

The Broch of Burrian, North Ronaldsay, Orkney

by Arthur MacGregor

North Ronaldsay is the most northerly of the Orkney Isles and surely one of the most bleak: its four treeless square miles rise nowhere beyond 50 ft (15 m) above sea level and today are given over wholly to farming. At the SE tip of the island on the edge of the arable land lies the Broch of Burrian (NGR HY 763514; fig 1; pl 3c) which, although little more than a grassy mound at that time, was evidently suspected to be of some antiquity when it was decided to conduct excavations there in the summers of 1870 and 1871. Operations were directed by the proprietor of the island, Dr William Traill of Woodwick, with the assistance of the eminent antiquarian, Sir Henry Dryden. A report on the excavations together with a site-plan and illustrations of a few of the finds was published by Traill in *Archaeologia Scotica* 5 in 1890 and a list of objects finally donated to the National Museum appeared in *Proc Soc Antiq Scot*, 10 (1872-4), 5 ff.

In the century which has elapsed since those excavations took place a number of the more interesting finds from Burrian have figured repeatedly in the archaeological literature but the bulk of them remains unpublished. A complete catalogue of the finds appears here along with an assessment of the significance of the site as a whole, with the intention of providing a more fully documented background for this important body of material.

THE SITE

The nature of the structural remains at the time of excavation may be judged from the plans and sections illustrated in figs 2-5¹ while their present-day condition is shown in pl 3c.

Primary phase

The primary broch is of the solid-based variety, that is, having no ground-floor intramural gallery, a type which on present reckoning may belong to the late first century BC or the early first century AD (MacKie 1971a, 68). Only on the outside of the modern sheep wall has the external face been revealed to its lowest extremity and here it can be seen to rest on footings projecting beyond the wall face for some 10 cm (fig 2).

The entrance emerges today directly on to the rocks of the foreshore and, while this has undoubtedly been brought about by persistent coastal erosion (which threatens now to undermine the walls), the access could never have been very far from high-tide level. The passageway narrows to form a door check about half way along, with the vertical slabs lining the check surviving to a height of 0.50 m and 1.0 m respectively. The side walls are now too ruinous to permit positive identification of an associated bar-hole. The lintels of the passageway were already missing by the time the excavations took place and on analogy (MacKie 1971b, 19) may have been deliberately removed during an early rebuilding phase; the fact that secondary walling was built along one side of the passage and into the door check makes this very probable. The mural chamber to the

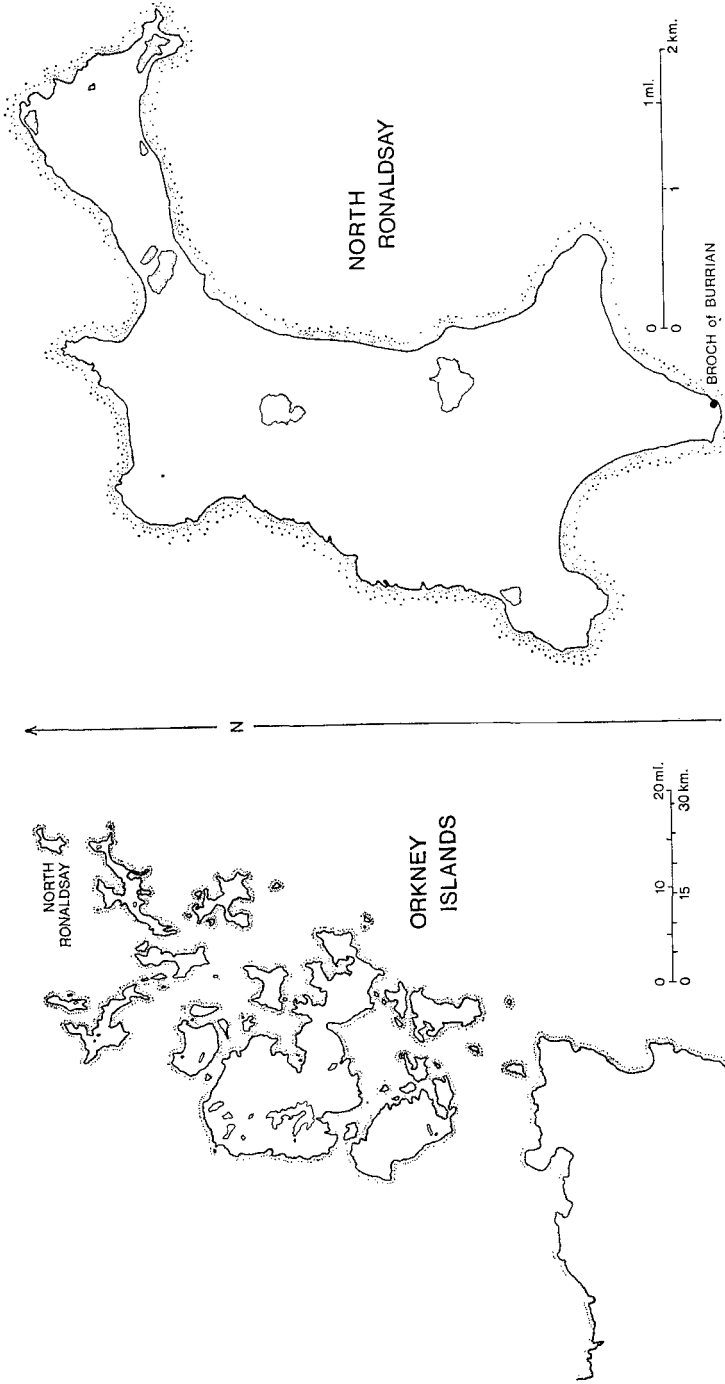


FIG 1 Location of the Broch of Burrian

NE was still roofed over however (fig 2), although it collapsed before the completion of operations. It stood originally about 1.50 m high to the closing slabs of its roof and was entered by a lintelled doorway 1.0 m high (Traill 1890, 343). Although no reference is made to it in the excavation report, a note on one of the contemporary plans mentions the possibility that the collapsed area above the chamber (fig 4a) may mark the location of one of the characteristic voids which pierce the inner walls of many better-preserved brochs.

The maximum height of walling surviving at Burrian is over 3.0 m, in the NW sector (RCAMS 1946, fig 76). There a scarcement ledge about 12 cm deep has been formed at a height of 1.0 m above ground level. The excavators seem not to have noticed that about 1.30 m above the scarcement the wall is corbelled outwards again, the face then continuing to rise in its original plane. This feature, which seems to be unparalleled elsewhere, is not easily explained but it may indicate that the ledge supported not only a raised floor but also a timber framework of some sort, wedged at the top against the upper rebate. Its precise function and form cannot of course be ascertained and its very existence must remain hypothetical, but some relationship with the presumptively timber buildings of this first phase is obviously implied. The basal level of the broch was paved for at least part of its area (Traill 1890, 341).

The only remaining internal feature which can be assigned to the primary broch phase is the 'well' (figs 2, 3). Underground chambers of this general form are not uncommon in the brochs: Graham (1947, 76) lists a total of twenty-seven wells or cisterns, eighteen having steps leading down to them as at Burrian. The identification of some of these (including the Burrian example) as wells has been questioned by Scott (Scott, W L 1948, 95), who thought it probable that most of them 'served the purposes of a souterrain'. No water was found in the chamber when excavated but, nonetheless, its essential similarity to other more certain wells, for example that at the Broch of Ayre (Graeme 1913, 34), which occupies a similar position in relation to the doorway, does suggest that this did indeed provide a water supply for the broch. The weight of the covering slabs of the well was partly borne by a tall block of stone (fig 2, section A).

Four lines of ramparts protect the landward side of the broch (fig 4) and are to be assigned to its first and most obviously defensive phase. Although barely discernible on the ground they are readily seen from the air under appropriate lighting conditions (pl 3c). Graham (1947, 87 ff) mentions thirty-eight occurrences of external defences associated with brochs in Orkney and Shetland, some of them completely encircling the broch tower and others cutting off a promontory. In common with most of these other brochs, nothing is known of the composition of the ramparts at Burrian, nor of the nature of the ditches which separated them, although the use of stone in the defences at Midhowe on Rousay and at the Broch of Gurness, Aikerness (RCAMS 1946, 75, 195) might suggest the presence here of stone cores if not built faces.

Secondary phase

Above the floor of the broch the excavators found 'from one to two feet of rubbish', on top of which lay 'an upper paved space, and various partition walls, built upon the debris that overlay and concealed the original floor' (Traill 1890, 341). This floor upper (fig 3) provided a clear stratigraphical reference point, making it possible to assign at least some of the finds to either a primary or a secondary phase of occupation, and for many years Burrian remained one of the few broch sites at which this kind of distinction could be made. However, it will be suggested here that the separation was not altogether as clear cut as has often been assumed.

All the internal walling has long since disappeared, presumably having been demolished in the course of excavation. The plans make it quite clear, though, that two techniques were employed in erecting these internal partitions: built walling is shown dividing up the northern half of the

