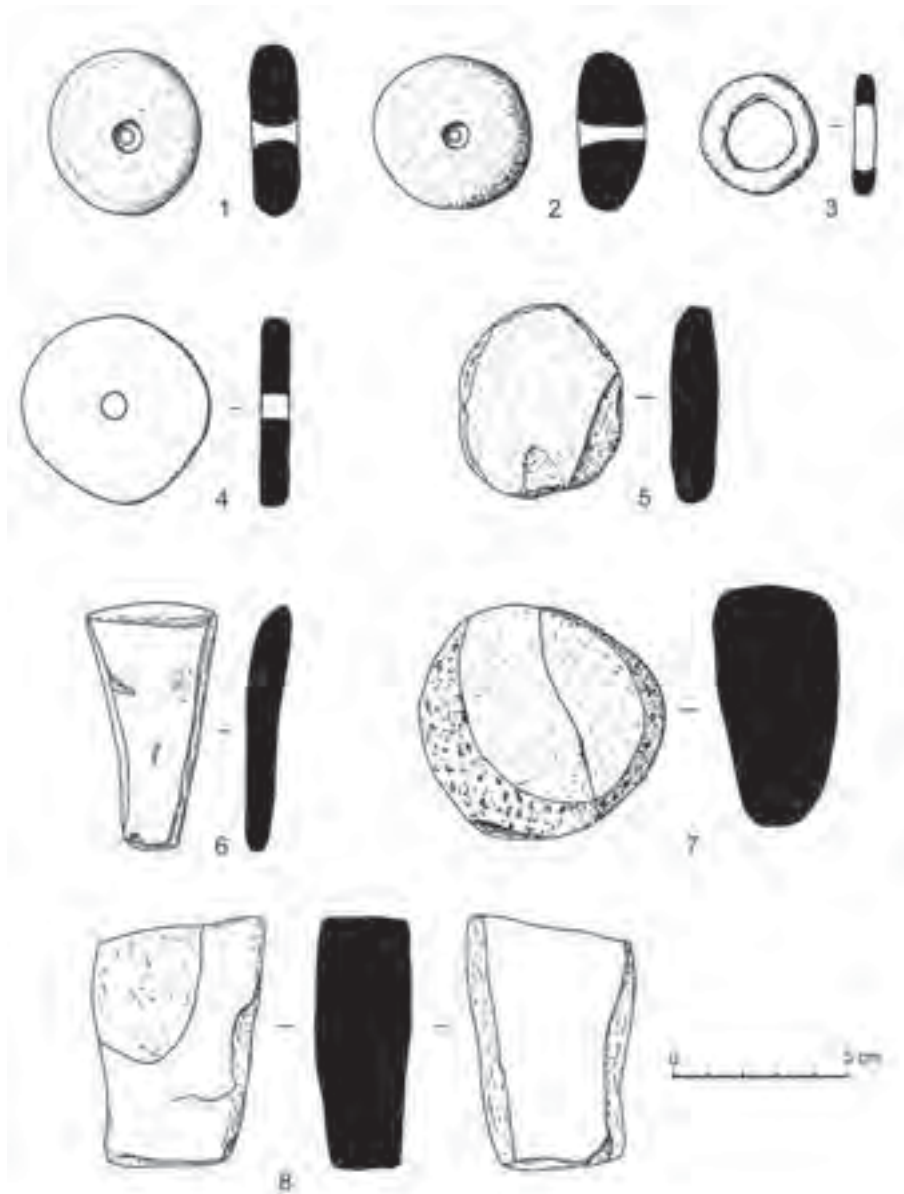
The three smoothers are simple forms of this type, one having been split down the length and then the broken face used for smoothing (X.HH758). The other two are cobbles of sandstone with a slight flattening and smoothing of a natural face.

#### *Whetstones (total = 2) and sharpener (total = 1)*

The whetstones are just lightly used cobbles with a rectangular cross-section. No 223 has the clearest wear patterns with opposite faces worn smooth from use (illus 34: 8). The blade sharpener is a slab of sandstone with multiple V-shaped grooves on both faces (No 51) and has clearly been used for the maintenance of metal tools.

#### *Spindle whorls (total = 11)*

The spindle whorls are made on a variety of stone including shale, and sedimentary and igneous rocks (illus 34: 1; 34: 2; 34: 4; 35: 9–11). They vary in size from 39mm to 73mm in diameter but most cluster between 45mm and 55mm. In five cases naturally flat, circular pebbles have been selected for use with the central perforation being the only modification to the whorl (Nos 53 & 46). The remainder of the whorls have been shaped to a flat cross-section by grinding (eg X.HH784, No 48, X.HH755). On one shale whorl (No 52) there has been some grinding on the faces to shape them slightly and on one of the faces the striations form the shape of a cross, which would appear to have been a deliberate act of decoration (cf there is a spindle whorl from Fishers Road West (Haselgrove & McCullagh 2000, 36, not



ILLUS 34 Coarse stone artefacts: 1=spindle whorl; 2=spindle whorl; 3=shale ring; 4=spindle whorl; 5=stone disc; 6=stone axe; 7=stone disc; 8=whetstone

illustrated) that has three or four radially incised lines on one face). The perforations have usually been bored from both sides to form a biconical cross-section and in two cases (X.HH755 & X.HH785) the perforation is rather skewed as the boring from both sides did not quite meet in the middle.

*Stone gaming pieces: stone balls (total = 32); stone domes (total = 2); counter (total = 1)*

The stone balls are typical of those described from other Iron Age sites (eg Cool 1982). They range in diameter from 25mm to 46mm and most cluster

TABLE 9  
Kaimes coarse stone artefact type and context

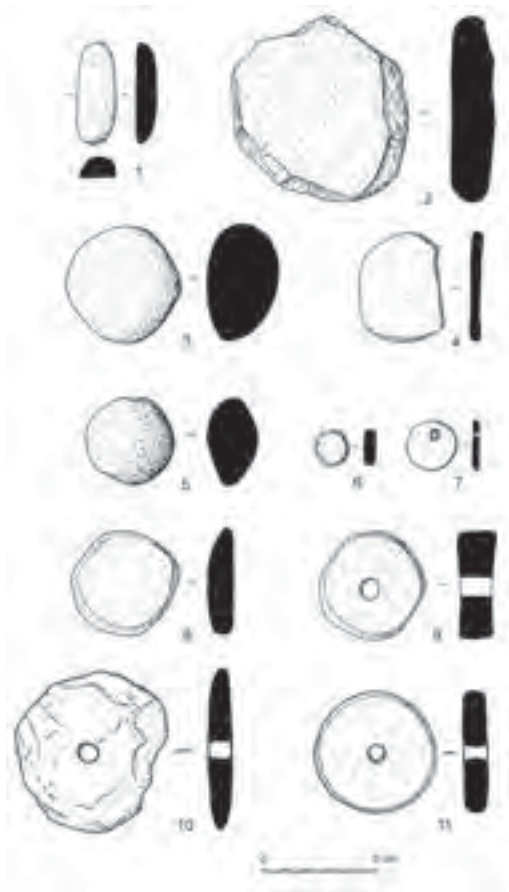
	<i>House 1</i>	<i>House 2</i>	<i>House 3</i>	<i>House 4</i>	<i>House 5</i>	<i>House 6</i>	<i>Rampart 2 (222)</i>	<i>Rampart 2 (213)</i>	<i>Rampart 1</i>	<i>Rampart ?</i>	<i>Unstratified</i>	<i>Total</i>
Cobble tools:												
Faceted cobble		2		1	2	1	2	8			5	21
Pounder/grinder		3			2	1	2	5		1	3	17
Cobble tool fragment		1			5	2		2				10
Plain hammerstone							2	2				4
Smoother					1						2	3
Spindle whorl	1	1				2				2	5	11
Stone ball			2	3	4	1		2		1	19	32
Stone 'dome'							1				1	2
Counter											1	1
Shale bracelet										1	5	6
Shale bracelet blank								1			1	2
Shale ring						1						1
Shale plaque			1									1
Shale unworked fragments							1		1		1	3
Pendant											1	1
Stone disc					1	1			1		3	6
Whetstone									1		1	2
Sharpener						1						1
Rotary quern										1		1
Grinding slab											1	1
Socket stone											1	1
Axe					1							1
<i>Total</i>	<i>1</i>	<i>7</i>	<i>3</i>	<i>4</i>	<i>16</i>	<i>10</i>	<i>8</i>	<i>20</i>	<i>3</i>	<i>6</i>	<i>50</i>	<i>128</i>

