

Excavations at Balloch Hill, Argyll

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ABSTRACT

Excavations from 1973 to 1978 at Balloch Hill, Argyll, were conducted in order to clarify the relationship between small forts and duns in the Kintyre peninsula by the first excavation of a small drystone fort. Objectives in the field were the definition of a structural sequence, the recovery of assays for radiometric dating and the retrieval of a stratified selection of the material culture. In the event, four phases were isolated in exposures totally nearly 450 m²: a third millennium bc settlement; mid-second bc cremation burials; and a later first millennium bc enclosed settlement which was probably succeeded by an open homestead. Little evidence, in terms of artefacts and structure, was found for an evolution to the smaller but more massively walled duns. On the contrary, development at Balloch was to open occupation in Phase 4 and the evidence in general suggests that the advent of elaborate duns in Kintyre owes little to the building traditions of local forts.

INTRODUCTION

In Atlantic Province Iron Age studies, brochs, and to a lesser extent duns, have attracted considerable attention in terms of excavation, whereas hillforts, common in the south, rare in the north, have scarcely been touched, especially in comparison with the situation in southern Britain. Feachem, in his general survey of Scottish hillforts, could say very little about the types that exist in the west (1966, 76-7), but as the more recent inventories of Argyll sites are making clear, there are several hillfort types, a diversity and indeed a surprising density that is witness to the complexity of later prehistoric developments there (RCAMS 1971, 1975, 1980). There are numerous reasons for this imbalance in archaeological research, not least the curiosity aroused by the imposing monumentality of many brochs and duns, the apparently confined area that they present for excavation, and the historical associations of many of the latter. Yet, with regard to monumentality, this is to overlook the total effort involved in the construction of hillforts, one which, if we consider sites such as Buaille Oscar, Caithness (Feachem 1966, 71, fig 7), Dun Gerashader, Skye (RCAMS 1928, 182-3) or Borraichill Mor, Islay (NGR NR 371468) equals and in some cases surpasses that involved in the erection of brochs and duns. Effort may well have been matched by expertise, but it is not yet possible to compare the much vaunted architectural sophistication of broch- and dun-builders with the abilities of fort builders since evidence for the latter has not been sought and may well be of a different nature.

One exception to this paucity of hillfort investigation concerns vitrified forts which constitute a lengthy and distinct timber-laced building tradition extending from the 7th or 6th

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century BC (MacKie 1976) into historic times (Alcock 1981). Most duns and all brochs, however, rely solely on massive drystone building techniques for their structural strength and thus timber-lacing can be regarded as a collateral tradition. The drystone hillforts therefore stand in much closer relationship to duns and brochs and several in Argyll exhibit structural affinities with duns. In the Kintyre peninsula this is made clear by the small size of many forts, by duns succeeding forts on the same site, and by such characteristic dun features as internal mural revetments and door checks in forts (RCAMS 1971, 64–94). The last feature is evident in the 0.27 ha Knock Scalbart fort, for example, which in addition has a probable Bronze Age cairn and circular and rectangular buildings (RCAMS 1971, 73, fig 50). The temporal and cultural connections of both types of sites, however, remain a moot point in the absence of comparable data from stratified fort deposits. The little work hitherto carried out on these and other drystone forts in the Atlantic Province has yielded disappointingly few leads. A *denarius* of Trajan, pierced to render it a pendant, lacks a proper context though it probably does come from Largiemore fort, Argyll (RCAMS 1971, 74). Also in Kintyre, a trial cutting across a trench at Glenehervie enclosure suggested that it was a marker, rather than a palisade, trench (RCAMS 1971, 99). In Coll, Tiree and Iona it is evident from pottery that some fort locations were occupied during the *floruit* of broch- and dun-building episodes (RCAMS 1980, 19). The only other revealing evidence from these is that one, Dun Cul Bhuirg, was occupied long enough for the installation of a circular house with central stone-built hearth (RCAMS 1980, 77). This meagre catalogue of supplementary evidence hints at continued occupation of fort locations which is at odds with a strictly evolutionary sequence in which duns and brochs emerge from earlier fort-building traditions. Whatever the structural tendencies, settlement patterns seem diverse. So in order to obtain more satisfactory evidence for the place of drystone forts in the Atlantic Province Iron Age and in particular to examine their temporal and cultural affinities with some of the duns, it was decided to investigate a fort that possessed one or more dun features. In testing such a fort it was felt desirable to obtain information on three points. These objectives would dictate excavation strategy. First, an evolutionary sequence, and for this evidence of multi-period occupation was required. Second, datable material associated with that sequence: since forts generally do not yield a varied and rapidly evolving material assemblage, emphasis must be placed on the recovery of assays for radiometric dating. Last, a representative selection of that material culture: this implied a fairly substantial exposure and it was the least likely of the aims to be achieved.

Fort- and dun-building traditions flourished in Kintyre, and it could be argued that the Laggan area constituted an anomalous fertile depression that induced larger population nuclei, the forts, coeval with duns. The latter have a distinct distribution concentrated along the semi-arable coastal fringes to the N (fig 1). Moreover, five of these Kintyre duns had been excavated (below pp 206–08) and could therefore provide nearby material for comparison. The c 64 km² Laggan, consisting of raised beaches, alluvial gravels and peats, is a coast-to-coast trough separating the upland peninsula to the N from the Mull to the S. In antiquity it was mostly a raised bog in the W (Nichols 1967, 183–4), but higher knolls to the E ensured better-drained land at that limit of the Laggan. To the N of this favoured focus the upland terrain is broken as a result of faulting or slides in mainly metamorphic and limestone rocks (McCallien & Anderson 1930). The more regular southern flanks consist of Mull schists and Old Red Sandstone cut near the centre by a pass to Southend. Both boundaries, but especially the northern, therefore offer ideal locations for hilltop sites. When for various reasons one of the 12 surrounding forts, Knock Scalbart, proved too difficult to excavate, a second site, Balloch, on the S edge of the Laggan, was selected. Since there was active erosion of the internal deposits of the site due to a now defunct quarry and since secondary structures with walls reportedly of turf (RCAMS 1971, 66) were being wasted by cattle

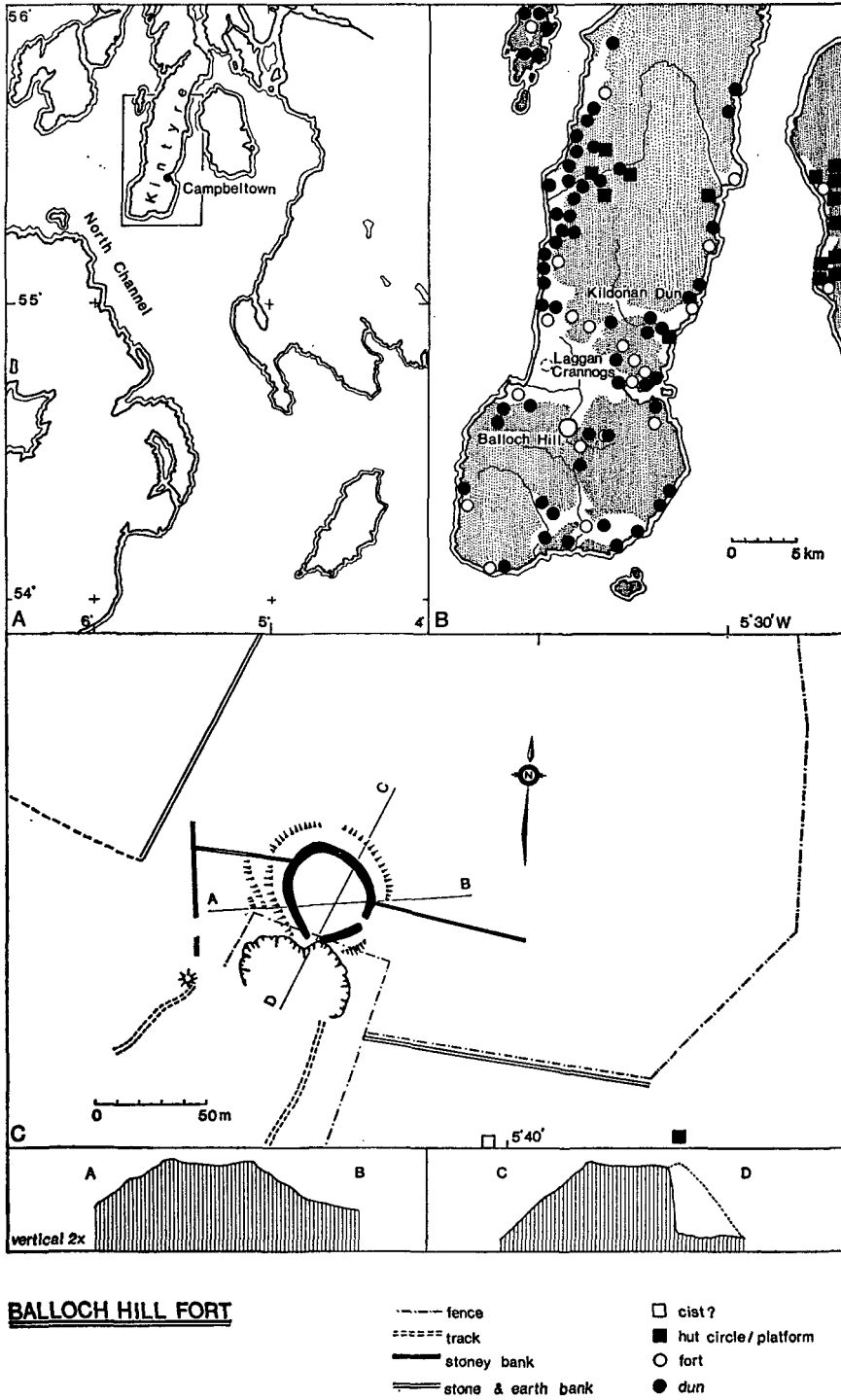


Fig 1 Location maps, general plan and elevation of Balloch Hill

constantly sheltering therein, a major rescue element was introduced into operations in the second season. This enabled us to realize our third fieldwork aim to a degree not initially envisaged.

Balloch (NGR NR 677176) is situated on a carboniferous lava boss that conspicuously marks the E terminal of a long ridge sloping gently from Tirfergus Hill to the W. This ridge forms the S flank of the Laggan. At its base, 120 m below the summit, the Tirfergus Burn has exposed deposits of black coaly shale, soft sandstone, quartz and clay, but above is a zone of lavas. To its E the Chiscan Water flows through a broad cleft that channels the main communication route to Southend, a major triangle of arable at the S of the Mull, dominated by the largest fort (2.5 ha) in Kintyre, Cnoc Araich (RCAMS 1971, 68, fig 41). Balloch (Gaelic *Bealloch*, the Pass) is one of six hilltop sites clustered at this end of the route, but it is the only one on the less broken W side. The boss is crowned by an irregular oval stone rampart enclosing an area of 0.25 ha (fig 2).

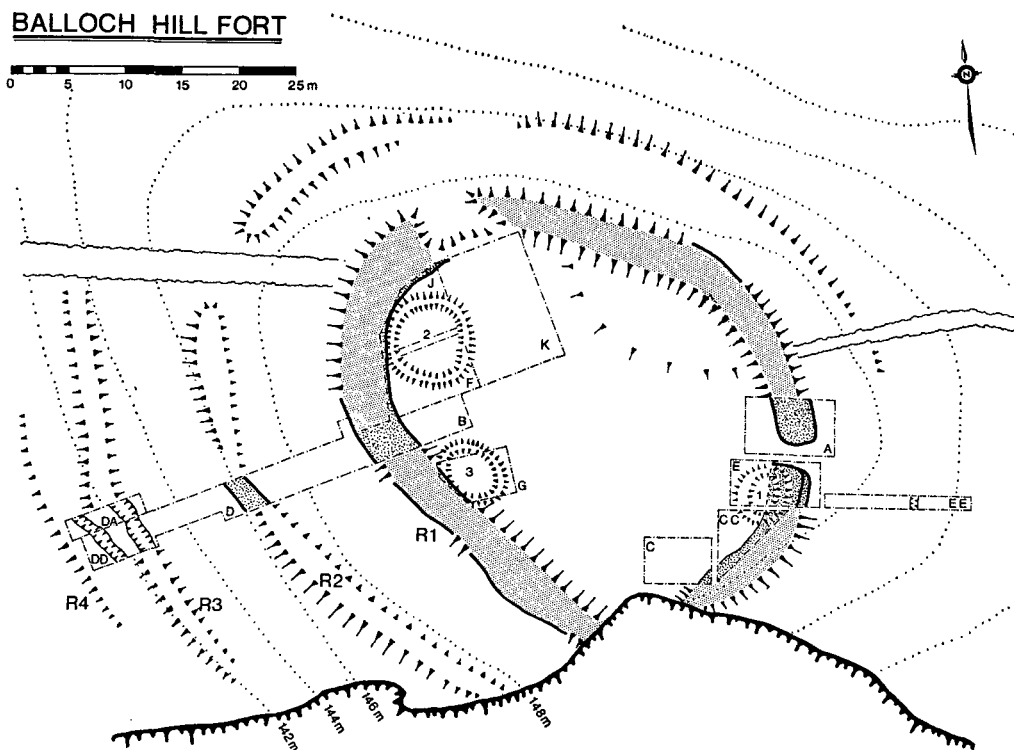


Fig 2 General plan of Balloch Hill showing excavation Areas

Since it caps the terminal of a ridge, the ground falls away quite steeply on three sides but there is an entrance gap on the least steep of these, the E side. Traces of another rampart which appear intermittently on the slopes become a low stone and turf bank, R2, on the more gentle W slope where, at distances of c 20 and c 26 m from R1 there are two more breaks in scarp, R3 and R4 respectively. These were robbed for more recent dykes, which, away from these sources of stone, consist primarily of earth and few stones. The nearby exception to this, some 60 m to the W of R1, is a c 0.50 m high stony bank with some facers that runs across the saddle of land separating the Balloch Hill boss from the ridge to Tirfergus Hill. It too is robbed for stone and is mostly spread to

a width of 1.5 m. Since it is earlier than ostensibly recent dykes and since other forts such as Harehope and Arbory Hill (RCAMS 1978, 91, fig 45) have similarly placed ramparts, it merits consideration as part of the outworks of Balloch. The fort's multiple ramparts are missing on the S side where a quarry has encroached into the interior. This quarry opened in 1899 to supply road-metal for the Laggan-Southend road and from 1905 output was expanded, but there is no record of finds from these operations. A hard surface and posthole appeared in the 1.1 m deep section revealed by the quarry on the interior of the fort where there were also patches of outcrop in the NW and three small secondary structures. As these locations were being so adversely affected, excavations were initially concentrated there but they were expanded both to deal with deposits which, being disturbed by the secondary features, would otherwise have remained unintelligible and also to satisfy the fieldwork aims mentioned above. In the following account of a total of 16 weeks fieldwork the excavation of visible features is described first in order to provide a clear comparison with conclusions derived from survey of such visible remains, a method on which Atlantic Province hillfort studies are almost entirely dependent, and only then are the results from excavations of areas lacking surface features described.

EXCAVATION OF THE VISIBLE FEATURES

STRUCTURE 1 (fig 3; pl 12a)

On top of R1 and its internal collapse at the southern jamb of the entrance lay a subcircular structure, its NE almost a right angle where its exterior coincided with the fort entrance. Its eastern face was set on the crest and c 0.3 m behind the early face of the rampart from where it followed the line of the S jamb 4 m into the interior of the fort before curving S in a gentle arc until once more it joined the rampart top. The outer edge of its E wall lay directly on the rubble core of the rampart and was but a single course high; its inner, failing to compensate for the rampart slope, was slightly lower but constructed of more massive blocks. The remainder of the c 1.4 m wide wall was founded on more level ground and, like the ramparts, consisted of a rubble core with facing stones as many as three courses high (max 0.8 m). Differences in rampart construction include the use of more angular stones, the intermittent insertion of uprights, and heavier stones on the interior than the exterior. By analogy with the width of R1 in Area A, the inner face of Structure 1 E wall impinged on the line of the rampart, so both demolishing its interior section and obtaining suitable facing stones for the rest of the structure. There is a probable 1 m wide entrance in the E, but the loosely fitting wall stones and consequent amount of slip and tumble (as well as an unexcavated baulk) made certainty difficult.

Its interior, oval in plan but squared in the N, pointed in the S, 4.4 m by 2.2 m was filled level with stones to just below the top of the internal facing stones. Had these all been from the wall one would have expected a dished profile of internal tumble, but the central area, at a depth of 0.3 m, had slightly larger stones in a subrectangular arrangement, E1, c 1.40 by 1.8 m. The northern edge of E1, in particular, formed a straight line that was inserted into the surrounding smaller stones. Though not so clear in the S, E1 seems to be a densely packed fill of stones sloping to its centre where a slumped group gave way to a posthole (E2; fig 3 insert) with wedges but without trace of pipe. It was sunk 0.3 m into the boulder clay, but the platform of E1 in which the upright wedges were also incorporated would have provided a further 0.4 m of stabilization.

The smaller stones into which E1 was inserted gave way imperceptibly to others which ran both under E1 and the walls of Structure 1. Thus no occupation could be associated with Structure 1, though any arbitrary level in this material could have sufficed as a short-lived rough paving. The disturbance to lower levels caused by E1 meant that only a perimeter band could be isolated and in



FIG 3 Plan of entrance and Structure 1 in Areas A, E and CC. General key to symbols in plans and sections

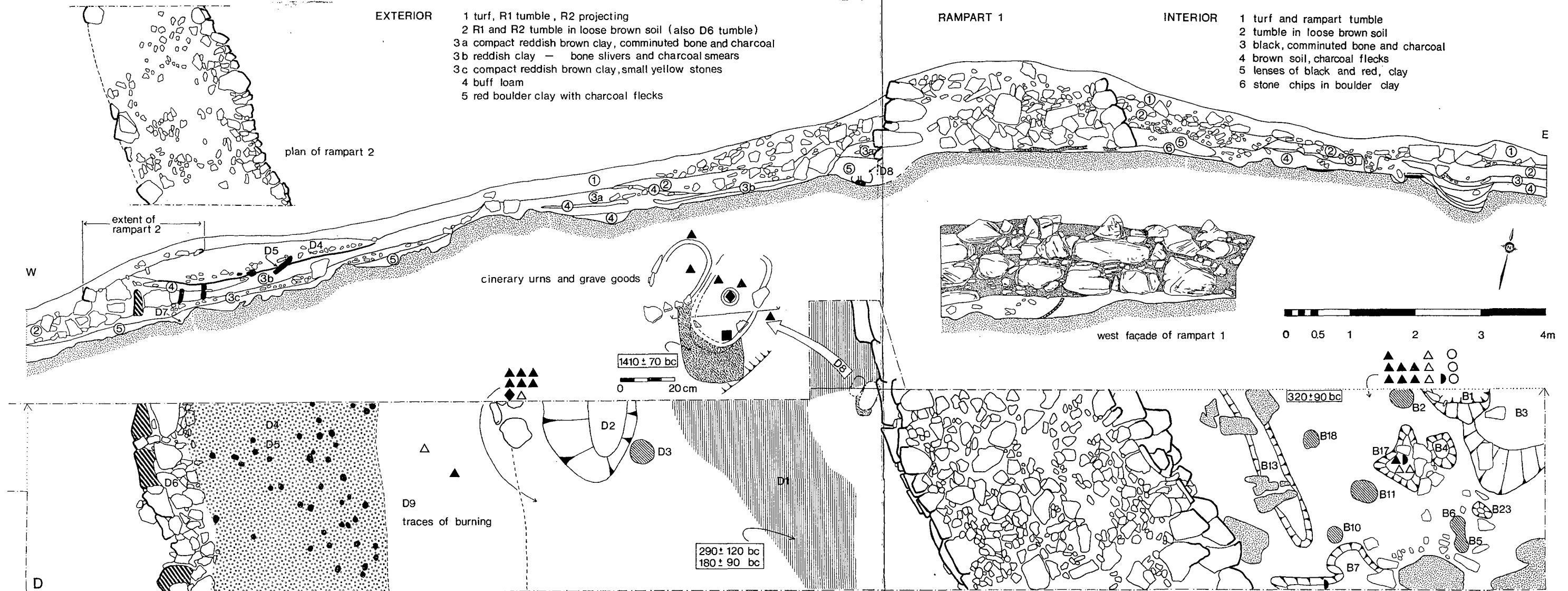


FIG 4 Plans and sections of Ramparts 1 and 2 in Areas B and D

this it was possible to clear a surface which merged with smaller stones just beneath the bases of Structure 1 wall orthostats. Upon removal of the W wall, the difference was one of degree rather than kind, so if this had been the floor for Structure 1 it was kept clear; it therefore demonstrates that the builders had scooped a hollow into R1 and its tumble, but stopped while still within the debris, where they roughly flattened an area for the interior. The refurbished layer of small stones was c 0.12 m thick; under it were larger stones typical of R1 collapse, and at the base, featureless, blackened boulder clay, iron pan and outcrop.

Structure 1, therefore, post-dates the collapse of R1 and the C¹⁴ date of 500 bc ± 65 (Table 8) from carbonized wood below its interior 'paving' is in all likelihood to be derived from the core of R1. Despite the substantial size, though poor construction of its walls, little can be concluded regarding the function of this structure because of its stratigraphic divorce from E1 and the absence of associated finds or typological parallels. The cleanliness of its presumed floor surface indicates that it could not have been used for any great length of time whether continuously or recurrently. What intervals existed between R1, Structure 1 and E1 are also difficult to assess in the absence of intervening layers.

At some stage E1 must have looked like a rough platform of 0.55 to 0.75 m radius around a post, but removal of the latter has caused its present concave surface. Similar paved areas in the fort interior were used as hearths (below p 162) but there is an absence of the usual burning here and they do not have associated posts. Another possible explanation for this unusual feature may be that it was the setting for the red ensign which is known to have been raised at Balloch at the peace celebrations after the 1914–18 war, though the actual flagstaff was reported to be in place well before and after that event. (Messrs D Colville, T Miller and Father J Webb all attested to its existence and Mr A Cunningham, previously of Drumlemble, recalls seeing it a little after 1905 and still in 1929 'at the East end of Balloch Hill' (pers comm).)

STRUCTURE 2 (fig 5 left; pl 12b)

A c 6 m diameter circular turf-covered bank of small stones was clearly visible in, and standing a maximum 0.25 m proud on, R1 collapse at the NW interior of the fort. Its western arc skirted the facing stones of the rampart c 1 m to the W and lay some 1.2 m higher than the E arc, so barely modifying the slope-line of R1 collapse. Its interior was featureless but excavation showed that the N bank formed but one, outer, component, J24, in a wide and perhaps multi-period wall, the inner one of which, J23, though more coherent and substantial, reduced the floor space to a 3.4 m wide oval.

Despite the amount of stone to hand, the builders of Structure 2 only put together rubble walls which appeared as a slight bank in the upper, western tumble and an unfaced but definable c 0.6 m wide bank of larger stones in the eastern. Modern disturbance had some effect on these walls, but they were never laid in courses and were probably the result of clearance for a floor area. The N arc is 3 m wide and consists of a hollow, J25, between two banks of converging rubble, though in the NE the outer is too disturbed to follow its line with certainty. The outer, J24, is of small stones with occasional larger stones marking an outer limit. The inner, J23, is of larger stones only and its line could be followed round to the S where it began to merge with the rampart tumble. Thus in the W where the tumble was deeper the wall was simply a rubble revetment c 0.5 m in height. The diverse N components could not be traced elsewhere and the question arises as to whether they represent a unitary construction or not. Unlike Structure 1 or R1, Structure 2 wall has no facing stones, its edges are not parallel and the core is of very small stone chips sloping from outer to inner bank, concave instead of convex in profile. Since it was not possible to follow the floor of the structure to the inner wall, let alone underneath it, any conclusion on the chronology of J23–5

must be based on structural observations. Near the centre of a circle whose perimeter is in part formed by J24 is the only posthole, J22, associated with the nebulous floor of the structure. It suggests that J23 is a later reduction of the size of Structure 1 rather than an initial part of a very wide N wall, or an internal partition for which it seems too massive. An alternative theory which cannot be ruled out if we interpret J22 as other than a central roof support is a unitary wall of special thickness in the N, perhaps to counteract the prevailing winds. This arc may have had a turf core, thus accounting for the hollow, small stone chips which may have been incorporated into the now disintegrated turves and the presence of humus and dried-out grass roots. Indeed, these alternatives need not be mutually exclusive since a reduction of floor space may have been deemed useful at some stage, after which J22 continued as an eccentric feature and the arc between J23 and 24 was reserved for storage, a bench or some other purpose. The distribution of the glass and metal finds in Area J tends to support the suggestion that J23 was in fact a late and internal addition. Its connection with J24 in the E is obscured by disturbance and a gap in the SE, perhaps the remains of an entrance.

In scooping-out from R1 tumble a level, stoneless floor the builders cut into underlying deposits in such a way that its slightly dished surface was a mixture of typical earlier material trampled into a surface. The lighter coloured central area may be the result of leaching. Since this was such a poor, object-free, surface it was not possible to determine its relationship with J24. Near the centre of the larger circle was a rectangular stone-lined bin, J21 (0.38 m by 0.58 m), with the top of its uprights on three sides level with the floor surface. The E side had only superficial stones between the thick flanking slabs which contained the same brown soil, few small stones and small charcoal and bone slivers as the rest of the floor make-up. There were no signs of *in situ* burning and the 740 bc \pm 70 C¹⁴ date from it (Table 8) is unlikely to be contemporary with J21 or Structure 1.

Apart from the lignite bead found beside the central posthole, J22, the artefacts come from between and below the stones of J23-4. So loosely piled are these stones that the lowest finds are regarded as having percolated through the voids and this may also be the case for the jet bracelet (fig 18.135), but being somewhat deeper still it is attributed to underlying occupation. The types of objects – glass beads, iron dagger and hollowed ‘spike’ – are unusual at Balloch and otherwise only found in the upper levels of Areas C and CC and, in the case of one bead at K6 (fig 9), beneath the concentration in J23. With the exception of the last, therefore, the distributional evidence suggests that these objects are late and to be associated with Structure 2. They further suggest personal goods rather than storage items and so support the notion stated above on slender structural evidence that the NE sector of Structure 1, J25, functioned as a bench or perhaps sleeping accommodation.

STRUCTURE 3 (fig 5 right)

Some 5 m S of Structure 2 lay the similar, but smaller, wasted stony wall of Structure 3, also cut into the interior tumble of adjacent R1. Area G was placed to deal economically with the circle as indicated by surface remains, but these proved misleading and only part of the building was excavated. As in Structure 2, its walls, where traceable, were of rubble construction and its interior even more segmented.

Only the western wall, G5, almost flush with the upper facing stones of R1, was definitely located and its projected arc indicates a circular structure of c 8 m diameter maximum. Surface remains suggest that this is too large, thus it may not have been entirely circular. The remainder of the surface bank proved to be collapse or edges of internal arrangements; its N wall lay beyond the limit of excavation. Highest of these arrangements was a wide, semicircular platform, G1,

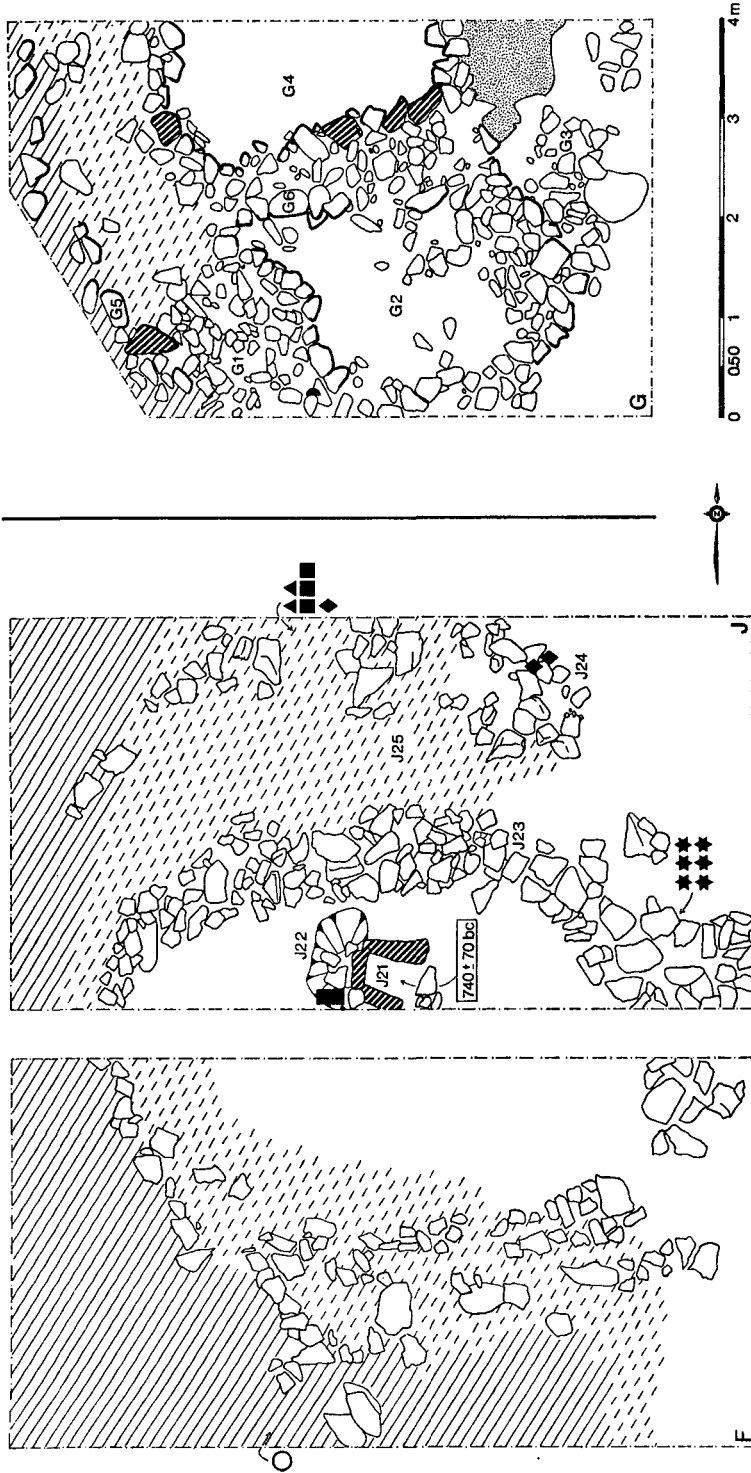


Fig 5 Plans of Structure 2 in Areas F and J and Structure 3 in Area G

extending 1.4 m from the outer wall in the SW. Its compact core provided a nodular, but fairly level, surface that was bordered by slightly larger stones, set, like the borders of other features, on outcrop. Approximately 0.2 m lower was a trapezoidal area, G2, which was bounded on the S by the suspected remains of Structure 3 wall and on the N by wall G6. It was slightly hollowed, with a fill of stone chips and humus. What may have been a cross-wall, parallel to and 2 m from the edge of G1, separated G2 from a still lower unit, G3; these peripheral compartments then descended in height according to the original slope of R1 tumble. That G3 was indeed a compartment is difficult to sustain except for the stub of an external boundary of larger stones and a central part of similar composition, as G2 though with more tumble. It continued beyond the limit of excavation to the N and was bounded on the W by outcrops on which G6 was founded.

G6 is the S part of a more readily definable rubble wall incorporating occasional internal uprights. Where it projected beyond the principal mass of tumble it was 0.60–1 m wide, but in the W it was simply a revetment c 0.44 m high. The builders capitalized on a protruding ridge of outcrop on which to found G6 for most of its excavated length. This bounded a partly excavated cobbled floor, G4, the lowest of all the compartments, some 0.2 m lower than G2 and one that seemed to be the most coherent surface in Structure 3. Save for some presumably intrusive thick bottle-glass c 0.07 m above it, the 2.2 by minimum 1.4 m floor was featureless.