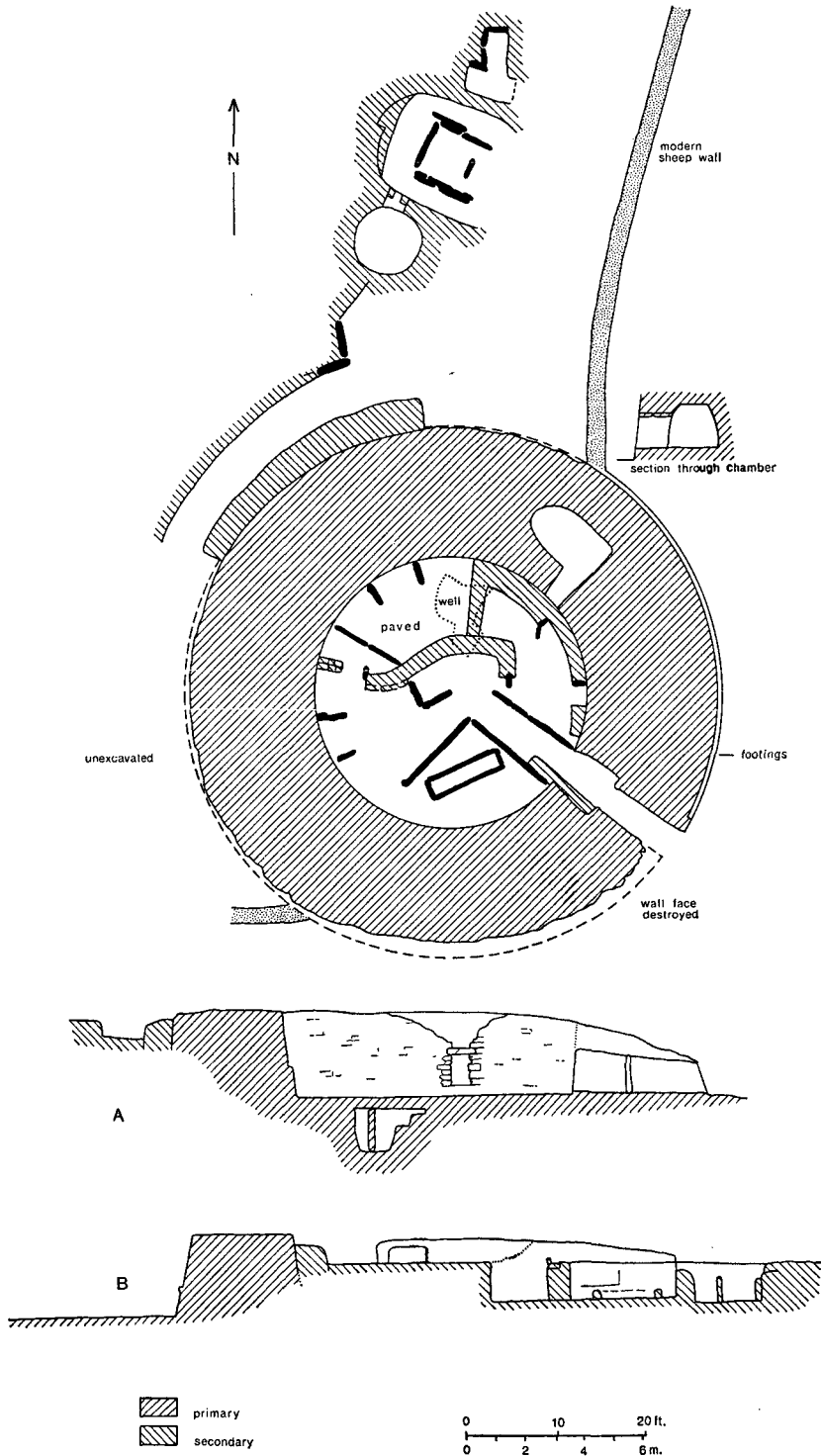


FIG 2 Site plan and sections at the time of excavation (after Dryden and Trail). Section A through broch from SW, section B through broch wall and outbuildings from E and SE

broch, with a peripheral stretch incidentally cutting off the primary mural chamber, access to which must already have been somewhat restricted by the accumulation of debris on the floor; upright slabs are shown forming other divisions throughout the interior. It seems impossible to attribute any chronological distinction to the two techniques: some of the regularly spaced radial slabs could perhaps have antedated the built walling but others seem to have formed integral

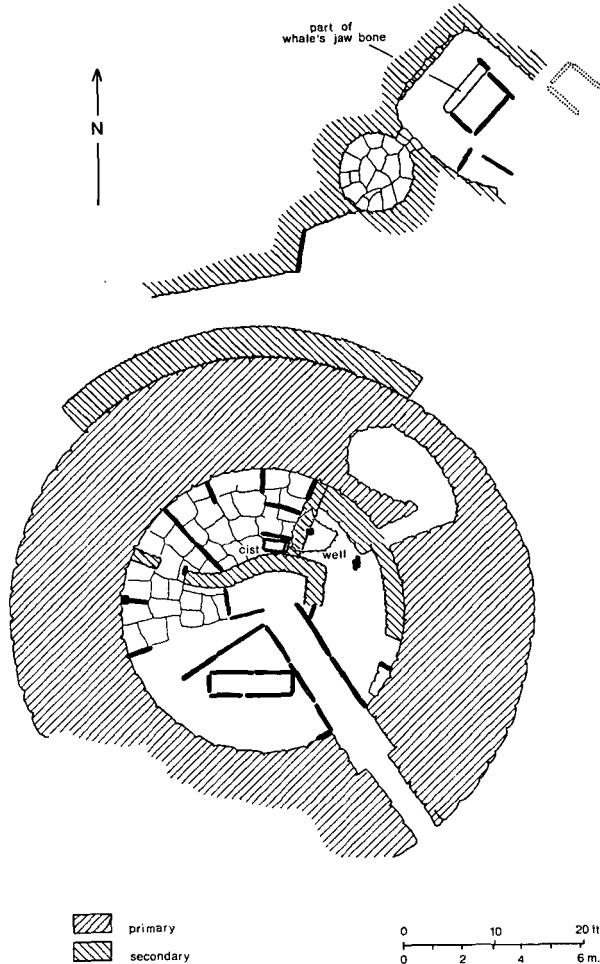


FIG 3 Site plan at the time of excavation (after anonymous drawing)

parts of the same structures and one slab wall, to the NW, was apparently erected within the built chamber, cutting off its original entrance and resulting in steps having to be cut into the peripheral wall to maintain access.² The radial walling may have helped to support a roof but since the upright slabs were not, it seems, bonded into the broch wall they would have been rather unstable in this function. Indeed MacKie (1965b, 113) suggests that the insertion of a peripheral wall is a prerequisite if radial piers are to have sufficient lateral stability for this purpose.

A rectangular 'cist' was found in this upper level, 'partly embedded in the earth below the floor or paved space' (Traill 1890, 341 f). It measured about 1.0 m by 0.45 m by 0.45 m and was

closed by a capstone 'between which and the cist, clay had been carefully plastered, apparently for the purpose of excluding air and moisture' (ibid). The cist contained an engraved pebble (278 in this catalogue) and was half-filled with red ashes. (It should be noted that this represents about 0.15 cu m (4 cu ft) of ash – evidently not the product of funerary cremation.) No hearth

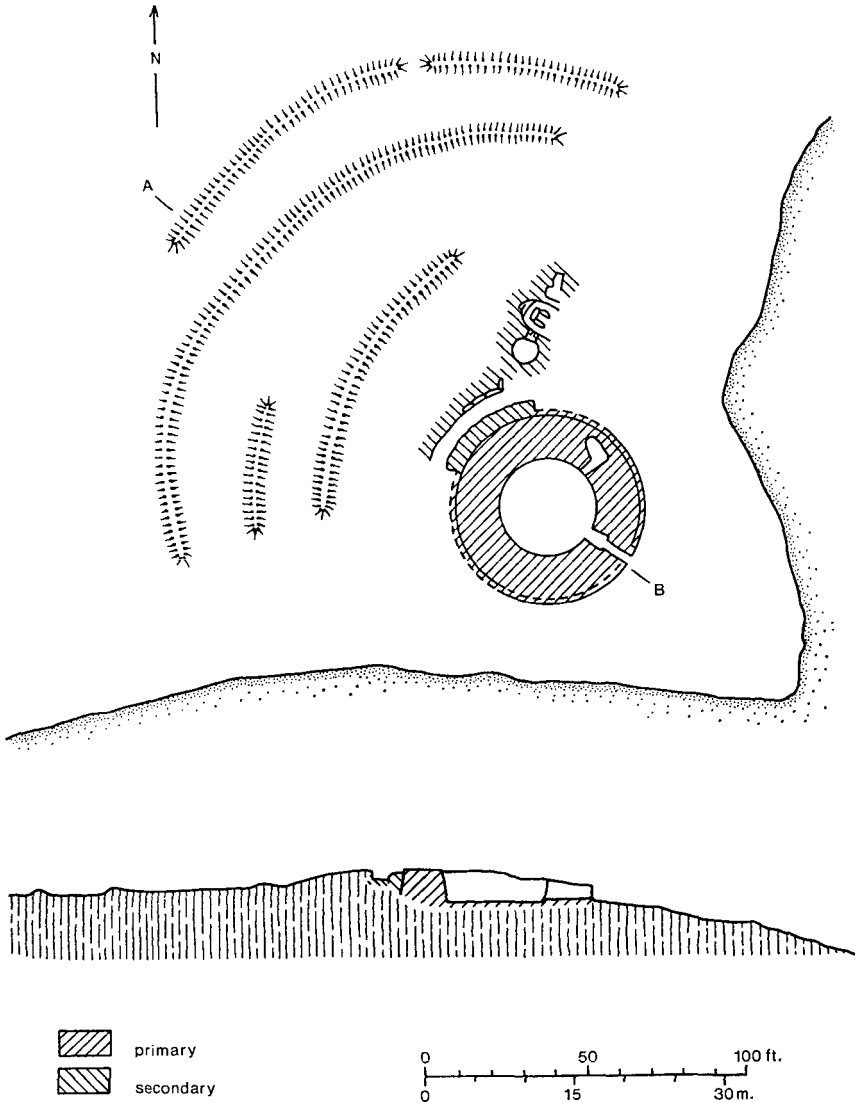


FIG 4 Plan of defences, with section A-B (after Dryden and Traill)

was recorded in the broch but the lid on the cist would rule it out as such. Two slab-built boxes with stone lids were discovered in the 'earth house' at Bac Mhic Connain, North Uist, one of them containing a hammer stone (Beveridge and Callander 1932, 45 f, fig 2) and a similar dwelling at Garry Iochdrach on the same island produced three 'sinks' containing bones, shells, a great deal of ash and, in one instance, two hammer stones (ibid, 35 f). A plausible explanation of the function of these boxes may be contained in Sir Lindsay Scott's note (1948, 125) on the use of ash in food

storage. In this he mentions the comparatively recent use of peat ash in the Faroes and on St Kilda for the preservation of birds' eggs, and of seaweed ash in the Hebrides for curing seal meat and sea birds and for 'salting' cheese. In view of the quantity of ash in the Burrian cist and its air-tight seal it seems reasonable to interpret it and others like it as food stores with the preserving agent still *in situ*. The ash in this instance would most probably have been derived from seaweed, there being no peat on North Ronaldsay; writers in the eighteenth and nineteenth centuries record that the only fuel available to the islanders then was seaweed and dung (Marwick 1924, 52; *New Stat Acct*, 107).

In the excavation report (Traill 1890, 342) the cist was said to stand 'at the west side of the well or underground chamber', which is the position it occupies in the plan reproduced in fig 3. It should be noted, however, that in Dryden and Traill's plan (fig 2) the well occupies a slightly different position relative to the secondary wall so that the precise location of the cist remains in some doubt.