between 25mm and 35mm (Table 10; illus 37). Pecking the parent rock to a spherical form, usually with one or two facets over the surface, has shaped the balls and two pieces (X.HH759 & No 84) have clearly been flattened on the top and bottom. Some of the balls have a rough finish that may be due to weathering or post-depositional damage, but one of the largest pieces (X.HH271) is probably an unfinished ball indicating that such pieces were made on site. The balls are made either of micaceous sandstone or else an igneous rock that glistens as it is held. Moreover, Cool (1982, 96) has noted that the choice of an attractive stone is often a feature of these stone balls.

Possibly related to these balls are two stone domes that, with diameters of 43mm and 56mm, are larger than the balls (X.HH760; illus 35: 3 & No 23; illus 35:

5). These have been pecked to a spherical upper face, and in this respect they are very similar to the stone balls, but a rough base has been formed on which they can sit. Finally, there is a small quartz counter (X.HH757; illus 35: 6) that has been shaped around the edge by grinding.

Although listed as gaming pieces the true function of these small stone balls is not known. The degree of effort that must have been used to shape the pieces and the occasional selection of an attractive rock suggests, however, they were objects to admire. On some sites they have been found in large numbers (Table 11), though they are not deposited in large groupings, and from the available contextual data it would seem that they occur in a wide variety of context types at most Iron Age sites. The spherical shape must be representative of something though



ILLUS 35 Coarse stone artefacts: 1=elongated sandstone pebble; 2=stone disc; 3=stone dome; 4=stone disc; 5=stone dome; 6=quartzite counter; 7=pendant; 8=stone disc; 9=spindle whorl; 10=spindle whorl; 11=spindle whorl

the practicalities of incorporating facets, presumably in order to keep the ball from rolling, are evident. Aside from gaming pieces other possibilities for their use are as amulets (Ballin-Smith 1994) or as tally stones, perhaps representing stock animals or even persons. These stone balls have a confined

distribution within south-east Scotland, although there are some outliers (Table 11), and their spread across the hillforts and enclosures of the south-east may be somehow representative of tribal or familial connections across the present-day Lothians and Borders.

*Decorative stone: shale bracelets (total = 6, plus 2 possible blanks); shale ring (total = 1); shale plaque (total = 1); stone pendant (total = 1)*

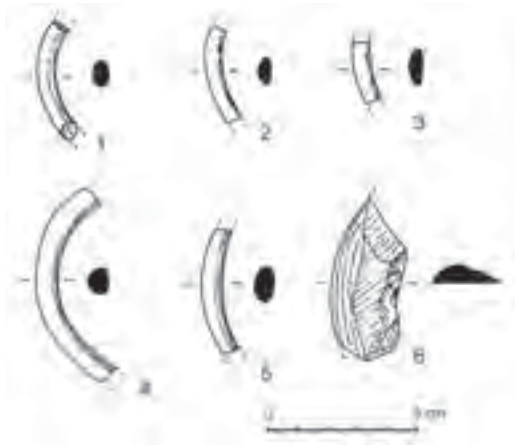
The shale bracelets are all plain forms with the standard D-shaped cross-section. Their internal diameters range from 44mm to 65mm and they are on average 8mm thick (X.HH749, X.HH704, X.HH702 & X.HH750; illus 36). The probability that such bracelets were made on site is indicated by the presence of two possible blanks in the shape of two roughly worked shale rings (X.HH789 & No 10). The manufacturing method is illustrated on piece X.HH789 that shows, in addition to the rough chipping to shape, evidence for grinding on the surviving face. This suggests that a large blank was made after which grinding was used to reduce the size and give the final shaping. The shale ring (No 268; illus 34: 3) is small, with an internal diameter of just 21mm and it has a thicker D-shaped section than those of the bracelets. It too must have had some ornamental purpose since it would appear to be too delicate for any load-bearing function.

The shale plaque is an unusual form (no find number) but since it is a fragment, the original shape can only be guessed at. It was most probably a triangular shape though the presumed apex is missing and it is uncertain whether this would have had a perforation. It is unlikely to have been very thick and it has been ground over the surviving face and sides leaving rather coarse striations running parallel to the sides of the piece.

The stone pendant is a small siltstone disc that has been ground all over to shape with the perforation made off-centre (X.HH756; illus 35: 7).

TABLE 10  
Diameter of stone balls

Diam. mm	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
No.	2	2	1	1	4		3	3	3	2	2	2		1		1		2	2			1



ILLUS 36 1-5=shale bracelets; 6=worked shale

#### Stone discs (total = 6)

There are five sandstone discs and one fragment of a possible shale disc. Four of the sandstone discs have diameters ranging from 50mm to 98mm and have been roughly chipped around the circumference to shape either a sub-hexagonal (X.HH476; illus 35: 8) or a sub-oval outline (Nos 48 & 54; illus 35: 2). The smallest disc is of a finer-grained sandstone than the others and it has been ground around the edge to shape, as well as partially on one face (X.HH880; illus 35: 4). The shale disc is just a fragment, possibly intended for further shaping, perhaps as a blank for a spindle whorl.

*Miscellaneous artefacts: rotary quern (total = 1); grinding slab (total = 1); socket stone (total = 1); axe (total = 1)*

A fragment of a rotary quern survives, which indicates that it was flat in cross-section, of a sub-circular outline and the upper face and surviving perimeter appear to have been unshaped. In contrast, the base has been prepared by pecking and then worn smooth by the circular grinding motion. The grinding slab is simply a large cobble with a concave, smoothly worn face, and it is uncertain whether the piece could be termed a quern or else some kind of sharpening stone. The socket stone must have acted as a pivot for a door since it has a deep, flat-based hollow worked on one face but unfortunately it was not found in situ. Finally, the axe (No 49; illus 34: 6), of a hard, fine-grained, green stone has a narrow triangular outline with a

flaked butt and ground blade end that is very rounded and blunt in cross-section.

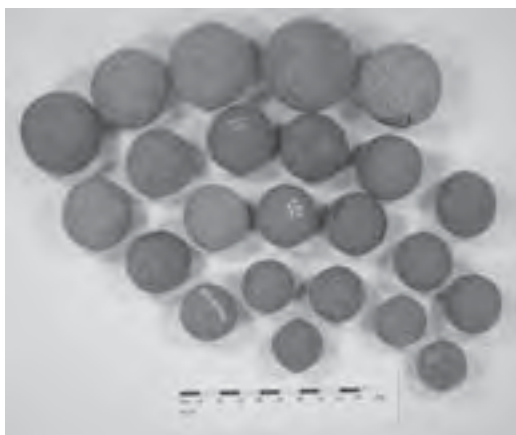
#### FUNCTION OF THE ASSEMBLAGE

The coarse stone assemblage is evidence of the wide variety of activities that was carried out at Kaimes. Spindle whorls attest to the spinning of yarn, and though there are no loom weights made of stone to indicate weaving, these could have been made in other less durable materials such as clay, or bone. Incidentally, perforated stone weights appear to be absent at other hillforts in the area (Table 12). The whetstones and sharpener certainly indicate the maintenance of metal tools, though for tools that would have been in use on a daily basis the whetstones are infrequent and not heavily worn. This may mean that at Kaimes portable whetstones were not commonly used or else that they were disposed of off-site.

