

Excavations at Dun Ardtreck, Skye, in 1964 and 1965

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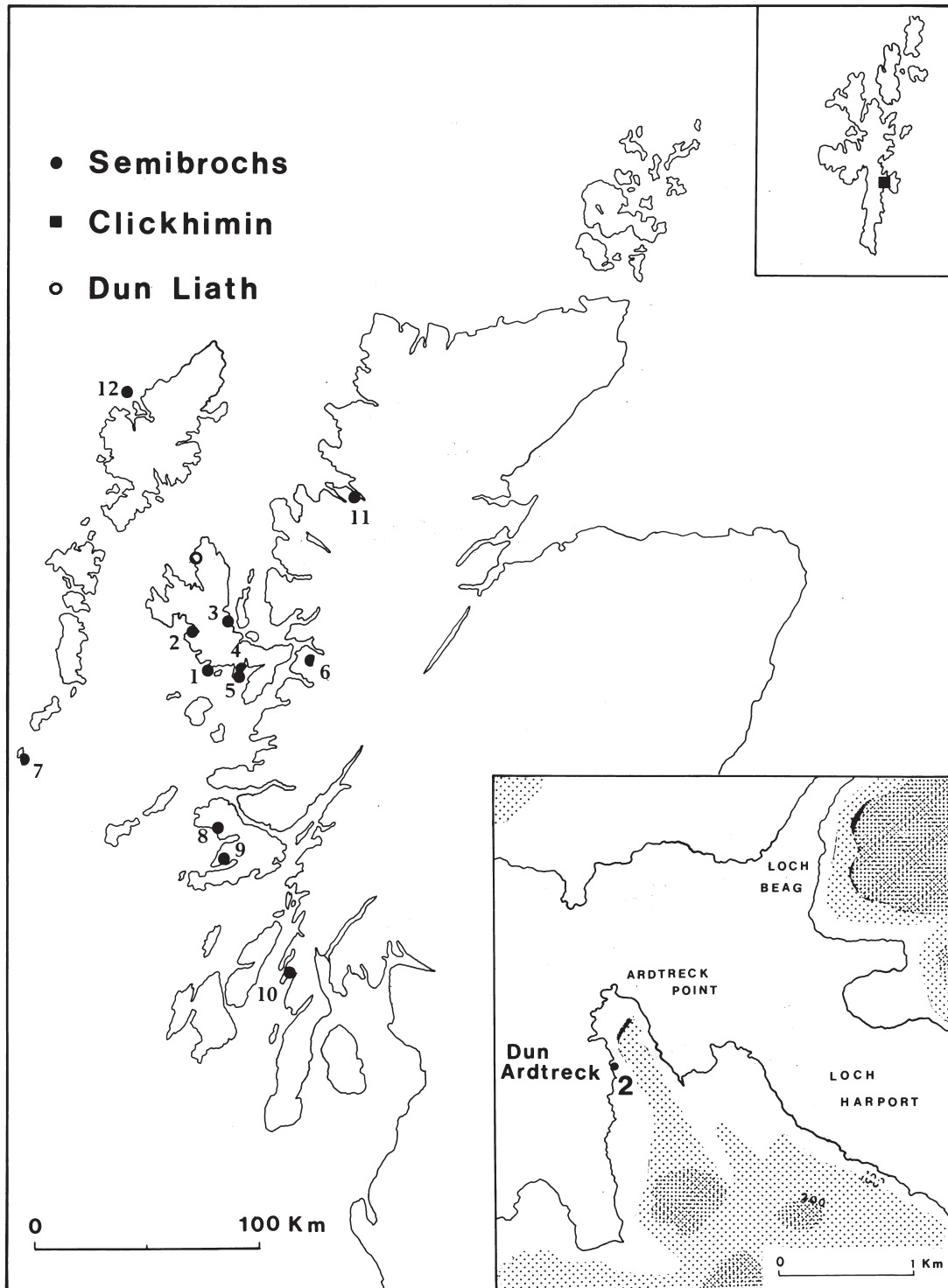
ABSTRACT

Dun Ardtreck stands on the west coast of Skye, on a rock knoll with a sheer cliff. It is a small D-shaped drystone strong-hold surrounded by an outer wall and could be one of a small group which had the high broch hollow wall but were not circular towers, termed semibrochs by the writer. The circumstantial evidence for the wall having originally been high is strong, although it is badly ruined now; however, the possibility that the wall was never more than of modest height cannot be completely ruled out. Construction was probably in the first or second centuries BC (Phase 1) and was followed by two distinct phases of occupation. Phase 2 was inside the higher-walled structure where there may have been a wooden roundhouse with a raised floor, although direct evidence is lacking; a central fireplace was not found. A fierce fire put an end to this occupation, the wall was pulled down and an iron door-handle left lying in the passage. A small Roman jar, possibly intact, had already arrived on the site. The ruins were re-occupied in Phase 3 after a ramp had been built against the entrance passage to make access easier. Roman material was inside this ramp and in the secondary deposits and, though it and the native pottery suggested that occupation did not continue beyond the third or fourth centuries, a sherd of E ware on top of this layer implies that it went on at least until AD 500, a conclusion supported by a piece of pumice from about AD 400. Some of the Roman material is unusual for an Atlantic site and there may be special reasons for its presence.

INTRODUCTION

The work on Dun Ardtreck was undertaken as part of the second stage of a programme of research into the origin and development of the broch-building cultures of the Scottish Iron Age, the first of which was the excavation of the broch of Dun Mor Vaul in Tiree from 1962–64 (MacKie 1974; 1997). The hypothesis which emerged from the fieldwork undertaken on brochs all over Atlantic Scotland at that time has been described more than once, and recently discussed again (MacKie 1991), and contradictory views have likewise been advanced several times (Fairhurst 1984; Harding 1990; Armit 1990); there is therefore no need to rehearse the arguments in detail here. Briefly it seemed to the writer then, and still does, that there is a distinct class of broch-like structures in the Western Isles which have the high, galleried wall typical of the class but which, being open-sided and usually attached to cliff edges, are not round towers. These structures, or ‘semibrochs’, seemed to be plausible prototype brochs — a view first advanced 35

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ILLUS 1 Location map of the site with other semibrochs indicated. The large gallery-walled fort Dun Liath is also marked. (Based on Ordnance Survey maps © Crown copyright) 1. Rudh' an Dunain, Skye (NG 396160); 2. Dun Ardtreck, Skye (NG 335358); 3. Dunan an Aisilidh, Skye (NG 532358); 4. Dun Ringill, Skye (NG 562171); 5. Dun Grugaig, Skye (NG 535123); 6. Dun Grugaig, near Glenelg (NG 852159); 7. Sron an Duin, Barra Head (NL 549802); 8. Dun Choinichean, Mull (NM 441431); 9. Dun Buirg, Mull (NM 422263); 10. Dun Mhuilig, Loch Craignish (NM 777019); 11. Dun an Ruigh Ruaidh, Loch Broom (NH 149900); 12. Dun Barabhat, Lewis (NB 156356).

years earlier (RCAHMS 1928, ii–xx) — but even as late as 1960 none had been excavated and dated. The exploration of Dun Ardtreck was planned as a test of this hypothesis.

Dun Ardtreck was first described, without a plan, by the Royal Commission (RCAHMS 1928, no 484; NGR: NG 335 358). The name appears to be modern; the first edition of the Ordnance Survey in 1871 (Sheet XXXIII) marks the site as ‘dun’ so the Commission presumably named it after the nearby Ardtreck Point. Before excavation the structure was distinctly D-shaped in plan, with the straight side of the D being formed by the edge of a high, sheer cliff, and traces of an intra-mural gallery could be seen all around the wall. The entrance passage faced directly inland. When the writer first visited the site and planned it in 1963 the central part of the outer wall face, around the entrance, stood about 2.4 m (8 ft) above the ground in front, suggesting that an upper mural gallery — the classic diagnostic feature of a broch wall — was probably preserved. Five days of excavation in August 1964 produced enough material to justify a full scale project which was carried out for a month in August of the following year.

In order not to anticipate the conclusions reached about the nature of the site after the work — and particularly because its identity as a semibroch has been challenged more than once — the building is described with the broad term *dun* throughout the descriptive part of this report.

This report appears 36 years after the excavation was completed. The delay in writing it was due to a number of reasons which seemed good at the time but in retrospect seem quite inadequate. The writer can only apologize to colleagues and hope that the old saying ‘better late than never’ will be applied.

REFERENCES TO FINDS IN THE TEXT

Artefacts are described in detail in Appendix 1 where provenance (context, group & phase) is summarized in Table 1. Catalogue references are given in the text in square brackets for non-ceramic objects; but for ceramic objects, numbers in brackets refer to Hunterian Museum accession numbers.

NOTE ON ARTEFACT DRAWINGS

The drawings of the pottery and other finds were prepared and assembled by the late Margaret Scott in the early 1980s and she followed the grouping by site phases which was then thought correct. During the preparation of this report all the stratigraphical contexts were re-assessed by the writer and a number of the drawn finds were thus allocated to a different phase. The drawings (illus 21–25) have been re-arranged accordingly but Mrs Scott’s original numbers have been left unchanged; thus the numbers are now often not in numerical order. The list of illustrated finds (Appendix 1) includes various clues to help follow these changes.

SUMMARY OF THE EXCAVATION RESULTS

Most of the stratigraphical sequences uncovered during the excavations were clear and unambiguous and they allow the history of the site to be reconstructed from perhaps the second or third century BC to about the sixth or seventh AD. No trace of any occupation prior to the construction of the *dun* was found; the old turf line, often resting directly on the rock plateau, was found at the base of the sections in several places (illus 20).



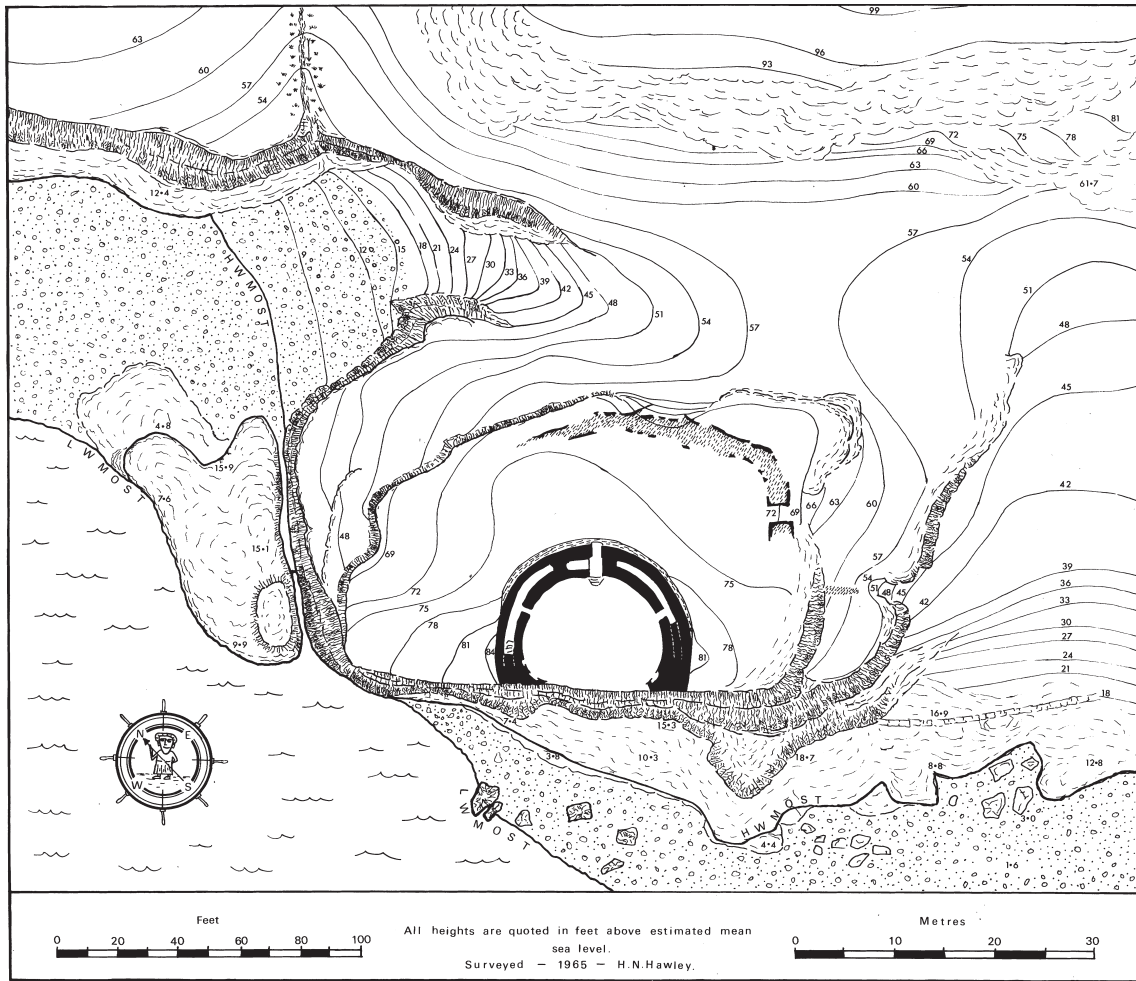
ILLUS 2 General view of the site from inland

The isolated rock knoll is flat near the cliff edge but soon begins to slope fairly sharply downwards away from the sea. The first structure to be built on top of the knoll was a rubble foundation platform with a carefully made, semicircular face; this served to create an approximately level building surface on which a semicircular, galleried, drystone wall was built, its outer face continuous with that of the platform below. Thus the intra-mural features — entrance passage, guard cell and mural galleries — all rested on a packed rubble surface and never on rock; curiously this was true even where the walls approached the cliff edge where the rock was high and the platform only about 0.3 m thick.

A drystone outer wall up to 2.3 m thick surrounded the dun on the landward side, running along the edge of a low but sheer rock face. There was a gateway in it, without door-checks, 1.2 m wide.

It is estimated that there were at least two upper galleries on top of the preserved basal one so that the minimum original height of the wall on the highest point of the rock (at the edge of the cliff) would have been about 4.6–6.1 m. Assuming a level wallhead the overall height at the entrance passage, which faces inland, would have been some 2.4 m more, although the number of intra-mural galleries was the same because of the foundation platform. The entrance passage, then presumably roofed with flat lintels, was 3 m long and paved with pebbles and flat slabs; it emerges 0.6 m above the paving on the ground in front. The door-checks were formed of large upright stone slabs set at right angles into the wall 1.2 m from the front of the exterior sill stone, and traces of a bar-hole and socket were in the passage walls behind these.

The only objects which can be clearly dated to the time of the construction of the dun (ie Phase 1) were found in the rubble of the foundation platform; they are two base sherds, both with internal impressed decoration (illus 21, no 1), and some flecks of charcoal. The latter gave a radiocarbon date of 2005 ± 105 BP which when calibrated is 170 BC-AD 110 at one sigma.



ILLUS 3 Contour map of the site on its rocky knoll, surveyed in 1965 by H N Hawley. The contours are in feet above an estimated mean sea level and at 3 ft (< 1 m) intervals

No deposits except a few thin ash spreads could be clearly assigned to the primary occupation of the dun before its destruction (Phase 2) and, since the destruction deposits which marked the end of this phase rested nearly everywhere on or very close to the rock, it seems that little occupation debris accumulated before that event.

Signs were found that a fierce fire had raged inside the dun at the end of Phase 2 and that the high drystone walls were taken down shortly afterwards. These signs included many fragments of fused and semi-vitrified lumps of soil and stones as well as smashed pottery vessels and artefacts (some of which had themselves been severely heated). All these were found with reddish ash and some burnt bone fragments, either on the rock surface or on top of the rubble foundation platform. A broken and heated rotary quern stone and a scatter of 25 tiny glass ring-beads of various colours were further signs of this catastrophe, as was the fused iron ring handle of the wooden door; the latter was found on the floor of the passage apparently where it had fallen.

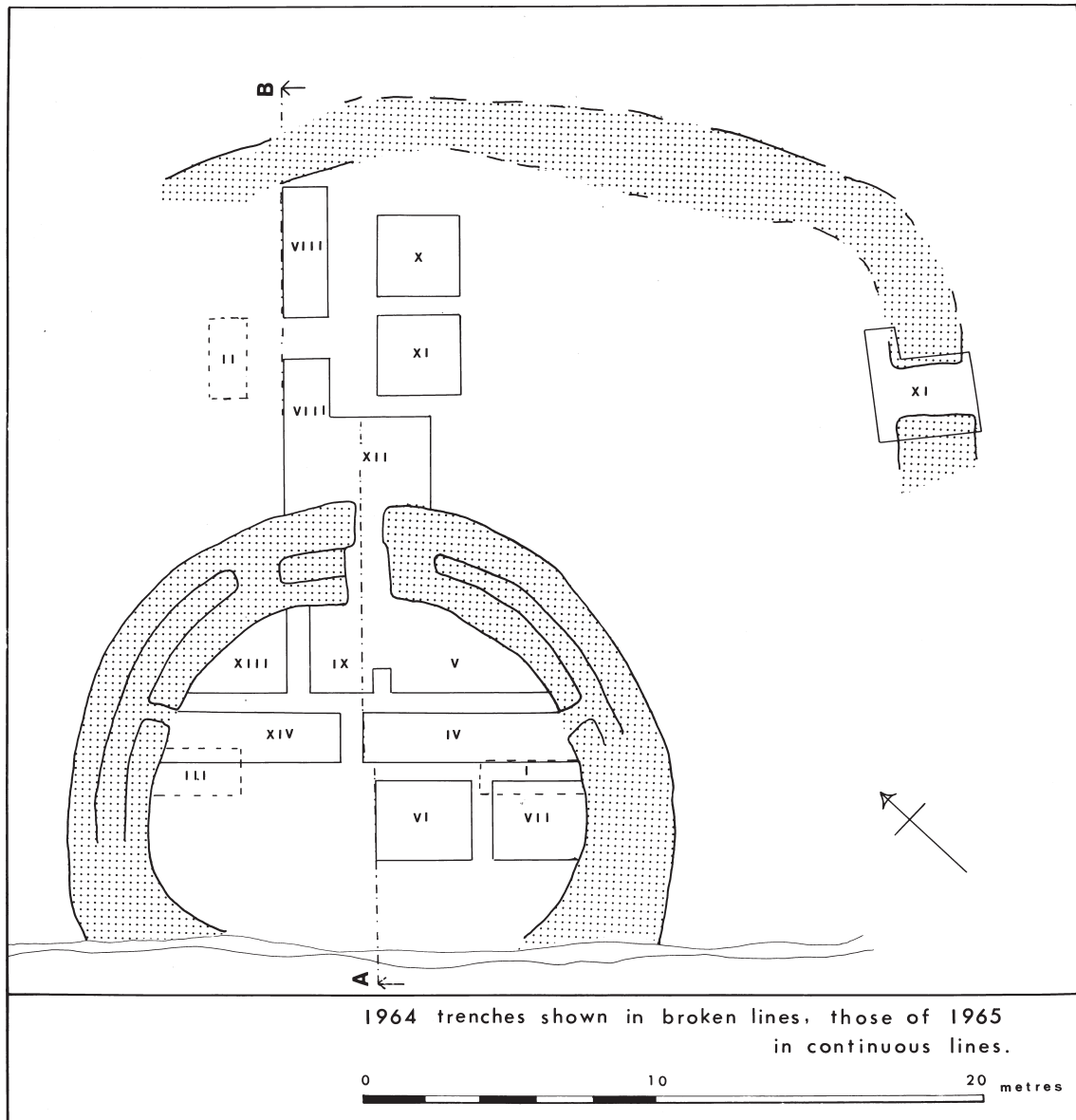
Since the following period of domestic occupation (Phase 3) can be deduced for various reasons to have taken place inside a substantially demolished structure, it appears that most of



ILLUS 4 Close-up of dun wall before excavation

the dun wall was pulled down after the fire, and the lintels taken off the entrance passage; the intra-mural stairway also seems to have been completely removed. Very large quantities of heavy stone rubble fill the outer court and are presumably composed of the debris from the upper parts of the wall. The broken pots in the destruction level were all vases decorated with geometric designs in incised lines, very similar to the *Vaul* ware identified on *Tiree* and inferred there to have belonged to the aboriginal Iron Age inhabitants of the island (MacKie 1997); no *Everted Rim* ware was identified from this early level. Presumably the intensity of the fire in the interior and in the entrance passage was due to the combustion of the elaborate timber work which is usually thought to have been inside hollow-walled brochs and is entirely appropriate if *Dun Ardtreck* was a semibroch, although no ring of post-holes was identified.

The start of Phase 3 saw the conversion of the burnt out and demolished dun to a less defensible form of dwelling. The high step at the outer end of the entrance was concealed by a ramp of earth and heavy rubble, surfaced with pebbles, which made entry into the dun much easier. As the dark earth of the secondary occupation layer inside accumulated it was prevented from overflowing into the descending passage by a short, semicircular flight of steps at its inner end, and these in turn were kept clear by a short revetment wall immediately to their north. The two doorways to the unroofed mural galleries were blocked with masonry at the start of Phase 3 and presumably some sort of low wooden roof was erected over the interior, resting on the reduced wallhead and on posts. Again no trace of the latter was found but then, as with the assumed primary roundhouse, most of these would have rested on rock or on the uneven rubble foundation platform.



ILLUS 5 Plan of the site showing the areas excavated during the two seasons

Many artefacts were found in the Phase 3 floor deposits including fragments of second-century Roman pottery and many of the usual middle Iron Age items found in brochs and wheelhouses. Right on top of this stratum, or at the base of the one above, was a wheel-made rim sherd diagnosed as E ware of the sixth or seventh centuries (Appendix 3). Thus it is possible that the secondary occupation went on until about then, but also possible that the dun had been abandoned for many years before the E ware sherd was dropped, since all the other diagnostic material from Phase 3 is of firmly middle Iron Age type. In the latter case however it is hard to understand why no loose rubble accumulated in the interior throughout that long period. The

beginning of Phase 3 is assigned to the second century AD because of the presence of Roman pottery inside the ramp outside the entrance.

In Phase 4 the structure was becoming dilapidated and the interior was becoming covered with loose earth and heavy rubble, the latter representing the final collapse of the wall. Very few finds were associated with this phase and one may be the E ware sherd mentioned; another was a rim sherd which might just be related to Irish souterrain ware (illus 23, no 66).

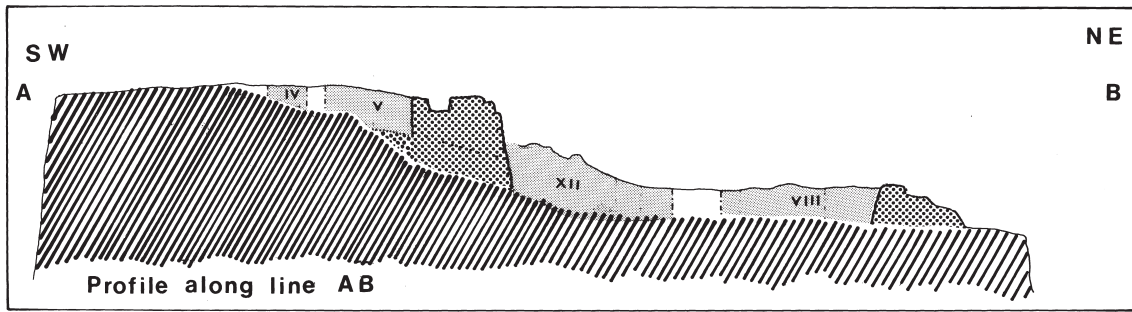
SITUATION OF THE SITE

Dun Ardtreck stands in Bracadale parish in south-west Skye, on the west side of the tip of the peninsula formed by the long inlet of Loch Harport to its east (illus 1). Because of a long ridge of higher, rocky moorland immediately to the east, the site cannot be seen when approaching from the land until one is about 200 m from it (illus 2). From this ridge, and from the site itself, an extensive view out to sea is to be had from the south round to the west; on a clear day one can see the southernmost islands of the Outer Hebrides as far north as South Uist. The fort itself stands in what must have been thought (until the destruction) an almost perfect natural defensive situation, on a high rocky knoll with a seaward sheer cliff 21 m high; it is cut off on the landward side by a series of low but steep rocky faces forming terraces, and by lower ground between the knoll itself and the inland ridge.

Immediately to the north of the dun is a small narrow bay 20 m across at the most, formed by the side of the knoll and by the opposite cliff and in which there is a small beach. A steep gully leads up from this beach to the relatively flat ground immediately in front of the site. This must surely have been the harbour for the dun when it was occupied, and traces of the rubble of fallen walling were noted at the top of the slope down to this beach. There may have been a short defensive wall at this point but it was not explored.

The top of the knoll consists of a D-shaped plateau of rock measuring some 40 m along the almost straight edge of the cliff (which is aligned about NW/SE) and with a roughly semicircular landward margin which reaches a maximum breadth of 28 m. The surface of the rock rises steadily both along the edge of the cliff and towards it so that the highest point is inside the dun at the centre of the cliff edge. This point was about level with the wallhead as it was in 1965 but, whereas the slope along the cliff edge was fairly shallow — resulting in the wall being only about 0.3 m high there — that running inland was somewhat steeper (illus 6 & 20). In this direction the rock rises unevenly some 6.7 m from the edge of the first terrace to the cliff and, as a result, the dun wall is 2.4 m high at the outer end of the entrance (illus 2) while its top, as noted, is level with the highest part of the cliff top.

The plateau on which the dun stands is bounded on its north-east and north sides by a sheer rock face from 6.3 to 3.6 m in height (illus 3); this was less pronounced on the south east and east, appearing again as it approached the cliff on the south-east. Traces of the outer wall of the dun were found along the edge of this plateau on the arc from north-east to east, but nothing remains elsewhere where the edge is sheer. A second, lower terrace — bounded by an even higher sheer rock face — is on the north and north-east and appears in places on the other parts of the edge of the knoll; no traces of walling were found on this. This second terrace is broken on the ESE where it is replaced by a turf-covered slope running up from lowest ground level to a similar but narrower gap in the face of the upper terrace. This is the only natural approach up onto the knoll and the gateway through the outer wall was found at this point.



ILLUS 6 Simplified cross section of the site from the edge of the cliff, through the entrance passage and to the outer wall; the trench profiles along the main section are labelled

PHASE 1: ORIGINAL STONE STRUCTURES

THE FOUNDATION PLATFORM (CONTEXT ALPHA)

Excavation soon revealed that the inside face of the semicircular galleried wall of the dun rested everywhere on rubble and not on rock (illus 7, 8 & 9). This was true even close to the edge of the cliff where the total remaining height of the wall was less than 0.6 m; the slight remains of each of the mural galleries uncovered at this point had a rubble base (illus 20, Trench I). At the point near the cliff, where the south-east wall was sectioned, the inner and outer wall faces did rest on rock, but about 3 m from the edge rubble and stones began to protrude from beneath the base course of the inner face (illus 20, Trench IV; illus 7; ranging poles throughout are in feet). Near the main entrance the inside face was resting on a layer of rubble, as was the guard chamber nearby (illus 20, Trench IX); it was thus evident that, where it sloped more steeply downwards inland, the rock had been made up to a level building floor with a crescent-shaped layer of rubble, revetted on the semicircular landward side with a carefully built face of stone blocks.

The outer face of the galleried wall was continuous with that of the foundation platform so that no trace of this unusual method of construction was visible from the outside. The fact that the outer face — also built of large, squarish and rectangular blocks — has no horizontal straight joint at the top of the platform or anywhere else shows fairly clearly that platform and galleried wall were built in one operation. This is an important point when the significance of the radiocarbon date is considered (below).

The platform itself was composed of stone rubble with a little earth in places, the stones being both round and angular (illus 9). Most of the areas excavated proved to be sterile except for fragments of charcoal, and when an occasional artefact was found it was often difficult to decide whether this had been dropped when the platform was being laid or whether it had slipped down later from the accumulating occupation deposits above.

Finds definitely from Context Alpha included two potsherds which were both fragments of base sherds with interior decoration of depressions presumably made by a thumb or finger (illus 21, no 1). There were also four small glass ring-beads, 2 yellow and 2 blue [44A & 45A] (illus 24 nos 1–4 & illus 28), but judging from a cluster of similar beads in the same area but slightly higher up, these had almost certainly slipped down among the stones from the layer above. There was also a bone spatulate tool [37A] (illus 24, no 5) and a hammerstone [25A]. One sample of charcoal stratified well down in the layer gave a radiocarbon date of 2005 ± 105 BP (GX 1120) and this is discussed further below.

THE GALLERIED WALL

Built on top of this approximately level rubble platform, and with its outer face continuous with that of the latter, were the remains of the galleried wall of the dun, D-shaped in plan. The outer and inner faces of the dun wall were well built of carefully chosen, squarish blocks of stone which were fitted skilfully together (illus 2 & 4); yet the sides of the intra-mural galleries were much cruder and composed often of rounded blocks, badly fitted together, and which were prone to collapse when the rubble fill was removed (illus 14).

At the level of the foundation platform the wall at the entrance was 2.82 m thick although, because of the batter of the outer face, the thickness here is 3.28 m if measured horizontally to the base of the outer face. Elsewhere the galleried wall was on average about 2.9 m thick at its base though it narrowed to 2.4 m on the north-west. As it approached the edge of the cliff the outer face at both ends straightened out markedly while the inner face began to curve more sharply to run along the edge of the cliff. It seems likely that a thin wall, perhaps only 0.45 m or so thick, completed the circuit along the cliff edge, both to act as a wind break and a safety barrier. The question of how this cliff edge wall was connected to any wooden structure assumed to have existed in the interior in Phase 2 is considered further below.

Two facing stones of the end face of the wall on the south side were found, showing that it had been carefully squared off at the very edge of the cliff (illus 18). There can be no question therefore of the dun ever having once been a complete circle or oval like a broch, with a galleried wall all the way round which was partly destroyed long ago by a cliff fall. No large lumps of rock were seen in the sea below though they were looked for at low tide several times. Such pieces of fallen cliff can, by contrast, be clearly seen in the water below the cliff on which stands the gallery-walled promontory dun Rudh' an Dunain, also on Skye at NGR: NG 396 160 (RCAHMS 1928, no 483).

The area within the semicircular wall measures at the most 10.7 m from the entrance passage to the cliff edge and 13.4 m along a line at right angles to this; the enclosed space thus contains about 105 sq m. Dun Ardtreck is comparable in the size of its enclosed area to a large circular broch; one with an internal diameter of 10.7 m — not unusual in the Hebrides — contains 88 sq m. By contrast the gallery-walled fort Dun Liath, in Kilmuir parish in north Skye (NG 360700), is very similar in design and situation to Dun Ardtreck but is larger and has a more irregular plan; it encloses an area of about 218 sq m (RCAHMS 1928, no 541).

The mural gallery in the south-east half of the wall (on the left when entering the dun) was narrow and crudely built. It varied in width from 0.61 m to 0.53 m but was difficult to measure exactly because of the many projecting stones in its faces. Its depth, and therefore the surviving height of the hollow wall, reached a maximum of 0.75 m between the gallery doorway and the entrance passage and was reduced to less than 0.3 m at 3 m from the cliff (illus 20, Trench I). It was reached by Door 1, a narrow opening from the interior 0.7 m wide and 1 m deep, with a roughly paved floor (illus 16). In spite of this not very well built door, the narrowness of the gallery behind, the many projecting stones in its sides and its uneven rubble floor make it very unlikely that it was entered regularly when roofed over.

The mural gallery in the north-west half of the wall was wider and better built, as was the doorway leading to it (illus 14 & 15). It achieved a width of fully 0.9 m at a short distance to the right of the access door, and the sides were more neatly built of squarish blocks without the projecting stones found in the southern half. Originally, this gallery seems to have extended up to the entrance passage, in contrast with that on the south-east side where there was solid masonry for 1.4 m between the two features. At 2.29 m from the passage, however, there was a primary



ILLUS 7 View of the north-east side of the interior showing trenches and the interior wall face; the latter can be seen to be resting on the foundation platform and the gallery door is next to the pole



ILLUS 8 Similar view of the interior but taking in the entrance passage; the rubble of the foundation platform is starting to appear among the dark earth of Layer 2

cross wall between 0.81 m and 1.07 m thick, bonded only to the inside face of the gallery, the outer face continuing past this blockage. Thus the final section of the gallery formed a simple rectangular chamber measuring 2.29 m long by 0.92 m wide, which evidently served as a guard cell (illus 12).

THE ENTRANCE PASSAGE AND GUARD CELL

The only entrance into the dun was at the centre of the semi-circular wall and it faced north-east, directly inland. The outer end emerges 0.69 m above the outer paving so that, for anyone entering the dun from the outside, there was a high step up to be negotiated (illus 13). The passage floor was paved and slopes fairly sharply upwards towards the interior, presumably because of the rapidly rising rock surface underneath (illus 11 & 20); it rises 0.67 m in a horizontal distance of 3.15 m (the total length of the passage in plan), about a slope of 12° above the horizontal. At the inner end the paving projected several feet into the interior of the dun (illus 11) and a low stone revetment continued the line of the left or south wall into the interior and held back the rubble of the foundation platform (illus 18).

The walls of the passage are built of large, squarish blocks with many small stones fitted between them (illus 11, 12 & 13). The outer wall face is sharply battered and recedes 0.65 m in a vertical distance of 2.24 m, that is a slope of about 16° away from vertical; it is therefore difficult to measure the exact length of the passage and the horizontal distance to the edge of the sill has been used. The width is 1.04 m at the exterior and 0.98 m at the door-checks, of which the right one is 1.22 m from the exterior and the left one 1.3 m. Thereafter the passage widens to 1.37 m and continues at about that to the inner end.

The right door check (looking in) is made of a large, flat stone slab which projects from the wall; its thickness is 0.1 m and it stands 1.02 m above the passage floor into which it is sunk (illus 11 & 12). The left check is built of square blocks. The bar-hole and socket are still preserved behind the checks and at a height of 0.97 m above the passage floor. The bar-hole, on the right, is blocked with rubble and its inner end is destroyed; the length of the wooden drawbar would have been at least 1.8 m.

The guard cell — which, as already described, is essentially the end section of the mural gallery — opens on to the right side of the passage and is rectangular in plan. There was no constriction to form a doorway at the junction with the passage and the cell was probably roofed originally with flat stone lintels like the rest of the intra-mural galleries; however, no suitable long flat stones were found among the excavated rubble on the site. The chamber is entirely the wrong shape to have supported a corbelled drystone dome as at Dun Mor Vaul on Tiree (MacKie 1974, illus 3b).

The sill at the cell door was at the same level as its rubble floor, at about 0.75 m above the passage floor at its inner end and fully 0.9 m at the outer side (illus 20 & 12); it is thus more or less at the level of the bar-hole behind the door-checks. The cell floor was of rubble and about 0.45 m above the level of the foundation platform immediately inside the dun wall (illus 20, Trench IX). The inner side of this adapted section of the intra-mural gallery was so close to the inner wall face that there was room for only a single course of masonry some 0.3 m thick (illus 20, Trench IX); nevertheless this masonry did not collapse, although it seemed fragile when excavated.

Originally, a wooden door must have swung shut against the stone checks and been held in place there by the drawbar. The iron door-handle for it was found (illus 29) but no socket for the hinge post was located in the passage floor. The position of the post depends on what one thinks happened to the door. A left-hand hinge post seems implied by the fact that what was presumably



ILLUS 9 View towards the inner end of the entrance showing the rubble foundation platform exposed



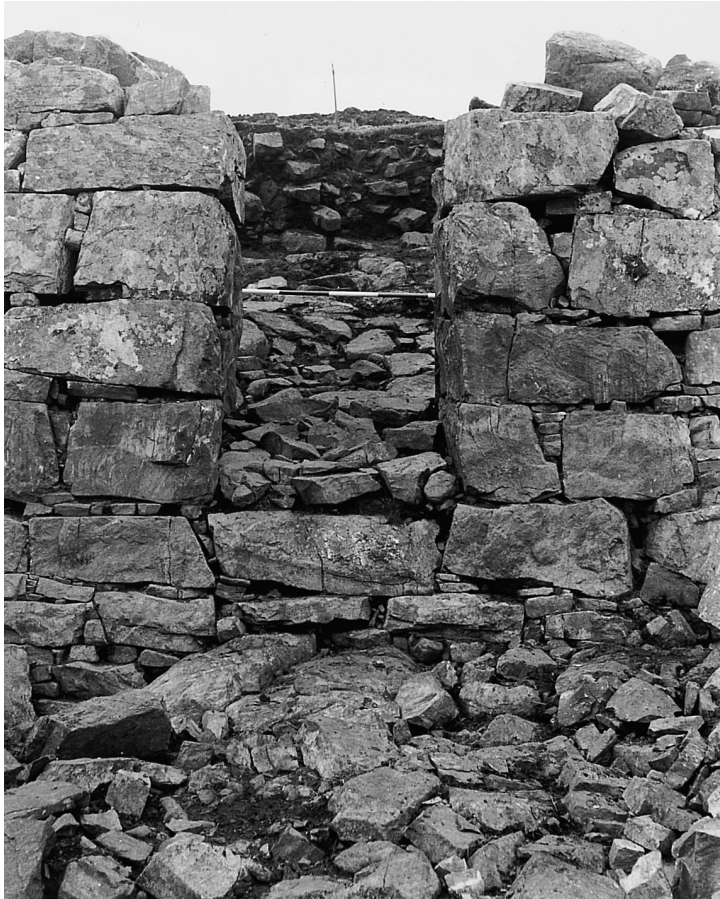
ILLUS 10 Primary paving close to the inner wall face on the north-east side, showing clear signs of burning, including the heat-cracked half quern stone in the foreground, which looks like part of the paving



ILLUS 11 View down the cleared entrance passage from the interior; the secondary steps at the inner end have been removed, exposing the rock. The slab-faced door-checks are clear, the raised sill of the guard cell is on the left

Illus 12 The raised sill of the entrance to the guard cell, seen from across the main passage; the secondary steps are still in position on the left





ILLUS 13 View of the outer end of the main entrance after removal of the secondary ramp and inner steps; the high sill is clear, resting on rock, and the primary outer paving is to the right of this. The pole rests in the bar-hole (on the right, next to the guard cell) and the bar socket. A section of uncleared deposits can be seen in the interior

the iron door-handle was found lying a short distance behind this check and leaning against the foot of the left wall, suggesting that when open the door lay along that wall. In this case the post must have rested directly on the flat stone immediately behind the left check (looking in, *illus 11*). On the other hand the clear evidence that the dun was destroyed and the door battered inwards and set on fire (below) implies that it could have been knocked flat while in the closed position; in this case the door-handle would be lying where it was found if the hinge post was on the right.

On the whole the former arrangement seems more likely; pivot stones behind the left-hand check (with the socket for the drawbar in the left wall above them) are very common in brochs (see below). As noted the bar-hole is on the right here. The very comparable site at Ruigh Ruaidh on Loch Broom, Wester Ross, also lacked a proper pivot stone for the outermost wooden door in its entrance passage but had a socket lined with stone slabs instead; this was immediately behind the left check (MacKie 1980, *illus 6b*). The passage walls at this site did not survive high enough for the bar-hole and socket to be preserved. A good example of a pivot stone with polished and scored socket was found at Dun Mor Vaul on Tiree where it was also behind the left check, with the bar socket above it (MacKie 1974, *illus 12e*). This would suggest that the wooden door of Dun Ardtreck burned away in the open position, resting against the left wall.

Although the paving of the entrance passage was not removed it was clear that, at the inner end (where it projected into the dun interior), it was laid on rock, but that the further outwards it went the greater the thickness of rubble on which it lay. Because of the outer step it must lie on at



ILLUS 14 View of the cleared intra-mural gallery on the south-west side, with the door to the interior in the foreground. The unusually well-built inner faces can be seen, suggesting that this section led to a stair inside the wall

least 0.75 m of rubble foundation there, and on about 0.5–0.6 m at the door checks. There would thus have been ample depth for a pivot socket behind the left check and its absence is surprising. That such a wooden door could function without a hinge post socket is shown by the example at Dun Lagaidh in Wester Ross. There the entrance passage of the Iron Age dun was equipped with two sets of door checks and a guard cell, but the floor at the outer end was of rock and no socket had been cut into it.