A second and larger tank-like structure shown in the S quadrant of the broch is not mentioned in the text and its contents are unrecorded. Discussing a series of kindred features in Caithness brochs, Anderson (1901, 125 ff) concluded that they were in many cases probably hearths, similar fireplaces having survived in use until fairly recent times on St Kilda; the Burrian structure may well have had this same function.

In the NW sector the outer face of the broch is supported by buttressing of vertically laid slabs, now largely obscured. This area was never completely excavated and the full depth of the buttressing is unknown. Vertical revetting is known from Midhowe (Callander and Grant 1934, 455, fig 17) where, apparently in an attempt to ward off the collapse of the broch wall, vertically laid slabs were wedged inside the ground-floor gallery and around the NW external face. This shoring up of the Midhowe wall apparently took place at a comparatively late stage in the broch's history as the entrances to a number of secondary buildings which had grown up around it were now so constricted by the buttressing that new doorways had to be opened up at the opposite ends of the chambers and the old ones built up. Why the (apparently) solid wall at Burrian should have threatened to collapse is not clear, although excavation of the lower levels might provide an answer.³ The passageway in which the revetting lies follows the same arc as the broch wall itself and, while it may have been narrowed in the shoring-up process, it was not rendered unusable so that the sequence of events here is not immediately apparent as it is at Midhowe.

This passageway gave access to an area within the ramparts to the N of the broch where three chambers were uncovered. On the evidence of the bone combs, pins and other implements recovered from these structures, Traill (1890, 342) was 'inclined to consider them coeval with the second occupation' and thought it likely that further buildings had been swept away by the sea. Indeed, it seems not impossible that others may yet lie undiscovered, particularly in view of the depth of unexcavated material between the floors of these buildings and the basal level of the broch wall. Those which were uncovered are considerably overgrown today but are still recognizable in outline here and there.

THE FINDS

The fact that nineteenth-century excavation reports, with all their inadequacies, still form such an indispensable part of broch literature is a sad comment on the inertia into which the study of this field had lapsed until comparatively recently. Even more salutary is the fact that Burrian, after a hundred years, remains one of the most frequently cited 'stratified' sites (see, for example, Stevenson 1955a, 283; MacKie 1965b, 132). But while the discovery there of two stone floors providing clear stratigraphical divisions cannot be disputed, a great deal of caution is called

for when using the stratigraphy in relation to the finds: in particular, it should be noted that the (presumably) secondary paving indicated in the plans covers less than half of the broch interior; any break in the occupation sequence would have been more difficult to detect elsewhere and certainly no mention is made of it in the report. Indeed, there is no conclusive proof that there ever was a break in the occupation nor, if there was, that the slab floor represented the boundary between the primary and secondary phases. Dr Traill (1890, 364) published a list of finds from the site in which articles from primary levels were distinguished from those *supposed* to belong to the second occupation; some measure of uncertainty is obviously implied but none is admitted in the list itself which, as Stevenson (1955a, 283) observes, is 'too clear cut not to have been partly subjective'. Furthermore, the one item whose context is described in the course of the text (the engraved pebble from the cist in the upper floor) is listed as belonging to the first period. Any division of the finds relying on this list (which is in any case incomplete) would clearly stand on very insecure foundations, so that in this review, while reference is made to Traill's text where appropriate, the finds are treated as effectively unstratified and are considered purely on their own merits.

Bone pins (figs 5-8)

One hundred and six pins, seven pin heads and four needles of bone were recovered in the excavations. Illustrated in fig 5 is a selection of small dress pins of which 1-7 in particular closely resemble Romano-British products with their ball heads and swelling shanks. Stevenson (1955a, 283 ff) has shown, however, that most of the Scottish representatives of this type of pin, including those from Burrian, are more at home in the last few centuries before the arrival of the Vikings. They are well represented in the Atlantic province with examples from as far apart as Dùn an Fheurain, Argyll (Ritchie, J N G 1971, fig 2, 14-16), à Cheardach Mhor, South Uist, (Young and Richardson 1960, fig 13, 28-29) and Buckquoy in Birsay, Orkney (Ritchie, A, *Proc Soc Antiq Scot*, forthcoming). Numbers 21-24 have decorative heads treated in a variety of ways: 21 is in the form of a nail head, another widely distributed type (Stevenson 1955a, 285 f). Stevenson suggests a Romano-British origin for these too, in which case a nail-headed pin from broch-period levels at Clickhimin, Shetland (Hamilton 1968, 114) is a very early representative in the north; the bulk of the other nail-headed pins seem to cluster around the seventh to ninth centuries, however.

A number of the round headed pins and some of those with transversely flattened heads (fig 6, 30-37) have shanks which swell gradually for some two-thirds of their length before tapering to a point, a feature which would help prevent them slipping out of position. Others (eg 24-26, 36) are provided with grooves around their circumference for the same purpose, a feature expanded elsewhere, for example at Buston Crannog (Munro 1882, fig 212), into bands of cross hatching. A third device designed to keep the pins in place is the provision of distinct 'hips' towards the lower end of the shank, most readily seen on 20-21 and 38 but detectable on one or two others. Lethbridge (1952, 187), in describing a hipped pin from Sithean a Phiobaire, South Uist, claimed that it was 'almost certainly used, amongst other things, for picking winkles out of their shells', but while there may have been lapses of this nature in the remoter Scottish islands the primary function fulfilled by these pins was undoubtedly the fastening of clothing. Anglo-Saxon examples in England range in date from about the sixth to the ninth centuries, although none of the Scottish examples seem to be earlier than the seventh century (Stevenson 1955a, 283 ff).

The pins numbered 30-36 form a distinct group at Burrian, characterised by their splayed and transversely flattened heads, sometimes almost circular and merging smoothly with the shank, sometimes sharply cut away to form a curving fan shape. Similar pins come from Dun Cuier, Barra (Young 1956, fig 14, 28), Buckquoy (Ritchie, A 1974, fig 2, 2 and 6) and a number of sites with no stratigraphic record.

The technical excellence of the bone pins from Burrian is most evident in the minutely carved horses' heads which decorate 39. There seem to be no close parallels for this treatment in Scotland but a comparable example in bronze may be noted in the Irish National Collection, possibly (but by no means certainly) of ninth-century date (Armstrong 1922, 81 ff, fig 4.6); the double-sided nature of the head is reflected in 37, 38 and 74. It may be that the smallest of the pins, 38 and 40 in particular, were intended to fasten some article of personal ornament rather than an item of clothing.

Four needles were also found (43-46), all of them types with a wide distribution in time and space reaching, for example, as far as Glastonbury (Bulleid and Gray 1917, 410 ff, fig 147). The slender bird bone numbered 47 has not been worked although the polish on its obliquely cut hollow end shows that it was certainly utilised for some purpose. If it did serve as a pin then its fragile nature would suggest that it was worn in the hair. Dr Traill remarked that, on trial, it was found to be useful as a pen for writing with!

A group of more robust pins is shown in fig 7: 73-79 have heads treated more or less decoratively while amongst the remainder a minimum amount of trimming has been used to modify a series of suitably shaped bones (some of which, at least, seem to be the fibulae of pig) to serve as pins, the distal ends forming natural heads.

Fig 8, 94-100 shows a series of pins derived from similar bones but in this case having the heads perforated. Comparable examples are described elsewhere as needles (Brodribb *et al* 1972, 129) or as basket needles (Hamilton 1956, fig 69, 3-4), though with the possible exception of 96 and 100 none of the Burrian pins (nor indeed either of Hamilton's pins) shows any sign of wear in the perforation from prolonged use. It seems more likely that in most instances the perforation was purely for the purpose of attaching a cord and that the pins were made to secure an article of dress: on the continent, Migration Period burials have been found with pairs of similar pins, one at each shoulder (eg Nerman 1935, Textfig 108), perhaps originally joined by a cord; in Ireland on the other hand, where pigs' fibulae were commonly used as pins in the early Christian period (there are one hundred and thirty-one from Lagore (Hencken 1950, 194), for example), those with perforated heads are thought to have had a cord passed through the perforation and tied around the point, keeping the pin in place and forming at the same time a rudimentary brooch (Hencken 1938, 38).

Two pins of rather flat cross-section (109-110) are decorated with transverse cut marks whose only function (if they had any at all) must have been to prevent them slipping out of position; certainly their 'rune-like' appearance commented on by Traill is purely fortuitous. Fragments of two similarly decorated pins in the National Museum (GO 229-231) come from Howmae, a habitation site about a mile NW of Burrian and perhaps partly coeval with it (MacKie 1956b, 97) and a coarser example with decoration in the form of a continuous zig-zag was found at Bruthach a Sithean, South Uist, where it was judged to have been used as a potting tool (Lethbridge 1952, 187, fig 4, 6).

Four varieties of bone heads for metal pins are represented at Burrian. One solid type (111) finds parallels (Stevenson 1955a, 292 f) from the East Broch of Burray and the Broch of Ayre in Orkney, from Kettleburn Broch and Freswick in Caithness and from Buston Crannog. An ultimate derivation from Romano-British pins with larger heads of jet is suggested (*ibid*).

Another pin head (112), bun-shaped and made from an animal tooth, belongs to a group with a peculiarly Orcadian distribution (Brochs of Midhowe, Oxtrow and Howe) although Stevenson (1955a, 292) cites what may be an imitation in cetacean bone from Foshigarry, North Uist, (Beveridge and Callander 1931, 339).