Cobble tools are numerous at Kaimes and are of the types common to Iron Age sites across Scotland. The pounder/grinders are a particular form with broad facets and worn faces that appear at almost every site from the Northern Isles southwards and they often appear in conjunction with rotary querns, indicating that two methods of grinding were used on site. The presence of a glossy residue which, though not analysed, may presumed to be traces of the organic

TABLE 11  
Sites with small stone balls

Site	No of balls
Traprain Law (Cool 1982)	55
Broxmouth (Cool 1982)	94
Kaimes Hill	32
Craigs Quarry, Dirleton (Cool 1982)	15
Dunion (Rideout et al 1992)	9
Castlelaw (Cool 1982)	7
Braidwood (Cool 1982)	3
St Germain's (Cool 1982)	3
Fishers Road East (Haselgrove et al 2000)	3
Bonchester (Cool 1982)	2
Cockburn Law (Cool 1982)	2
Edgerston (Cool 1982)	2
North Berwick Law (Cool 1982)	2
Eildon Hill (Rideout et al 1992)	2
Carronbridge, Dumfries & Galloway (Johnston 1994)	2
Edinburgh Castle (Driscoll & Yeoman 1997)	1
Meikle Reive, Stirlingshire (Fairhurst 1956)	1



ILLUS 37 Stone balls

substance which was being worked is a feature of some Iron Age stone assemblages and has recently been observed on cobble tools from Scalloway, Shetland and Minehowe, Orkney (Sharples 1998; Clarke 2001). Some analysis would be necessary to determine whether the substance being processed

using these pounder/grinders was the same across the geographical spread of sites.

There is some evidence for the manufacturing of artefacts on the site itself and this is in the form of the blanks which survive. The rougher forms of the stone balls are doubtless unfinished pieces while the probable shale blanks for bracelets and a spindle whorl, together with the few fragments of unworked shale found on site (Table 9), would indicate that there was the expertise on-site to create such pieces.

#### CONTEXT, DATING AND SITE COMPARISON

There is unfortunately little context detail with which to examine the distribution of the artefacts and from Table 9 it would appear, on the basis of the most frequent artefact types (ie cobble tools, stone balls and spindle whorls), that they are distributed quite evenly across the site, and do not point to any clear differences in use between the structures or between phases. The stone assemblages from the ramparts are also of a similar composition to those from the houses,

TABLE 12

Character of stone assemblages from hillforts and other Iron Age sites. Excludes saddle and rotary querns

	<i>Stone balls</i>	<i>Stone discs</i>	<i>Cobble tools</i>	<i>Spindle whorl</i>	<i>Shale worked</i>	<i>Hollowed stone</i>	<i>Whetstones</i>	<i>Counters</i>
Traprain Law	×	×	×	×	×	Countersunk	×	×
Broxmouth	×		×	×	×	Hollowed Mortars/ lamps	×	
Kaimes Hill	×	×	×	×	×	Lamp (lost)	×	×
Dunion	×	×	×	×	×	Lamp		
Edinburgh Castle	×	×	×	×	×		×	
St Germans	×	×	×	×			×	×
Bonchester	×			×	×			
Eildon Hill	×		×				×	
Braidwood	×		×					
Craigs Quarry, Dirleton	×							
Castlelaw	×							
North Berwick Law	×							
Carronbridge, Dumfries & Galloway	×							
Meikle Reive, Stirlingshire	×	×	×	×	×	Lamp		
Fishers Road East	×		×	×				
Fishers Road West			×	×			×	
Hurley Hawkin, Angus		×	×	×		Hollowed	×	×
West Plean, Stirlingshire		×		×	×	Hollowed and cup	×	
Castlehill Wood, Stirlingshire			×	×		Hollowed and lamp	×	



ILLUS 38 Bone pin

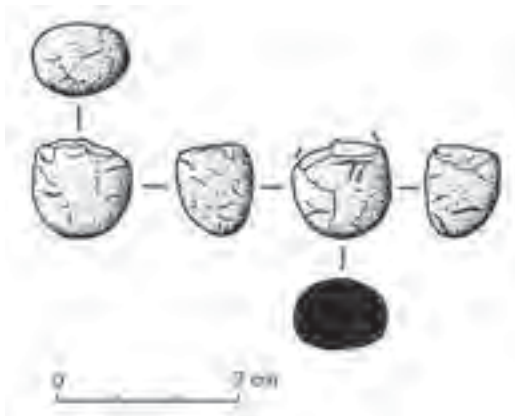
and it is probable that this material was derived from domestic contexts.

The majority of the material is largely chronologically insensitive and merely reflects the typical range of coarse stone objects found on many Iron Age sites in the region. The stone balls, however, may represent one component of the coarse stone assemblage with some chronological potential, though at present the dating of these balls is problematic since there are few secure radiocarbon dates associated with these artefacts. Since Cool's distribution map of stone balls (1982, fig 3) the number of sites has expanded to include three other hillfort sites in the Lothians and Borders (Eildon Hill North, Dunion and Edinburgh Castle) and an enclosure site at Fishers Road East, Port Seton (Table 11). A stone ball, unseen but illustrated, is present at the fort of Meikle Reive in Stirlingshire that is outside the area of normal distribution. Even further away at Carronbridge, Dumfriesshire, two stone balls were found in the topsoil of an Iron Age enclosure and though they are a larger size than average (61mm and 40mm in diameter) they most probably performed a similar function. Another unusual piece from Carronbridge, a piece of slate with a round-toothed saw edge is reminiscent of a piece from Traprain Law (Johnston 1994, 269) and may indicate, together with the stone balls, some

kind of a link with the Lothian hillfort site. It should be noted here that stone balls are also present well outside of southern Scotland but they are dated to a later period of the Iron Age. These include the stone balls from the brochs of Howe, Orkney and Jarlishof and Scalloway in Shetland (Ballin-Smith 1994; Sharples 1998). A stone ball was also recently found in the Late Iron Age settlement at Bostadh, Great Bernera, Lewis (Neighbour, forthcoming). These stone balls are, in general, larger than those stone balls from the hillforts of southern Scotland and they occur less frequently, and it would appear unlikely that they fulfilled the same function as the balls from the Iron Age sites in southern Scotland.

At Broxmouth the stone balls are quite specific to late period VI and early period VII (Hill 1982a, 181), and are associated with deposits which were dated to  $2320 \pm 60$  uncal BP,  $2295 \pm 50$  uncal BP and  $2250 \pm 55$  uncal BP (Cool 1982, 99). When calibrated these dates suggest a possible currency extending back from c 170 cal BC. At a number of other sites, however, the use of stone balls can be more explicitly tied to a period which dates between approximately 200 cal BC to cal AD 100. These sites include: the Dunion, where houses associated with stone balls were found to date to the last two centuries cal BC and first century cal AD (Rideout et al 1992); Edinburgh Castle, where a stone ball was associated with a phase 2 deposit which is thought to span the last two centuries cal BC to the first or second century cal AD (Driscoll & Yeoman 1997); and Fishers Road East, where a stone ball was recovered from the fill of ditch 806 whose primary deposits are dated to 200 cal BC – cal AD 120 (Haselgrove & McCullagh 2000). At Kaimes this chronology appears to be confirmed by the available radiocarbon date obtained from House 5, which was associated with four stone balls. This dates suggests that the production and use of the stone balls may also span the last two centuries cal BC.