Structure 3 possessed several elements that recall features in Structure 2 and both may be considered as expressions of the same architectural tradition. Both were scooped out of R1 tumble and, eschewing the use of large building blocks available in its façade, their builders provided only rubble walls. The builders aimed at a level floor space but did little to effect a horizontal wall, preferring minimal compensation for tumble slope. Both structures possessed wide peripheral arrangements, at least for part of their circumferences, in which the inner line consisted of relatively larger stones in a wall-like setting. While it was not possible to be certain in Structure 2 if that feature, J23, was primary, it is likely that its equivalent, G6, is, for nowhere does the floor of G4 extend under the setting. Whether the three components in the SW, G1–3, are internal or external units is difficult to determine but at least we can see in Structure 3 that this peripheral crescent can be articulated, primarily because there the partitions were more readily dictated by protruding bedrock. With regard to their functions, it may be noted that humus deposits, as in J25, characterized the upper fills of G2 and G3 but were absent from the structurally different G1 where the only pottery was found. These fragments, however, are too few and of a type occurring too frequently in earlier levels to be helpful in determining spatial organization.

RAMPART 1 (fig 2; pl 13a)

Roughly connecting convenient rock outcrops along the lip of the Balloch summit, this, the most massive rampart, circumscribes an irregular oval plan. It consists of a central projecting spine of small stones bounded by large blocks visible mostly on the exterior and it is slighted by the quarry in the S and by a c 7 m wide scoop in the N. A depression in the ESE marks an entrance. In order to sample its opposite extremities, the faces of this rampart were revealed in Areas A, B, D, F, G, J and K and it was dismantled in A and D–B to discern constructional techniques and building sequence. In view of the variations encountered in the different areas it will be convenient to treat each in turn, starting with the terminals that form the jambs of the entrance.

The northern jamb (Area A: fig 3) suffered least disturbance. Before excavation it presented a sloping profile towards the entrance, but no visible facing stones. These proved to exist on both faces of the uniformly c 3.5 m wide wall; small and a maximum of three courses high on the interior, large on the exterior. There was little collapse in the interior, but large blocks extended beyond the limit of excavation on the exterior (fig 6, Level 2) indicating a minimum of two more

'courses' there and a reconstructed socle height of c 1.25 m. The terminal was almost rounded, with much small stone spilling out over and between the surviving basal course of flat, untrimmed blocks, themselves sometimes propped-up on small stones. Some slippage was evident here and in the battered external face, but there were no signs of other terminal facers in the collapse. The rubble core consisted mainly of stone chips and a little soil near the apex of its spine, a mixture of small and facer-sized stones near the base. The plan of the latter (fig 3) shows a compact area delimited on the exterior by three, on the interior by another three (?) possible facers. Upon removal of the c 0.8 m wide internal 'revetment', however, the suspected earlier face was barely traceable. Its external counterpart was more convincing since it had two larger blocks and a smaller third neatly in line and with flush outer faces. The masonry here seemed much more assured than the uneven outer face. R1 was, therefore, either built in two distinct phases, with a compact, c 1.8 m wide, wall succeeded by a more substantial one, or it was of unitary construction in which wall-stabilizing devices were installed at the basal level.

Pine or spruce charcoal (Appendix 1) and amorphous burnt patches were included in both cores. Since they were found only in very limited areas and the charcoal was small, without attendant slots, we are probably dealing with additional core-fill rather than with traces of structural members. This should come from builders' or earlier activity such as indicated by fig 6, Level 5 and a 0.06 m deep posthole (?) A51 sealed by it. Natural was revealed over the whole of Area A and there were no features accompanying A51.

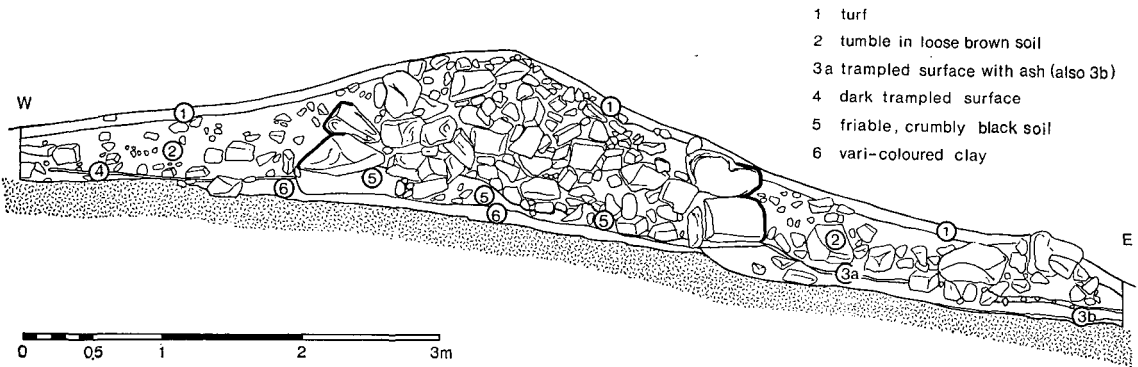


FIG 6 Rampart 1 section in Area A

Beyond the entrance to the S the wall was partly destroyed by Structure 1. This impinged on the central spine at a height only slightly below the spine in Area A, but it demolished the inner face of the wall to the extent that its original width here cannot now be recovered. Below and to the E of Structure 1, however, the rampart was reasonably intact for a width of 1.4–1.6 m and here it yielded further evidence for multi-stage construction (pl 13a). Situated on a 12° slope up to the entrance, it consisted, as in Area A, of a rubble core with boulder facing-stones. Moreover, within the preserved width, two faces were clearly discernible and as an intermittent external cobble paving abutted the inner but ran under the outer, they belong to different stages rather than to a single construction phase. Excavation proceeded to natural only under the outer face. The inner face (pl 13a, face with 0.5 m scale) comprised up to three 'courses' of blocks (maximum height 1.3 m) laid so that their flat sides faced outwards. More headers than stretchers were thus

incorporated, but the apparent lack of trimming and the intractable raw material produced an uneven vertical face with larger boulders incorporated at random and gaping interstices loosely filled. Only at the corner with the S jamb of the entrance, where there was a large flat block, was extra care exercised. This jamb could be traced for c 2 m and it showed that the early rampart was squared-off at the entrance.

A poor revetment, maximum width 0.6 m, was subsequently added and survived to a regular maximum height of 0.75 m, thus appearing like a step in front of the earlier wall. At no place was it bonded, as in an original footing, and it could be further distinguished by the use of somewhat smaller stones placed even more cursorily in a line that bulged from the straighter, earlier wall.

Fragmentary though the rampart is in Area E it confirms the suggestion of a two-stage boulder-faced wall in Area A. In both cases the earlier wall seems to possess more carefully selected facing stones, more vertical elevation and straighter line than the final form. The additions display much poorer workmanship and, given the step-like appearance of Area E revetment, may not have been completed or intended as a defensive measure.

Opposite the entrance, in the B-D cutting to natural, R1 had increased to 4 m in width and 1.4 m in surviving height (fig 4). It too consisted of a boulder-faced rubble core but its more substantial girth was complemented by larger, more carefully placed, facing stones. As in Area A, it was removed in three horizontal stages, but the stony core, with heavier boulders near the base, possessed no convincing internal face and so it was probably of unitary construction here. Save for iron panning and slivers of chipped stone, it rested directly on boulder clay.

The vertical external façade was exposed for 4.6 m. The largest blocks were installed as stretchers and were mostly reserved for the basal course which projected 0.1–0.25 m. Above, there was little effort to build in level courses, sizes were mixed and the smaller stones laid as headers, but most were flat and all chinks were carefully filled so there was an attempt to create a smooth façade. To judge by the amount of tumble and the projecting spine of rubble core, the original elevation may have been c 2 m of graded stones. The very battered interior façade was exposed for some 30 m in Areas G, B, F, J and K. It survived to a similar height as the exterior, but there was no intention to develop a similar smooth surface here and the rounded boulders indicate a deliberate policy of reserving the most suitable blocks for the exterior. Lacking any regular coursing, these rounded boulders were roughly piled up to retain the core in position. Bulging and slumped walls in Areas F and K showed that this was not always successful. Along its internal base for a length of c 12 m was an occupation-free flat terrace 1 m wide maximum. A gully, B13, edged this terrace which stood c 0.1 m higher than the occupation on the interior of the fort. In one Area, F, where there was a particularly extensive rampart collapse, the terrace clay, mixed with some occupation, continued high up into the face and core of the rampart as if it were used for patching-up. In some instances the terrace was raised against the basal course, in others a little tumble was succeeded by a further thick strip of clay. All this seems indicative of refurbishing and a demarcated clear zone beside the W rampart, perhaps to maintain ready access both to the wall itself and to deal with collapses.

Consistently underlying or mixed with the lower levels of tumble on the terrace was a band of washed-out daub and burnt wood varying in size from twigs up to 0.12 m long to a compressed piece c 0.12 m by 0.5 m. Against the rampart the band was unbroken, but it became ragged c 1 m from the face and patchy beyond the terrace in the N as well as in Area A. Lacking occupation refuse or associated structural elements sunk into the terrace, it probably represents the fallen timber wattle and daub superstructure on the stone rampart socle rather than any lean-to arrangement: a similar band occurred on the exterior.

ENTRANCE (fig 3; pl 12a)

The entrance was excavated to natural in Areas A and E. It was 1.75–2.4 m wide and, as preserved, slightly narrower at the inner end of the 3 m passage, but disturbance prevents certainty. The builders selected a place where there was a slight cleft in outcrop and, founding at least the N jamb on this protruding natural, they enhanced the depth of the entrance. A single paving of small chips extended the full length of the passage, rising gradually to the interior where it thickened to level-up areas between the higher outcrops which effectively defined its width. Its well-trodden and hollowed profile, at its highest 0.2 m below the top of outcrop in the N, indicated prolonged use. It rested on a thin level of compact clay with charcoal flecks between fissured outcrop. Directly on its surface lay a maximum depth of 0.5 m of R1 tumble: it was dense where missing facing stones had allowed the core to spill out freely. This paving continued outside the entrance where the ground fell to the E and S (fig 6, Level 3A) and where, in the deeper crevices between out-crop, an earlier paving of smaller chips was found, Level 3B. 3A ran up to the final R1 face in the N, but in the S where there was no 3B, it reached the earlier face. So rough was the cobbling, however, and so interrupted was it by the tops of outcrops that edges and additions were difficult to define. Thus it may never have extended to the earlier face in the N.

There was little evidence for a fixed gate in this entrance. Its S jamb was much altered by Structure 1 and its N was reduced to a basal course, but poor, low, construction and absence of pivot marks on potential footings argue against the existence of mural fixtures to help support or secure a gate. Two interruptions in the rough paving, however, must be considered in this context. A21, at the N exterior, in front of R1, was a pronounced area of burning c 0.1 m deep. It included small pieces of charcoal, but its outline was so blurred that interpretation as a posthole is precluded. At the opposite end of the entrance, A34 is a stone-wedged small posthole, too flimsy to support a gate. It none the less remains the case that a considerable amount of combustible material accounts for the exceptional A21 so if it is linked with the entrance it may represent the burnt remains of a movable barrier which, when not in use, was stacked or rolled-up against R1 at the outer corner of the passage.

RAMPART 2 (fig 4; pl 13b)

This slight bank was excavated to natural at one point only, on the W side of the hill where it was most pronounced in Area D. For its exposed length of 3 m it survives as a c 2 m wide stone-fronted, earth-and-rubble cored wall. The inner kerb consists of closely fitting untrimmed headers, the outer of larger blocks, but many of these have slipped downhill, leaving a ragged edge and core-spill. The rampart is only one course high and since the inner face is intact, without sign of robbing or tumble, it must originally have been built no higher in stone than is presently preserved. Thin patches of charcoal in the core may indicate the previous existence of an organic superstructure; their blurred appearance is due to natural disturbances only a few centimetres below present ground level. It was founded on the crest of a pre-existing bank so that the outer face rested precariously on the downslope side, the inner on the flat back of the crest. This bank extended further upslope than the socle just described and was of complex construction. Underneath an intervening soil bank and in an area nearly 3 m E–W was a thin level of chips and fist-sized cobbles, D4, sloping uphill in the E, horizontal at the W where it stopped in a line parallel with the face of R2 at a higher level. Its evenness indicates a deliberately laid surface in discontinuity with the convex bank above. Largely sealed by and extending below the cobbles through a dark line of burning into Levels 3b and 4 are a minimum of 40 small holes ranging from 0.05 to 0.3 m in depth but mostly between 0.07 and 0.1 m. Diameters are standardized, 0.05–0.09 m, fills stoneless, inclinations varied and bases flared-out horizontally to create an irregular lattice

pattern in plan. Holes all turned at the harder Level 3c. Rather than stakeholes, therefore, animal activity is indicated but it is perhaps noteworthy that it was strictly confined to the area below the cobbling.

D4, the cobbling, and the burnt lens on which it rests, curve upwards downslope because of D6, a 0.7 m wide retaining wall of much larger stones than in R2 but one which runs parallel with it (pl 00). Only the basal course seems to survive *in situ*: this is composed of two rows of untrimmed blocks, the exterior row mainly upright, the inner unfaced. Considerable amounts of tumble indicate a wall at least twice its present 0.4 m height: indeed one of these slumped blocks was re-used in the front kerb of R2. Since this wall is not sealed by D5; since there are signs of wash in Level 4 over its top concomitant with tumbled upper courses; and since there is no internal face, it is interpreted as a retaining wall for a low platform some 3 m wide. It is this subsequently heightened platform and not the stone wall of R2 that has produced the superficial break in scarp.

At the S end of the exposed retaining wall, D6, its stones were lower than in the N and here rested in the middle of a rock-cut groove with 0.3 m wide uneven base and flaring sides. The eastern, upslope, side averaged c 0.6 m in depth, the western, downslope, only 0.1 m. The slot was at right angles to the slope and to the natural fissuring, parallel with the ramparts. Apart from some of D6 it was filled with reddish clay and charcoal flecks. The rest of D6 was either perched directly on the outer lip of the slot or stood 0.25 m above and beyond it. Since it has every appearance of being cut and it runs counter to outcrop folds, this slot, D7, is a man-made feature. It differs from grooves normally interpreted as palisade trenches because of its widely diverging sides and lack of post-packers, some of which ought to appear in a 3 m long exposure had posts stood here. Posts, especially those of considerable height, could not be retained by this slot alone. There is an irregular void between the edge of the cobbling, D4, and the line of the stone wall, D6, which could conceivably be a soil replacement for such a palisade which would thus have received additional revetting along its base by D6. However, there was a complete absence of charcoal to corroborate such a cumbersome reconstruction and rather than treat the D7 slot as such, or an arduously cut marker-trench, it is interpreted here simply as a bedding slot for revetment wall D6 which in some places had slipped away from the slot in and others still rested inside it.

Thus, there are two quite distinct periods of construction represented here. Period 1a consisted of a low, 3 m wide, platform with cobbled surface extending horizontally from the slope to a stone-revetted face which was set in a bedding slot. In Period 1b the platform and stone revetment were raised and so presumably extended c 5.5 m further upslope, but all that survive of this are the eroded bank above the cobbles of D4 and the collapsed revetment in front of D6. The overlying low stone and earth wall, Period 2, represents a marked change in constructional practice, but the time-lapse between 1b and 2 remains uncertain. That 1a and/or 1b was part of a major undertaking is confirmed in Area EE on the opposite side of the hill where similar features were located near the break of slope indicated in fig 2. Here, too, at 9 m from R1 and well beyond the limit of its tumble, were the remains of walling in an irregular shallow depression c 0.4 m deep. Its lower course remained *in situ* and, as in Area D, members were placed upright like a skin with small stones behind. Though on a smaller scale, the relationship between the retaining wall and slot was closer, but there was no trace of a bank or intervening void suitable for timbers. Erosion on this 10° slope may account for the exiguous remains here and for the absence of all signs of Period 2.

RAMPART 3 (fig 7)

Excavation at the low bank 12 m to the W of R2, just above the flat saddle, revealed two meandering but roughly parallel slots in the boulder clay and stone tumble in and downslope

from the lower slot, 2. The superficial bank was formed by erosion settling over the level area between the slots and especially at the lower edge of slot 1, rather than by any stonework *in situ*. Both slots and central reservation were excavated for a length of 5 m down to natural. Slot 1 varied from 1.15 to 1.6 m in width but was only 0.1-0.16 m deep with vertical W, sloped E face. No attempt was made, as in D7, to cut into the flat bedrock which formed its base and, where

- 1 turf
- 2 weak iron pan
- 3 reddish brown soil
- 4 compact grey clay and soil
- 5 soft brown soil with pebbles and stone tumble

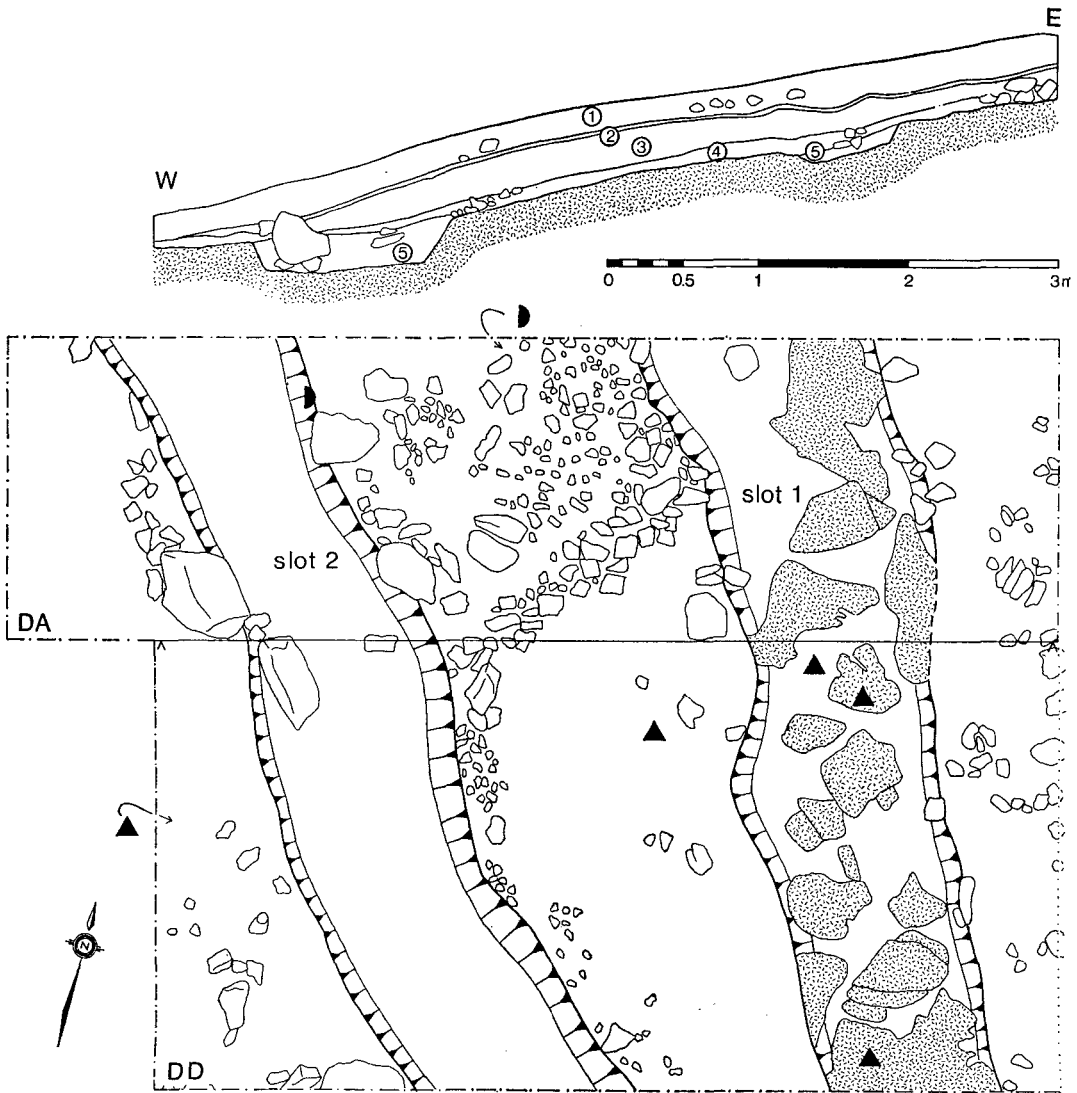


FIG 7 Distribution of flint

protruding, as in the section of fig 7, nullified the edge of the slot. Its uniform silty brownish fill was readily discernible from the surrounding boulder clay on which, in the area to the W, lay a stone spread. Since this began at the present outer lip of slot 1 it is assumed that that cutting was originally no deeper and, whatever the intention of the builders, would hardly be called an obstacle. Slot 2 confirms the shallow principle adduced for slot 1 since here the diggers stopped well before reaching bedrock which otherwise might have offered a reason for the meagre depth. It was approximately twice as deep as 1, 0.2–0.31 m, but only 1–1.4 m wide. Its straight sloping sides led to a flat bottom c 1 m wide and it was directly on this that a compact spread of stones had accumulated, particularly in the W, where it was separated from the true side of the cutting by a little wash. There was no inner face to this linear arrangement which had every appearance of tumble, presumably from the reservation between the slots. On the former the patches of cobbles and few larger stones on its otherwise barren surface are all that remain of a wall. A number of larger blocks in and beyond slot 2 suggest a facing of unknown elevation, but certainly no more than two courses on the basis of restricted excavation here in front of a rubble core. The width of the wall is uncertain since it is not known if the cobbles represent a foundation (they follow the slope rather than build-up into a level platform), or a rough paving behind the wall; perhaps the relative absence of tumble in slot 1 favours the latter interpretation.

R3 therefore probably once consisted of a drystone wall or foundation, maximum of 1.2 m wide, flanked on both sides by irregular shallow slots and situated at least on the W side of the hill where there are traces of a fourth rampart beyond. It was not picked up in Area EE on the E side of the hill, but if it were equidistant from R2, it would have been beyond the limit of excavation. Hardly defensive, the cuttings may be regarded as soil-winning for increasing the height of the wall, and a prescribed wall height is indicated by the abrupt cessation of digging in boulder clay of slot 2. That they constitute preliminary demarcation for wall construction is possible but we would need more evidence than that offered by Areas DA, DD, or elsewhere for similar features (RCAMS 1971, 99).

Of the four objects recovered from slot fills, one, a leaf-shaped arrowhead (fig 16, 167) is diagnostic of at least third millennium bc lithic traditions, and two others could also have served as arrowheads; a remarkable concentration. At the same level and 0.6 m W of one of these was a 0.1 m long length of charcoal, perhaps an arrowshaft, but too crumbled to recover. Other objects, chipped stone, Iron Age pottery and, high in the tumbled stone in slot 2, clinker, could post-date R3.

EXCAVATION OF AREAS WITHOUT SURFACE FEATURES

INTER-RAMPART ZONES

Excavations were confined to two trenches on opposite slopes of the hill and of these Area D yielded useful results, particularly along the slight shoulder between R1 and R2. It was expanded to a width of 3 m to test for occupation deposits that would be likely to exist if R2 represented an early fort on the hill. Results from this 24 m² are most conveniently treated in sequence, starting with the earliest.

Cremation burials (fig 4, D8; pl 14a)

Two upright oval urns were located in a fold of bedrock partly below the external face of R1. The rim of urn 75 was 0.3 m below the footing of the rampart and both urns were sealed by Level 5 (fig 4) which underlies the rampart. This level constitutes a small mound truncated by the

builders of R1. The irregular hollow underneath was bounded in the NW by scattered stones and in the S by a restricted, 0.03 m thick, lens of iron panning (?), extending for a height of 0.3 m. Directly on thin boulder clay and bedrock and curving up the side of the cleft lay a 0.1–0.15 m wide band of burnt hazel twigs up to 30 mm in diameter. This extended from the S edge of the cleft as far as the transverse break of urn 75. Also in the same area, projecting c 0.05 m from the base of the urn, was a thin hard uniform band of charcoal with well-defined upturned edge, easily distinguishable from the more amorphous charcoal underneath. The latter had the appearance of a flattened bundle of twigs, the former the rim of a wooden dish, subsequently identified as of pine or spruce. On this organic material stood urn 75 and to its W, contiguous and parallel with it, the smaller urn 76. Pressure on occasional stones in Level 5 had caused these to break the urns, but the majority of their walls, and hence their contents, were still intact. Grave goods and 2.5 kg of cremated bones were contained between the poorly fired base of 75 and a whitish clay seal some 0.02 m below the internal rim ledge. More *in situ* sealant on the ledge (pl 14a) confirmed the suspicions that the contents had subsided, that originally the seal was continuous across the top of the vessel and that a function of the concave inturned rim ledge was to provide purchase for the seal. The c 8–20 mm thick, sticky sealing agent is mostly kaolinite, of chemically similar composition to the clay of the urn itself (Appendix 2), and so is likely to be unfired potter's clay. The adjacent and contemporary urn 76 was filled with 1.2 kg of cremated bone and sealed in the same manner, but it may be regarded as subsidiary in so far as it was placed without recognizable ancillary wooden dish and it contained fewer grave goods.

Urn 75 contained a minimum of one cremation, but high in the centre of its fill was a miniature vessel (pl 14a) similarly sealed from rim-to-rim, though the hardness of the seal resembled more the poorly fired bases of the urns. It held the remains of a child and a copper awl. Thus the cremated residue of at least two humans had been placed in urn 75 and with the major deposition there were, in addition, three flints: a possible scraper, halfway between rim and base; a joining flake, just under the miniature vessel; and outside near the base of the urn, part of a blade (fig 8.18, 20, 24). A rough, pear-shaped lump (fig 8.363) was pierced near its apex as if for a pendant. X-ray fluorescence analysis detected elements typical of clay or stone, but the core material remains unidentified. It is reminiscent of rare pumice pendants (cf Ritchie *et al* 1978, 96–7). A large flint flake (fig 8.17) was placed on top of the contents of urn 76 in the same position as the miniature vessel in 75 and this, together with a flake by the rim, accompanied what Dr A Young has identified as the remains of an adult in the third decade of life. Some bones had spilt beyond the edges of both urns, but otherwise a section through the contents (fig 8.75) showed a tip-line of larger fragments and reddish soil, 3, in a matrix of smaller and powdery bone-residue, 2, as if remains had been derived from different parts of a pyre.

Other deposits between Ramparts 1 and 2 (fig 4)

Several deposits are closely related to the slope of red boulder clay and these may be considered in turn, beginning with those closest to R1.

D1 was an irregular band of distinctive burnt remains extending up to c 1.75 m from the foot of R1. The band comprised interleaving reddish 'clay' and smears of charcoal which, where better preserved, retained fragments of trimmed hazel twigs up to 15 mm in diameter. In patches beneath this, lying directly on the boulder clay were thin lenses of more amorphous charcoal smears and a little comminuted bone typical of internal occupation deposits. Thus there seems to have been little or no vegetation cover in front of R1 but only some intermittent traces of debris overlain by D1 which in its upper levels was mixed with rampart tumble. That D1 does not represent deliberate fire-clearance of the natural vegetation prior to the building of the rampart is

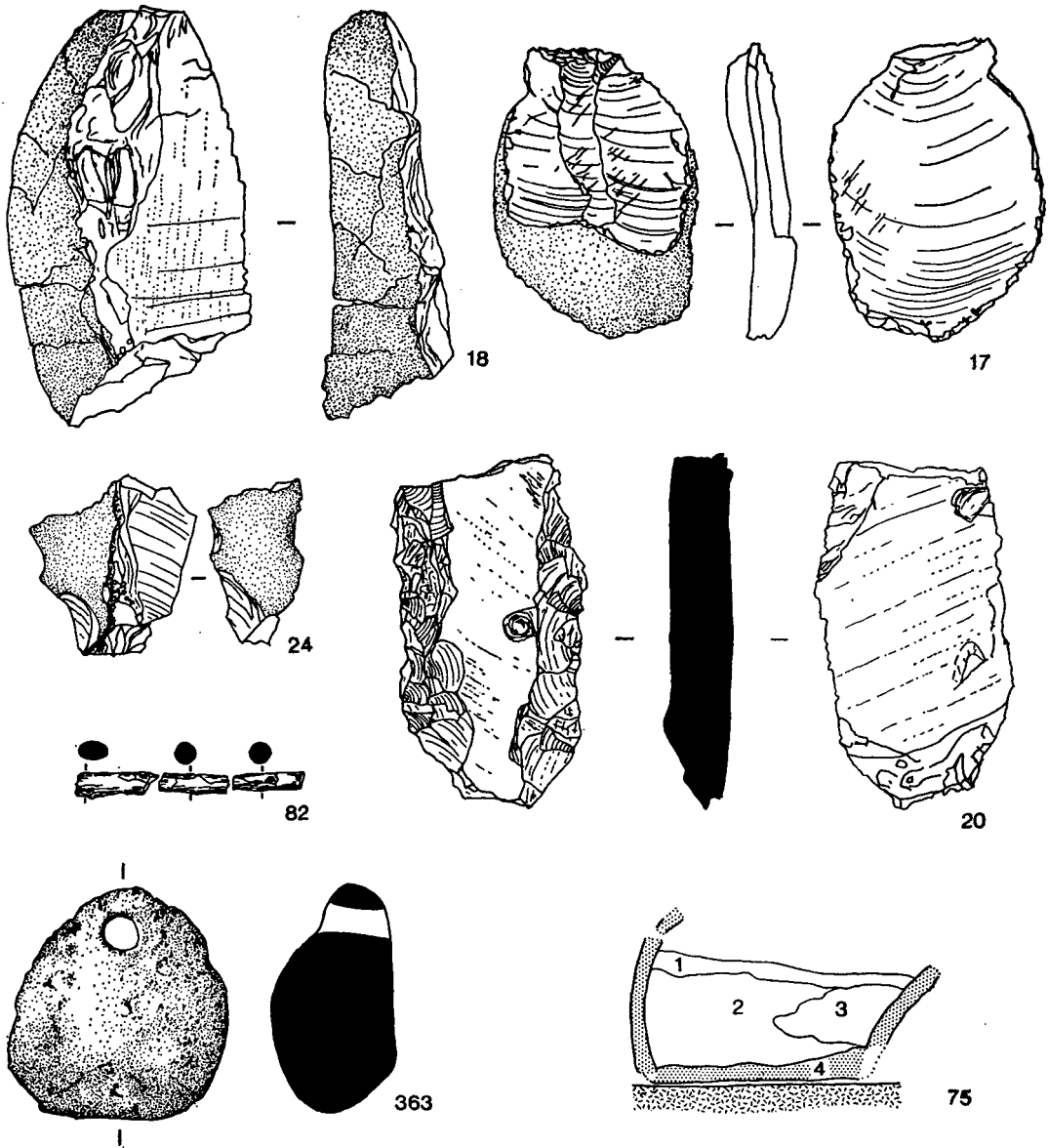


FIG 8 Grave goods from cremation burials in Area DD with section of urn 75 showing clay seal (1), small burnt bones (2), bone fragments and reddish soil (3) and soft clay base (4) (scale 1:1, 17 at 1:2, 75 at 1:40)

demonstrated by the underlying deposits. The restricted proximity to the rampart rather suggests that it is fallen wattle and daub superstructure.