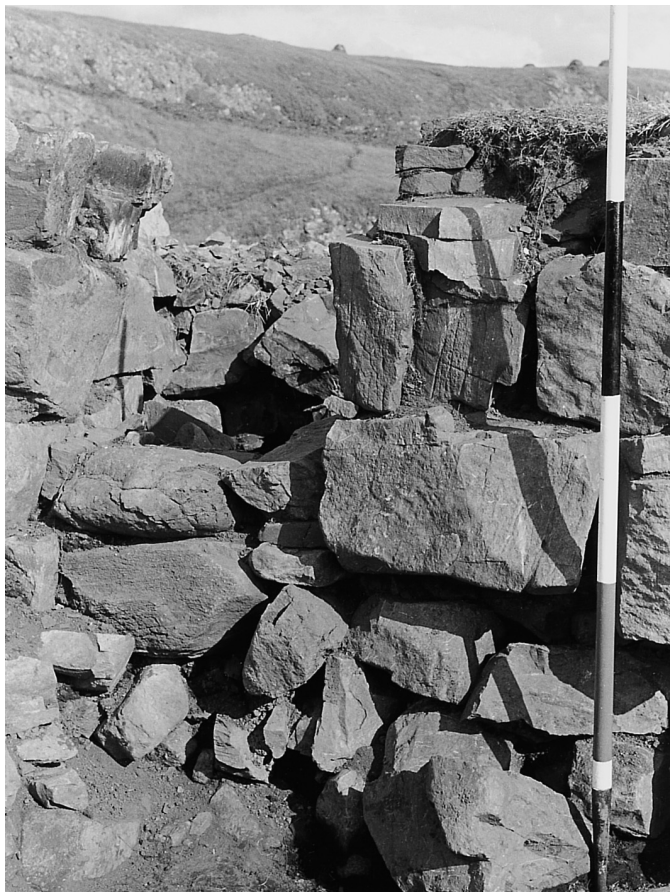
OUTER PAVING (CONTEXT SIGMA)

Immediately in front of the main entrance, and below the secondary ramp which led up to it, was an area of level paving (illus 13) which had obviously been laid down when the dun was constructed. It seemed to occupy only a limited area, approximately two-thirds of a circle in plan, and measured about 3.5 m wide and 2.4 m outwards from the dun wall. No cuts were made through this paving so it is not clear how far above the rock it is; if, as seems very likely, the outer face of the main wall is founded on rock it may be close. Further away from the entrance, towards the north-west and north-east, the paving gave way to a roughly floored area composed of smaller chips of stone, but this may simply be levelled-off builders' debris.

Finds from Context Sigma at the time of the excavation were a whetstone [27B] (illus 24, no 6), a fragment of iron slag [8B] and some animal bones. Three years later, in September 1968, Mr Kenneth MacLean visited the site and discovered a complete bronze ring-headed pin of the north British type with projecting head lying on the area of small stones immediately north-west of the paved area [15B] (illus 24, no 7). From the circumstances of the discovery it seems reasonable to suppose that the pin was embedded in this very early floor level and came into view when rain eventually washed away the earth from the newly exposed stones. The pin, which is a



ILLUS 15 Gallery Door 2 on the south-west side, after the removal of the blocking; its sides are more neatly built than those of Door 1 (illus 16), apparently confirming that access to the intra-mural stair was planned



ILLUS 16 Gallery Door 1 on the north-east side after removal of the blocking; the sill stone and the lowest course of the inner wall face are level with the bottom of the white band on the pole; below that is the foundation platform, partly removed

whole one, thus antedates the ramp and was probably dropped at a time of intense activity, either when the dun was destroyed at the end of Phase 2, or when it was being built in Phase 1. The latter is assumed here.

OUTER WALL AND COURT

Signs of an outer wall partly surrounding the dun were observed in places along the edge of the first rock terrace (illus 3) but it was examined in detail only into two places, namely at the end of Trench VIII and at the outer gate. As noted, the position of the latter was already suspected to be at the top of the only grassy slope which ran through the rock terraces.

A short ridge of turf-covered rubble was visible on the seaward side of the outer gate on the south-east, but it rapidly faded into the rising rock ledge as the latter approached the main cliff. On the landward side of the gate a number of facing stones on the inside and outside of the wall protruded through the turf and allowed its line to be traced for some 23 m round the north-eastern (landward) side of the upper platform, more or less directly in front of the main entrance. There was no trace of it along the other of the edge of the upper terrace — from north-east to north-west — although presumably there must once have been some walling there. In the latter sector the vertical edge of the upper terrace rises to about 3.7 m in height in front of the main entrance of the dun and reaches some 6.1 m to 7.6 m on the north-western arc. Hence the need for an outer wall was much less than on the north-eastern arc (illus 2).

At the one point where it was clearly exposed — at the end of Trench VIII (illus 5) — the inner face of the wall stood just under 1.2 m high and was founded directly on the rock. Traces of an old turfline were observed on this rock and running under the wall (illus 20, Trench VIII). The thickness of the wall at this point cannot have been more than 4 m because the edge of the rocky face of the terrace was this distance from the inner face. The actual thickness was probably less; it was only 1.5 m at the outer gateway (illus 18).

The completion of Trench VIII — a section right across the deposits in the outer court — was delayed by bad weather and undertaken in muddy conditions and when time was short. When the section was drawn nothing unusual was noted in the inner face of the wall but an examination later of photographs suggested that there was the edge of a doorway there. The drawn section (illus 20, Trench VIII) includes the blocks of what may be the left edge of a very narrow opening. It hardly seems possible that there could be an intra-mural gallery in the outer wall so it might be a postern gate. The width of this doorway would be about 0.41 m, somewhat less than that of the two gallery doors inside the dun. Clearly nothing certain can be concluded about the structure of the outer wall at this point without re-excavation.

OUTER GATEWAY

The gateway through the outer wall is south-east from the dun entrance, at the top of a grassy slope which forms a natural ramp up to a gap in the face of the upper rock terrace. As noted, little of the wall remains on the seaward side of the gateway, where the rock rises rapidly, but it is well preserved on the other side at the outer entrance, though only to a maximum height of 0.75 m (illus 17). The length of the passage, and hence the thickness of the wall at this point, is 1.3 m on the north side and 1.6 m on the south, but the northern side widens to nearly 1.53 m within a few feet of the gateway. The width of the passage varies from 0.9 m at the outer end to 0.97 m at the inner, and the uneven floor is the solid rock, which rises about 0.3 m within the length of the passage. There are no traces of door checks in the surviving masonry which is of course too low

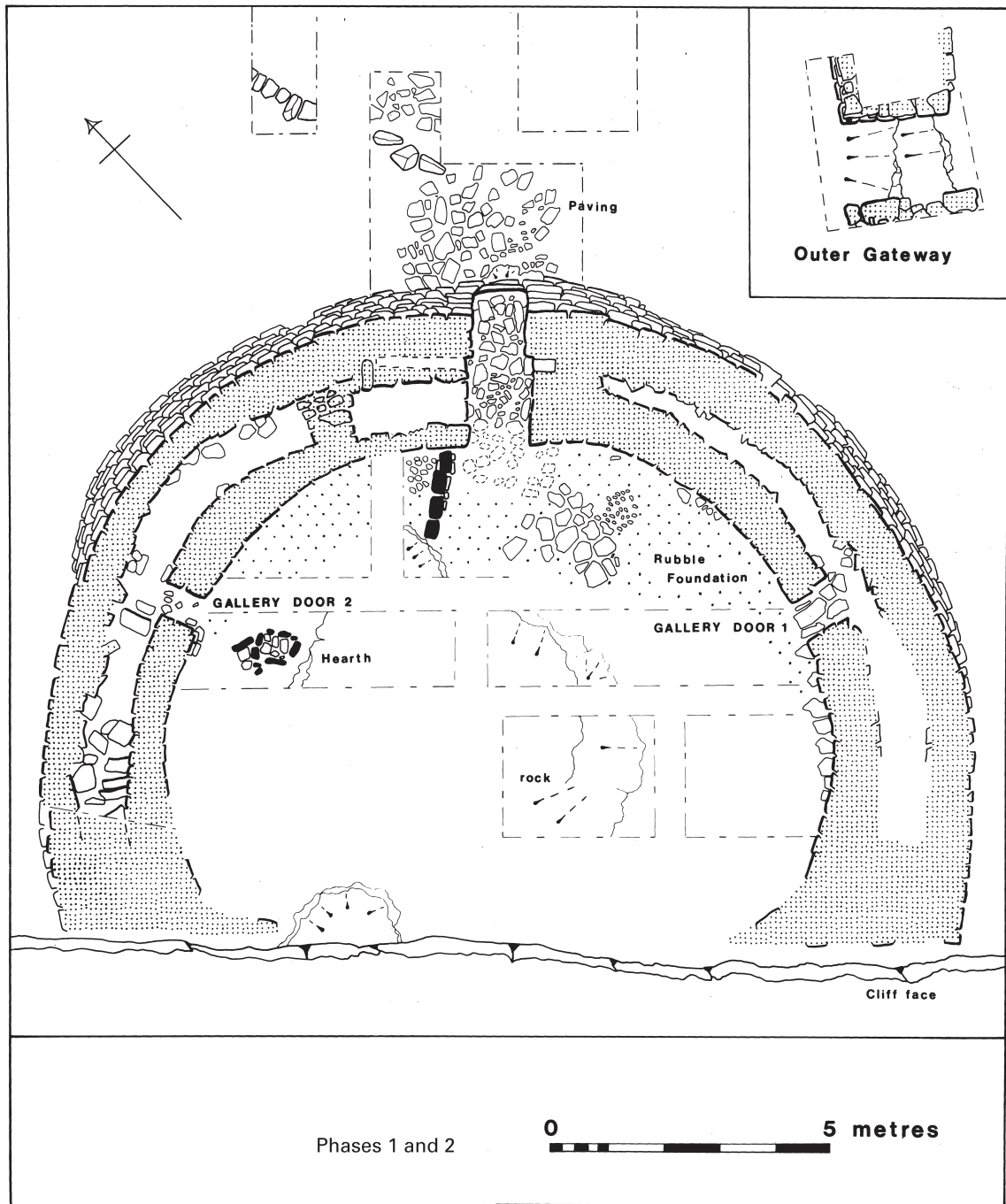


ILLUS 17 The entrance passage through the outer wall cleared, showing the rock surface in the foreground; there are no signs of any checks for a door

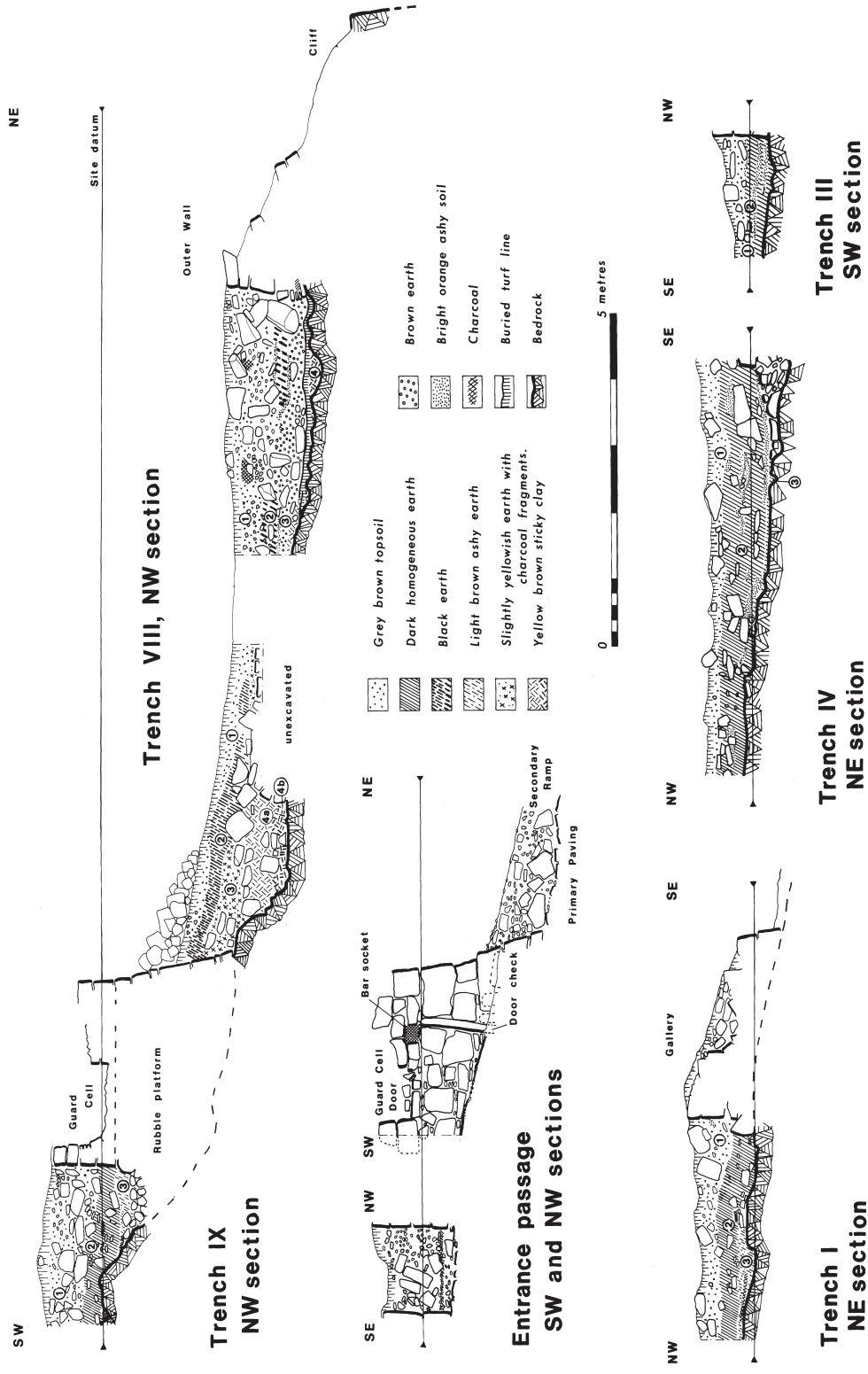
for any bar-hole or socket to be preserved. Many fragments of iron slag were found on the rock floor [8K] (Appendix 6), and these are considered further, below.

PHASE 2: FIRST OCCUPATION AND DESTRUCTION

The trenches dug inside the central court of Dun Ardtreck (illus 5 & 7) exposed a clear series of deposits which seemed to fall naturally into four layers. Layer 1 (Context Zeta) was of rubble and loose earth immediately under the turf and was found over most of the court except in the centre and in the area next to the cliff (illus 7); it contained very few artefacts. Underneath was Layer 2 (Context Epsilon), compact grey earth containing numerous Iron Age artefacts, and which in turn lay either on rock or on Layer 4 (Context Alpha); this is the rubble foundation platform on which the dun wall rested and which has already been described. Eventually it was realized that in places there was also a thin Layer 3 (Context Beta) — a stratum of ash and occupation debris with many artefacts (some of which showed signs of severe burning) which also rested either on rock or on the rubble platform. The sections in illus 20 (Trenches IX, I, IV & III) illustrate the sequence clearly.



ILLUS 18 Plan of Dun Ardtreck in Phases 1 and 2. The black row of stones inside the entrance is a revetment holding back the rubble foundation platform on that side. The paving to the right of this is probably secondary because the fragments of Vase 1 were found underneath it



ILLUS 20 Various sections of trenches inside Dun Ardreck and in the outer court

Finally, the section along the north-west side of Trench IX (illus 20) clearly shows the lighter brown ashy earth, under the dark grey earth above, and resting directly on the rubble of the foundation platform. Thus, even though, as explained below, this grey earth layer rests directly on the rock in the central part of the court and near the cliff, nearer the wall it can be seen to be a secondary accumulation. This is confirmed by the presence of occasional large facing blocks at a low level in it (illus 20, Trench IV, north-east section), showing that the dun wall was much reduced in height soon after it began to accumulate. However, there was no wall rubble under Layer 2, so either any reduction in height of the wall must have been done systematically and carefully, or the dun was cleared of fallen rubble before the secondary occupation began. The fact that rubble seems to have been left in the intra-mural galleries, and the doors to these carefully blocked at the start of Phase 3 (below), implies the latter.

A small area of paving was found at the foot of the inner wall face in Trench V (illus 10); some flat stones projected from under that face and this surface was continued for a short distance into the court by other flat slabs, which included half of the upper stone of a rotary quern. This paved area seemed to form the southern pointed end of the crescent-shaped area of the foundation rubble (illus 18). Some of the flat stones, including the quern fragment, had been very severely heated, thermal cracks being clearly visible. That a fierce fire had raged in this area was also shown by the broken pots on the floor (illus 19), particularly by Vase 4 (illus 21, no 16) parts of which had been truly vitrified after being broken and had thus acquired a coke-like consistency (illus 26).

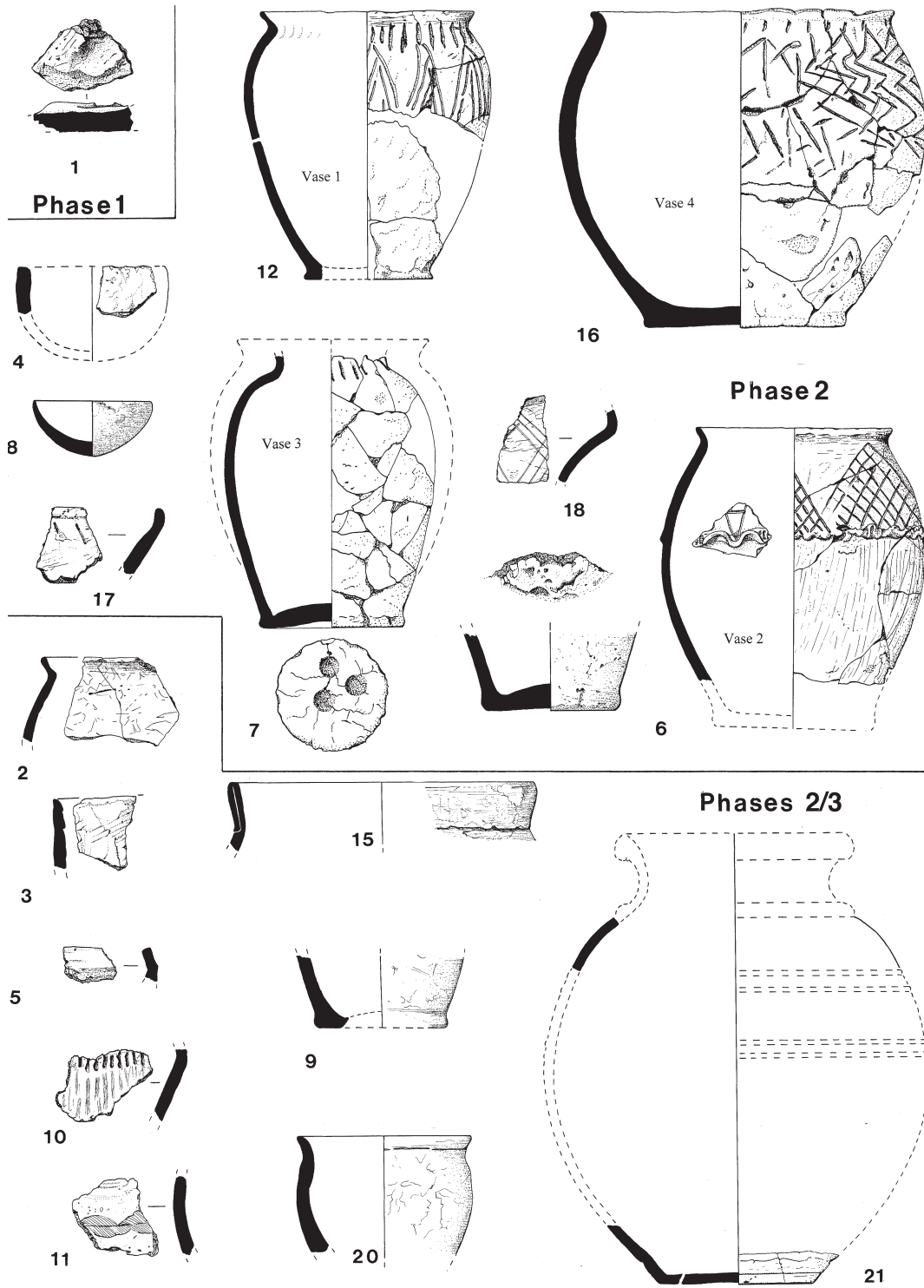
FINDS FROM PHASE 2

The occupation layer (Context Beta)

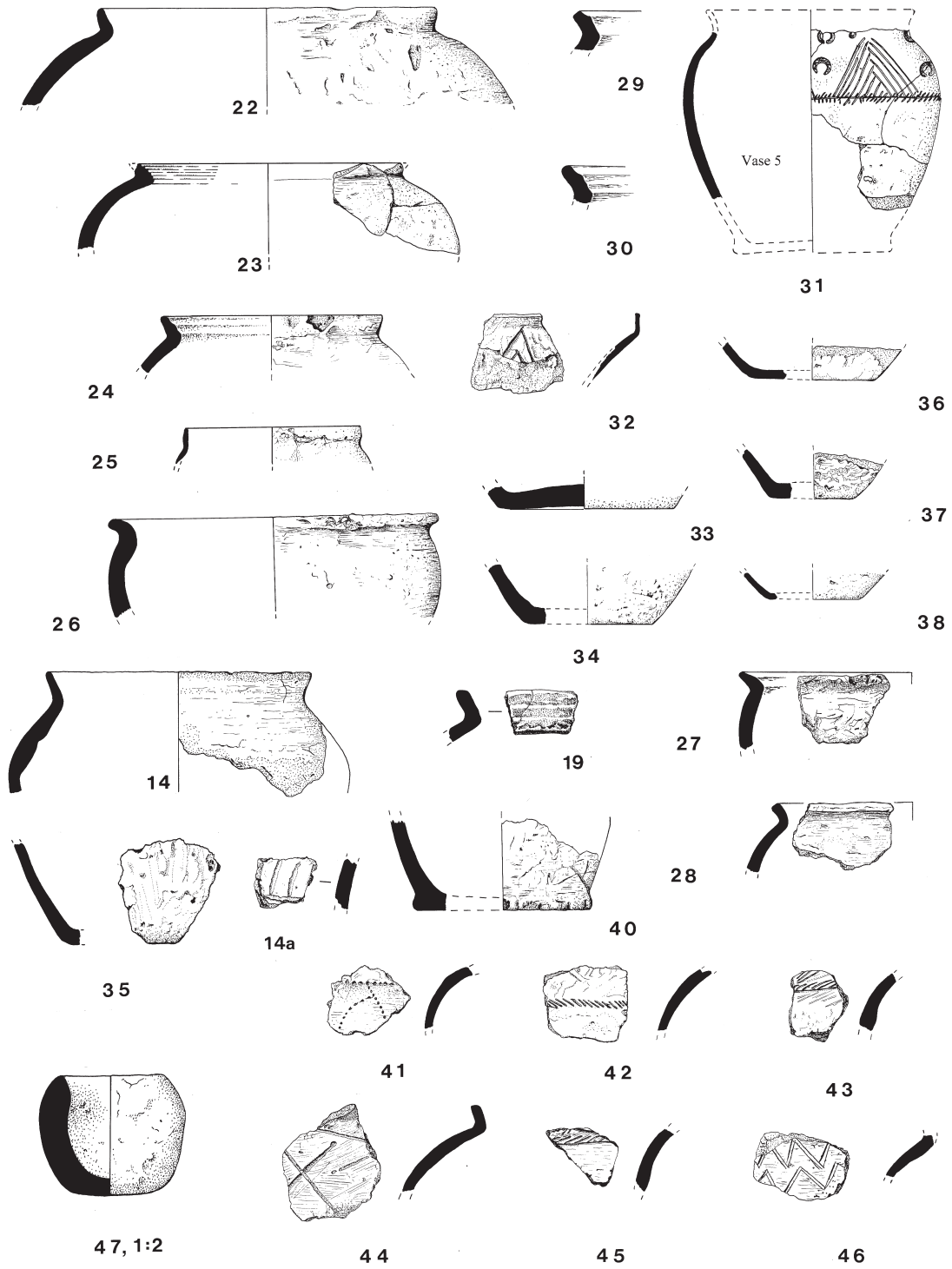
Included here are those finds which were clearly associated with the ashy Layer 3, as well as those from elsewhere which were technically at the bottom of Layer 2 but, coming more or less from directly on the rock or on the rubble foundation platform, looked as if they had fallen there before the overlying earth started to accumulate. Similarly, anything left lying on the primary floor of the dun, apparently before the episode of burning, is also included. Most of the intact artefacts and all the broken pottery vessels probably date from before the destruction at the end of Phase 2. Material dropped very early in the period of accumulation of the overlying Epsilon earth layer will also have fallen almost onto the rock and this is described below under Context Beta/Epsilon (Phase 2/3). One or two objects which are stratigraphically slightly later, like the fragment of the Roman melon bead (illus 25, no 54), also show signs of intense burning and may originate in this horizon.

Pottery Pieces of four broken pottery vessels (Vases 1–4) were found on the rock floor and the paved area in the south-eastern part of the interior (illus 21, 26 & 27) and all seem to belong to the same episode of destruction. A fifth pot, less well preserved, may be slightly later (Vase 5) and is not so obviously re-heated.

Four of these vessels (Vases 1 & 3–5) are the vase form of the hard-fired, reddish brown ware, decorated with geometric patterns in incised lines, which was found to be the earliest (pre-bronch) pottery at Dun Mor Vul on Tiree and there named Vul ware; this style goes back several centuries BC on Tiree, possibly as early as the eighth century (MacKie 1974, 92 & 157). None of the second form of Vul pottery — the larger, barrel-shaped urns, also usually decorated — was found in any stratum at Dun Ardtreck. The other one, Vase 2 (illus 21, no 6), is a sub-variety of Vul ware termed the Balevullin vase, after the type site on Tiree where small examples occurred in an early Iron Age context; it might have its origins in Bronze Age cordoned urns (MacKie 1965). It also occurred very occasionally at Dun Mor Vul (MacKie 1974, fig 20).



ILLUS 21 Pottery and other finds from Phases 1, 2 and 2/3: scale 1:4



ILLUS 22 Pottery from Phase 3 — scale 1:4 except no 47 at 1:2

Iron Two fragments of a knife blade [1C] were recovered.

Copper-alloy Objects included a small piece of a spiral wire found with the red glass bead [20C] (illus 24, no 45) and a small penannular ring [13C] (illus 24, no 21).

Bone A spatulate implement [37C] (illus 24, no 26), a perforated fish gorge [39C] (illus 24, no 25), a segment of sawn horn or antler [37C, no 2] (illus 24 no 27), and a heavy awl or piercer [39C, no 1 or 2] (illus 24, no 28) were all fashioned on bone.

Stone These included an oval disc, perhaps a small palette [31C] (illus 24, no 31), two joining fragments of a rotary quern of volcanic agglomerate showing signs of severe heating [32C, no 3] (illus 24, no 30), and half of another rotary quern of basalt [33C, no 1] (illus 24, no 29); a hammerstone [25C] and a faceted pebble grinder [26C]. There were also a piece of mica (biotite) [58C], some heat-fractured stones and 69 vitrified lumps, presumably soil and stones mixed [60C].

Fired clay Two crucible fragments without any obvious signs of heating [50C] (illus 21, nos 4 & 8) were recovered.

Glass objects These include 21 small ring-beads [44C & 45C] (illus 24, nos 8–19 & illus 28) and one distinctive large red ring-bead which had a short twisted length of spiral bronze wire threaded through it [46C] (illus 24, no 51; illus 28).

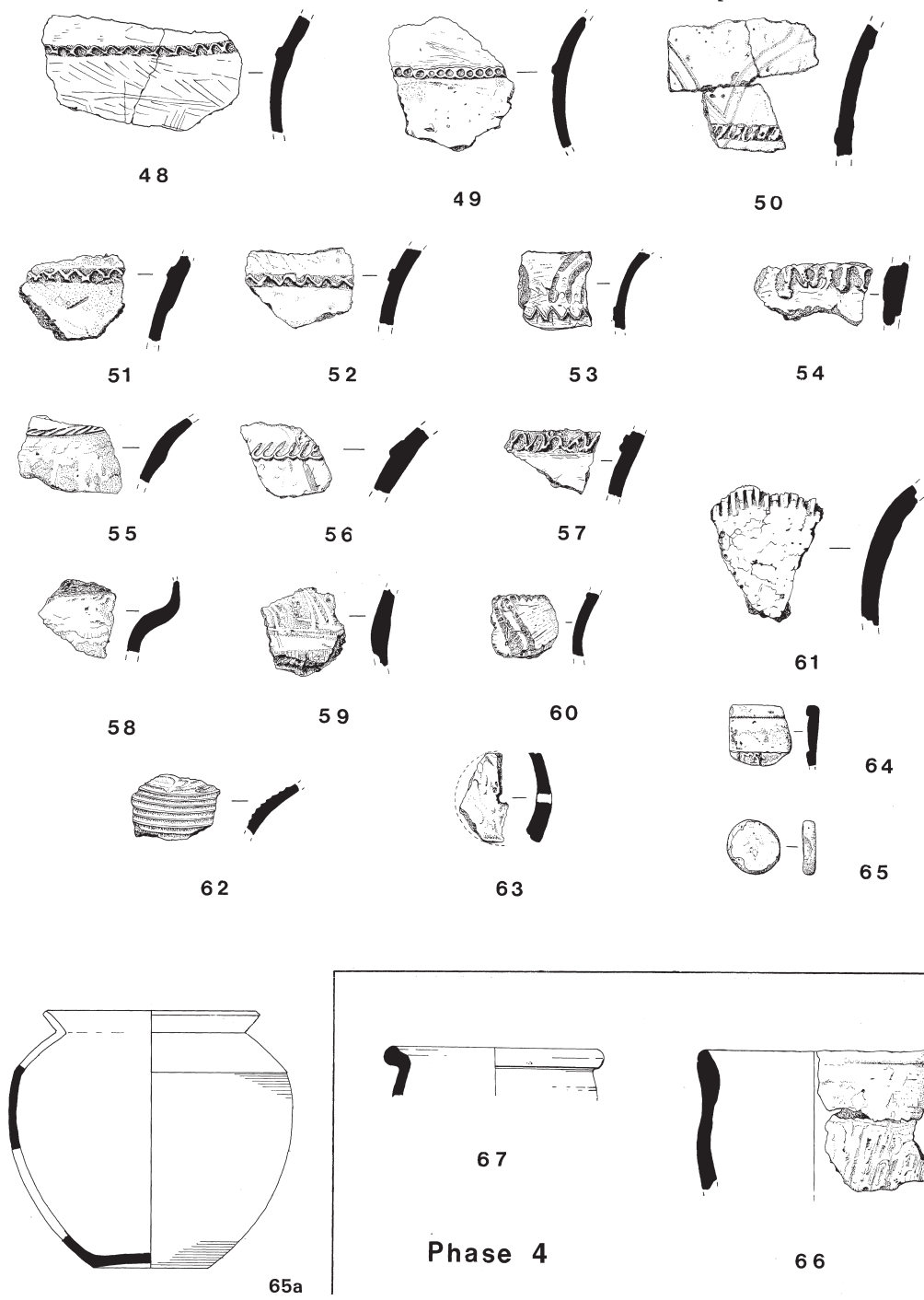
The entrance passage, lowest level (Context Eta)

Finds made on the floor of the passage probably belong to the destruction at the end of Phase 2 on the assumption that material was not normally left lying about in this important communicating area. They were in the thin black layer lying directly on the paving (Context Eta; a more diffuse layer of black earth and stones lying on top of this — Context Theta — is described below).

The main find from Context Eta was an intact iron ring, formed like a rope quoit and still attached to a flat iron bar which contains two bolts or rivets, presumably for attachment to something of wood [2D] (illus 24, no 20 & illus 29). This is assumed to be the door-handle of the dun and is described in more detail in Appendix 1. There were also a few potsherds of indeterminate type.

EARLIEST DEPOSITS IN THE OUTER COURT

The clearest floor level found just outside the dun has already been described; no dark occupation layer lay on this paving, which was evidently kept clean and clear during the whole of Phase 2, the primary occupation of the dun. Knowledge of what was happening in the rest of the Outer Court at this time is limited; only at the inner and outer ends of the long Trench VIII (illus 20) was the underlying rock exposed and at the latter point it was covered with a thin buried turf layer which seemed to run under the outer wall. At the inner end, next to the dun, was a layer of yellow, clayey soil starting at about the level of the adjacent outer paving. No clear occupation floors were found under the heavy rubble in this trench, and no artefacts.



ILLUS 23 More pottery from Phase 3 and two sherds from Phase 4 — scale 1:4

PHASE 2/3: TRANSITION

After the fire and demolition, and before the start of the secondary occupation, a number of changes were evidently made to the design of the dun. Any internal wooden roundhouse or similar structure of Phase 1 had presumably already been burned and demolished, and the assumed high galleried wall had evidently been substantially pulled down to not much above its present height. The changes seem to have been drastic enough to have involved un-roofing the ground level galleries, the guard cell and the entrance passage. The only tangible pieces of evidence for these alterations are the blockings in the two gallery doors and the rubble ramp built up to the outer end of the entrance passage (see below for the reasoning on which these interpretations are based).

THE GUARD CELL AND MURAL GALLERIES (CONTEXTS KAPPA AND LAMBDA)

The few finds on the floors of these features might belong to the first period of occupation but, because of the inference that the dun was partly demolished at the end of that period, the filling of the guard cell and the intra-mural galleries with rubble should also have occurred then. The finds are therefore allocated to Phase 2/3.

Finds from the guard cell include one hammerstone [25E] and several potsherds including one with a decorative impressed cordon [A.1965.47/1]. The few finds made on the floor of the two intra-mural galleries include one hammerstone [25F] and several wall sherds [49 & 799].

GALLERY DOOR BLOCKINGS (CONTEXT TAU)

The two doorways into the intra-mural gallery had been deliberately blocked, presumably at the start of Phase 3, and, since laid facing stones were only found at the interior wall face and not at the intra-mural end of the short passage, it seems that the galleries themselves were already filled with rubble when these revetments were made. Their primary purpose, therefore, was evidently to stop stones falling from the gallery into the interior and to present a continuous neat wall face to people inside.

Finds made in the core of these blocking walls included one pebble, possibly used as a polisher [31G], a few sherds [802–4 & 923] and a fragment of vitrified earth [60G]. The last confirms that a severe fire preceded the blocking.

BODY OF THE RAMP (CONTEXT NU)

When first exposed the outer end of the dun entrance passage was approached by a sloping pebbled surface but it soon appeared that this was a secondary rubble ramp which had been piled up against the dun wall to make it easier to surmount the high sill at the front end of the passage. Massive paving was found at the foot of the main wall and under the ramp (illus 13 & 18) and it seemed that the latter was probably built at the beginning of Phase 3, after the fire and demolition had rendered Dun Ardtreck redundant as a defended stronghold. Thus material excavated from the core of the ramp should belong to the very beginning of Phase 3, termed Phase 2/3 here.

Finds included several native potsherds [918] and eight sherds of a small Roman jar [53I, 536] (illus 21, no 21; Appendix 2).

FINDS WHICH COULD BE AT THE PHASE 2 / 3 BOUNDARY

After a re-examination of their recorded contexts the objects listed below seemed as likely to belong to the end of Phase 2 as to the start of Phase 3.

Inside the dun (Context Beta / Epsilon)

As indicated, it was sometimes difficult to separate out unburnt material dropped at the end of Phase 2 (when a destruction by fire is inferred) from that deposited at the start of the following secondary period of occupation (Phase 3). There was no sterile layer of small destruction rubble between the two horizons, as was observed for example at Leckie broch in Stirlingshire, despite the fact that several broken pots and a shattered quern stone were left on the primary floor. Thus some finds from the base of the dark earth Layer 2 could in fact belong to the top of Layer 3, below, and this was especially true before the Layer 3 occupation had been recognized (as noted it did not exist in large parts of the interior where Layer 2 rested directly on the rock). Most of the unequivocal evidence for the destruction by fire comes from re-heated artefacts, particularly one of the broken pots (illus 21, no 16 & illus 26) and the half rotary quern (illus 24, no 29 & illus 10), and these also define the horizon concerned.

Pottery included both incised vase and cordoned Everted Rim sherds, the identification of the latter as Everted Rim ware being confirmed by the presence of two base fragments without a foot [732]. There was also one Everted Rim sherd with fluting along the inner face of the rim [737] (illus 21, no 5) and a rim sherd with finger impressions [741]. There are also the several sherds of Vase 5 (illus 22, no 31) which is technically in the dark earth of the later Context Epsilon but, being only about 0.15 m above the rock, might perhaps be part of the group from the destruction layer. However there are no obvious signs of re-heating.

Iron objects included a tanged knife blade [1J] (illus 24, no 36) and a nail or bolt [4J].

Copper alloy objects included a corroded ring-headed pin [15C] (illus 25, no 38), a pin shaft, probably of a short ring-headed pin [16C] (illus 24, no 34), a small ring swivelling in the tubular end of a flat, folded-over bar of unknown purpose [19M] (illus 24, no 43) and a disc-shaped object with a flange around the edge which has not yet been identified [12M] (illus 24, no 42).

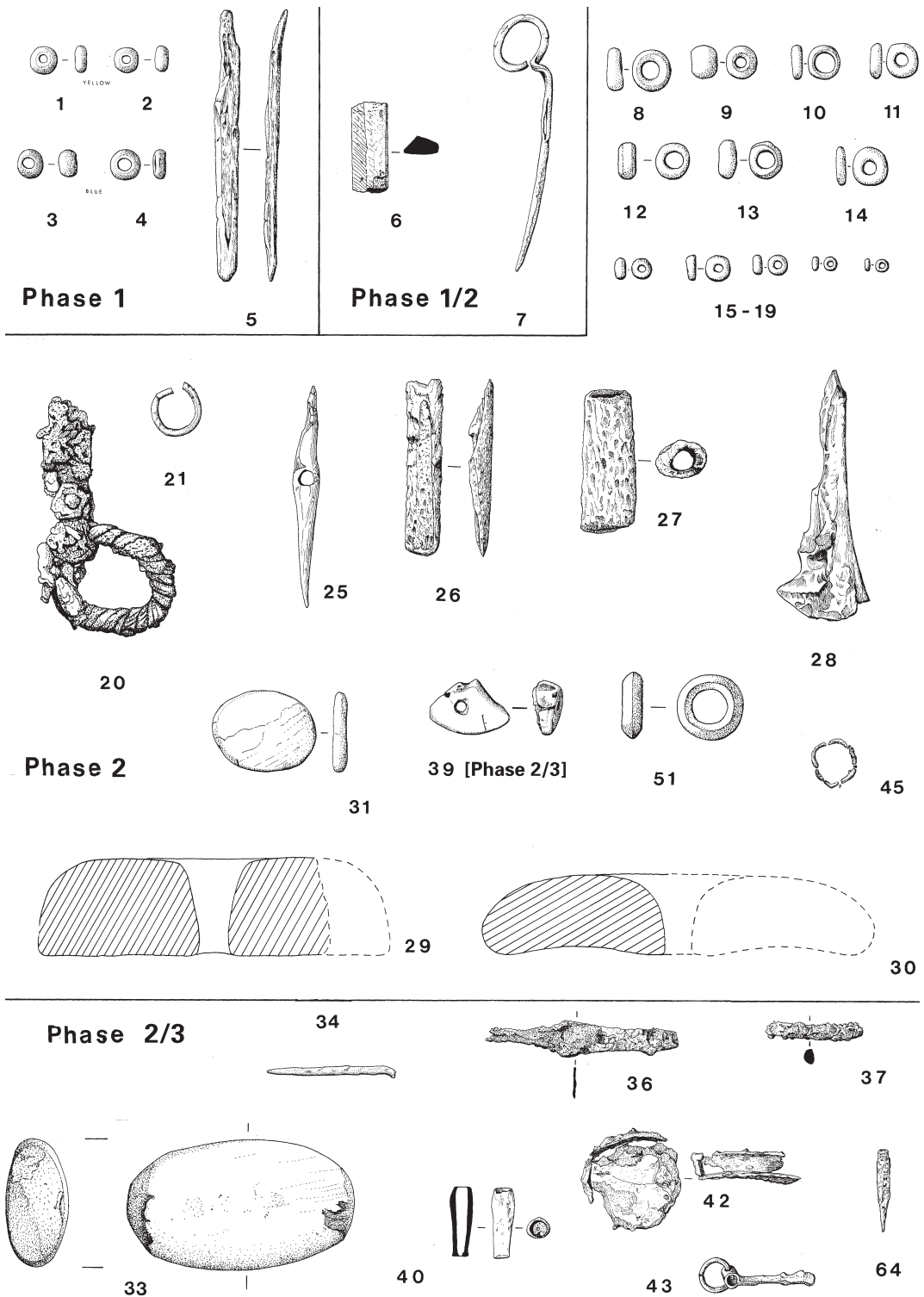
Bone A fragment with cut-marks [36J] and a small cylindrical handle, perforated longitudinally, and probably for a small metal awl [39J] (illus 24, no 40), and a small awl or point [41M] (illus 24, no 64) were fashioned on bone.