A list of the stone assemblages from other hillforts and some other Iron Age sites from the south of Scotland (Table 12) illustrates the range of stone artefacts that was in use during the earlier Iron Age. Sites such as Traprain, Broxmouth and Kaimes have the widest range of artefacts and this most probably reflects the greater extent of these excavations, and therefore a greater recovery rate of artefacts, in comparison to the smaller investigations of other hillforts at, for example North Berwick Law and Castlelaw. Given, however, the problems with interpretation of assemblages collected at



ILLUS 39 Fired clay sphere

different levels of efficiency, it does appear that the use of stone for tools and personal adornment was very similar between the Iron Age sites of southern Scotland. Each settlement was most probably self-sufficient in activities such as grain processing and spinning, and it is also most likely that activities such as the working of shale or the production of stone balls were carried out at the individual settlements, rather than the objects having been imported onto site. This would suggest a general sharing of knowledge amongst the wider community rather than the objects having been supplied or exchanged from a specific outlet.

## WORKED BONE

Eileen M Murphy

In 1966 a single object made from bone was retrieved by Mr C Hoy as a stray find from the hilltop at Kaimes. The object was then stored in the Museum of Scotland (X.HH 676). It comprised a needle or pin which had been manufactured from a longitudinally split strip of ovicaprid long bone, and had a length of 53mm and a midpoint width of 5.4mm (illus 38). The implement had been shaved along both sides and had a flattened section, with a thickness of 3.2mm. It tapered slightly towards one end, which would have presumably ended in a point, although the tip had been broken. A perforation, which had been drilled through both sides and had a diameter of 2.5mm, was evident at the other end of the object. It was incomplete, however, since the object had also been broken at this point. As a consequence of the breakage it was not possible to ascertain the

precise nature of the object's head. All surfaces of the artefact displayed smoothing and polishing as a consequence of wear.

Although it is difficult to be certain if the object had functioned as a needle or a pin, it would appear that the perforated end of the object was not greatly expanded, perhaps making it more likely to be a needle. Forty-one bone needles were recovered during excavations at the Glastonbury Lake Village (St George Gray 1917, 410), while a further ten examples were retrieved from the excavations at the Meare West Village (St George Gray 1966, 301). A number of the examples from both sites have a very similar appearance to the Kaimes artefact. St George Gray (1917, 412) stated that bone needles were a common find on archaeological sites of Iron Age date. Examples of perforated bone pins or needles have also been recovered from Anglo-Scandinavian and Medieval contexts in York (MacGregor et al 1999, 1948). Since the Kaimes object was a stray find it is difficult to be certain about its date.

## ROMAN COIN

N M McQ Holmes

Fragment of a silver denarius of Septimius Severus (193–211)

Weight 1.77g, die axis 12.0. Reg no FR 213. See *Proc Soc Antiq Scot*, 52 (1917–18), 235–6.

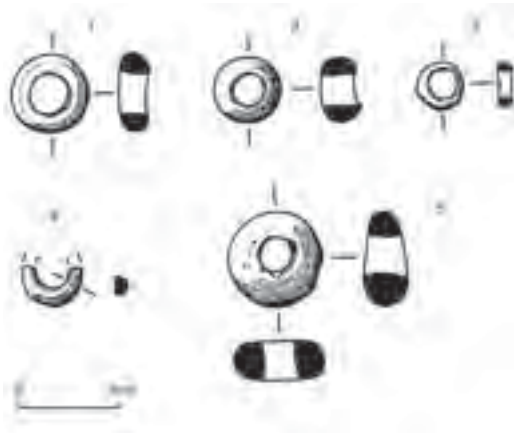
Obv.: ..... EP S .....; head laureate right

Rev.: legend illegible; figure seated left

This damaged, corroded and worn coin cannot be dated more closely than to the reign of Severus, but it is typical of the coinage issues which entered Scotland at the time of the Severan military campaigns and which are found in Scottish hoards deposited during and after this period.

It is notable that denarii of the Severan period, although common on the military sites of the period (Cramond and Carpow) and in hoards often considered to represent payments to native chieftains, have rarely been found as stray finds on native sites. The only other recorded specimens are a denarius of Pertinax from Auchterderran, Fife, and one of Caracalla from a possible native site at North Berwick, East Lothian (Robertson 1983, Table 3). The coin series from Traprain Law, East Lothian, which is by far the largest from any native site, terminates with issues of Antoninus Pius and Faustina





ILLUS 40 Glass beads

I, recommending only with antoniniani of Gallienus from the third quarter of the third century.

Despite the poor condition of the Kaimes Hill specimen, it is fairly clear that it has sustained much greater wear than coins of a similar period found in Scottish hoards or as individual finds on military sites. It may therefore be supposed that, whatever its source, it was not lost until some considerable time after its date of issue.

## MISCELLANEOUS SMALL FINDS

Fraser Hunter

### CERAMIC & VITRIFIED MATERIAL

X.HH 711: Irregular flattened fired clay sphere in red oxidized clay with fine grits; broken (illus 39). One surface and the edges are decorated with a series of irregularly spaced fingernail impressions, typically 5.5–8mm L; some are very faint, others up to 2mm deep. Two form a conjoined crescent, while three others form a crude pi-shape. The flattening and the undecorated side imply it was designed to sit on a surface for use as a gaming counter. Dimensions 17×16 (incomplete)×13.5mm. There is a closely similar clay ball with finger-nail decoration from Fairy Knowe, Stirlingshire, where related types are discussed (Willis 1998, 332 & illus 15). Such clay and stone balls were also probably gaming pieces, although the flattening of the Kaimes example

suggests it was for use in a board game rather than as a marble or boule.

X.HH 712: Two small pieces of fired clay with attached slag (weight 15.2g), one with a wattle impression. Hearth or furnace lining from an undiagnostic industrial process, although they could be from a domestic hearth.

### GLASS ARTEFACTS

All the blue glass beads were stuck to glass sheets and only one face could be seen. Although the vessel and window glass from Kaimes Hill (FR 211) has been seen as possibly Roman (Anon 1892, 221; Simpson 1969, 9), this and the finds from the more recent excavations (X.HH 753–4) are all certainly, or most probably, post-medieval (Murdoch, pers comm).

HD 725: Translucent D-sectioned annular bead, clear with a slight blue-green tinge. Slightly irregular perforation 7mm D; tapers slightly in section from 7.5 to 9mm. Faces worn. D 18.5mm (illus 40: 5).

X.HH 699: Annular D-sectioned slightly translucent dark blue bead. D 8.5mm, perforation 4.5mm, H 3.5mm (illus 40: 1).

X.HH 700: Half of an annular D-sectioned slightly translucent dark blue bead. Visible face worn. D 6.5mm, perforation 4mm, H 2.5mm (illus 40: 4).

X.HH 701: Annular D-sectioned translucent mid blue bead. D 7mm, perforation 3.5mm, H 3.5mm (illus 40: 2).

X.HH 752 (a): Irregular annular D-sectioned translucent dark blue bead. D 5.5mm, perforation 3mm, H 2mm (illus 40: 3).

X.HH 752 (b): Fragment of a mid blue bead, incomplete D section; overall form cannot be reconstructed. 2.5×2×1.5mm.

All the beads have a broad chronological range. The plain translucent example (HD 725) falls into Guido's (1978) rather amorphous Group 6(ia), while the blue beads are Group 6(iva), which is again poorly defined. Guido (1978, 66) suggests the translucent ones are unlikely to predate the Roman period, while the blue ones start rather earlier in the Iron Age and have a long currency.

TABLE 13

Kaimes, animal bone body parts including all contexts and treating the bones recovered from House 6 as if disarticulated.  
*Note* – identified as metapodial.