Beyond this band, occupation wash (Level 3a) continues more strongly but together with traces of burning and this is interrupted by colourless loamy deposits with pieces of sandstone. They lie over and in a depression, D2, and Mr J Bibby of the Macaulay Institute for Soil Research who kindly paid a number of visits to the excavation suggested that these could be the residue of turf, or the boulder clay where its red had been leached in water-logging conditions, a felicitous

explanation in view of the depression below. An adjacent posthole to its E, D3, filled with occupation material now only 0.12 m deep, and two flat stones to its W are all that remain in Area D of what, according to the section, may have been a more substantial feature.

Whatever the status of the stones, they mark the E limit of an intense band of burning, D9, which, as it descends the slope, becomes blacker. There is hardly any bone in this deposit, nor any articulated twigs. It could be the result of burning the till, leading to the formation of haematite (Appendix 2, samples 4 and 5), or something more structural, perhaps related to D2-3 and the flat stones, running parallel with R1 and R2.

The section on fig 4 masks the variations which occur in even such a narrow width as the 3 m of Area D. The burning, which comprised reddish clay, black stains and, rarely, comminuted bone, extended, if not always evenly then still as the most consistent deposit, from below the tumble of R1 to below D4 and 5; a stratigraphical relationship which bears on the construction sequence of R1 and 2. If it forms a single phase then the wall D6 must precede R1 and R2 succeed 1. While the chronological integrity of this burning would have to be corroborated in further excavations, it nevertheless remains the case that R2, as a constituent of Level 1, is unlikely to be earlier than R1 which is founded on boulder clay.

THE SUMMIT, INSIDE RAMPART 1

The interior of the fort was initially tested beneath the superficial structures that were being wasted and beside the eroding quarry face. In order to understand the relationship between these structures and the disturbed deposits underneath, excavations were extended in the NW to yield a 225 m² exposure and in the SE from the quarry face to Structure 1, an area of 42 m². Since bedrock was found immediately under Structure 3, this area was not exposed beyond its 24 m², but five postholes were nevertheless located in cavities between outcrop, thus attesting earlier maximum use of internal space. Conditions differed markedly in the NW and the S so they are best dealt with separately.

The north-west: Areas B, F, J and K (fig 9)

The present flat ground surface against the inner face of the rampart here implied either less rampart tumble or a slope in the old ground surface towards the N. The latter, together with a decline towards the E proved to be the case, so deposits rested in a large, sloping depression in which outcrop projected, especially in the NW. Since the outcrop was capped by boulder clay everywhere else and occupation was largely confined to the hollowed area below the lip of the clay terrace on which R1 was founded (above, p 150-2), the area was often waterlogged and excavation could then only take place after baling and siphoning. If drainage to beyond the rampart existed in antiquity, and this seems likely in view of the presence of hearths and other features in this sometimes submerged level, we found no trace of it. The natural configuration suggests it may have been near the robbed part of R1 in Area K.

Except for stone-built units, features were only identified at the interface between the boulder clay and the c 0.1-0.3 m thick black occupation deposit that lay above. Paved areas were up to 0.31 m higher than the boulder clay and the tops of tall packers for postholes exceptionally up to 0.2 m, so a significant truncation factor affects most features. Occasional greyish-brown discontinuous lenses were isolated in the occupation deposit, but no floors or further subdivisions were recorded. The deposit consisted of black charcoal-enriched soil, stone scatters, occasional smears of washed-out daub, and comminuted bone. The last-named were no more than slivers but even where larger they were being broken-up by small cloddy soil action, by the pressure of rampart tumble and, beyond that, by root action from the humus which lay directly above. Dr

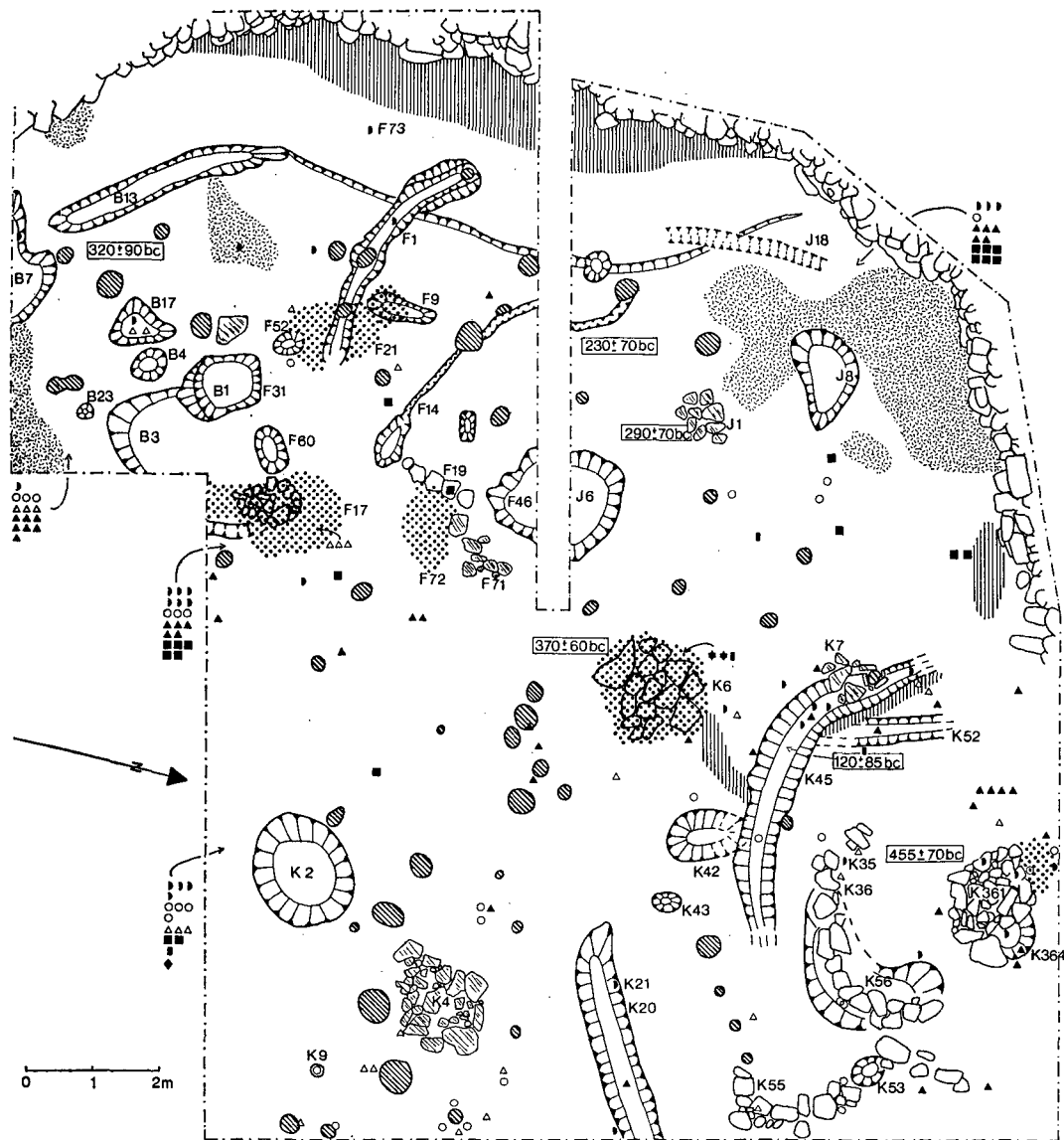


FIG 9 Plan of the NW interior of the fort (Areas B, F, J and K, level 3)

A Young examined all recovered samples but only a few identifications (ungulates, bovines, small deer, pig and hare) were possible. Although it is clear from the different absolute heights of small pavings and from overlapping features that the deposit represents an accumulation of more than one phase of occupation these could not be separated in vertical stratigraphy. The whole is therefore treated horizontally and finds and features (eg K3) belonging to this accumulation are described as coming from Level 3 according to Area (eg K, Level 3). Finds indicated outwith the areas of excavation in fig 9 and other figures come from those Areas but could not be securely fixed on the interface of K, Level 3, or other surfaces. Level 1 is turf and Level 2 represents superficial buildings and associated features. Waterlogging and leaching may be responsible for

the amorphous nature of Level 3 and the disappearance of trampled earth floors. This situation is further exacerbated by the natural dip to the NE. Several larger features like the gullies are only traceable in the SW of postulated circular plans and so it would seem that gradual erosion to the NE has taken the corresponding arcs with it. Water action therefore has effected drastic constraints on the stratigraphic evidence to hand in the NW quadrant of the fort.

Additional evidence for prolonged occupation or relatively rapid rampart collapse comes from Area K where the occupation deposit, K, Level 3, was bisected by the tumble, indicating continued activity in the fort after a buried adjacent structure in the N had gone out of use. It is not known if the rampart was rebuilt for this later occupation. Built or dug elements in the occupation deposit and in the boulder clay include pits, a small 'midden', paved areas, hearths, gullies, stone walls and postholes. A description of these and the meagre evidence for stratigraphic relationships, when combined with artefact distribution and C¹⁴ dates, facilitate interpretation of structures, activities and chronology in the NW interior of the fort.

Pits

The 16 recorded pits were extremely variable in plan and size, attaining a maximum truncated depth of 0.42 m. They may best be grouped according to fills. The first group, J8, K2, 56 and 364, were larger than most others and filled with stones: of these, J8 and K2 had a thin lining of occupation material which in K2 contained a few barley seeds. Rather than designed as a sump arrangement, the packing of stones may have been a secondary function for pits initially intended to serve other purposes. K56 and 364 are both sealed by later features. K56, moreover, also contained an exceptional white boulder and was the largest pit on site. The second group, B4, 7, 17, 23, 1-F31 and F46-J6, were filled with the usual black occupation deposit. Only one of these, B1, was re-cut and contained coloured lenses perhaps due to leaching; another, B17, contained waste products consisting of a possible fragmentary crucible (fig 15.237), flint and slivers of pitchstone. The third group consisted of two shallow stone- or outcrop-lined pits, F52 and F60, serving perhaps as adjuncts to contiguous hearths. F60 was filled with silt lenses and so may have been a settling basin, though there was no evidence for clay luting. A much shallower and more expansive hollow, B3, was also filled with silt and sandy lenses. The remaining small pits, K42, 43 and 53, have flecks of charcoal and, in 53, daub fills; they may well have been post-sockets. K42 marks the position of a beam stub that fell over adjacent K45.

Two distributional traits may be noted amongst these pits. Group two forms a cluster in the SW which lies beyond the concentration of gullies. This exclusive zoning argues for contemporaneity between the different types of features, a view which receives some support from the possible crucible in B17 which should be associated with another (fig 15.251) found in the area defined by one of the gullies. Much daub seems to have been required for buildings and so one possible reason for the pits is for clay-winning. This does not, however, explain why B1 was re-cut. The second is that group one, though widely spread, occurs outwith that cluster and so probably reflects different needs.

'Midden'

A small 1 m by 0.8 m dump, F72, of comminuted bone, charcoal flecks and carbonized seeds (Appendix 1) stood c 0.1 m proud beside and over F19. These constituents were embedded in a matrix of dense black soil that could be readily distinguished from surrounding deposits.

Paved areas

Apart from the four pavings noted here, F7, J1, K4 and K7, there were several isolated stones lying horizontally in stone-rich Level 3. Some probably served originally as post-packers

but were dislodged during post removal; others may have come from walls or larger paved areas. Only two of the areas, J1 and K4, retained a regular oval outline. Of these, K4, 1.2 by 1.6 m, had its thick flags set contiguously and the traces of burning and density of associated finds may mean that it was a little-used hearth.

Hearths

Hearths are defined as installations with signs of severe burning and so do not include patches of burnt ground. Four major and one minor example were found.

The pair F17 and F21 consisted of a single level of heat-cracked flags (deleted for the sake of clarity in the plan of F21, fig 9) set in clay and surrounded by a stone edging 1 m in diameter. Traces of burning extended beyond the edging, particularly to the S of F17. Each was provided with a tangential pit and F21 had beside it a large flag suitable as a low seat or stand. These well-built fixtures could be readily distinguished from the other two, more deeply founded, hearths K6 and 361. K6 was a funnel-shaped pit hearth. At its base was a 0.4 m diameter pit, 0.1 m deep and filled with stone; in the 0.9 m diameter hollow above were small flags set concentrically, and at the top were two levels of thick flags in an area 1.4 m by 1.23 m, without an edging. Less clay was incorporated into this hearth than in the first pair. The similar, oval hearth, K361 (pl 14c), was less substantial, but still possessed much larger flags than did the first pair. Burning extended to the NW where there was a dense concentration of pottery fragments, some surrounded by stones that may have acted as stands, but they were too loose to be certain. It seems unlikely that the eccentric pit, K364, underneath was part of this hearth.

A small hearth above F9 does not conform to any of the others and may have been a temporary affair. It sealed a short gully, whereas the adjacent hearth, F21, was sealed by the large gully, F1. Neolithic finds are associated with F21 and its twin F17; a crucible with K6, and Iron Age pottery with K361.

Gullies

Nine gullies were recorded, but of these, two, J18 and F9, were too superficial or short to supply useful detail. Almost all the others had wide, shallow U-shaped profiles with an average depth of 0.12 m. The exception was F14 with a distinctively narrow V-shaped profile 0.15 m deep. They were filled with grey-brown soil and small stones and were usually first discerned above their recovered edges by a rickle of stones that may have acted originally as wedges for insertions into the gullies. This factor; the postholes in one if not two gullies, F1 and K45; the irregular bottoms suggesting pressure from uprights; the probable band of washed-out wattle and daub beside F45; and the bulbous terminal of F14, suggest that, despite their profiles, most were structural features rather than drip- or drainage-trenches. B13 was distinguished from the others by the intrusion of bedrock along its discontinuous bottom; by its linearity and by its position near R1 terrace edge. Since it was parallel to the rampart it may have been related and may have supported some kind of lean-to or access ramp.

With the exception of F14 and the W end of F1, gully extremities faded out and the longest surviving stretch was a mere 5 m, so it is difficult to reconstruct plans on the basis of these fragments. K45, moreover, did not pursue a regular course, so inferred circular plans could be misleading. Their fragmentary state is to be ascribed to erosion and to their relationship with falling contours in much the same manner as the better preserved examples at Burradon and Hartburn (Jobey 1970, 58; 1973, 22-3). Multi-phase activity is indicated by F1 overlying a hearth F21; by K45 cutting K52; and perhaps by the convergence of F1 and F14.

Stone walls

There were only three candidates for this description, two of which were founded on top of boulder clay. The exception was K36, a 4 m long band of irregular stone blocks which at both terminals seemed to curve towards R1 in the N. It may have converged with the rampart, but its surviving limits were disturbed, so it was not possible to reconstruct its plan. Tumble indicated that two courses were occasionally employed, but the remaining irregular blocks probably never supported a higher wall and its poor, narrow (c 0.4 m) construction is unlikely to have belonged to a substantial structure. It rested on the fill of K56, and to the N of its slightly concave face it delimited a hollowed area. The hearth, K361, lay 1.6 m from, and 0.16 m lower than, the foot of this wall-face where there were pottery fragments, flint and pitchstone. The internal area so defined was characterized by heavy burning and small stones forming a rough cobbling between the hearth and the E limit of K36 and by patches of slight cobbling between the hearth and K52. It was uncertain if the discontinuous cobbling and the burning were contemporary with K36 but they did antedate R1 collapse and the associated density of finds did not extend beyond K36 and K52. A possible L-shaped wall, K55, may have abutted the exterior of K36, and this may also have continued beyond the limit of excavations. It consisted of smaller, more rounded stones in a single course.

Striking NE from the bulbous terminal of gully F14 was a one-stone wide row of small blocks, F19, extending 1.3 m in length. It may have been somewhat longer if the few stones lying in disarray over the subsided surface of pit F46 belong. Since swollen terminals of construction gullies often served as the jamb of an entrance (eg Jobey 1973, 24, fig 5), F19 is likely to have demarcated the NW side of an entrance passage, but its insubstantial width suggests that it could have supported no more than a screen.

Postholes

Of the 65 recorded occurrences, 56 were graded as reliable and only these are shown on the plan (fig 9). They fall readily into three diameter-groups: below 0.18 m; 0.18 to 0.26 m, and 0.27 to 0.45 m. There are notable clusters of diameters in group 2 (28 postholes at 0.2 to 0.22 m), and in group 3 (18 at 0.3 to 0.33 m). These measurements apply to total posthole dimensions: since most retain packers, the actual post diameters were smaller. In addition, some 52 potential stakeholes were recorded but, as in Area D, where they could be adequately tested they proved more likely to be the result of animal activity and so these too have been deleted from the plan.

Packers varied from nodules to small upright wedges, mostly collapsed into the interior. There was no relation between this pattern and the few pointed, occasional flat and common rounded bases. In some instances *in situ* flat slabs rested at the bases of the holes which ranged from 0.04 to 0.26 m in depth, but there were no marks on them. They suggest that some of the flags in Level 3 may also have supported posts. Many timbers probably rotted in place and normally the fill consisted of typical occupation debris.

Apart from posts in one of the gullies (F1) they present no obvious general plans, probably owing to erosion and overlapping structures. In order to elucidate plans from such a defective palimpsest some objective assessment of their characteristics and spatial distribution is required if we are not to rely entirely on intuition. Bradley (1980, 228–32) has attempted this, under more amenable conditions, by plotting nearby postholes of the same diameter group, of depths within a 0.05 m range, of the same or adjacent reliability grade, and of spacing between 1.6 and 2.2 m. It is felt here that depths below natural in sloping terrain may be misleading in defining structures since they assume measured timber cutting instead of digging to varied depths to adjust for irregular slopes. Absolute depths are more likely to reveal linked components and these are plotted for

nearby posts with a tolerance of 0.1 m (fig 10A). Spacing of posts is here reduced from 2.2 m maximum to 2 m in conformity with the frequently smaller timber structures that are found in N Britain. As only one reliability grade of posthole is recorded here we can dispense with Bradley's third step. A small number of postholes were distinguished by the absence of packers and as this may reflect a certain constructional tradition, or removal pattern connected to a single structure, nearby examples are also isolated in fig 10A. While resolution of individual structures on the basis of this analysis is not satisfactory, it has none the less defined two major zones, in the E and in the W, where timbered buildings are to be expected.

The plans and relationships of buildings in the NW interior of Balloch may now be inferred from the combined evidence of the distribution of gullies, postholes, stone walls, floors and, to a much lesser extent, the arrangements of hearths, paved areas and pits. Since floor patches remain in the lee of K36, only Structure 4 is regarded as certain in the interpretation plan (fig 10B).

Structure 4 (pl 14c)

Near the rampart in the NE corner of K, the walls of this structure were stone-based and/or timber-framed. That refurbishing did take place is indicated by intersecting gullies, both presumably related to the adjacent wall (but see below). Another possibility is that the gullies represent drip- or drainage-trenches, but this does not explain how the flimsy stone wall could have sufficed as the major weight-bearing element. Since the N part is missing, a semi-circular lean-to against the rampart is also possible, but disturbance along the latter's conjectural line was too pervasive to establish a relationship between the two. Indeed, only the complete excavation of the wasted rampart here might determine which has chronological priority. C¹⁴ dates cannot of themselves resolve these issues but they suggest that a partially stone-based structure, 4, was as early as, or earlier than, R1, and that the adjacent gully K45 is much later (Table 8). To the S there may have been some form of projecting entrance or annexe incorporating a parallel timbered wall, posts and a stone-based cross-wall, but the remains are too scanty to be sure that this complex is even associated with Structure 4. Its interior comprised a minimum of 12.5 m² dished floor-space which was dominated by a large circular hearth. It is possible that the floor to the E of the hearth was meant to be more hard-wearing or to drain better through cobbling and some functional division is in any case indicated by the concentration of pottery, flint, pitchstone and lignite to the W and SW of the fireplace and the dearth of objects to its E.

Structure 5

This is inferred from the 3.6 m long terminal arc of what was probably a construction groove belonging to a building some 8 m in diameter. It lacks the corroboration of posts along its projected circumference, but the swollen terminal is characteristic of the entrance of many ring-trench buildings, while suspected reasons for the disappearance of features to the NE have been given above (p 161). The entrance may have been prolonged on the interior by a c 2 m deep passage flanked by stone-footed walls. If symmetrical, the passage would have been funnel-shaped in plan, narrowing markedly to the interior. The paved patch beside the stone wall may then have been for such a passage which subsequently became a rubbish tip. It may have been supplied with a pit hearth like that in Structure 4, but here the hearth was located in the NE quadrant and not in the centre as one might have expected. Reference to fig 10B demonstrates the possibility of another, small oval structure, at the E of Structure 5, composed of group 2 posts with the hearth in the centre. So close were the lignite bracelet fragment and three-sided crucible (fig 15.251) to the hearth that they may be regarded as belonging to the same horizon.

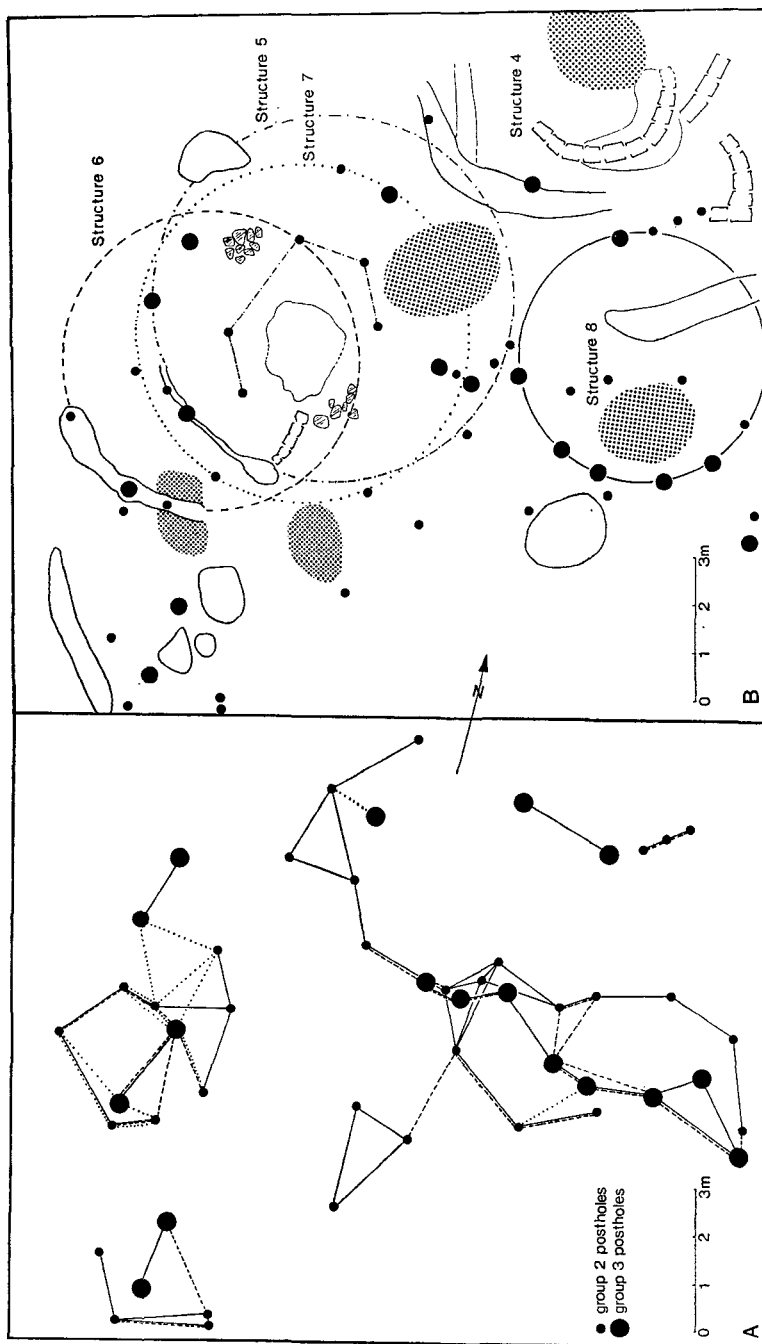


FIG 10 A. Northwest interior: posthole interpretation plan. — posts of same diameter group up to 2 m spacing; - - - - nearby posts with absolute depth within 0.1 m; ······ nearby posts without packers
 B. Northwest interior: general interpretation plan of structures

Structure 6

Like 5, this is assumed from the arc of a gully, F1, in this case with three postholes *in situ*. Buildings with double rings do occur of course but this gully converged with the nearby ring of Structure 5 and had a smaller projected circumference, giving a diameter of only c 6.4 m. No other features were obviously associated with 6, and like 5 there were no postholes along the projected circumference. This structure was the only occupation feature to impinge on the R1 terrace and since the gully is very clear at its W end, which stopped rather than faded out, it is strange that a corresponding terminal could not be located further to the N. The arc of a possible secondary gully, J18, does not correspond if 6 is truly circular and so it may indicate yet another structure.

Structure 7

Both this structure and Structure 8 are inferred from posthole combinations, but the possible existence of no 7 must be rated as very low. It was almost contiguous with 5 and when the postholes of the latter are extracted from fig 10A, most high scoring pairs disappear and we are left with only a few associated pairs in an 8.5 m diameter circumference which, in total, includes seven posts. A pattern of internal posts that is more central to 7 than any other structure is a ring of five that could have been intermediate roof supports, but their distance from the perimeter is unconvincing as they vary from 1.6 to 2.8 m. There are two C¹⁴ dates, 230 bc ± 70 and 290 bc ± 70 (Table 8), from its area that could, however, apply to any of Structures 5-7.

Bearing in mind the strictures mentioned above, p 160-1, buildings of plans other than circular may have existed here, but this is not clearly intimated by post patterns or gully arcs (fig 10).

Structure 8

This is based on the clearest pattern of posts to emerge in fig 10A, a 5 m diameter ring or semicircle isolated at the E side of Area K and composed of six group 3 and one group 2 postholes. Other suggested structures are essentially, if not entirely, comprised of group 2 posts, so the adjacent group 3 posts, extending 1.6 m to the W of Structure 8 arc, may belong to a porch arrangement. There are three small posts in a line on its interior; a corresponding line may be partly obliterated by gully K20. A possible hearth lies perhaps too close to the circumference but it is difficult to see to what other structure it could have belonged.

That there were more structures in the NW, if not necessarily all of the same kind, is indicated by the outlying postholes not already accounted for, and, if one accepts that hearths are internal fixtures, by the two edged-hearths, F17 and F22, one of which preceded Structure 6.

AREA C AND CC (fig 11)

Except for a depression under Structure 1 W wall which yielded a concentration of ceramics, these areas adjacent to the quarry were not subject to waterlogging. There are two major levels in Area C, Levels 1 and 5/6, separated by a R1 partial collapse, so confirming the suggestion of continued occupation while the rampart was in a state of disrepair in Area K.

Directly under the turf, on a grey-brown subsoil extending to the limit of R1 collapse, lay two fire-cracked flags 1 m apart, traces of burning and patches of paving including one in the NW that encompassed a line of small uprights. The latter fragment assumes importance when the plan of this level (not illustrated) is superimposed on fig 11. From the overlay it could be seen that not only did the 1.1 m long row of uprights stand parallel to and beside the line of gully C52, but other less obvious correlations also became apparent. Thus, there was an absence of features along the line of the gully in level 1, traces of burning recurred in similar locations and the same type of paving stones were in use. Despite the fact that this daub- and charcoal-smear-

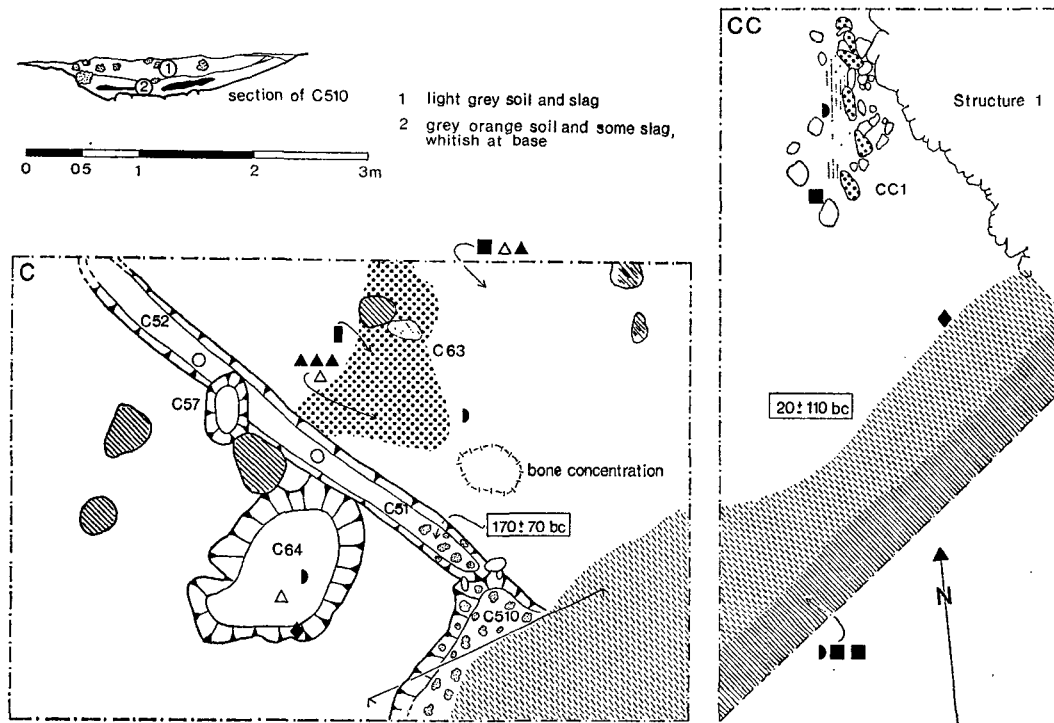


FIG 11 Plan of the SE interior of the fort (Areas C and CC)

surface of Level 5/6 extended below R1 tumble, the weight of which had disturbed its SE, the continuity of arrangements in Levels 1 and 5/6 indicates persistent occupation in the area after the rampart had begun to collapse. There are no features in Level 1 overlying the rampart tumble in the manner of Structures 1–3, but the presence of a single fragmentary glass bead from Levels 1–2 interface, a class of find closely associated with Structure 2, hints at proximity in tradition if not necessarily in time. It is from this collapse that the fibula discussed by Dr J Close-Brooks, p 194–5, is derived, a collapse which should post-date 170 bc ± 70 or even 20 bc ± 110 (Table 8), but its context is obviously not sealed.

Level 5/6 is notable for a gully extending 4.4 m transversely across the trench from NW to SE where it terminated in an irregular contemporary hollow, part of which was lost in rampart collapse. This atypical gully, C51–2, was up to 0.2 m deep, with a U-profile, and apart from random small stones, it contained black soil, charcoal, daub smears and, nearer its terminal, more nodules of vitrified material. The terminal, C510, was dug in boulder clay and was at least 1.8 m wide with a preserved depth of only 0.3 m. On its base were thin lenses of white ash (too thin to show in the inset section on fig 11); and above, two levels of fill, the lower with more charcoal flecks, the upper with more nodules of vitreous material. 3.6 kg of this ‘slag’ were recovered from C510 and though the depositional sequence of mainly ‘slag’ above charcoal, and the presence of a flue or tuyère slot (C51–2), both rather superfluous, or at least exaggerated, conform to expected characteristics of bowl furnaces (Jobey 1962, 21, fig 7), these are usually much smaller and have burnt linings (Raftery 1976, 347). The lack of fire-hardened pit walls and the non-metallic nature of the ‘slag’ (below p 192–4) mean that this vitreous material was produced elsewhere, perhaps in

processes unrelated to metalworking, and is now in secondary association. One consideration to bear in mind in determining alternative uses if C51-2 and C510 have nothing to do with the vitreous material is that, in tandem with the surface of Level 5/6, C51 slopes 2° towards pit C510 which it enters only 0.05 m above the NW base of the latter. Thus any explanation involving water must take into account the respective levels of the two features, levels which would cause wash-back along channel C51. This is not to deny that it could have been used for drainage or for some industrial purpose but the profile of C51 was crisp and so it is more likely to have been used for an internal stockade or other kind of partition.