Stone Two pebble hammerstones [25J] were recovered.

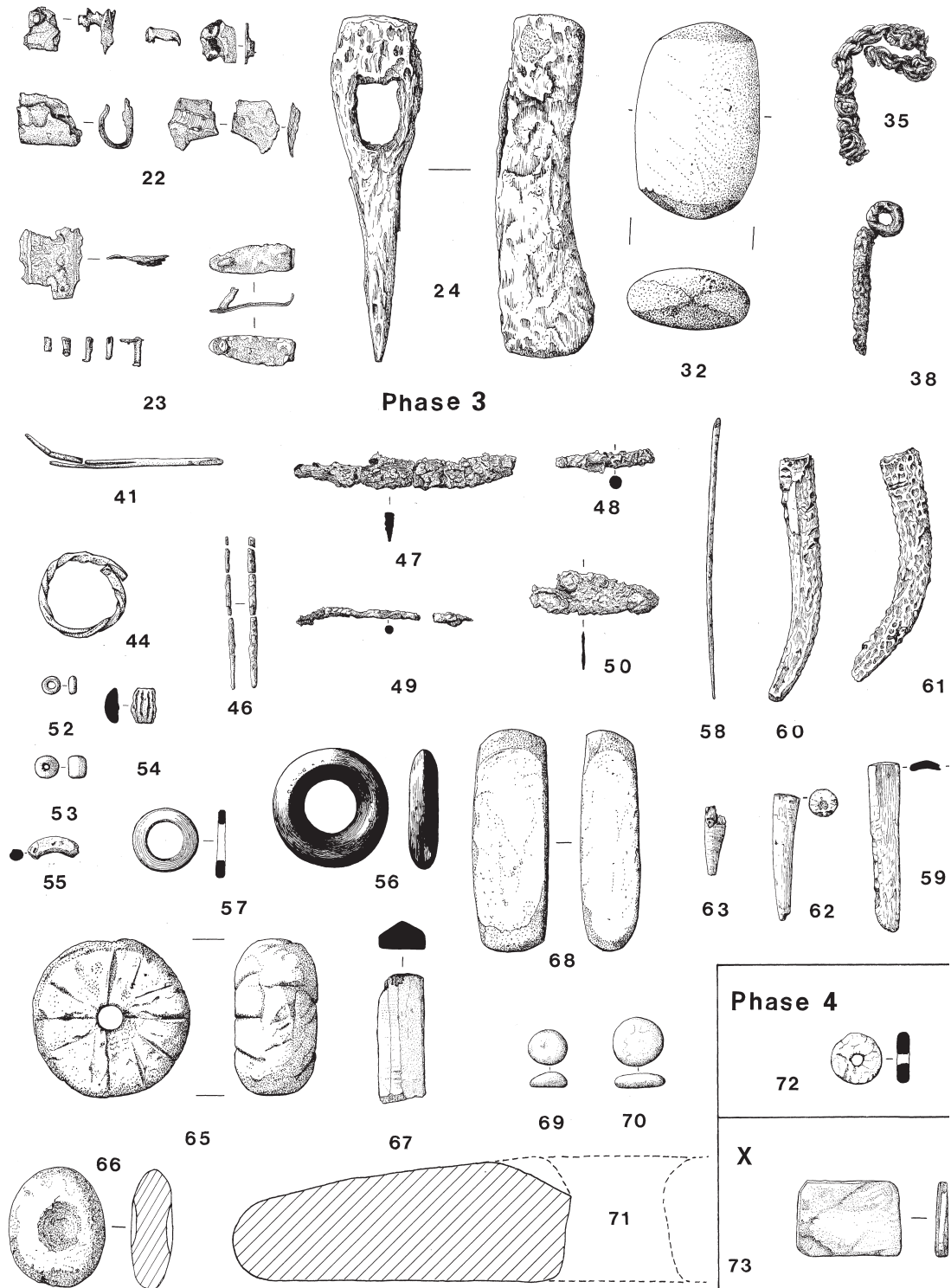
Amber One triangular bead with signs of burning [22J] (illus 28 & illus 24, no 39, where it should be under 'Phase II/III') was the sole object in amber recovered.

Under the secondary steps (Context Beta-1)

From under the packing of the secondary steps came one significant find. These steps, at the inner end of the entrance passage (Epsilon, below), were evidently built after the secondary floor level



ILLUS 24 Small finds of glass, metal, bone and stone from Phases 1, 1/2, 2 and 2/3 (scale 1:4, except nos 1-4, 8-19 & 51 at 1:1; nos 7, 21, 25, 31, 34, 39, 42, 43 & 45 at 1:2; nos 29 & 30 at 1:8). No 39 should perhaps be in Phase 2/3 and no 43 is more probably from Phase 3 and should be in illus 25 (the illustrations pre-date recent re-analysis of the excavation record and finds dates)



ILLUS 25 Small finds of glass, metal, bone and stone from Phases 3 and 4; all at scale 1:4 except no 22 at 1:1, nos 41, 57 & 65 at 1:2 and no 44 at 2:3

had been accumulating inside the dun for some time and thus was making it increasingly awkward to get from the sloping passage up on to the interior floor. From under the rubble packing behind these steps, almost on the underlying rock, came what appears to be a large rim sherd of Everted Rim ware. Although it does not possess the really sharply turned-out lip of the class (illus 22, no 14), it could be important because stratigraphically it seems to be the earliest example of this characteristic pottery to have been found at this site. Technically it should go into Context Beta-1 (Phase 2), but because it is a large piece, and because it would surely have been crushed if it had been lying around for any length of time exposed on the rock just in from the entrance passage, it should belong to the early part of Phase 3 (Epsilon-1, just before the construction of the steps) or, less probably, to the very beginning of that Phase.

Rubble in the Outer Court (Context Upsilon)

The north-west side of Trench VIII in the Outer Court (illus 20) shows the stratigraphy between the dun and the outer wall a short distance north-west of the entrance passage and ramp. A thick layer of earth and heavy rubble was the dominant feature and, although it underlay a layer of black earth in the inner half (and is therefore Layer 3 there), there is no doubt that it is the same as Layer 2 in the outer half. This is presumably the enormous heap of stone debris, later infiltrated by various soil and clay deposits, which accumulated when the high galleried wall of the dun was thrown down. Very few artefacts were found in this layer.

Pottery A few plain wall sherds and one incised sherd, together with two lumps of fired clay [891 & 897] were recovered.

Stone artefacts included an oval disc [24H], a hammerstone [25H], and a crude whetstone [27H].

Bone and antler were also represented, by various fragments [860, 861 & 902].

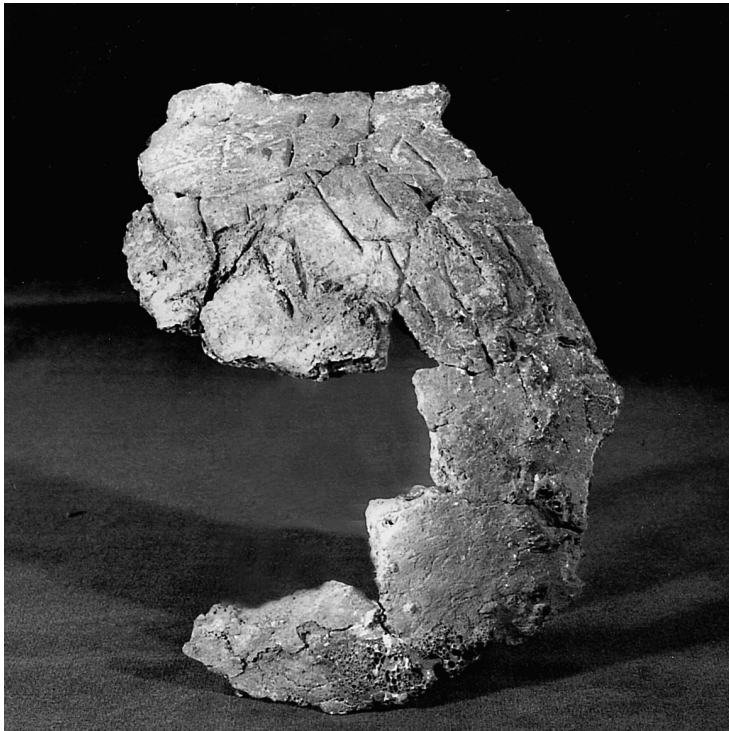
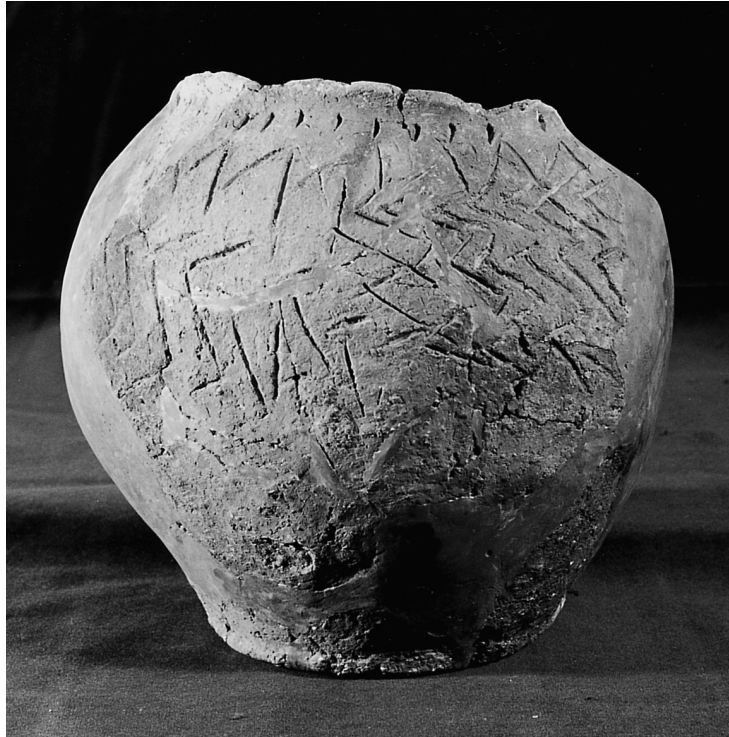
The Outer gateway (Context Rho)

When the outer gateway was cleared of its rubble fill a fairly flat rocky surface was found which had presumably served as the original entrance floor (illus 17). Scattered over this surface and lying directly on it was a large number of fragments of iron slag [80], which were evidently dropped before the huge accumulation of rubble in the outer court. If this rubble is the result of demolition of the dun at the end of Phase 2, the slag should be the result of a smelting operation which took place just before that. A report on one of the fragments appears in Appendix 6.

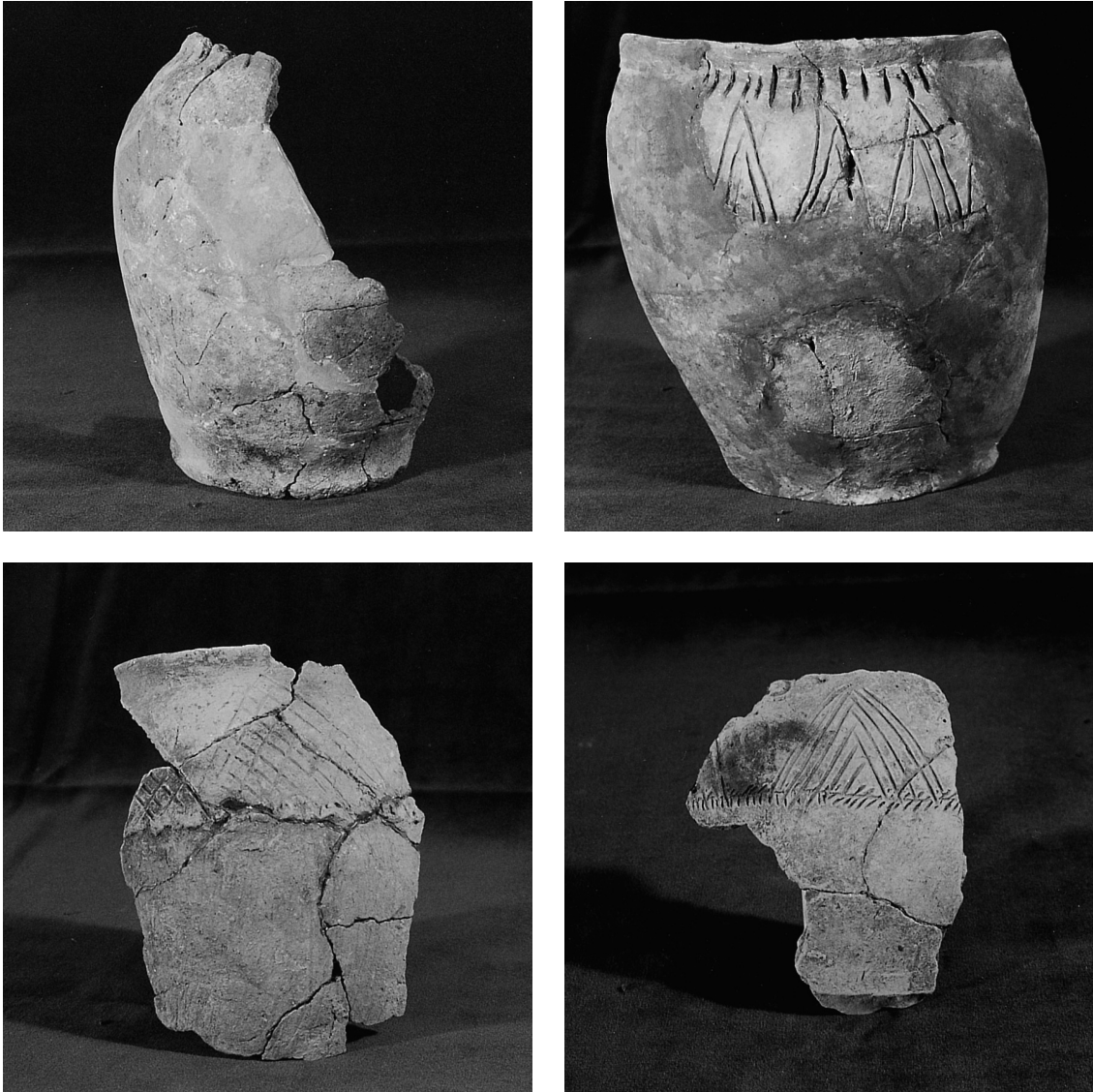
PHASE 3: SECONDARY OCCUPATION

SECONDARY FLOOR LEVELS INSIDE THE DUN (CONTEXT EPSILON)

Throughout the whole of the central court a distinct deposit of dark grey earth (Layer 2), mainly with few stones, was found either below the topmost layer of brown earth and heavy stones (Layer 1), itself immediately below the turf, or directly below the turf itself. It was soon realized that Layer 2 was a secondary feature, lying in places on the thin remains of the earlier Beta occupation just described. In the half of the dun interior nearer to the cliff Layer 2 rested on rock



ILLUS 26 Two views of the reconstructed parts of Vase 4 showing the severe heat blistering



ILLUS 27 Vases 1, 2, 3 & 5 (clockwise) — large pieces from the four other broken pots from the destruction layer, though Vase 5 may be later

(giving the initial impression that it was the primary occupation deposit) but it was also on the rubble foundation platform and (as already explained), at one point, on an earlier light brown earth Layer 4. Significant also was the discovery in Layer 2 of a few large blocks evidently fallen from the inner wall face, near its base and almost on the rock (illus 20, Trench IV, north-east section); this implies that the wall was becoming dilapidated — or perhaps had already been deliberately demolished — at the boundary between Phases 2 and 3.

In Trench XIV the remains of two adjacent small paved hearths were located within Layer 2 (illus 30 & 33); no central fireplace was found at any level although the layout of the trenches (illus 5) suggests that it is just possible that one slightly off centre could have been missed.



ILLUS 28 Beads of glass, faience and amber, bone probe and two bronze objects, all at scale 2:1: (top left) yellow ring bead [45/M, no 3]; (top right) dull red ring bead [46/C]; (top two rows, centre) seven small ring-beads [45/A]; (rest) black, dark blue, blue and green ring-beads [44/C]; (centre top) shaft of bronze 'needle' [14/M]; (middle) shaft of ring-headed pin [15/C]; (bottom) thicker bevelled end of long bone 'probe' [43/M]; (bottom, left and centre) two views of amber bead: left, heat-shattered face and, right, unburnt [22/J]; (right) burnt Roman melon bead [47/M]

Just inside the inner end of the entrance passage a short flight of three shallow stone steps had been added on top of the primary paving and it rested against the dark earth of Layer 2; it was bounded by a low curved revetment on the uphill side (illus 31 & 33). The insertion of the steps was presumably necessary because of the steadily accumulating Layer 2, which means that the floor level in the interior was slowly getting higher in relation to the passage floor.

FINDS FROM CONTEXT EPSILON (ILLUS 22, 23 & 25)

The great majority of the finds from Phase 3 came from Layer 2 inside the dun, just described. Those which were found near the bottom of it have already been listed under Beta / Epsilon above.

Pottery (illus 22 & 23) Many sherds were found, including numerous pieces of both cordoned Everted Rim and incised Vault wares, but the variant of the former with curvilinear decoration — known as the Clettraval sub-style — was not common. Specific examples to which attention should be drawn include Everted Rim sherds with decorative fluting along the inside of the rim (nos 23, 24, 29 & 30), the standard footless base of the Everted Rim jar (nos 36–38), several wall sherds with the applied cordons of Everted Rim ware (nos 48–57), including a true Clettraval jar with channelled concentric arches (no 53) and an unique rilled sherd, evidently from the incurving shoulder of a globular jar (no 62). Potentially important are the two sherds of a fine black-burnished jar of antique type (illus 23, 65a).

Incised sherds were found, presumably of the ancient indigenous style identified at Dun Mor Vault (illus 22, nos 32 & 41–46) as well as a finger-notched, footed base sherd characteristic of the class (no 40). Vase 5 comprised several pieces of a Vault ware vase with incised decoration and the impressions of a ring-headed pin (no 31) though this, as noted, might belong to an earlier stage, at the end of Phase 2. Completely absent was the other Vault ware vessel type, the barrel-shaped urns.

Iron objects (illus 25) These included one probable tanged knife blade [1M, no 5]; one well preserved, flat knife blade perhaps tanged [1M, no 8] (no 47); two more fragments of probable knife blades [1M, nos 6 & 7] (no 50) and a rod or pin shaft [5M] (no 49). There were also many nails [4M, nos 2–4] (no 48). A massive Roman iron axe-hammer or shaft-hole axe, much corroded, was found at an early stage of the excavations not far down in Layer 2 [6M] (no 24), and the stratigraphical position of this is discussed below. There were also 15 lumps of slag [8M].

Copper-alloy (illus 25) There is what looks at first sight like a spiral finger ring of unusual design, being made of a square-sectioned rod twisted round its longitudinal axis, but it seems to be the bent lower part of the shaft of a zoomorphic pin [16M] (no 44), similar to one found at Howe, Orkney (Ballin Smith 1994, illus 133, no 4314): such pins could apparently be of fourth- or fifth-century date. There is also a length of fine double-linked chain, very probably part of a chain brooch like that found at Leckie broch, Stirlingshire [11M] (no 35). A well preserved needle with short grooves above and below the eye could be a Roman type [14M] (no 41). A somewhat corroded large ring-headed pin of uncertain type (the head being detached from the shaft) is probably one of the projecting-headed Scottish variety [15M] (no 38) (a complete example was found outside the main entrance, Phase 1 above). In addition, the head of a small projecting ring-headed pin has been used to stamp circular motifs on the small Vase 5 of early Phase 2/3 (illus 22, no 31). Several fragments of a thin bronze rod, probably a pin shaft [18M, no 2] (no 46) were found, as well as fragments of sheet metal with small rivets [21M].

Bone and antler (illus 25) Objects fashioned on bone or antler included a long thin rod — perhaps a medical probe — with one spatulate and one delicate pointed end [43M] (no 58 & illus 28); a polished antler tine sawn across at the proximal end [37M, no 6]; two antler tines probably in the process of being made into bridle cheek pieces [38M] (nos 60 & 61); one antler tine sawn as if to make a knife handle [37M] (no 62); another antler tine, the pointed end of which may have been used [37M, no 8]; and a polished bone spatulate implement [36M] (no 59). Many large pieces of unworked antler were also in Layer 2.

Stone objects (illus 25) These included one complete jet ring or pendant [33M] (no 56) and two small rings like washers which might also be jet [34M] (no 57); four crude hammerstones [25M, nos 9 & 10] and a fine pebble grinder [26M]; one fine large whetstone suitable originally for a sword blade but both ends of which were (presumably subsequently) used for grinding [27M] (no 68); several smaller whetstones, one rectangular in cross section [27M] (no 67); one possible fragment of the edge of an upper stone of a rotary quern [32M]; a large spindle whorl decorated with incised radial lines [28M] (no 65); one shallow oval pebble with a pecked indentation in the middle of each face, doubtless a palm protector for when using a heavy bone awl on leather [29M] (no 66) and two possible counters made from small unworked pebbles [23M]. The rectangular stone palette which was found in the spoil heap probably belongs to this context [31M] (no 73).

Glass (illus 25 & 28) Two small yellow annular beads [45M nos 3 & 4] and two similar beads of blue glass [44M, nos 8 & 9] (nos 52 & 53 & illus 28) (Appendix 5) were all the glass objects from this context.

Objects of fired clay (illus 22 & 23) include a spindle whorl made from a potsherd [51M] (no 63), and a crucible or miniature pot [50M] (no 47).

Roman finds (Appendix 2) These were a tiny fragment of green glass [49M]; about a quarter of a melon bead, badly burned [47M] (illus 25, no 54 & illus 28); and three small samian sherds [54M]. These last were identified as of Central Gaulish make, and probably mid second century or Antonine in date; one has been carved into a disc or counter [54M, no 2] (illus 23, no 65). One of the samian sherds (part of the rim of a bowl) was found in dark earth just below the turf, in the central part of the dun where there was no overlying rubble [54M, no 3] (illus 23, no 64).

Miscellaneous A water-worn fragment of black pumice has been used as an abrading tool of some kind and may be important dating evidence for the deposit [57M] (Appendix 7). There were also about 30 vitrified lumps of fused stone and mineral matter.

SECONDARY STEPS (CONTEXT DELTA)

The small secondary steps at the inner end of the entrance passage have already been described; they were set against a backing of dark earth and stones which produced a few finds, presumably mainly of Phase 2 although some from the primary occupation could also have been included.

Finds included a small penannular bronze ring [15L], fragments of iron slag [8L], 1 fragment of the upper stone of a rotary quern [32L] which joins a piece in Context Beta (illus 24, no 30); one hammerstone [25L] and many fragments of animal bones. The pottery included several rim sherds from an incised vase [824] and some Everted Rim sherds [726].



ILLUS 29 Two views of the iron door-handle from the entrance passage (photographs by Trevor Graham)



ILLUS 30 (top left) The remains of two adjoining small kerbed and paved stone fireplaces in the south-west half of the interior; being secondary they rested on the dark earth of Layer 2

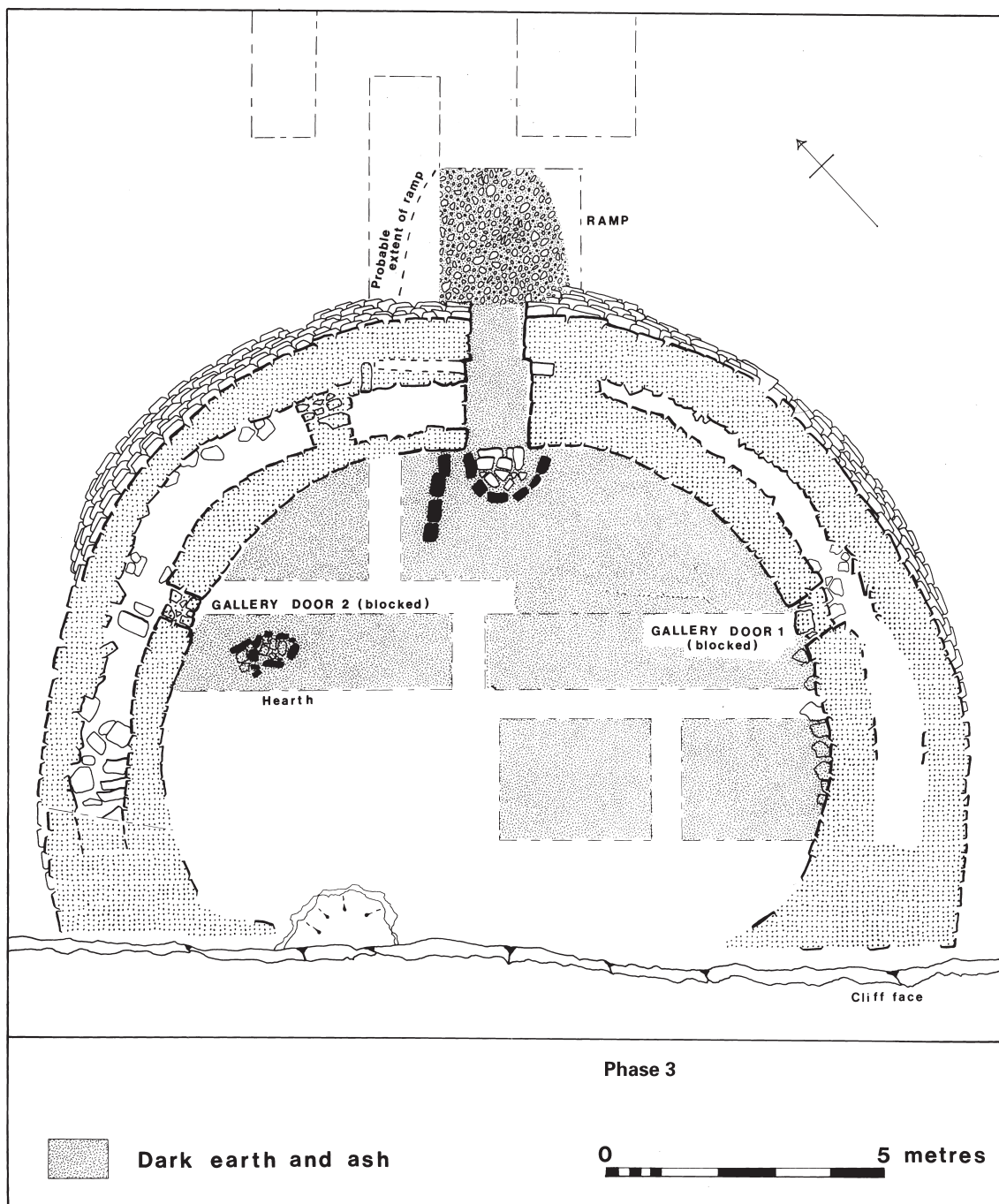
ILLUS 31 (left) The secondary steps at the inner end of the entrance passage. To the right can be seen the uppermost of the row of blocks which revetted the edge of the foundation platform, keeping the entrance clear in Phase 2

ILLUS 32 (top right) The outer end of the entrance showing the secondary ramp half removed. The primary sill stone is just visible and the pebble surface of the ramp is still in position on the left and in the centre (with three blocks lying on it) with the heavy blocks forming its core in the foreground

UPPER DEBRIS IN THE ENTRANCE PASSAGE (CONTEXT THETA)

On the paved floor of the entrance passage was debris — already described and including the iron door-handle — from the destructive fire (Context Eta). On top of this lay a thin layer of rubble covered by another thin black earth layer, presumably the equivalent of Layer 2 (Epsilon) in the interior, with the heavy rubble from the final dilapidation on top (illus 20, south-west section).

Finds (illus 25) were sparse but included many small fragments of sheet copper alloy with studs, perhaps strap mountings [19K, nos 1 & 2] (nos 22 & 23); a fragment of an iron knife or dagger blade [1K]; and several iron fragments [9K]. There were also animal bones and shells.



ILLUS 33 Plan of Dun Ardtreck in Phase 3

SURFACE OF THE RAMP (CONTEXT KSI)

The pebbled surface of the ramp outside the entrance produced several sherds of Everted Rim ware [812 & 913] and a rim of a Vaul ware vase [813]; also an iron nail [4P]; a quarter of the

upper stone of a rotary quern of Torridonian sandstone [32P] (illus 25, no 71 & MacKie 1972, fig 2m); and one sherd of the Roman wheel-made jar [916] (illus 21, no 21).

TRENCHES IN THE OUTER COURT (CONTEXT UPSILON)

The nature of the outer court deposits has already been described. No clear occupation layers or working floors were noted but there was one curious structure which might have been the foundations for a stone hut.

HUT OCCUPATION IN THE OUTER COURT? (CONTEXT PI)

What appeared to be part of one rectangular hut foundation was located in Trench II in 1964. It could date from Phase 3 but since no clear floor level was found on either side of the long wall, and the few finds were not linked with any obvious occupation level, it was not explored further. The finds included some potsherds [50], a hammerstone [25N] and some animal bones.

PHASE 4: ABANDONMENT

RUBBLE LAYER (CONTEXTS ZETA AND MU)

As noted, a layer of rubble mixed with loose earth (Layer 1) was found all over the dun except on the wallheads; in places it was immediately under the topsoil and elsewhere under a layer of dry rubble and resting directly on Layer 2, the final occupation deposit. This rubble should post-date the final abandonment of the dun as a dwelling, although a few objects were found in it.

At the interface between the rubble lying over the interior of the dun (Zeta) and the dark earth below (Epsilon), and apparently resting on the latter, a rim sherd of imported E ware was found. The probable significance of this is discussed below.

In the rubble layer proper (Zeta) were found an iron nail [4Q] and a piece of slag [8Q], a steatite whorl or bead [28Q] and a hammerstone [25Q], four Everted Rim sherds (797), three sherds from a vessel with a vertical rim (illus 23, no 66) which may be of Irish origin (Appendix 1), a footed base sherd [842] and 75 wall sherds [843]. There were also animal bones and some lumps of vitrified soil and stones [60Q].

In the rubble filling the intra-mural galleries (Mu) were found two iron nails [4S], a wall sherd [805] and quantities of shells and animal bones.

MATERIAL CULTURE OF THE DUN

POTTERY

Because Dun Ardtreck is built directly on a fairly smooth rock surface at the edge of a cliff it seems improbable that any traces would survive of an occupation earlier than that of the dun, except perhaps in the Outer Court. However, the vast majority of the potsherds found were inside and immediately in front of the dun; hardly any were found in the Outer Court and none at all in the lowest levels there. Thus it seems reasonably certain that the great majority of the pottery cannot be older than Phase 1. However, two sherds from a much older early Iron Age pottery style were found (illus 23, no 65a) and are discussed below. These might in theory indicate an earlier occupation — a timber palisade defending the same rock knoll perhaps, or an older settlement nearby — but they were found in the Phase 3 occupation layer.

That no distinctive pottery from such an earlier occupation exists (apart from that one black-burnished jar) is also suggested by the nature of the sherds from the destruction levels of Phase 2 which exactly parallel some of the pre-broch pottery found on Tiree. The large pieces of four small vessels which were found to have been in use at the time of the destruction are closely similar to the Vault ware vases found at Dun Mor Vault; the other vessel type found there — the barrel shaped urn — was absent from the Skye site for some reason. At Dun Mor Vault both these vessel types were in use from the very beginning of the site's occupation, which may have been as early as the eighth century BC, although also somewhat later (MacKie 1997, 175 ff), and continued in use until the abandonment of the site in Phase 5, perhaps in the third or fourth centuries AD (a later date now seems likely). When the completely distinct Everted Rim ware was introduced in Phase 2a — shortly before the broch was built — Vault ware continued in use side by side with it. There can thus be little doubt that Vault ware was the pottery of the aboriginal Iron Age, and perhaps of the late Bronze Age population of Tiree, and was of considerable antiquity there even in the first century BC (Phase 2).

Thus the oldest layers inside Dun Ardtreck had only one of the two 'native' vessels of the Tiree site (about 58 miles away across the sea to the south) with no trace of the Everted Rim jars introduced by the broch builders to that island. It is only in the secondary, post-destruction deposits of Dun Ardtreck (Phase 3) that Everted Rim sherds appear (illus 23, no 53) as well as the associated *omphalos* jar bases without the characteristic projecting foot of the Vault vessels (illus 22, nos 33–38). A small amount of the new ware occurs in the probably mixed layers of Context Beta/Epsilon, but its absence from unequivocal Phase 2 (Beta) deposits suggests that all these pieces come from Phase 3.

Illustration 35 shows two different ways of interpreting this information. If we assume that Everted Rim ware — more particularly the Cletraval sub-style — spread fairly rapidly throughout the Western Isles after its first appearance (probably on Tiree), and that it therefore forms a distinct ceramic horizon, this could mean that Dun Ardtreck was built much earlier than Dun Mor Vault. The whole of Phases 1 and 2 at the former site took place before Everted Rim ware appeared, when only the indigenous Vault ware was in use. Alternatively the Everted Rim pottery, even though it may have started out on Tiree as the new pottery of a new class of broch-building families, might have spread fairly slowly to other western islands, considerably more slowly in fact than the new idea of the broch tower itself, an idea supported by the discoveries at Dun Vulan (below). In this case much of the primary occupation of Dun Ardtreck could have been contemporary with Phases 2b and 3a and Dun Mor Vault, and it would be more difficult to argue that the D-shaped semibroch was built a long time earlier than the broch simply on the basis of the evidence of the stratified pottery from the two sites.

In fact it is difficult to argue for the 'rapid spread' scenario because of the earliest points in the site sequences at which Roman artefacts appear (shown by the thick dotted lines in illus 35). These finds may be assumed to date their associated layers to not earlier than the late first century AD, especially if they are of distinctly Flavian type — and quite possibly mostly into a band of time from about AD 80 to the later second century. This 'Roman horizon' pre-dates the appearance of Everted Rim ware at Dun Ardtreck but post-dates it at Dun Mor Vault (MacKie 1974, fig. 9). If the two horizons connect the sites in time reasonably accurately, this also implies that the latter part at least of the primary occupation of Dun Ardtreck was contemporary with the primary period of occupation of the Tiree broch. Thus the evidence that Dun Ardtreck was built and used a long time before broch towers is weaker and that hypothesis has to rely on other evidence including radiocarbon dates. The stratigraphy unravelled at Dun Vulan in South Uist also shows that the broch there pre-dates the arrival of Everted Rim ware (although no Roman

artefact horizon was recorded there) and seems to support the slow spread hypothesis for the new pottery. With the evidence now available it is therefore harder to argue now that Everted Rim ware was the standard pottery of the builders of either semibrochs or brochs anywhere in the Hebrides except on Tiree.

Classic early Iron Age carinated pottery is found in quantity in eastern and southern England and it occurs sporadically in the northern Scottish islands, for example at the well dated sites of Bu and Howe in Orkney (Hedges 1987, vol 1; Ballin Smith 1994) and also at Jarlshof in Shetland (Hamilton 1956). It is less well known in the Western Isles but that this important early Iron Age tradition was there was shown first at the open site at Balevullin on Tiree, where a miniature vessel with a carinated side, and several sherds of a coarser carinated pottery very similar to that from Yorkshire, were found in 1912 (MacKie 1965, fig 1, no 1 & fig 4, nos 58–61). In 1963 on the same island many sherds of a very small carinated Everted Rim jar with a glossy red-brown surface were at Dun Mor Vaul (MacKie 1974, fig 13, no 113).

These early Iron Age Scottish horizons seem not to be later than about the seventh and sixth centuries BC, judging from the available radiocarbon dates. The equivalent early Iron Age carinated wares of southern England also seem to go back at least to the seventh century BC. The finer pots tend to have a glossy black surface which requires special skill in firing as well as, sometimes, some graphite to apply to the surface (Harding 1974, chap 9). Up until now the only place in the Atlantic province — indeed in the whole of north Britain — where similar material has been found is at Jarlshof in Shetland (Hamilton 1956, chap IV), although other broch sites in the north have yielded black-burnished Everted Rim jars, so far unpublished; Mousa in Shetland (MacKie 2000, pl 2) and Midhowe in Orkney are good examples as perhaps is Clickhimin (Hamilton 1968, figs 42–4).

Particularly interesting in view of all this are the two somewhat worn sherds of a similar black-burnished, carinated jar of remarkably fine, hard and thin ware, with an *omphalos* base (and doubtless with a sharply Everted Rim), from a secondary context; an attempt has been made to reconstruct the appearance of the vessel (illus 23, no 65a). It is hard to judge the detailed significance of the two sherds but such a fine pot must surely have been a very high status item in its day and its very presence — even centuries after it was in use — also surely implies something about the status of Dun Ardtreck. The much later E ware sherd implies the same in the mid first millennium AD (Appendix 3).

ECONOMY OF THE SITE

The available direct evidence for the kind of food consumed by the inhabitants of Dun Ardtreck is confined to the rotary querns (for cereal preparation) and the animal bones (for the kind of meat eaten) although other details can probably be filled in from neighbouring contemporary sites.

Cultivated cereals

Because of the presence of rotary hand mills we can assume that there were fields of cultivated cereals close by the site, although no traces of these have yet been sought. At Dun Mor Vaul the evidence from both charred grain and from cereal impressions on sherds showed that the grain grown was six-rowed barley (*Hordeum vulgare*) and that this was mainly the hulled as opposed to the naked variety (Renfrew 1974). Presumably the same crop was grown on Skye. The only clue available about how the barley grains were prepared comes from the querns themselves; the grain

was ground into flour and this must surely mean that some kind of unleavened baked products like bannocks and loaves were made, although no trace of baking ovens was identified. Presumably the barley grains could also have been boiled in a pot to make a form of porridge, either over an open fire or by dropping hot stones into a vessel (though no such heated stones were clearly identified).

No evidence was recovered from this site for how the ground was tilled or the grain harvested and stored. Iron ard points — really open-socketed iron shods for a flat timber beam — are known from a few sites; a good example comes from the wheelhouse at A' Cheardach Beag, South Uist (Fairhurst 1971, pl 12 & fig 11) and another, better preserved and more spade-like, is known from Leckie broch in Stirlingshire (MacKie 1987, pl 4). Thus we might assume that the ground in the small fields was broken up with a drag plough or ard, which made grooves in the soil rather than turning it over. However, the tilled soil on Skye now seems rather heavy to be broken up by an ard (which seems more suited to the *machair* (turf-covered sand) of the Outer Hebrides) and one wonders whether something like the old highland foot plough, or *cas chrom*, was used also in the Iron Age.

Meat

Appendix 4 describes the mammalian bone found during the excavations, mostly from Phase 3 deposits. Domesticated cattle provided most of the meat eaten, followed by hunted red deer, followed by presumably wild pig and after them sheep. The scarcity of sheep is somewhat surprising when contrasted with their relative abundance at Dun Mor Vaul (Noddle 1974). One might guess that red deer were commoner on Skye in the Iron Age than on Tiree and that the inhabitants of a high status site were fond of hunting. One concurs with Noddle too that the environment around Dun Ardtreck must have had a lot of woodland suitable for deer and pig but not much open ground for sheep. Boar's tusks are frequently found on brochs and allied high status sites and presumably represent hunting trophies, but none was observed at Dun Ardtreck. Boar hunting requires horse riding and, although no horse bones were found at this site, there are pieces of antler tines which look as if they were being made into bridle cheek pieces (illus 25, nos 60 & 61). A complete such cheek piece was found at Dun Mor Vaul and a peculiar iron point — with a small blade and a massive socket containing the remains of a wooden shaft, found at Leckie broch, Stirlingshire — might be a from an early pig-sticking spear.

Dairy produce

Direct evidence for the production of milk and other dairy products is rarely found on Hebridean Iron Age sites though the abundant cattle bones must surely mean that much milk, butter and cheese was available. Dramatic confirmation of this has come from the radiocarbon dating of two wooden kegs of butter found in highland peat bogs in the 19th century (Earwood 1991); that from Kyleakin, Skye, was dated to 1730 ± 35 BP (UB-3186) and another from Glen Gell, Morvern, Argyllshire to 1802 ± 35 BP (UB-3185). Calibrated to one standard deviation these dates become time ranges of AD 140–247 and AD 246–346 respectively and there can be little doubt that, despite the allocation of these finds to the 'Early Historic' period, burying kegs of butter in peat bogs (presumably to preserve them for a few months during winter) was a standard feature of the middle Iron Age economy of the west coast and Western Isles.