	<i>Cattle</i>	<i>Ramparts Pig</i>	<i>Sheep/goat</i>	<i>Cattle</i>	<i>Houses Pig</i>	<i>Sheep/goat</i>
Loose teeth	19	3	3	10	0	2
Skull/mandible	9	0	0	0	0	7
Rib/vertebra	0	0	0	0	0	2
Scapula	1	0	0	0	0	0
Humerus/Radius	5	0	1	0	1	3
Metacarpal/Carpal	2	1	0	0	0	0
Pelvis	2	0	1	0	0	1
Femur/tibia	3	0	2		0	4
Metatarsal/Tarsal	6	0	2	1	<i>Note 2</i>	6
Phalanges	4	1	0	0	3	0
Total	51	5	9	11	6	25

## ANIMAL BONE

Leslie Cram

### METHODS OF EXCAVATION AND STUDY OF THE ANIMAL BONES

The animal bones from Kaimes excavated between 1964 and 1968 have been reported on previously (Cram 1969). Those excavated from 1969 to 1972 were examined in the early 1970s and again in 2003, with the exception of those from House 6 which could not be relocated. This report reconsiders all the extant bones.

The total number of bones recovered during the excavations was small, with only 107 bones identified to species. It was therefore not possible to obtain statistically viable results. This scarcity of bone is

common in Scottish lowland sites, a consequence of the acidity of the soil which consumes bones.

The dating methods available (radiocarbon dating and artefact styles) for the majority of the contexts are not precise enough to enable the bones to be placed within detailed phases or time sequences. It is also not clear in the case of House 2, whether the animal bones are associated with the house or with the earlier occupation deposit located beneath it. All the bones have therefore been treated as Pre-Roman Iron Age in date. The collection has been divided into the animal bones recovered from the 'hut circles' and those from the ramparts, however, to see if different activities between these two areas can be ascertained (Table 13).

The bones were all excavated by hand and sieving was not used. Measurements were taken where possible using the methods of von den Driesch

TABLE 14

Kaimes, animal bone showing types of burning from different contexts

	<i>Not burnt</i>	<i>Carbonized</i>	<i>Calcined</i>
Rampart 2 core	87	7	3
Rampart 7 ditch	7	0	0
Within Ramparts various	13	0	14
Entrance 3	9	0	13
'Hut' 2	8	0	110 plus 0.77 kg
'Hut' 3	8	0	54
'Hut' 5	16	0	5
'Hut' 6	29	0	138
'Hut' misc	0	0	12

(1976). Evidence of butchery and gnawing of bones was recorded, while the bones were also classified as unburnt or burnt. In the case of the burnt bones these were further classified as either calcined (of a white colour possibly from burning in a bonfire with much air), or carbonized (black in colour as might be produced by a domestic fire) (Table 14). The nature of the burning is discussed below.

#### SUMMARY

Many contexts from within the ramparts produced bones which are generally the last to decay in acid soils – tooth fragments, pieces of thick long bone shaft or burnt (calcined) fragments. Seventeen of these contexts are located within the ramparts, five of which are situated at Entrance 3 of the hillfort. Some well preserved bones were recovered from the core of Rampart 2, comprising 49 from cattle, all of which had originated from mature animals, three from sheep/goat and five from pig. Bones were recovered from only a single ditch fill feature – the upper ditch fill of Rampart 7 – and consisted of the left upper back leg of a lamb or kid.

The bones from House 2 were fragmentary and showed evidence of erosion. They included many cattle teeth and a few bones from a young pig. The majority of the bones were calcined. Houses 3 and 5 similarly produced calcined bone and tooth fragments but not in the same quantities as were recovered from House 2. House 6 produced calcined fragments, a cattle tooth and a large number of sheep/goat bones in the north-western quarter of the house. These comprised a sheep skull and an upper front left leg, a left and a right upper back leg, and a left lower back leg of an ovicaprid. All of these could have originated from a single mature animal. They all show some evidence of erosion, and it is possible that the bones may have belonged to a complete body, with the ribs, vertebral column and feet having decayed away. Nevertheless, some evidence of the missing elements would be expected and, given the complete absence of the bones it is possible that they had been cut from the body.

When comparing all bones from the ramparts and houses and counting the remains from House 6 individually (fragments count), identifiable species from the ramparts number 51 cattle, nine sheep/goat and five pig. From the houses these numbers are 11 cattle, two sheep, 23 sheep/goat and six pig. In summary the numbers of fragments for the whole site comprise 62 bones of cattle, 34 of sheep/goat and

11 of pig. On the basis of the minimum numbers of individuals and their ages at death (ignoring evidence from loose teeth) the remains comprise two mature cattle, two immature pigs, and a mature and an immature sheep/goat.

No indications of gnawing, butchery or pathological conditions were apparent on the bones.

#### INTERPRETATION AND COMPARISON WITH OTHER SITES

Excavations at Iron Age enclosures in East Lothian in 1977 at Broxmouth (Barnetson 1982) and in 1994–5 at Fishers Road East (Hambleton & Stallibrass 2000) and Fishers Road West (O’Sullivan 2000) have provided collections of bones which are useful for comparison with the remains from Kaimes. Broxmouth is yet to be fully published but some 15,000 bones identifiable to species were recovered. The preservation of so many bones is probably due to the non-acidic soil at the site. Fishers Road East produced 1363 and West 169 fragments, with evidence for many bones having been eroded by the acidic soil leaving unusually large numbers of burnt bones. Material from the Fishers Road sites was recovered partly by hand-excavation and partly by sieving. The sieved samples from the East site gave sheep/goat as the most frequently occurring animal, while hand digging resulted in cattle bones being the most frequently occurring species. It is possible that the excavators had simply missed the small sheep or goat bones (Hambleton & Stallibrass 2000, 147). Overall, at the three sites, cattle bones outnumbered those of sheep/goat which in turn outnumbered pig. It is interesting to note that both sheep and goat bones were found, since goat bones have not been recovered on Scottish sites of earlier date. There were also small numbers of horse, dog and wild animal bones. Although the samples recovered from Kaimes were substantially smaller the findings broadly agree with those derived from these richer assemblages.

Butchery marks were evident on 11% of cattle and 3% of sheep/goat bones from Fishers Road East, while gnawing marks were apparent on 16% and 19% of the bones respectively (Hambleton & Stallibrass 2000, 149–50). The absence of these marks on the Kaimes bones may be the result of the small sample and the eroded nature of many of the bones.

The Fishers Road West report (O’Sullivan 2000, 54) considers the numbers of unburnt and burnt bones and divides the latter into carbonized, which are identified with burning in a domestic fire with

low heat, and calcined, said to be from fires with much air thereby producing a higher heat (cf Stiner et al 1995). When applied to the Fishers Road West site the frequencies of carbonized bones are used to indicate hearths, while calcined bones are considered to be indicative of the clearance of the site by burning rubbish, including bones, in bonfires. When applied to the Kaimes site the highest frequencies of calcined bones probably comes from an occupation layer beneath House 2 which predates its construction.

Different bones of the body survive better or worse in acid soils and when burnt. It is therefore unwise to draw any conclusions concerning the proportions of body parts from the small sample from Kaimes. The excavations have, however, produced the unusual remains of the sheep which appears to have been dismembered and left in a partially articulated state on the floor of House 2.

## CREMATED HUMAN BONE

Eileen M Murphy

### INTRODUCTION

A small corpus of cremated human bone was recovered from the hilltop at Kaimes. Potsherds from an enlarged Food Vessel urn (Vessel 8, above: NMS accession no X.HH 739) and fragments of cremated human bone were retrieved by Mr C Hoy during 1970. In the following year Mr Hoy discovered further fragments of cremated human bone (X.HH 781) near the original findspot of the Food Vessel Urn. A further bag of cremated bone was also recovered from Kaimes, but precise details of this find are unknown (X.HH 339). It is stated on the label association with the bag, however, that the remains were probably also associated with the Food Vessel Urn. All potsherds and fragments of cremated bone were stored in the National Museums of Scotland.