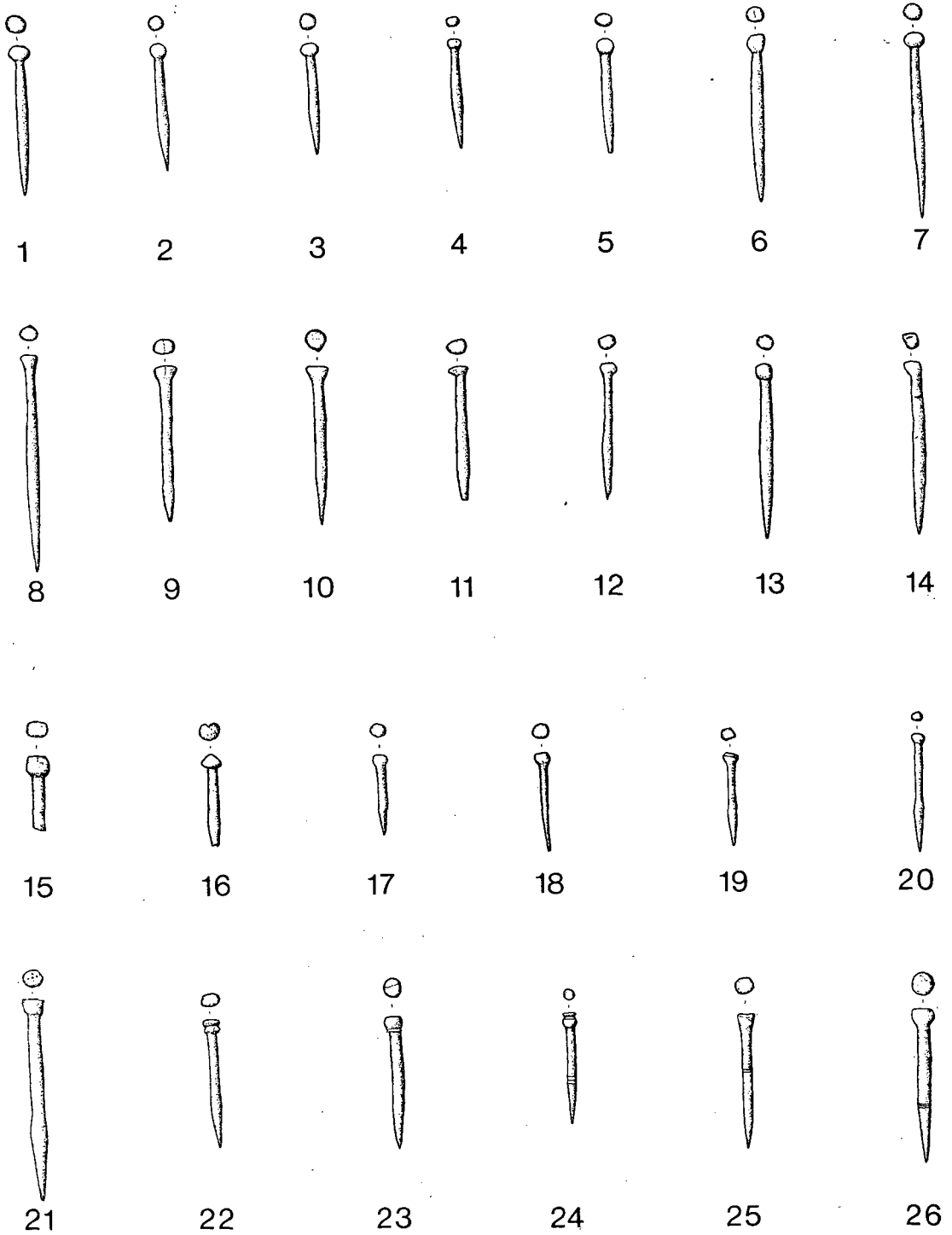


FIG 5 Bone pins (1 : 2)

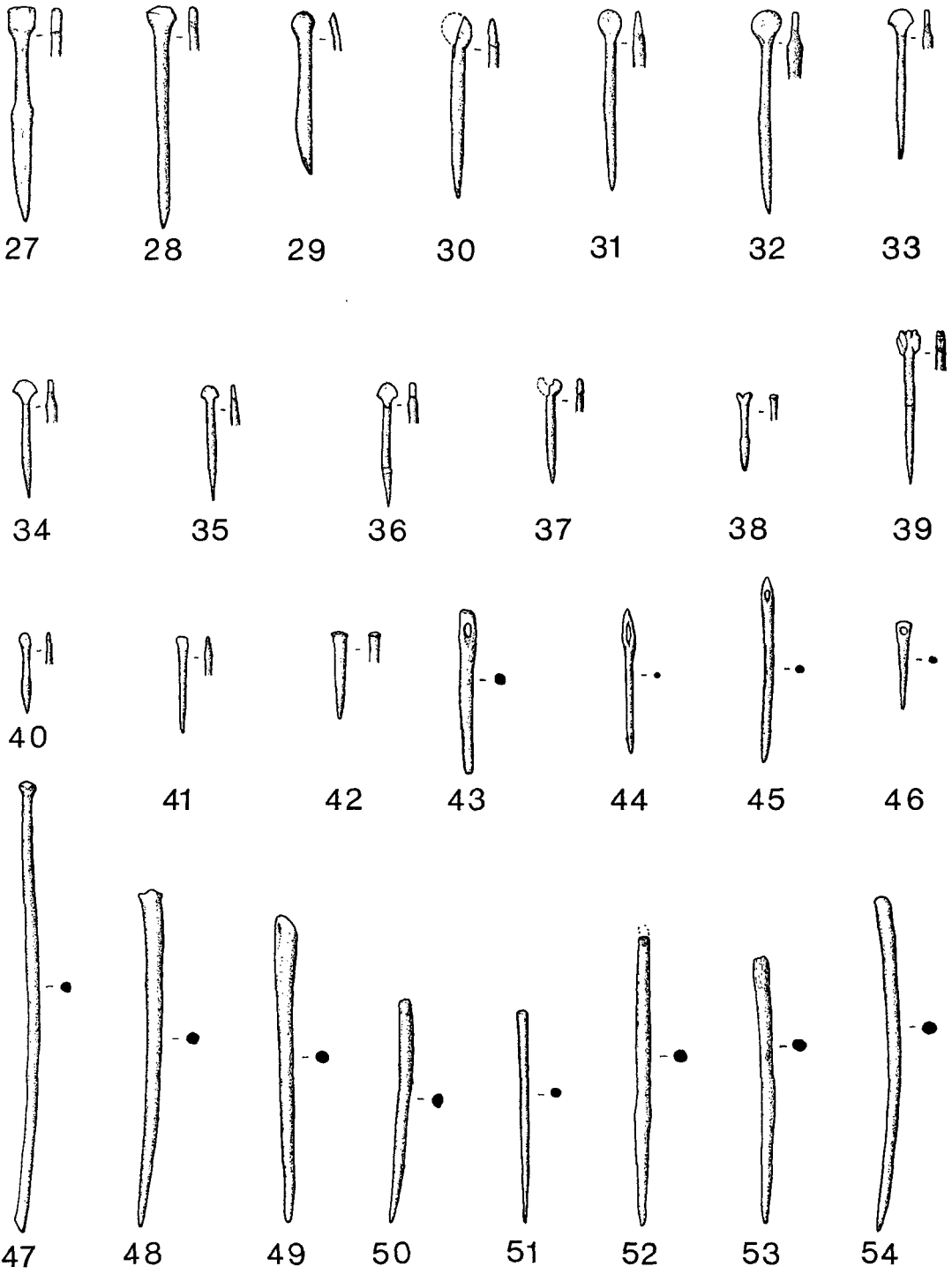


FIG 6 Bone pins (1 : 2)

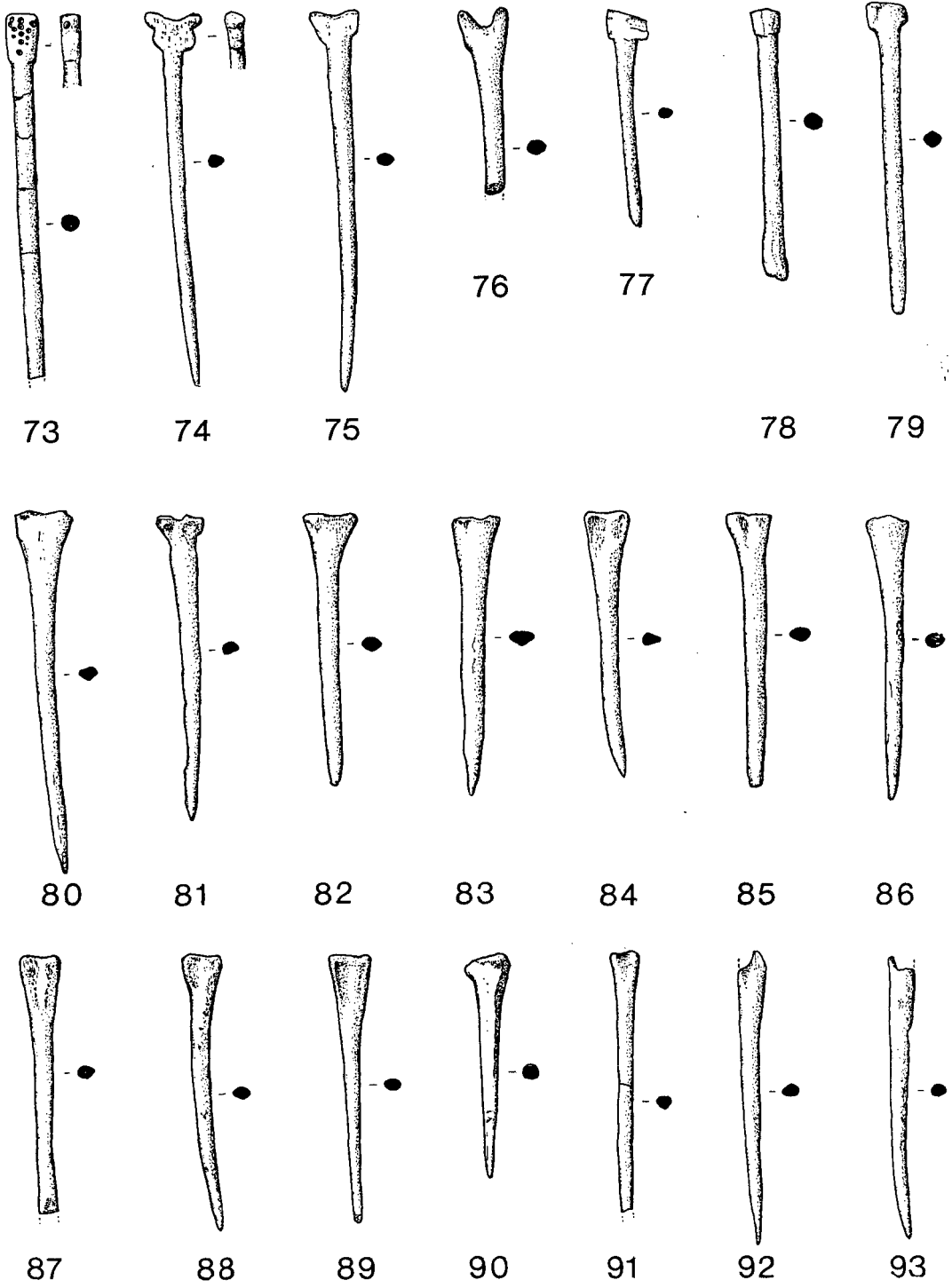


FIG 7 Bone pins (1 : 2)