TECHNOLOGY

Metalworking

Although several iron knife blades were recovered no evidence of the presence of a smith who was forging implements was found. Yet iron ore must have been smelted close by as shown by the presence of some fragments of slag inside the dun, and by many on the rock floor of the outer gateway. Any such smelting furnace is hardly likely to have been inside the dun at any stage, but the quantities of slag in the outer gateway suggests that there was one close by at a late stage in the primary use of the site; unless in a dire emergency red hot slag would surely not have been thrown in the outer gateway if it was still in regular use (see Appendix 6). The clearest sign of the activities of a skilled smith are to be seen in the ring door-handle (illus 29), although with the evidence at present available one cannot know whether this remarkable object was made locally or imported from some centre of high craftsmanship. (This problem is considered further, below.)

Copper alloy was used only for small objects at this stage in the Iron Age and three small vessels like crucibles were found, suitable for melting small quantities of copper alloy; one had clear traces of intense heat. However, nothing like baked clay mould fragments was located. Unfortunately it has not yet been possible to arrange for analyses of the components of the alloys used. The work in this area recently carried out by Dungworth (1996; 1997) suggests that, in many sites in southern Scotland at least, the alloys used to cast Iron Age 'bronze' ornaments was heavily influenced by Roman practice in that zinc was used. This metal was not available to insular smiths in pre-Roman times. Similar investigations on large numbers of ornaments from Iron Age sites in the Highlands and Islands have yet to be carried out.

Bone working

The bone and antler implements found were relatively crude; with the exception of one piece of an antler tine that had been neatly sawn off (illus 25, no 62) most of the bone implements seem to have been quite roughly cut. One exception is the fish gorge which — though worn at one end — seems to have originally been polished smooth all over; this is the only implement which suggests that splinters of bone or antler might have been removed by cutting parallel grooves with a burin of some kind. Its central hole was also drilled (presumably with a bow drill) rather than cut. The tines which might be blanks for bridle cheek pieces also show quite neat saw cuts at their proximal ends.

Leather working

Two or three implements may have been used for dressing and piercing leather. Iron knives were presumably used for cutting out shapes but obviously cannot be specifically diagnosed as having been used for this task. The polished spatulate tool (illus 25, no 59) may have been a scraper for preliminary dressing of skins and the heavy bone awls were surely used for piercing tough leather. The oval pebble with a shallow, circular pecked depression in each face (illus 25, no 66) is plausibly diagnosed as a palm protector to help with forcing such a point through the tough material.

Spinning and weaving

The situation at Dun Ardtreck contrasts to some extent with that at Dun Mor Vaul, where sheep bones testified to the availability of wool and potsherds made into spindle whorls were plentiful and testified to the wool having been spun into yarn. Judging from the bones sheep were much rarer at the Skye site and only one pottery whorl was found, though there were also two probable ones of stone (illus 25, no 65). The usual evidence for weaving on Iron Age sites is the long-handled bone comb, but none was found either at this site or at Dun Mor Vaul. No long handled combs have been reported from Dun Vulcan in South Uist (Parker Pearson & Sharples 1999) and one may perhaps doubt that this particular type of comb — with long, close-set teeth — was really suitable for weaving.

Pot making

Some comments on how the pottery was made and decorated are to be found in the descriptions of the illustrated sherds (Appendix 1); in general, the vessels were hand made and built up by the ring system.

Fishing

No fish bones were identified which seems strange as the site is immediately next to the sea. However, the single bone fish gorge (illus 24, no 25), if correctly identified, presumably indicates that line fishing was occasionally practised.

Wood working

A high standard of joinery is implied if Dun Ardtreck was originally equipped with an elaborate thatched roof on the wall head and with a ring-shaped raised wooden floor in the interior, as well as — presumably — a massive wooden door bound with iron in the entrance. However, tangible evidence is lacking here and depends on finding the appropriate iron tools and waterlogged or charred pieces of wood bearing the marks of carpentry. Only Leckie and Buchlyvie brochs in Stirlingshire, have so far produced elaborate arrays of iron tools, including (at the former site) a piece of a small saw, which shows that skilled joinery was carried out. However, the small wooden kegs holding butter which have been found well preserved in peat bogs, two of which have now been dated to the middle Iron Age (Earwood 1991), provide valuable new evidence for the high wood-working skills possessed by the carpenters of the western broch-building cultures.

THE EVOLUTION AND DATING OF THE SITE

THE PRIMARY STONE AND WOOD STRUCTURES

The strongly defensive appearance of the drystone building of Phase 2 is indicated by the nature of the rocky eminence on which it stands — an ideal defensive position — and by the nature of the entrance passage with its guard cell, its steeply sloping floor, high sill outside and substantial checks for a heavy door secured by a wooden draw-bar. However, reconstructing the details of the design of the building depends to a large extent on three of its aspects which are not so easily determined. First is the question of the original plan of the site. Was it a circular broch-like structure part of which has fallen over the cliff or was it built in the D-shaped form it has now?

Second is the question of the original height of the galleried wall. Was it high like a broch tower (with several superimposed intra-mural galleries) or more modest? An essential aspect of this is the existence or otherwise of an intra-mural stone stair. The third question is that of the nature of the primary roof and, connected with this, whether there was any complex internal wooden structure analogous to the roundhouse usually supposed to have existed inside hollow-walled brochs.

The plan of the building

Before excavation the plan of Dun Ardtreck, with its galleried wall and characteristic entrance passage, gave the impression of a close relationship with the brochs, and it was not unreasonable that any early discussion about the site should have asked whether it could have been a round broch built next to a cliff-edge and part of which had fallen into the sea because of a rock fall. The Royal Commission's field investigators were the first to examine the site in detail; although no large scale plan was published, Dun Ardtreck was included among the non-circular broch-like sites which seemed to be such a prominent feature of the Iron Age buildings of Skye (RCAHMS 1928, no 484; also xxvi ff). In other words the D-shaped, open-sided plan next to a cliff edge was assumed to be the original intention of the designers.

The writer isolated again this class of 'non-circular brochs' — as Scott called them (1947, 14) — in 1963 and named them semibrochs, assuming that they were a more primitive form of broch, the immediate prototypes of the towers in fact. The main reason for this assumption was that these buildings appeared to have exactly the same high, hollow wall as the brochs, together with various other subsidiary features — such as a scarcement on the inside wall face — which seem consistently to occur with this (MacKie 1963, 103 & fig. 1). Eventually, this positive diagnosis provoked a reaction, as one would expect, and several authorities have questioned the existence of the C-shaped and D-shaped semibrochs as a separate group (below). The excavation of Dun Ardtreck showed quite clearly that the galleried wall widened slightly at both ends as it approached the cliff edge; the outer faces straighten to form right angles with the edge and the inner face of each end curves distinctly round to run along it. The probable end of one of the intra-mural galleries was also located, a few feet short of the northern wall end. There is little doubt that the building was from the start a D-shaped structure with a thin, straight wall (far too thin to contain an intra-mural gallery) along the edge of the cliff.

The original height of the galleried wall

The first fact that has to be faced is that only one intra-mural gallery is preserved — built on top of a fairly level surface of rock and the foundation platform — and that no covering lintels remain. However, for various reasons it seems fairly certain that the wall was originally somewhat higher than it was before excavation in 1965 and that it must, therefore, have had at least one more gallery on top of the existing one. This could mean that the dun had something very like the specialized high, hollow wall characteristic of true broch towers. Admittedly this inference also depends on the assumption that the building was designed to look impregnable, whether for purposes of prestige or as a strong defence, or for both. If it was not so designed the wall may have been somewhat lower, and this possibility is considered later. The inference of a high wall also depends on there having been some kind of stairway inside it and, as shown below, there is no unequivocal evidence for this.

<i>approx. date</i>	<i>phase</i>	<i>main events</i>	<i>other events and finds</i>	<i>dating evidence & cultural stages</i>
	4	ABANDONMENT & DILAPIDATION	rubble accumulating in interior dwelling abandoned	LATE IRON AGE Irish sherd?
c. AD 500?	3 (end)		6th century visit by Irish monks?	E ware sherd Historical source?
	3	SECONDARY OCCUPATION	dark earth accumulating in interior similar material culture Antonine samian sherds	MIA III Roman finds
	3 (start)	DWELLING REBUILT	appearance of Everted Rim ware new wooden house inside wall ramp built against entrance passage	
late 1st or 2nd C	2 (end)	DESTRUCTION & DEMOLITION	outer court filled with rubble walls pulled down iron ring left in entrance wooden roof, furnishings and door burned	MIDDLE IRON AGE II
	2	PRIMARY OCCUPATION	outer gateway used for iron smelting arrival of Roman jar (from ships?) incised Vaul ware vases rotary querns glass beads thin primary occupation layer outer court clear	
200 BC?	1	CONSTRUCTION OF STRONGHOLD	rotary querns ring-headed bronze pin? roof wooden roundhouse inside? high, D-shaped galleried wall built foundation platform laid	C-14 2005 ± 105 BP for foundation platform MIA I

ILLUS 34 Diagram of the Dun Ardtreck site sequence

If it is assumed that a good high defensive wall was intended (from the situation of the site and from various surviving structural features like the entrance passage and from the evidence of destruction and demolition at the end of Phase 2), then it can be concluded with some confidence that the wallhead was once at least 3 m, and quite possibly 4.6 m to 6.1 m, above the present wall. The first and most powerful argument in favour of this view is that the wall would have been quite useless for any kind of protection unless it had been at least 3 m higher at the edge of the cliff, where it now stands to only about 0.45 m. In fact, since a drystone wall of 3 m to 3.4 m could probably be scaled easily by a man pushed up by two others, it seems quite reasonable to assume a minimum of height of 4.6 m (with perhaps three galleries) for the wall at this point; the true figure could have been 6.1 m (20 ft, with four galleries) but of course this is quite unverifiable.

Because of the roughly level foundation platform on which the galleried wall is built there is every reason to believe that the original wallhead was also level. Thus one may reasonably assume that the galleried wall once stood at least 4.6 m and perhaps even 6.1 m above the rubble platform and, since it is inconceivable that the two concentric halves stood to this height without being bonded together, there must have been horizontal rows of stone lintels linking them. So, assuming an average height per gallery of 1.5 m, there should have been at least two upper galleries on top of the existing one at ground level. In addition one would probably expect a short thickness of solid wall on top of that to keep the lintelled part protected and stable, and perhaps a parapet of say 1.2 m high over the outer half to allow a watchman to walk around partly hidden. In this scenario there can be little doubt that Dun Ardtreck had at least a modest version of the high galleried wall of the true broch towers, a deduction which is supported by the huge quantity of stone rubble lying in the Outer Court (see comments on ‘The Outer Court and Gateway’ below).

The problem of the intra-mural stair

The question of the existence or otherwise of an intra-mural stairway is bound up with that of the original height of the wall of the stronghold. The vast majority of the high, galleried walls which have been systematically examined are in hollow-walled brochs and there is usually an intra-mural stone stair connecting them together, reached through a doorway from the enclosed court which can be at ground or first floor level. Most excavated brochs can be seen to have this arrangement and the only other excavated semibroch — Dun an Ruigh Ruaidh on Loch Broom — also has the remains of an intra-mural stair leading to an upper gallery (MacKie 1980, figs 5 & 8). These stairways might also have been useful during construction if it was convenient to carry the smaller stones (which alone, except for the gallery and void lintels, and the steps for the stair, are in the upper levels of the wall) to the wallhead up a gradually extending stone stair as each gallery was built. In that case less wooden scaffolding might have been necessary.

Moreover, with only one known exception (Dun Grugaig semibroch on Skye) these stairways rise to the right of the doorway at their foot — in other words they ascend clockwise. Modern Gaelic has the word *deiseal* meaning ‘to the right’ or ‘sunwise’, a word which has symbolic connections with prosperity and good luck; Dwelly (1941, 328) gives a long list of examples of such beliefs among the Gaels. Thus it seems inherently likely that, if Dun Ardtreck (though a pre-Gael structure) did once have an intra-mural stairway, it rose to the right. The question then to be answered is — where was it?

Both halves of the wall have a doorway from the central court leading to the gallery but any such stair can really only have existed in the northern half of the wall which, as described earlier, had a wider gallery with better built faces (illus 14). Yet there was no trace of a stone stair in the

section between Gallery Door 2 and the guard cell where the inner faces were particularly neatly built and reasonably well preserved and intact.

Immediately to the left of this doorway, however (towards the cliff), there were traces of a feature which might be the remains of a stair. The single flat slab which lay on the gallery floor here might be the bottom step of a flight — elsewhere the floor was of unpaved rubble. Yet there were no traces of sockets or snapped-off stumps further up where the missing steps should have been bonded in. At a point 2.1–2.4 m in the same (seaward) direction there were more flat slabs looking like the remains of steps but again nothing coherent remained. In any case a stair in this section seems improbable, not only because such a one would be almost unique in rising to the left, but also because it would have ended abruptly and uselessly, facing the blank end of the hollow wall at the cliff edge.

If there was a stone stair it surely started from a point to the right of Gallery Door 2 and rose in the same direction, towards the guard cell and entrance. As noted, the difficulty with this hypothesis is that in this wide section there are no traces of such a stone stair, either in the form of detached slabs from the steps, or of breaks in the wall face where they might have been, or in the form of the stumps of snapped-off slabs still in the wall face. The latter can be seen in several sites, including for example Dunrobin Wood broch in Sutherland.

It might be argued that, despite appearances, the cross-wall at the back of the guard cell is a secondary construction and that the stair began at this point. Yet no sign of this wall being secondary was observed. If the stair did start here the steps should just have cleared the lintels of the entrance passage, but the writer knows of no similar arrangement elsewhere except at Dun Grugaig semibroch on Skye where, as noted, the stair rises in the ‘wrong’ direction. If as seems certain the steps oversailed the lintels of the guard cell, they must have risen from the rubble floor of the gallery at least 1.8 m back from the cross-wall, where there were no signs of them.

Alternatively, it may be that there was no intra-mural stone stair in this building but that a solid wooden flight of steps served the same purpose. The general impression gained from a study of its architecture — particularly from the presence of the rubble foundation platform — is that the builders of Dun Ardtreck had a limited competence in advanced drystone construction; this is well seen by comparing its foundations with those, for example, of Dun Grugaig in Glenelg, an unexcavated D-shaped semibroch of very similar type which was built with great skill on sloping and uneven rocky ground (MacKie 1991, 162–6 & figs 5 & 6). This might support the view that an intra-mural stone stair was beyond the capabilities of the builders, or at least that it was too much trouble when a wooden one would do. This idea could also be supported by fairly clear indications from the associated material culture that Dun Ardtreck belongs to the era immediately before the broch towers were developed, when the sophisticated building techniques required for these were presumably less developed. Against this idea, however, is the evidence from Dun an Ruigh Ruaidh, a very similar cliff-top C-shaped building about 100 miles by sea to the north on the south shore of Loch Broom; this structure did have a fine intra-mural stone stair as well as a raised intra-mural gallery (MacKie 1980, fig 5). Alternatively, the base of the stone stair at Dun Ardtreck could have been wrenched out when the wall was pulled down to something near its present height, somehow leaving no traces.

In summary, the following known facts and plausible deductions all imply that an intra-mural stair of some sort did exist there. First, the hollow wall was very probably once much higher and should therefore have had several super-imposed galleries; second, all other known broch hollow walls with superimposed intra-mural galleries have a connecting stone stair inside the wall and, third, the mural gallery to the right of Door 2 was wide and reasonably well built

with smooth faces. However, the absence of signs of snapped-off stone steps means that a wooden flight may have served instead.

A low-walled dun?

Nevertheless the possibility that Dun Ardtreck never had a high wall, and therefore did not need an intra-mural stair, must be considered. It has to be admitted that rather too many of the structural features characteristic of the hollow-walled brochs are missing from this site to make the diagnosis of Dun Ardtreck as a high-walled semibroch beyond question. Some, like a scarcement and a chamber over the entrance, could be absent simply because of the poor preservation of the building but others, like the stair, should have been there but were not found during the excavation.

The absence of direct evidence of a stone intra-mural stair is perhaps the most serious objection to the diagnosis; every other broch or semibroch which has been properly excavated has revealed a stone stair inside the wall (except for a number of possible solid-based brochs in Caithness and Orkney where the stair may have begun at the now vanished first-floor level). Evidently the possibility must be allowed that this building was never more than two storeys high, with one upper gallery on top of the present one. Yet even such a relatively low wall would surely have had a parapet on top and a stair or a ladder for watchmen to get up to it. In the end the original condition of Dun Ardtreck has to be inferred and whether one argues for a high-walled semibroch or a low-walled dun depends on whether the physical or the circumstantial evidence seems more important. The problem is reviewed again briefly after the next section.

Wooden structures on top of and inside the dun

Since complex internal wooden roundhouses with at least one raised annular floor almost certainly formed an essential part of the structure of many if not all of the hollow-walled brochs, and since Dun Ardtreck may well have had some broch-like architectural features (notably a high, galleried wall), it must be asked whether there is any evidence for the existence of such a wooden structure inside this building. Normally there are two kinds of such clues.

Indirect evidence is available in brochs in the form of the level stone shelf or scarcement almost always found on the interior wall face between 1.8 m and 3.6 m above the primary floor, and also in the fact that openings in the wall face often seem to be arranged to give access from the interior of the stone wall (and particularly from the first landing of the stair) out on to this raised ledge (Graham 1949, 14 ff & figs 2 & 3). Direct evidence has been found, in several of the few hollow-walled brochs excavated to primary floor level, in the form of a ring of massive post-holes concentric with the inside wall face and about 1.8 m in front of it (MacKie 1994, 153 ff). Such a ring was also found at Dun an Ruigh Ruaidh on Loch Broom, Ross and Cromarty — a cliff-edge, C-shaped structure very similar in plan to Dun Ardtreck but much better preserved; parts of the scarcement, of the stone intra-mural stair and of one upper gallery remain there (MacKie 1980).

The problem with supposing that wooden broch roundhouses existed inside C- and D-shaped cliff-top sites like Dun Ardtreck and Dun an Ruigh Ruaidh (as well as in the unexcavated Dun Grugaig, Glenelg, and in Dun Ringill, Skye) is that we do not know how such a complex structure with a raised wooden floor would have been attached to the relatively thin wall which ran along the edge of the cliff. This problem was particularly acute at the Loch Broom site because the interior primary floor surface sloped down quite sharply towards the cliff edge, so

that any level wooden floor resting on the scarcement in the massive uphill wall (1.2 m above the floor there) would have been a couple of metres higher when attached to the much thinner wall along the cliff edge. It may be that Dun an Ruigh Ruaidh had a simple wooden internal roundhouse, the roof of which rested on the scarcement as Scott thought (1947); yet there are strong arguments against this idea from the design of the raised doorways in brochs (Graham 1947), and the Loch Broom site has one of these which links the landing on the stair to any floor resting on the scarcement (MacKie 1980, fig 5).

Of course this problem would disappear if these cliff-top sites were really circular broch towers, part of which had collapsed over the cliff, as has been argued more than once (Harding 1984, 211; Armit 1990c); it could then simply be assumed that a uniformly massive galleried wall originally ran the whole way round the site and that the raised floor of a complex wooden roundhouse rested on a scarcement equally well built all the way round. The specific evidence from Dun Ardtreck which unequivocally contradicts this view has been described; moreover a careful study of similar unexcavated semibrochs leaves no room for doubt that such open-sided broch-like structures really did exist and cannot be wished away (MacKie 1991). Problems therefore remain over the exact nature of the wooden building inside Dun an Ruigh Ruaidh for example (MacKie 1980, fig 15).

No signs of post-holes were seen at Dun Ardtreck during the excavations in the interior. There could not have been any throughout at least half of the circumference when the primary (Phase 2) occupation began because near the cliff any posts would have rested directly on hard rock (illus 20). Those in the remaining area would have been set up on the rubble foundation platform which occupied much of the inland half of the interior and one might have expected at least some shallow post-sockets in this; however none was seen (illus 9). Since the wall was so poorly preserved we do not even have the remains of a scarcement to indicate that post-holes may have been missed, as was the case at Dun Mor Vaul (MacKie 1997, 158–9). Yet if it is accepted that the circumstantial evidence that Dun Ardtreck originally had a high galleried wall is strong, then there was probably a scarcement also.

Thus all one can conclude on the basis of the available evidence is that there could well have been a complex wooden roundhouse inside Dun Ardtreck in Phase 2 but no unequivocal signs of it were seen. It may be significant that most of the Phase 2 finds which seem to have been burned in the destruction were found fairly close to the wall (illus 19); perhaps the pots were originally on the raised wooden floor and fell down during the fire. Being buried in a mass of red hot wood and charcoal fanned by a wind could easily explain for example the exceptionally burnt condition of Vase 4 (illus 26), although naturally a fiercely burning low but massive roof (below) could well have produced the same effect.

Normally one would assume that any raised floor was ring-shaped because many brochs have been found to have a large stone central hearth on the ground; however no such central hearth was found at Dun Ardtreck (though, as noted, it may have been missed if it was slightly off centre) so it is possible that any raised floor here completely covered the interior, provided that one can plausibly assume a hearth resting on this, no doubt on a clay base as in a crannog.

Whatever the original height of the building it can probably also be assumed that a fairly massive thatched roof rested on the wallhead, perhaps behind a parapet to protect it from gales. The argument that the main roof rested on the scarcement — first advocated by Scott (1947) — cannot be refuted at Dun Ardtreck except on general grounds. For example the heavy rain of the Hebrides would all run off the thatch and down the inside face of the wall, which would surely have made the interior unbearably damp and uncomfortable in wet weather, especially in winter. However at Dun an Rhiroy the intra-mural stair led to a landing from which, through a void or

doorway in the inner half of the wall, any wooden raised floor resting on the scarcement could have been reached (MacKie 1980, fig 8). Despite the problem of what exactly happened along the cliff edge this surely implies that this semibroch had a higher main roof, as Graham (1947, 71ff) argued in detail for brochs in general.

Looking at the profile of the site between cliff-edge and entrance passage (illus 6) one can see that the seaward half of the interior is almost level, dropping slightly from the middle towards the cliff edge. The rock surface in the inner half drops down quite sharply but — as can be seen more clearly in illus 20 (section of Trench IX) — this slope is much reduced near the wall by the presence of the rubble foundation platform. If we imagine a scarcement in the inner wall face say 0.6 m above the present wallhead at the guard cell (which means more or less the same distance above the wallheads everywhere) any wooden structure resting on it would be about 2.4 m above the lowest part of the floor here (and above the inner end of the entrance), about 1.83 m above it a short distance towards the cliff and about 1.53 m above the rock over the seaward half of the interior. This does not seem an unreasonable estimate. The question remains whether such a relatively unsophisticated-looking semibroch is likely to have had all this woodwork in the interior or whether a single main roof on a lower wall might have been all (see below).

Outer Court and gateway

For reasons given below it is assumed that most of the deposits in the Outer Court above the level of the old turf line started to accumulate at the end of Phase 2 at the earliest. During Phase 2 therefore the Court should have been empty and the outer gateway clear but the limited excavations carried out do not allow a more detailed picture of the Outer Court at that time to be reconstructed.

DESTRUCTION AT THE END OF PHASE 2

The various deposits and artefacts which imply that Phase 2 came to a violent and fiery end have been described above. The most vivid is the series of broken pots and artefacts found on the primary floor level inside the dun which show evidence of severe heating. These include Vase 3 (illus 21, no 7), the basalt rotary quern (illus 24, no 29), probably the amber bead (illus 24, no 39), and the Roman melon bead (illus 25, no 54) and the iron door-handle (illus 29). The latter became so hot while lying on the floor of the entrance passage that it fused to some small stones on which it lay; a few of the latter became so hot in their turn that they were transformed into liquid rock before cooling.

Evidence of the deliberate demolition of the dun wall after the fire is circumstantial but quite strong. It includes the absence of any of the lintels which once covered the surviving wall gallery (either *in situ* or in the rubble inside the space), the fact that the two doors to this gallery were deliberately blocked, and the existence of the secondary ramp leading up to the entrance which implies that the function of the dun had changed.

The mass of rubble which filled the lower part of the outer court, and had piled up against the remains of the outer wall, obviously accumulated after that feature was built (illus 20, Trench VIII); the old turfline was identified in places under it and close to the rock. This rubble layer is different from that lying on top of the floor deposits inside the dun — in its entrance passage, intra-mural galleries and guard cell — and also on top of the external ramp and at the foot of the outer wall face. All these latter layers were of rubble which was either dry or mixed with some loose, dry earth. The debris filling the outer court underlay these later deposits close to the dun

but elsewhere lay immediately below the turf and consisted of rubble mixed with wet earth and occasional sticky, clay-like soil; there were no air spaces in it.

It seems reasonable therefore to suppose that most of this stone rubble was deposited as the result of the demolition of the dun at the end of Phase 2, after the fire. The fact that it is now a consolidated mass, well mixed up with earth and clay and with a reasonably even turfed surface, is presumably to be explained by the many years of intensive human activity which took place on top of it during Phase 3: perhaps it was deliberately flattened and spread at the beginning of that phase.

THE SECONDARY OCCUPATION OF PHASE 3

In Phase 3, after the demolition of most of the high galleried wall, there was intensive occupation for many years inside the ruined dun — perhaps for as much as four centuries — and there must surely have been a low, solid thatched roof over the court to counteract the occasional gales that blew over this exposed site. Yet again no unequivocal signs of post-holes — such as the stone-lined ones seen at Dun an Ruigh Ruaidh — were observed during the excavation of the dark earth of Layer 2. One could perhaps attribute the failure to spot these to inexperienced excavators, but most of those who took part in the project in 1964 and 1965 had previous experience and it would be surprising if trowelling through the firm and compact, but usually not sticky, earth of Layer 2 failed to find any silted-up sockets that existed, especially if they were stone-lined as at Ruigh Ruaidh. The details of the domestic structure in Phase 3 must therefore also remain elusive.

All the evidence combines reasonably well to suggest that Dun Ardtreck in Phase 3 was still a high status wooden roundhouse inside a massive stone wall which — despite the utter ruination and reduction in height of the latter — might still have been quite difficult to assault. However, the piling up of the rubble ramp against the raised sill at the outer end of the entrance surely shows that its main function was domestic (just as its absence in Phase 2 shows that the dun was more defensive then). One might guess that it was occupied by the descendants of the family of the local tribal chief for whom Dun Ardtreck was perhaps first built. (Other reasons for thinking that that this was a high status site over a long period of time are considered below.)

ABANDONMENT

There is little more to be said about the rubble deposits in the dun interior and outer court. A handful of artefacts came from the former deposit, but there is nothing to suggest that these were not dropped by casual visitors to a ruined site. The traces of a possible rectangular stone structure observed in 1964 in the outer court were not sufficiently clear to make plausible the deduction that it was a late stone hut; no unequivocal packed floor level was found inside it for example. The iron slag found on the floor of the outer gateway was almost certainly dropped there at the end of Phase 2, as noted earlier.

DATING THE PHASES OF OCCUPATION

Phase 1, construction

The construction of Dun Ardtreck is dated directly by one radiocarbon measurement of 2005 ± 105 BP (GX 1120), obtained from a sample combined from several scatters of small charcoal fragments found well down inside the foundation rubble. There is no obvious reason to doubt

that the charcoal is the debris of the burning of small material while the dun was being built, or shortly before. When adjusted by the tree-ring calibration, there is a 68% chance of the real age being between 114 BC and AD 120 and a 98% chance of it being between 351–311 BC and 206 BC–AD 242 (Parker Pearson & Sharples 1999, 357). Normally a single date is not to be heavily relied on but in this case, even though it has a large standard deviation, it fits reasonably well with the more exact dating provided by the stratified Roman material in later levels (below). Using this historical evidence as well it can be stated with reasonable confidence that Dun Ardtreck was built before about AD 50 and quite possibly a century or even two before that.

The nature of the Phase 2 deposits might give a clue to how long the primary phase lasted. The fact that these are thin and scanty might mean that it was only a few decades, unless the interior of this presumably high status site was kept tidy and swept out regularly. If so, a construction date in the first century BC might be plausible, but there is no direct evidence either way.

The pottery from Phases 1 and 2 might provide another chronological clue. The builders and first occupants of Dun Ardtreck evidently only had Vault ware vases on site; no Vault urns were ever in use and Everted Rim jars did not appear until Phase 3. This contrasts with the situation at Dun Mor Vault on Tiree where Everted Rim ware slightly pre-dated the broch and was found in quantity in its construction levels (MacKie 1997). On Tiree moreover Vault ware pre-dated the broch levels, and probably by several centuries; its earliest use there might go back to before 700 BC although later dates are also possible (MacKie 1997, table 8.5). No earlier stone fortifications were identified at the Tiree site but if Dun Ardtreck was partly a product of the pre-broch culture seen at Dun Mor Vault it is at least possible that its construction might go back a century or two BC on the basis of its associated pottery. Yet Vault ware continued in use at Dun Mor Vault side by side with the new Everted Rim ware and it is equally possible that Everted Rim ware spread fairly slowly to Skye; Dun Ardtreck in that case need not be much older than Dun Mor Vault. A slow spread of Everted Rim ware to Outer Hebridean broch sites also seems to be indicated by the evidence from Dun Vulcan in South Uist where it appeared some time after the broch had been built (Parker Pearson & Sharples 1999, chap 9) (illus 35). At the present stage of our knowledge of the evolution of Hebridean Iron Age wares it is impossible to use pottery as more than fairly vague dating evidence.

The two sherds found unequivocally stratified in a Phase 1 deposit (in the rubble foundation platform) were unusual, being fragments of bases with internal decoration of impressions, probably made with a thumb or finger before the base was attached to the wall. Unfortunately, this curious form of decoration is not susceptible of exact dating, occurring as it does in the earliest pre-broch deposits at Dun Mor Vault (MacKie 1974, fig 11, no 31), in the late Bronze Age Urnfield horizon at Plumpton Plain in Sussex (Hawkes 1935, fig 13G) and in a much more sophisticated pattern inside a late Bronze Age Urnfield pot from Fort Harrouard, Eure et Loire, western France (Sandars 1957, fig 75, no 7). It is also found in various middle Iron Age horizons in the western Scottish Atlantic province, such as on Vase 3 at the end of Phase 2 in Dun Ardtreck itself (illus 21, no 7). In Hebridean sites internally decorated bases with simple designs seem so far to be part of the Vault ware tradition so could go back many centuries BC, yet in Shetland they occur with the large Everted Rim jars in the pre-broch Fort phases (Hamilton 1968, fig 44).

In favour of a first or second century BC age for Dun Ardtreck may be the date for the construction of the very similar C-shaped semibroch Dun an Ruigh Ruaidh on Loch Broom, Ross and Cromarty, about 70 km north by sea from Dun Ardtreck, going round the north of Skye (MacKie 1980). As explained earlier a number of radiocarbon dates were obtained from

that site and, although there were some inconsistencies, the evidence suggests that this cliff-top, broch-like structure was most probably built in the third century BC.

Also almost certainly built in the third century BC was the thick-walled, timber-framed dun at Torr a' Chaisteal, in Strath Oykell, in south-east Sutherland (Nisbet 1995, fig 10). This resembles a possible prototype broch in a different way, having a massive timber roundhouse inside its thick, circular wall, the latter being solid except for the timber framework in the core (which subsequently burned and caused much of the dun to vitrify).

Thus two of the three different strands of dating evidence seem to be pointing in very similar directions, and a date for the construction of Dun Ardtreck between the third and first centuries BC seems reasonable and may be adopted as a working hypothesis. The scantiness of the primary floor deposits would then have to be explained either by the interior having been kept tidy and free of accumulating debris for between one and four centuries (not improbable if Dun Ardtreck was a chief's fortified residence), or by the assumption that the stronghold was not continuously occupied but kept in good order. Whether it is realistic to suppose that a high, hollow-walled building, with a number of signs of inferior construction techniques in its design, could have lasted that long in its windy cliff-top situation is harder to estimate; this consideration may well imply that the second century BC is the earliest plausible date for Phase 1 and that the first century BC is more likely. The evidence available does not allow for more precision.

Phase 2, primary occupation

The only direct dating evidence available is for the end of this phase, and for the destruction of the dun by fire which brought about that end. Some of the fragments of the Roman coarse ware jar of Severn Valley Ware (illus 21, no 21) — which look as if they come from a complete vessel which was already on the site — were found in the body of the ramp outside the main entrance and this seems to have been built soon after the destruction, at the start of Phase 3. This is the first example of such pottery to have been found north of the Antonine Wall. Although late first century examples of the ware are known, for example, from Chester, the jars are not found on Roman sites in Scotland earlier than the Antonine period (Appendix 2); they do not appear on the Flavian (late first century) forts of that region.

The simplest diagnosis of the chronological significance of the jar from Dun Ardtreck would be that — like the other Roman material found on the site — it found its way to Skye during the Antonine occupation in the middle of the second century. Nevertheless, it and the Roman army iron axe-hammer (from a middle or upper level in the Phase 3 deposits in the interior) are very unusual objects to be passed from hand to hand from the military sites in southern Scotland far into the highland and island zone. Much more usual on remote native sites in the Atlantic province are cut-down sherds of the glossy, red-brown samian ware vessels of the Antonine period (AD 140–60) (two of which were found in the Phase 3 deposits here) and the occasional melon bead. It seems quite probable that a whole jar (perhaps with wine in it) was brought to the site and one has also to ask whether it is likely in this condition to have been brought by land across the mountains. One way in which the unusual Roman material could have arrived at a coastal stronghold in Skye was directly from the Roman fleet which was active off the western and eastern coasts during the campaigns of Governor Agricola in the early AD 80s; a date towards the end of the first century for the end of Phase 2 might then be indicated, bearing in mind that the small wine jar was probably on the site before the destruction. However, the probable Antonine date for the jar seems to rule out this idea for the present.

Phase 3, the secondary occupation

The two Antonine samian ware fragments found in the upper part of Layer 2 in the dun interior imply that the Phase 3 occupation continued on until at least the late second, and perhaps well into the third century. Sherds of the standard cordoned Everted Rim native pottery continue to appear right up to the top of Layer 2 (immediately under fallen rubble).

However, the most significant piece of evidence for the duration of Phase 3 is a rim sherd of imported Dark Age E ware (illus 23, no 62) which, as far as can be determined from the field records, was found either lying on top of the dark earth layer of Phase 3 or very near the base of the loose rubble and earth of Layer 1; from the depth measurements it was almost certainly not inside Layer 2, a view which seemed to be supported at first by the nature of the Iron Age pottery there, and also by the fact that one second-century Roman sherd was also found at the top of this layer. These wheel-made jars and beakers of a white coarse ware were traded into western Britain from western France between about AD 580 to 700, and E ware is particularly associated with high prestige sites like Dumbarton Rock on the Clyde (Alcock & Driscoll 1989), Dunadd in Argyllshire and Dinas Powys in south Wales (Campbell 1996a and in Appendix 3). The question of why a single rim fragment of an imported E ware pot, with clear connections elsewhere in Scotland to high status royal sites, should be left on an ancient Iron Age stronghold in Skye is an intriguing one and is considered in more detail by Ewan Campbell in Appendix 3.

Phase 4, abandonment

Very little material of any kind was found in the rubble Layer 1 in the interior, immediately under the turf. A fragment of unusual pottery from this late level (illus 23, no 66) bears some resemblance to Irish souterrain ware (Appendix 1); although the connection cannot be said to be unequivocal the rim is quite distinct from middle Iron Age pottery in the Scottish Atlantic province.

THE ROMAN FINDS FROM DUN ARDTRECK

The quantity and variety of Roman and possibly Roman items found at Dun Ardtreck is unusual for an Iron Age stronghold in Atlantic Scotland and deserves further comment. Many excavated brochs and allied sites have yielded Roman material but — with the striking exception of a few sites in central and south-eastern Scotland (Buchlyvie and Leckie in the former area and Torwoodlee in the latter) — these tend to be few in number, fragmentary and restricted in type. Considering only neighbouring Western Isles sites, Dun Mor Vaul on Tiree for example produced eight small fragments of Roman glass — including a rim fragment of a Continental bowl — a glass gaming piece, four small pieces of samian ware (nearly all abraded) and one of coarse ware (made into a spindle whorl) (MacKie 1974). At Dun Iardhard on Skye was found a pottery model of a Roman bale of wool (Curle 1932, 289–90 & fig 2b) and the recently partly excavated broch Dun Vulcan in South Uist produced nothing Roman (though this may be because the Iron Age floors inside the structure were not explored). The wheelhouse at Kilphedir in South Uist gave an inlaid Romano-British bronze brooch (Lethbridge 1952), though on the whole wheelhouses tend not to produce Roman material, even though they have a similar material culture to that found in brochs.

As far as the writer is aware no other native site north of the Antonine wall has produced a Roman army iron axe hammer like that found at Dun Ardtreck, and nor have several fragments

of a small jar been discovered, suggesting the arrival of a whole vessel on the site. The bronze needle also seems likely to be Roman and again is unique; two superficially similar objects from Clickhimin broch, Shetland, are in fact quite different and were diagnosed as fish gorges (Hamilton 1968, fig 40, 1 & 2). Melon beads are not uncommon on native sites north of the Wall, though many more have been found on equivalent sites south of it.

Potentially the most significant object in this context may well be the iron ring-handle which was presumably attached to the door of Dun Ardtreck when it was burned and destroyed. The ring is much more sophisticated than the plain iron ring-handles found on Roman military sites in southern Scotland and northern England and a good parallel for its rope-like construction has yet to be found. More research on the apparently exotic objects from Dun Ardtreck is clearly needed.

THE SITE IN ITS WIDER CONTEXT

DUN ARDTRECK AND THE BROCHS

As already discussed, it seems likely that Dun Ardtreck falls into that class of drystone buildings named semibrochs by the writer 38 years ago (MacKie 1963, 104 & 124–7) and which were built with the high, hollow galleried wall of the true broch but without the building being a completely enclosed round tower. There is not much more that can be said on this topic. The evidence from Dun an Ruigh Ruaidh on Loch Broom supports and amplifies that from the Skye site and it still seems probable that — when looked at from a purely structural perspective — the specialized high hollow wall of the broch tower evolved in the way suggested in the mid 1960s, appearing first in a few promontory defences and in the Western Isles, then in a larger number of C- and D-shaped semibrochs in the same area (illus 1). (Evidence which may contradict this idea is discussed below.)

Provisionally to accept this origin for the high hollow wall does not necessarily carry any implications about what proportion of the structures commonly known as brochs actually had this ingenious double wall (a subject of some dispute in recent years) nor does it negate the potential importance for the evolution of brochs (or complex Atlantic roundhouses if the term be preferred) of the much earlier stone roundhouses in Orkney, unknown in 1965, nor does it carry any implications about ‘foreign’ influences in the development of the towers. Indeed it is becoming increasingly clear that the indigenous cultures not only of Orkney, but also and more especially of the north-east mainland, were much more powerful and well established than has been supposed hitherto, and that the broch towers were adopted by these, sometimes (as in south-east Sutherland) without any of the new material culture commonly associated with these buildings in the Atlantic province (MacKie 2000, 108–11 & figs 2 & 3 & table 1). Brochs are unknown outside Scotland and the clear evidence from this region of Sutherland is that the towers were not culturally diagnostic, but easily crossed important material cultural boundaries — presumably spread by a class of professional architect-builders who were recruited by local chiefs or communities. These facts free us from the need to assume automatically that this or that hypothesis about their structural development carries any important implications about the origin and nature of the Atlantic Iron Age material cultures, many of the standard components of which (apart from much of the pottery) seem to arrive fully formed in the middle Iron Age and bear little resemblance to what went before, locally (MacKie 2001). What is clear is that the advocates of the Orkney evolution of brochs from the earlier roundhouses there should accept

the existence of Hebridean semibrochs at an early date (though not so far as early as those roundhouses) and take account of this evidence fairly.

DUN ARDTRECK AND LOCAL MATERIAL CULTURE

Where the evidence from Dun Ardtreck is important, however, is in terms of our understanding of the sequence of buildings and associated material cultures in the middle stage of the Inner Hebridean Iron Age, and particularly in the linking of a probable D-shaped semibroch with the local material culture. Two specific points about the site are particularly relevant when considering this problem. Firstly, the dun was built on a virgin rock site with a fairly level summit — apparently cleared before construction — so there is no real possibility of traces of any earlier occupation surviving to complicate the stratigraphical sequence, certainly not within the area of the dun itself, and very probably not in the outer court either.