### CREMATED BONE ASSOCIATED WITH THE FOOD VESSEL URN (X.HH 739)

A total of 61.6g of cremated human bone was directly associated with the fragments of Food Vessel Urn. Studies undertaken by Trotter and Hixon (1974) have indicated that the average weight of a cremated adult is approximately 1919g. The average weight for a cremated adult male is 2288g, with a range of 1534–3605g, while the average weight for cremated

adult females is 1550g, with a range of 952–2278g (Mays 1998, 220). It is clearly evident that the bone recovered from Kaimes corresponded to a very small proportion of a human skeleton. The majority of fragments were greater than 10mm in size (79.7%), with only 20.3% of the fragments being between 4–10mm in size. No fragments less than 4mm in size were recovered. This finding may further attest to the incomplete nature of the assemblage. The size of the fragments would also tend to suggest that the remains had not been pulverized prior to their deposition.

Most of the fragments were identified as having originated from the skull, limbs or axial skeleton, and only 2.1g of the bone was unidentifiable. The total weight of the skull fragments was 23.9g, which represented 38.8% of the total weight of bone. A total of 21 skull fragments were present, which included eight fragments of parietal, six fragments of occipital, six fragments of frontal bone and a single fragment of petrous temporal. The total weight of the limb fragments was 30.8g, which represented 52.9% of the total weight of bone. A total of 28 limb fragments were present. The only other readily identifiable fragments in this category were a piece of the sternal end of a clavicle and a fragment of ilium. Only six fragments of axial skeleton were present and these weighed 3g, representing 4.9% of the total weight of bone. They comprised five ribs and a fragment of the inferior surface of the body of a cervical vertebra.

No unfused bones were present and the morphology of the cranial fragments indicated that the remains had originated from an adult. It was not possible to further determine the age or sex of the individual.

### CREMATED BONE RECOVERED FROM VICINITY OF THE FOOD VESSEL URN (X.HH 781)

A total of 54.8g of cremated human bone was recovered from the vicinity of the find spot of the Food Vessel Urn. Most of fragments were greater than 10mm in size (98.9%), with only 1.1% of the fragments having a size of between 4–10mm. No fragments less than 4mm in size were recovered. As was the case with the bone recovered from the Food Vessel Urn, this finding is an indication of the incomplete nature of the assemblage. In addition, it is probable that these remains were also not pulverized prior to their deposition.

The fragments were sub-divided into those that had originated from the skull, those which had formed part of the limbs and those which comprised fragments of

axial skeleton. The total weight of the skull fragments was 16.2g, which represented 29.6% of the total weight of bone. A total of 13 skull fragments were present, which included six fragments of parietal, three fragments of occipital, two fragments of frontal bone, one fragment of mandible and one fragment of petrous temporal. A total of 24 limb fragments were present. The total weight of the limb fragments was 37.3g, which represented 68.1% of the total weight of bone. The only fragments of axial skeleton that were present were two pieces of rib which weighed 1.3g and represented 2.3% of the total weight of bone.

The morphology of the cranial and long bone fragments would tend to suggest that the remains had originated from an adult. It was not possible to further determine the age or sex of the individual.

#### CREMATED BONE PROBABLY ASSOCIATED WITH THE FOOD VESSEL URN (X.HH 339)

A further sample of cremated bone with a weight of 9.9g is considered to have also been associated with the Food Vessel Urn. These remains comprised two fragments of frontal, a fragment of basioccipital, and the root from a maxillary molar. The morphology of the remains indicated that they had originated from an adult individual.

#### DISCUSSION

All of the fragments of cremated bone recovered from Kaimes appeared to have been adult. There was no obvious duplication of fragments and it is possible that only a single individual was represented. In addition, all of the pieces of bone were white in colour, which would tend to suggest that they had all been burned at a similar temperature. The colour of cremated bone reflects the amount of oxidation the organic components of the bone have undergone and is partly dependent on temperature. When bone is subjected to increasing temperature it changed from black, through various shades of grey, to white (McKinley 1994, 77). Experimental work has indicated that bone colour generally tend to change to white at temperatures of between 645 and 1200°C (Mays 1998, 217). It is likely that all of the fragments of cremated bone recovered from Kaimes had been burned at this high temperature. The total weight of cremated bone was only 126.3g; substantially less than would be expected for a complete cremated adult skeleton. This finding is not unexpected since the remains were recovered as a series of stray finds

and it is probable that the majority of bone originally associated with the Food Vessel Urn has been lost. Most of the pieces of cremated bone were greater than 10mm in size; a finding which would tend to suggest that they had not been deliberately pulverized prior to their original deposition.

#### SITE DISCUSSION

Richard Gregory & Derek Simpson

The various campaigns of archaeological investigation at Kaimes Hill suggest a protracted and probably intermittent use of the site, beginning in the Mesolithic period and extending through to the present day. The small assemblage of chipped stone microliths are indicative of Mesolithic activity and represent the earliest artefactual evidence from the hill. This assemblage is composed predominantly of narrow blade microliths, alongside other diagnostic Mesolithic tool types, which were probably knapped on the hilltop. These finds also presumably reflect a wider pattern of movement of Mesolithic people within the coastal hinterlands of the Firth of Forth, as it is probable that the stone resources used were procured from outside the immediate environs of Kaimes Hill. The scale of movement in this wider region is difficult to discern, however, as the evidence for Mesolithic activity in other areas of south-eastern Scotland is generally sparse in comparison to western Scotland (cf Finlayson & Warren 2000). Comparable Mesolithic sites are confined to inland areas such as the Tweed valley (cf Lacaille 1954; Mulholland 1970) and coastal areas such as Cramond (Dean 1993) and Dalmeny (Jones 1998; 1999) while other more unusual finds, indicative of this period, include the barbed antler point from Blackness Bay (Saville 1996). Due to the fairly limited nature of this evidence little can therefore be deduced concerning the precise spatial extent and form of Mesolithic occupation and settlement in this area of lowland Scotland, but it would appear that other prominent hilltop sites were at least sporadically visited as evidenced by the

recovery of two microblades from Traprain Law (Jobey 1976).

The next phase of identifiable activity at Kaimes probably relates to the use of the hilltop as a ritual site during the late third/early second millennium BC. This evidence consists of the standing stones, the cup-and-ring marks and the kerbed cairn. Direct dating for the cup-and-ring marks on the site is lacking but associations with cist burials elsewhere may indicate an Early Bronze Age date for the more complex designs (Simpson & Thawley 1973). Morris (1989, 70) lists 12 sites from the Lothians which have produced rock art of more complex form than the simple cups. Three of these, including Kaimes, occur on natural rock surfaces in hillside situations. On the Braid Hills, Midlothian, cup-and-ring marks have been recorded on boulders (Bruce 1897) while at Traprain Law, East Lothian, on the north-east corner of the hill, with commanding views over the surrounding countryside, the designs include the ubiquitous pecked cup-and-ring motifs but predominant are more complex incised parallel lines, grid and ladder-like designs (Edwards 1935). It is also probable that the kerbed cairn at Kaimes dates to a similar period (Ritchie & MacLaren 1975). This cairn, found on the summit of the hill, had been heavily disturbed as a result of World War II activity when a portion of its interior was removed and 'dumped' close to the summit (Ritchie 1970, 58). It seems possible that this 'dump' was the 'overburden' examined by Mr C Hoy during the early 1970s before the obliteration of this area by quarrying. It may therefore be significant that the fragments of the enlarged Food Vessel Urn and cremation deposits discovered by Hoy were recovered from this area, and it seems feasible that they originally constituted a burial deposit interred within the cairn. Other excavated kerb cairns have produced burials associated with Food Vessels and Urns (Stevenson 1995; Simpson 1996). Traprain Law is also the site of a robbed cairn of uncertain form close to the summit, containing four Collared Urns and an accessory cup (Jobey 1976), and this may well

attest to a wider ritual use of prominent hilltop sites in southern Scotland during this period.