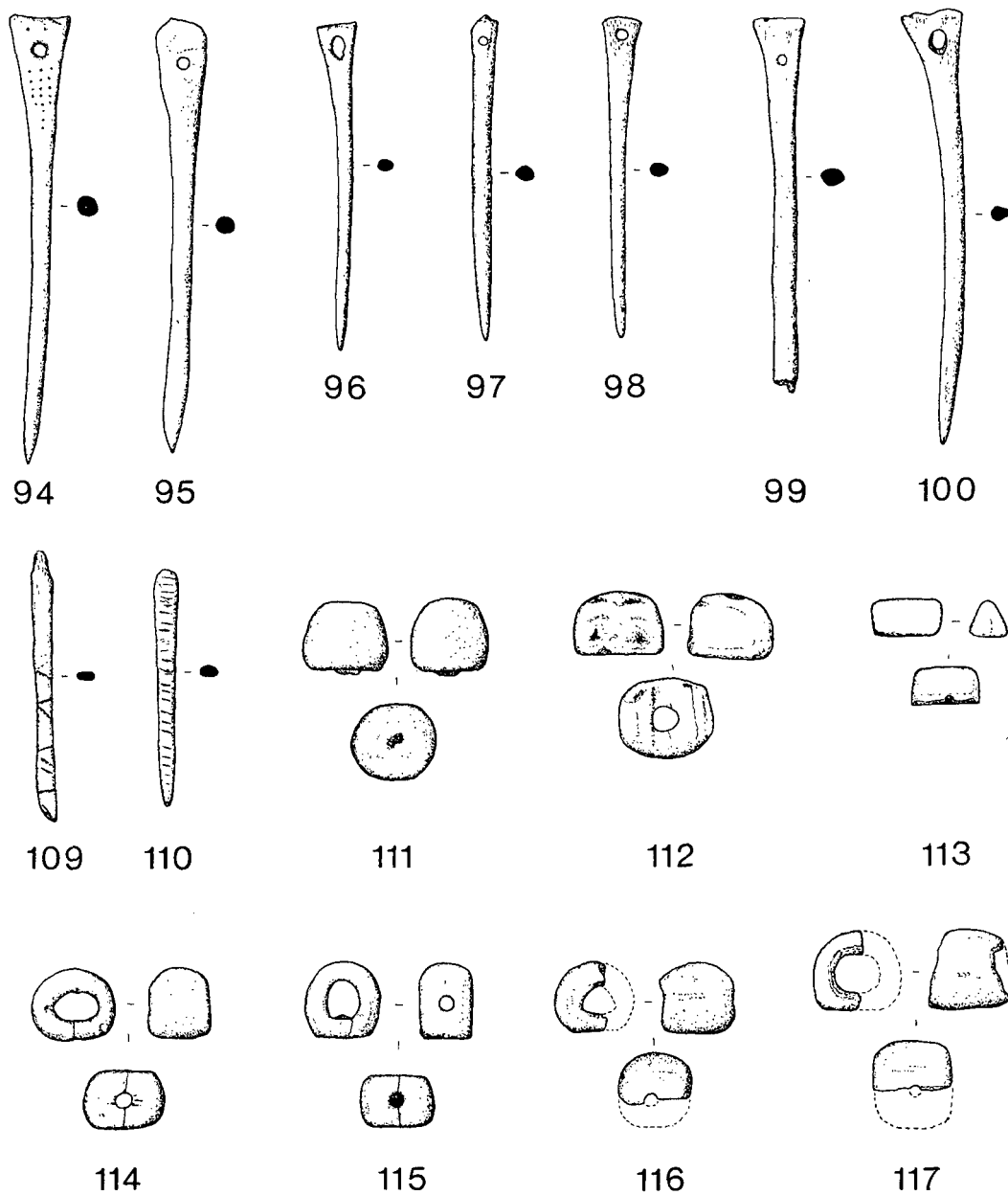


FIG 8 Bone pins and pin-heads (1 : 2)

No. 113 seems to be another pin head, again of ivory and retaining part of the iron-oxide-stained shank hole. It may on the other hand be a playing piece, similarly shaped (but unsocketed) bone objects from the Frisian *terpen* having been identified in this way (Roes 1963, 54 f, pl XL, 38) while other more conventionally shaped playing pieces with basal sockets are scattered from Sandwick Bay, Shetland (*Proc Soc Antiq Scot*, 66 (1931-32), 216, fig 3) to Cahercommaun, Co. Clare (Hencken 1938, 64, fig 39) and a gaming board with peg holes for the playing men was recovered from Ballinderry Crannog 1 (Hencken 1937, pl XXV). Another possibility is that this object had a purely decorative function, as has been suggested for a similarly shaped section of boar's tusk from Dinas Powys (Alcock 1963, fig 34, 12), secured originally by an iron nail.

A fourth distinct type is represented by 114-117: these are cut from a hollow section of long bone, ground and polished to a more or less globular shape on top and pierced by the shank of the (usually metal) pin on the flattened underside. Stevenson (1955a, 292 f) lists five other Orkney brochs which produced similar pin heads, others coming from the Brough of Birsay, Bac Mhic Connain and Corbridge. Some at least of the thirteen examples from Ballinderry and Lagore seem to have surmounted shanks of bone rather than iron. One pin very similar in shape to 115 came from Dùn an Fheurain, but since it lacks a shank hole it has been interpreted (Ritchie, J N G 1971, 103, fig 2, 19) as a bead.

Bone tool handles, implements, etc (figs 9, 10)

An interesting variety of bone handles was recovered from the Burrian excavations (fig 9) but all the iron tools they once served have long since oxidised completely. Of those socketed longitudinally to take the tang of a knife or similar implement (118-123), only one (119) still retains part of the tang *in situ*.

A second group (124-126) evidently functioned in quite a different way, all of them being narrowed externally around the lower end. In the case of 124 this narrowing has been deliberately achieved by cutting away the bone, perhaps with the intention of fitting the handle inside a socket but 125 and 126 seem rather to have been waisted in the performance of their function before being finally broken. Many bones waisted in the middle and quite often broken at this narrow point are known from comparable sites in the Atlantic province, for example from Foshigarra (Beveridge and Callander 1931, 332 f, fig 13) and the 'earth house' at Galson, Lewis (Edwards 1924, 201, fig 9). Their purpose has never been convincingly demonstrated, although similar but heavier pieces may have been used as quern handles (Young and Richardson 1960, 166, fig 13, 44). It is also possible too that some of them may have served as bow drills; Traill (1890, 345) suggested that one of the finds (apparently 125) might have been a bow drill. Another possible function for these items may be inferred from the conclusions reached by Semenov (1964, 189 ff, fig 103) about a group of similarly worn bones from early medieval sites in Russia. Microscopic study and astute interpretation of the wear marks on these Russian bones showed quite convincingly that they were used for softening and stretching thongs. To assign the same function to the Scottish bones on the strength of purely superficial resemblance would be to negate the whole basis of Semenov's approach but there seems a good chance that a similarly detailed study of these would confirm the relationship and settle matters once and for all.⁴

The two items of cetacean bone numbered 127 and 128 were more certainly used as implement handles, although the method of hafting must have been quite different from those mentioned above: both handles have transverse perforations designed to take a square tang and 128 has in addition two peg holes towards its outer extremities, implying that the implement (perhaps an auger) was fitted with some sort of cross bar or plate secured to the handle by pegs as an additional precaution against rotation of the tang within the socket. One handle similar to 127 came from the secondary

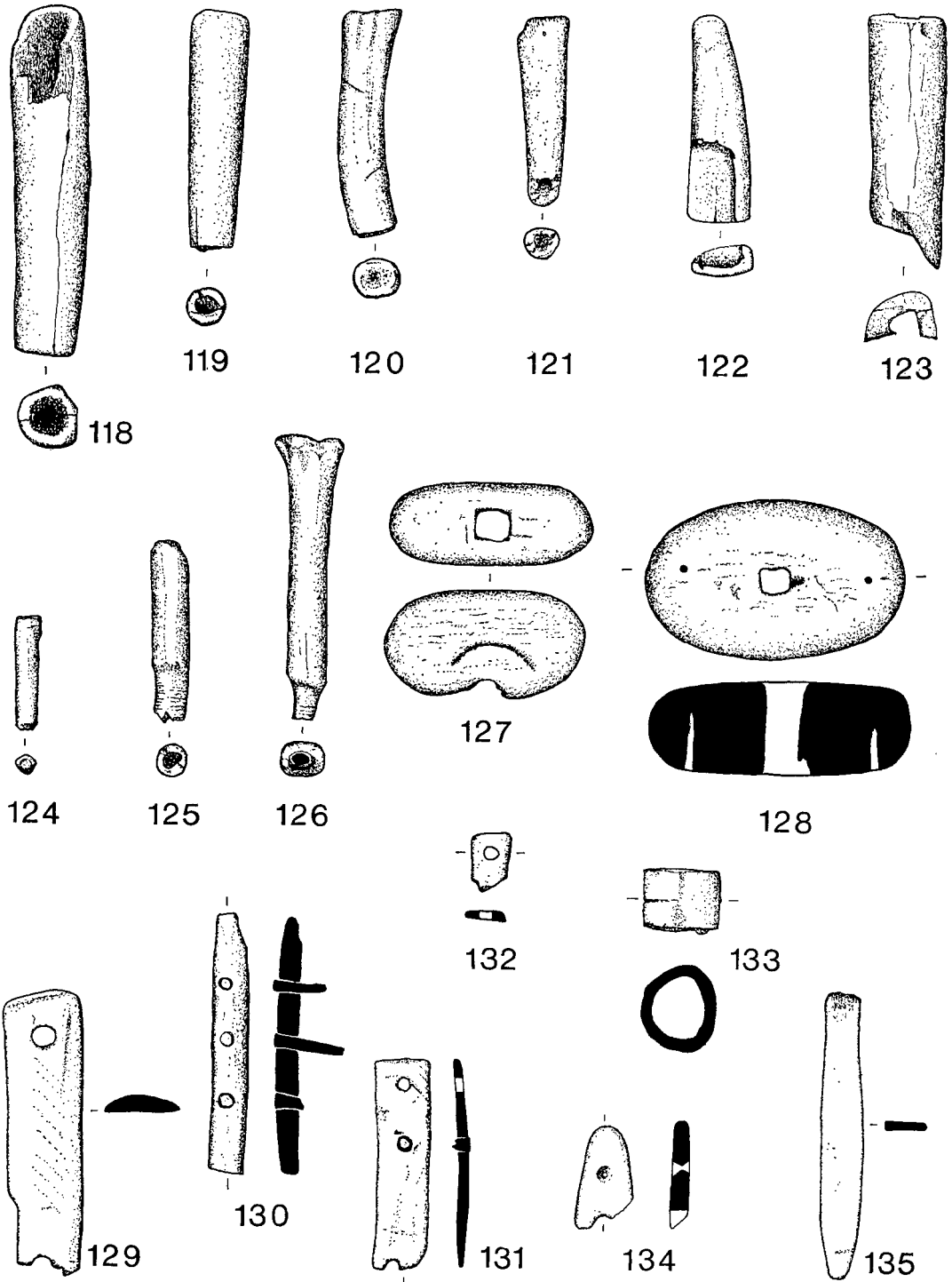


FIG 9 Bone tool-handles and mounts (1 : 2)