Secondly, the original building seems to have been suddenly and quite violently destroyed, preserving a selection of the material culture in use on the site on that particular day. The date of this event can be defined by the associated Roman artefacts somewhat more accurately than would have been the case if the radiocarbon date alone had to be relied on — especially if contact with Roman ships is a possibility — and we can be reasonably confident that it happened either towards the end of the first or in the middle or later part of the second century. We could thus be offered a snapshot of the building skills available in, and the pottery and artefacts in use in, that part of Skye during those 100 odd years. When combined with the information from the much longer stratified sequence uncovered at Dun Mor Vul broch on Tìree some interesting conclusions about the development of the material culture in the area seem to follow (illus 36).

The almost closed deposit of pottery and artefacts left inside Dun Ardtreck after the fire and demolition at the end of Phase 2 shows two things very clearly. In the first place, the pottery comprises only incised-line decorated Vul ware vases of the type found at Dun Mor Vul, Tìree, in both the pre-broch and the broch levels. There are no Vul ware urns and no trace of Everted Rim ware. Secondly, and by contrast, some elements of the middle Iron Age broch culture of Dun Mor Vul are present, such as the disc-shaped rotary quern and a variety of small glass ring-beads. Probably the bone tools like the fish gorge are also part of the new technology.

One clear implication of these discoveries is that, on Skye, monumental, hollow-walled, drystone, near circular buildings appeared with some of the new middle Iron Age artefacts but before Everted Rim ware arrived at Dun Ardtreck — or, more particularly, the Clettraval sub-style of it (with an applied waist cordon and concentric semicircular arches above this). This phenomenon is apparently also seen at Dun Vulcan broch in South Uist where it seems clear that the pottery of the broch people was the same as that of earlier times; Everted Rim ware was evidently completely absent from the early broch horizon and evidently did not appear there until about the third century AD (Parker Pearson & Sharples 1999, 210–11). However, the fact that the interior of the broch was not excavated down to primary floor level means that there must be reservations about the reliability of this statement, since the major part of the evidence for or against this hypothesis — the pottery on the primary broch floor — is not available.

One might have supposed — as the writer did immediately after excavating at Dun Mor Vul on Tìree in 1962–4 — that the clear synchronism there between the building of that broch and the appearance of a completely new material culture (including a new pottery style, Everted Rim ware), and apparently defining the start of the middle Iron Age, would be found to apply all over the Western Isles. Indeed, an unreferenced statement that the writer did make such a prediction has appeared (Parker Pearson & Sharples 1999, 360). However, by the time the

excavation report was written this view could not be maintained and some of the reasons why were outlined then (MacKie 1974, 106). The prediction certainly does not appear in the 1983 list of those which could usefully be tested by future excavations (MacKie 1983, 124–5).

Assuming that the construction of Dun Mor Vul did take place in the first centuries BC or AD, the earliest appearance so far known of the Hebridean version of Everted Rim ware — the Cletraval style — seems to have been on that island, and its spread among the Western Isles evidently took place much more slowly than the spread of the brochs and of other elements of the associated material culture. Illustration 35 shows in diagrammatic form the two alternative views of the spread of this pottery.

A third point is of great potential importance too. The material culture that could be directly attributed to the builders and earliest inhabitants of Dun Ardtreck consists of only a few fragments (the glass beads in illus 24, 1–4, almost certainly filtered down from a later horizon), such as a bone rubbing implement and a broken whetstone (presumably designed to sharpen an iron knife blade) (illus 24, 5 & 6), probably the bronze ring-headed pin of the north British type from outside the entrance passage (illus 24, 7), and no doubt also the rotary quern that was part of the interior paving (illus 10 & 24, no 29). Only two sherds could definitely be allocated to the construction levels and they were pieces of internally impressed bases similar to that on the Vul vases broken and burned at the end of Phase 2 (illus 21, 1). No doubt some of the smaller sherds in illus 21 (eg nos 17, 18, and those in Phase II/III) are also from an early period of Phase 2 and they are all of Vul ware vases.

In other words, there are a few clear indications that when Dun Ardtreck was built the material culture of its inhabitants was the same as at the end of Phase 2, and that the middle stage of the Hebridean Iron Age sequence had already started in Skye (albeit with no Everted Rim ware). So, however early the construction of this probable D-shaped semibroch is dated, the appearance of the middle Iron Age material culture must be at least as early. This means that it is extremely improbable that any of the D- and C-shaped semibrochs belong to the early Iron Age and they should be some centuries younger than the earliest stone roundhouses in Orkney for example (as the radiocarbon dates have always suggested). The very sparse material culture at Dun an Ruigh Ruaidh, together with the radiocarbon dates from there, might take that D-shaped semibroch back to the third century BC but probably not earlier. Yet the absence of all elements of the Hebridean middle Iron Age culture (except for three small sherds of finely made, thin-walled pot from midden under the cliff — MacKie 1980, 52) probably means that Ruigh Ruaidh was built for a mainland culture, not the Atlantic Iron Age culture and one cannot assume that Dun Ardtreck was equally early; in any case there were rotary querns (partly of mainland type and presumably of the middle Iron Age) at the Loch Broom site.

Thus Dun Ardtreck, and the island semibrochs like it, seem to be part of the great technological and building innovations (including the appearance of massive wooden roundhouses inside protecting stone walls) that inaugurated the middle Iron Age in Atlantic Scotland — a material cultural phase that may well now have to be put back to the second or even the third century BC (especially if Dun Barabhat, Lewis, is as early as has been claimed, see below). Dating the start of that phase (as opposed to the start of broch building a little later) by assuming links with historical events in the south of England and Brittany in the first century BC (MacKie 1971) certainly now seems impossible to justify, even using the Hebridean stratigraphical data alone. To demonstrate this in detail from local stratified archaeological material seems better archaeological practice to the writer than to deny any connection simply because of preconceived assumptions (there are too many examples of such assumptions in the literature of the last 20 years to cite them here).

THE CULTURAL SEQUENCE IN THE HEBRIDEAN SEA

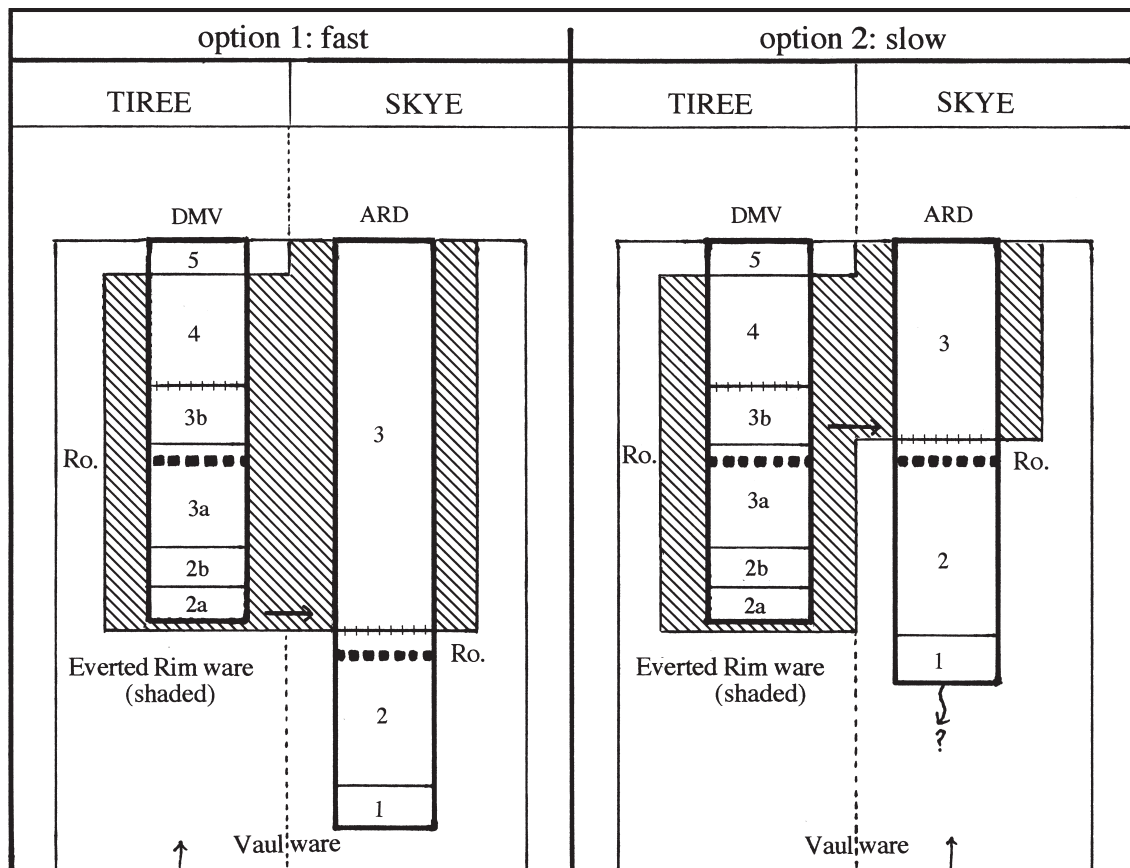
Illustration 36 is an attempt to summarize the information above and to construct a broad cultural sequence for the Hebridean Sea, but more specifically for Tiree and Skye, from about 700 BC to AD 700; this should serve as a useful model for testing when further broch and allied excavations take place in the west. The time scale obviously has to be approximate; although the time-span for the earliest arrival of Roman material in the area is presumably reasonably accurate at about AD 80–160, scattered items no doubt filtered into the area for some time afterwards and individual Roman pieces may have been kept for a long time (for example illus 23, no 64). Against the latter point, however, is the fact that the well excavated Outer Hebridean wheelhouses, which also have a middle Iron Age material culture and could be a little later than the brochs (but see below), usually fail to produce any Roman material at all.

This discussion was drafted before a similar but more generalized one appeared in the Dun Vulan report, accompanied by a comprehensive list of radiocarbon dates (Parker Pearson & Sharples 1999, 359–60 & tables 12.1 & 12.2). The only major difference is the latter's much earlier date for the start of the late Iron Age, at about AD 300, which seems to the writer to be unlikely for reasons explained below. The present discussion also places greater emphasis on the stratified sequences of assemblages of pottery and artefacts, the writer believing that this is the background against which the appearance and disappearance of building types has to be set (MacKie 1963, 116 ff & fig 6).

Late Bronze Age and Early Iron Age

A very specific period of stone roundhouse building activity concentrated in the sixth and seventh centuries BC has been clearly established in Orkney by radiocarbon dates from well stratified sites like Howe, Bu, Pierowall and Quanterness; the evidence is summarized by Armit (1992), MacKie (1994, 147 ff) and now by Parker Pearson & Sharples (1999, tables 12.1 & 12.2). Some of the Orkney sites have produced simple carinated (shouldered) pottery which seems to be typical of this early phase throughout much of eastern and southern England, where it has been dated to as early as 700 BC; presumably it originates in the Continental La Tène angular beaten and riveted bronze jugs of the period (Harding 1974, 139). These jars are fairly rare in Scotland, where they tend to come from the islands. However, Orkney has not yet produced the high status carinated pottery — thin-walled, finely made and with a glossy, black-burnished outer surface (doubtless imitating the metal prototype) — such as that found in the second pre-broch village at Jarlshof, Shetland (Hamilton 1956, chap IV: the black gloss is not mentioned). Jarlshof was excavated before the advent of radiocarbon dates but there is no real reason to doubt that that village can be dated by its pottery to the seventh or sixth centuries BC; carinated ware seems to have gone out of fashion not long afterwards and by the time the broch was built on that site the pottery was different, though still occasionally with the glossy black surface (Hamilton 1956, chap V).

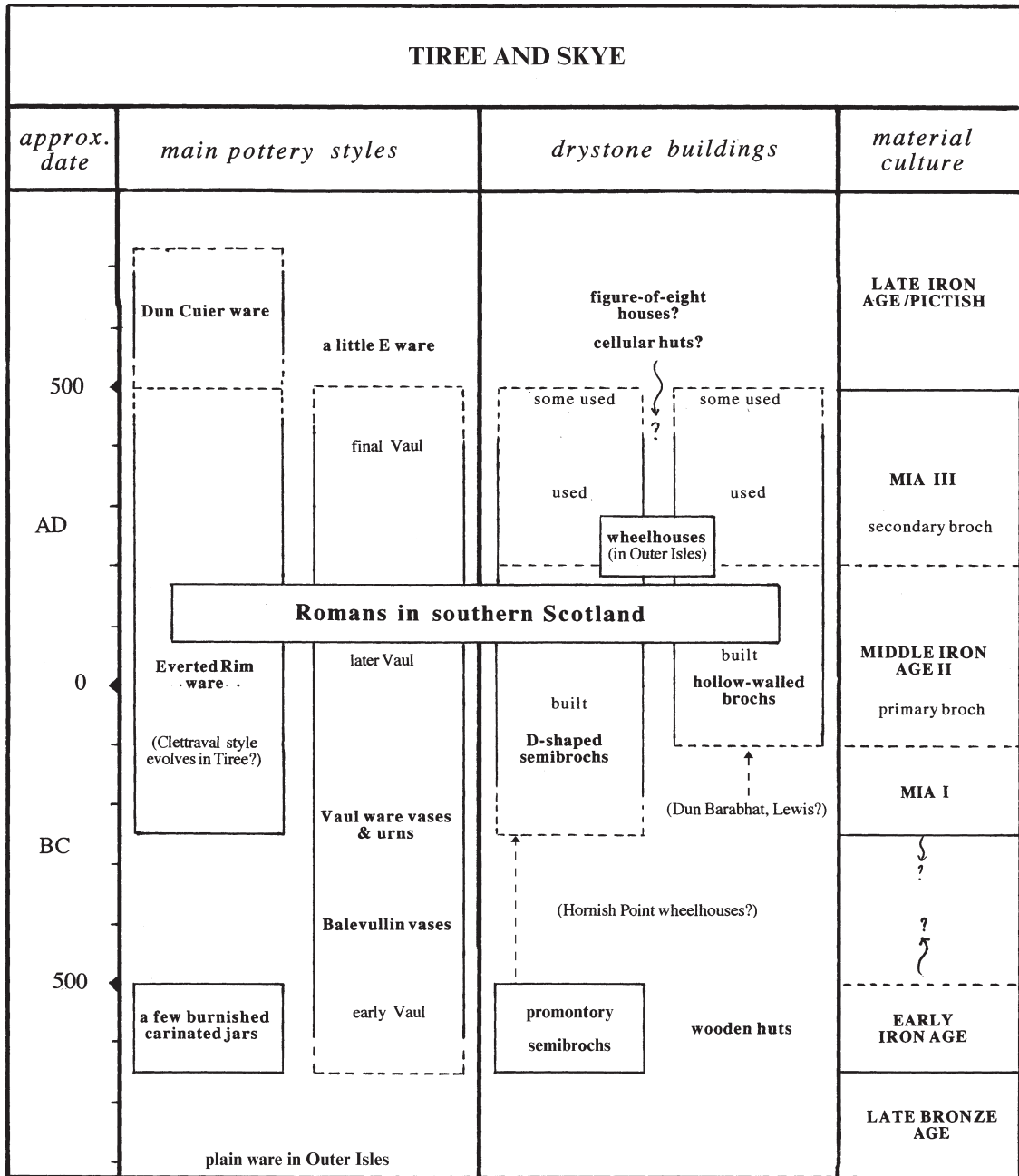
Until recently no comparable early stone roundhouses were known from the Western Isles but since 1999 the picture has been transformed by the discovery of a late Bronze Age settlement covered by the *machair* at Cladh Hallan on the west coast of South Uist (*DES 1999*, 91–3; *2000*, 97–8). The three buildings are large roundhouses consisting of circular stone-lined pits in the sand and the finds include late Bronze Age metalwork. Archaeomagnetic dating for the middle roundhouse apparently shows that an intermediate floor was occupied during a time span from about the ninth to the early seventh centuries BC. The comparable early horizon at nearby Dun Vulan produced only plain pottery (Parker Pearson & Sharples 1999, 210). Analysis of the



ILLUS 35 Diagram showing two alternative views on the spread of Everted Rim ware throughout the Western Isles based on the stratigraphical evidence from Dun Mor Vul broch on Tiree and Dun Ardtreck semibroch on Skye. The thick dotted lines show the points in the history of each site when Roman artefacts first appear, presumably between about AD 80 and 160; the line of crosses marks the point at which each site was deliberately demolished. The pre-broch horizons of Dun Mor Vul are omitted

pottery residues evidently indicates intensive dairy farming (Craig *et al* 2000). The only other clearly stratified and reasonably well radiocarbon-dated early Iron Age horizon yet found was under the broch and its outer wall at Dun Mor Vul, Tiree, and there the dwelling structure seems to have been of wood. Only the aboriginal pottery styles were associated with these early horizons on Tiree — Vaul and Dunagoil ware (MacKie 1974, fig 11 & fig 12, contexts Zeta and Nu). However, from later levels (including one which was still pre-broch) came fragments of a small carinated vessel with an omphalos base. This is unique in the north in having a glossy orange-red surface as well as a sharply out-turned rim, all of which makes this as clear a copy of a new beaten bronze or copper jug as can be imagined, albeit a miniature one (MacKie 1974, 41 & fig 13, no 113). It surely confirms that Dun Mor Vul was a high status site long before the broch was built there. Dun Vulcan does not appear to have had any of this fine pottery (bearing in mind that the original broch floor was not explored).

Now two sherds from a small black-burnished carinated jar have been identified from Dun Ardtreck, in its secondary phase of occupation (illus 23, 65a), and to the writer's knowledge this is the first of the black version of this fine, thin-walled glossy pottery to have been found in the western Atlantic province. Although, with the evidence at present available there is no possibility



ILLUS 36 Suggested sequence of Iron Age structures and pottery on Skye and Tiree, divided into material cultural phases. The unpublished excavations which may not fit this scenario — Hornish Point and Dun Barabhat — are indicated. Late Bronze Age stone roundhouses with plain ware are now known from Hallan in South Uist

that Dun Ardtreck was occupied anything like as far back as the seventh or sixth centuries BC, there might have been an important early Iron Age site nearby. Moreover, the fact that either a whole black carinated jar or parts of one were brought to Dun Ardtreck and kept there for an unknown length of time — perhaps as a sort of talisman of the ancestors — surely confirms that

this too was a very high status site, much as does the presence of an E ware sherd a millennium later.

Even at Dun Mor Vaul it is not possible to be sure that occupation was continuous from early to middle Iron Age; the layers under the broch seem to have been levelled and cut down a short time before the tower was built, removing the relevant evidence. Likewise, at Howe in Orkney, the radiocarbon dates strongly imply that there was a gap between the two stages, although the pottery is fairly similar in both. There are clear signs of a hiatus at Jarlshof too where blown sand covered the pre-broch villages (Hamilton 1956, 41 & pl Vc). A possible gap of two or three centuries between the early and middle phases is therefore indicated on the chart.

As described earlier it is not possible to put any of the D-semibrochs back into this early Iron Age horizon although the three simpler promontory versions may be older (MacKie 1991, fig 1); however, none of these has yet been explored. Even if the 'block-house' at Clickhimin in Shetland — clearly stratified under the broch — is a hybrid example of one of these, there are no radiocarbon dates for that site, and a yellow glass bead is associated with the midden of the earlier ring-fort; thus it too seems to belong to the middle Iron Age.

Yet there is one promontory semibroch which, from indirect evidence, may be as old as the seventh or sixth centuries BC, namely Rudh' an Dunain in south-eastern Skye; it stands on a short cliff promontory in a remote area bordering the mouth of Loch Brittle. A Neolithic chambered tomb is close by, but no other major prehistoric monumental structures for many miles. Sir Lindsay Scott and his wife excavated the tomb in 1931 and 1932 and they also explored a nearby cave in the latter year (Scott 1932, 1934a & 1934b).

The cave revealed two distinct occupations. At the base of the deposits, on the sandy floor, were Beaker potsherds and abundant debris of stone tool working; presumably this early Bronze Age phase was coeval with the latest phase of the use of the tomb, which also produced a Beaker. Higher up was an iron smelting furnace, with masses of slag, and in the same stratum were several potsherds of Iron Age type. One of the rim sherds (which the author has seen) appears to be from a rather crude shouldered jar of early Iron Age type (Scott 1934b, fig 7), similar to the material, for example, found in the Quanterness roundhouse in Orkney.

There is no obvious reason to doubt Scott's conclusion that the two cave occupations reflect the use of the two massive prehistoric stone structures nearby. It therefore seems probable that the Rudh' an Dunain promontory semibroch ('promontory broch' according to Scott), with its fully developed, hollow-walled, broch-like architecture, marks the beginning of the early Iron Age occupation in the area and that it dates perhaps to the younger end of the 700–500 BC time bracket. It is also of great potential importance that efficient iron-working seems to have arrived at the same time, just as at the presumably contemporary early Iron Age village at Jarlshof, Shetland. Rudh' an Dunain is therefore placed appropriately early in illus 36; the site would surely repay full excavation.

Middle Iron Age I

It has long been apparent that the start of the middle Atlantic Iron Age in Scotland is in general marked by a sharp increase in the number and diversity of the artefacts in use and that many new types appear in what one might call 'the age of the brochs'. Yet the stratigraphy also suggests that the middle stage can itself be sub-divided; this has long been apparent at Clickhimin in Shetland where the first ring-fort on the site produced an entirely new form of Everted Rim jars — examples of which at some sites, like Mousa and Midhowe, are black-burnished (MacKie 2000, pl 2) — and also small yellow glass ring-beads (Hamilton 1968, 91 & fig 41). However, the rotary

quern, which seems nearly everywhere to be a ‘type fossil’ of the middle Iron Age, was not found in that horizon. A hint of something similar was found at Dun Mor Vaul where a shadowy Phase 2a was isolated — immediately before the construction of the broch — and in which the new Hebridean form of Everted Rim ware was present, though apparently not in the standardized form that came later (MacKie 1974, 40–1 & fig 13, nos 113–54).

Dun Ardtreck makes the situation in the Inner Hebrides much clearer. As described, the semibroch was built by people who only had decorated Vaul ware vases for their pottery. Until a semibroch (or indeed a broch) is found with a primary material culture which lacks all the new material of the middle Iron Age it seems safe to assume that the development of these curious hollow-walled structures marks the start of middle Iron Age I and that this happened before Everted Rim ware appeared, at least locally. Rotary querns and glass beads also appear at about the same time; indeed, one of the querns looks as if it was incorporated into primary paving and might therefore pre-date the construction of the dun (illus 10).

The dating of the start of this phase is still controversial and was discussed in the previous section. The old idea of an influx of new migrants from the south in the first or second centuries BC, bringing new skills and artefacts, has not been popular for many years but it seems unreasonable to dismiss out of hand sporadic contact with influential people from the south (MacKie 2000). The fact still remains that the available radiocarbon dates, though of limited precision, do seem to show that (with the possible exception of Dun Barabhat, Lewis) no definite hollow-walled broch can yet be dated to before the first century BC or AD, which fits with a mild version of the old ‘diffusionist’ view (MacKie 1983, fig 1; and 1995, table 2). However, this coincidence may be much less relevant now that we know that the earliest middle Iron Age material culture almost certainly appeared in the Western Isles well before this, which breaks any link between its appearance and military and political events in Julius Caesar’s time.

Independent evidence for a somewhat earlier start for the middle Iron Age than the first century BC may also be provided by one of the ‘type fossils’ of the period — the rotary quern — which is known to have been in use (albeit in a distinct form) at Danebury hillfort in southern England by the mid fifth century BC (Cunliffe 1991, 395). One has also been claimed to date to the sixth century BC at Howe, Orkney, though with some doubts being raised (Ballin Smith 1994, 187, table 14; MacKie 1998, 26–31). The Dun Ardtreck evidence makes it likely that middle Iron Age I — the ‘pre-broch stage’ — started in the Inner Hebrides as early as the second or even the third century BC and this is allowed for on the chart. Thus a specific prediction made by the writer in 1983 — that the middle Iron Age material culture itself would be found to be not earlier than the middle of the first century BC — appears to have been falsified (MacKie 1983, 124d).

Another site which may have provided important evidence relevant to this problem is Dun Barabhat in western Lewis; the excavation report (Harding & Dixon 2000) became available as this paper was going to press so only a limited discussion is possible here. The structure sits on an island in Loch Barabhat and is a small gallery-walled building 10.0 m by 11.5 m overall, not much over half the size of a standard broch, and with a central hearth. It was not well founded and part of the wall eventually collapsed. There seemed no reason to suppose that the structure was ever a high, hollow-walled broch and the term ‘Atlantic roundhouse’ is preferred by the excavator.

Most of the associated material culture belonged to the secondary phase of occupation and included a variety of middle Iron Age artefacts like small glass beads (including one with a spiral inlaid pattern), hammerstones, pebble strike-a-lights and iron ‘bolts’. Much of the pottery looks like a local version of incised line-decorated Vaul ware but there were some Everted Rim jars with cordons but seemingly without the Clettraval style curvilinear motifs (Harding & Dixon 2000,

28ff). Two C-14 dates (GU 2434 & 2435) showed fairly clearly that this secondary phase belonged to the last two centuries of the first millennium BC and probably to the first century AD.

One small blue glass ring bead was the only find which could be definitely associated with the primary floor of the roundhouse for which no C-14 date was obtained. At a lower level was an occupation horizon of uncertain nature, without artefacts, which underlay the wall of the building. This produced a date (GU 2436) which probably falls into the eighth or seventh centuries BC (Harding & Dixon 2000, Table 1) but it was not possible to say how much later than that the 'Atlantic roundhouse' was built. The excavator thinks it may have been about 500 BC, whereas the author considers that, as with Dun Ardtreck, the middle Iron Age material culture implies that a date not earlier than about the second century BC is most likely. With the evidence at present available it seems unwise to drag Dun Barabhat, and its associated material culture, back to 500 BC on the basis of one C-14 date from a pre-roundhouse phase. The fact that no form of the shouldered pottery of this early phase was found surely supports this view.

Middle Iron Age II

That hollow-walled broch towers were developed after semibrochs (though perhaps not very long after and perhaps with considerable overlap) is implied by the stratigraphies of Dun Mor Vul and Dun Ardtreck and confirmed reasonably well both by the radiocarbon dates (for example for Dun an Ruigh Ruaidh), by distribution maps, by architectural studies (MacKie 1991, figs 1–4) and particularly by the demonstrably pre-broch date of the 'blockhouse' and its associated galleried wall at Clickhimin in Shetland. Whether Dun Barabhat really contradicts this view remains to be seen when the results from this excavation are fully published. That hollow-walled brochs emerged locally and that nothing of their specialized architectural details can be definitely shown to have been imported seems to be the one point about these remarkable buildings that is generally agreed on. The development of the towers in the west seems a good point therefore at which to start middle Iron Age II, and it also seems to coincide with the appearance on Tiree of the decorated Hebridean version of Everted Rim ware — the Clettraval style — even though so far the coincidence of the appearance of the new pottery and the new buildings has been demonstrated only at Dun Mor Vul. As described, the new pottery evidently spread slowly from that island, much more slowly than the spread of the broch towers themselves (illus 35).

Dating the start of stage II has similar problems to that of stage I. Even if intangible historical connections are ruled out as unreliable, one can still infer from the radiocarbon dates that the first centuries BC and AD are the likeliest time-span during which the hollow-walled brochs emerged (Parker Pearson & Sharples 1999, 360 ff), especially as second-century Roman material seems to arrive at a slighter higher level stratigraphically at Dun Mor Vul, that is after Phase 3a (the primary occupation) had been going for some time. What is presumably the architecturally advanced, solid-based broch at Leckie, Stirlingshire, should represent one of the last of its kind built (being in a region remote from the main concentrations of broch towers), and late first-century Roman material was on the site before it was built (MacKie 1985). The approximate date of AD 100 is therefore offered here (illus 35) as the end of the period of broch construction, and — in the absence so far of any clearly contradictory radiocarbon dates — a period of between one and two centuries before that seems reasonable for the start of tower-building.

Middle Iron Age III

There is little obvious evolution in the various material cultures found in brochs throughout the whole time they were in use, although some artefacts seem to appear in the later levels which are

not present in the earlier; two examples are the bronze zoomorphic pin and moulds for bronze spear-butts, though these are quite rare. Ultimately, it may be possible to sub-divide the six or seven centuries of this period more accurately with such items. In the meantime there is clear evidence from several well excavated sites that there were primary and secondary occupations in brochs within the period of the middle Iron Age, separated and defined by the deliberate and careful demolition of the upper parts of the drystone towers. Since this change may reflect important social developments it seems reasonable to call the period of secondary occupation stage III. There is no reason yet to suppose that broch demolition took place at the same time over the whole Atlantic province (though, depending on the primary cause of demolition there may have been a relatively short time-span during which the towers were pulled down), but a date perhaps in the second century seems about right, again judging from Dun Mor Vul and the stratified Roman material found there. The transition at Dun Ardtreck might have been slightly earlier for reasons explained in the next section.

It should be noted that deliberate broch demolition and continued occupation seems to be a completely distinct phenomenon from that of the insertion of late Iron Age or ‘Pictish’ buildings into ruined brochs as at Beirgh in Lewis (Harding & Gilmour 2000). These were presumably accompanied by a distinct material culture (yet to be published for the site mentioned) analogous to the late Iron Age material described below.

As is explained in the following section middle Iron Age III in the west now seems likely to have continued well into the fifth century and perhaps into the start of the sixth.

The Late Iron Age and the date of the Middle/Late transition

Since the work of Alison Young in the 1950s a very specific archaeological horizon has been recognized in the Outer Isles in which ornamental-headed bone pins and composite bone combs are found with a characteristic cordoned pottery in the ruins of middle Iron Age buildings — later called Dun Cuier ware after the type site on Barra (Young 1956). At Dun Cuier itself the bone material also occurs in a later horizon with a plain pottery. Parallelopiped bone dice once seemed likely also to belong to this later horizon because of their occurrence in Dun Cuier but have since been shown to be a middle Iron Age artefact as well (MacKie 1974, fig 19, no 496). The pins and combs have long been recognized as a post-broch phenomenon (Stevenson 1955) and have since been reliably dated to the seventh and eighth centuries AD, partly on the basis of their occurrence on historic sites in mainland Scotland and in Ireland, but mainly on the evidence of radiocarbon dates for the pins themselves (Foster 1990, illus 9.3). In particular Young’s work in 1956 on the wheelhouse of A’ Cheardach Mhor — in advance of the building of a rocket range on South Uist — showed that this pin and pottery horizon was in sand several feet above the floor of the ruined wheelhouse (Young & Richardson 1960, figs 10, 11 & 13).

The fact that the Dun Cuier ware pots are a form of plain jar with an applied waist-cordon, a footless base and a curious upcurving rim (which looks like an elongated version of the Everted rim of the well known middle Iron Age pottery) strongly implies it is a late version of Hebridean Everted Rim ware. However, very little evidence was found at Dun Mor Vul, and none at Dun Ardtreck, for the presence of this late pottery. At the Tiree site one massive rim sherd from a late level resembled a Dun Cuier jar (MacKie 1974, fig 19, no 483) which suggested — contrary to what was implied at A’ Cheardach Mhor — that there was a slight overlap between the standard middle Iron Age material culture and the start of Dun Cuier ware. For various reasons — particularly a probably second-century radiocarbon date for Phase 5 and the presence of Roman material in the same topmost levels — the date of the end of the occupation of Dun Mor Vul

seemed unlikely to have occurred later than about AD 300 (MacKie 1974); thus the writer assumed for some time that that was when Dun Cuier ware was emerging.

However, the dating of the associated bone pins and composite bone combs to the seventh and eighth centuries clearly contradicts this idea and the writer tended to assume, therefore, that there must have been a period — tentatively termed middle Iron Age IV — when Dun Cuier ware was in use before the arrival of the pins and combs. Although there was no stratigraphical evidence for this idea the finding of the E ware sherd on top of the Phase 3 occupation layer of Dun Ardtreck seemed to support it, since it seemed improbable that the site was occupied as late as the seventh century; the discovery of an Antonine samian sherd also at the top of the Phase 3 seemed to support this view strongly.

Now, however, the well-dated sequence at Scalloway broch in Shetland has confirmed that the late Iron Age occupation in the broch there took place in the sixth to tenth centuries and not earlier; moreover, a whole cluster of such dates supports the view that the primary occupation of the broch continued until about AD 500 (Sharples 1998, 86 ff). Thus it seems much less likely now that Dun Cuier ware began to develop as early as the fifth or even perhaps the fourth century, the only evidence for this being the single sherd from Dun Mor Vul. Indeed it is more likely now that that sherd, together with the Scalloway evidence, represents occupation of Dun Mor Vul at least until the end of the fifth century and perhaps on into the sixth. At Dun Vulcan in South Uist, Dun Cuier ware is now dated to between the sixth and ninth centuries (Parker Pearson & Sharples 1999, 210).

Additional evidence in support of this view appears to come from the piece of dark brown dacitic pumice found in the Phase 3 deposits in the dun interior (Context Epsilon, ARBD: Appendix 7). It almost certainly came from the final silicic eruption of the Katla volcano, on the south coast of Iceland, which occurred about AD 400. No later eruptions occurred which produced pumice of this type, and before that time about five similar eruptions have been identified going back to about 4000 radiocarbon years BP. Dun Mor Vul produced a very similar fragment of this pumice from a post-broch, Phase 4 level (Appendix 7), which was dated in the report as ending at about AD 300. Thus the two pumice fragments seem to be providing valuable confirmation that Middle Iron Age III in the Western Isles continued well into the fifth century and that we do not now need to assume much of a chronological hiatus between the Middle and Late stages of the Iron Age material cultures.

Although so far the classic late Iron Age horizon has not been found on Tiree and Skye it seems reasonable to assume that, when it is, it will be found to start in the sixth or seventh centuries, and to be marked by the appearance of Dun Cuier ware and of the typical bone pins and composite combs. The stratigraphy of Dun Ardtreck would contradict this view if its secondary phase of occupation could be shown not to have extended until the time that the E ware sherd was left on that site, but it now seems that the implications of the stratigraphical position of that sherd must be accepted (and those of the similar position of the Roman sherd rejected) and that Phase 3 continued on until the fifth century. Although one cannot simply assume that the situation in Skye was identical to that in Shetland, it seems that Scalloway broch has provided the best evidence we have for the long duration of the Atlantic middle Iron Age phase and this fits the impression gained from the stratigraphy of Dun Ardtreck very well. It now seems much less probable that the interior of that site had been abandoned for a long time and was tidied up, and perhaps temporarily re-roofed, for the bearer of the sixth century imported pottery; a continuous middle Iron Age occupation up until the arrival of the E ware sherd now seems much more likely. The idea of a sub-phase IV of the middle Iron Age can now be

abandoned, therefore, until some clearer distinction is found which separates out the fourth and fifth centuries, for example, from what went earlier.

Parker Pearson & Sharples (1999, 359–60) argue for an earlier start to the late Iron Age, at about AD 300, on the basis of the radiocarbon-dated appearance in secondary broch contexts of stone rectangular buildings and cellular settlements. The writer believes by contrast that the main stages of the Atlantic Iron Age should be defined primarily by consistently recurring assemblages of pottery and artefacts and not by buildings and that — unless the structures referred to always occur with the standard late Iron Age pottery, ornamental-headed bone pins and composite bone combs — they must belong to the middle Iron Age.

THE ALTERNATIVE SCENARIO

The scheme outlined above summarizes what one might call the evolutionary scenario for the appearance and development of the various Atlantic Iron Age buildings discussed, and is also one which implies the validity of the definition of a broch as a ‘homogeneous structure with a short chronology’ (MacKie 2000). This scenario depends on the assumption that such specialized and complicated structures are likely to have developed gradually — probably from the more simple to the more complex — as the architects and masons gained more experience and skill, and as they took more account of the demands of their clients. The analogy is broadly comparable with the natural selection of the most efficient form of animal for a particular environment.

The evolutionary scenario does not have to be a strictly unilinear one: the possibility of various local developments can be seen in the structures. Nor does it imply that all examples of a simpler form of building have to be earlier than all examples of a more complex one; overlaps could obviously have occurred, especially in the occupation of sites. However, it does imply that in broad terms the semibrochs, for example, antedate brochs as a concept, and wheelhouses post-date them. An analogy might be drawn with hand-held long guns. Fire-lock muzzle-loading muskets antedated the flint-lock variety which in turn antedated the hammer-lock form with the percussion cap; eventually breech-loading rifles using a firing pin and prepared cartridges rendered all other forms obsolete. Despite all this flint-locks remained widely used in Africa well into the 20th century (giving employment to flint knappers at Brandon, Suffolk) as did the occasional muzzle-loader in the Western Isles (one was photographed in use, with a powder horn, by Werner Kissling, probably in the 1930s). The evolutionary scenario also implies that the most numerous and standardized buildings were the most popular and therefore best adapted to their function, whatever that was. It is of course generally accepted that the evidence implies that all such building development took place within the Atlantic Province of Scotland. The scenario was depicted as a detailed diagram 35 years ago (MacKie 1963, fig 8).

As is well known, this evolutionary scenario is not the only one current in Atlantic Iron Age studies at the turn of the millennium and is in fact probably a minority view now, as the belief that a variety of buildings could have flourished at the same has gained ground. This latter view would maintain, for example, that there is no reason to suppose that D-shaped semibrochs were earlier than brochs — they could be alternative and contemporary forms of buildings (Harding 1984, 211–15), or members of a post-broch group (Fairhurst 1938; 1984, 175; Armit 1990b, 48–50). Their existence as a separate group has also in effect been denied entirely (Harding 1984, 215), although this is hard to justify in most cases (MacKie 1991). Naturally, if the primarily defensive nature of brochs and allied structures is disputed and their role as status symbols is emphasized, the assumption that a form of selection for more efficient protection pushed their builders along a particular line of development can be down-graded or abandoned entirely, and

many other motives introduced for the appearance of different designs which could then have appeared almost at random. Indeed there can be little doubt that occasionally a badly constructed, unstable, broch-like building was set up on an unsafe site for mainly ideological reasons, as at Howe in Orkney (MacKie 1998).

The last point also leads naturally to the view that there is no real need to separate out a specific group of hollow-walled towers called 'brochs' from all the other variations on the theme — in fact it could be misleading to do so. Therefore the span of time during which all these 'Atlantic Roundhouses' were built could have been much longer, extending as far back as stone roundhouses of Orkney in the seventh century BC. This may be called the view of brochs as 'variable structures with a long chronology' (MacKie 2000). Likewise, there might be no particular reason for expecting any particular order of development during the twelve hundred or so years in which these buildings were being put up and used. Leaving aside the question of how likely it is that complex stone buildings could appear and disappear almost at random in this way, the two scenarios outlined seem sufficiently distinct that the most plausible should eventually be detected as ever greater numbers of reliable radiocarbon dates become available.

The writer has already made it clear that he considers that the evolutionary scenario, despite being less popular, is better supported both by most of the relevant radiocarbon dates and by the evidence of the developing material cultures found with the buildings. However, it cannot be denied that there is some contradictory evidence and it is only fair to allude to it here, if only briefly. As far as the hollow-walled brochs are concerned, an early attempt by Hedges to show that forms of these were being built several centuries BC in Orkney — in the early Iron Age — ran into much contradictory evidence still visible at the site (MacKie 1994). Likewise, the early dating of the other two northern sites with thick-walled round buildings which look like brochs — Howe in Orkney and Crosskirk in Caithness — is not unequivocal, and none of the three buildings concerned can be shown to have had the galleried wall of the broch (MacKie 1998). The bulk of the radiocarbon dates do seem to support the idea that no hollow-walled brochs were built before about 100 BC (Parker Pearson & Sharples 1999, tables 12.1 & 12.2).

The one western site which seemed to contradict the evolutionary scenario, and to support the idea that completely enclosed, gallery-walled, broch-like buildings appeared two or three centuries earlier than this, is Dun Barabhat on Lewis. Now that the full report has appeared that argument can be seen to be inconclusive because the single C-14 date which suggests it belongs unequivocally to an earlier horizon and because the dates connected with the middle Iron Age material culture seem to be not earlier than about the late third or the second centuries BC. By contrast the hitherto ignored evidence from the Rudh' an Dunain cave on Skye (see above) could be confirming that the truly broch-like, simple promontory defence nearby is several centuries older than that, as the evolutionary scenario would expect.