Following ritual use, the significance of the hilltop was possibly transformed. It would appear that during the Middle-Late Bronze Age (1380–1000 cal BC) 'domestic' occupation of some description was established on the hill, though it is possible that this activity was conditioned in part by the earlier phases of veneration. This evidence consists of an occupation layer located beneath House 2, containing burnt animal bone, chipped stone artefacts and charcoal, and this appears to present further evidence for a distinctive phase of Middle-Late Bronze Age domestic occupation that is gradually emerging at many prominent hilltop sites in southern Scotland. At Eildon Hill North, for example, a Late Bronze Age settlement is present which consists of a series of house platforms associated with at least one enclosing rampart (Owen 1992). Recent excavations on the summit of Traprain Law have also identified occupation deposits, similar in composition to the occupation layer at Kaimes, which clearly date to the Middle and Late Bronze Age. These deposits might also be associated with the 'summit' rampart (Armit et al 2002; Armit, pers comm). It is therefore possible that a similar form of occupation was present at Kaimes during this formative period, consisting of either an unenclosed or enclosed settlement. Significantly, in contrast to both Traprain Law and Eildon Hill North where it is suspected that following the Bronze Age phase of use a hiatus in occupation occurred until the Roman period, the importance and presumably the wider significance of Kaimes Hill was retained into the Pre-Roman Iron Age.

The archaeological evidence for Pre-Roman Iron Age activity is the most conspicuous on the hilltop consisting, in part, of the numerous ramparts which enclose the southern circuit of the hill. In its final form this rampart system would have created an imposing series of boundaries, which was enhanced in places through the provision of the *chevaux-de-frise*. Moreover, these boundaries appear to have

controlled and channelled access to the lower and upper terraces in a carefully prescribed manner. This channelling is particularly evident in the case of the upper terrace which could only be approached by two somewhat protracted and convoluted routes. Apart from controlling access to the interior of the site these ramparts were probably constructed with a number of differing functions in mind. Although one of these functions may well have been to create a defensive boundary, which protected the more easily assailable southerly slopes of the hill, it is also feasible that the construction of the ramparts was intimately connected to the site's status within the immediate and wider region (see below). It is also possible that the ramparts were allied to other, deeper, concerns pertinent to the Iron Age community occupying the site, particularly as one of the excavated ramparts in the 'Main Cutting' incorporated the Early Bronze Age cup-and-ring marks within its internal fabric. Although these symbols were potentially serendipitously incorporated into the rampart, it is also possible that they form part of a wider pattern of reuse and veneration of earlier monuments and symbols which appears as an increasingly common feature of Iron Age life. Hingley (1996; 1999), for example, has discussed in some detail the relationship between Iron Age houses and earlier Neolithic monuments in Atlantic Scotland and also the incorporation of Neolithic and earlier Bronze Age monuments within many of the Iron Age enclosures and hillforts of Britain and Ireland. He suggests that in many instances this reuse and/or containment allowed later prehistoric communities to define 'their place in the world through references to ancient monuments' (Hingley 1999, 246). The control of earlier ritual monuments may also be relevant at Kaimes, as the kerbed cairn and standing stones are located within the interior of the Iron Age enclosure and could only be accessed by passing through the system of ramparts enclosing the hill. A more direct parallel for the incorporation of rock art into the fabric of an Iron Age

settlement is found, however, at Hayknowes Farm, Dumfriesshire, where a boulder etched with probable Early Bronze Age petroglyphs was placed as a foundation deposit within the easterly orientated porchway of an Iron Age house (Gregory 2001a). In this instance, as at Kaimes, it is possible that these symbols formed an 'active' element of the structure's design and acted as a particular form of foundation deposit, which perhaps linked these boundaries to certain cosmological or ancestral referents.

It is likely, however, that the system of boundaries at Kaimes evolved over the course of the first millennium BC, and this may explain the differing architectural characteristics of certain of the ramparts. Excavation indicates, for example, that Rampart 1 was probably timber-laced, was constructed after c 380 cal BC and preceded the construction of Rampart 2, a revetted earth and rubble boundary. It may also be significant that the core of Rampart 1, like that of Rampart 2, contained Iron Age occupation debris. While the presence of this material might form another example of the intentional and structured placement of 'domestic' material within the rampart (cf Hingley 1992, 31), it is probably indicative of a pre-rampart phase of occupation during the latter half of the first millennium BC, assuming of course that Rampart 1 is the earliest earthwork on the hill. On the strength of these results the phasing of the ramparts appears complex. In an attempt to disentangle the sequence of construction Simpson (1969, 24), in a preliminary account of the 1960s excavations, argued, however, that three phases of rampart construction could be discerned. He suggested that during Phase 1 an oval univallate timber-laced rampart was built (Rampart 1), which enclosed the upper terrace, and which had an entrance to the south (Entrance 3). He further argued that the plan of this enclosure was paralleled by a number of vitrified forts in eastern Scotland. Simpson then suggested that the 'defences' surrounding the upper terrace were strengthened by the replacement of the timber-laced rampart with Rampart 2

and through the remodelling of the southerly entrance (Entrance 3). Simpson argued that concomitant with these Phase 2 modifications was the construction of Ramparts 3 and 3A as these closely follow the plan of Rampart 2. It was then argued that the strengthening of the upper terrace and the enclosure of the lower terrace through the construction of Ramparts 5, 6, 7 and 8, and the placement of the *chevaux-de-frise* at certain points along Rampart 7 represent a final phase of rampart construction. Simpson (1969, 24) also speculated that a number of other constructional episodes occurred during this final phase. These included the creation of a series of entrance gaps through Ramparts 2, 3, 3A and 4 ‘as their form is in marked contrast to the complexity of the Phase 1 and 2 entrance on the south’, and the construction of House 1 on the line of Entrance 3, and House 3 over the degraded remains of Rampart 1. Although this sequence of construction does seem entirely plausible, particularly as it sits comfortably with the morphology of the earthworks, it is unfortunately largely speculative, and in hindsight its formulation probably owes much to certain persuasive Post-War theories of hillfort development, embodied in Piggott’s (1948) ‘Hownam model’ of hillfort evolution. This model was formulated as a consequence of excavations at Hownam Rings, Roxburghshire, and dictated that within the Scottish Borders a sequence from unenclosed settlement, to univallate and then to multivallate enclosure, followed by a ‘post-defensive’ phase of settlement might be expected at many hillfort sites. As a result of excavation at sites such as Broxmouth, East Lothian, which appears to fluctuate between univallate and multivallate phases of enclosure (cf Hill 1982b) and Dryburn Bridge, East Lothian, where an unenclosed settlement post-dates a palisaded enclosure (Triscott 1982), this model has, however, been largely deconstructed since the late 1970s (Armit 1999). Moreover, recent research and field survey in other areas of lowland Scotland, such as the south-west, also indicates that the

sequence and architectural form of enclosure is invariably complex (cf RCAHMS 1997; Gregory 2001b). In consequence it appears that no firm rules can be applied to the form and sequence of enclosure of Iron Age sites in lowland Scotland. Inevitably this has certain implications for the proposed sequence of enclosure at Kaimes as it implies that, apart from the direct relationship observed during the excavation of Ramparts 1 and 2 by both Childe (1941) and Simpson, the constructional sequence of the ramparts cannot be determined with any degree of confidence. It is, therefore, possible as Harbison (1971, 199) suggested during a review of sites with *chevaux-de-frise*, that Ramparts 2 and 7 may well have been constructed at similar time, particularly as there is no firm evidence to suggest ‘that a timber-laced wall can *a priori* be taken to be earlier than a rubble and turf wall, or that the outermost wall is automatically the latest’. It is also entirely possible that Ramparts 1 and 2 represent a contraction of the enclosed area on the hill, and this might explain the discovery of Iron Age occupation debris within the core of these ramparts.