buildings at Midhowe (Callander and Grant 1931, 481, fig 32, 4) while a comparable but much finer example from à Cheardach Bheag was thought (Fairhurst 1971, 199, fig 10, 1) to be either a pendant or, more probably, a pommel, being 'neatly bevelled at the upper edge as though for a dagger'. No. 127 may be the 'bone whistle' listed by Traill, as the Midhowe example was similarly described as 'like a whistle' (Callander and Grant 1931, 481) (see also p 290 below).

The bone plate no. 129 almost certainly served as one side of a knife handle. At Clickhimin such hilt plates were common in the broch period but died out in the subsequent wheelhouse phase (Hamilton 1968, 132), while some at least from the Broch of Ayre were in a secondary context (Graeme 1914, 41 f, 51). The similar pieces nos 130 and 131 must have had some different function, however, perhaps as decorative mounts on wooden objects, since the bone pegs with which they were secured would be quite unsuitable for hafting.

No. 134 resembles the type of latch or sneck still made in metal today and known also in bone from à Cheardach Mhor (Young and Richardson 1960, 166, fig 13, 41). Bone collars similar to 133 are known from Bac Mhic Connain (Beveridge and Callander 1931, 52 f, fig 9), from the wheelhouse period at Clickhimin (Hamilton 1968, fig 60) and elsewhere, but unfortunately there are no clues as to their purpose. The function of the thin slip of bone no. 135 is also undetermined although the wear on the end suggests that it may perhaps have been used as a burnisher in leatherworking or potting.

Further artifacts of bone and antler are shown in fig 10. No. 138 belongs to the family of implements known collectively as gouges, frequently made, as here, from a long bone from a sheep or goat. A large series was discovered at Glastonbury (Bulleid and Gray 1917, 419 ff) where sixty-five specimens of varying forms were distributed throughout the village. This example belongs to Bulleid and Gray's Type F, retaining its articular surface intact and being unsocketed. The most plausible explanation of these unhafted gouges was proposed by Crowfoot (1945, 157 f), who interpreted them as 'dagger beaters', used either horizontally or vertically to beat up the loose weft on a loom, and the most recent authoritative study of textiles and weaving in antiquity (Wild 1970, 66, 133) confirms this interpretation. Though susceptible of being used for a variety of purposes, the smoothness to which the Burrian example is worn would certainly be compatible with its being used in weaving. More definitely boring tools are 139-142, while 143 is another gouge-like implement, this time formed by cutting a sheep's long bone into a flat chisel-point. Seven similar implements came from Midhowe (Callander and Grant 1934, 487, fig 27), where some had their points cut in the same plane as the joint while others were at right angles to it; two at least of these (ibid, 463) came from a secondary compartment within the broch.

Antler tines worked in the manner of 144 are thought (Roes 1960, 70 ff) to perform one of two functions: those notched or bored at the base and with an additional notch in the centre are thought to be harness cheek pieces while others more akin to the Burrian example, having no central notch or worn area, may be straw needles for basket work, thatching and the like. Other, unnotched examples come from Stacwick Bay on the neighbouring island of Sanday (NMA GA 967) and Cin Trolla broch, Sutherland (NMA, GL 24).

The small bone tool (145) with a triple-ridged end seems to be unparalleled elsewhere. There is no doubt that the ridges have been deliberately cut and are not the product of wear and tear, and it seems likely that their function was to impart their pattern on to some other material, most probably leather.

In the National Museum collection 146 is described as a lynch pin, but the length and strength of the pin hardly seem adequate for such a purpose and there are no wear marks to confirm that it has ever been in contact with a wheel hub.

Although bearing some superficial resemblance to each other, the two perforated bone discs

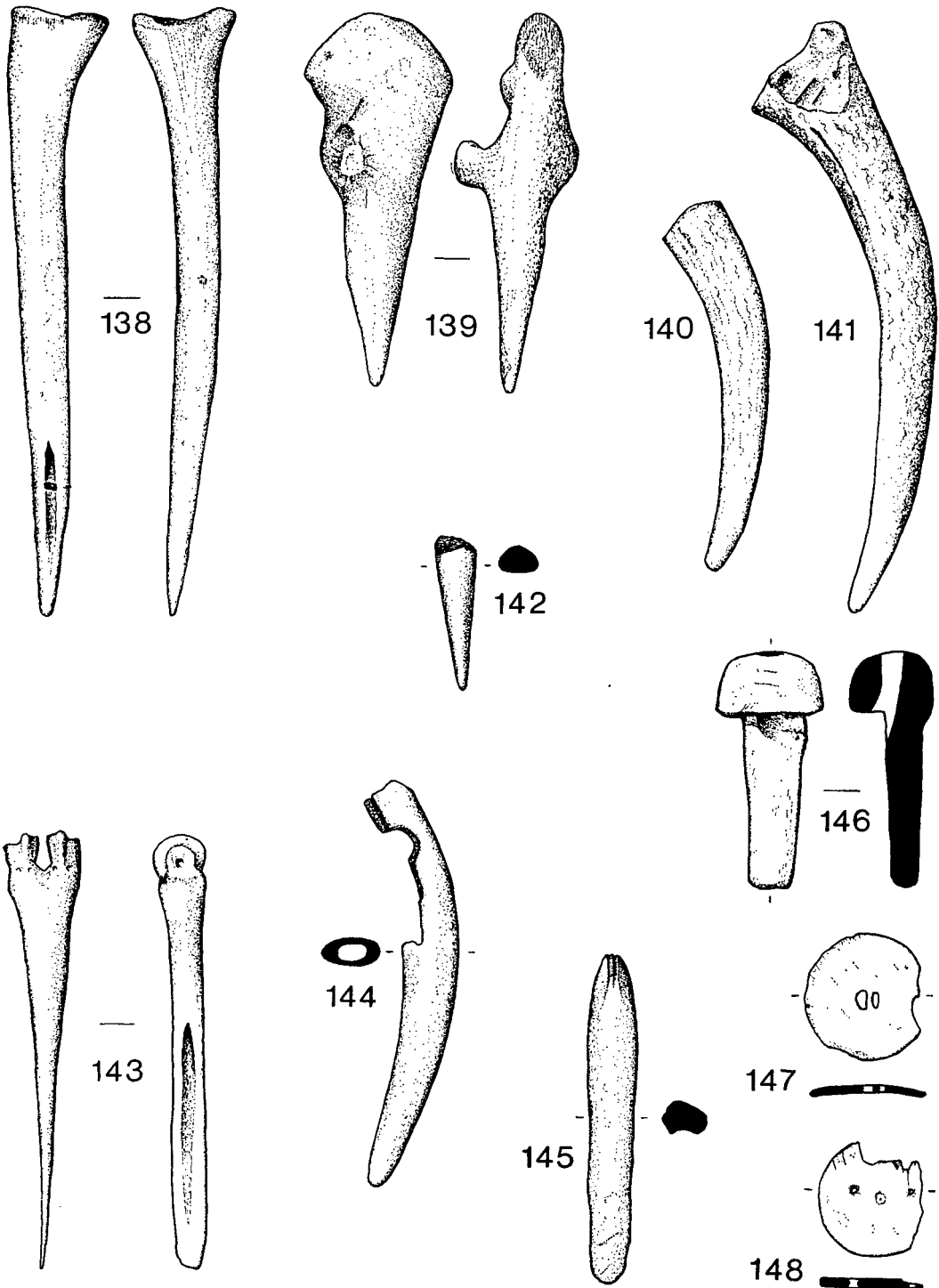


FIG 10 Bone and antler implements, etc (1 : 2)

(147-148) seem likely to have performed quite different functions; it has been suggested recently (Small *et al* 1973, 122 f) that they and others like them served as dress or girdle fasteners and while this may be true of 147, the relatively fragile centre-piece would take very little strain indeed and may indicate a purely decorative role. Two other discs which may have formed part of some scheme of decoration are those with single perforations found at Dun Troddan, Glenelg (Curle 1921, 89) and Baleshare, North Uist (NMAS GT 905). The perforations on 148 are, on the other hand, too far apart to have made a satisfactory button and the manner in which the holes have been worn indicates rather that it was used as a weaving tablet. This was also the interpretation suggested by Audrey Henshall (1950, 148 ff, 161) for this and similar discs from elsewhere. Tablet weaving as a method of producing braids and closing borders is described by Hoffman (1964, 167 ff). The resemblance noted by Wilson between these bone discs and those in silver from St Ninian's Isle is therefore likely to be coincidental, and even their contemporaneity, which he regards as highly probable (Small *et al* 1973, 122), cannot be established with any degree of certainty.

Hair combs (fig 11)

With one exception (151) the toilet combs from Burrian are all of the composite variety and fall into two basic categories, single-edged and double-edged; several of them share common decorative features in the form of engraved ring-and-dot ornament and many have suspension holes. The round-backed outline of 149 may be derived from earlier one-piece combs, represented in this country by examples from Ghegan Rock, East Lothian (Laidlay 1870, fig 3) and Langbank Crannog (NMAS, HC 105). Close parallels for 149 come from Buckquoy (Ritchie, A 1974, fig 2, 9), the Broch of Burwick (Anderson 1883, fig 213), and the Brough of Birsay (unpublished), the latter two showing the same decorative use of drilled holes. The flattened ogival outline of 150 is less common but may be compared with similar treatment of the end sections of certain double-edged combs of the type represented here by 154.