SMALL FINDS: POTTERY

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INTRODUCTION

The pottery from Balloch Hill, although a relatively small assemblage, demonstrates intermittent occupation of the fort throughout prehistory from the Neolithic period. It includes types of the middle or late Neolithic, the early Bronze Age and those common to the Iron Age up to and shortly after the Romans arrived in Britain.

The partial excavation of the fort yielded 11.836 kg of pottery which consists of six pots, 167 sherds and 61 fragments representing an estimated minimum of 22 pots. Tables 1 and 2 give a detailed breakdown of the assemblage by period and for each excavated area. During excavation only the Bronze Age pottery, a cremation burial, was found in a closed context and was dated by the associated radiocarbon sample. It is a double burial with two cinerary urns of unusual oval shape with a very finely decorated miniature vessel. The rest of the pottery was initially believed to be Iron Age and no concentrations of different types of pottery were recognized. However, on examination, it became apparent that two groups of sherds could be distinguished on the basis of fabric, form and finish. One group is of generally thin, fairly finely gritted, hard, black- or dark-fired pottery. It includes various rims and carinated sherds and the surfaces are frequently burnished: a few pieces are decorated with fine fluting. In contrast the sherds of the other group are frequently thick walled, coarsely made and gritted with a soft orange-brown fabric. The few rims are simple in shape, and decoration is limited to rough grooves and cordons on a few sherds. Comparison with pottery from other sites in Scotland, discussed below, has allowed these two groups to be assigned to the Neolithic and Iron Age periods respectively. More specifically the Neolithic pottery will be seen to be similar to Achnacree bowls, as described by Henshall (1972, 100-3) or to the Rothesay style as defined by Scott (1977, 26-37). A few sherds indicate the possible presence of the Grimston ceramic style. The Iron Age pottery fits readily into the class of coarse pottery common to the hillforts of Northern Britain which is called by MacKie, Dunagoil ware (1974, 226-30). Five sherds could not be related to any group and hence have been labelled Unclassified. One of these is decorated with fingernail impressions.

There was a total of 94 finds of pottery of which five relate to the cremation burial and two are Unclassified. Of the remaining 87 finds, 36 were of solely Neolithic pottery, 48 were of Iron Age pottery and three were of both pottery types. An examination of the distribution of these finds has shown a number of concentrations of solely one or other type of pottery which relate to possible structures that are also indicated by other artefacts and excavated features.

NEOLITHIC POTTERY

This fairly homogeneous group includes one pot, 53 sherds and five fragments. There are only two recognizable vessel forms, the carinated bowl and the small cup (fig 12).

Fabric description

The walls are generally thin (4-10 mm) and of a dense and hard fabric. They are well gritted with many small, well-sorted inclusions which include soft, irregularly shaped, brown and grey grits, which may be grog, as well as various hard rock fragments that include quartz and a few specks of mica. These grits give five, apparently uneroded, sherds a 'speckled' surface, perhaps due to the lack of any finishing processing such as a slip or burnish being used. The possibility of variation in this fabric group is indicated by the small, white inclusions clearly visible in sherd BH306/7. The fractures of the sherds are usually an

TABLE 1
Numbers and weights of pottery by period

	Number of pots	Number of sherds				Number of fragments	Minimum number of pots	Weight (g)
		Rim	Wall	Body	Total			
Neolithic								
BH233	(1)						1	407.7
Decorated rims		(3)			(3)		3	85.9
Undecorated sherds		3	33	9	45	5	5	316.2
'Speckled' sherds			2	3	5		1	36.4
Total	(1)	6 (3)	35	12	53 (3)	5	9	846.2
Bronze Age								
Cinerary urns	2						2	6629.5†
Miniature vessel	(1)						1	85.9
Others		2			2		1	10.7
Total	3 (1)	2			2		4	6716.1†
Iron Age								
Thumb pot	1						1	51.5
BH12	1	(1)					1	128.2
Coarse sherds		(1)	39 (8)	36	76 (9)	49 (3)	2?	1502.4
V. coarse sherds		2	13	1*	15	7	1	186.4
Grey-tempered sherds			5	10	16	7	2	2340.8
Total	2	3 (1)	57 (8)	47*	107 (9)	56 (3)	7	4209.3
Unclassified			4 (1)	1	5 (1)		2	65.0
Total	6 (2)	11 (4)	96 (9)	60*	167 (14)	61 (3)	22	11 836.6†

Key: () decorated sherds; * possible base sherd; † includes weight of renovation

Note for Tables 1 and 2

On Table 1 'Number of pots' represents whole or nearly whole vessels. Bodysherds are those which cannot be firmly said to belong to either of the other two categories. Small pieces in poor condition, ie less than c 20 mm square and having only one or no surface intact, have been separated from the bodysherds and listed as fragments. Such an arrangement should show not only the amount of pottery but also its distribution and the proportion available for useful study. Percentages have not been used owing to the relatively small size of the assemblage. Brackets indicate decorated pieces, and when placed to one side of the total these are included in the total. Estimates of the minimum numbers of pots have been made although they are undoubtedly subjective. When the total is above that of known pots and distinctive rimsherds the difference represents small groups of sherds which differ from the rest in their fabric and/or their finish. One of the cinerary urns has been renovated so the weight includes that of the plaster used.

even dark grey but the surface colour ranges from black to reddish brown to pale pinky brown. The lighter colours would seem to be the result of scorching from a fire which is also evident from the soot deposits and the cracking and flaking of external surfaces. Examples of Munsell soil chart readings, taken under artificial light, are 10YR 5/2 greyish brown, 7.5YR 4/2 brown-dark brown and 5YR 4/3 reddish brown. The majority of the sherds are burnished, some highly so, and a few appear to be slipped (eg BH215 and 250). Decoration is limited to fine fluting and only occurs on the carinated bowl BH233 and three rim sherds (fig 12).

Summary of main pieces

Details of size, shape, colour and decoration are given for all pieces in the full catalogue, which has been deposited in the National Monuments Record of Scotland.

BH233 (fig 12) is a large carinated bowl with an asymmetrical 'T' or splayed rim which is fluted on the rim and exterior. It corresponds to Piggott's vessel shape E (1931, 75). The whole exterior is decorated with narrow vertical and parallel fluting, possibly drawn with a reed. The surface is burnished and this appears to have been done after decoration (cf Scott 1977, 31). Three rimsherds, BH5, 21a and 250, are generally similar to BH233 in decoration and shape but it is likely that they represent three different vessels. A number of the undecorated sherds are concave or convex in profile, eg BH134, 215, 230, 321 and 334, and may be the remains of more sinuously profiled carinated bowls.

TABLE 2

Numbers and weights of pottery by excavated area

NEOLITHIC							BRONZE AGE			
Area	Number of pots	Number of sherds				Number of fragments	Weight (g)	Number of		Weight (g)
		Rim	Wall	Body	Total			Pots	Rim	
A										
B		2 (1)	1		3 (1)		10.6			
C		1	1		2	1	6.6			
CC								3 (1)	2	6716.1†
D										
E										
F		(1)	4	5	10 (1)		106.7			
G			1		1		9.9			
J		1	6	1	8	1	78.4			
K	(1)	(1)	22	6	29 (1)	3	634.0			

IRON AGE							
Area	Number of pots	Number of sherds				Number of fragments	Weight (g)
		Rim	Wall	Body	Total		
A			1		1		9.5
B				2	2		78.9
C	1			3	3	1	181.9
CC		2	13	2*	17	2	2356.3
D				2	2	2	43.3
E			1		1		27.5
F			12 (3)	10	22 (3)	18 (2)	348.1
G			1		1	2	10.2
J			1	1	2	4 (1)	71.2
K	1	(1)	28 (5)	27	56 (6)	27	1081.4

UNCLASSIFIED								
Area	Number of sherds			Weight (g)	Total number of pots	Total number of sherds	Total number of fragments	Total weight (g)
	Wall	Body	Total					
A						1		9.5
B						5 (1)		89.5
C		1	1	7.4	1	6	2	195.9
CC						17	2	2356.3
D					3 (1)	4		6759.4
E						1		27.5
F	4 (1)		4 (1)	57.6		36 (5)	18 (2)	512.6
G						2	2	20.1
J						10	5 (1)	149.6
K					2 (1)	85 (7)	30	1715.4

Distribution on site

The 39 finds of Neolithic pottery came from only six of the 13 excavated areas, ie, B, C, F, G, J and K. Area B produced two of the six rimsherds, BH5 and 6, both from Level 3. The rimsherd BH21a was found in Area F superficial (fig 9). The rim of the cup BH284 came from Level 3 in Area J where it lay beside BH280, a carinated wallsherd similar to BH233, which in turn was found in the nearby Area K. Area K was the most productive for pottery finds and from near BH233, which was located on a rock shelf in context K9, a total of 16 wallsherds were found and these are believed to relate to Structure 8 (fig 10B). These sherds, BH253, 263, 269, 273, 274, 275 and 291, include one concave and one carinated sherd, BH263a and b respectively. Also from this area came the flanged rimsherd BH250. Several of the concave/convex

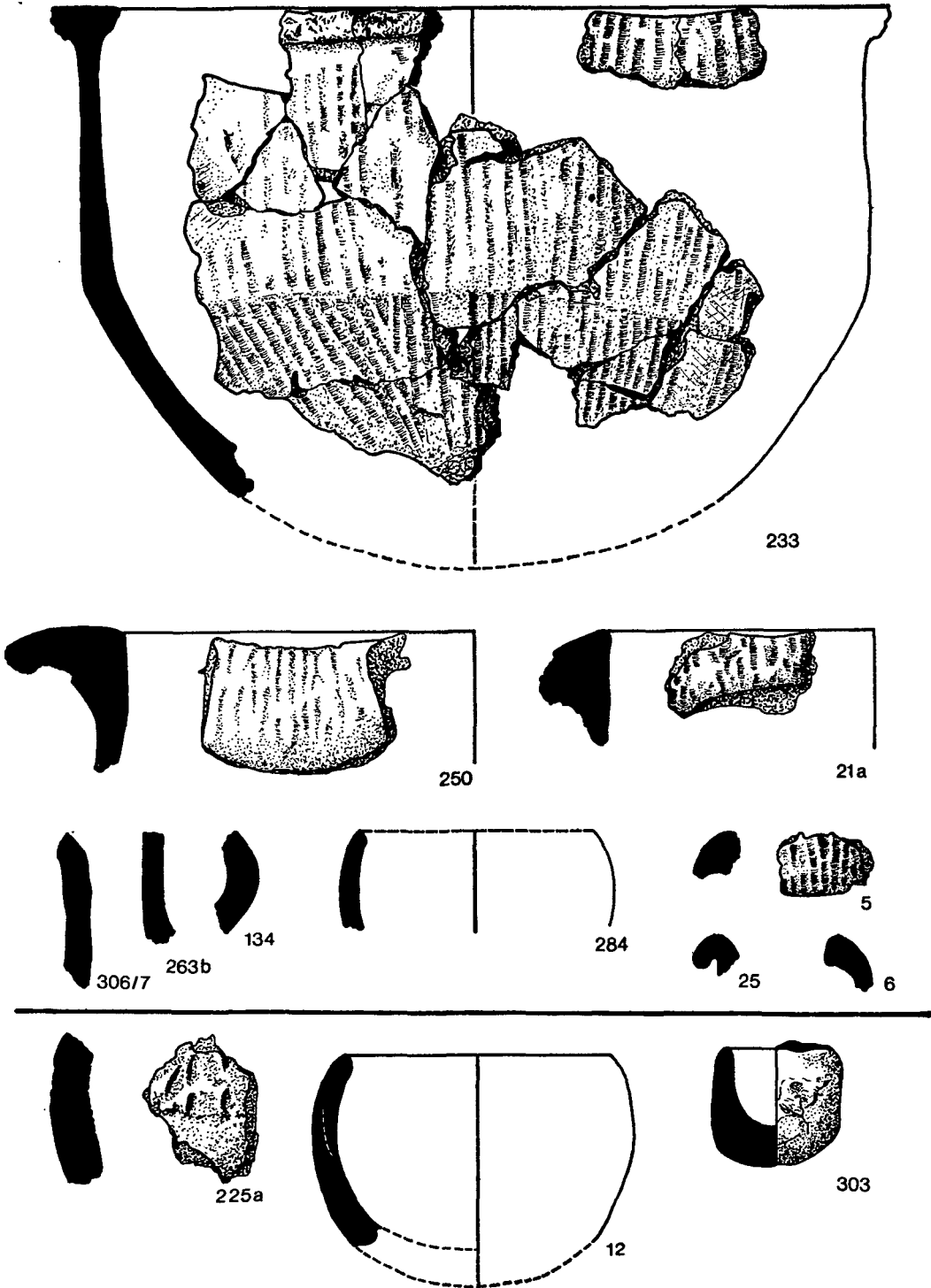


FIG 12 Balloch pottery: Neolithic (above) and Iron Age (below) (scale 1:4)

sherds were found in the adjoining Areas F, J and K but the strongly concave sherd BH134 was the only Neolithic sherd found in Area G, Level 3. The sherd BH306/7, thought to be from just below the rim of a pot and noted above as differing slightly in fabric, was found broken in two separate findspots but in the same pit and is the only pottery from this feature, K56. Two small sherds BH48 and 49, the latter probably part of the neck of a pot, were found in the gully C51. Indications are that this is a late feature, so these sherds have probably been redeposited. The last of the rimsherds, BH25a, also comes from this Area and was found in Level 4. From this it can be seen that the distribution is wide but not wholly random. The waterlogging of the site has caused much disturbance, and the juxtaposition of different rim- and wallsherds may be coincidental but there are indications of possible *in situ* deposits in Area K.

Discussion of comparative pottery

Some Late Bronze Age and Iron Age pottery is decorated with fluting and rilling, as noted by Saunders (1957, 130) and MacKie (1974, 22), but they compare poorly with the decorated pieces from Balloch. The pots differ in shape; the flutes are distinctly broader and deeper in their execution and they are often used in conjunction with other designs. In contrast the fluting used at Balloch achieves a ripple effect of light and dark lines with the shallow flutes remaining matt between the highly burnished raised areas. The closest comparisons for these fluted hooked and flanged rims and carinated bowls are to be found in the Achnacree bowl type as described by Henshall (1972, 100–3, 172–3). This pottery has been recently re-examined and redefined by Scott who prefers the term Rothesay style (1977, 20–37).

BH233 is about the same size as the largest of the Achnacree bowls, from Nether Largie, Argyll (Henshall 1972, 100). From the cast in the NMAS this carinated bowl can be seen to be similarly decorated on the outside and rim with fine vertical and radial fluting. However, it has a rather sinuous profile, a hook-sectioned rim more like BH21a and relatively thick walls. Another Clyde chambered tomb in Argyll, Achnacree, has an all-over fluted carinated bowl which has been carefully constructed, but it is only half the size of BH233 and also has the addition of lugs. The rim, again, compares better with BH5 and 21a. Another incomplete vessel from this site has a possible example of a 'T'-headed rim, depending on which definition is taken (see Scott 1977, 33, fig 14c). One other example of an all-over fluted Achnacree bowl, recently described by Scott (1977, 23, fig 9b), comes from the Clyde chambered tomb, Glenvoidean, Bute. It is slightly smaller than BH233 and has a hook-sectioned rim. This rim form, seen at Balloch on sherds BH5 and 21a, is common for Achnacree/Rothesay vessels. Further examples include the diagonally incised and undecorated rims from the Hebridean chambered tomb of Rudh' Dunain, Skye (Scott, W L 1932, 183–213) and the large rim from the settlement site of Townhead, Rothesay, Bute, which is decorated with widely spaced flutes set radially on the rim and vertically on the wall.

Wide-flanged rims like BH250 can be found amongst not only Achnacree/Rothesay vessels from the West of Scotland but also on pottery described as Grimston-Lyles Hill in tradition from sites in the east (Henshall 1972, 168–71). From the west there are those from the Clyde chambered tombs of Giant's Grave, Arran (*ibid* 1972, 384–5); Monamore, Arran (MacKie 1964, 26, fig 3); and Glecknabae, Bute (Henshall 1972, 411–4); and that from the settlement site of Knapper's Farm, Dunbartonshire (Mackay 1948, 263, figs 1, 2). From the east two examples come from Aberdeenshire, Binn Hill (Henshall, forthcoming) and the long-horned chambered tomb at Knapperty Hillock (Henshall 1963, 395–6). The bowl from the latter site is noted by Scott as possibly Rothesay in style (1977, 34).

To return to the asymmetrical 'T'-headed rim of BH233, ready parallels are harder to come by with only two of the possibilities coming from sites relatively nearby. These are the one already mentioned from Achnacree, and the incised and dot decorated rim from Townhead, Bute (Scott 1977, 28, fig 12e). The others are from Clettraval, Uist (Henshall 1972, 308, fig 2); Eilean an Tighe, North Uist (Scott, W L 1951a, eg fig 7, 0.31) and Luce Sands, Wigtownshire (McInnes 1964, eg no 51). Both Henshall (1972, 173) and Scott (1977, 35) describe 'T'-headed rims as characteristic of Irish pottery where in Case's analysis (1961, 175, fig 1) they form 25.6% of Lyles Hill pottery. Scott goes further and states that there are no such rims in any of the pottery assemblages he recognizes as belonging to his Rothesay style. This includes all of the above examples except for the pottery from Luce Sands, which Scott attributes to the Lyles Hill ceramic tradition (1977, 35). Longworth's classification of rim forms from Hurst Fen, Mildenhall, Suffolk, (*in Clark et al* 1960, 228) has been followed here: the problem, as already suggested for the Achnacree rim, is one of definition and where, if at all, the line should be drawn between these variously thickened and splayed rims.

BH5 may be from a bevelled, rather than a hooked, rim but this form, as with undecorated carinated bowls, is common to the Achnacree/Rothesay style (Scott 1977, 32–5). These rimsherds, along with the

bowl BH233, appear to fit well alongside the Achnacree/Rothesay bowls of western Scotland but certain traits do find parallels outside this area, such as the flanged rim and the 'T'-headed rim. Small bowls and cups occur frequently in Neolithic pottery assemblages. BH284 compares well in size and form to that from the Clyde chambered tomb of Bicker's Houses on Bute (Henshall 1972, 415–16). A number of the sites mentioned above with Achnacree/Rothesay pottery have small bowls which are slightly larger than BH284.

Everted, bulbous and tightly rolled rims comparable with BH6 and 25a can be found amongst the Grimston-style pottery from Auchategan, Glendaruel, Argyll (Scott 1978, 53, fig 12f, i, l, m, o, p). Rolled rims also occur in the similarly labelled assemblage from Loanhead of Daviot, Aberdeenshire (Henshall 1972, 171). Grimston-style pottery is mainly found in Yorkshire (Newbigin 1937, 189–216) and also east Scotland (Henshall 1972, 168–71) where the form is of graceful open bowls, Piggott's vessel shapes D and G. The concave/convex sherds could be tentatively interpreted as the poor remains of such bowls.

The comparisons with the Balloch pottery drawn above all seem to be with pots that are similarly made, fired and finished, but confirmation requires much more detailed study and analyses of the fabrics. However, it would appear that none of the sherds proposed as possibly of Grimston-style has a high mica content, a factor which has been used by McInnes (1964, 47) and Scott (1978, 59) as a pointer to contact with Yorkshire. None of the radiocarbon dates for Balloch is pertinent to this pottery so it is only on the basis of the comparative types that a broad date for the early occupation of this site can be suggested. Only two sites have produced radiocarbon dates, one from Townhead, Bute, of 2120 bc ± 100 (Ga K1714) from an earlier-excavated charcoal sample associated with Rothesay-style sherds (Scott 1968a, 296–7) and one from Monamore, Arran, from a charcoal spread from under the final blocking of this tomb, of 2240 bc ± 110 (Q-676) (MacKie 1964, 15–17). These dates, as well as that from Abingdon, Berkshire, are discussed by Scott, and he concludes that early Rothesay-style pottery did not appear in SW Scotland much before the close of the Middle Neolithic. On typological grounds he gives the Glenvoidean pottery a date around 2100 bc and considers these along with the Nether Largie bowl and the fluted rim from Townhead as late forms (1977, 34, figs 9a, b, 12c). The Nether Largie bowl is also seen as a late variant of the Achnacree bowls by Henshall (1972, 100). The single date of 2300 bc ± 100 (I-4705) for the Grimston-style pottery at Auchategan, Argyll does not go amiss here.

BRONZE AGE POTTERY

The cremation burial found in context D8 was contained in two, possibly unique, oval urns and a finely decorated miniature vessel (figs 4, 13).

Cinerary urns (fig 13; pl 14b)

These urns are virtually identical, differing only slightly in size; both are undecorated, oval in plan, have steep walls and internally concave, bevelled rims. The shape of the rim probably reflects a purely functional purpose; the provision of a secure edge for the unfired clay coverings which closed both mouths. This covering is kaolonite (Appendix 2) and it would appear that the same clay was used for the pots themselves, with the addition of numerous, often large (up to 10 mm) rock fragments. Construction was rough and the successively overlapped rings or slabs of clay used can be clearly seen in BH75. The fractures are an even pale grey, suggesting low firing. The poor quality of these urns may have either made it impossible to carry them, or required some sort of support.

No urns of the same shape are known to the writer but they may be seen as variants of Bucket urns which are usually similarly buried upright and are often undecorated (Morrison 1968, 82). They may also be skeumorphs of wooden vessels. The functional shape of the rim is a form found on many other types of urns (Megaw & Simpson 1979, 237–41).

Miniature vessel (fig 13)

This was found, also with a clay covering over the mouth, inside urn 75. Recovered intact, though slightly worn, it contrasts with the urns in being well-made of a hard, finely gritted, possibly slipped fabric, and decorated with incisions and dots on the rim, over the whole of the exterior and on the base. It is biconical with an internally bevelled rim and flat base: there is a pair of 'suspension' holes on one side of the shoulder. Alternate herring-bone patterns are incised on the upper half of the vessel: the lower half is decorated with a chequered pattern of similarly infilled rhomboids. The base design is of an incised cross within a circle.

Pygmy or miniature vessels in SW Scotland (Scott, W L 1951b, 81, fig 2; Morrison 1968, 87) and Northern Ireland (Kavanagh 1977, 75, fig 9) are predominately biconical. A pair of 'suspension' holes is a

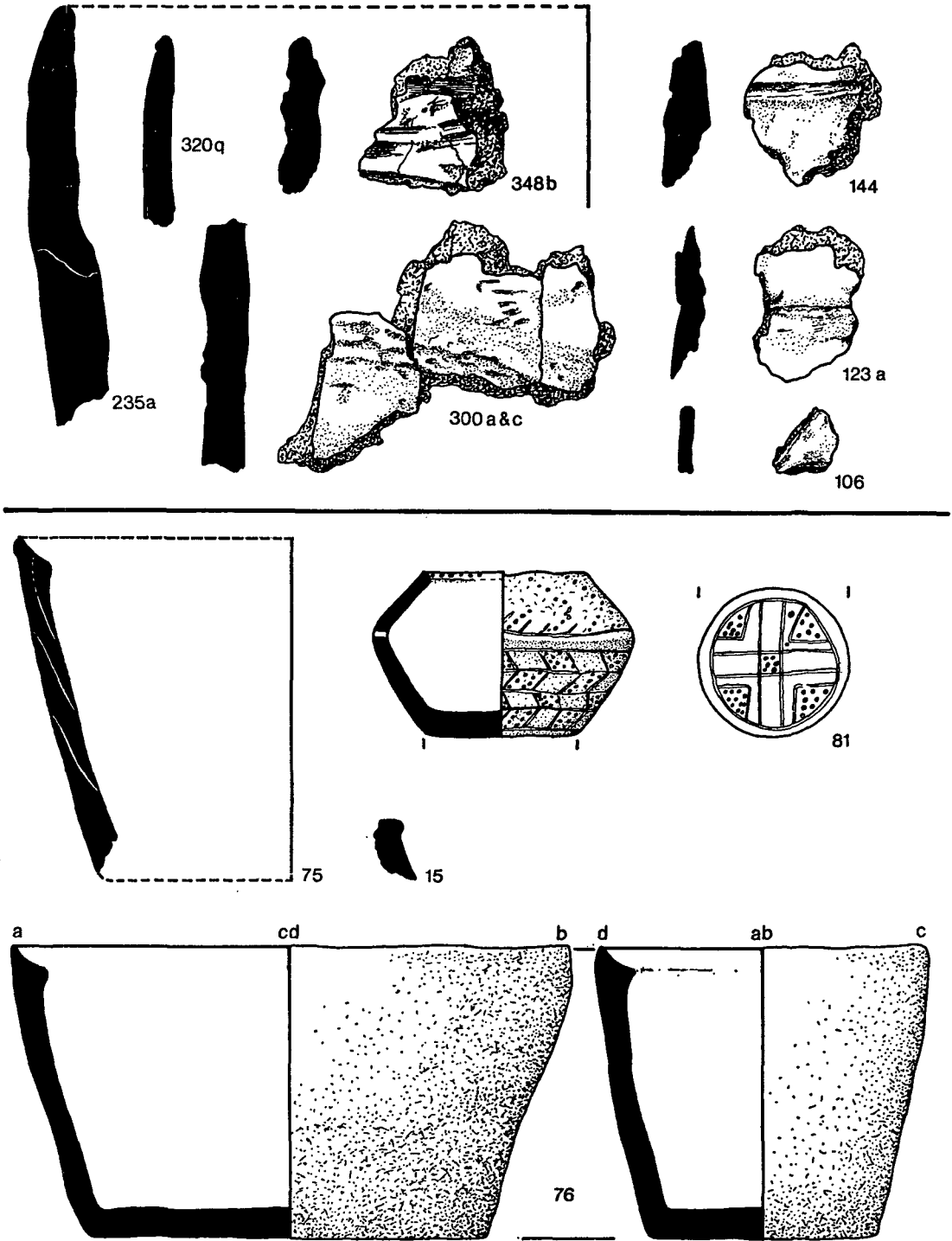


FIG 13 Balloch pottery: Iron Age (above) and Middle Bronze Age (below) (scale 1:4; 75-6, 1:8).

common feature of miniature vessels in general, as is the use of incised and dot decoration. Likewise the basic motifs used in the decoration of this vessel and the contrasting effect achieved by infilling alternate areas can be readily paralleled with many other miniature vessels. However the overall composition cannot be matched exactly. A similarly sized but asymmetrical biconical cup from Gilchorn, Arbroath, Tayside, has on its upper part vertical chevrons alternately infilled with dots: the rim of this cup is incised with a zigzag (Scott, W L 1951b, fig 2.19). A sherd bearing a chequered design of infilled diamonds and triangles was found at Coldchapel, Lanarkshire, and a band of plain herring-bone occurs on the asymmetrical biconical cup from Dunbar, East Lothian (Scott, W L 1951b, figs 2.33 & 2.29). The upper half of a cup from Crailing Hall, Borders, has a plain, double herring-bone (Scott, W L 1951b, fig 2.34). Further afield, alternately infilled herring-bone patterns have been frequently used on pedestal cups from Wessex II burials in southern England (Annable & Simpson 1964, 27). Decoration on the base of miniature vessels is not so usual, and as for the rest of the decoration on BH81 no exact parallels could be found. Simple crosses occur incised in the base of the biconical cup from barrow 40, Wilsford, Wiltshire (*ibid* 1964, 67) and, dotted, on the tub-shaped miniature vessel from Cushendale, Co Antrim (Abercromby 1912, no 346; Kavanagh 1977, no 1). Most of the Scottish and several of the Irish examples have chequered patterns (Morrison 1968, no 82). Perhaps the base design of BH81 can be seen as a mixture of two motifs, the cross and chequers.

These vessels are of recognized Bronze Age types, but it is difficult, with the present state of understanding of this period, to place them in the early or late phase of the period. The radiocarbon date for the burial, 1410 bc ± 70 (Table 8) places it just in the early phase (Megaw & Simpson 1979, 237–41). Bucket urns were believed to be late forms but this has been questioned by Morrison (1968, 85).

Two sherds, also found in Area D from Level 3, are included here as their fabric is very close to that of the cinerary urns. BH16 could well have come originally from the rim of either of the urns but BH15 shows a very different vessel form, being part of the inturned rim of a possible small bowl (fig 13).

IRON AGE POTTERY

One thumb pot, a partly restored bowl, 167 sherds and 61 fragments make up this rather heterogeneous group. It has been separated into three subgroups to account for differences in form and/or fabric and these have been given purely descriptive labels: Coarse, Very coarse and Grey-tempered coarse pottery. The bowl BH12 is dealt with separately. This order is used in the catalogue. The majority of the sherds fall within the subdivisions of Coarse and Very Coarse pottery and, as will be shown, can be compared with much of the so-called 'native ware' found on many hillforts of Northern Britain. The Grey-tempered pottery and the bowl BH12 only differ noticeably from this broad class of pottery in their temper. They are considered here as Iron Age but obviously this is open to question.

Summary of fabric and main pieces

The largest of the subgroups is the Coarse pottery which includes the undecorated thumb- or pinch-pot (fig 12.303). The clay matrix of this pottery is very soft but it is well gritted with ill-sorted, often large (up to 11 mm) mixed rock fragments, including quartz. Firing appears to have been at a fairly high temperature with clear surface colours of orange, pink and brownish yellow, but the frequent grey cores of the fractures indicate incompleteness of the process. Examples of Munsell soil chart readings are 5YR 6/6 reddish yellow, 7.5YR 7/4 pink and 10YR 5/4 yellowish brown. Construction is poor, as shown by the cracking of the thumb pot and the thick walls (10–20 mm) of the sherds. There has been some attempt to cover protruding grits, perhaps by a wet hand finish, which has resulted in rather undulating surfaces. Roughly executed decoration of grooves and cordons can be clearly seen on nine sherds and three fragments but it is sometimes difficult to distinguish between deliberate and accidental marks. The decorated pieces are BH106, 123a and b, 144, 168d, 186, 300a and c, and 320 b, d, e and p. Possible decorated sherds include 128a and b. The incised V on one of the fragments, BH106, hints at a pattern more complex than simple grooves and cordons. Sherd 348b is deeply impressed with nearly parallel grass impressions. No base sherds were recognized but the lack of curvature in the wall sherds, the associated rimsherd BH320q, the related Very Coarse pottery and the comparative pottery assemblages discussed below suggest that the most likely vessel form is a simple bucket shape. Slight variations between the sherds may mean that a number of such vessels are represented and this is supported to some extent by their distribution on site.

BH320q, a simple rim with a thin irregular groove below the brim on the outside, is the only rim belonging to the Coarse pottery. However its hard fabric, the sparse grits and the possible slipped surfaces argue against it being placed with surety in this subgroup.

The Very Coarse pottery differs from the Coarse pottery only in being much more gross and more

heavily gritted. The walls range in thickness from 11.6 to 28 mm, with the possible base sherd reaching 35.5 mm in thickness. These sherds suggest a large, bucket-shaped vessel with a simple, possibly slightly inturned, rim of estimated diameter c 320–330 mm.

The Grey-tempered coarse pottery, as its name implies, has numerous, well-sorted, grey inclusions. These are small (c 1–3 mm), soft, rounded and often have pale centres and may possibly be grog or clay pellets. Various rock fragments do occur but only in small quantities. Only 15 sherds and seven fragments are so tempered and most are badly worn.