The peculiar form of large Atlantic roundhouse known as the wheelhouse probably provides an even more crucial test for the evolutionary scenario. This is an unusual form of the stone roundhouse in which the internal ring of roof-supporting posts — typical of Iron Age wooden houses throughout much of lowland Britain — seems to have been replaced in treeless areas by radial stone piers. The 1965 diagram alluded to showed them as a distinct post-broch development, starting in Shetland perhaps in the second century AD (where a number of brochs are known with a wheelhouse added inside them) and then being brought back to the Outer Hebrides where they were built in some numbers and standing on their own. The striking evidence from Jarlshof seemed to show that the wheelhouse actually evolved in the Northern Isles. The earliest of the group inside the broch courtyard there started as a stone-walled roundhouse with a ring of internal wooden posts and a scarcement on its inner wall face, just like a broch; only later

were free-standing stone piers inserted to replace the posts, and presumably also to replace the primary wooden structure (Hamilton 1956). Quite recently, another similar set of wheelhouses has been found not far away at Old Scatness and built around the broch there; one of these too has a scarcement on its inside face as well as the stone piers (Nicholson & Dockrill 1998, pl 6).

All the published Hebridean wheelhouses have, in sharp contrast to the Orkney round-houses, essentially the same pottery and artefacts inside them as the nearby brochs — in other words they can be firmly assigned to the middle Iron Age. The only comparable early Iron Age structure is one of two much smaller round stone huts at Jarlshof, Shetland (with quite distinct early Iron Age carinated pottery), in which three small radial piers are preserved. The sequence suggested here is directly opposed to that of Scott (1947) for example, who believed that the hollow-walled broch tower came at the end of a development of increasing massive round farmhouses which started at an uncertain date with aisled wheelhouses.

Thus all this evidence, much of which (except the radiocarbon dates) was available in 1965, suggested to the writer then that none of the large middle Iron Age wheelhouses, either in the west or in Shetland, ought to be earlier than the first century AD and perhaps not earlier than the second. Enough radiocarbon dates have now accumulated to allow this hypothesis to receive a preliminary test (Parker Pearson & Sharples 1999, table 12.2). The large aisled wheelhouse which used to be called Machair Leathann and is now known as Sollas (Campbell 1991b) gave six dates for pits below the floor level which all fell in the first century BC and the first half of the first millennium AD (GU 2562, GU 2564–66, GU 2590 & GU 2591). The excavation of the wheelhouse at Cnip in Lewis has not yet been published but, of three dates for Phase 1 activity (GU 2758, GU 2755 & GU 2757), the first gave a very vague date somewhere in the first eight centuries BC and the second two fell into the first centuries BC and AD, one possibly also into the second or third centuries AD. Cill Domhain, also unpublished, produced two dates for its secondary occupation which fell into the first millennium.

Hornish Point (another unpublished site) consists of one certain and two probable wheelhouses on the machair for which a whole series of radiocarbon dates were obtained on seashells (Armit 1991, 212). They appear to show that deposits on top of the wheelhouse were accumulating as early as the third century BC if not before. Clearly there is at first sight enough evidence here to suggest that some classic wheelhouses could go back into the third centuries BC, which would make them older than the oldest hollow-walled brochs, and would create major difficulties for the evolutionary scenario as at present defined. The detailed reports on the sites are needed, however, before a final judgement can be made and, in particular, there is the problem that seashell dates will almost certainly be found to be too old (Armit 1991, 212). This ‘seafood effect’ has also cast doubts on some of the dates from Crosskirk in Caithness (Harkness 1984; MacKie 1987).

Thus unless one adopts it as *a priori* the alternative scenario to the broadly evolutionary one seems to be a long way from being proven.

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APPENDIX 1

CATALOGUE OF ILLUSTRATED FINDS

The pottery and other artefacts are listed below in the order in which they appear on the five drawings of finds. The letters and numbers which appear in the last part of each entry form the field number of the object concerned, and a list of the bag contexts (two letters) will be archived. The museum numbers of the objects are given at the end of each entry. The reference in square brackets is to a table showing the distribution of finds (Table 1) and is the key to the detailed catalogue of finds in the site archive.

Most of the potsherds, whatever the colour of the ware, are sand-tempered. Under the microscope numerous small grains of sand and tiny shell fragments can usually be seen in the surfaces, together with occasional larger grains. It is rare, however, to find a stone fragment more than 2–3 mm long.

POTTERY

Phase 1 (illus 21)

1. Base sherd, lacking any of the edge, of hard-fired dark grey ware with buff surfaces; the inner surface is slightly dome-shaped and decorated with at least two deep finger impressions on the inside surface (one complete and the beginning of a second just visible). There is also a shallow groove, made by finger-tips, around the inside of the base at the junction with the wall.

Max. thickness 15 mm. 152.CS, Context Alpha. (A.1965.690).

Phase 2 (illus 21)

2 & 3 See under Phase 2/3.

4. Rim fragment of a small bowl-shaped vessel of very hard grey ware with a slightly coke-like texture. The clear signs of heating and traces of slag and vitrification on the inside show that this is a hemispherical crucible for melting copper or bronze.

Diam c 86 mm, thickness of wall 7 mm. 154.BQ, Context Beta [50/C, no 2] (A.1965.708).

5. See Phase 2/3

6. Vase 2: many joining sherds of a small footed vase of hard-fired, sandy-textured ware with a light grey core and light buff-brown surfaces; decoration of an applied and impressed zig-zag waist cordon with, above this and resting on it, a pattern of sharply incised lines forming upright triangles 'shaded' with criss-cross decoration. This is a sub-variety of the Vault ware vase sometimes known as the Balevullin vase, after the type site (MacKie 1965, fig 3, nos 26 & 27): one or two sherds were found in the pre-broch levels at Dun Mor Vault (MacKie 1974, fig 11, no 40).

In the Hebridean Iron Age this combination of applied waist cordon with a decoration of geometric patterns in incised lines occurs only on this small sub-group of pots of Vault ware with footed bases. By contrast one never finds, for example, the combination of the curvilinear channelled arches (of the Clettraval sub-style of Everted Rim ware) and angular patterns of incised lines, confirming that Vault ware and Everted Rim ware are two completely distinct traditions (MacKie 1987, 160 ff).

Estimated height c 174 mm, diam c 115 mm, thickness of wall 5.5 mm. 62.BD, 70.BD, Context Beta. (A.1965.693)

7. Vase 3: many joining sherds giving the complete profile of a footed vase of hard-fired, smooth surfaced ware with a light grey core and red-brown surfaces; the sparse decoration is of sharply incised lines forming a row of vertical slashes below the rim. The vessel has evidently been reddened and badly distorted by heat, although there is no blistering as with no 16. If the original profile of the rim was more like that of nos 6 and 16 for example (which seems certain because nearly all the numerous Vault ware vase rims from Dun Mor Vault match those two) it would have been closer to that marked by the dotted line; the great heat would have softened this part of the pot and let it bend inwards. Since this seems unlikely to have happened when the pot was entire one may surmise that it had already broken into two halves at least and that this part was softened by heat.

Height 158 mm, originally perhaps 167 mm, estimated original diam 110 mm. 8.AF, Context Beta. (A.1964.45/1)

8. About a third of a small, flat, bowl, presumed to be a crucible although there are no obvious signs of heating in the form of deposits of metal residue or of vitrification or cracking of the clay; it does however look pinkish and heated. The ware is hard-fired with mottled pinkish grey surfaces and a very pale grey core with at least one large inclusion.

Diam c 70 mm, height c 35 mm, thickness at base 11.5 mm, at rim 5 mm. 98.BQ, Context Beta [50/L]. (A.1965.707)

9–11 See Phase 2/3

12. Vase 1: several joining sherds giving the complete profile of a vase of hard-fired buff to grey ware with buff-brown surfaces, tempered with dark sand grains; the decoration consists of sharply incised lines

forming a row of short vertical strokes below the rim with a series of upright triangles below these, each triangle being 'filled in' with two or three more lines parallel to the two upright sides. This is a Vault ware vase of essentially the same kind as found at Dun Mor Vault (MacKie 1974, fig 15, no 220).

Diam 125 mm, height 155 mm. 117.BJ, BJ & CD, Context Beta. Some of the sherds have been restored with plaster to form about a third of the complete pot. (A.1965.694)

13. Footed base sherd of very hard-fired ware with a grey inner two-thirds and buff-brown outer third, the outer surface being buff. The inside surface of the base rises up in a slight dome-shape. This seems to be from a Vault ware vase.

Diam 80 mm, max. thickness of base 15 mm, minimum thickness of wall 10 mm. 150.CP, Context Beta. (A.1965.706)

16. Vase 4: many joining sherds giving the complete profile of a vase of hard-fired, smooth-surfaced grey ware with red-brown outer surfaces. The decoration is of incised lines showing, first, a row of short vertical slashes just below the rim and, second and below these, an irregular series of horizontal herringbone (or vertical zig-zag) lines around the upper half of the vessel. Parts of the pot have been severely re-heated and reddened — some of them having melted and bubbled to produce in places a distinctly coke-like texture — so that only a small number of sherds show the original colour and texture. There are examples of joining sherds of which only one has this texture of extreme-re-heating, implying that the pot was broken and the pieces scattered somewhat before the fire reached its maximum intensity.

Approx rim diam 177 mm, height 183 mm, max wall thickness 10.5 mm. 50.BA, 55.BA, 96.BQ, BA & BF, Context Beta. Many of the sherds have been restored with plaster to form about a half of the complete pot with an entire base. (A.1965.692)

17. Rim sherd of hard-fired, dark grey ware, decorated with a series of short diagonal incised lines immediately below the rim. This is part of a Vault ware vase but the rim is unusually short and near the vertical.

Diam not measurable, max wall thickness 8 mm. 142.CM, Context Beta. (A.1965.725)

18. Small rim sherd (the actual edge of the rim missing) of hard-fired buff ware with traces of a grey area on the exterior; the decoration, done in fine incised lines, appears to consist of a series of sets of three diagonal lines, immediately below the rim, which intersect each other to form diamond shapes. There are impressions of numerous bits of short fine grass or straw on the inside surface, and also many flecks of which at first looked like black sand but which are in fact small spots of shiny black material on the surface. Part of a classic Vault ware vase.

Diam not measurable, max wall thickness 7 mm. 149.CM, Context Beta. (A.1965.725)

Phase 2/3 (illus 21)

- 2 Two joining rim sherds of very hard-fired grey ware with buff interior and grey and buff mottled exterior, tempered with coarse black sand including some quite large fragments; the outer surface is impressed with several short lines as if some very fine stiff grass blades had been pressed into the damp clay; probably a plain Vault ware vase.

Diam c 120 mm, max wall thickness 6.6 mm, BQ.1 & 2, Context Beta/Epsilon or Epsilon. (A.1965.778)

3. Sherd of hard-fired, grey-brown ware with smooth grey and buff surfaces; there are three faint parallel score marks on the outside. It seems to be the vertical rim of a small bucket-shaped jar but the rim form is rare in the Scottish Atlantic Iron Age; alternatively it might be the top edge of a ring from the wall of a pot, although the 'rim' has been folded over slightly and there are no obvious joint scars. BQ.1; Context Beta/Epsilon. (A.1965.735)
5. Small rim fragment of Everted Rim ware with fluting in inside face of rim. CP.1, Context Beta/Epsilon. (A.1965.737)
9. Sherd of a footed base of hard-fired brown-buff ware with smooth surfaces of the same colour, presumably of a Vault ware vase or urn (though no identifiable urn rims were found at this site). BQ.4, Context Beta/Epsilon. (A.1965.733)
10. Wall sherd (just below rim) probably of Vault ware vase with incised decoration of short vertical lines. BD.4, Context Beta/Epsilon. (A.1965.728)
11. Wall sherd of hard-fired grey ware with mainly brown surfaces decorated with a horizontal pattern of very fine incised lines; these form a pattern of two series of shallow curved lines alternating and opposing each other along either side of a straight line; the enclosed spaces (like a very shallow D) are shaded with fine, diagonal, parallel incised lines all running in the same direction. Max thickness 8 mm. 143.CO, Context Tau. (A.1965.804)
14. See pottery from Phase 3, below.
15. Large rim sherd of a jar of very hard-fired, dark grey ware showing the rim construction technique clearly; the ring of clay is folded sharply outwards to give the whole long rim a slight bulge (about 29 mm) even after thinning to match the wall. The junction of the fold can be seen at the base of the rim outside and the split between the two halves goes almost up to the top of the rim. This, if an Everted Rim jar, has a much more vertical lip than usual. There is a patchy hard black encrustation on the top of the rim and on its outside surface. Diam c 180 mm, max thickness of rim 10 mm. 12.AK, Context Kappa. (A.1964.47/1)
19. See pottery from Phase 3, below.
20. Large rim sherd of very hard-fired, smooth surfaced dark grey ware, part of a small plain pot with a slightly turned-out rim, probably a small plain Vault ware vase (although the fabric more closely resembles that of Everted Rim ware). Diam 111 mm. CQ.1, Context Beta/Epsilon. (A.1965.728)
21. Several rim and wall sherds of a Roman jar of coarse ware — see Appendix 2. Estimated rim diam 240 mm, estimated height 260 mm, base diam 89 mm. 63.BC, 87.BP, 104.BP, 115.BP, AW & BP, earliest Context Nu. (A.1965.722)

Phase 3 (illus 22)

14. Large rim sherd of a plain jar of hard-fired light red-brown ware with some black areas on the outer surface and along the edge of the rim; a plain Everted Rim jar apparently without a waist cordon.

Diam c 153 mm, wall thickness 11 mm. 151.CM, Context Delta. (A.1965.726)

19. Small rim sherd of a jar of hard-fired, smooth-surfaced orange-brown ware with ornament of three horizontal bands of shallow fluting or channelling along the inside surface of the rim. This is what is sometimes known as the Clickhimin sub-style of Everted Rim ware, named after the type site in Shetland (Hamilton 1968; MacKie 1974, fi. 14, no 180).
Wall thickness just below rim 11 mm. 10.AI, Context Epsilon. (A.1964.38/2)

22. Large rim sherd of a jar of hard-fired ware with smooth outer surface, the inner half dark grey, the outer orange buff, with the outer surface mottled buff and grey. Though there is no trace of a waist cordon it seems to be from a large, plain Everted Rim jar.
Diam c 197 mm, max wall thickness 14 mm. BO.2, Context Epsilon. (A.1965.774)

23. Three adjoining rim sherds of a jar of hard-fired, smooth-surfaced buff ware with areas of dark grey on the interior, decorated with rilling on the rim bevel consisting of at least five fine grooves; judging from the scars outside the rim may once have been up to twice as long as at present. This is a form of Everted Rim jar in the Clickhimin sub-style but with an unusually globular profile.
Diam 160 mm, max wall thickness 11 mm. 133.CH, Context Epsilon. (A.1965.775)

24. Rim sherd of Everted Rim jar of buff-grey ware, the exterior buff-brown and smooth, the interior buff, decorated with two horizontal flutings along the inside face of the rim.
Diam 127 mm. 79.BG, Context Epsilon. (A.1965.775)

25. Rim sherd of a possible vase with an almost vertical rim.
Diam 102 mm. AR.5, Context Epsilon. (A.1965.774)

26. Large Everted Rim sherd of very hard-fired, buff grey ware tempered with coarse dark sand including some quite large grits, outer surface smooth and buff, inner buff-grey; part of Everted Rim jar with slightly squared off rim edge; the vessel looks more bowl-shaped than most of its type.
Diam 190 mm, max thickness 11 mm, 113.BR, Context Epsilon. (A.1965.774)

27. Rim sherd of an Everted Rim jar with fluting (two facets only) along the inside face of the rim: the profile is probably closer to that of no 28 below.
Diam 198 mm. 51.AR, Context Epsilon. (A.1965.775)

28. Everted rim sherd of hard-fired, smooth surfaced, slightly sandy-textured grey ware with smooth, pale buff-grey outer surface showing a number lines like slim grass impressions, presumably tempered with fine sand with the occasional grit; a fragment of an Everted Rim jar with the characteristic squared-off rim edge of its class.
Diam c 162 mm, max wall thickness 7 mm. BN.2, Context Epsilon. (A.1965.774)

29. Small fragment of the rim of an Everted Rim jar of hard-fired, orange-brown ware with two broad flutings along the inside bevel.
Diam not measurable. AZ.5, Context Epsilon. (A.1965.775)

30. Small rim sherd of hard-fired but slightly friable, light brown ware with more buff-coloured surfaces (the colour now darkened by polyvinyl acetate); none of the wall is preserved but the sharp angle of the rim inside is. The decoration is of three parallel flutings along the inside face of the rim. The long and sharply turned-out rim is an example of the rare (in the Western Isles) Clickhimin sub-style of Everted Rim ware (see no 19).

Diam not measurable, max rim thickness (just above the angle) 12 mm. 1.AA, Context Epsilon. (A.1964.38/1)

31. Vase 5: four sherds forming two pieces just below the rim, three more joining sherds forming another large part of the wall and a tiny rim sherd, all of a small, fine vase. The ware is hard-fired, sandy-textured, slightly friable and light buff-brown on the surfaces with a slightly more orange core in places; the tempering is mainly of fine sand with a few larger grits. There is a small patch of dark grey encrustation on one part of the exterior.

The vessel has been made with the ring-building technique, the separately applied rim having come off and left a tapering, horizontal breakage scar at the top of the wall; just below the waist there are traces of another horizontal such scar where the lower band has broken off. These joints are not the same as the 'tongue and groove' joints on Everted Rim ware from Dun Mor Vul, Tiree (MacKie 1974), and visible on no 42 below, even though the ware of this vessel is quite similar to that contemporary style of pottery. Whereas on the Tiree vessels the upper edge of the lower ring was smoothed into a blunt, rounded edge and fitted into a split in the lower edge of the ring above (the joint then being smoothed down on both sides), in this vase there is no overlapping on both faces, the joint being in the form of a short curved bevel with the lower edge inside and the convexly rounded edge being on the lower ring. This joint looks more likely to break than the Tiree form.

The decoration is of incised lines forming a row of upright, hatched triangles just below the rim, the hatching being formed of successively smaller triangles inside each. These shapes rest on what looks like an imitation waist cordon done as a herringbone pattern with short, diagonal hatched lines on either side of a horizontal line. In each of the blank spaces between the triangles is a vertically arranged pair of impressions of the head of a small bronze ring-headed pin with a projecting head, the gap between ring and shaft being clearly visible.

This is a delicately and symmetrically made vase of Vul ware but with a strong, skeuomorphic representation of the cordon of the Balevullin vase. Also the sandy-textured fabric, but not the pale colour, is closer to Everted Rim ware.

Rim diam approx 127 mm, waist diam 149 mm, estimated height 140 mm, max wall thickness 7 mm. 48.AR; Context Epsilon (but could be Beta as the earth Layer 2 lay on the rock nearer to the cliff). (A.1965.783)

32. Rim sherd of extremely hard-fired, perhaps twice-baked, grey ware with light brown interior and light buff-brown exterior, tempered with small dark grits; the bottom edge has been broken along the joint between the rim ring and that below, showing that the rings were moulded together after a simple overlap, the upper ring being on the inside. This is a Vul ware vase with a zig-zag pattern of incised lines, and in the drawing the profile is probably tilted too far upright.

Diam 152 mm. CK.5, Context Epsilon. (A.1965.778)

33. Part of the base, without a foot, of an Everted Rim jar, of hard-fired grey ware tempered with grains of dark sand and a few shell fragments.

Diam of base c 100 mm, max thickness of base (at centre) 9 mm. BG.6, Context Epsilon. (A.1965.781).

34. Base sherd of hard-fired, sandy-textured, smooth-surfaced grey ware tempered with sand including many shiny specks and some larger grits, part of an Everted Rim jar. The under part is not well enough preserved to tell whether it had the omphaloid form.
Diam 60–70 mm, wall thickness 9 mm, base thickness 11 mm. CG.5, Context Epsilon. (A.1965.781)
35. Base sherd without a foot of hard-fired, smooth surfaced grey ware tempered with coarse dark sand including many quite large grits, buff grey surfaces, outer surface has many impressions of what looks like very fine, short grass blades: base of an Everted Rim jar.
Diam approx 120 mm, wall thickness 8 mm, base thickness 10 mm. BR.4, Context Epsilon. (A.1965.781)
36. Part of 65a.
37. Part of the base of an Everted Rim jar.
AR.3, Context Epsilon. (A.1965.781)
38. Part of the base of an Everted Rim jar.
BO.6, Context Epsilon. (A.1965.781)
39. (number omitted)
40. Footed base sherd of a Vaul ware vase.
CT.2, Context Epsilon. (A.1965.779)
41. Wall sherd of hard-fired, sandy textured, dark grey ware, some of the interior red-brown, some of the exterior buff; the sparse decoration is of lines of punctuated marks perhaps made with the point of a pin and includes a horizontal line. The profile of the pot shows a slight angle at this line, presumably a faint echo of the early Iron Age carinated wares (see 65a below). Alternatively it may be part of a Vaul ware vase (the sherd is drawn upside down).
Max wall thickness (at the 'carination') 8 mm. AT.5, Context Epsilon. (A.1965.790)
42. Wall sherd, one of three joining ones from the same vessel, of hard-fired, slightly sandy-textured dark grey ware with a very smooth outer surface (mottled buff and grey) and a buff inner surface; decorated with a horizontal band of short diagonal fine incised lines. The lower edge has a very clear groove, the impression of the tongue of the ring of clay built below the present one during manufacture. Judging from the fabric and the tongue and groove joint this is part of an Everted Rim jar but with a band of short incised lines instead of an applied waist cordon.
Waist diam not known, max thickness (at ring join) 9 mm. AT.6 (with AT.7 & 3), Context Epsilon. (A.1965.785)
- 43, 45 Two of three wall sherds of hard-fired, sandy-textured grey ware, the outer surface very smooth and mottled with buff, from a rounded pot decorated with fine incised lines forming a waist band consisting of a single horizontal line from which run short, diagonal lines like shallow S-shapes, the whole looking like a simplified rope pattern; fragments of another incised pattern are preserved above this which

looks like the bottom of inverted triangles. Some dark grey hard encrustation covers part of the horizontal band. Probably a Vault ware vase although the colour and texture are those of Everted Rim jars on Tiree.

Max wall thickness 8 mm. AT.4 & 8; Context Epsilon. (A.1965.790)

44. Rim sherd of a Vault ware vase decorated simply with incised lines.
CK.1, Context Epsilon. (A.1965.778)
45. See 43 & 45 above.
46. Wall sherd of hard-fired light brown ware, tempered with fine black and pale (quartz-like) sand with some larger grits, the outer surface decorated with fine double incised lines forming at least two matching zig-zag patterns; the sherd is just below the rim of what seems to be a Vault ware vase.
Thickness just below rim 10 mm. 139.CH, Context Epsilon. (A.1965.785)
47. Half of a miniature flat-based pot, probably neatly made with the thumb from a ball of clay; it looks like a crude crucible without a pouring lip but there are no signs of heating.
Diam 42 mm, height 34 mm, max wall thickness 8 mm, thickness of base 4.5 mm. 53.AZ, Context Epsilon [50/L]. (A.1965.756)

(*illus 23*)

48. Two adjoining wall sherds of a cordoned jar of hard-fired, smooth-surfaced dark grey ware with more obvious pale sand tempering than usual, the surfaces dark grey with a small area of buff on the exterior; the decoration is an applied horizontal cordon impressed into a flat zig-zag. Part of an Everted Rim jar.
Waist diam unknown, max wall thickness 10 mm. 94.BO, Context Epsilon. (A.1965.776)
49. Wall sherd of a cordoned jar of hard-fired ware with smooth outer surface, the inner half of the core buff-brown coloured, the outer dark grey, but both surfaces are mottled with both colours; decorated with a horizontal applied cordon, impressed with a row of what looks like a very small finger-tip and nail. This is from an Everted Rim jar.
Max wall thickness (just below cordon) 10 mm. 69.BG, Context Epsilon. (A.1965.776)
50. Wall sherd with applied, horizontal zig-zag-impressed cordon, with a fragment of a semicircular channelled arch above, part of an Everted Rim jar of the Cletraval sub-style.
49.AT, Context Epsilon. (A.1965.776)
51. Wall sherd of very hard-fired, sandy-textured dark grey ware, the outer surface very smooth and mottled buff and grey, the inner dark grey and buff; the decoration of applied horizontal zig-zag impressed cordon, presumably of an Everted Rim jar.
Max thickness 9 mm. 36.AR, Context Epsilon. (A.1965.776)
52. Wall sherd with applied horizontal zig-zag-impressed cordon, presumably of an Everted Rim jar.
41.AR, Context Epsilon. (A.1965.776)

53. Wall sherd of a jar of hard-fired ware, the inner half of the core dark grey, the outer buff-coloured, the outer surface having black areas (perhaps due to use); decoration consists of an applied, horizontal cordon impressed into a flat zig-zag pattern, with resting on this parts of two motifs of two concentric, semicircular channelled arches. This is part of an Everted Rim jar of the Cletraval sub-style.
Wall thickness 6.5 mm in centre, 7.5 mm at top and bottom. BG, Context Epsilon. (A.1965.777)
54. Small wall sherd with large, applied horizontal impressed cordon, presumably of an Everted Rim jar.
32.AT, Context Epsilon. (A.1965.776)
55. Wall sherd with an applied cordon, cut with diagonal incised lines, presumably of an Everted Rim jar.
AT.2, Context Epsilon. (A.1965.776)
56. Wall sherd of hard-fired orange-brown ware with a more buff-coloured outer surface and tempered with more larger dark grits than usual; decorated with an applied, horizontal cordon, finely impressed with diagonal impressions drawn from bottom left to top right. This is presumably from a cordoned Everted Rim jar (the sherd is drawn upside down).
Max thickness (just above cordon) 13 mm. 4.AA, Context Epsilon. (A.196.42)
57. Wall sherd with large, coarse applied horizontal zig-zag-impressed cordon, presumably of an Everted Rim jar.
BG.4, Context Epsilon. (A.1965.776)
58. Wall sherd from pot with rounded shoulder.
BJ.5, Context Epsilon. (A.1965.776 or 785)
59. Wall sherd with possible curvilinear decoration?
15.AT, Context Epsilon. (A.1965.790 or 791)
60. Wall sherd with incised (?) decoration.
AT.17 (or AT.7) Context Epsilon. (A.1965.774)
61. Thick wall sherd of very hard-fired grey ware with tempering of dark sand including some quite large fragments, the surfaces are smooth despite the large fragments; decoration consists of a band of short incised lines apparently on the incurving shoulder; presumably a Vaul ware vase.
Approx diam at shoulder 170 mm, max thickness 14 mm. BJ.7, Context Epsilon. (A.1965.785)
62. Wall sherd of hard-fired, buff-brown ware, the outer surface mottled dark grey and buff, tempered with more sand than usual and with many tiny flecks of mica; a thin encrustation of hard, dark grey material is at the bottom of the inside surface and covers most of the lower grooves. The decoration is highly unusual, consisting of neat, horizontal grooves or rilling on the exterior. The sherd is from the shoulder (the very beginning of a turned-out rim can be seen at the top and the rilling ends a short distance below that) of a very rounded, almost onion-shaped jar, presumably of an unusual form of Everted Rim ware; just below the rim the angle of the wall is less than 45° above the horizontal.
Max thickness 8 mm, average width of the 7 grooves 3.57 mm. 17.AN, Context Epsilon. (A.1965.782)

63. Wall sherd made into a spindle whorl with a perforation.
BO.7, Context Epsilon [51/M]. (A.1965.789)
64. Rim sherd of a Roman samian cup, probably Dr 30 from Central Gaul and of Antonine date (c AD 140–60).
Rim diam not known. 13.AO, Context Epsilon [54/C & Appendix 2]. (A.1965.768)
65. Circular counter, the edge carefully ground, made from a sherd of a Roman samian ware cup or platter, probably from Central Gaul and of Antonine age.
Diams 30–31.5 mm. 134.CH, Context Epsilon [52/L & Appendix 2]. (A.1965.768)
- 65a Two sherds were identified which, though coming from Context Epsilon (the secondary occupation Layer 2 of Phase 3 in the dun interior), are clearly from the kind of fine, early Iron Age ware found at Jarlshof in Shetland and presumably dating to several hundred years BC; carinated pottery was completely out of fashion by the time of the Atlantic middle Iron Age. One sherd is part of the footless base of a jar and the other is a carinated wall sherd from the same Context and almost certainly from the same vessel.
- The wall sherd is 4.5 mm thick, the base sherd 5.5 mm at the most and both are of hard-fired, sandy-textured ware, the inner half buff and the outer dark grey. The outer surfaces of both are exceptionally smooth and traces of a very dark grey gloss can be seen. At one edge of the wall sherd is a shallow but nevertheless sharp shoulder — or carination --which is so typical of some early Iron Age British pottery. The other piece is clearly part of the jar base and has an *omphalos* design (a slightly hollowed base which touches the surface when upright only at the edge).
- Estimated rim diam 110–20 mm, approx shoulder diam 150 mm, base diam 6.0–6.5 mm, estimated height of jar 140 mm, thickness of wall at carination 4.5 mm, up to 5.5 mm at base. AT.18 & AZ.3 (base), Context Epsilon. (A.1965. 791 & 781 respectively: when catalogued they were not recognized as part of the same pot)

Phase 4 (illus 23)

- 66* Joining rim and wall sherd of a small, plain pot with a vertical rim, possibly of Irish 'souterrain ware'.
CF.4 & BW.3, Context Zeta. (A.1965. 798)
67. Rim sherd of wheel-turned pot, early medieval E ware — see Appendix 3.
101.BK, Context — either at the top of the Epsilon earth Layer 2 or at the bottom of the Zeta Layer 1 of loose earth and heavy rubble. (A.1965.770)

NON-CERAMIC FINDS

Phase 1 (illus 24)

- 1.–4. Two small yellow and two small blue glass ring-beads.
76.BI, Context Alpha. (A.1965.691/1 & /2)
5. A spatulate bone implement with a rounded working end, formed from a flat strip made by cutting a hollow long bone longitudinally. The narrow or handle end appears to have been broken across but has also been trimmed with a blade while the broad end has been polished or smoothed, doubtless through wear in use. There are four small, short, worn, cut marks on the edges, starting 37 mm from the tip and

forming opposed pairs (though not quite opposed) about 11 mm apart, one being double. They have no obvious function and could perhaps be owner's marks.

Length 160 mm, maximum width 14 mm. 153.CI, Context Alpha, found in a bag of animal bones [36/A]. (A.1965.699)

Phase 1/2 (illus 24)

6. Part of whetstone of basalt with triangular cross section, very like no 67, both ends broken off. The lower surface is slightly convex and smooth; the thicker edge and one of the upper sides are also smooth. The other upper face is rough and it looks as if a long parallel-sided flake has been removed from the whetstone (before the ends were broken off presumably), almost completely removing the other vertical side.

Max length 54 mm, width 20.5–21 mm, thickness 11–12 mm. 118.BV, Context Sigma [28/B]. (A.1965.723)

7. Complete bronze ring-headed pin of north British type made by twisting a thick bronze wire into shape; intact apart from a small split in the shaft.

Length 77 mm, diam of head 18 mm, thickness of shaft 3 mm. SF 157, probably Context Sigma (found on the site in 1969 by Mr K McLean) [15, no 1]. (A.1969.6)

Phase 2 (illus 24)

- 8.–19. Twelve small glass ring-beads.

76.BI, Context Beta. (A.1965.702)

20. Iron ring attached to a flat iron bar (drawn before conservation: see illus 29). The ring is made of four iron strands twisted together like a quoit; each of the strands seems to be a tube 4–5 mm in diameter and no constituent wires can be seen clearly even under a microscope. Neither is there any obvious join apart from a breakage sustained during an earlier extra-mural examination. The ring is attached to a flat bar by the latter having been wrapped round it to form a simple hinge. The bar contains two rivets or bolts with their almost hemispherical heads on the outer side (defined by the way the 'hinge' turns up) and there is a square iron 'washer' under one of these. On the under side of the bar the rivet with the washer projects through and has another flat, curved head starting about 7 mm above the bar; the other rivet as a squarish head about 10 mm above the bar. The entire object has been severely heated and some of the small stones fused to it have been vitrified.

The most obvious identification is that this was a ring handle attached to the inside face of the door of the dun, although no analogous ring-handles have so far been located, and it is clear that the wood to which the bar was attached was only 7–10 mm thick (far too thin for a defensive door). It may have originally been designed to be attached to something with a thinner wooden wall, like a chest. On the other hand, the handle may have been riveted to a thin plank of wood which was itself nailed to the much thicker door, though this seems a cumbersome and unsafe procedure if the ring was actually made as the handle of a heavy dun door. The handle cannot have had any securing purpose (a function performed by the wooden draw bar) but would simply have been used to pull the door open on its hinge post. On the other hand, the technique of the bent flat bar seen here was also used for fastening rings to cauldrons, either directly to the rim or as part of a chain for suspension.

There is a similar but less sophisticated object, diagnosed as a door-handle, from Newstead legionary fort in Roxburghshire (Curle 1911: not illustrated) and now on display in the National Museums of Scotland. The ring is made from a simple iron bar with a rectangular cross-section, bent into a circle and welded, while the loop for attaching it to a door is made from a slimmer bar, bent

round the ring and the two ends hammered together and beaten into a spike. Presumably this spike was driven directly into a thick wooden door, contrasting with the Dun Ardtreck handle whose flat securing bar was bolted on to the surface of the wood.

Two simple rings of about the same size were in the ironwork hoard from Blackburn Mill (Piggott 1953, *illus* 11), which contained both Roman and native objects; both of these were attached to flat T-shaped pieces of iron and were inferred to have been attached to a wooden tub. Another plain ring (diam 88.9 mm) was found at Lochlee crannog in Ayrshire with a small fragment of wood attached (Munro 1882, 126, *fig* 137). Two such rings were found in a hoard at Lesser Garth, Glamorgan (Savory 1976, 107, *fig* 37, nos 7 and 9). One is still attached to the expanding and looped end of an iron bar. The fine collection of iron objects from Leckie broch, Stirlingshire, did not produce any iron rings. Manning's (1985) catalogue of ring handles in the British Museum does not mention anything with the same rope-like construction.

For many years the writer has simply assumed that the Dun Ardtreck door-handle was a native product. If the brochs themselves could develop entirely within the Iron Age cultures of Atlantic Scotland then some sophisticated joinery and iron-working skills must have been available to their builders. However, and in view of the other unusual Roman material from this site, it is possible that this object could be the strongest evidence of Roman contact (of a very unusual kind) before the destruction at the end of Phase 2. Yet, as noted, a preliminary search for a good parallel in the military sites in the north has not been fruitful so far. The Scottish iron rings — from Newstead, Blackburn Mill and Lochlee — have been mentioned. A remarkable wooden chest, full of armour and other metalwork, is known from Corbridge on Hadrian's Wall, but there were no comparable iron rings either inside or as chest handles (Allason Jones & Bishop 1988). Colchester has not produced a parallel among the finds from the excavations of 1971–9 (Crummy 1983). The absence of good Roman parallels in the north implies that the ring is even less likely to be the product of a native smith.

External diam of ring 71–81 mm, thickness 11–13 mm, width of flat bar 20.5 mm, present length to end of hinge 90 mm, thickness 7–8 mm. SF 22.AS, Context Eta, lying on a thin later of dark earth with charcoal fragments which rested on the paved floor of the entrance passage, leaning against the side wall and 0.7 m behind the left door-check [2/G]. (A.1965.714)

21. A small bronze penannular ring, slightly oval, formed of tubular wire and with plain terminals, very well preserved; it could be part of the chain (no 35). A similarly larger repair link was found on the chain of the double brooch at Leckie broch, Stirlingshire, although the rings of that chain were somewhat smaller. On the other hand this ring is identical to that which forms part of the 'strap attachment' (no 43), particularly in its size, in the way the tubular bronze rod has been skilfully bent into a ring and in the fact that there is a slight circumferential ridge on each lateral face. Another identical ring was found in Context Delta (not *illus*). This example shows that the curious 'strap attachment' mentioned (no 43 below) was probably on the site in Phase 2.

Max. external diam 14 mm, diam of wire 1.5 mm, gap between terminals 3 mm (the ring has probably been pulled apart slightly). 126.CD, Context Beta. [15/C]. (A.1965.709)

22.–24. See Phase 3, below.

25. Flat, double-pointed polished bone implement tapering at both ends and having a very elongated diamond shape. The implement is asymmetrical now but may not have been originally; one end looks complete and the other roughened and shorter. However, this is probably because the latter point has been slightly damaged — the polished surface comes right up to the abraded or chipped area and forms a clear line with it, as if the former has been worn off. Thus the carefully drilled central perforation is now slightly off centre. This is likely to be a fish gorge, designed to be tied to a line and hidden inside

bait; when the fish swallowed it the gorge turned at right angle inside the fish which was then caught; two similar ones of bronze were found at Clickhimin broch, Shetland (Hamilton 1968, fig 40, nos 1 & 2).

Length 64.5 mm, max width 90 mm, thickness 3.5 mm, min diam of the slightly hour-glass perforation 3.5 mm. 128.CD, Context Beta, 'resting on foundation rubble': [39/D]. (A.1965.700)

26. Spatulate tool made from a piece of a longbone split longitudinally. At the working edge it has been pared down to form a broad, flat, curved and bevelled blade (which shows polish due to use) but the rest of the tool is unworked and fairly rough.
Max length 104 mm, max width 21 mm. 75.BH, Context Beta [36/C]. (A.1965.698)
27. Segment of antler, cut at both ends, forming a hollow tube. The broad end has been sawn across and displays slight damage, the narrower end tapers slightly inwards. There are no signs of polish.
CD, Context Beta [40/C]; length 85 mm, max diam 33 mm. (A.1965.701)
28. Heavy, pointed, bone tool made from the upper articulating end of a bovine leg bone, the remains of the concave socket at the wide end possibly being a finger grip. One edge of the lower, narrower part has been chipped away. The outer edge remains smooth. A rough triangular point has been formed at the bottom end by chipping and cutting, converting the bone into a heavy awl or piercer.
Length 148 mm, CD, Context Beta [37, no 2]. (A.1965.718)
29. Two joining fragments forming about half of the upper stone of a slightly bun-shaped rotary quern of basalt, with flat grinding surface and a mainly flat upper surface in which there is no sign of a handle hole. The central hole is bi-partite, having an unusually funnel-shaped hopper at the top with a narrow feed-pipe below, giving it a resemblance to the bun-shaped and beehive querns of the south Scottish mainland (MacKie 1972, illus 2i). It is in poor condition and broken due to damage by intense heat (illus 24, no 29).
Diameter c 420 mm, max thickness from flat surface when lying level 110 mm. 93.BQ, Context Beta [33, no 1]. (A.1965.696)
30. Two joining fragments of volcanic agglomerate forming part of the upper stone of a rotary quern with a slightly concave grinding surface and a rounded edge; part of the central feed pipe is preserved but there is no handle socket (MacKie 1972, fig 2, xx).
Diameter c 520 mm, max thickness from flat surface when lying level 90 mm. SFs 127.BX & 132.CH, Contexts Beta and Delta respectively [33, nos 2 & 3]. (A.1965.695)
31. Oval, flat palette of a hard, impure, micaceous fine-grained sandstone presumably formed from a pebble and ground flat. Found with potsherds of Vase 3 (see illus 21, no 7).
Length 62 mm, width 48 mm, thickness 7–8 mm. 8.AF Context Beta [24/C]. (A.1964.45/2)
32. See Phase 3, below.
33. See Phase 2/3, below.
39. See Phase 2/3, below.
45. Fragment of tubular bronze rod or wire twisted into a small spiral. It was found threaded through the red bead no 51. The object is much too small for a finger-ring and its purpose is unclear.