Though hitherto catalogued as part of a double-edged comb 151 should be seen as rather a coarse representative of a group of small one-piece single edged combs known from several other broch sites, including Bowermadden (Anderson 1883, fig 205) and Kettleburn (NMAS, GI 37) in Caithness and from Midhowe (NMAS, GAM 163) and Borwick (Tankerness Museum, Kirkwall, S54) in Orkney.

Double-sided combs are numerous represented (153-165) but, although there is some small variation in the fineness of the teeth from one comb to another, in no instance is there any significant differentiation between one side and the other of the same comb. Alcock (1963, 154 ff) has pointed out that early examples of double-edged combs in the Roman period were always provided with coarse teeth on one side and fine on the other, but while this differentiation was largely maintained on Migration-Period combs on the continent it began to fade on pagan Saxon combs and virtually disappeared in the Celtic west. Alcock concluded that the now redundant second set of teeth survived by virtue of the 'control of tradition over craftsmanship', but, since the care lavished on their execution shows that they were prized as much for their decorative as for their functional value, one wonders whether the pleasing visual symmetry of the vertically suspended double-edged comb did not play a part in perpetuating the obsolete form. Considered purely as pendants 150 is much less satisfactory than 153, while the multiple holes in 149 may represent in part at least an adaptation to the horizontal display of the single-edged comb.

Close parallels for 153 come from Buckquoy (Ritchie, *A Proc Soc Antiq Scot*, forthcoming) and Buston Crannog (Munro 1882, fig 218), while a similar one-piece example in wood from

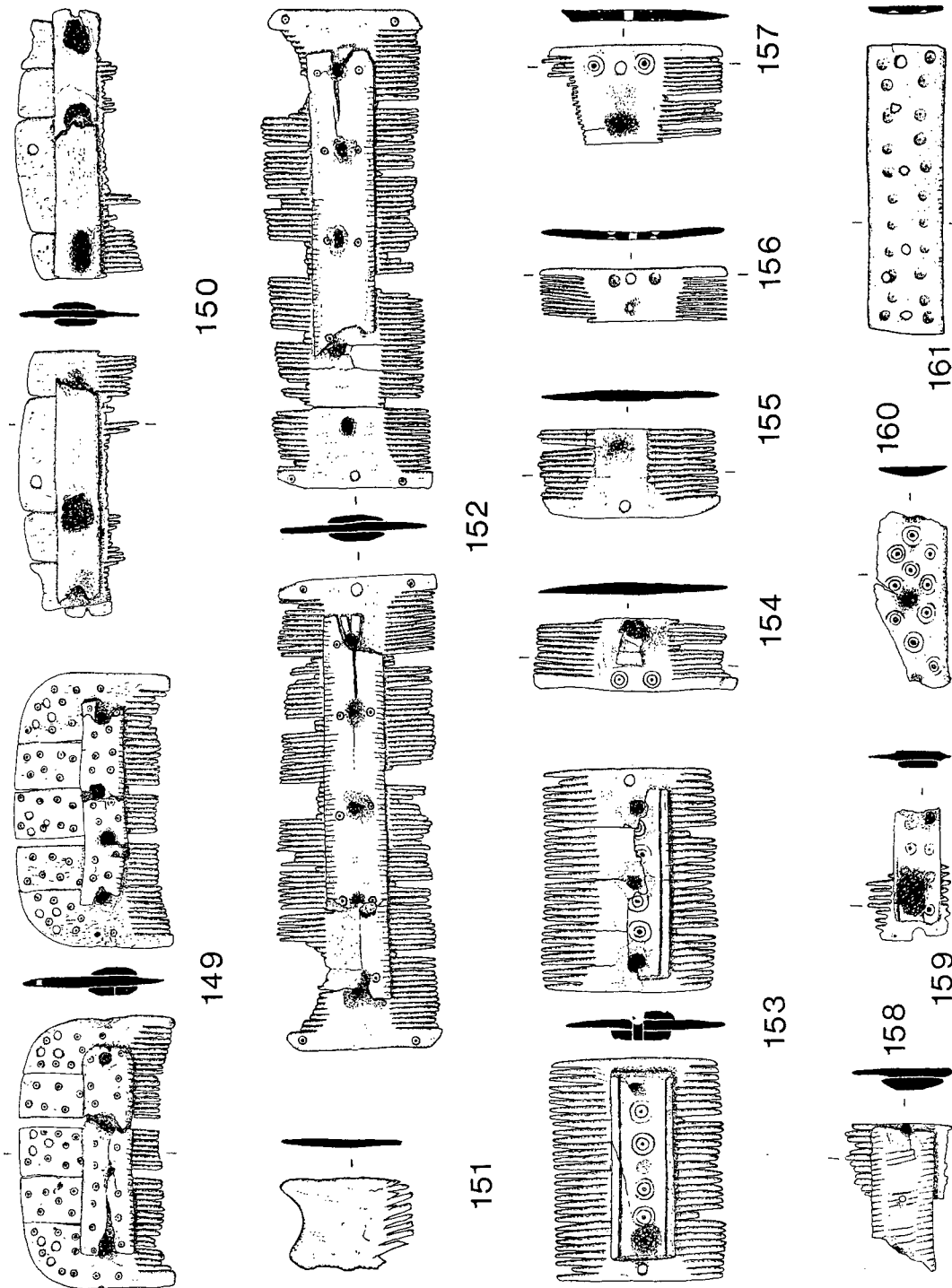


FIG 11 Bone hair combs (1 : 2)

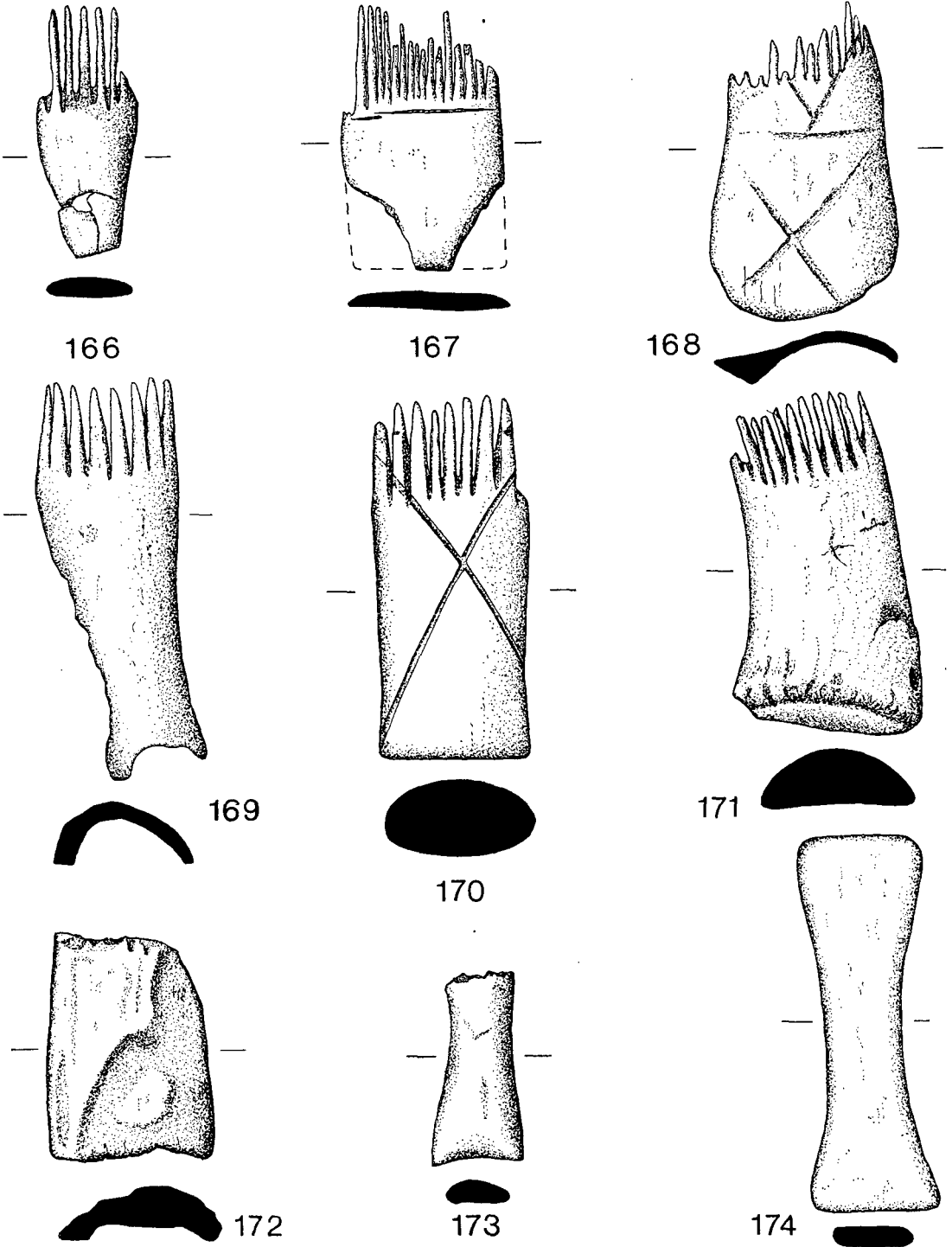


FIG 12 Bone and antler weaving combs (1 : 2)