The partly restored bowl, BH12, has a soft, even, orange-brown fabric and appears to have been tempered with an organic material, perhaps thin grass or straw, which has burnt out leaving narrow irregular vesicles. These make a haphazard pattern on the untreated surface. It is semi-globular in shape with a simple rim of estimated 80 mm diameter and c 70 mm height and at least partly constructed using the ring/coil method. Although there appears little to choose between this small bowl and the suggested Neolithic cup BH284 from the illustrations (fig 12), their fabrics, and possibly construction, are very different.

Distribution on site

The Iron Age pottery is more numerous than the Neolithic pottery and was found in all of the excavated areas and in most levels. The Very Coarse pottery is confined to Area CC where the sherds were situated close to one another and may, in fact, be all from one pot. They were overlain by Structure 1. Area A produced only one sherd described here as Coarse pottery. Apart from the Bronze Age pottery, Area D yielded only a few pieces of Coarse pottery. The majority of Coarse sherds came from Areas F and K, including the decorated pieces. Only one decorated fragment, BH186, was found outside these two areas and then just from the nearby Area J. A mass of Coarse sherds namely BH300, 310 and 320, was associated with the hearth K361: these may represent the remains of a single decorated pot. Apart from a Neolithic sherd from Level 3, Area G produced one find of suggested Iron Age date, that of BH100, described here as Grey-tempered coarse pottery. Post-excavation work has indicated that this may have been an *in situ* deposit, though it was found just below the turf, on shelf G1 of Structure 3 (fig 5, right). One sherd of Grey-tempered coarse pottery, BH142, was the only pottery find from Area E but the rest of the sherds from this subgroup were from mixed deposits. BH123 and 145 had Coarse pottery and BH168 both Neolithic and Coarse pottery associated with them.

Discussion of comparative pottery

During excavation some of the sherds were recorded as daub. Although this cannot be completely ruled out for some of the very small fragments, the evidence of distinct surfaces, clear decoration, laminated fractures, ring/coil breaks, and the lack of wattle impressions would argue against this initial view. Thumb pots are a fairly common feature on Iron Age sites where they are often considered to be crucibles (Laidlaw 1870, 376). However, BH303, though similar in its thick walls and crude construction had, on analysis, no identifiable metal deposits. An alternative suggestion is that it was made by a child as its size and shape resembles those small pots made by children in local pottery classes today.

Work by MacKie (1974; 1976, 205–35) and that very recently done by Hilary Cool on the pottery from Broxmouth Hillfort, East Lothian (1982), has gone some way to define the crude and simple pottery found on Iron Age sites in northern Britain, which previously has been often referred to as simply 'native ware'. MacKie lists a number of sites with examples of this pottery which he calls Dunagoil Ware. Of those which it has been possible to examine, Finavon, Angus; Sheephill, Dunbartonshire; and Abernethy, Perthshire, compare well with the Coarse pottery from Balloch Hill, but Castlelaw, Midlothian, does not. However, Finavon is the only site whose pottery was similarly decorated. In the original report Childe suggested that the grooves were where grass wrappings, used in the construction of these pots, had burned away (1935, 75). At least a few of the examples from Balloch would suggest deliberate decoration. There are also a number of assemblages not mentioned by MacKie which can be usefully compared to that from Balloch Hill, eg Hownam Rings, Roxburghshire (Piggott, C M 1948, 193–224); Braidwood Fort, Midlothian (Piggott, S 1958, 61–77) and Bonchester Hill, Roxburghshire (Piggott, C M 1950, 113–36). The last also has some more robust sherds which, with those from Shemore Dun, Central Region (Corser, forthcoming) are similar to the Very Coarse pottery from Balloch. Balloch Coarse and Very Coarse pottery appears to compare with Broxmouth type I. However, this site is located in the E of the country, as indeed are many of the pottery assemblages that it has been possible to look at. This should be borne in mind along with the other problems of comparing such crude and basic pottery, the construction of which will have been greatly influenced by local differences in clay and gravel. Though it

would seem that the parallel with this poor quality bucket-shaped Iron Age hillfort pottery is based on largely negative evidence; the consistency of construction technique used, the similarity of decoration on the pottery from Balloch and Finavon, and the broadly comparable dates obtained for some of these sites does place the comparison on a firmer basis. Fifteen radiocarbon dates, not counting that from the cremation burial, were obtained from Balloch Hill. At least two (Table 8) come from close association with pottery, 455 bc \pm 70 from context K362, which sealed the Coarse pottery BH320 in context K362, and 170 bc \pm 70 from context C51, where the two probably Neolithic sherds BH48 and 49 were found. These are suggested as likely to have been redeposited. The time bracket, from the 6th century bc to the 1st century ad, would include most of the dates obtained for some of the sites mentioned above and for other sites with Dunagoil pottery, either by radiocarbon assays or cross correlation.

Temper like that seen in the Grey-tempered coarse pottery and the bowl BH12 was not observed in any of the pottery mentioned above, although several do have a little, possibly accidental, organic temper. The one example of wholly organic temper known to the writer is pot 27 from Ardnave, Islay, which was found on top of a hearth which had a radiocarbon date of ad 195 \pm 60 (Ritchie, J N G, pers comm). It is of a similar soft, orange-brown fabric with no noticeable surface finish, but it has a very different shape.

UNCLASSIFIED POTTERY

Five sherds that cannot even tentatively be related to any of the pottery described above are included here. BH22 is an undistinguished bodysherd but BH225 has a hard brown fabric gritted with well-sorted, small, angular, dark grey rock fragments. One of the sherds is decorated, on one side of a rounded carination, with nearly vertical fingernail impressions. However, as noted by Stuart Piggott (1931, 79), such decoration is common on prehistoric pottery.

CONCLUSION

The pottery assemblage from Balloch Hill, although only a sample of the site and of relatively small size, has shown that this probable settlement site was intermittently occupied throughout prehistory from the Neolithic period. Although there were few stratified finds and the site on excavation appeared to be greatly disturbed it has been possible to isolate a few areas where sherds of just one pottery type were concentrated. These are Structure 8 in Area K, which is believed to be Neolithic; hearth K361, Area CC; and possibly Structure 3 in Area G which have produced, nearly exclusively, Iron Age sherds.

Identification of pot types has had to rely mostly on comparison with pottery assemblages from other sites in Northern Britain though the cremation burial was found in a secure context and dated by an associated radiocarbon sample. From this and from comparison with other similar pottery it has been tentatively suggested that the burial may belong to the early phase of the Bronze Age. The rest of the assemblage separated into two groups which have been identified as Neolithic and Iron Age respectively. The former include examples of Achnacree/Rothesay pottery and possibly a few pieces of Grimston-style pottery of the middle or late Neolithic period. The latter, consisting of mostly coarse and relatively undiagnostic sherds, fits into the broad and as yet little-differentiated class of coarse hillfort pottery sometimes called Dunagoil Ware. Only one of the radiocarbon dates was closely associated with sherds of this type but they are of this period. A few pieces which differ slightly in their fabric are tentatively included in this group. The pottery assemblage, as a whole, fits into the pattern of prehistoric pot types found in S W Scotland, though the Achnacree/Rothesay bowl and the miniature vessel are rather fine examples and the cinerary urns are of unusual shape.

POTTERY CATALOGUE

The complete catalogue has been deposited in the National Monuments Record of Scotland. (abbreviations used: t thickness, d diameter, h height, ext exterior, int interior, fract fracture. All measurements in mm)

Neolithic: decorated rimsherds

- BH5 Area B, Level 3 Fig 12
Rim, probably part of a hook-ended rim. Ext & int black, fract greyish brown. Burnished: shallow radial fluting c 2 mm apart on ext.
- BH21a Area F, Structure 2 superficial Fig 12
Rim, part of hook-ended? rim (lip damaged) with peaked brim, d c 160. Ext & int black, slightly reddened, fract grey-brown. Burnished, marks on int: irregular shallow radial fluting c 3 mm apart on ext.
- BH233 Context K9 Fig 12

Eight sherds of a fine, large carinated bowl with asymmetrical 'T' shaped rim. The int rim d is c 210 and the estimated h c 170. Both rim and ext of body are decorated with narrow fluting. Surfaces & fract black with patches of pinkish and yellowish brown on damaged base—result of scorching? A few patches of soot. Burnished: irregular, shallow, radial fluting on rim c 5 mm apart possibly drawn with a fingertip. Finer and precise vertical fluting c 3 mm apart runs from the neck over the carination, dovetailing on the base, which is damaged, possibly from fire.

- BH250 Area K, Level 3 Fig 12
Rim, wide flange (slightly damaged), d c 210. Ext reddish grey, int dark grey, fract pale brown, pink near ext. Slight burnishing: shallow irregular radial fluting c 2–3 mm apart, on ext of rim.

Neolithic: undecorated rimsherds

- BH6 Area B, Level 3 Fig 12
Rim, thickened, rounded and everted. Black, burnished.
- BH25a Area C, Level 4 Fig 12
Rim, tightly hooked or rolled with rounded corner and lip. Int black, ext & fract dark grey. Int highly burnished, ext only slightly. Faceting on lip, tool marks visible on int of hook.
- EH284 Area J, Level 3 (found beside BH280) Fig 12
Rim, of small bowl, simple, uneven with slight int bevel, d c 70. Dark grey, surfaces untreated.

Neolithic: undecorated sherds

- BH7 Area B, Level 3
Wall. t 6·4. Ext grey, int & fract black. Int? burnished.
- BH12b Area F, Structure 2 superficial
Wall. t 8·9. Ext reddish grey-brown. Int & fract grey-brown. Int & ext? burnished.
- BH48 Context under C51
Fragment, eroded. Brown.
- BH49 Context C51
Wall, curved. t 3·8–7·6. Ext & part of fract dark reddish grey, int & part of fract dark grey. Ext burnished?
- BH134 Area G, Level 3 Fig 12
Wall, concave from neck? t 9·6. Ext pinkish brown, int dark reddish brown, fract dark grey. Int burnished.
- BH154a-b Area F, Level 3
Two bodysherds. t 8·7, 8. Black and brown.
- BH215a-f Area J, Level 3
Five wall sherds. t 4·2–10. Burnished, note horizontal striations. Fabric slightly greasy to touch. See BH263.
- BH222a-b Context F60
Two wall sherds. Black, though ext of 222b discoloured orange from hearth? Surfaces smooth, ext of a is burnished. 222b is laminated.
- BH230 Area F, Level 3
Wall, (concave?). t 9·2. Ext dark reddish brown, int & fract dark grey. Smooth surfaces.
- BH240 Area K, Level 3
Two small fragments. Black and brown. Crumbly.
- BH253a-b Area K, Level 3
Two wall sherds. t 5, 4·4. Very dark grey, 253a also reddish brown. Surfaces smooth.
- BH258 Area K, Level 3
Body, worn. t 9. Ext brown, int & fract dark grey.
- BH263a-d Area K, Level 3 Fig 12
Four wall sherds. Ext variously reddish brown, red-grey, brown, int black, fract grey. Burnished. 263a see 215a.
- BH266 Area K, Level 3
Wall, curved. t 8·4. See BH322.
- BH269 Area K, Level 3
Three small wall sherds. t 6·4, 6·4, 6·5. Dark grey-brown, slight burnishing.

- BH271 Area J, Level 3
One bodysherd and one frag. Brown.
- BH273 Area K, Level 3
Wall. t 5. Ext reddish brown, int & fract black. See BH274.
- BH274a-b Area K, Level 3
Two wall sherds. t 4-7, 5. Brown and black. See BH273.
- BH275 Area K, Level 3
Wall. t 4-1. Black, burnished. See BH291.
- BH280 Area J, Level 3 (found beside BH284)
Wall, curved, eroded. t 7-8. Black discoloured orange on ext, burnished on int.
- BH291 Area K, Level 3
Wall. t 5-8. Black, burnished. See BH275.
- BH306-7 Area K, Level 3 Fig 12
Wall, convex possibly from just below the rim. t 7-3-9-8. Ext & int v dark grey, fract grey. Int burnished, ext smooth. Several small, white, sub-rounded inclusions possibly clay?
- BH317 Area K, Level 3
Body, eroded. t 8. Int black, fract grey. Smooth.
- BH321 Area K, Level 3
Wall, (concave?). t 5-7. Black, burnished. See BH275 and BH291.
- BH322 Area K, Level 3
Wall, curved. t 7-5. Black, patches of reddish brown on ext. Uneven surface part burnished. See BH266.
- BH332 Structure 4
Wall. t 10-2. Ext & part of fract greyish brown, int & part of fract v dark grey. Smooth.
- BH334a-e Structure 4, context K362/3
Two wall- and three bodysherds and one frag. Thick and crumbly pottery. t 11-3-17. Dark brown with black core. Patches of black burnishing on int, ext smooth.
- BH349 Area K, Level 3
Body, eroded. t 10-3. Int black, fract grey. Int smooth.
- Neolithic 'speckled' sherds*
- BH154b Area F, Level 3
Body. t 8-5. Ext brown, int grey.
- BH168c Area F, Level 3
Body, eroded. t 7-1. Int? black, fract dark grey.
- BH191a-b Context F73
One body- and one wallsherd, eroded. t 11-3, 9. Int v dark grey, fract pale pink-brown.
- BH348a Area K, Level 3
Wall. t 7. Grey.
- Bronze Age Cremation Pottery*
- BH75 Context D8 (found with BH81, beside BH76) Fig 13
Nearly half of the wall and rim of an undecorated oval cinerary urn with 23 loose pottery fragments and three unfired clay fragments. An open vessel with steep, fairly thick, walls and an unevenly thickened and splayed rim which has a concave internal bevel. ds c 300 & c 200 (mouth), c 240 & c 140? (near base), est h c 200. Ext light yellowish brown with patches of dark grey, int v dark grey, fract grey. Horizontal wiping marks. The wall was built up from three slabs of clay 50, 45 and 80 mm high, going from rim to base. These were joined by overlapping the edges and smoothing over; the rim was formed from the top slab. Facetting and tooling marks occur on the rim.
- BH76 Context D8 (found beside BH75) Fig 13
A largely renovated undecorated oval cinerary urn with one loose sherd and 17 fragments. Shape as for BH75 with flat base. Fragments of the unfired clay covering still adhere to the bevel of the rim. ds 200 & 340 (mouth), 136 & 240 (base); h 178. Patchy yellowish brown and dark grey. Wiping marks.
- BH81 Context D8 (found inside BH75) Fig 13
Small, finely-made miniature or accessory vessel. Highly decorated on rim, exterior and base

with incised lines and dots, though partly worn, especially above the carination. The eroded rim is simple with internal bevel, the wall thickens gradually to the base. ds 50 (mouth), 80 carination), 45 (base), h 45–50. Mottled, ranging from pale pinky brown to greyish brown with patches of pale bluish grey where worn. Possibly slipped. Ext smooth, int slightly rough. Two cylindrical-sectioned suspension holes of 2 & 2.5 mm diameters made after firing, set 22 mm apart on the carination. Decoration consists of series of herringbones made from impressed dots c 1.5 mm in diam (fig 13). However, the filling of alternate spaces with dots tends to break up the pattern into a series of contrasting rhomboids. The base has a roughly incised circle divided into four by two sets of parallel lines placed to form a cross. The square formed in the centre and the corners of the segments are filled with dots.

Related sherds

- BH15 Area D, Level 3 Fig 13
Rim, eroded, flat and inturned, probably part of a small bowl. Int dark grey, fract pale grey. Smoothing lines.
- BH16 Area D, Level 3
Rim, probably part of one of the above urns or similar. t 15.7. Grey. Smoothing lines.

Iron Age: Coarse Pottery

- BH25b Area C, Level 4
Body, eroded. t 18.3. Ext pale brown, int v dark grey, core brown. Texture soft-hard. Possible grass marks.
- BH47a-b Context C64
Two bodysherds and seven frags. t 15.8, 13.4. Grey. Crumbly.
- BH50 Area C, Level 6
Frag, eroded. Yellow.
- BH77 Area B, Level 3
Body, eroded. t 13. Int orange, core pale grey and pink.
- BH78 Context A32
Wall, eroded. t 17.7. Ext orange, int black, core grey brown.
- BH106 Area F Fig 13
Frag, decorated with two grooves. Ext pale yellow, fract orange. Smooth surface. Remains of two grooves, at least 2 mm wide, joining to form a V. See BH123, 124, 126, 128, 144, 145.
- BH123a-c Area F, Level 2 Fig 13
Three eroded wall sherds and five frags. Two decorated with a single groove. Ext pale brownish yellow, int of c black, fract orange. Laminated. Grooves c 2 mm wide of varying depth. See BH106, 124, 126, 128, 144, 145.
- BH124a-c Area F, Level 3
Five bodysherds and six frags. t 9.4–15. Ext pale orange-yellowish brown, int black, fract pale grey, patches of pink. Laminated. See BH106, 123, 126, 128, 144, 145.
- BH126 Area F, Level 2
Body, eroded. t 11.2. Int orange, core greyish brown. See 106, 123, 124, 128, 144, 145.
- B127 Area CC, Level 1
Body, worn. t 14.1. Ext pale orange brown, int black core pale grey. Crumbly.
- BH128a-b Area F, Level 1/2
Two wall sherds, eroded. t 9.6, 8.3. 128a ext pinky orange, 128b int? dark greyish brown, core grey. Possible shallow uneven grooves, 2–3 mm wide. See BH106, 123, 124, 126, 144, 145.
- BH144 Area F, Level 3 Fig 13
Wall, with groove. Ext & part of fract pale yellowish brown, int & part of fract black. Horizontal? groove. See BH106, 123, 124, 126, 128, 145.
- BH145 Area F, Level 3
Wall and three frags. t 15.2. Ext yellowish brown, int & fract brownish grey. See BH106, 123, 124, 126, 128, 144.
- BH156 Context F73
Wall. t 14.5. Ext & part of fract orange-brown, int & part of fract dark grey.
- BH157 Context F73
Body. t 20. Ext & part of fract brown, int & part of fract black. Texture soft-hard.

- RH168d Area F, Level 3
Bodysherd and one frag. t 12·4. Yellow. Frag has part of two grooves.
- BH170 Area D, Level 3
Eroded fragment. Dark grey.
- BH171 Area DA, Level 2
Body and one frag. t 29. Ext & part of fract of orange-yellow, int & part of fract dark greyish brown.
- BH175 Area F, Level 3
Eroded fragment. Dark grey.
- BH186 Area J, Level 3
Eroded fragment with part of groove. Yellow.
- BH187 Area CC, Level 1
Eroded fragment. Orange, yellow and grey.
- BH188 Area J, Level 1
Body and three frags. t 16·4. Ext pale yellowish brown, int and fract black.
- BH189 Context F73
Body, eroded. t 18. Black and grey.
- BH190 Area F, Level 3
Wall. t 12. Yellow brown.
- BH192 Area DA, Level 2
Body eroded. t 18·2. Ext and part of fract pale yellowish brown, int and part of fract black.
- BH205 Area J, Level 3
Wall. t 19. Ext & int pale yellow brown, fract grey. Undulating surface.
- BH206 Area CC, Level 3
Eroded fragment. Yellow and grey.
- BH207 Area K, Level 3
Eroded fragment. Yellow and grey.
- BH223 Area F
Wall. t 11·6. Ext & part of fract pale brown, int & part of fract grey.
- BH242 Area K, Level 3
Body, eroded. t 16·7. Int orange, core grey. See BH248, 300i 304, 310, 320, 325.
- BH248 Context K21
Wall, eroded. t 17·3. Int orange, core grey. See BH242, 300, 304, 310, 320, 325.
- BH289 Structure 4
Body, eroded. t 10. Pale grey.
- BH300a-p, Structure 4 Fig 13
r-w Thirteen wall, seven bodysherds and 17 frags. t 4·5–19·1. Ext variously yellow, orange, pink and greyish brown, int variously orange, pink, brown and grey, core grey. Undulating ext surface, 300 a & c join and show an irregular groove between uneven cordons, possibility of another groove parallel to these. See BH242, 248, 304, 310, 325.
- BH303 Area K, Level 3 Fig 12
Thumb pot. A slightly squared-off bowl with an uneven flat base, thick walls which thin only slightly to an uneven, simple rim. Rim, d 37 (int), h 32·3; t 12 (wall). Clear brownish yellow with patches of pink. Cracking has occurred due to insufficient kneading of the clay and uneven shrinkage during firing. Analyses for metal negative.
- BH304 Area K, Level 3
Wall, eroded. t 11·7. Yellow and grey. Undulating surface. See BH242, 248, 300, 310, 320, 325.
- BH310a-c Structure 4
Three bodysherds. t 13·2–15·6. Orange and grey. See BH242, 248, 300, 320, 325.
- BH313 Area K, Level 5
Wall. t 12·6. Ext pinkish brown, int & fract greyish brown. Smooth.
- BH314 Area K, Level 3
Eroded fragment. Orange and grey.
- BH320a-p Structure 4, K363 within K364
Ten wall- and four bodysherds plus three frags. t 12·3–16·2. Ext variously orange, yellow and brown, int variously orange, yellow, brown and grey, fract grey. Undulating surfaces. 300b, d, e and p decorated with single grooves. See BH242, 248, 300, 304, 310, 325.

- BH320q Structure 4, K363 Fig 13
Rim, simple with slight groove. Orientation unsure. Grey brown. Smooth, possible slip. Horizontal smoothing.
- BH325 Structure 4
Body and one frag. t 15. Ext pale pinkish brown, int grey, fract mixed. See BH242, 248, 300, 304, 310, 320.
- BH344 Context 57A
Body. t 15. Ext brown, int orange-brown, core grey. Ext smooth, int very cracked.
- BH348b Area K, Level 3 Fig 13
Wall, with deep grass impressions. t 9-13.6, Ext pale yellowish brown, int & fract dark grey. Ext slip? with five roughly horizontal grass impressions.
- BH350 Area K, Level 3
Body, eroded. t 12.3. Orange-brown.

Iron Age: Very coarse pottery

- BH224 Context CC, level 3/4
Wall. t 18.7-25. Brownish yellow. Undulating surfaces.
- BH226 Context CC412
Body/base? t 25.6-35.3. Ext & part of fract pinky orange, int & part of fract pale grey-brown. A few grass marks.
- BH234a-c Context CC38
Three wall sherds. t 15.1-25.2. Ext yellowish and pinkish brown, int & fract grey-brown and black. Finger streaks?
- BH235a-1 Context CC34/5 Fig 13
Two rim and nine wall sherds. d 320-330, t 10.5-28. Ext reddish brown with patches of soot, into range, core grey.

Iron Age: Grey tempered coarse pottery

- BH100 Structure 3, G1
Wall plus two frags. Eroded. t 12.6. Surface pale pinky orange, core grey.
- BH123d Area F, Level 2
Body. t 14.3. Brown.
- BH142 Area EE, Level 3
Wall. t 13.4. Ext orange-brown, int pink-orange brown, core grey.
- BH145c Area F, Level 3
Fragment. Grey and brown.
- BH168a-b Area F, Level 3
Two eroded wall sherds. t 15, 19.4. Ext & part of fract pale brown and orange.
- BH277a-j Structure 4, K35
One wall-and eight bodysherds plus four frags. t 11.5-24.4. Ext & part fract pale brown, int & part of fract dark grey, patches of soot?
- BH315 Area K, Level 3
Body, eroded. t 15. Yellow and grey.

Iron Age: Small bowl

- BH12 Context C31 Fig 12
Small, plain, globular bowl with simple rim. Three rim, 12 wall-sherds and 10 frags. d c 80, h c 70 (estimate). Orange-brown with patches of pink and yellow. Smooth, soft textured pottery with much thin grass? temper and a few grits. At least part ring/coil built. Ext finger-impressions.

Unclassified

- BH22 Area C, Level 5
Body, eroded. t 10.6. Brown grey. Smooth surfaces, soft texture and a fairly fine fabric with some small, subrounded grey-brown inclusions. Part of groove? c 2 mm wide.
- BH225a-d Context F53 Fig 12
Four wall sherds, partly eroded, one with fingernail impressions. t 10.4-12.3. Dark brown. Ext smooth, int v rough with numerous small, angular, grey grits protruding through the surface.

Fabric hard. 225a is convex, probably part of a rounded carination, on one side of which is a series of parallel, roughly vertical, deep fingernail impressions.

SMALL FINDS: STONE

The origins of the different types of stone artefacts, except flint, are discussed by Dr J G MacDonald in the following section. The complete list of identifications is filed with the other excavation documents in the National Monuments Records of Scotland.

PETROLOGY

J G MacDonald

Introduction

Fifty-eight samples or groups of samples were examined. They can be grouped under the headings of rocks of igneous, sedimentary, or metamorphic origin.

Identification of samples

Igneous rocks Although some of the igneous rocks are so badly weathered that precise identification is difficult, the majority of the specimens in this category are clearly fragments of lava, varying in composition from basalt to basaltic hawaiite. Such compositions are typical of the lavas of Lower Carboniferous age that are widespread in S Kintyre, including the crag on which the Balloch hillfort is situated. They have been previously described as olivine basalts of the Jedburgh type (McCallien 1927, 91) in accord with the widely-used classification of the Carboniferous lavas of the Midland Valley of Scotland (MacGregor 1928). Fig 15.118 is typical of this group.

Other rocks of igneous origin include porphyry (Specimen no 117) which probably derives from the major sill which lies to the SSE of Balloch Hill (cf McCallien 1927, 83), and porphyritic trachyte (163). Both these are probably also of Carboniferous age.

Two samples of tuff (volcanic ash) occur. Fig 15.182 is a medium-grained ash which could be of Carboniferous origin but fig 14.27, a broken axe, is too well lithified to be of this age and may be exotic.

Study of the thin section of five specimens, 356-360, confirms the initial impression that they are composed of silicate glass, and specimens 358-60 can be described as *pitchstone*. Specimens 356-7 are much more glassy than normal pitchstone so from a purely petrological viewpoint could be termed *obsidian*.

Sedimentary rocks Apart from the metasediments described in the next section, the vast majority of the sedimentary material studied consists of fragments of impure coal or carbonaceous shale. One sample of the latter, when roasted in air, lost c 20% of its mass, most of the loss probably being carbon. Other samples appear to have higher carbon contents. The frequent occurrence of plant remains and occasional ostracods indicates that these samples have been taken from coal-bearing strata of Carboniferous age.

Metamorphic rocks Broadly speaking, the metamorphic rocks can be described as schists and quartzite and various gradations between these. The metamorphic grade is somewhat variable but it is frequently low, most commonly in the greenschists facies. There can be little doubt that all or most of these specimens originate in the Dalradian metamorphic complex that occurs throughout Kintyre and most of the SW Highlands of Scotland.

A high degree of rounding of many of the cobbles suggests that they may have been derived via Lower Old Red Sandstone conglomerates. These commonly contain large numbers of clasts of Dalradian origin (Friend & Macdonald 1968). The vein quartz specimens (12, 17, 117) are probably also from the Dalradian.

Provenance

With the exception of fig 14.27 and the pitchstones (considered below pp 189-92), all the samples studied are of rock types which could be expected to be found in the Kintyre area either in rock outcrops or in superficial deposits. The well-rounded nature of most of the smaller specimens of quartzite and schistose-grit points to sources in drift or beach deposits derived from the weathering of conglomerates of Lower Old Red Sandstone age. The source rock is widespread in S Kintyre. Other specimens could have originated directly from the local Dalradian outcrops through the agencies of weathering, particularly the intensive glaciation to which the area was subjected during the Pleistocene.

The igneous specimens are almost entirely composed of rock types that occur locally, within a 3 km

radius of the site. Most of them appear to have been taken from superficial deposits, rather than quarried directly from the outcrop, as they often display a fair degree of rounding.

The carbonaceous material was most likely derived from sediments of Carboniferous age which outcrop in Torchoillean Burn or Tirfergus Burn. The much more extensive sedimentary basin which contains the Machrihanish Coalfield is almost entirely concealed by the drift deposits of the Laggan of Kintyre so is unlikely to have been a source area. Of the two burn sections the second is the more probable, as a two-foot coal seam outcrops in the burn S of High Tirfergus (McCallien & Anderson 1930, 614). In any case the carbonaceous sediments contrast with much of the other material in that it must have been mined from the outcrop rather than having been 'picked up' from the superficial deposits of the area. Nevertheless it would not have had to be transported for any great distance to the site, especially if it was obtained from Tirfergus Burn.

Discussion

There is nothing remarkable about these specimens as most of them could have been picked up within a radius of no more than 3 km of Balloch Hill; indeed, if they came out of the drift rather than outcrops almost all specimens could have come from the immediate vicinity. Nor is there anything unusual in the use of quartzite or schistose grit as hand tools as this has been recorded from other sites in Kintyre (McCallien & Lacaille 1941).

The relative abundance of carbonaceous material is of more particular interest. It must have been transported to the site, most probably from the outcrops in Tirfergus Burn, in such quantity as to suggest that there was some compelling reason for its use. One might speculate as to a possible use as fuel but in that case it might be expected that some trace of clinker or ash would have been found. It could be worth considering whether there was any metallurgical use, although there is no good evidence of any worthwhile ores in the immediate vicinity. Slight traces of copper, which are liable to occur in the local lavas, are not known to reach proportions that would be worth extraction even on a modest scale. If any smelting of copper was done at Balloch Hill the ore would have had to be brought from veins in the Dalradians in Knapdale, or farther afield. A more likely use for the coal might have been for the manufacture of beads as a substitute for jet. In recent times there have been many examples of coal-carving amongst miners in central Scotland and other coal fields so it is conceivable that the raw material of 'jet' articles found in archaeological sites in Argyll were made from coal. To verify this it would be necessary to make microscope sections of beads for comparison with material from Whitby and Kintyre.

The origin of the axe (fig 17.27) is of interest. It is not composed of local material for although volcanic ash is undoubtedly associated with the local lavas it could not normally be expected to be sufficiently well consolidated to be of use for the manufacture of artefacts. The absence of a clear foliation seems to rule out a Dalradian source and suggestions of sources in other areas such as the Ordovician of the Highland Border must be regarded as speculative. More detailed work on petrography will be required before the provenance of this specimen can be determined.

Naturally-occurring pitchstones and obsidian have not been recorded in the Kintyre Peninsula. It is not likely that any major outcrops of pitchstone have been missed as the area has been studied in some detail by several workers, including officers of the Geological Survey, and W J McCallien (1932). The nearest source of similar material is the Isle of Arran where there are numerous intrusions of pitchstone associated with the activity of the Tertiary volcanic centre there. Of the five specimens, 360 can be most closely matched with Arran material. Fayalite-quartz-plagioclase-bearing porphyritic pitchstones have been recorded near Tormore in Judd's No 2 composite dyke (Judd 1893), Glen Ashdale (Rae 1958), Glen Shurig, Brodick (Scott 1915) and beside the schoolhouse at Brodick, although in all these cases the groundmass is more crystalline than that of the specimen from Balloch Hill. The same is true of matches that can be made between specimen 359 and a pitchstone from the sill north of Clauchlands Point (Tyrrell 1928, 213, 230) and a pitchstone in Lag a'Bheith Burn between Lamlash and Brodick. Thus the Balloch Hill material bears a striking resemblance in some instances to some of the Arran material and it appears likely that those specimens which are most probably of natural origin, namely 358-60, originated there. Nevertheless the pitchstones from Balloch Hill are less crystalline than those of Arran, but this may be a question of degree rather than of fundamental difference.