Spiral now disintegrated but its diameter was of the order of 18 mm, thickness of wire 2.5 mm.
23.AR, Context Beta [20/L]. (A.1965.705)

51. Large ring bead of deep red, opaque glass, found with no 45 above (see Appendix 5).
28.AR, Context Beta. (A.1965.704)

Phase 2/3 (illus 24)

33. Heavy, long, symmetrical pebble grinder with faceted working surface at each end, each of which has a diagonal ridge between the facets.
Length 131 mm, width 76 mm, thickness 36 mm. 123.BX, Context Beta/Epsilon, 'almost on the rock' [26/C]. (A.1965.740)
34. Copper-alloy pin shaft in very good condition with a slight bend at the blunt end, almost certainly a broken ring-headed pin; if so the head of the pin has snapped off, leaving a shaft similar to one found in the beach deposits outside the fort wall during excavation of the broch at Clickhimin [Hamilton 1968, 119, fig 50, no 1]. One of the complete bronze pins found at Dun Ardtreck (no 7) is certainly of the projecting ring-headed type and the other (no 38) probably is.
Length 38 mm, diameter of shaft 2 mm. 72.BD, Context Beta/Epsilon, [15/C]. (A.1965.710/2)
36. Tanged and shouldered iron knife blade, the blade flat and parallel-sided except near the shoulder but starting to taper towards the point. The tang was perhaps made by folding the sides inwards; the point is missing. The original length may have been 140 mm and the symmetrical design suggests that this was a small dagger rather than a knife.
Present length 112 mm, width of shoulder 21 mm, width of blade at centre 13 mm, length of tang 34 mm at least. 54.BA, Context Beta/Epsilon [1/J no 1]. (A.1965.712)
37. Rod of iron (not conserved), perhaps a nail or bolt.
Length 57 mm, max width 10 mm. 78.BD, Context Beta/Epsilon [4/C]. (A.1965.814)
39. Perforated amber bead, flat and approximately triangular in plan, possibly not worked except for the drilled hole. Part of the lower surface is translucent but broken and jagged and bright amber-coloured; the other part is blackened and seems to have been burned (illus 28). The translucent jagged area could be the result of the surface coming off because of heat fracturing. Amber, or fossilized tree gum, is found in Europe mainly in the Baltic area but fragments have been known to float across the North Sea and to come ashore in Britain, mainly in East Anglia. While it is not inconceivable that a piece could have floated all the way round to the Hebridean Sea and come ashore on Skye it seems much more likely that this bead was imported deliberately.
Dimensions 23 x 17 x 11 mm. 71.BF, Context Beta/Epsilon (wrongly shown as Phase 2 on illus 24) [22] (x 2). (A.1965.771)
40. Small, squat, solid polished, tubular, tapering bone implement, with both ends sawn and smoothed and with a tiny drilled hole in the smaller one where the bone is solid; the other has a larger natural hollow centre. This looks like the handle of a fine metal awl or probe.
Length 41 mm, max diam 14 mm, diam of perforation 2 mm. 74.BD, Context Beta/Epsilon [38/C]. (A.1965.703).

42. Copper-alloy flanged disc, in cross section like a miniature, handleless frying pan with a vertical side, the base being slightly convex as seen from above. The rim of the flange is bent over inwards and there appears to be a groove cast into its outer face just below this rim. Presumably some kind of bronze mounting for the end of a tubular piece of wood.

External diameter including flange 36 mm, height of flange 8.5 mm, thickness of flange (including corrugations) 3 mm. 24.AR, Context Beta/Epsilon [12/M]. (A.1965.746)

43. Well preserved bronze mounting or attachment, consisting of a flat metal strap folded double with the fold turned into a small tube; a small ring swivels in a perforation through this tubular end. The strap shows the remains of three of (at least) four small rivets, which presumably fastened the two halves together. The slightly elliptical ring has been made by twisting round a bronze wire but the junction is barely visible. It is not clear whether the hole has been bored or cast into the 'hinge'.

The object could be part of a mounting which would have secured a leather strap or a cord. Since there are two other identical bronze rings from the site (illus 24, no 21) it is possible that this object originally had a ring at each end, like a miniature bridle bit; if so its purpose remains obscure. Alternatively there may have been more than one of them. A Roman origin for this piece seems a possibility but no good parallels have yet been found; some kind of small bronze implement like tweezers, with a ring handle for suspension, may be a possibility.

Present length of strap 24 mm, width 6 mm, width of fold 8 mm, max diam. of ring 11 mm, thickness of its wire 2 mm. 105.BR, Context Beta/Epsilon [19/M, no 3]. (A.1965.748)

64. Sliver of cut bone having a rectangular butt tapering into a long conical point which has been ground; perhaps a point to be fitted into an arrow shaft or a finely made awl, although it seems small for the latter.

Length 47 mm, width of rectangular butt 8 mm. 155.BJ, Context Beta/Epsilon [41/M, no 1]. (A.1965.764)

Phase 3 (illus 25)

- 22, 23. Various fragments of bent sheet bronze and rivets were found in the upper black layer in the entrance passage; they were collected and numbered in two groups but belong to the same deposit. The largest piece of sheet (not shown) has two parallel lines scribed or embossed into it, 13 mm apart. One of the sheet fragments has an edge where the last 2 mm have been folded through a right angle and another has a rivet in it; another of the fragments has been bent back on itself around a rounded edge so that the total thickness is now 5 mm with a gap of 3 mm between. The example on the right is particularly interesting, resembling perhaps an oval bronze plate or scale which was fastened to wood or leather with the single rivet so that it hung down; this piece is unfortunately no longer intact. Presumably most of the sheet bronze fragments were attached with the rivets to wood or leather about 6 mm thick.

Thickness of sheet fragments 1 mm, length of rivets 8 mm. 25.AS & 26.AS, Context Theta [19/E]. (A.1965.810)

24. Heavy iron axe-hammer with a massive butt above the shaft-hole and a long slender blade below it, the latter curving slightly backwards. This is evidently the corroded core of the original tool, its superficially good state of preservation explained by the massiveness of the original. It seems to be a much worn Roman army tool with much of the butt and the blade, as well as the side-clips, missing. Technical analyses (Appendix 6) have shown that the axe hammer is made of several small, high quality steel ingots which have been welded together.

Of the obviously Roman finds on the site, this is the most unusual and, although badly eroded, there cannot be much doubt about its nature. Much better preserved examples have been recovered

from Roman military sites in central Scotland such as Bar Hill, and in these the wide splayed blade, the massive square-topped hammer-head above the shaft-hole and the small winged projections, or clips, at either side of the shaft-hole (evidently designed to stop the shaft from wobbling sideways) are clearly seen. However, there are examples from Roman sites that are closer in their proportions to the Dun Ardtreck one.

If the Dun Ardtreck axe-hammer was originally like the larger ones mentioned above much of its iron must have corroded away before its final deposition (no mass of iron conglomerate was found enclosing it and the soil in which it lay was well drained and fairly dry). This could suggest that the axe is somewhat older than Phase 3. On the other hand if it was never as massive as the large Roman ones, this will not apply. The absolute rarity of such Roman army axes on native sites in Scotland north of the Roman frontier surely requires a special explanation for its presence on Skye, so this find requires a further discussion here.

The axe-hammer was found on the second day of the small scale, preliminary season of excavation in 1964 — in the first trench sunk into the interior and before even the simple stratigraphy there had been unravelled.

In the section of the north side of Trench I the clear boundary between Layer 1 (loose earth and heavy rubble) and Layer 2 (the dark earth of the secondary occupation) runs at about 0.3–0.45 m above the 1965 site datum (illus 20). Plotting the positions and depths of the Small Finds mentioned against this section confirms that what was then taken to be a floor level at that early stage in the work was in fact the top of the secondary occupation layer, making a sharp contrast with the loose, rubble layer above (Layer 1). From the available levels both the fluted Everted Rim sherd and the small yellow glass bead were on top of this occupation layer and, although the Roman axe is described as being on the same 'floor', it is definitely lower down in relation to the section drawing, but still several inches above the primary occupation layer on rock (revealed later). It is possible that it was on top of Layer 2, which was a little lower at the final spot mentioned. Stratigraphically, therefore, the axe must be quite a bit later than the objects found in the destruction level; one of the fragments of second-century samian ware was at a similar high level (illus 22, no 64). If it is contemporary with the E ware sherd, also on top of the Phase 3 deposits, the final resting place of the axe-hammer could date to about AD 500.

It is possible of course that it could have been brought to the site earlier, near the end of Phase 2 when the amphora and perhaps the door-handle (below) arrived. That some other stratigraphically late Roman or possibly Roman objects did arrive before the destructive fire is shown by the amber bead fragment from Phase 2/3, which had been severely burned (illus 24, no 39; illus 28, bottom left). Though the amber bead (also from Phase 3 levels) is not specifically Roman, it is clearly exotic and had also been subjected to great heat. It too may be a survivor from before the destruction.

Length 195 mm, width of butt end 43 mm, length of cutting edge 38 mm, thickness of butt 36 mm, length of cutting edge 118 mm, thickness of cutting edge 3 mm, thickness of blade 38–54 mm, socket 29 mm maximum by 43 mm. 5.AA, Context Epsilon [6]. (A.1964.43)

32. Heavy symmetrical pebble grinder with faceted ends, the junctions between the facets being diagonal. Length 117 mm, width 73 mm, thickness 40 mm. 11.DA, Context Epsilon [26/L]. (A.1964.41)

35. Fragment of a bronze chain with double or triple links, broken in places, but otherwise in fairly good condition. It was lifted in plaster and remains embedded. The rings are jumbled up and the chain is twisted, so it is difficult to be sure whether the links are double or triple; some seem clearly to be the former, others the latter, though triple-linked chain with rings of this size seems improbable. At least one link can be seen with a join, showing a section that is penannular and made from a bent-round bronze rod; however, this looks larger than the rest and may be a repair. Many of the rest of the links are oval, presumably as a result of strain on the chain. The fragment is similar to a piece of double-linked bronze chain from the Iron Age fort phase at Clickhimin in Shetland (Hamilton 1968, 90, illus

3) and a comparable double-linked chain was found at Leckie Broch in Stirlingshire (MacKie 1984, 62; Hunterian Museum A.1980.2). In the latter case it formed part of a complete chain double-brooch. It seems likely that both the Dun Ardtreck chain and that from Clickhimin are from similar cloak brooches.

Diameters of links c 11–12 mm, diam of rod from which they are formed 1.5 mm. 52.BA, Context Epsilon [11]. (A.1965.738)

38. Copper-alloy pin with circular ring head apparently projecting forward from the stem. It is badly corroded and could only be lifted with the aid of plaster, so there may be some doubt about the exact placing of the ring-head in relation to the shaft. It is apparently of North British type with a projecting head.

Length 91 mm, diam of head 21 mm, thickness of shaft 8–11 mm. 68.BD, Context Epsilon [17/M, no 2]. (A.1965.710/1)

41. Two adjoining fragments of a tapering, slightly curved bronze rod in good condition with an oval cross section and a groove along the curved part, looking like the pointed butt end and part of the shaft of a needle (illus 25). The head looks as if it might have been split lengthways for a short distance and the two parts bent slightly outwards and formed into a long eye for the thread. On both sides of the rod a groove continues below the eye for a few millimetres, becoming shallower.

This appears to be a standard Roman bronze needle and numerous similar examples have been found on Roman sites. The South Shields Roman fort in Northumberland produced examples in which the groove extends both above and below the eye (Allason Jones & Miket 1984, fig on 176, no 496 and on 178, no 503). Verulamium has produced similar examples (Frere 1984, 41, fig. 16 no 123) as have Gorhambury (Neil *et al* 1990, fig 124, nos 155 & 156) and Colchester (Crummy 1983, 67, no 1993). By contrast, needles from northern Iron Age contexts tend to be of bone.

Present length of longest piece 48.5 mm, width of shaft 2.5 mm, length of 'eye' about 10 mm by 1.5 mm wide. 108.BR, 110.BS, Context Epsilon [14/M]. (A.1965.749 & 750)

- 42, 43. See Phase 2/3.

44. A roughly formed penannular small bronze ring with slightly overlapping ends made from a rod with a square cross-section which has been twisted round its longitudinal axis. There are patches of corrosion, but otherwise it is in good condition. Although at first sight this looks like one turn from a spiral finger ring, no other such ring is known with this twisted feature. While it may have finished its existence as a simple finger ring — although one would have thought it an uncomfortable design to wear — this find seems more likely originally to have been a badly bent pin. A fragment of such a bronze pin made from a twisted rod with a similar square section was found in a stratum of the wheelhouse phase at Clickhimin in Shetland (Hamilton 1968, 137, fig 61, no 1).

Length when straight 65 mm, thickness of rod 2.5 mm. 131.CH, Context Epsilon, [16/M]. (A.1965.751)

45. See Phase 2/3.

46. Fragments of thin flat bronze rod, in reasonably good condition, possibly a pin shaft (although such usually have circular cross-sections whereas this is rectangular) or a bronze awl. Although no point is preserved there is a suggestion of tapering at one end of the longest piece.

Overall length 79 mm, width 4 mm, thickness 2 mm. 130.CL, Context Epsilon [18/M, no 2]. (A.1965.749/3)

47. Four adjoining pieces of a corroded curved knife blade which might once have had a tang; probable a tanged knife.
Length of middle two fragments 85 mm, max present thickness 8 mm. 103.BR, Context Epsilon [3, no 8]. (A.1965.868)
48. Iron nail with a square-sectioned shaft, bent slightly at one end.
Length 56 mm, thickness of square shaft 7 mm. 31.AR, Context Epsilon [4/L, no 3]. (A.1965.739)
49. Pieces of long iron bodkin or awl.
Length of longest fragment 66 mm, present width of shaft 4 mm. 73.AT, Context Epsilon [5/L, no 1]. (A.1965.739/1)
50. Thin flat iron fragment which tapers to a rounded point at one end and may be the tip of a dagger or knife blade which has split through corrosion.
Present length 66 mm, max width 26 mm, thickness 1 mm. 37.AR, Context Epsilon [1/M, no 6]. (A.1965.742)
51. See Phase 2/3.
52. Small blue glass bead (see Appendix 5). [44/M], 21.AP. (A.1965.752)
53. Small yellow glass bead (see Appendix 5). [45/M], 2.AA. (A.1964.39)
54. A quarter of a Roman melon bead, originally of blue faience but now grey, severely heated and discoloured with the interior looking very like coke (illus 25, no 54).
Length 20 mm, original diam c 30 mm. 91.BO, Context Epsilon [47/M.]. (A.1965.754)
55. Segment of possible ring bead of soft white material, possibly burnt. 15.AN, Context Epsilon [56/M]. (A.1965.769)
56. Circular polished jet ring or pendant with a lozenge- or diamond-shaped cross-section — the individual surfaces being slightly convex. The inside surfaces come to a marked circumferential ridge and the outer form a more rounded profile. There is more obvious wear, in the form of rough spots, on the outside surfaces than the inner (those facing the central hole). Similar thick rings are known from mainland Iron Age timber-framed hillforts like Abernethy (Christison 1899) and Finavon (Childe 1935) and from some in the Inner Hebrides, for example Dun Mor Vaul on Tiree (MacKie 1974, fig 15, no 222). They seem more plausibly diagnosed as pendants being surely too fat to be finger rings.
External diam 34 mm, internal diam 11 mm, thickness 8 mm. 14.AP, Context Epsilon [33/M]. (A.1965.757)
57. Washer-shaped flat ring of jet or shale, perhaps a small pendant.
Diameter 19 mm, thickness 4 mm, depth 2.5 mm. 99.BO, Context Epsilon [34/M, no 2]. (A.1965.758/2)

58. Long double-ended bone delicate awl or probe, the thicker blunt end being bevelled and polished, the thinner pointed; perhaps a medical probe (see also illus 28).
Length overall 164 mm, max diam 4 mm. 155.BJ, Context Epsilon [43/M]. (A.1965.764)
59. Polished bone implement. The broad, flat butt end seems to have been sawn across before it was polished. One long edge is straight and smoothed, as is the upper third of the other. The rest shows some wear damage and tapers to form a blunt point at the narrow end. Thus the upper third evidently served as the handle, perhaps with the index finger pressing down on the lower part of the polished edge to use the rough edge as a blade or gouge in some relatively soft material. The tool has been made from a sliver cut from a long bone.
Length 98 mm, width of broad end 18 mm, maximum thickness 4.5 mm. AT, Context Epsilon [37/M, no 3]. (A.1965.773)
60. Barely modified curved antler tine with the wider end damaged but probably cut through. There are some cut marks close by as if this end was starting to be pared down. Possibly a blank for a bridle cheek-piece although there are no signs of a perforation having been started at the wide end.
Straight length 146 mm, max diams at widest end 20 x 22 mm. 42.AT, Context Epsilon [38/M, no 2]. (A.1965.766)
61. Barely modified curved antler tine with the wider end cut and with some shallow cross cut-marks near this end. It may be a blank for a bridle cheek piece, which would have a transverse socket near the thickest point.
Straight length 185 mm, max diams at wide end 26 x 23 mm. ARBR, Context Epsilon [38/M, no 1]. (A.1965.766)
62. Point of a small antler tine with the rough outer surface scraped off and then smoothed. The wide end has been neatly sawn through. There are some signs of abrasion on the pointed end in the form of small worn facets.
Straight length 73 mm, max diams 16 x 15 mm. 64.BG, Context Epsilon [36/M, no 6]. (A.1965.766)
63. Another point like no 62, the distal end of a cylindrical, polished tine. The broad end has been broken off and the stump is burnt. The pointed end is also damaged and slightly charred.
Present length 40 mm, broad end diam 13 mm, pointed end diam 5 mm. 141.CH, Context Epsilon [36/M, no 3]. (A.1965.767)
64. See Phase 2/3.
65. Heavy and thick spindle whorl of sandstone but seemingly not typical of those on Skye. It may have been metamorphosed and contains a grey mineral of uncertain identity. It has a decoration of four radial lines on one surface, forming a cross with the central hole at the middle. On the other is the same but a V-shaped design has been inserted into each of the quadrants, the point towards the centre. There are suggestions of some circumferential lines inscribed partly round the edge.
Diameter 45–46 mm, diam of perforation 7 mm at the surfaces, perhaps 5 mm in the middle, max thickness 24 mm. 18.AN, Context Epsilon [29/M]. (A.1965.759)

66. Oval flat pebble with a shallow pecked depression in the middle of each face, one end of the pebble has been damaged by the removal of small flakes and the edges look also as if they may have been used occasionally to hit something hard. Probably a palm protector for forcing a bone or iron awl through leather.
Oval 70 x 57 mm, max thickness 21 mm, diams of pecked depressions 23–29 mm and 27 x 27 mm. 114.BR, Context Epsilon [29/M]. (A.1965.760)
67. Broken basalt whetstone with a cross-section like a shallow triangle on top of a rectangle, very like no 6. The remaining end is slightly convex and neatly shaped. The main working surface seems to have been the bottom which is smoother than the others and very slightly convex from side to side.
Present length 75 mm, width 28 mm, thickness 20 mm. 120.BK, Context Epsilon [28/L]. (A.1965.762/2)
68. Complete four-sided massive sandstone whetstone, rectangular in cross section with slightly convex faces. The stone also tapers slightly towards each end. The four long faces are smooth and quite shiny and both ends show signs of rubbing, one being faceted. The fact that the stone looks symmetrical suggests that it was a dual purpose tool and is not a long whetstone that was broken and used for something else. It is so long that it must surely have been designed to sharpen long blades like sickles, scythes (if they existed then on Skye) and swords.
Length 123 mm, width 43 mm, thickness 32 mm. 39.AR, Context Epsilon [27/M, no 3]. (A.1965.762/1)
- 69, 70. Two small circular water-worn pebbles, probably natural, with one side flat and the other slightly convex, perhaps gaming counters. The smaller one in particular is very similar in size to — and has the flat D-shaped profile of — a Roman glass counter.
CG, Context Epsilon [23]. (A.1965.792)
71. A quarter of what at first sight looks like the upper stone of a disc-shaped rotary quern of red Torridonian sandstone with a flattish but irregular grinding surface and a slightly tapering profile and a rounded edge. The inner part of the upper surface is smooth and polished to some extent. There is a broad central hole (the upper part of which is damaged), but no handle hole is preserved (MacKie 1972, illus 2m). The unevenness and absence of any sign of fine dressing on the ‘lower’ surface, and the signs of polish on the ‘upper’, suggests that this may be a lower stone in spite of the profile of the edge. On the other hand the central perforation is wide enough to be the feed pipe of an upper stone. The stone looks as if it has been damaged and slightly re-shaped after breakage.
Max thickness 70 mm, radius 220 mm. 88.BP, Context Ksi [33/P, no 5]. (A.1965.811)

Phase 4 (illus 25)

72. Perforated disc of steatite with flat surfaces and a straight edge, presumably a spindle whorl or perhaps a large bead. The central perforation is irregular and has not been drilled. There are extensive deposits of steatite in Shetland but also small ones in south-west Skye (Sleat) and in Glenelg, but it is not clear from which one this object is made.
Diameter 30 mm, thickness 9 mm, diam of perforation 7 mm. 122.BW, Context Zeta [29 no 2]. (A.1965.794)

Unstratified (illus 25)

73. Flat, sub-rectangular (in fact slightly trapeze-shaped) flat stone of basalt, with slightly rounded corners and all surfaces worn smooth, almost polished. It has been carefully ground along the edges and on both faces and, unlike no 31, the flat surfaces have been worn to uneven thickness; for example, it is 8 mm thick at one corner and only 4.5 mm at the diagonally opposite one (the other pair are 4 mm and 6 mm). It might be a palette for grinding mineral colouring material to powder.

Maximum length 61 mm, width 43 mm, thicknesses as above. SF119, unstratified but probably Context Epsilon [31/M]. (A.1965.772)

APPENDIX 2

ROMAN MATERIAL FROM DUN ARDTRECK, SKYE

Originally, the late Anne Robertson commented on all the Roman material recovered from Dun Ardtreck in 1970. However, a new report on the Severn Valley Ware jar sherds has kindly been provided by Peter Webster and this takes the place of the equivalent parts of the original report.

SAMIAN WARE, GLASS AND MELON BEAD (illus 23)

A Robertson

- 125.ARBX Scrap of thin light green glass. Context Epsilon, Phase 3.
 91.ARBO One fragment of melon bead, burnt. Such beads occur commonly on Roman military sites, especially in the late first and second century AD. Context Epsilon, Phase 3.
 57.ARAZ Fragment of samian ware (possibly from cup Dr. 33 or bottom of platter Dr. 18/31 or 31) in light, pinkish buff clay, with worn, fairly dull red glaze. Central Gaulish, probably Antonine. Context Epsilon, Phase 3.
 134.ARCH Fragment of samian platter or bowl in pinkish clay with fairly dull, dark red glaze, cut to form a counter. Central Gaulish, probably Antonine. Context Epsilon, Phase 3.
 13.ARAO Rim fragment of decorated samian bowl, Dr. 30 (or 37), in soft, orange-red clay with worn red glaze, showing worn ovolo. Insufficient remains for certain identification, but the piece is probably Central Gaulish and Antonine. Context Epsilon, Phase 3.

THE SHERDS OF SEVERN VALLEY WARE (illus 21)

P Webster

Descriptions

- 63.ARBC Two joining fragments from the junction of the base and side of a flat-based large jar in soft orange-pink ware with a grey core. This is Severn Valley Ware. The scorings on the lower exterior wall may well be the accidental result of trimming. The lower base, however, has an impressed groove concentric to the outer edge. This is a characteristic of some Severn Valley tankards and jars. Context Nu, Phase 2/3.
 ARAW.1 & .5. Two joining fragments from the flat base of a large jar in Severn Valley Ware similar to the last. Possibly part of the same vessel as 63.ARBC above. Context Nu, Phase 2/3.
 ARAW.4 Fragment of the wall of a large jar from immediately above the junction of the base and side. The fabric is Severn Valley Ware as 63.ARBC and ARAW 1&5 above. The piece shares with the latter an irregular small step about 10 mm above the base externally. It

- looks as if clay has been added to the base, perhaps because throwing or trimming had produced a weakness at the side/base junction. This is not a common feature and makes it all but certain that ARAW.4 and ARAW.1&5 are from the same vessel.
- ARAW Another similar fragment. Context Nu, Phase 2/3.
- ARBP Three fragments (small find nos 87, 104 & 115). All are in Severn Valley Ware and despite some difference in colour (no 115 looks as if it has been burnt) all are Severn Valley jar fragments and it seems reasonable to suppose that all are from the same vessel. Context Ksi, Phase 2/3.
- ARBP A further fragment similar to the above and also showing evidence of burning.

Comment

The Severn Valley Ware from Dun Ardtreck appears all to be from the same type of vessel, a jar. Indeed, there seems no reason to suppose that all the Severn Valley sherds are not from the same vessel or that it did not arrive at the site complete. Unfortunately, truly diagnostic features have not survived, but the vessel would appear to have been fairly bulbous and the choice lies between a storage jar of the types represented by Webster (1976, 1–13) and a wide mouthed jar of the types represented by the same study (*ibid.*, 19–33). The groove in the base makes a wide-mouthed jar marginally more probable.

Severn Valley Ware has not previously been noted north of the Antonine Wall (*cf.* Webster 1977) or on non-military sites in Scotland. However, Roman pottery does, of course, appear on native sites both within the periods of Roman occupation in Scotland and outside them. The Scottish evidence would suggest that the Dun Ardtreck pieces are most likely to be contemporary with the vessels found on the Antonine Wall, particularly as jars, with tankards, make up the bulk of the Severn Valley assemblages there. We must, however, ask if any other date is possible. Turning first to an earlier date, Chester, a possible exporting point for the ware has a few pieces which should have reached the site by the late first century at the latest (*cf.* Carrington 1977, nos 38–9) although the bulk of the material so far published is later. Severn Valley ware appears in the installations at the western end of Hadrian's Wall and is largely or wholly absent from Stanegate forts (Webster 1972). Thus we can assume that it was not being imported into the Tyne-Solway isthmus before the late Trajanic or early Hadrianic period. The ware appears to be absent from Flavian forts in Scotland. A pre-Antonine date, although not impossible is, therefore, improbable. A post-Antonine date appears a little more likely. Certainly the ware appears in north-west England in the third and fourth centuries (the evidence is summarized in Manning 1993, 286) and export even further north is a possibility. However, there seems no particularly good reason for proposing a date outside the period of known export to Scotland and, particularly in view of the Antonine date proposed for the Dun Ardtreck samian, it seems most economical to suggest that all the Roman pottery from the site is of that date.

We might also ask ourselves why the Severn Valley vessel reached Dun Ardtreck. The answer has to be a matter of speculation but large jars are not the most obvious element of the Severn Valley Ware assemblage to be marketed over long distances as they seem bulky and thus expensive to carry when compared with smaller items. One solution to this problem would be to suppose that they travelled simply as containers and that they reached Scotland around some commodity from further south. Whether such a commodity would have reached Skye or whether the containers were themselves marketable once emptied is difficult to tell.

APPENDIX 3

E WARE FROM DUN ARDTRECK, SKYE (illus 23, no 62)

Ewan Campbell

The form and fabric of this sherd can be matched in the E ware assemblage, but the fabric is an unusual variant which is found in only five percent of E ware vessels (Campbell 1991a, App 2). The normal E ware

fabric has angular, rather than well-rounded quartz, but the well-rounded variant is found in Scotland at Dunollie Castle, Argyll and Little Dunagoil fort, Bute. The rim is not so sharply everted as many E ware jars, but it does fall within the range of variation of E ware rim forms. The only other white gritty ware which is found in Scotland, and with which it might be confused, is medieval East Coast Scottish White Gritty Ware. This, however, does not have well-rounded quartz, though the rim forms can be very similar to E ware. Some doubt on the attribution to E ware must remain, but the balance of probability is that it is E ware.

The context of the Dun Ardtreck find can only be seen in relation to the other occurrences in Scotland. E ware is of western French origin, and was brought to Britain and Ireland in a trading network which operated along the Atlantic seaboard from the late sixth to late seventh centuries (Campbell 1991a; 1996a). In Scotland, E ware is common in Argyll, the ancient kingdom of Dál Riata, with the royal site of Dunadd producing the largest known concentration of vessels of any site in Britain (Campbell 1996b). The only finds outside Dál Riata are all single vessels, from Clatchard Craig, Fife (Campbell 1986), Dundurn, Perthshire (Alcock & Driscoll 1989), Craig Phadrig, Inverness-shire (Campbell in Bruce-Mitford forthcoming), and Dun Ardtreck. The three eastern Scottish sites are all important Pictish hillforts, and I have suggested that the E ware found on them was the product of diplomatic gifts from Dál Riata to Pictish potentates, possibly carried there by Christian monks acting as neutral intermediaries (Campbell 1986; 1991a).

It is not clear if Dun Ardtreck fits into this pattern, though there are good grounds for believing that Skye lay outside the areas of Gaelic control. Square burials cairns of distinctively Pictish type have recently been found in the Western Isles, supplementing the few Pictish symbol stones there and in Skye. Adomnán's statement that when Columba visited Skye he needed an interpreter to preach to the chieftain Artbranan, tends to confirm that the area was culturally distinct from Dál Riata. One of the few Pictish symbol stones in Skye was found on the beach at Fiscavaig, very close to Dun Ardtreck (RCAHMS 1999, 28). Watson (1926, 74) suggested, on the basis of the rare place-name element, that the location of this incident, at '*dobur artbranan*' (the water of Artbranan), might be equated with Totarder in Bracadale. It is interesting that this site lies immediately across Loch Harport from Dun Ardtreck. Craig Phadrig is also possibly linked with Columba, as it is believed by some to be the site of the royal fort of the Pictish king Bridei, visited by Columba (Sharpe 1995, 335, n. 294). As far as the other two eastern Scottish E ware sites are concerned, Columba is not mentioned by Adomnán as visiting southern Pictland, but an early seventh-century praise poem from Iona, *Amra Choluimb Chille*, describes Columba as preaching to 'the tribes of the Tay' (Clancy & Márkus 1995, 118–9). Clatchard Craig was a major fort of the Tayside Picts, and Dundurn guards the main trans-Highland route between Dál Riata and Tayside. All of these supposed Columban connections are highly speculative, but they may provide a context for these outliers of E ware away from the main distribution centre. At the very least, they indicate that these specific areas of Pictland were known to people in Dál Riata at a period when E ware was currently in use.

DESCRIPTION

ARBK 101 Rim of jar, everted at 60°, rounded and thickened, with faint lid-seat, unabraded. Fabric medium hard, with abundant well rounded clear and white quartz mainly c 0.5 mm diameter, with some small mica plates. Colour beige with black core in places. RD 140 mm. MS 50 mm. Phase 3 Epsilon. On top of latest occupation, sealed by collapse of walling.

APPENDIX 4

MAMMALIAN BONE FROM DUN ARDTRECK

Barbara Noddle

(Author's note: this report was compiled by the late B Noddle in the 1970s.)

A total of 1242 bone fragments (excluding rib) was identified, of which the vast majority came from Phase 3. The species proportions and the period distributions are set out in Table 2. This also includes an estimate

of minimum number of individuals, which may be a more accurate method of assessing proportions when it seems likely, as at Dun Ardtreck, that only a small proportion of deposited bone survived. The proportions are also given as percentages, which is a useful means of comparison, but may present a spurious accuracy when only small numbers are involved. Since Phase 1 yielded only a single identifiable bone from a pig it is not further discussed.

Cattle was the most important species throughout, comprising nearly half the identifiable fragments, though only about one third of the minimum number of individuals. Red deer came next, with little difference between the two methods of counting, and there is a suggestion, if the small numbers from Phase 4 are valid, that it was increasing with the passage of time. Pig is the third most important species, and then sheep. Roe deer make up nearly 10% of the count in Phase 2/3, but decline sharply thereafter. Seal was never abundant, and goat was only found in Phase 3, but this animal is always underestimated because its bones are so similar to those of sheep. A single bone fragment came from a dolphin. Horse was not found and there was only one dog bone. The environmental indications of this assemblage suggest substantial areas of woodland suitable for deer and pig, and little heath for sheep, but the woodland might have been decreasing, as indicated by the roe deer numbers.

The comparative ages of some of the individuals can be determined in some cases using the state of dentition and the maturity of the longbones. However, absolute chronological ages are only valid for modern livestock, and so stages of maturity are employed. These are: new born, juvenile, immature and mature; and for modern animals these would be up to 3 months, 3–18 months approximately, 18 months to about 4 years, and over 4 years, respectively. There is a slight bias towards younger animals, as these are easier to detect. These figures are set out in Table 3, where again percentages are employed for convenience. The majority of all animals died at the immature stage, when they were probably at their best for the meat point of view. The next most abundant group is mature, with the exception of sheep, but perhaps the numbers are too low to be valid.

Complete bones and commonly occurring bone ends were measured. This gives an estimation of size and a comparison with other sites. Cattle were small and slight, smaller than English animals of a similar date, as might be expected in an island habitat. The single complete horn core indicates a short-horned variety of cattle similar to that found in Orkney dating from the same period (Ritchie 1934). The few sheep bone measurements also indicate a small animal, comparable with the primitive Soay sheep, but there was not enough material to make a qualitative comparison with this primitive animal. The three pig bone measurements indicate two small animals, and one rather larger, which might be a small wild boar. Red deer were rather larger than their modern counterparts; this species prefers a forest habitat, but in Britain it has been forced to adapt to heathland, with a resulting reduction in size. This reduction seems to have taken place between Roman and medieval times in southern England, and is unlikely to be earlier in Scotland.

A brief anatomical analysis has been carried out on the cattle bone from Phase 3. This gives the following proportions for the major parts of the body, expressed as a percentage: mandible 4, vertebrae 2, upper forelimb 13, upper hind limb 9, carpals and tarsals 13, metapodials 10, phalanges 11 and loose teeth 40. Assuming that complete animals were brought to the site, these figures indicate considerable bone loss due to disturbance and erosion, which would favour the survival of the durable teeth and loss of the fragile vertebrae. The high proportion of foot bones suggests that this might be slaughter waste as opposed to kitchen waste, but there are other explanations, such as the fragmentation of the upper limb bones to extract their fat content, or simply to fit them into small cooking pots. Long bones might also have been used as a raw material for tools, but the presence of so many metapodials, the favoured bone for this purpose, suggests otherwise. This is in contrast to some earlier sites in the Northern Isles and is further evidence of the availability of wood.

A comparison can be made with two other Hebridean sites, the broch of Dun Mor Vaul, Tiree (Noddle 1974) and the hillfort Dun Bhuirg, Iona (Noddle 1980). Cattle are more numerous at Dun Ardtreck than at the other sites. Sheep are most numerous at Dun Mor Vaul, where pigs are few. The proportions of red deer are much the same at all three sites, and roe deer also occurred at all of them. The cattle from Dun Ardtreck are smaller than those of Dun Mor Vaul; there is insufficient data to compare the other species.

TABLE 2
Proportions of species

Phase	Total	Cattle	Sheep	Pig	Red Deer	Roe Deer	Seal	Other			%
								Dolphin	Goat	Dog	
4	<i>a</i> 33	15 (45%)	2 (6%)	4 (12%)	12 (36%)	–	–	–	–	–	
	<i>b</i> 8	2 (25%)	2 (25%)	1 (12%)	3 (38%)	–	–	–	–	–	
3	<i>a</i> 1007	545 (54%)	22 (9%)	125 (39%)	227 (23%)	2 (<1%)	6	1	9	–	(2%)
	<i>b</i> 152	56 (37%)	24 (16%)	30 (20%)	32 (21%)	2 (1%)	2	1	5	–	(5%)
2/3	<i>a</i> 201	89 (44%)	20 (10%)	25 (12%)	48 (24%)	17 (24%)	1	–	–	1	(1%)
	<i>b</i> 37	10 (29%)	5 (14%)	7 (19%)	8 (22%)	5 (14%)	1	–	–	1	(2%)
1	<i>a</i> 1	–	–	1	–	–	–	–	–	–	
	<i>b</i> 1	–	–	1	–	–	–	–	–	–	

a = number of identified fragments

b = minimum number of individuals

TABLE 3
Ages of animals expressed as %

Animal	New-born	Juvenile	Immature	Mature	Total
Cattle	12	4	49	35	51
Sheep	6	31	43	19	16
Pig	4	8	52	36	25
Roe Deer	22	4	38	35	31

APPENDIX 5

CHEMICAL ANALYSIS OF THE NATIVE GLASS BEADS

Based on a report by Julian Henderson

Several of the native glass beads from Dun Ardtreck were subjected to a non-destructive chemical analysis in 1979 by Julian Henderson, now of the Department of Archaeology in Nottingham. The work was carried out with a Edax Exam II non-dispersive X-ray fluorescence spectrometer RF incorporating a 30kv X-ray tube operating under vacuum. The analyses and some of the comments about them have been reproduced here from the resulting publication (Henderson & Warren 1982) while more details of the analytical methods are given in a previous paper (Henderson & Warren 1981; see also Henderson 1989). The writer is very grateful to Dr Henderson for carrying out this work, which has thrown much light on the origins of this particular kind of 'type fossil' of the middle Iron Age cultures of Atlantic Scotland.

BEAD ANALYSES

The beads from Dun Ardtreck submitted to Dr Henderson in May 1979 (together with examples from Dun Mor Vaul and Leckie brochs) included one of the yellow ones from Phase 3 (A.1965.753), the red bead from Phase 2 (A.1965.704) and 20 of the small ones (both yellow and of other colours) found in the Phase 2 deposits and which all seem likely to have belonged to a bracelet or necklace (A.1965.702). Only four of the beads from this site were in fact analysed, three of the yellow ones and the red, and it is not now possible to determine with the information available which the three yellow ones were, or whether one or both of those from Phase 3 was included. The figures for each element in a bead represent the percentage of the total impurities found in the glass; each row of figures adds up to nearly 100%.

The compositions of the lead glass beads were classified by discriminant analysis; in this way it was possible to ascertain whether groups appeared which could be from the same workshops, or at least from the same tradition of glass making. Those from Scotland fell into a comparatively tight group, as did, separately, those from Meare in Somerset (Henderson & Warren 1982, fig 1).

TABLE 4
Chemical analysis of glass beads

Sample (Guido class in brackets)	element oxide											
	Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	K ₂ O	SnO ₂	CaO	Sb ₂ O ₃	MnO	Fe ₂ O ₃	CuO	PbO
22 yellow (8)	8.3	0.6	8.6	57.3	1.87	1.22	3.9	0.3	0.46	0.93	0.01	16.5
23 yellow (8)	20.0	0.6	2.5	48.5	1.50	ND	4.6	0.6	0.5	2.44	0.02	18.52
24 yellow (8)	16.1	1.5	1.8	44.2	2.36	ND	5.7	0.7	0.53	1.40	0.05	25.7
82 red (?)	7.9	0.4	7.9	47.2	0.28	ND	4.8	0.75	0.26	0.34	11.3	18.8

TABLE 5
List of beads from Dun Ardtreck

No.	Class	colour	context	diam 1	diam 2	thickness	SF	Museum no.	Comment
1	?	opaque blue	Alpha	5mm	2mm	2mm	76.BI	A.1965.691/2	—
2	?	opaque blue	Alpha	4mm	1.5mm	2.5mm	76.BI	691/2	—
3	?	opaque green*	Beta	6mm	—	2mm	97.BQ	702	—
4	?	olive green*	Beta	5mm	2mm	1.5mm	97.BQ	702	—
5	?	opaque blue	Beta	4–5	3	1.5–2.5	97.BQ	702	—
6	?	opaque blue	Beta	4–5	3	1.5–2.5	97.BQ	702	—
7	?	opaque blue	Beta	4–5	3	1.5–2.5	97.BQ	702	—
8	?	opaque blue	Beta	4–5	3	1.5–2.5	97.BQ	702	—
9	?	opaque sky blue	Beta	2mm	0.5mm	1mm	97.BQ	702	—
10	?	opaque sky blue	Beta	2mm	0.5mm	1mm	97.BQ	702	—
11	?	sea green	Beta	4mm	1mm	1.5mm	97.BQ	702	—
12	?	translucent blue	Beta	5mm	2mm	4mm	97.BQ	702	—
13	?	opaque pale blue	Beta	2mm	1mm	1mm	97.BQ	702	—
14	?	opaque pale blue	Beta	2mm	1mm	1mm	97.BQ	702	—
15	?	opaque pale blue	Beta	2mm	1mm	1mm	97.BQ	702	—
16	?	blue	Epsilon	3.5mm	1mm	?	21.AP	752	missing
17	?	blue	Epsilon	—	tiny	—	33.AR	?	—
18	8	opaque yellow	Alpha	3.5mm	1mm	1.5mm	76.B?	691/1	—
19	8	opaque yellow	Alpha	—	—	—	76.B?	691/1	—
20	8	opaque yellow	Beta	2–6mm	1–1.5mm	1–2mm	97.BQ	702	—
21	8	opaque yellow	Beta	2–6mm	1–1.5mm	1–2mm	97.BQ	702	—
22	8	opaque yellow	Beta	2–6mm	1–1.5mm	1–2mm	97.BQ	702	—
23	8	opaque yellow	Beta	—	—	—	97.BQ	702.	—
24	8	opaque yellow	Beta	2–6mm	1–1.5mm	1–2mm	97.BQ	702	—
25	8.	opaque yellow	Beta	2–6mm	1–1.5mm	1–2mm	97.BQ	702	—
26	8	opaque yellow	Beta	2–6mm	1–1.5mm	1–2mm	97.BQ	702	—
27	8	opaque yellow	Epsilon	6mm	4mm	2mm	2.AA	A.1964.39	—
28	8	opaque yellow	Epsilon	4mm	1.5mm	1.5mm	2.AA	39	—
29	?	opaque brown-red	Beta	11mm	5mm	4mm	28.AR	A.1965.704	—

Note: The type, where given is Guido's (1978): an asterisk after the colour indicates that one or more fine yellow lines or streaks are visible in the glass. Diameter 1 is external and 2 is of the perforation. For groups of very small beads of the same colour dimensions are averages for the group.