Enclosed within the ramparts are also a number of ‘hut circles’. These are probably contemporary with some of the enclosing ramparts. The available AMS dates indicate, for example, that at least two of the houses (Houses 4 & 5) were constructed and occupied during the Mid-Late Pre-Roman Iron Age, a period which probably corresponds with the construction of Ramparts 1 and 2. Similarly, the coarse stone artefacts and pottery recovered from the remaining excavated house sites may suggest a comparable chronological currency. The construction of House 3 and ‘Huts’ I and III, excavated by Childe (1941), over the degraded remains of the inner ramparts also provide further corroborative evidence for the abandonment and remodelling of certain ramparts during the Iron Age phase of occupation.

In contrast to many of the ‘substantial houses’ which characterize the Mid Pre-Roman Iron Age vernacular architecture of south-east



Scotland (cf Halliday 1985; Hingley 1992) the excavated houses at Kaimes are generally small, with diameters ranging between 4–6m. Only House 2 was larger in size with a diameter of 11.4m, which might tentatively suggest a Mid Pre-Roman Iron Age date for structure. The size of the remaining houses is therefore in keeping with the smaller ‘Votadinian’ type houses identified by Hill (1982a) in East Lothian. Hill (1982a; 1982b) suggests that this house type dates to the Late Pre-Roman Iron Age/Early Roman Iron Age, is often no more than 6m in diameter and is commonly defined by either a low stone wall and stone paving. At Kaimes many of these typical ‘Votadinian’ architectural traits are also present. The houses, for instance, are defined by a low stone-wall with an entrance gap and have an interior floor composed either of exposed bedrock or series of paving slabs. Only one of the houses, ‘Hut II’ excavated by Childe (1941), was found to contain a definite hearth, however, although the presence of charcoal was noted during the excavation of all of the houses. Intriguingly, none of the excavated houses revealed any evidence for internal post-holes, which could have supported a roof. While it is possible that these supporting posts rested directly on the paving slabs or bedrock ‘floor’, and have consequently left little archaeological trace, it is also feasible that the roof was supported directly by the house wall. Moreover, at Kaimes the comparatively slight nature of the house walls may indicate that this roofing was lashed to a series of timber uprights set within the wall core in a similar fashion to the proposed reconstruction of House 3 at The Dunion (Owen 1992, fig 3.26). The excavated houses at Kaimes were also found with a range of artefactual and faunal remains, which would not be out of place with a proportion of the ‘Votadinian’ houses (cf Cool 1982). These include pounders/grinders, spindle whorls, sharpeners, faceted cobbles and cobble tool fragments, chipped stone, pottery and cattle, ovicaprid and pig bone, indicating that the houses were the focus for many of the domestic activities occurring at the site.

The enclosure at Kaimes did not exist in isolation, however, but was probably intrinsically linked to other Iron Age settlements in the region. These invariably consist of similar hillforts and enclosed and unenclosed settlements found within the environs of the City of Edinburgh (cf Driscoll & Yeoman 1997). Unfortunately, apart from a contemporary phase of enclosure on Castle Rock, Edinburgh (*ibid*), the precise dating of the majority of the sites is vague. It is therefore difficult to construct any meaningful pattern of settlement during the course of the Iron Age as the chronological parameters and possible contemporaneity of these sites is not particularly clear. It is probable though that Kaimes by virtue of its size and scale of construction, like certain other ‘hillforts’ in south-east Scotland, occupied an important and prominent position within the later prehistoric landscape. The role of these sites should not be seen as in any way universal, however, as it is likely that different hillforts across Northern Britain performed a range of differing functions, which were dependant upon the social and political circumstances operating in a particular region, at particular points in time. Recent discussions of enclosure during the Iron Age emphasize, for instance, that status and concomitant display were possibly guiding principles behind the construction of many large enclosure and hillfort boundaries, and that the scale of construction was explicitly linked to the mobilization of subservient labour drawn from less dominant settlements (cf Hingley 1992). This implies that in some areas a settlement hierarchy might be expected where the accumulation of both ideological power and economic resources was confined to specific communities occupying certain settlements. Indeed, it is possible that in south-west Scotland one such hierarchical settlement pattern was present during the Late Pre-Roman Iron Age/Early Roman Iron Age, which may have been sustained through the accumulation of pastoral stock, particularly cattle (cf Gregory 2001b; Halliday 2002). Alternatively, in other regions

it is possible that the construction of hillfort boundaries and the labour which it inevitably required was designed as a means of coalescing dispersed and largely detached communities or kin groups at certain permissible times. In this sense many of the large hilltop sites may have functioned as ‘symbols of the community’ (Hill 1995, 53), comparable in some way to the large communal monuments of the Neolithic. Furthermore, it is possible that within this communal context hillforts were reserved for a number of specific activities which could only occur outside of a ‘domestic’ setting. These activities might include certain ritual acts and the production of certain types of artefacts. The Roman coins and remarkable collection of metalwork and metalworking debris from the large hillfort at Traprain Law, East Lothian, might represent one such example, as these finds have been interpreted by Hill (1987) as evidence for votive deposition within a large ceremonial centre which may have held a small specialist population partly engaged in the manufacture of metalwork. In contrast, the evidence at Kaimes might suggest permanent domestic occupation at this hillfort and this may indicate, on the basis of the scale and visually impressive form of the ramparts and *chevaux-de-frise*, that the site was situated within the upper echelon of a potential later prehistoric settlement hierarchy. Apart from the scale of these boundaries and the area they enclosure there are also certain hints within the artefactual assemblage from the site, which may also set this settlement apart from other ‘lesser’ settlements in the Lothians. The preponderance of stone balls at Kaimes may, for instance, be one potential indicator of an elevated site status. At Kaimes these objects might date to the last two centuries cal BC and although the recovery of these durable artefacts is dependant on the extent of excavation and the duration of occupation, it is interesting to note that the other sites in the Lothians where sizeable assemblages are discovered include the large hillforts at Traprain Law and Broxmouth. Again this might suggest a potential link between these objects and site

status, particularly when the evidence from the smaller settlements at Fishers Road, East Lothian, is taken into account (Haselgrove & McCullagh 2000). Here only three stone balls were recovered from one of the settlements, Fishers Road East, which like its counterpart Fishers Road West appears to represent a fairly ubiquitous type of settlement, typical of many of the enclosed settlements or farmsteads scattered across the Lothians that perhaps housed a large percentage of the Iron Age population. Significantly, both settlements were subject to area excavation and extensive programmes of bulk sampling, and the recovered artefacts may therefore be taken to be a fairly representative sample. Unfortunately the function of the stone balls is not clear but it is possible that they were ritual or symbolic objects (*ibid*) or as Clarke (above) suggests tally stones, perhaps representing stock, people, or other resources. Indeed, this interpretation might be particularly pertinent if there is a link between stone balls and settlement status.

Following the Pre-Roman Iron Age phase of settlement the nature of the occupation at Kaimes is less clear. During the Roman Iron Age it is possible that some of the excavated house sites were occupied, although the absence of diagnostic Roman artefacts might suggest that the excavated houses were largely abandoned. At other hillfort sites, for example, such as Castle Rock, Edinburgh (Driscoll & Yeoman 1997), and Traprain Law, East Lothian (Jobey 1976; Armit et al 2002), and a number of lowland brochs, such as Hurley Hawkin (Taylor 1982), Roman pottery and metalwork, nominally signify Roman-period occupation. There does, however, appear to be some form of activity at Kaimes during this period due to the recovery of a Severan denarius. It is possible though, that these finds, like the Medieval pottery sherds recovered from the degraded ramparts, represent a fairly sporadic form of activity which was not linked to any concerted form of occupation. Indeed, it is possible that Kaimes Hill was largely abandoned during this period and, perhaps, the settlement as well as its concomitant political

and ideological connotations were transferred to Dalmahoy Hill, where an Early Historic centre may well have developed.

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