The question remains as to how the pitchstone fragments got to Balloch Hill. The two possibilities are that either they were transported by ice from Arran and deposited in the glacial drift of S Kintyre or the material was collected by man in Arran and carried to Kintyre. The latter case appears to be supported by the relatively glassy nature of the specimens which could be explained if they had been specially

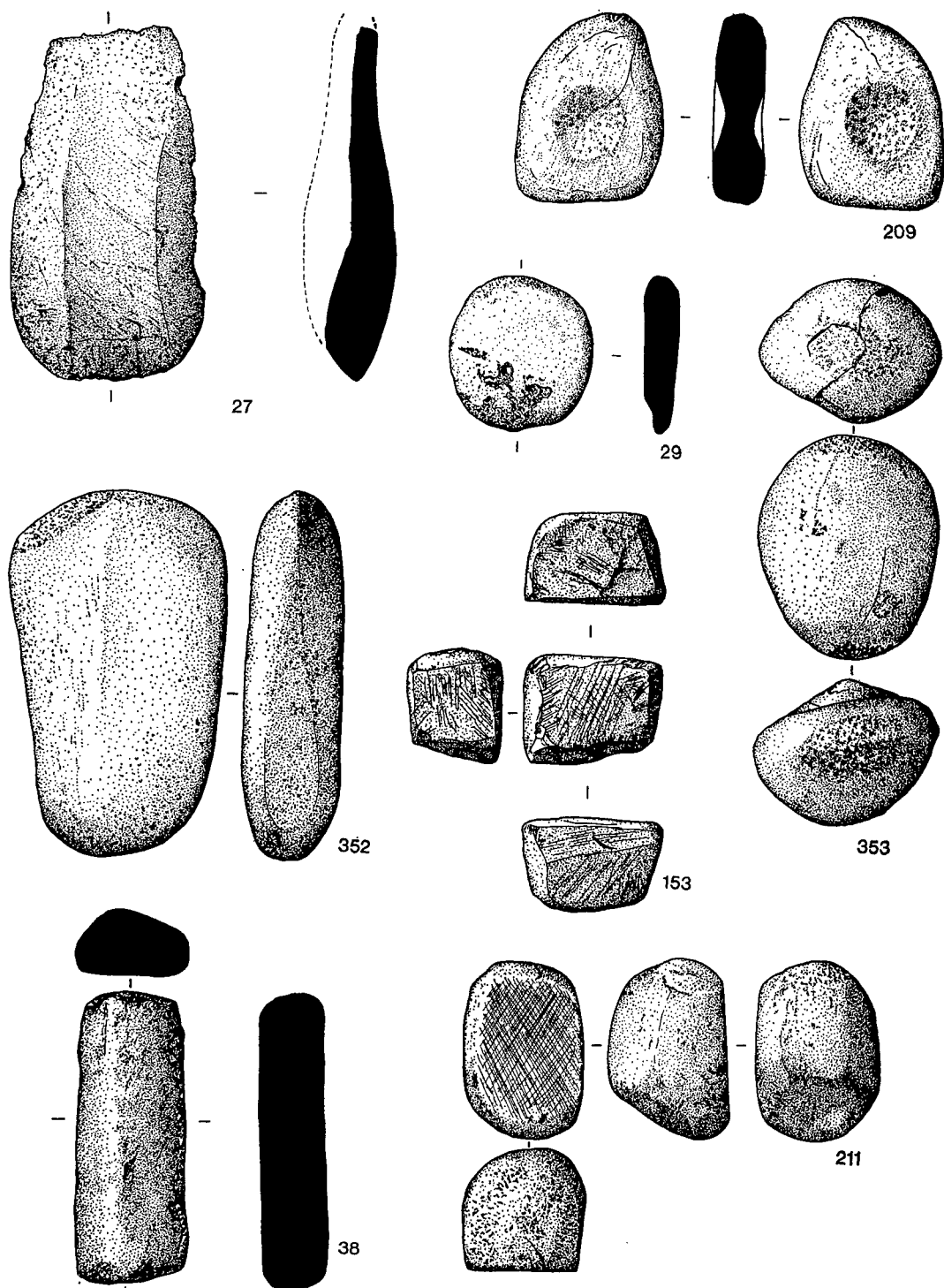


FIG 14 Balloch: ground stone implements (scale 1:3)

selected as 'choice' material. The lack of such choice material in Arran at the present day might be explained by it having been 'worked out'.

(What Dr MacDonald has referred to as jet is termed lignite in the remainder of this report without prejudice to its identification.)

Coal is known from other first millennium BC sites (Jobey 1970, 86) but its limited quantities indicate that timber remained the preferred fuel. Until these raw materials are differentiated (Pollard *et al* 1981) it may not be timely to discuss sources. However, as in the case of Traprain Law, East Lothian (Curle & Cree 1921, 168, fig 11.34), Dunadd, Argyll (Christison 1905, 315) and St Blane's, Bute (Anderson 1900, 311), some of this material may have been worked locally at Balloch. Apart from shapeless fragments, there are some 18 sizeable flakes, some with scratched surface, one with a possible perforation. The slender evidence for Balloch wasters, however, lack the central discs or cutting grooves of bracelets and all fragments derive from post-rampart deposits.

STONE OBJECTS CATALOGUE

Stone axe (?)

A badly sheared example from Area C, Level 5 (fig 14.27) retains only its worn cutting edge and most of one face. Apart from pitchstone, this is the only exotic stone in the Balloch assemblage, a lithic arenite (volcanic ash), and although it has not been possible to assign it to one of the known groups of polished stone axes, its non-Kintyre origin is more in keeping with the stone exchange systems of the third millennium BC than the characteristic local exploitation of the first. Its weathered and battered condition suggests re-use.

Cupped stones (figs 14, 15)

Stones of diverse purpose and shape are grouped together here. The smallest, 209, is a flattened pebble of Dalradian grit with 35 mm diameter shallow cupmarks neatly pecked in both faces. There are no signs of lamp-burning: other instances of opposed cups show that pecking continued till the intervening wall was pierced (Simpson 1969, 22, fig 9.2), hence its possible use as a small-scale mortar. This however is a very neat example which resembles the oval pebbles from crannogs (Munro 1882, 56, fig 29) and Dun Ardreck, Skye (MacKie 1971b, 68). A much larger plano-convex schist slab, 167, has two cupmarks and the start of a third in its convex face. These are more irregular, with a rough surface suggestive of circular pivoting action, but the worn laminated texture of the stone prevents certainty. Along the smooth, slightly concave, portion of the flat surface are two parallel indentations, too superficial to be described as grooves. The remaining cups take the form of single oval hollows in two blocks; the complete example, 118, is 15 mm deep. Their roughly pecked surfaces preclude prolonged use as pivot stones, their coarse, air-holed texture as mortars for fine materials. They may have been post-supports in loose soil conditions, but their secondary stratigraphic contexts are of little assistance to interpretation. The other cupped stones were recovered near Structures 5-7 in Level 3.

Grinders (fig 14)

These are hand-sized stones abraded at one or both ends from grinding intractable materials. They do not seem to have served as dual-purpose hammer-grinders such as Beveridge noted in the duns of Tìree and Coll (1903, pl opp 176), but our recorded sample, four, is small. Pebble 352 is axe-shaped, its corner 'edge' fashioned by grinding in the same manner as one working platform on 353; 211 is striated on a smooth surface and another may have been re-used as a pot boiler. They come from the area of Structures 5-7.

Polishers

Several smooth quartzite pebbles have developed shiny patches from working pliable materials. They are concentrated in the areas of Structures 5-7, Level 3, and indicate the deliberate choice of certain stone types for specific functions.

Whetstones (fig 14)

A rectangular bar of carboniferous lava with hog-backed profile, 38, is smoothed on its flat face and may have been used for sharpening metal. A smaller pebble-shaped sandstone with three, and possibly five, flat planes has the consistency of emery and may have served as a hone. Both come from post-R1 deposits.

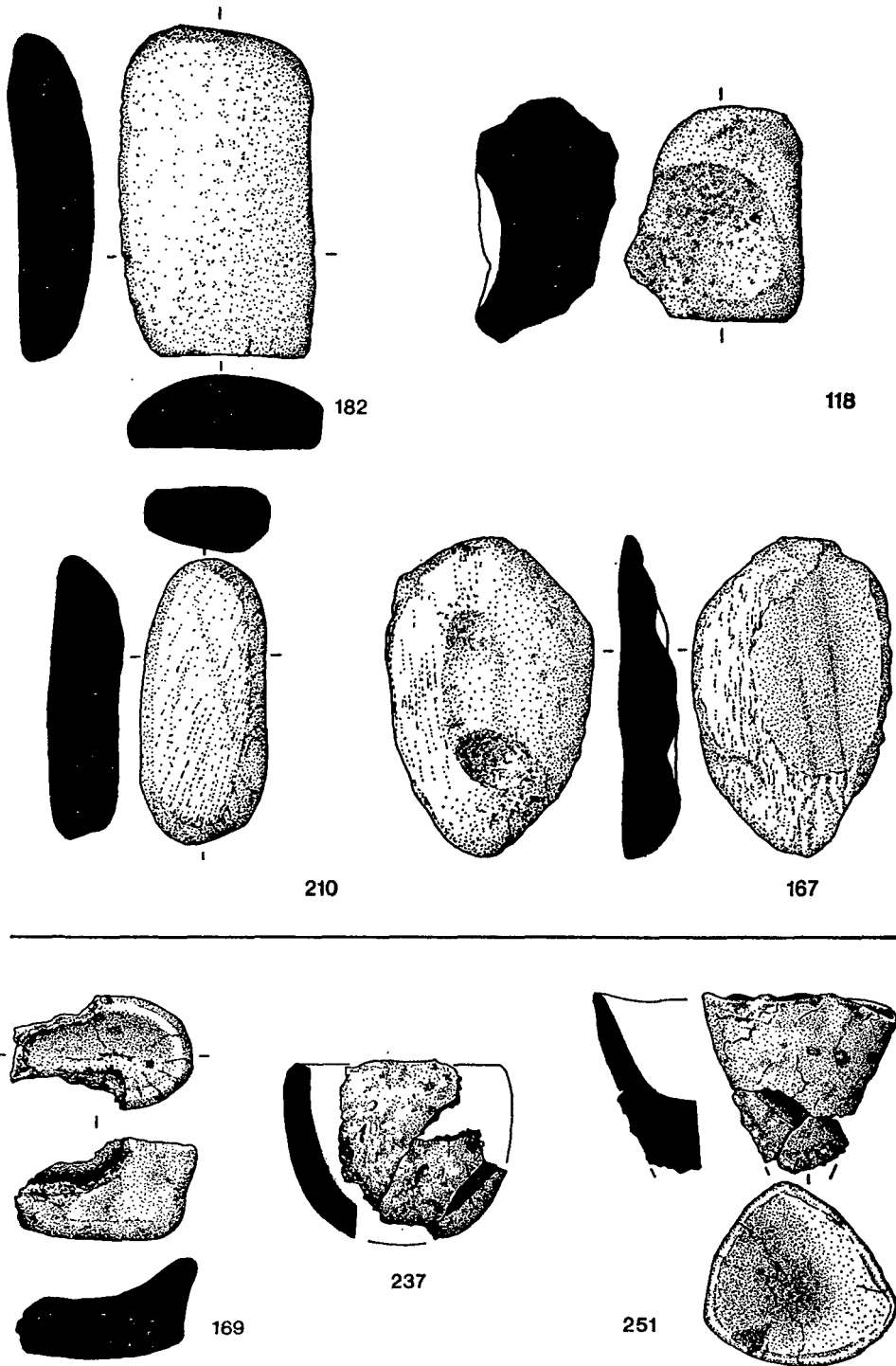


FIG 15 Balloch: ground stone objects (above), mould (?) and crucibles (below) (scale 1:8 (above), 1:2 (below))

Saddle querns (fig 15)

Only one of the four plano-convex blocks classified as saddle querns has their typical slightly dished working surface, but the remainder are otherwise worn in the same roughened manner. Two are fragmentary, one an irregular slab, and 182 a complete, rectangular, tuff with central smoothed plane. All come from the NW interior; one, from the post-rampart deposits, had one end damaged, perhaps as a result of its secondary use as a hammer.

Rubber (fig 15)

An elongated schistose grit pebble, 210, with one much abraded but utilised surface was recovered from R1 tumble in the NW interior.

Pot Boilers

Several probable examples were found.

Disc (fig 14)

One flat pebble, 29, has an abraded, but not smoothly ground, circumference. Its slightly bevelled edge would be suitable for slotting into the mouth of a receptacle were it not for a counter-bevel along one side.

Counters and burnishers (figs 14, 18)

Two types, disc and cuboid, are included here. The lignite disc examples are either thick, 53, or thin with sharply cut oblate profile, 324. Both are scratched from use, but schist disc 252 has, in addition, sloped faces. It may therefore have served as a burnisher, as may the cube, 153. The largest face of the latter is flat, the remaining five rougher and slightly convex. Since, however, there are no striations on the flat surface it is tentatively included here. These objects were scattered in pre-R1 collapse contexts in the NW interior and the SE; the cube comes from the area of the later Structure 2. Similar jet and schist counters occur in the broch levels Dun Mor Vaul, Tiree and Dun an Ruigh Ruidh, Ross and Cromarty (MacKie 1974, 135; 1980, 70, fig 16.5-6).

Beads (fig 18)

A single, very worn lignite disc-bead, 32, oblate in section and with double-cone perforation, comes from Structure 2. It is very uneven and poorly finished in comparison to the lignite bracelets and is more over a small type with little chronological value (cf Ralston 1980, 33).

Armllets (fig 18)

Fragments of three annular, D-profiled lignite armllets were found near hearth K6 and in Area C; a possible fourth from Area EE outside the fort entrance was pierced as if for re-use as a pendant or for mending. The two near hearth K6 have identical diameters, 85 mm; that from Area C, with a minimum width of 30 mm is probably a more massive type. It comes from a level deposited when R1 was in disrepair. Later prehistoric and early historic parallels are widespread and in their distribution Kintyre was no exception, with examples from two of the five excavated duns, Kildalraig and Ugadale (RCAMS 1971, 88; Fairhurst 1956, 19) and from the crannog Lochan Dughail (RCAMS 1971, 95).

Flints (figs 16 top, 17)

The majority of the 118 recorded specimens are cream-grey in colour and they often retain a fretted, buff-white cortex. Only four are uniformly dark grey; three examples brown. Except for beach flint, this material is not available in Kintyre, and although there are deposits in Ayrshire and Mull (Wickham-Jones Collins 1978), these are limited, so the plentiful deposits in Antrim cannot be excluded as one possible source. None shows signs of water-rolling.

A high proportion, 20%, are implements and no doubt flakes were also utilized. No cores were recorded. The following types are represented:

Leaf-shaped arrowheads:	2 and probably 4 (fig 16.137, 167)
Scrapers	:11 (figs 16.149; 17.8, 26, 65, 297)
Blades	:4 (fig 17.346)

These types, the remaining implements (chiefly retouched flakes), and the by-products show little patination. Most come from Level 3 inside R1, but a notable proportion, 18%, was found in the limited exposures beyond R1 (Table 7). Three contexts are chronologically significant. Sealed below R1 in Areas B-D were several tiny waste flakes attesting to the presence of the builders, or of still earlier inhabi-

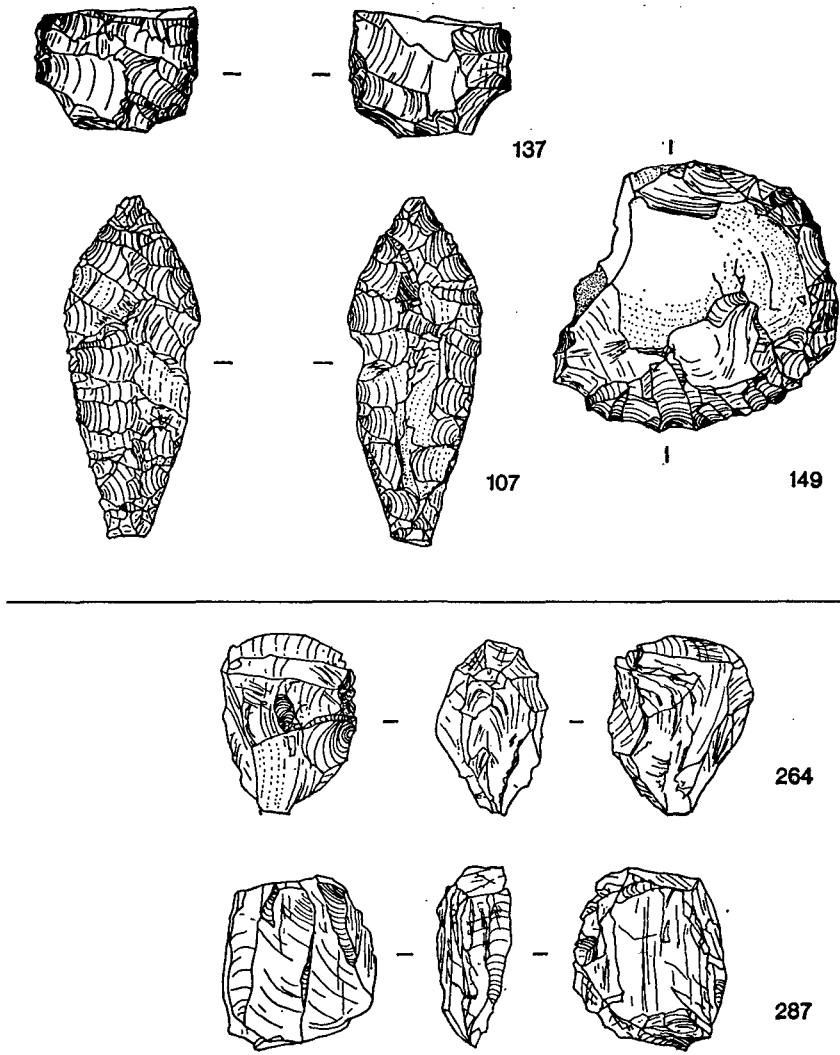


FIG 16 Balloch: flints from Area DD (above) and pitchstone cores (below) (scale 1:1)

tants. Three cream-grey flints were associated with the cremation burials. Of these only the blade in urn 75 was burnt and had fractured into two (18 & 24) before or during deposition. The fragmentary blade outside that urn is the only retouched tool from the group: no other blades from Balloch exhibit such steep, bilateral retouch. The flake, 17, from the centre of urn 76 is notable for being the largest flint from Balloch save for one scraper from the interior of the fort (unstratified). The third group (fig 16 top), from R3, consists of fine flakes, one definite and one probable leaf-shaped arrowhead and a discoidal scraper. One of the flakes, triangular with intact bulb at its base, was found near a carbonized length of wood (above, p 156). The finer quality of this group distinguishes it from the rest of the assemblage. The remaining two possible leaf-shaped arrow-head fragments were found in Level 3 inside R1: one was in Area B (secondarily burnt) and the other in Area K.

Pitchstone (figs 16 bottom, 17)

The 58 recorded pitchstones are opaque, lustrous dark green in colour, the majority incorporating white specks. Six examples are more olive-grey, but this colour merges into dark green on one example, so

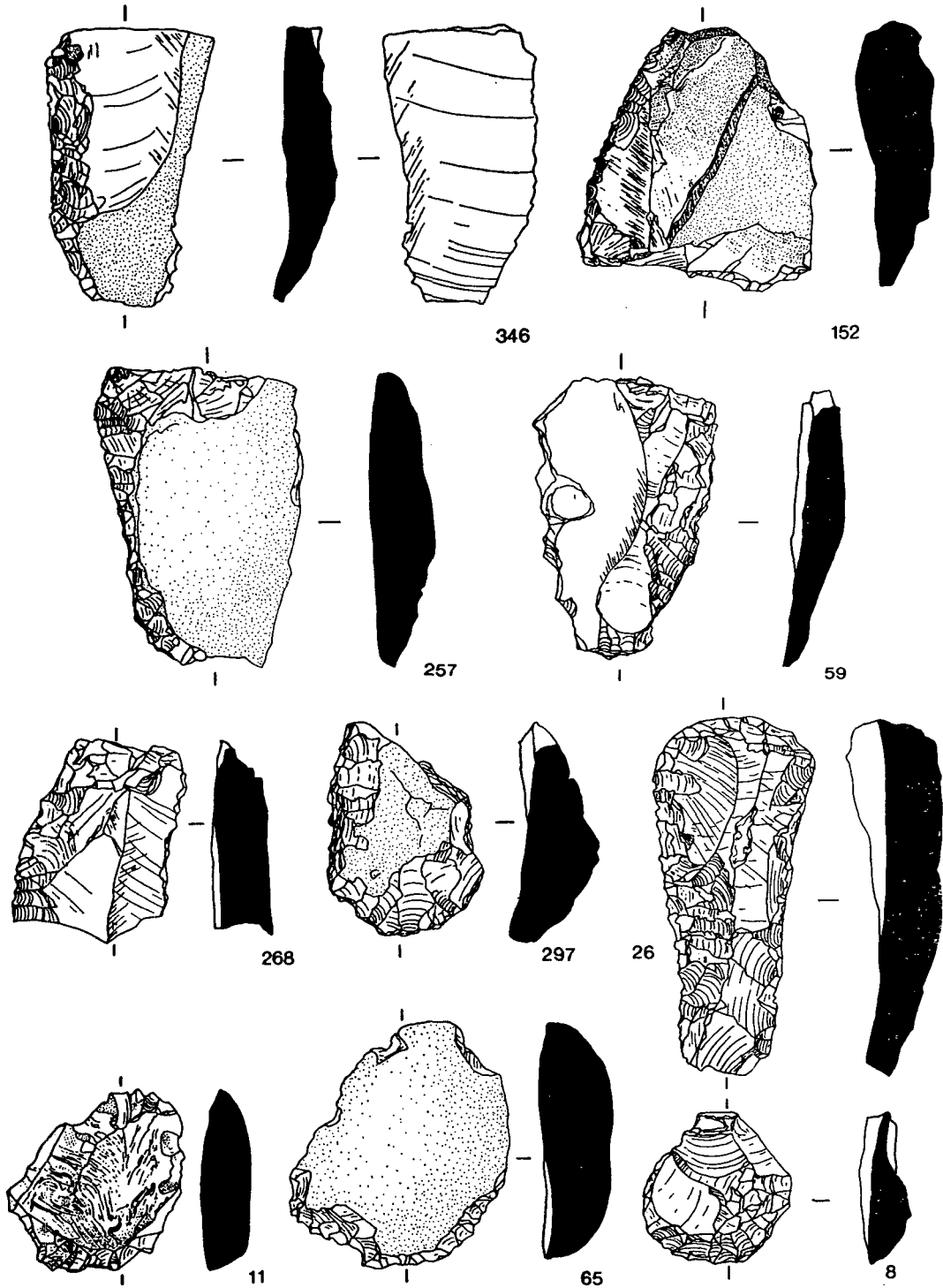


FIG 17 Balloch: Flint implements and pitchstone scraper (11) (scale 1:1)

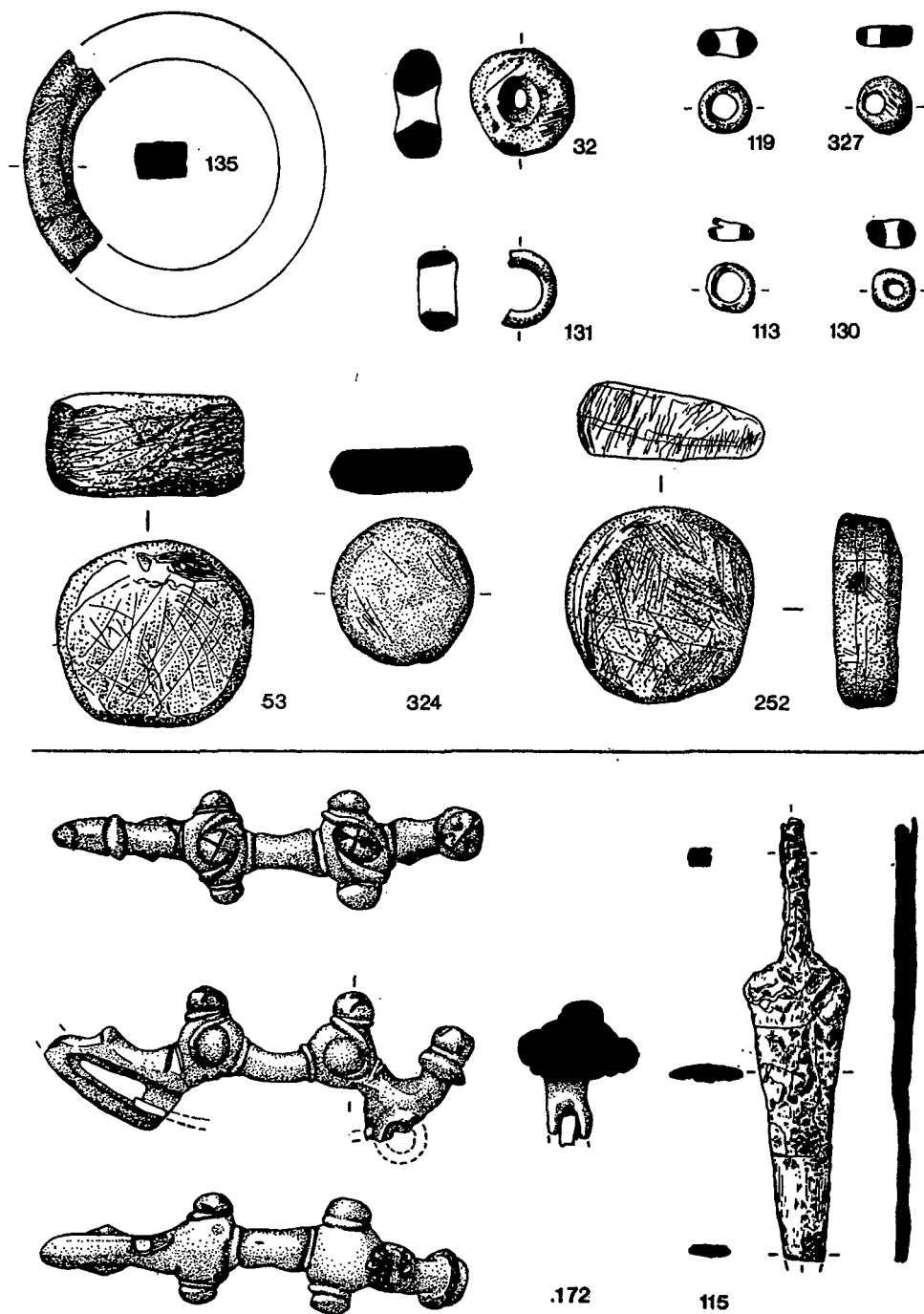


FIG 18 Balloch: Lignite, schist, glass and metalwork (scale 1:1 except 115 and 135: 1:2)

no great difference in type is indicated. Dr J G MacDonald has concluded that a presumed representative selection is from Arran and that of these some were specially selected for their glassy characteristics and brought to Kintyre by human agency (above, p 00).

Only one tool, a thin scraper (fig 17.11) on a lightly patinated flake, is represented in this assemblage. The rest consists of 51 small flakes and six cores; the largest piece is only 38 mm long. The absence of attrition on the brittle edges of the flakes and the rarity of implements indicates manufacture of end-products for use elsewhere. The core sizes (fig 16.264, 287) suggest that these were small, practically microlithic and certainly smaller than the anomalous scraper. One sliver comes from beneath R1 and so antedates, or is contemporary with, its construction. The question of their possible date is discussed below p 195.

Quartz

Small slivers, chips and two struck pieces attest the occasional use of quartz which occurs locally in the area. It was found in unworked nodules in most deposits in the interior. One nodule has pairs of parallel grooves on two faces but there is no trace of iron-staining as sometimes occurs on strike-a-lights, nor do any of the recorded examples resemble the smooth pebbles with single grooves found in duns and brochs (Childe 1936). Some fragments may have been gun flints. Most chips and nodules come from Level 3; the tracked quartz from post-R1 deposits.

GLASS (fig 18)

Ten undecorated small annular beads were recorded. They are of translucent blue glass with an average diameter of 7 mm. Only one, 327, has flattened ends and it, like the largest, 131, lacks the cobalt hue of the others. Most are associated with Structure 2 (fig 5) and they belong to a type which, in W Scotland, has a chronological range from at least the 1st century BC to the 8th century AD (Guido 1978, 160-1). There are, in addition, fragments of modern glass from superficial deposits and these may be related to the four terracotta bottle stoppers from equally superficial levels.

METALS AND METALWORKING

Dr E A Slater examined a variety of Balloch materials with a view to establishing the nature and extent of evidence for metalworking on the site: in conjunction, Dr J Tate carried out a series of X-ray fluorescence analyses. The following results are compiled from Dr Slater's much more thorough report which is filed with other site documentation in the National Monuments of Scotland Record. An asterisk indicates an object not examined by Dr Slater.

METAL

Copper-based Awl (?) from miniature vessel 81. Fig 8.82. *Brooch** from Area CC, Level 3. Fig 18.172. Possible pieces of metal sheet from Area C, Level 5.

*Iron Dagger** from Structure 2. Fig 18.115. Length 121 mm, width 31 mm. *Tang** from Structure 2. Length 38 mm

Hollow chisel (?) from Area J, Levels 2/3. Length 127 mm

Short length of cylinder with rectangular socket from Area CC, Level 3. Length 23 mm

Fragment* from Area K, Level 3

Nails from Area F, superficial

VITRIFIED MATERIAL

Classified in the field as slag, clinker or slight vitrification, this widely-dispersed material proved to be quite varied in composition and is probably derived from different processes. The material was initially scanned with a magnet and then multiple samples were taken from each batch for X-ray diffraction. All patterns were difficult to interpret as there are numerous minerals with similar X-ray diffraction patterns. Charts were scanned for the presence of characteristic slag components such as fayalite (Fe_2SiO_4); manganese; magnesium iron; aluminium oxides; iron silicates and co-metallic silicates; other identifications were made where possible.

The material was very inhomogeneous. If there was a specific area of interest (eg surface glaze), this was sampled. Otherwise, a large sample was removed and ground, then aliquot was taken for analysis in the hope that it was representative and contained all phases. The results are shown in Table 3.

TABLE 3
Distribution and identification of vitrified materials

Area	Context	Weight (g)	Sample analysis
B	rampart tumble	nd	
B	Level 3	nd	
C	Levels 2-5	48	Silicates, Fe(OH) ₃ . Not slag
C	Level 2	500	
C	Level 3	25	
C	Level 4	350	
C	Level 5	125	
C	51	256	
C	52	nd	
C	57	nd	
C	510	3608	Silica, Fe ₂ O ₃ . Not early iron-working slag
C	63	271	Fayalite slag
CC	Level 1	12	Not slag
DD	Level 2	60	Iron oxides and hydroxides, silica
EE		25	
J	Level 3	179	Iron fayalite slag
K	Level 3	500	Silica and iron oxides

nd - below 1 g

NON-METALLIC SAMPLES

Mould or crucible from Area F, Level 3, fig 15.169. Fragmentary; length 50 mm, width 30 mm. Light grey ceramic with small internal patch of deposit which consists mainly of copper and tin oxides.

Small, fragmentary pot from B17, fig 15.237. Height 56 mm, diameter 64 mm. Discoloured, but no analytical evidence for connection with metalworking.

Triangular crucible with patches of red/green glaze, from Area K, Level 3, fig 15.251. Height 37 mm, width 52 mm. This was used for copper-based materials, but the slag on the base is due to heating and vitrification of the ceramic body.

? Clay nozzle from Area D. Fragments of baked clay.

? Mould fragments from Area B, Level 3. Dr J Romans of the Macaulay Institute for Soil Research suggested this interpretation on the basis of colours, fabric and 'brown glass' in cavities. Very small fragments do not retain traces of shape of intended (?) object.