APPENDIX 6

METALLURGICAL ANALYSIS OF FERROUS INDUSTRIAL WASTE AND A SHAFT-HOLE AXE FROM DUN ARDTRECK

Effie Photos-Jones

A sample of industrial waste, an iron slag, and a ferrous shaft-hole axe (illus 25, no 24; illus 38) were examined metallographically and with the scanning electron microscope with energy dispersive analyser (SEM-EDAX). The aims were to investigate (a) the extractive practices at Dun Ardtreck (blooming/smelting or smelting slag) and (b) the nature (iron/steel) technique of manufacture of the axe.

The axe seems to be of a distinctive Roman military type, and could therefore have been imported to the site. The slag was found at the entrance to the outer wall of the dun, buried under the thick rubble layer of the destruction at the end of Phase 2; it probably dates either to the end of the first or middle of the second century AD. The axe was found within the dun proper near the top of the Phase 3 deposits; it probably therefore dates to between AD 300–500. The presence of the slag suggests that it may have been produced from local ores.

The axe was cleaned and conserved many years ago in the Hunterian Museum.

SAMPLE PREPARATION METHODOLOGY

The axe was sectioned with a diamond blade at two places: (a) at the blade (sample ARTE1a) and (b) at the butt (ARTE1b) (illus 37c). A small section was removed from the slag (DUN1). In preparation as polished blocks, the three samples were mounted on a metallographic resin, and ground and polished with 6 and 3 microns diamond paste. The two metal samples were subsequently etched (with 2% nital) and examined with the metallographic microscope under reflected light. ARTE1a and DUN1 were carbon-coated in preparation for SEM-EDAX analysis.

SLAG ANALYSIS (DUN1)

Description

The slag submitted for analysis was an amorphous lump of porous, heavy, brown-black ferrous slag weighing c 250 g and measuring a maximum 70 mm (long axis). It is one of a number of fragments found scattered on the rock floor of the entrance passage in the outer wall — presumably the remains of a single smelting or forging operation, and covered by a mass of heavy rubble thought to be from the demolished dun (Context Rho, end of Phase 2).

SEM Examination and Analysis

The section revealed a typical bloomery iron slag consisting of three distinct mineralogical phases (see illus 39), namely globular dendrites of wustite (bright grey), long needles of fayalite (light grey) and an interstitial (between the grains) glassy phase (dark grey). Area analysis, and the chemical composition of each individual phase, are shown in Table 6, below. The mean (on the basis of three analyses) is given for each phase, wustite (FeO), fayalite ($2\text{FeO}\cdot\text{SiO}_2$) and the iron-rich alumino-silicate glass. Little prills (round particles) of metallic iron inclusions were also detected. Area analysis shows the slag to be high in iron, at nearly 85%, which is characteristic of smithing slags.

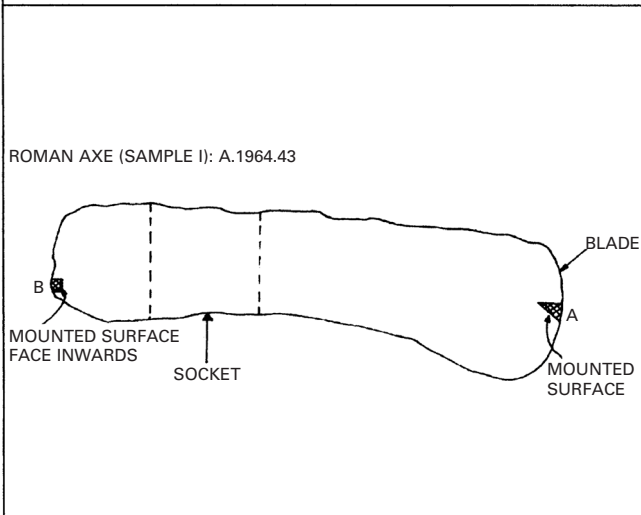
Bloomery iron making was the standard practice in Scotland from the Iron Age to the post-medieval period (Photos-Jones *et al* 1998; Photos-Jones & MacKie forthcoming). The Dun Ardtreck slag is contemporary with similar material from Leckie Broch, Stirlingshire (Photos-Jones 1998) at the time of the Roman presence in southern Scotland. It is now certain that bloomery iron-making took place in Scotland well before the arrival of the Romans. The box-like bloomery furnace excavated at Tarras Farm, in Forres, Inverness-shire, testifies to well established iron making practices radiocarbon dated to the second to first century BC (Will 1999; Photos-Jones 2000). Bog ore, or a combination of siderites and bog ore characterized by the presence of manganese and phosphorus and low amounts of calcium and alkaline earths, have been shown to be the normal type of ore used in the Highland bloomeries (Hall & Photos-Jones 1998). The Dun Ardtreck slag falls within this group as seen in the analysis in Table 6. Because of the high iron content the slag appears to be from smithing, although the possibility that it might be from smelting cannot be excluded. It simply testifies to iron-working on site before the destruction of the dun at the end of Phase 2, when the perimeter wall may have been used as a ‘shelter’ against the elements. Given what we know about Highland bloomeries, the presence of the slag in that context is not unusual. More importantly it provides a background against which the provenance of the shaft-hole axe can be discussed.



Dun Ardtreck shaft-hole axe (side view)



Dun Ardtreck shaft-hole axe (view from above)



Areas of sampling of shaft-hole axe: ARTE1A (edge) and ARTE1B (butt end)

Illus 37 The shaft-hole axe showing locations of samples (bottom) removed for metallurgical analysis

SHAFT-HOLE AXE

Description

The axe, really an axe-hammer, is described in detail in Appendix 1, above (illus 25, no 24; illus 37). Its massive hammerhead above the shaft-hole and the backward curving, long blade below it recall Roman axes from military sites in southern Scotland in the late first and mid second centuries AD. However, its context is much later. It was found lying either on top of the dark earth layer of the secondary occupation (Phase 3), immediately under the rubble of the final collapse and abandonment, or just within it (Context Epsilon, end). It probably reached this final resting place between AD 300 and 500.

Analysis

The conventional approach for establishing the geological (rather than the typological) provenance of an iron artefact has been the matching of the chemical composition of locally available slag with that of slag inclusions within the artefact. This methodology delivers satisfactory results only when the ore has very characteristic fingerprinting elements; manganese and phosphorus, without being unusual, are nevertheless typical of Scottish Highland bloomery slags. Slag inclusions are normally either single-phase (glass) or two-phase (wustite and glass). For a valid comparison of chemical compositions to be made, the composition of the glassy phase of the bloomery slag should be matched with the glassy phase of the slag inclusion.

The results shown in Table 6 suggest that the axe could well have been produced from 'local' ores. However, it should be emphasized that 'local' is a broad term which encompasses the manganiferous- and/or phosphorous-rich ores which are found in the western Highlands, anywhere from Argyll to Wester Ross or Inverness-shire. Was the artefact made locally, in Scotland? Or was it brought in from one of the *ferraria* in Romanized England? In the absence of parallel studies from Scotland one needs to examine the available evidence

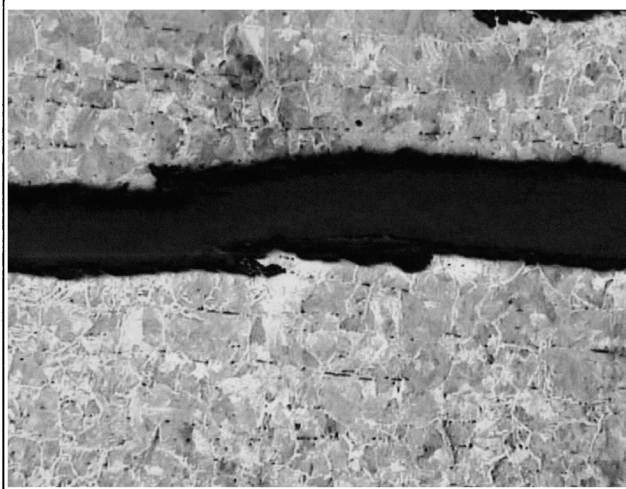
The axe was examined both metallographically and with the scanning electron microscope with the energy dispersive analyser (SEM-EDAX). When dealing with tools and weapons, normal practice is to sample only the cutting edge. However, axes or other objects of the size of the Dun Ardtreck example would often have been made of a number of small blooms welded together into a larger piece. A varying degree of carburization would then be expected throughout the object necessitating sampling at more than one place.

ARTE IA: cutting edge The SEM-BS (back-scattered) image of the cutting edge shows at least two strips of metal which must have originally been welded together and are presently separated by corrosion (See illus 38, top and middle). Slag stringers (elongated slag inclusions) run along either side of the gap. The cutting edge shows nearly eutectoid steel with ferrite (white) at the grain boundaries and pearlite (dark grey) within (c 0.7% carbon). Ferrite is of the feathery type (bainite) suggesting a slow cooling rate. There is no gradient, from the edge to the interior, in the carbon content, the relative proportion of ferrite and pearlite being the same throughout the specimen. Indeed surface carburization would be redundant given the high carbon content of the section. (Hardness $H_v(25)$ ferrite = 91–120.)

ARTE IB: the butt end The SEM-BS image of the butt end of the axe shows its composition to be 0.7% C consisting of ferrite and pearlite, but in places there is pearlite only (ie 0.8% C or eutectoid steel). The lighter grey phase at the grain boundaries and within the grains is also ferrite. The characteristic platy structure of pearlite can be seen at high magnification (x 2400) in the SEM-BS of illus 39. This suggests that the butt end was made of a piece of bloom of similar carbon content to that of the cutting edge. (Hardness: $H_v(25)$ ferrite = 150; $H_v(25)$ pearlite = 243.) The rarity of slag inclusions compared to the edge suggests that this piece of the bloom was chosen intentionally to withstand the impact of hammering.



ARTE1A: SEM-BS image of sample showing (at least) two strips of metal originally welded but presently separated by corrosion (gap). Dark grey area is a layer of surface corrosion (bar = 2 mm)

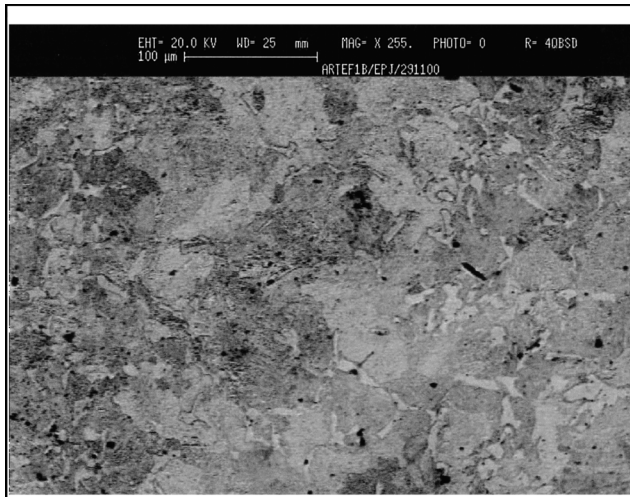


ARTE1A: OM-RL photograph of the Dun Ardtreck edge showing nearly eutectoid steel (about 0.7% C) consisting of ferrite (white) at the grain boundaries and pearlite within the grain boundaries (dark grey). There is no gradient in the carbon content from the edge to the centre, which suggests that no attempt was made to carburize the cutting edge of the axe. Slag inclusions run in the form of stringers along the gap (black area). For analysis of slag inclusion see Table 6 (x5).

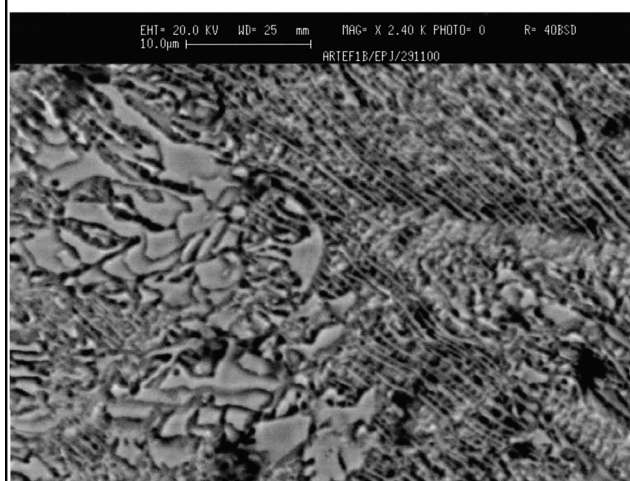


ARTE1A: OM-RL photograph of the Dun Ardtreck edge (same sample as above) at higher magnification showing white ferrite around pearlite grains (x10)

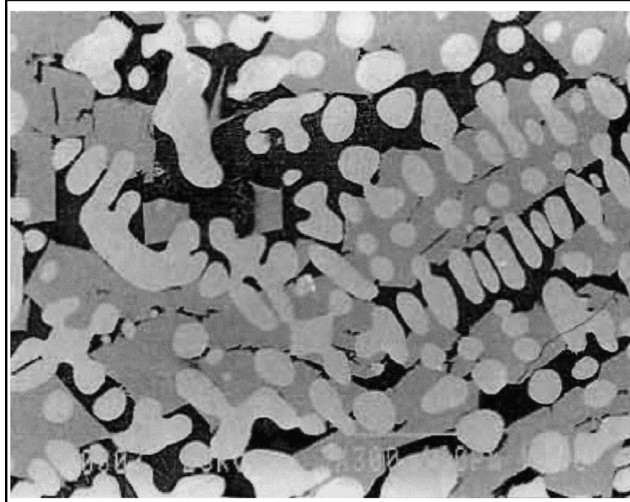
Illus 38 Microscopic images (SEM-BS) of samples from the edge (ARTE1A) of the shaft-hole axe



ARTE1B: SEM-BS image of the Dun Ardreck sample from the butt end showing ferrite at the grain boundaries and pearlite within. The black spots are pores rather than slag inclusions (bar = 100 microns). Slag inclusions were relatively few, compared to the edge.



ARTE1B: SEM-BS image of the same section as above with plates of pearlite of varying thickness overlaying each other (bar = 10 microns)



DUN1: SEM-BS image of the slag sample showing dendrites of wustite (light grey), needles of fayalite (medium grey) and interstitial glass (dark grey) (bar = 100 microns)

Illus 39 Microscopic images (SEM-BS) of sample from the butt of the shaft-hole axe (ARTE1B) and from the slag (DUN1)

Conclusions

Fell & Salter (1998, table 2) have produced metallographic and electron micro-probe analyses of seven British iron axe-heads of Iron Age provenance, from a variety of locations in England. Metallographically they are very different from the Dun Ardtreck axe in that their cutting edges are of low carbon iron, although some intentional surface carburization thereof was attempted in some of the axes. As such their edges could not have been very effective as cutting tools. The authors suggest that 'they were presumably felling tools and it may be that resilience and toughness were the principle qualities sought rather than hard and brittle cutting edges' (Fell & Salter 1998, 5).

The Dun Ardtreck axe is made of a c 0.7% carbon steel. The relatively uniform carburization and slow cooling shows considerable expertise on the part of the smith. He achieved a cutting edge that was hard but not brittle. In this way his axe testifies to a superior craftsmanship to that of the English Iron Age axes examined by Fell & Salter (1998). The object appears to have been made from bog/sideritic ores common in, but not exclusive to the Scottish Highlands. Was it somehow obtained from the Roman Army or fleet during one of the two occupations of southern Scotland between AD 80 and 160? At first this seems rather unlikely in view of the much later date (c AD 300–500) of the context in which the axe was found. However, in view of the exceptionally high quality of its steel cutting edge, and of its resemblance to standard Roman military axes, it is not impossible that it continued in use on the site for several centuries. Alternatively it

TABLE 6

Metallurgical analysis of samples from slag and axe-hammer; composition in weight %

	Na ₂ O	MgO	Al ₂ O ₃	S ₁ O ₂	SO ₃	P ₂ O ₅	K ₂ O	CaO	TiO ₂	MnO	FeO	BaO
<i>Axe</i>												
Arte 1a	0.47	1.59	5.66	35.47	0.36	1.06	3.27	15.29	0.48	6.94	28.77	0.65
Arte 1a	0.46	1.46	5.13	32.88	0.37	1.04	3.06	13.94	0.22	4.9	35.68	0.86
Arte 1a	0.02	0.89	4	23.22	0.44	0.52	0.48	1.57	0.21	4.27	64.09	0.28
<i>Slag</i>												
area analysis	0	0	2.41	8.71	0	0.42	0	1.23	0	1.63	85.58	0
wustite mean	0	0.23	0.17	0.12	0	0	0.04	0.1	0.61	1.37	96.33	0
fayalite mean	0	0.46	0.4	28.87	0	0.2	0.48	4.02	0.31	4.25	59.93	0
interstitial glass	2.05	0.21	11.68	33.04	0.54	1.58	3.67	13.18	0.67	1.77	31.58	0
metallic inclusion	3.71	0.66	0.34	0.6	0.39	0	0	0	0	0	94.22	0

could be a later copy of a Roman axe-hammer which could explain its context and dating almost equally well.

APPENDIX 7

TWO FRAGMENTS OF PUMICE

Anthony J Newman

The presence of mainly dacitic pumice in both archaeological sites and on the raised shorelines of the North Atlantic has been known for many years (Binns 1972). This ocean-transported pumice occurs in sites as far apart as Arctic Canada, Greenland, Iceland, Svalbard, Ireland, Scotland, Norway, Sweden and Denmark. Although Iceland was recognized as the most likely source for the pumice, it is only in the last decade that enough information has become available to lead to a positive identification of the source (Newton 1999a).

The study by Newton (1999a) was the first for some 30 years to collate all records of pumice finds in Britain and Ireland. The number of sites where pumice has been found has nearly doubled, since the work of Binns (1972), to over 150 and the total of pumice pieces recovered has increased by 3.5 times to over 2300. Virtually all these sites are in Scotland (141 sites) where pumice occurs at many coastal archaeological sites, especially those in the Western and Northern Isles. Dated pumice deposits have been found most frequently in Iron Age sites, with Neolithic contexts being the next most common. The oldest pumice deposits are found in the Inner Hebrides, with several sites containing pumice in Mesolithic contexts dating

between 8000 and 7000 BP. In most other areas, pumice is found in archaeological sites dating from the Neolithic to the Norse periods, with most finds in the Iron Age. The youngest finds are from Orkney, where late medieval and modern finds occur. Over 30 sites are undated and these form the second most common class.

The majority of the pumice pieces recovered from archaeological sites are brown or black in colour and many pieces show evidence of having been used as abrasive tools. The Mesolithic pumice from Staosnaig (Colonsay) show two distinct colour types, the first being light brown and the second black (Newton, forthcoming). Both types are more vesicular than the more common brown/black pumice. White pumice has also been found at the Norse site of The Biggings, Papa Stour (Newton 1999b) and at several other sites in Shetland; this pumice is more vesicular and friable than the majority black/brown pumice.

Virtually all the pumice found around the North Atlantic has been produced by a series of Holocene eruptions by the Icelandic volcano Katla (Newton 1999a). This volcano, located on Iceland's south coast, generally erupts basaltic material, but at least 17 silicic eruptions have also occurred between the early Holocene and about 1676 BP (about cal AD 400). Newton (1999a) was able to demonstrate that the two types of Mesolithic pumice were produced by at least two eruptions of Katla; one some time before 8000 BP and the other around 7000 BP. With a single exception, the remaining dacitic pumice has been found in contexts younger than 4000 BP and, through geochemical analysis of tephra layers around Katla, five potential source eruptions have been identified. The white Norse pumice was produced by the AD 1362 eruption of the south-eastern Iceland volcano Oraefajokull.

THE DUN ARDTRECK AND DUN MOR VAUL PUMICE

The piece ARBD (Context Epsilon) from Dun Ardtreck is physically typical of the brown dacitic pumice found in post-Mesolithic archaeological sites in Scotland. Pumice has been found at two other sites in Skye, the Iron Age broch Dun Beag (NGR: NG 339 386) and the early Bronze Age cave at Rudh' an Dunain (NGR: NG 399 162). It is rounded, probably by wave action, and shows evidence of having been used as an abrasive tool. The date of the Phase 3 deposit, perhaps as late as AD 500, suggests that the pumice was produced by the final silicic eruption from Katla at about AD 400. It is also possible that the pumice was found in an older deposit and re-used at Dun Ardtreck, and hence was produced by an earlier eruption, although the scarcity of pumice sites in Skye suggests that this is unlikely.

The fragment DMGA (Context Sigma) from Phase 4 at Dun Mor Vaul is the only pumice find reported from Tiree (MacKie 1974, 62). It is dark brown and its flattened and triangular appearance again suggests that it has been used as an abrasive tool. The similar archaeological context of the piece to that of the one found in Skye suggests that it too was probably produced by a late eruption of Katla, possibly the AD 400 event.

APPENDIX 8

LIST OF CONTEXTS WITH THEIR SITE PHASES

Greek letter	Deposit (layer nos in brackets)	Code	Phase
	<i>Dun interior</i>		
Alpha (α)	Rubble platform under walls of dun and in parts of central court (4)	1	1
Beta (β)	β -1 Brown earth and ashy deposits in dun interior, on rock (3)	2	2
	β -2 Same, on rubble platform (3)	3	2
	β -3 Same, on paving below secondary stairs (3)	4	2

Gamma (γ)	none	5	—
Delta (δ)	Rubble packing under secondary steps	6	3
Epsilon (ϵ)	ϵ -1	black earth layer on rock (2)	7 3
	ϵ -2	same over rubble platform (2)	8 3
	ϵ -3	same, resting on secondary steps (2)	8a 3
Zeta (ζ)	Rubble layer (1)	9	4
—	sterile topsoil (0)	—	—
<i>Entrance passage and area in front</i>			
Eta (η)	Thin black layer (4) lying on paving of entrance	10	2
Theta (θ)	Stones, dark earth and charcoal in entrance	11	3
Iota (ι)	Rubble and earth layer (2)	12	4
—	Dry rubble layer (1), sterile	—	—
<i>Guard cell</i>			
—	Dry rubble layer (1), sterile	—	—
Kappa (κ)	Lying on rubble floor of cell	14	2/3
<i>Mural gallery</i>			
Lambda (λ)	Resting on the packed rubble floors	17	2/3
Mu (μ)	In the fallen rubble (1)	18	4
Tau (τ)	In the laid rubble blocking the gallery doorways	19	2/3
<i>Outer court</i>			
—	On underlying rock (nothing)	—	1/2
Pi (π)	Hut occupation floor	20	3
Rho (ρ)	Rocky surface of outer gateway	21	2/3
Upsilon (υ)	Rubble and earth layer (2)	22	2/3?
Phi (ϕ)	Topsoil (1)	23	4
<i>Ramp in front of dun entrance</i>			
Omicron (\omicron)	Loose rubble lying on ramp (1)	24	4
Ksi (ξ)	On surface of ramp	25	3
Nu (ν)	Rubble core of ramp	26	2/3
Sigma (σ)	On paving under ramp	27	1/2
<i>Unstratified</i>			
u/s	—	—	—

REFERENCES

- Alcock, L & Driscoll, S 1989 'Reconnaissance Excavations on Early Historic fortifications and other royal sites in Scotland 3: Dundurn', *Proc Soc Antiq Scot* 119 (1989), 189–226.
- Allason Jones, L & Miket, R 1984 *The Catalogue of Small Finds from South Shields Roman Fort*. Newcastle on Tyne.
- Allason Jones, L & Bishop, M C 1988 *Excavations at Roman Corbridge. The hoard*. (English Heritage Archaeological Report 7). London.
- Armit, I (ed) 1990a *Beyond the Brochs: changing perspectives on the Atlantic Iron Age*. Edinburgh.
- Armit, I 1990b 'Brochs and beyond in the Western Isles', in Armit (1990a), 41–70.
- Armit, I 1990c 'Epilogue: the Scottish Atlantic Iron Age', in Armit (1990a), 194–210.
- Armit, I 1991 'The Atlantic Scottish Iron Age: five levels of chronology', *Proc Soc Antiq Scot*, 121 (1991), 181–214.
- Ballin Smith, B (ed) 1994 *Howe: four millennia of Orkney prehistory* (Soc Antiq Scot Monogr 9). Edinburgh.
- Binns, R E 1972 'Composition and derivation of pumice on post-glacial strand lines in northern Europe and western Asia', *Geological Soc America Bulletin*, 83 (8), 2303–24.

- Bruce-Mitford, R forthcoming *A Corpus of Hanging Bowls*. Oxford.
- Campbell, E 1986 'The Dark Age pottery — E ware', in Close-Brooks, J, 'Excavations at Clatchard Craig, Fife', *Proc Soc Antiq Scot*, 116 (1985–6), 155–6.
- Campbell, E 1991a *Imported Goods in the Early Medieval Celtic West: with special reference to Dinas Powys*. (Unpublished PhD thesis, University of Wales) Cardiff.
- Campbell, E 1991b 'Excavation of a wheelhouse and other Iron Age structures at Sollas, North Uist by R J C Atkinson in 1957', *Proc Soc Antiq Scot*, 121 (1991), 117–73.
- Campbell, E 1996a 'The archaeological evidence for contacts: imports, trade and economy in Celtic Britain AD 400–800', in Dark, K R (ed), *External Contacts and the Economy of Late Roman and Post-Roman Britain*, 83–96. Woodbridge.
- Campbell, E 1996b 'Trade in the Dark Age West: a peripheral activity?', in Crawford, B (ed), *Scotland in Dark Age Britain*, 79–91. St Andrews.
- Carrington, P 1977 'Severn Valley Ware and its place in the Roman pottery supply at Chester: a preliminary assessment', in Dore & Greene (eds) (1977), 147–62.
- Childe, V G 1935 'Excavation of the vitrified fort of Finavon, Angus', *Proc Soc Antiq Scot*, 69 (1934–5), 49–80.
- Christison, D 1899 'On the recently excavated fort on Castle Law, Abernethy', *Proc Soc Antiq Scot*, 33 (1898–9), 13–33.
- Clancy, T O & Márkus, G 1995 *Iona: the earliest poetry of a Celtic monastery*. Edinburgh.
- Craig, O, Mulville, J, Parker Pearson, M, Sokol, R, Gelsthorpe, K, Stacey, R & Collins, M 2000 'Detecting milk protein in ancient pots', *Nature*, 408, no 6810 (2000), 312.
- Crummy, N 1983 *Colchester Archaeological Report 2: Roman small finds from excavations in Colchester 1971–79*. Colchester.
- Cunliffe, B 1991 *Danebury: an Iron Age hillfort in Hampshire. The excavations 1979–1988*. Vol 5 *The Finds*. London: Council for British Archaeology.
- Curle, J 1911 *A Roman Frontier Post and its People: the fort at Newstead in the parish of Melrose*. Glasgow.
- Curle, J 1932 'An inventory of objects of Roman and provincial Roman origin found in sites in Scotland not definitely associated with Roman constructions', *Proc Soc Antiq Scot*, 66 (1931–2), 277–400.
- Dore, J & Greene K (eds) 1977 *Roman Pottery Studies in Britain and Beyond*. (BAR supp ser 30), Oxford.
- Dungworth, D 1996 'The production of copper alloys in Iron Age Britain', *Proc Prehist Soc*, 62 (1996), 399–421.
- Dungworth, D 1997 'Roman copper alloys: analysis of artefacts from north Britain', *J Archaeol Sci*, 24 (1997), 901–10.
- Dwelly, E 1941 *The Illustrated Gaelic-English Dictionary* (4th edn). Glasgow.
- Earwood, C 1991 'Two Early Historic bog butter containers', *Proc Soc Antiq Scot*, 121 (1991), 231–40.
- Fairhurst, H 1938 'The galleried dun at Kildonan Bay, Kintyre', *Proc Soc Antiq Scot*, 73 (1937–8), 185–228.
- Fairhurst, H 1971 'The wheelhouse site A' Cheardach Bheag on Drimore machair, South Uist', *Glasgow Archaeol J*, 2 (1971), 72–106.
- Fairhurst, H 1984 *Excavations at Crosskirk broch, Caithness*. (= Soc Antiq Scot Monogr ser 3) Edinburgh.
- Fell, V & Salter, C J 1998 'Metallographic examination of seven Iron Age ferrous axe heads from England', *J Hist Metallurgy Soc*, 31.1 (1998), 1–6.
- Foster, S 1990 'Pins, combs and the chronology of later Atlantic Iron Age settlements', in Armit (1990a), 143–74.
- Frere, S 1984 *Verulamium Excavations*, vol 3. Oxford. (=Oxford University Committee for Archaeology Monograph 1)
- Graham, A 1947 'Some observations on the brochs', *Proc Soc Antiq Scot*, 81 (1946–7), 48–99.
- Graham, A 1949 'Notes on some brochs and forts visited in 1949', *Proc Soc Antiq Scot*, 83 (1948–9), 12–23.
- Guido, M 1978 *The Glass Beads of the Prehistoric and Roman Periods in Britain and Ireland*. London.
- Hall, A J & Photos-Jones, E 1998 'The bloomery mounds of the Scottish Highlands: part II — a review of iron mineralisation', *J Hist Metallurgy Soc*, 32.2 (1998), 54–66.
- Hamilton, J R C 1956 *Excavations at Jarlshof, Shetland*. Edinburgh.

- Hamilton, J R C 1968 *Excavations at Clickhimin, Shetland*. Edinburgh.
- Harding, D W 1974 *The Iron Age in Lowland Britain*. London.
- Harding, D W 1984 'The function and classification of brochs and duns', in R Miket & C Burgess (eds), *Between and beyond the Walls: essays on the prehistory and history of Northern Britain in honour of George Jobey*, 206–20. Edinburgh.
- Harding, D W 1990 'Changing perspectives in the Atlantic Iron Age', in Armit (1990a), 5–16.
- Harding, D W forthcoming 'The Atlantic Scottish Iron Age: external relations reviewed', in V Turner (ed), *Lerwick Conference Proceedings*.
- Harding, D W & Dixon, T N 2000 *Dun Barabhat, Cnip: an Iron Age Settlement in West Lewis. Vol 1. The Structures and Material Culture*. Edinburgh: University of Edinburgh (=Calanais Research Series no 2).
- Harding, D W & Gilmour, S M D 2000 *The Iron Age settlement at Beirgh, Riof, Isle of Lewis: excavations 1985–95. Vol. 1: the structures and stratigraphy*. (Calanais Research ser 1) Edinburgh.
- Harkness, D D 1984 'An evaluation of the radiocarbon dates measured for the Crosskirk broch investigation', in H Fairhurst (ed), *Excavations at Crosskirk broch, Caithness*, 160–3. (Soc Antiq Scot Monogr ser 3) Edinburgh.
- Hawkes, C F C 1935 'The pottery from the sites on Plumpton Plain', *Proc Prehist Soc*, 1 (1935), 39–59.
- Hedges, J W 1987 *Bu, Gurness and the Brochs of Orkney*. Oxford.
- Henderson, J 1989 'The scientific analysis of ancient glass', in J Henderson (ed), *Scientific Analysis in Archaeology*, 30–62. (Oxford Univ Comm Archaeol, monogr 19) Oxford.
- Henderson, J & Warren, S E 1982 'Analysis of prehistoric lead glass', in A Aspinall & E Warren (eds), *Proc 22nd Symposium on Archaeometry*, 168–80. Bradford.
- Lacaille, A D 1954 *The Stone Age in Scotland*. Oxford.
- Lethbridge, T C 1952 'Excavations at Kilpheder, South Uist and the problem of brochs and wheelhouses', *Proc Prehist Soc*, 18 (1952), 176–93.
- MacKie, E W 1963 'A dwelling site of the earlier Iron Age at Balevullin, Tiree, excavated in 1912 by A H Bishop', *Proc Soc Antiq Scot*, 96 (1962–3), 155–83.
- MacKie, E W 1971 'English migrants and Scottish brochs', *Glasgow Archaeol J*, 2 (1971), 39–71.
- MacKie, E W 1972 'Some new quern stones from brochs and duns', *Proc Soc Antiq Scot*, 104 (1971–72), 137–46.
- MacKie, E W 1974 *Dun Mor Vault: an Iron Age Broch on Tiree*. Glasgow.
- MacKie, E W 1980 'Dun an Ruigh Ruaidh, Loch Broom, Ross and Cromarty: excavations in 1968 and 1978', *Glasgow Archaeol J*, 7 (1980), 32–79.
- MacKie, E W 1982 'The Leckie broch, Stirlingshire: an interim report', *Glasgow Archaeol J*, 9 (1985), 60–72.
- MacKie, E W 1983 'Testing hypotheses about brochs', *Scott Arch Review*, 2.2 (1983), 117–28.
- MacKie, E W 1987 'Review of H Fairhurst 1984 *Excavations at Crosskirk broch, Caithness*', *Antiquaries J*, 65 (part 2) (1987), 500–1.
- MacKie, E W 1987 'Leckie Broch: the impact on the Scottish Iron Age', *Glasgow Archaeol J*, 14 (1987), 1–18.
- MacKie, E W 1991 'The Iron Age semibrochs of Atlantic Scotland: a case study in the problems of deductive reasoning', *Archaeol J*, 148 (1991), 149–81.
- MacKie, E W 1994 'Gurness and Midhowe brochs in Orkney: some problems of misinterpretation', *Archaeol J*, 151 (1994), 98–157.
- MacKie, E W 1997 'Dun Mor Vault re-visited; fact and theory in the re-appraisal of the Scottish Atlantic Iron Age', in J N G Ritchie (ed), *The Archaeology of Argyll*, 114–80. Edinburgh.
- MacKie, E W 1998 'Continuity over four thousand years of northern prehistory: the "tel" at Howe, Orkney', *Antiquaries J*, 78 (1998), 1–42.
- MacKie, E W 2000 'The Scottish brochs: indigenous and isolated or part of a wider Atlantic world', in J R Henderson (ed), *The Prehistory and Early History of Atlantic Europe*, 99–116. (BAR Int Ser 861) Oxford.

- MacKie, E W forthcoming 'Scottish brochs at the start of the new millennium', in V Turner (ed), *Lerwick Conference Proceedings*.
- Manning, W H 1985 *Catalogue of the Romano-British Iron Tools, Fittings and Weapons in the British Museum*. London.
- Manning W H 1993 *Report on the Excavations at Usk 1965–1976. The Roman Pottery*. Cardiff.
- Munro, R 1882 *Ancient Scottish Lake Dwellings*. Edinburgh.
- Neil, D, Wardle, A & Hunn, J 1990 *Excavation of the Iron Age, Roman and Medieval Settlement at Gorhambury, St Albans*. London.
- Newton, A J 1999a *Ocean-transported Pumice in the North Atlantic*. Unpublished PhD thesis: University of Edinburgh.
- Newton, A J 1999b 'Report on the pumice', in B E Crawford & B Ballin Smith (eds), *The Biggings, Papa Stour, Shetland: the history and archaeology of a Royal Norwegian farm*, 178. (Soc Antiqs Scotl monogr 13) Edinburgh.
- Newton, A J forthcoming 'The pumice', in S Mithen (ed), *Hunter Gatherer Landscape Archaeology: the Southern Hebrides Mesolithic Project*. Cambridge.
- Nicholson, R A & Dockrill, S J 1998 *Old Scatness Broch, Shetland: retrospect and prospect*. Bradford.
- Nisbet, H 1995 'Excavation of a vitrified dun at Langwell, Strath Oykel, Sutherland', *Glasgow Archaeol J*, 19 (1994–5), 51–74.
- Noddle, B A 1974 'Appendix D: report on the animal bones found at Dun Mor Vault', in E W MacKie, *Dun Mor Vault: an Iron Age broch on Tiree*, 187–98. Glasgow.
- Noddle, B A 1980 'Appendix 3: animal bone from Dun Cul Bhuirg, Iona', in J N G Ritchie & A M Lane, 'Dun Cul Bhuirg, Iona, Argyll', *Proc Soc Antiq Scot*, 110 (1978–80), 209–29.
- Parker Pearson, M & Sharples, N 1999 *Between Land and Sea: excavations at Dun Vulcan, South Uist*. Sheffield.
- Parker Pearson, M, Sharples, N & Mulville, J 1996 'Brochs and Iron Age society: a reappraisal', *Antiquity*, 70 (no 267) (1996), 57–67.
- Photos-Jones, E 1998 *The Metallographic Investigation of the Leckie Broch Metalwork and Industrial Waste*. (Scottish Analytical Services for Art and Archaeology Internal Report 16) Glasgow.
- Photos-Jones, E 2000 *The Metallurgical Characterisation of the Tarras Farm, by Forres, Bloomery Iron Furnace and Industrial Waste: Scotland's earliest dated bloomery furnace*. (Scottish Analytical Services for Art and Archaeology Internal Report 40) Glasgow.
- Photos-Jones, E, Atkinson, J, Hall, D & Banks, I 1998 'The bloomery mounds of the Scottish Highlands. Part I: the archaeological background', *J Hist Metallurgy Soc*, 32.1 (1998), 15–32.
- Photos-Jones, E & MacKie, E W forthcoming 'Roman and native iron-working in southern Scotland in the first and second centuries AD', *J Hist Metallurgy Soc*.
- Piggott, S 1953 'Three metalwork hoards of the Roman period from southern Scotland', *Proc Soc Antiq Scot*, 87 (1952–3), 193–224.
- Renfrew, J 1974 'A report on the cereal grains at Dun Mor Vault', in E W MacKie, *Dun Mor Vault: an Iron Age broch on Tiree*, 210–13. Glasgow.
- Ritchie, J 1934 'Report on bones of an ox from the broch of Midhowe, Rousay, Orkney', *Proc Soc Antiq Scot*, 68 (1933–4), 515–16.
- RCAHMS 1928 Royal Commission on the Ancient Monuments of Scotland *Ninth Report with Inventory of Monuments and Constructions in the Outer Hebrides, Skye and the Small Isles*. Edinburgh.
- Sandars, N K 1957 *Bronze Age Cultures in France: the later phases from the 13th to the 7th century BC*. Cambridge.
- Savory, H N 1976 *Guide Catalogue of the Early Iron Age Collections*. London.
- Scott, L 1947 'The problem of the brochs', *Proc Prehist Soc*, 13 (1947), 1–36.
- Scott, W L 1932 'Rudh' an Dunain chambered cairn, Skye', *Proc Soc Antiq Scot*, 66 (1931–2), 183–213.
- Scott, W L 1934a 'External features of Rudh' an Dunain chambered cairn', *Proc Soc Antiq Scot*, 68 (1933–4), 194–99.
- Scott, W L 1934b 'Excavation of Rudh' an Dunain cave, Skye', *Proc Soc Antiq Scot*, 68 (1933–4), 200–28.

- Sharpe, R 1995. *Adomnán of Iona: Life of St Columba*. London.
- Sharples, N 1998 *Scalloway: a broch, late Iron Age settlement and medieval cemetery in Shetland*. (Oxbow Monogr 82) Exeter.
- Stevenson, R B K 1955 'Pins and the chronology of the brochs', *Proc Prehist Soc*, 21 (1955), 282–94.
- Watson, W J 1926 *The Celtic Place names of Scotland*. Edinburgh.
- Webster, P V 1972 'Severn Valley ware on Hadrian's Wall', *Archaeologia Aeliana*, 4th ser, 50 (1972), 191–203.
- Webster, P V 1976 'Severn Valley ware: a preliminary study', *Bristol & Gloucs Arch Soc Trans*, 94 (1976), 18–46.
- Webster, P V 1977 'Severn Valley ware on the Antonine frontier', in Dore & Greene (eds) (1977), 163–76.
- Will R 1999 *Tarras, by Forres*. (Glasgow Univ Archaeol Research Division Internal Report, 567).
- Young, A 1956 'Excavations at Dun Cuier, Isle of Barra, Outer Hebrides', *Proc Soc Antiq Scot*, 89 (1955–6), 290–328.
- Young, A & Richardson, K M 1960 'A' Cheardach Mhor, Drimore, South Uist', *Proc Soc Antiq Scot*, 93 (1959–60), 135–73.

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