Pottery fragment with patches of glaze from Area B, Level 3. Visual examination suggests that extensively heated, porous body has slag in the exterior, copper and iron on the interior.

Pottery fragment* with reddening merging into blue/green/white glaze on surface. From Area F, Level 1.

GEOLOGICAL SAMPLES

Certain stones from Areas CC, Level 3 and J, Level 3 had light green powder in surface pores. According to Dr J MacDonald (p 184) uneconomic traces of copper are liable to occur in the local lavas.

DISCUSSION

On the basis of iron-working slags from C63 and J, Level 3 it is evident that iron-working was established at Balloch during the main occupation of the fort. The installations that produced this debris have not been located, but they should not be far from Area C, at the downwind side of the fort whence most 'slags' came (Table 3). Copper-working implements are represented primarily by the mould and triangular crucible (fig 15.169, 251) with attached copper residues. The miniature pot (fig 15.237), though lacking traces of metal, has been reddened and whitened in an oxidizing atmosphere; its coarse, pitted fabric, unlike that of other small vessels (fig 12.12, 287, 303) also suggests specialised use, perhaps associated with metalworking. Other pieces of evidence such as the clay nozzle (?) and parts of structures (?) require corroboration if they are to be definitely linked with metalworking (eg the latter could be from

domestic ovens), but they do not contradict the suggestion that copper-based and iron objects were known and perhaps produced contemporaneously at Balloch.

The closest source of Argyll copper is 60 km to the N, in Knapdale (above p 183), but as the odd fragments indicate, scrap could have been one local source. One type of crucible employed here has the well-known triangular shape, common in later prehistoric contexts along the western seaboard. MacKie employs this type to bolster his thesis of English migrants from Wessex or SW England during the 1st century BC (1971a, 55). According to this theory they would only be found after that date in the Hebrides, but so little work has been carried out on the adjacent mainland that there is a dearth of sample control. This argument *e silentio* is now breached by the evidence of Balloch. Since there are no other objects from Balloch or other Kintyre sites that could substantiate a southern English presence, such widespread triangular crucibles may best be interpreted as evidence for itinerant metalworkers. The mould (fig 15.169) also suggests metalworking contact between groups without other affinities in terms of material culture. It is to be distinguished from the numerous stone bar-moulds and is thus a much rarer type with more limited use, paralleled at Bac Mhic Connain, North Uist (Callander 1932, 62, fig 17.8, 9).

Of the copper-based objects, only the brooch and possible pieces of sheet could possibly be associated with the copper-working equipment, but it should be noted that the brooch is not from a sealed context.

Amongst the iron objects, the dagger and chisel (?) merit further comment here. The corroded iron dagger (fig 15.115) lacks its tip, has a flat blade, angular shoulders and thick tang. It is only 121 mm long and may have been one of a pair, since a similar tang was found nearby. The latter splays slightly at one terminal where it previously joined the blade, so it is unlikely to have been part of what would have been a very long tang of the more complete dagger. Daggers with very long tangs occur elsewhere, as at Lochlee Crannog (Munro 1882, 126, fig 135), but the blades have more convex edges than does the Balloch example. The remaining principal iron object is a tapered bar, 127 mm long; although corroded and now embedded in stone, the squared profile of the socket is still visible. X-ray showed this to extend the length of the bar, a blunted, chisel-like tip and perhaps once bulbous butt. The now-sealed butt terminal makes it an unlikely socketed implement but it may have been a chisel.

BROOCH (fig 18) Joanna Close-Brooks

Bronze brooch, 58 mm long, the bow and foot cast in one piece; most of the iron pin is missing. The bow is ornamented with two sets of three knobs, and a collared knob projects behind the head. The point of the foot, now broken, probably also bore a knob. The central knobs and the end knobs have an incised cross on top; the side knobs are plain. Thin S-shaped scrolls link the knobs and coil round them; simple mouldings cross the bow before and behind the triple knobs; there is a lip-like moulding on the foot. The condition of the brooch is generally good, save for some damage to the knobs.

A small fragment of the iron pin remains in the catchplate; it appears to have been hinged. Below the head of the brooch depend the damaged remains of two perforated bronze discs. Corroded between them is part of what seems to be the flat ring-end of the iron pin, which probably pivoted on an iron rivet, now lost. X-ray fluorescence analysis by Dr J Tate of the Research Laboratory of the National Museum of Antiquities of Scotland has shown that the brooch is a tin bronze with traces of arsenic, antimony and lead, and that the pin fragment in the catchplate is iron, though now corroded green.

This is an unusual and intriguing brooch. The cast foot is a La Tène III form, and the brooch shows no sign of Roman influence, so it should date between the later 2nd century BC and the arrival of the Romans in the 1st century AD. The resemblance of the knobs and linking S-scrolls to La Tène II plastic-style (or earlier) ornament on continental bangles and brooches (cf Filip 1962, fig 21, pl 29) is probably fortuitous. There is no parallel for this brooch in Scotland, where La Tène brooches of any kind are rare. Indeed the only related brooch so far known in Britain seems to be the brooch with riveted-on glass knobs from the River Thames at Datchet, Berkshire (Fox 1958, pl 41a) which, despite structural differences, has certain similarities in the flattish bow, the profusion of knobs, the knobs projecting behind the head and the hinged pin. The Balloch brooch could be a cast bronze version of a similar prototype.

Comparisons for the decoration on the Balloch brooch are also limited. The lip moulding above the foot occurs on the foot of an involuted brooch from Danes' Graves, Yorkshire (Stead 1979, fig 26.4) but the motif is too simple for the comparison to be helpful. A more striking comparison can be made between the knobbed decoration on the Balloch brooch and three cast bronze ring-headed pins. One from the Isle of Coll, exhibited in 1881, is now lost (*Proc Soc Antiq Scot*, 15 (1880-1), 79-81, fig 3; the pin was not donated to the National Museum as MacGregor (1976, catalogue no 265) implies). The illustration is not very clear, but the pin was certainly ornamented with a cast knob or knobs. A second decorated ring-

headed pin from O'Connor's Island, Co Sligo, Ireland (Crawford 1922) has two pairs of knobs on the head, linked by an S-scroll in relief, apparently almost identical to those on the Balloch brooch. Another Irish pin from Grange, Co Sligo (Raftery 1951, fig 243.3; fig 253.12), has a similar pair of knobs linked by an S-scroll. However, the precise date of these pins is uncertain (MacGregor 1976, 138-9), and could be later than the brooch. More evidence is needed before any conclusions can be drawn from these comparisons across the Irish Sea.

MISCELLANEOUS

An approximately cylindrical tube of pottery (?) from J3 has a streak of blue 'glaze' on it. The piece is but 11 mm long, 3 mm in diameter and, according to X-ray fluorescence analysis there are no differences apparent in the blue and brown surface nor does the blue derive from an obvious metal base.

PHASES AND TYPES OF ACTIVITY ON BALLOCH HILL

The combination of plans, stratigraphy, artefactual and specialist analyses from Balloch offers detailed insights into activities over a prolonged period on this W Scottish hilltop. While hindered by the relatively small area investigated, 447.5 m² of a possible 0.5 ha or more, and the natural and man-made disturbances on the interior, it is none the less the largest hilltop exposure in the W and it is possible to isolate four major phases of activity. In summary, Phase 1 represents later 3rd millennium bc settlement; phase 2 middle 2nd millennium bc ritual and burial; Phase 3 later 1st millennium bc enclosed settlement and Phase 4 an unenclosed homestead of perhaps the 1st century bc or the earlier part of the following millennium.

PHASE 1

Evidence for Neolithic settlement, rather than ephemeral activity, is derived most obviously from the pottery with well preserved surfaces which is assigned to the later 3rd millennium bc (above pp 168-9). In this instance, therefore, the few leaf-shaped arrowheads and perhaps the finer scrapers and the stone axehead should not, as is often the case on hillforts, be dismissed as mere remnants of the activities of passing hunters or farmers but should preferably be associated with the pottery in one assemblage, even though stratigraphic evidence for such association is lacking.

The Arran pitchstone may also belong to this phase. Henshall (1972, 109) has demonstrated how frequently it recurs in Clyde chambered tombs which should in part be contemporary with Balloch 1. At Brackley, Argyll, however, Scott found it with a Food Vessel and while it could have been obtained from the primary, Neolithic, burial, the presence of a core with flakes may mean more than the re-use of earlier grave goods (1956, 38-44). A similar situation exists at Achnacreebeag, Argyll (Ritchie 1970, 50). This suspicion of continued distribution receives limited support from the occurrence of a secondarily-worked flake beside a cinerary urn at Cowdenbeath, Fife, a site lacking Neolithic material (Lacaille 1931, 266). Burial evidence therefore shows a *floruit*, rather than exclusive use, of Arran pitchstone in the Neolithic. Settlement and other non-burial contexts corroborate rather than alter this view. At least seven of the 43 pitchstones recovered from Lealt Bay, Jura proved to be of Arran type (Mercer 1968, 45) and elsewhere Mercer suggests that the late aspect of this hunters' camping ground, which does include Neolithic arrowhead types, should be no later than 2940 BC (1971, 24). He applies the same dating to the Lussa River camp, Jura, where five green pitchstone artefacts were included in the assemblage, though a Neolithic component is perhaps implied by the presence of a lozenge-shaped arrowhead (1971, 8, 22, 28). This mixture of Mesolithic and Neolithic artefact types is also evident in surface collections that include pitchstone at Barr River, Argyll (Mercer 1979, 4) and in several areas in southern Scotland stretching from Luce Bay and Ayrshire to the Tweed Valley (Mulholland 1970, 86-7). Within the greater Clyde basin however the popularity of this material in settlements

of the later 3rd millennium bc is emphasised by the 7:5 proportion of pitchstone to flint at Auchatagan, Argyll (Marshall 1978, 44) and the occurrence of a scraper at Ardnadam, Argyll (Rennie, pers comm). That it was also occasionally used later is clear from examples at Kildonan, Argyll (Fairhurst 1939, 215) and, perhaps, Loch Glashan, Argyll (Fairhurst 1969, 62), but not necessarily at Scotstarvit, Fife, where there is underlying early settlement (Bersu 1948, 263). However, these late specimens are very rare and the evidence at our disposal, including the associated C¹⁴ dates from Pitnacree, Perthshire, Monamore, Arran (Henshall 1972, 193n 2, 380) and Auchatagan, Argyll (Marshall 1978, 43) indicates a zenith of exploitation and dissemination of cores during the 3rd millennium bc. That most, and perhaps all, of these green and black pitchstones are derived from Arran is likely (Ritchie 1968), not only because of their distribution pattern but also because of the presence of crystals, which render striking planes unsuitable for working, in pitchstones from the other major source in Ardnamurchan.

Undated examples come from at least three other hilltop sites: Carwinning, Argyll (Cowie, pers comm), Dunagoil, Bute (Ritchie 1968) and Whitmoss, Renfrewshire (Jones 1979). At all three sites there is evidence for Neolithic activity. We know so little of the material culture of western seaboard drystone fort dwellers that a renewed exploitation of this material cannot be precluded, but the general exploitation trend does not support such a view and the flake safely stratified below R1 also points to earlier use. Since there is none with the cremation burials of Phase 2, the likelihood is that at Balloch, Arran pitchstone represents one more facet of Neolithic settlement.

The relatively large number of flints and quartz may also belong to the same phase since forts in general do not yield chipped stone in abundance. Where they do, as at Burnswark, for example (Jobey 1978, 96), the flints are often assigned to an earlier presence. However in Argyll there is some evidence to suggest persistence of the craft at sites conventionally assigned to the 1st millennium bc or later. Thus Dun Mor Vaul yielded 18 finds of chipped stone (MacKie 1974, 134), Duntroon 14 (Christison 1905, 279–80) and, in Kintyre, Kildonan I 70 (Fairhurst 1939, 213–15), Ugadale 34 (Fairhurst 1956, 19) and Dun Mhic Choigil at least 134 (Hedges & Hedges 1977). Eleven flakes also accompanied an 8th-century BC bronze hoard from Killernan (RCAMS 1971, 12). Thus there is a distinct possibility that some of the less diagnostic flint belongs to a later phase and this reservation may also apply to the stone axe. Christison commented on their recurrence during his work on Argyll fortifications (1905, 269) and the three examples from Kildalraig (Bigwood, pers comm), where there are no other traces of Neolithic activity, support the notion that they were collected in later times.

The distribution of undoubted and reasonably inferred Phase 1 finds, namely the Neolithic pottery, Arran pitchstone and diagnostic flint, may help to define zones of less disturbed Neolithic activity and so enable us to characterize that activity more clearly. In the following analyses of artefact distributions, excavated Areas are treated as a whole. In order to compare total artefact densities from discrete parts of the hill, the unequal areas of the exposures are weighted to ensure compatibility. Of the total exposure of 447.5 m², the NW interior is 225 m²; the SE interior is 117 m²; below the summit is 105.5 m²; and thus the weighting factor for the SE is 1.92, for the exterior 2.13. Weighted totals are shown in brackets in Tables 4–7.

The Neolithic pottery (Table 4) provides the clearest indication that a focus of activity existed in the NW part of the summit. Well over 90% of all Neolithic sherds come from this location and within it a large proportion was found on the old ground surface towards the dished centre of the hilltop. The pottery therefore suggests that Neolithic occupation was quite limited in extent. The pitchstone, however, is more widely distributed (Table 5). Not only is it found below the summit where there is no Neolithic pottery, but weighted figures indicate that

TABLE 4
Neolithic pottery distribution summary

	Area	Numbers (sherds & pots)	Weights (g)
NW Interior	B	4	11
	F	9	107
	G	1	10
	J	9	78
	K	33	634
Totals		56	840
SE Interior	A		
	C	3	7
	CC		
	E		
Totals		3 (6)	7 (13)
Below summit		none	

TABLE 5
Distribution of pitchstone

	Area	Cores	Flakes	Tools
NW Interior	B		5	
	F	1	6	
	G		1	
	J	1	2	
	K	4	24	
Totals		6	38	
SE Interior	A		3	
	E		1	
	C		6	1
	CC			
Totals			10 (19)	1 (2)
Below summit	D		2	
	EE			
	Under R1		1	
Totals			3 (6)	

almost 40% comes from beyond the NW location. Despite this contrast, the centre of manufacture is situated in the NW, whence all six cores came. Such a clear division is unlikely to be fortuitous and it supports the integrity of the sample. If this is accepted then the variant distribution may be interpreted in terms of functional differences. The pattern receives some confirmation from diagnostic flint which is also notable beyond the NW area.

Phase 4 occupation impinged on earlier levels in most areas and so it could be argued that this already meagre sample is further invalidated because of significant lateral displacement of artefacts. If so, then the Iron Age pottery should reveal a similar disturbance pattern. This is not the case. Compared to the Neolithic pottery it occurs in markedly higher proportions in the SE (Table 6). It is not so clear in relation to the pitchstones, but the few Iron Age sherds were much larger in the SE and the figures for pottery weights emphasize the concentration of activity that is evident here. Thus, despite later disturbance, Phase 1 material has not suffered radical displacement, a conclusion verified by the absence of abrasion on most Neolithic sherds.

There is no clear correlation between the distribution of the total flint assemblage (Table 7) and acknowledged Neolithic artefacts, especially the pitchstones, that might be expected if all flints belonged to Phase 1. If, however, one deletes the weight of the anomalous Bronze Age

TABLE 6

1st millennium bc pottery distribution summary

	Area	Numbers (sherds & pots)	Weights (g)
NW Interior	B	2	79
	F	45	348
	G	3	10
	J	7	71
	K	89	1081
Totals		146	1589
SE Interior	A	1	10
	C	4	182
	CC	19	2356
	E	1	28
Totals		25 (48)	2576 (4946)
Below summit	D	4	43
	EE		
Totals		4 (9)	43 (92)

TABLE 7

Distribution of flint

	Area	Number	Weight (g)
NW Interior	B	8	113
	F	11	122
	G	1	nd
	J	9	28
	K	39	298
Totals		68	561
SE Interior	A	1	nd
	E	0	0
	C	6	94
	CC	4	37
Totals		11 (21)	141 (271)
Below summit	D	17	207
	EE	0	0
	Under R1	22	1
Totals		39 (83)	208 (443)

flints, then over 60% occurs in the NW area and within that sector over 50% from Area K. This does correspond more closely to the Phase 1 pattern, but clearly we require better controls to elucidate its character further. Only four summit features contained exclusively Neolithic artefacts: an L-shaped pit, K56; the two identical hearths, F12 and F22; and gully C51. The first two are stratified below Iron Age units but it is not possible to measure the time lapse between them, nor are there structures readily associated with these almost identical hearths. Their substantial appearance, however, conforms more to Iron Age types than to what little is known of Neolithic hearths (McInnes 1971; Marshall 1978, 39–42). Gully C51, moreover, has a C^{14} date of 170 bc \pm 70 and so casts doubt on the validity of determining Phase 1 structural components on the basis of exclusive Neolithic artefact associations. This conclusion has even more force when the association is indirect, as in the case of Structure 8 where there is a notable concentration of Phase 1 material (figs 9, 10). However, two other factors should be taken into account in this case. Firstly, there is an equally remarkable absence of later finds from the area of Structure 8, the two exceptions coming from and beside gully K20 which does not seem to belong to the structure. This is a

unique situation on the site where, as in gully C51, there is usually ample Iron Age material in the vicinity. Where the latter has largely disappeared from other proposed structures there is a collateral scarcity of Phase 1 material: thus their combined scarcity in the western parts of Structures 5–7 is accounted for by later intrusion (Structure 2). Secondly, we have deduced that, with its larger posts, Structure 8 is distinct from the other buildings; it also differs from them in being located away from, rather than adjacent to, R1. There are therefore good circumstantial reasons for treating Structure 8 separately and attributing it to Phase 1. The focus of the artefacts lies in and beyond its SE quadrant where there are more postholes (fig 9), so Phase 1 occupation clearly extends beyond the limit of excavation at the centre of the summit. Other Neolithic circular post-built structures are known and to Jones's list of nine hilltop sites with such timber- or stone-footed buildings (1979, 33–4) may be added the Argyll hillside site at Auchategan (Marshall 1978, 39–43).

The presence of pottery and the probable existence of a substantial post-built structure indicate settlement at Balloch rather than just a hunting group's temporary station or camp. The pottery was secondarily burnt (above p 178) in or near Structure 8, whereas pitchstone and flint implements occurred more widely, beyond the confines of the building. Its date can only be ascertained indirectly from C¹⁴ dates associated with similar objects found elsewhere since the dates of Neolithic hilltop occupation are widespread (Jones 1979, 48–50). Leaf-shaped arrowheads may occur throughout most of the 3rd millennium bc in Argyll if the few dates from Port Charlotte, Islay (Harrington & Pierpoint 1980) and Auchategan, Argyll (Marshall 1978, 43) may be taken as representative. Balloch pottery analogies (above, p 172) tend to narrow the chronological range to the later 3rd millennium bc.

The site location is unexpected from distributional studies of finds and chambered tombs in Kintyre. These led Scott to suppose that Neolithic settlement would be found on raised beaches, alluvial gravels and limestone or Palaeozoic rocks (1969, 243). A number of factors may have determined this location, and one more readily assessed with our evidence involves the community's relationship with its surrounding landscape. This exposed hilltop is ideally situated for both upland accessibility and selective exploitation of the Laggan below. The Aros Moss, Laggan, pollen diagram is relevant to the vegetation of this period (Nichols 1967), but the lack of independent dating control for it, even if we knew the precise dates of Balloch Phase 1, means that it can only be used in a general manner. By virtue of sandbanks to the W, the Laggan was probably a raised bog in Zone VIIb with local water standing in what at times was a fenland. Attractive to animals, this probably accounts for the concentration of Balloch-type arrowheads there (Scott 1969, 228, fig 78). This, and the absence of cereal pollens, suggest that the Laggan served primarily as flat hunting-terrain clearly observed from Balloch summit. As the nearby chambered tombs (ARG 32 and 41) testify, upland terrain was at least used for burial and ritual. Unless occupation had nothing to do with subsistence patterns it would seem likely that upland terrain would also be exploited, but this lies above present arable and so should be envisaged in terms of stock or hunting. Balloch therefore provides little evidence for agriculture despite the recurrence of polished stone axeheads in Kintyre and multiple elm declines. Some of the latter, in the absence of C¹⁴ dates from Aros Moss, should belong to the late 4th–early 3rd millennium bc by extrapolation from the Loch Cill an Anghais series (Switsur 1981, 87–8).

Convinced by the polarized distribution patterns of artefacts in the Laggan–Campbeltown Loch area and chambered tombs elsewhere in Kintyre, patterns reinforced by Group VI axes N of the Laggan, Group IX in S Kintyre, Scott postulated a cultural division in this part of W Scotland (1969, 1973). In this division, the aboriginal Laggan group co-existed with chambered cairn builders who perforce settled elsewhere and engaged in mutually exclusive trading patterns.

Balloch on the other hand can hardly be divorced from exploitation of the Laggan and yet its pottery and pitchstone demonstrate close affinities with those of chambered cairn users. Coming from Arran, the most direct route for the pitchstone is through Campbeltown Loch, the centre of the Mesolithic-derived group, and not the Glenlussa route. If Scott's assessment is none the less accurate then the location of occupation at Balloch becomes explicable in terms of conflict between the intrusive group and those in the Laggan whose hunting was impinged upon. In that case the choice of Balloch may well have been for strategic reasons. These reconstructions, however, remain speculative. Phase 1 demonstrates that, as elsewhere in Britain, Neolithic settlement took place on hilltops in W Scotland and it supports Scott's contention that S Kintyre was heavily occupied during this period. Since this community's pottery cannot be dissociated from that used in chambered tombs, its territory should have extended from Glecknahavill or Lochoradale (ARG 32, 41), 3 km to the S on the same contour, and down into the Laggan. However, the pottery tradition and the imported flint, Arran pitchstone, and possibly the axe, demonstrate that, despite its location in the interior, the community had access to a variety of exotic items, reflecting a complex set of contacts beyond the confines of this territory.

PHASE 2

After relatively concentrated Neolithic occupation in S Kintyre a break seems to occur, for there is a retraction of finds to the E and to the area around Campbeltown Loch (RCAMS 1971, 11, fig 3). This corresponds to a withdrawal of habitation from Balloch and perhaps to the cessation of grass pollen in the Aros Moss record and a reinstatement of elm (Nichols 1967, 180). Such significant discontinuities in our evidence may be of more than local dimension since a changing settlement pattern is also recognizable in the Inner and Outer Hebrides where new Beaker settlements are established soon after 2000 bc at Rosinish, Benbecula (Shepherd & Tuckwell 1977, 112) and near Sorisdale, Coll (Ritchie *et al* 1978, 77). During the penultimate stage before the Aros Moss *Grenzhorizont* elm and oak decline and, for the first time, cereal pollens appear in the record (Nichols 1967, 180). Agricultural activity may well have ensued on the hilly flanks of the Laggan, and there are many finds from the area, including amber beads, jet necklaces and metalwork, which attest the flourishing state of the Kintyre peninsula (RCAMS 1971, 9–10). Phase 2 activity belongs to this poorly-dated, but probably post-Beaker, resurgence and the associated C¹⁴ date suggests that it was in progress by the mid-2nd millennium bc (Table 8).

The remains of at least three people were placed in two upright cinerary urns and a cup in a cleft of rock on the W crest of Balloch. The irregularities of the cleft were smoothed-out by lining the cavity with hazel and at least one urn was placed on a pine or spruce tray (?) over this. A small mound of boulder clay capped the multiple cremation deposit. It represents a noteworthy western extension of urns in the Laggan area of Kintyre (RCAMS 1971, 11, fig 3), one probably accounted for by agricultural opportunities there. Elsewhere in Scotland hilltop burials may be more common than present distributions indicate, since such positions are subject to much less disturbance than the coasts and valleys which have yielded most urns. Other hilltop examples in southern Scotland include those at Traprain, East Lothian (Curle & Cree 1921, 162–3, figs 5–6); Carwinning, Ayrshire (Cowie 1979, 4) and Kilpatrick Cashel, Arran (Balfour 1910, 205–6). In Argyll, the Food Vessel fragment from Dunadd (Craw 1930, 123, fig 9) and cairns on various Kintyre forts (RCAMS 1971, 43, 45) attest similar practices. However, several other features of the burials are exceptional or unique. Only a minority of urns are placed upright and none, to my knowledge, has the bread-loaf shape of these receptacles, even if their plain walls conform to the bucket series of urns. While these elongated plans recall shapes typical of woodworking (Bulleid & Gray 1911, 320, figs 82, 86), other non-ceramic analogies may also be borne in mind. These

include deep oval cinerary urns of steatite, some quite large, in the north which can only be attributed loosely to the Bronze Age and later (Anderson 1874, 538–41). There are, however, few other links now with the north and they may best be treated as skeuomorphs of wooden urns that may well have been more common than ceramic ones.

Associated ritual reveals close affinities with burials on the Ayrshire coast. Bucket urns in SW Scotland have a coastal distribution and within their range are four from Ardeer with characteristic internally bevelled rims and with seals of clay that may be quite typical despite few recordings (Morrison 1968). Balloch Phase 2 makes it clear that rims and seals are linked and that such rims functioned as keys for clay seals. Occasionally, removable or open bases have been recorded in pottery (Kavanagh 1976, 321) or in steatite in the north where they were possibly production techniques (Wilson 1851, 146–7). A Food Vessel base from Arran retains decoration suggestive of inserted bases (Balfour 1910, 109, fig 51) and those at Balloch were so poorly fixed as, once more, to indicate differential treatment. They certainly could not have supported the 2.5 and 1.2 kg of cremated bone in addition to the burial goods and so they were brought up empty, carried up on trays or made on the site. The second possibility is rendered more feasible by the fragment of a wooden dish or tray preserved under one urn (pl 14a). If the last could be proven then the pyre(s) is likely to have been at Balloch itself since one urn contained pyre material (fig 8.75). The hill in any case during this period seems to have served as a ritual focus and the affinities with Ayrshire noted above must eventually be considered in conjunction with the scarcity of major circular monuments in those two regions and the, presumably contemporary, imposing circles on the intervening Isle of Arran (Burl 1976, 143–7).

The atypical shape of these bucket rims would make them difficult to place chronologically were it not for the facts that they are sealed under R1, are associated with a biconical miniature vessel, and have a C^{14} date of 1410 bc \pm 70 (Table 8). The last two facts are in agreement, both for the accepted range for such accessory vessels and for dates available for analogous urns (Burgess 1974, 168, fig 25). They would seem to occur soon after the major Beaker horizon in the Atlantic province (Crawford & Switsur 1977, 135–6; Ritchie *et al* 1978, 77; Shepherd & Tuckwell 1977, 112) and, together with the distinctive Kilellan Farm, Islay miniature vessel (Burgess 1976, 199, fig 10.8.9), provide more northerly links with similar ceramic and funerary traditions in Ireland, which Kavanagh would derive from SW Scotland (1976, 335–6). The dates of the Balloch urns, miniature vessel and awl are not exceptionally early, however, and a firmer chronology for similar traditions in Ireland must emerge before such a derivation is assumed. More important is the fact, reinforced by these burials, of identical mid-second millennium bc funerary customs in Ulster, whence two-thirds of all Irish pygmy cups come, and SW Scotland. The lack of stone circles in Kintyre and their concentration, like biconical accessory cups, in the Counties of Tyrone and South Derry (Burl 1976, 243–53; Kavanagh 1977) emphasize the mixture of traditions and concomitant social complexities prevailing in these areas in the mid-2nd millennium bc.

PHASE 3

There is no evidence from these excavations at Balloch to indicate continued use of the site after the cremation burials of Phase 2 and since the next attested phase, 3, belongs to the 1st millennium bc (Table 8) we can return to the aims which initiated this work.

Constructional sequence

The recurrent attention to which the hilltop was subjected makes it difficult to ascribe components which are not stratigraphically linked or dated by C^{14} or associated finds to a particular phase. R3, which if projected around the hill would encompass a minimum of 0.5 ha, has

shallow slot-fills with some diagnostic Neolithic artefacts. The miniscule amounts of charcoal retrieved were submitted for C^{14} dating by the small counter at Harwell in order to resolve the question of their attribution to Phase 1 or to Phase 3. Preliminary results clearly indicate that the slot's rapid fill belongs to the latter (Table 8). R2 encloses c 0.34 ha and consists of two main periods of construction. The first, 1a, is a stone-revetted platform c 0.8 m in height and with a cobbled paving behind a probable breastwork. That the cobbling represents some form of paving, rather than a bonding agent as deduced for a similar occurrence at Burnswark (Jobey 1978, 66), is demonstrated by animal activity which descended only from this cobbling. The latter therefore was an exposed surface for some time. This outwork was subsequently raised (1b) and finally replaced by a 2 m wide stone-based wall (Period 2) which, at its foundation, was built in a very similar manner to R1. There is no internal dating material from this rampart, but the section (fig 4) suggests that it is unlikely to be earlier than R1, a conclusion supported by the total absence of robbing. This excavation evidence is at odds with another assessment of the site based on survey work, one which discerns a sequence in which R1 follows R2 (RCAMS 1971, 17) and one which therefore needs further discussion.

The periodization of multi-phase forts in NW Britain has largely been derived from field observation, and from this Feachem succinctly concluded that, in general, smaller sites succeeded larger ones (1966, 83-4), a conclusion that has gained widespread acceptance. Where there is no visible link between features, however, the problem of whether we are dealing with defended settlements with outer annexes or earlier sites upon which later walled settlements have been superimposed (Jobey 1971a, 83) still remains. Balloch, moreover, demonstrates that the superficial differences between ramparts may be misleading in that they may be more the result of soil mechanics than structural characteristics. Thus the more massive, inner wall of such examples, often perched on a hill, remains denuded of vegetation, whereas similar, if smaller, versions on the slopes below are liable to produce stone spreads which are further camouflaged by soil-creep downhill. The profile of the hill at Balloch (fig 1 bottom) renders the existence of an earlier fort delineated by R2 (RCAMS 1971, 66, fig 38, their Period I) most unlikely since it is well below the summit and entails occupation in several places on a 20° slope. No structures or other *in situ* occupation evidence was obtained from excavation in the most likely space between R1 and 2, that is the more gradual W slope at Area D. To function as an adequate defence, if such it was, R2 would have required an inner work along the summit, but there is nothing there to antedate R1. The two, therefore, are best regarded as part of a unitary scheme and in this view, Balloch was a multi-rampart fort similar to others like Black Hill, Lanarkshire (RCAMS 1978, 92, fig 47). It is a scheme which emphasizes the individual histories of enclosed hilltop settlements and, in general terms, one which shows that, far from a policy of contraction and evolution towards a smaller dun-like site, there was a determined effort to maintain and refurbish the outworks, R2.

With a probable height of up to 2 m in the W, surmounted by a wattle and daub superstructure, R1 is nevertheless unlikely to have served primarily as a defence. There are three main reasons for this appreciation. First, where it should be strongest, at the entrance, the wall in fact narrows and slopes gradually to its terminals. Second, there is no sign of a gate in the rather short entrance passage. Third, it was allowed to fall into disrepair while occupation continued. In contrast, however, R2 was refurbished and the W section of R1 is substantial. Because of the former these variations are unlikely to be the result of an initial conception which required strong defence which soon petered out because an assumed threat failed to materialize. Other, essentially non-defensive, enclosures are known elsewhere along the western approaches (cf Alcock 1960) and they may preferably be regarded as ostentatious displays of local wealth and power, projecting only an outward appearance of strength. At some stage after the erection of R1 its S terminal near

the entrance may have been widened by the addition of a thin and poor external revetment. This forms a low level bench against the foot of R1 and the scantiness of tumble or signs of robbing indicate that it is unlikely to have amounted to much more than its present height. Unless judged incomplete or as a footing for a turf skin against the original rampart, it is most readily interpreted as a stabilizing device for that rampart of a type which recurs in both hillforts (Jobey 1971b, 82-4) and duns (RCAMS 1980, 24). Its step-like appearance is a further argument that R1 was essentially an enclosure and not a defensive wall and this low example suggests that other internal revetments may be buried in rampart collapse of unexcavated forts.

Dating

The most thoroughly dated series of North British forts is in the Tyne-Forth region, but it is uncertain if one should extrapolate from there to Kintyre. Moreover, although general trends from palisaded to stone-built structures are acknowledged, this pattern is subject to considerable

TABLE 8

C¹⁴ dates from Balloch Hill

Group (see p 204)	Context and interpretation	Material	Site Phase	Lab No	C ¹⁴ date bc	Calibrated range BC/AD
I	D8 Cremation burial	<i>Corylus</i>	2	HAR-1902	1410 ± 70	1595-1860
II	E level 3 Initial clearance?	charcoal	3	GU-1031	500 ± 65	435-810
III	A21 entrance barrier	charcoal	3	GU-1033	355 ± 110	355-560
	B level 3 possible rampart 1 & superstructure	<i>Corylus</i> & <i>Salix</i>	3	HAR-1903	320 ± 80	215-475
	D rampart 1 super- structure	<i>Corylus</i>	3	HAR-1904	290 ± 120	165-470
	D check on HAR-1904	charcoal	3	HAR-2043	180 ± 90	50-390
IV	K6 structure 5 (?) hearth	charcoal	3	GU-1104	370 ± 60	380-560
	K362 structure 4 hearth	charcoal	3	GU-1105	455 ± 70	420-765
	R3 (preliminary value)	charcoal	3	HAR-1906	250 ± 100	
	K45 gully	charcoal	3	GU-1106	120 ± 85	50 AD-355 BC
V	C51 gully	<i>Corylus</i> & <i>Salix</i>	3	HAR-1907	170 ± 70	10-390
	J level 3 general occupation	charcoal	3	GU-1028	230 ± 70	120-420
	CC level 3 general occupation	charcoal	3	GU-1030	20 ± 110	190 AD-155 BC
	J upper level 3	charcoal	3/4 transition	HAR-1950	290 ± 70	185-450
VI	K level 2	charcoal	3/4 transition	GU-1029	90 ± 70	80 AD-205 BC
	J1 structure 2 bin	charcoal	4	GU-1032	740 ± 70	825-1030

variation and Balloch confirms the impression gathered from field survey that palisaded sites may have had a much more diminished role to play in the development of later prehistoric enclosed hilltop sites in the Atlantic Province. MacEwen's Castle, Argyll, could, however, possess a palisade and it demonstrates how wary of generalization we should still be (Marshall, forthcoming). This need not necessarily imply a retarded onset for stone-walled forts, however. The concept, in terms of timber-laced type, was current already in the 7th century BC and the sequence at Dun Skeig, Argyll shows that drystone-walled forts can precede both timber-laced forts and duns (MacKie 1976). There are in any case few drystone forts directly dated by C^{14} , and of these, a similar type at Brough Law, Northumberland is much later (Jobey 1971a, 84). It is also later than the beginning of the many walled forts in NW Wales (Savory 1976, 267-71), c 500-100 BC. At the recent end of the time-scale, the Roman presence in these two other areas makes chronological comparisons with Kintyre even more unsafe.

Given the occurrence of coal and Phases 1 and 2 occupation on Balloch, extreme caution has to be exercised in dealing with Phase 3 C^{14} dates (Table 8). These are separated into groups II-V according to degree of inferred dependability and for ease of reference. Against such macro-contamination possibilities must be put the facts that the coal remained in hard nodules and does not seem to have been carried in solution and that no Phase 1 dates have appeared, suggesting that little organic material persisted from that phase, or, perhaps like Phase 2, it was narrowly circumscribed. What redeposited charcoal does exist is more likely to have affected samples comprising smears and flecks from general occupation and transitional contexts (Table 8, group V) than the remainder. Of those, the four associated with R1 are least likely to have been altered by on-site factors since they are structural elements well-separated from earlier activities. Details of their association are given in Table 8, group III and they provide a 6th-1st centuries BC range for the use of the rampart. That it was constructed some time after the 9th century BC, and probably well after that, is suggested by group II which comes from timber that may originally have stood on the hill, was felled and incorporated into R1. This interpretation of the C^{14} series raises the problem of the initial Phase 3 occupation of the hilltop, for it was not possible to demonstrate the relationship between occupation and the erection of R1. Of the group IV dates, two from hearths are early within the R1 range of dates (group III), an expected disparity given the likely lateness of small, short-lived superstructure material, and two from gullies are late. Since, however, at even the one sigma level almost all dates in groups III and IV cannot be statistically separated it is more likely that Balloch Phase 3 represents an enclosed site from the start and that the dark lenses beneath R1 represent Phases 1 or 2, or builders' debris. More problematic is why the gully dates should be later than the hearth dates (group IV), unless it is a matter of removed building timbers and old wood for burning. One of the gully dates, HAR-1907, comes from the SE of the fort where activity late in Phase 3 was suspected. This date does not contradict such a supposition and there are at least two more occupation levels of similar type above its context, C51, to verify a further degree of longevity. In conjunction with the nature of deposits here they suggest that for some time houses were installed only at the back of the fort and that later the space near the entrance was devoted to special, perhaps craft, pursuits. That Phase 3 occupation extended into the 1st century BC is likely from a number of the more dependable dates and, perhaps, from the triangular crucible of fig 15.251.

Material culture

Apart from the brooch, which could post-date Phase 3, the assemblage is typically impoverished with few signs of external contact. It is primarily associated with the pursuits of a small residential community that exploited local material for such domestic activities as grinding

barley and oats, presumably from its fields below the fort. Even within this meagre assemblage, however, one might have expected the otherwise fairly ubiquitous pierced discs, perhaps used as spindle whorls. If the site's poor-draining clay subsoil and the local high winter precipitation meant that residence was primarily in the summer, activities like spinning may have been carried out in the winter months elsewhere. The crude pottery is also likely to have been a local product (but petrographic studies of its large grit filler are lacking), but it belongs to a widespread and essentially mainland Scottish tradition and so provides evidence on one aspect of the group's affinities. Sometimes called Dunagoil Ware after the site of that name on Bute, it is a common bucket fabric on several types of sites during the 5th–2nd centuries BC (above, p 177). The Balloch population therefore adopted an established mainland ceramic tradition. Moreover, the absence of decorated Hebridean wares, including Vaul and those associated with brochs and massively walled roundhouses which may be contemporary (MacKie 1980, 34, 72), emphasizes the mainland orientation of the population in terms of ceramics. Fig 13.106 suggests that this may not have been an exclusive orientation.

Other materials at Balloch that could reflect external contacts are lignite, metals and, presumably, flint, although re-use of residual pieces may account for much if not all of this flint. None of the products, however, is culture specific; they could represent contacts in many directions. Apart from providing an assemblage of artefacts for comparison with the range known from duns in the area, (see below p 206), three points concerning this material culture may be noted here. Firstly, the repertoire is quite unexceptional and not indicative of high social status in terms normally accepted in the south. In these areas, however, we lack data on the kind of symbols that denoted aristocratic status. Size of site may be more important as a guide to social hierarchies, but questions concerning their dates, and such different types as Cnoc Araich and Kildalloig with closely set earthen ramparts (RCAMS 1971, 67–71), render assessments difficult. In general terms, however, Balloch is typical of several forts in Kintyre. Secondly, there is nothing in its artefactual record to support the notion of contemporary influences from the south which others have seen in Iron Age 'A' types of pottery in the Hebrides and the Northern Isles (eg MacKie 1974, 92). This absence does not mean that such influence never existed; rather, it may begin to reveal something of the complexity of such diffusion which, in the case of movement of people, may be closely bound up with shifting and highly localized political and social allegiances. Thirdly there is the contrast between the essentially native character of its material culture and the apparent novelty of multi-rampart hilltop enclosure. Thus, there are no objects from these excavations to indicate that the rampart-building traditions represent anything but mainland Scottish populations. Balloch could of course be late within a sequence of local forts, but definite evidence for preceding periods is only available from bronze objects, some exotic, none associated with forts (RCAMS 1971, 14–15). What distant contacts are revealed by the material culture, or indeed site morphology, are too inexplicit to identify intrusive members who may have initiated this new custom. The balance of evidence therefore suggests that the construction of Balloch follows defensive precepts culled from elsewhere and here expressed as token ramparts that serve more the dictates of prestige and status than function.

PHASE 4

This phase consists of the re-occupation of Balloch after the collapse of R1; it witnessed the establishment of two circular stone-based structures in the lee of the R1 collapse in the W and a smaller but more substantial stone-based structure near the previous fort entrance. Since date VI (Table 8) is anomalous, there is no precise evidence for the date or duration of these structures, but the blue glass beads from Structure 2 suggest that it should not be much later than the 8th

century AD and could conceivably follow soon after Phase 3. Such beads were prevalent in the Irish Sea area in the 1st century BC and so need not necessarily be ascribed to a movement of *Scotti* into Argyll (Guido 1978, 41). There are a number of arguments in favour of temporal proximity to Phase 3. Structures 2 and 3 have diameters similar to their wooden precursors and are located in the same part of the now rubble defined summit. The single glass bead from Area C, in a context that documents continuity with Phase 3, is identical with several of the clutch from Structure 2. Also suggestive of continuity is the pottery from one of the peripheral platforms in Structure 3 (above p 48). Total excavation would be required to show the number of buildings in the fort in Phase 3, but assuming that outcrop and the centre were avoided, there could have been five. The implication of a small residential population is also consonant with the evidence of Phase 4.

It may be argued, however, that an appreciable time-lapse must be allowed for R1 tumble to accumulate between Phases 3 and 4. We have already seen that collapses occurred during Phase 3, but the main disintegration undoubtedly took place thereafter. Since it was preceded by the burning of its superstructure, we could be dealing with an event rather than a long-lived natural phenomenon. In that case only the top of R1 was dismantled since the lower courses were not wrenched out of place. The issue of time-lapse between Phases 3 and 4 therefore cannot be resolved by recourse to the duration of this R1 collapse which remains unknown. It is on the basis of location, size and distribution of a few finds that the proposition of continuity must rest and the weight of this evidence is in favour of such continuity rather than a prolonged interruption which would render Structures 1–3 comparatively recent (RCAMS 1971, 66). Here, then, a progression from wood to stone buildings, as so frequently occurs in the Tyne-Forth region, is evident, but it would be an over-simplification to attribute all unexcavated S Atlantic region circular stone huts to a similar period as a consequence. Continued survey in Kintyre and Arran is revealing an ever-increasing number of these (fig 1); but the excavations at Cul A'Bhaile, Jura (*Discovery Excav Scot 1980*, 29) and Ardnave, Islay (*ibid*, 28), for example, are beginning to demonstrate that their dates could be quite variable.

Here perhaps, as at Knock Scalbart (RCAMS 1971, 73, fig 50), an empirical attitude to building materials may have weighed more heavily than tradition in the builders' minds, and a readily available quarry of stones preferred. Despite the scrappiness of buildings, the principle of a central area delineated from a peripheral range of compartments is still discernible. While recalling the scheme of wheelhouses, the higher external ring and use of steps, in addition to radially-divided external ranges, bear a greater affinity to the much larger timber buildings, for example, in the Isle of Man where similar cobalt-blue beads, lignite bracelets and iron tools with rectangular-sectioned sockets were recovered. Bersu's 2nd-century AD date for this group of sites is considered too late, though it would be useful to know if the 3rd-century bc C¹⁴ dates are derived from large structural timbers and if so, from what rings (Bersu 1977, 96). The presence of a saddle- rather than rotary-quern in the vicinity of Structure 2 does not contradict an early date for Phase 4. Balloch Structure 3 is quite different, and with its E wall perched on, rather than behind, R1 may have to do with the vantage that Balloch provides for any look-out post.

FORTS AND DUNS IN KINTYRE

We may deduce from the early appearance of small timber-laced enclosures (MacKie 1976) that size within Childe's castle complex is not a dating criterion, but that there existed in the largely fragmented environment of the Atlantic province a recurrent tendency towards the dispersed, small economic unit. The broader application of the word *dun* to include such early sites

emphasizes the fact that small sites like Rahoy co-existed with larger forts. It may well be that some of the simple drystone duns also belong to this period, but modern excavation has concentrated on those choice sites where architectural sophistication is evident and a developed stage with broch affinities likely, or where duns are intrusive, as in central Scotland, and could be expected to be the equivalent of the equally intrusive northern brochs. In the former case this is true for Kildonan, Argyll (Fairhurst 1939) and Kildalloig (RCAMS 1971, 87–8); in the latter for Castlehill Wood (Feachem 1957) and in all instances a 2nd-century AD date is indicated. Nor do superficially less elaborate examples gainsay this evidence. Thus Dun Fhinn I yielded 2nd-century AD samian (RCAMS 1971, 84), Ugadale much later material (Fairhurst 1956), and others either late pottery or material such as rotary querns which are not noticeably earlier than the 2nd century AD. Except for Dun Fhinn and Ugadale in Kintyre, however, few of these morphologically less articulated sites with datable material have been excavated completely to basal levels and none of either type has been dated by radiometric methods.

KILDONAN DUN

The beginning of the massively walled duns therefore is still a matter of some conjecture and it was in the hope of obtaining C^{14} determinations for comparison with the Balloch series that an effort was made to secure assays from primary levels from a suitable nearby dun.

In terms of a gradual evolutionary model of development from simple to increasingly complex structures, Kildonan galleried dun, as stated above, might appear to be too late, but such a model in any case is undermined by the occurrence of uncomplicated duns that are late (cf Fairhurst 1956). Two other factors made Kildonan an attractive proposition. One was the possibility that the abruptly terminated wall E of its gallery was a modified early feature. Since the section through it was not taken below the gallery paving (Fairhurst 1939, 195), its chronological position remains uncertain, but its position on the edge of the only gentle slope from the low crag on which the dun stands is typical of the sturdy walls on such early sites as semibrochs (cf MacKie 1974, 97–100). Secondly, pockets of initial occupation, Periods Ia-c, remained readily accessible for excavation (Fairhurst 1939, 190–1). With the advice of its excavator, Dr H Fairhurst, and the permission of the owner Mr Semple and the Scottish Development Department (Ancient Monuments), a charcoal-rich deposit was sought under the intact Hearth II2 against the transverse joint of the rampart wall in the SW sector (Fairhurst 1939, 205–6). Excavations were carried out on 4–5 April 1979. Removal of Hearth II2 flags revealed more peat ash, reddish soil and charcoal flecks, and, at a depth of 0.26 m below the II2 flags, another similar hearth but without flanking uprights. Assays were obtained from this earlier hearth which is at the same absolute height as the slab I in Fairhurst's relevant section through the dun (1939, 190, fig 3). From the same context comes a 50 mm long fragment of an iron blade and a stone disc (26 mm by 29 mm), perhaps a counter (cf Fairhurst 1939, pls LXXVII-LXXVIII). To the W of Hearth II2 lay two lozenge-shaped schist slabs (lengths: 0.7 and 0.65 m) with, on the flat faces, shallow sockets 0.16 and 0.20 m in diameter.

The 7th–9th century AD dates from this context (Table 9) correspond closely to the dates for Period I-II arrived at from Kilbride-Jones's study of a penannular brooch from the dun (Fairhurst

TABLE 9
 C^{14} dates from Kildonan galleried dun

Context	Material	Site period	Lab No	C^{14} date ad	Calibrated range AD
Below hearth II 2	Charcoal	I or II	GU-1457	705 ± 70	640–825
Below hearth II 2	Charcoal	I or II	GU-1458	740 ± 60	670–875

1939, 224–5). There are earlier deposits beneath this C¹⁴ context which will be of greater assistance in resolving the original date for the dun, but meanwhile these assays demonstrate the continuation of structural alterations to Kildonan, and not just squatter occupation in a convenient building, well into the early historical period. However, further C¹⁴ assays will be required to provide independent chronological evidence for the particular problem posed here.

CONCLUSION

In conclusion, the dated artefactual and structural evidence from excavations at Balloch remains the most helpful in a comparison between small drystone forts and duns. Phase 3 material is rather undistinguished, though the small crucible(s) suggest a potential not realized in our discovery of objects. Thus the absence of such recurrent dun artefacts like ring-headed pins may well be fortuitous. Lignite bracelets do indicate some continuity, but the pottery from Kildalloig dun which Mr W Bigwood kindly allowed me to study is different: the degree of difference will be important, but this will only emerge after its publication. Phase 4 material, the glass beads, iron dagger or possibly knife, whetstones and scarcity of pottery, would, on the other hand, not be out of place in assemblages recovered from occupations of Kintyre duns. This similarity however must be set in the context of the structural development of Balloch. Save in size, there is little in the structural sequence or detail that obviously suggests an evolution to simple or complex duns. Thus there is no observable tendency to contraction of size or to the elaboration of protective devices such as wider walls, doorchecks and barholes at the entrance. Quite the reverse in fact ensues and an unenclosed homestead shortly follows Phase 3. Yet Knock Scalbart, visible from Balloch across the Laggan and identical in many respects, possesses a narrow rebated entrance in the manner of many duns (RCAMS 1971, 73). As a consequence it may be seen that there was no uniform evolution from one type of monument to another and Balloch rather suggests that each small drystone fort had an individual history only loosely tied to prevailing traditions. Unless we adopt a model of rapid and rather isolated innovation amongst the forts, which led to the creation of significantly new types of enclosures and settlement patterns, it would seem that the advent of elaborate duns in Kintyre owed more to developments initiated elsewhere than to the building traditions of local forts.

APPENDIX I

PLANT REMAINS

C A Dickson

The only plant remains dated to the Bronze Age are charcoal of *Corylus* (hazel) and a conifer, either *Pinus* (pine) or *Picea* (spruce), both under urn 75 from context D8 (fig 4). Pine is more likely but spruce, though not a native tree, cannot be excluded since it is not uncommon in prehistoric sites in Scotland, presumably originating as driftwood. Similar charcoal came from R1 in Area A which is an Iron Age context. Eight samples of the same period contain hazel charcoal and one has fragments of two hazel-nuts. *Salix* (willow) charcoal was tentatively identified in two samples and positively in a third. *Quercus* (oak) was found in two samples and *Alnus* (alder) in one sample.

Hordeum vulgare (hulled barley) is represented by eight certainly identified grains with pales, together with one grain of *Avena* sp (oats). Grains of barley are commonly found in Iron Age sites in Scotland and have been found in several brochs, eg Dun Mor Vaul, Tisee (Renfrew, in MacKie 1974). Occasional grains of oats, probably wild oats, are sometimes found with the barley (author's unpublished data; Dickson 1979).

It was possible to identify the three grains of *Triticum dicoccum* (emmer), a primitive wheat species, with certainty since drop-shaped grains are only known in this species (van Zeist 1970). Emmer is of particular interest since although it has been found in Bronze Age contexts in Wigtonshire and Morayshire

by Jessen and Helbaek (1944) and from Iron Age sites in Southern England (Godwin 1975), the author is not aware of any other Scottish Iron Age occurrences. There are Roman records from Scotland but it may well be considered that the wheat was grown outside Scotland and imported by the Roman armies. It may be that on well-drained soils where the climate was favourable, emmer wheat continued to be grown in Scotland during the Iron Age.

A pollen diagram from Aros Moss (Nichols 1967), a few miles from Balloch Hill, shows intermittent forest clearance, certainly from the Neolithic period onwards, with steadily decreasing amounts of tree pollen and increasing quantities of herbaceous pollen, particularly that of grasses and plantains. Cereal pollen is also present intermittently from a period thought to represent the activities of Bronze Age farmers onwards. It seems certain that Iron Age clearances are represented by one or more of these agricultural episodes.

CATALOGUE OF IDENTIFICATIONS

Charcoals

Area A, Rampart 1	<i>Corylus</i> , <i>Pinus</i> or <i>Picea</i> (pine or spruce)
Area A, Rampart 1, feature 1	<i>Quercus</i> (oak)
Area B, Level 3	<i>Corylus</i> (hazel), cf <i>Salix</i> (willow)
Area C, context 51	<i>Corylus</i> , cf <i>Salix</i>
Area CC, context 46	<i>Corylus</i> (hazel) fragments of 2+ nuts
Area CC, context 46	<i>Alnus</i> (alder)
Area D, under urn 75	<i>Corylus</i> , small pieces of hazel up to 30 mm in diameter
Area D, beside urn 75	<i>Corylus</i> (hazel)
Area D, under urn 75	<i>Pinus</i> or <i>Picea</i> (pine or spruce)
Area D, context 1	<i>Corylus</i> (hazel)
Area F, Level 1	<i>Corylus</i> (hazel), small branch, 9 mm in diameter, 4 years old ⁿ
Area F, context 8	<i>Salix</i> sp (willow); <i>Corylus</i> (hazel); <i>Quercus</i> (oak)
Area F, context 10	<i>Corylus</i> (hazel)
Area J, Level 1	<i>Corylus</i> (hazel), small branch, 11 mm in diameter, 13 years old ⁿ
Area J, Level 2	<i>Corylus</i> (hazel), small branches, 13 mm in diameter, 7 years old; 14 mm in diameter 11 years old; <i>Salix</i> (willow) small branch, 6 mm in diameter ⁿ
Area K, Level 2	<i>Corylus</i> (hazel), 12 small branches, 5–12 mm in diameter, 10–27 mm long
Area K, context 35	<i>Corylus</i> (hazel), 1 nut fragment

ⁿ Some of the charcoal has traces of bark, and the diameter of the wood, 8–14 mm, suggests that it may have been used as wattle.

Carbonised grains

Area F, Level 3	cf <i>Hordeum</i> sp (barley), 2 poorly preserved grains
Area F, context 8	<i>Hordeum</i> sp (barley), 1 grain of hulled barley
Area F, context 72	<i>Avena</i> sp (oats), 1 well preserved grain. It is not possible to say whether wild or cultivated oats is represented here
	<i>Hordeum vulgare</i> L emend Lam. (hulled barley), 8 fairly well preserved grains with pales; the presence of 3 lop-sided grains confirms the identification as <i>H vulgare</i>
Area K, Level 2	<i>Triticum dicoccum</i> Schübl (emmer), 3 carbonized wheat grains, 5.3–5.8x 3–3.2x 2.3–3 mm, two of them drop-shaped
	cf <i>Hordeum</i> sp (barley), 1 puffed and damaged grain
Area K, context 2	<i>Hordeum</i> sp (barley), 2 grains of hulled barley

APPENDIX 2

Selected soil-sample analyses Derek C Bain, Macaulay Institute for Soil Research

- Sample 1 Burnt materials beside Rampart 1 in Area B, Level 3
- Sample 2 Grey greasy matter from top of cremation urn (fig 8.75.1)
- Sample 3 Grey greasy matter from base of cremation urn (fig 8.75.4)
- Samples 4–5 Burnt materials on the exterior of Rampart 1, D1 and D9 (fig 4)

TABLE 10
X-ray fluorescence analysis – on an ignited (at 1000°C) basis.

	1	2	3	4	5
SiO ₂	62.2%	52.1%	61.2%	67.7%	63.0%
Al ₂ O ₃	13.8	22.4	26.5	13.9	13.6
Fe ₂ O ₃ *	11.9	4.51	3.81	8.94	12.1
CaO	1.60	9.48	1.47	1.06	1.71
MgO	1.73	0.96	1.52	1.49	2.05
K ₂ O	1.86	0.89	1.42	2.07	1.86
TiO ₂	3.27	1.69	1.74	2.46	3.09
P ₂ O ₅	0.51	6.62	0.96	0.54	0.48
Total	96.87	98.65	98.62	98.16	97.89
* Total iron as Fe ₂ O ₃					
Loss at 1000°C(%)					
%C	1.84	0.95	2.31	2.19	2.97
%N	0.44	0.26	0.36	0.34	0.45

C and N on an 'as received' basis.

Mineralogy

Sample 1 Mostly quartz and feldspar, possibly a little anatase

Sample 2 Kaolinite, quartz and feldspar. (no identifiable crystalline phosphate phase)

Sample 3 Mostly kaolinite and quartz with a little mica and feldspar

Sample 4 Quartz, feldspar, kaolinite and haematite

Sample 5 Quartz, haematite and feldspar. Possibly a little anatase

NB Na₂O not included in chemical analysis. This explains the low totals as feldspar is present in all these samples, being most abundant in no 1.

MnO A scan for MnO on sample no 4 revealed only a trace.

DISPOSAL OF DOCUMENTS

Full records of the excavation and specialist studies are deposited with the National Monuments Record of Scotland, Edinburgh.

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a Structure 1 and fort entrance in Areas A and E, from S (2 m scales)



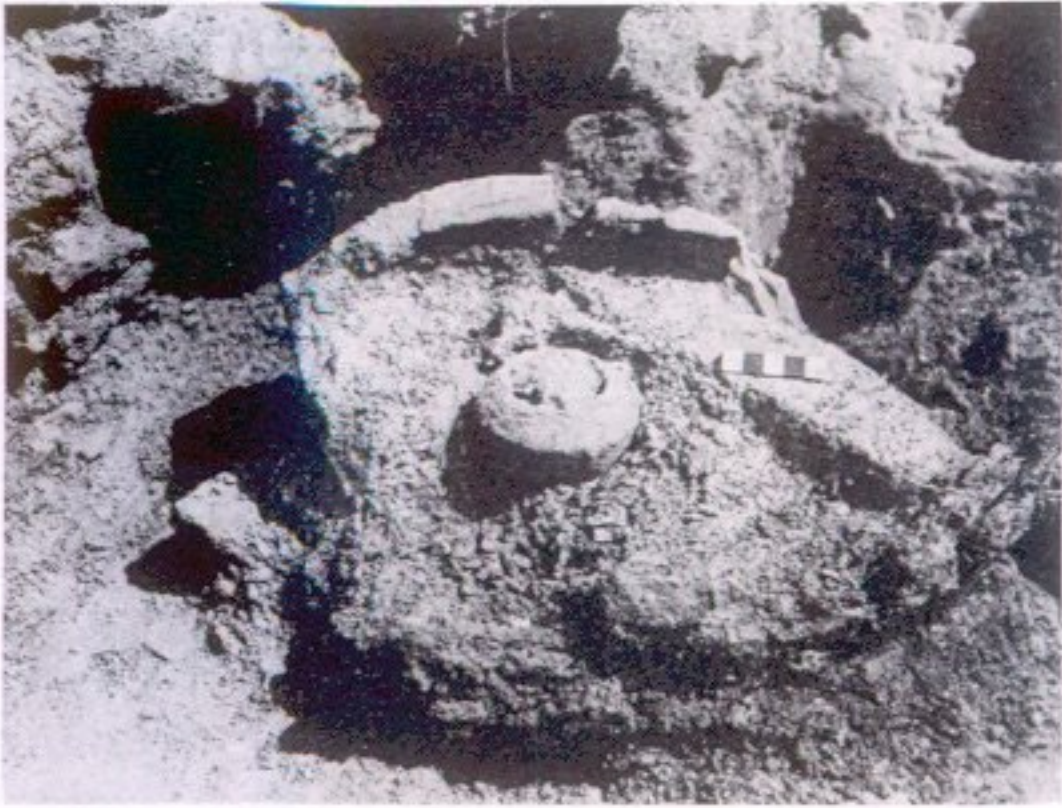
b Structure 2 from E (2 m scales)



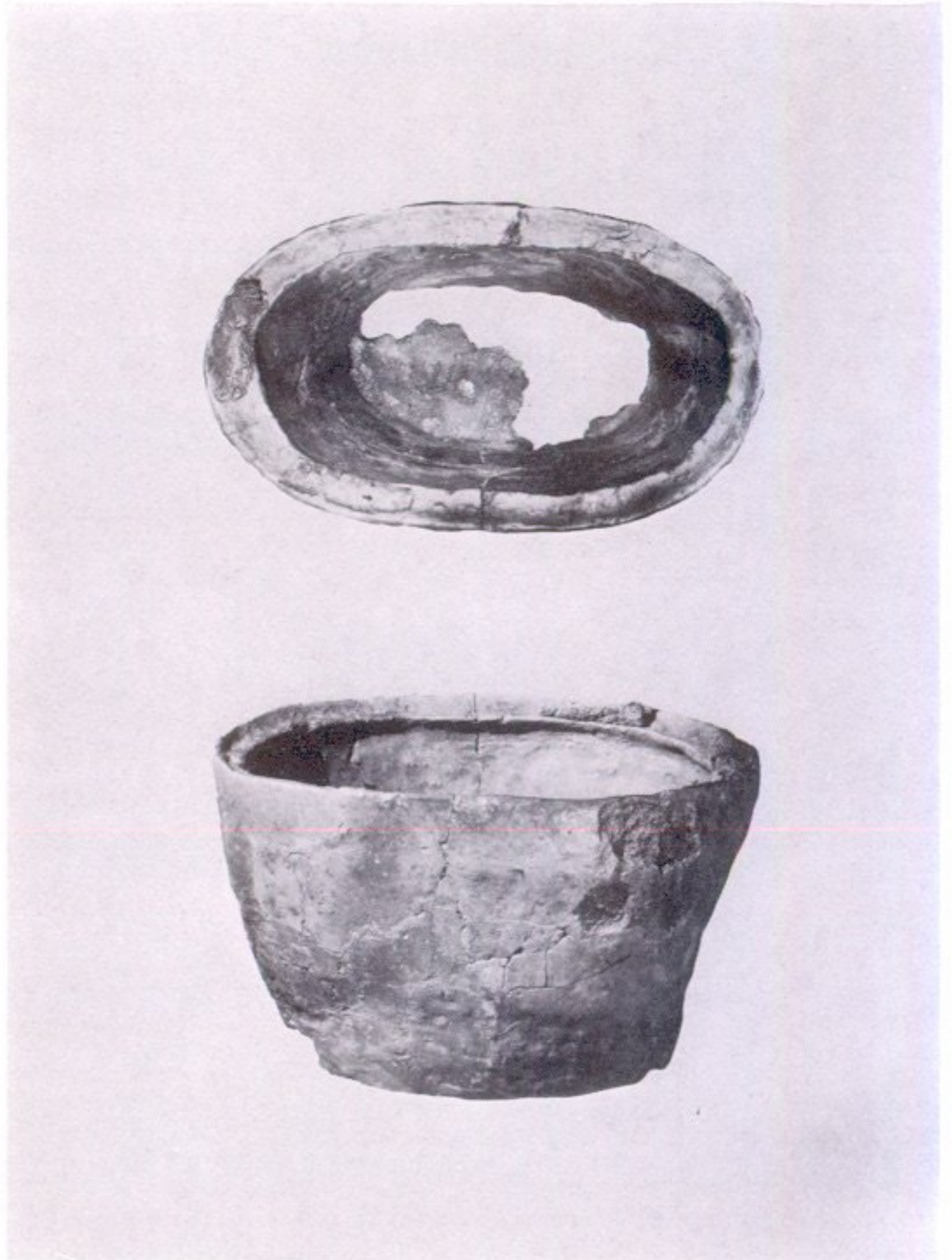
a Three phases of Rampart 1 in Area E, from N (2 m and 0.5 m scales)



b The slipped revetment and inner lip of the rock-cut bedding trench of Rampart 2, Period 1a-b in Area D from N (2 m scales)



a Cinerary urn (75) showing white seal and rim of underlying wood plate (?) (a) and sealed accessory cup (b) *in situ*



b Cinerary urn (76) with parts of sealing agent still adhering to bevelled rim



c Structure 4 from NW (2 m scale)