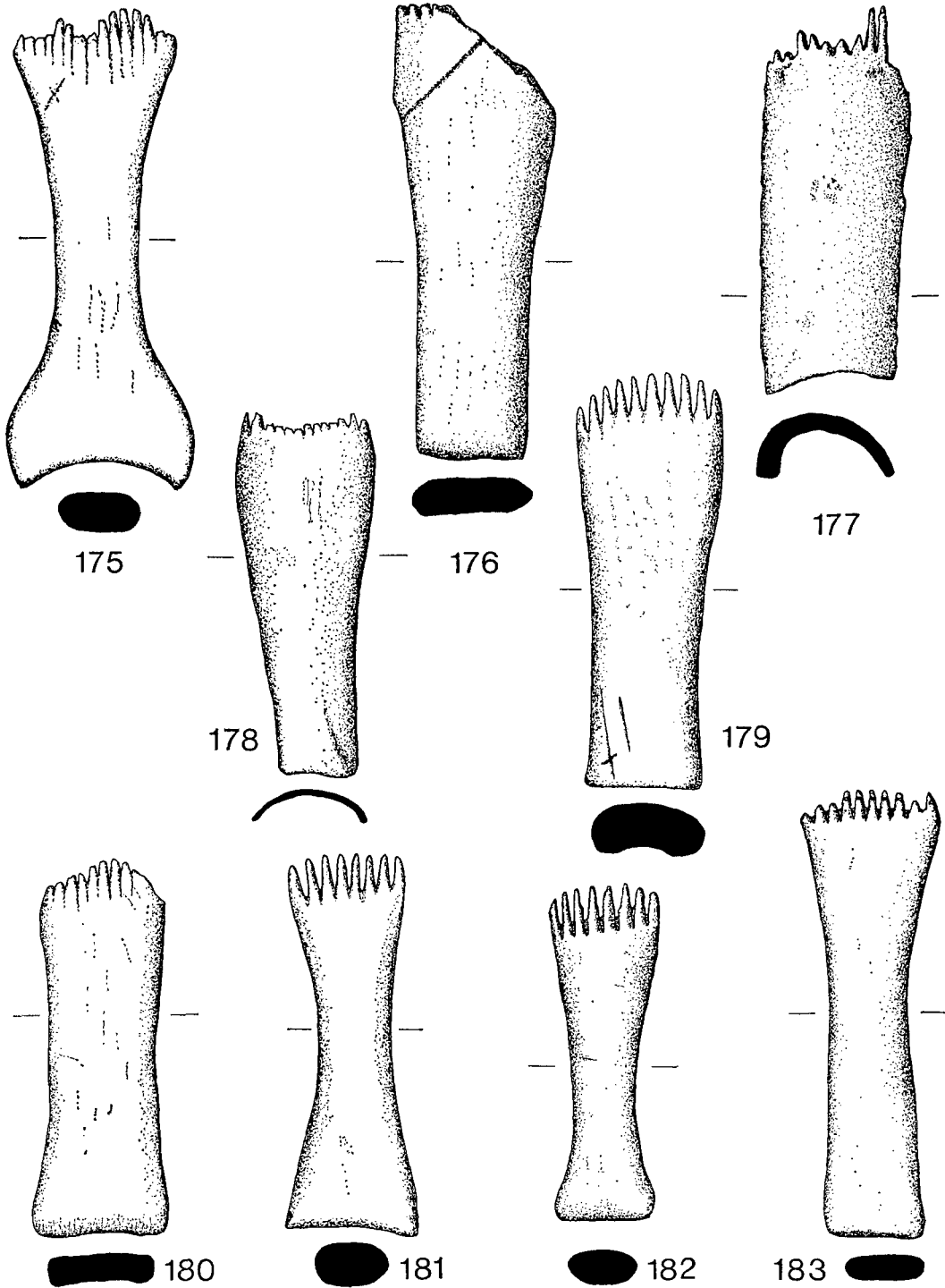


FIG 13 Bone weaving combs (1 : 2)

Ledaig Crannog, Argyll (Munro 1882, fig 27) is notable for having retained the differentiation of coarse and fine teeth. The ogival outline of the end piece of 154 has a fairly wide distribution reaching as far as Dinas Powys (Alcock 1963, 158, pl VII), Ballinderry Crannog No 2 (Hencken 1942, fig 22, 487) and Lagore Crannog (Hencken 1951, fig 97, 1615).

The only alternative to ring-and-dot decoration (or in the case of 156 and 161, dots only) on the Burrian combs are the groups of diagonal lines on 158, which find a few parallels elsewhere in Scotland, at à Cheardach Mhor (Young and Richardson 1960, fig 15, 51) and Dùn an Fheurain (Ritchie, J N G 1971, 103, fig 2, 18) for example. A very similar fragment from Dinas Powys was thought (Alcock 1963, 159) to be rather late in the sequence, being compared to tenth-century Irish examples, but at Burrian it seems more likely that this comb and all the others belong with the material already discussed from the two or three centuries before the arrival of the Vikings. The earliest possible date for their introduction is undefined but it has been suggested (MacKie 1965b, 120) that the Scottish examples have their origins in an influx of new cultural traits in the fifth or sixth century.

Weaving combs (figs 12, 13)

Even by the time Burrian was excavated there was some confusion about the precise function of these long-handled combs: in this journal a century ago Coughtrey (1872, 141), after summarising the arguments which had gone before, concluded that they were used principally for combing or carding wool, while a few pages further on Anderson (1872, 551 ff) declared himself convinced they were weaving combs, introduced to the broch dwellers by way of the Romans. While it is now well established that such combs had a considerable ancestry in Britain before the arrival of the Romans (Hodson 1964, 103), some measure of doubt has remained to the present day as to whether they had anything at all to do with weaving (see, for example, Alcock 1972, 153). Once again, microscopic examination of the wear patterns should produce a clear answer, and in the meantime the present writer is inclined to consider them as part of the assemblage from Burrian associated with a flourishing textile industry. Wild (1970, 66) favours the interpretation of these implements as weaving combs but characterises them as having a long handle and short teeth. While this would adequately describe some of the Burrian combs (fig 13) there are a number of others which seem to fall into a separate group (fig 12, 166-168), being marked by their relatively long teeth and short handles. These presumably would be well-adapted to teasing out wool while at the same time being more prone than the short-toothed variety to getting broken in the beating up process, so that there may still be room for different functions to be assigned to combs of this general class.

A few of the combs and the uncut blank (174) have been waisted in the middle but only in 175 has this treatment been carried beyond a rudimentary stage to approach the fishtail form that has been related (Thomas 1961, 25) to Scottish cave art of the second to fourth centuries AD. The incised saltire decoration on 168 and 170 is a motif with a distribution as wide as that of the combs themselves.

Traill (1890, 342 f) records that at least one of these combs came from a secondary context, although elsewhere (ibid, 364) they are listed as belonging to the first occupation. At Clickhimin similar combs were used by the builders of the primary broch (Hamilton 1968, 114) while in the excavation of the Broch of Gurness, Aikerness, one example came from a level associated with an ogham-inscribed knife of the fifth century or later (Henshall 1950, 146). The date range of the Burrian combs can therefore not be convincingly narrowed within the broad limits for the site suggested below.

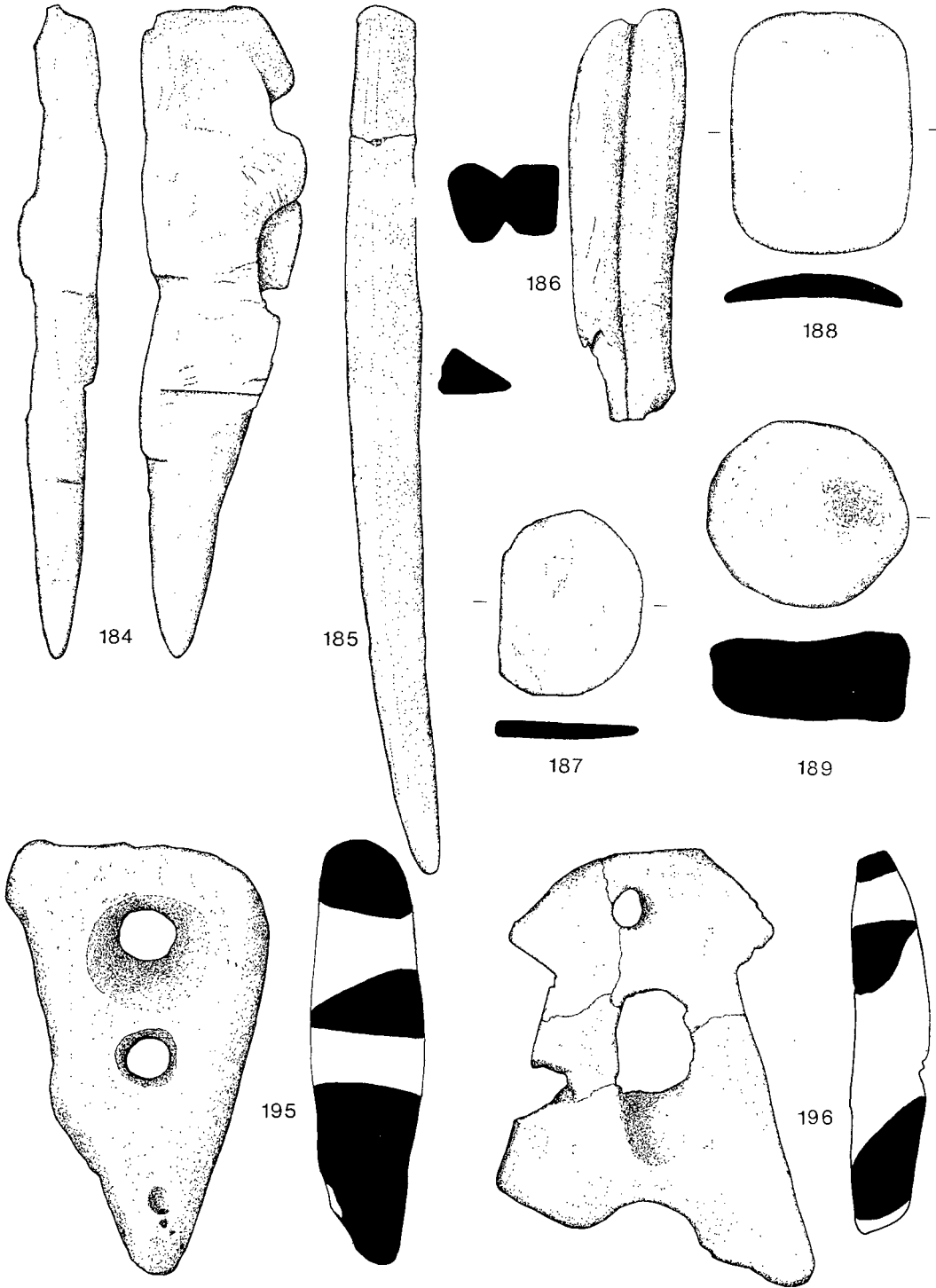


FIG 14 Implements of cetacean bone (1 : 3)

Implements of cetacean bone (figs 14, 15)

Extensive use was made of the bones of large cetaceans, particularly in the production of a variety of robust implements whose respective functions are sometimes quite obscure. This is certainly true of 184, a large and irregularly shaped stake which is nonetheless of considerable interest as it was evidently shaped with a metal saw and worn by the friction of a rope.

The group of flat plaques of bone numbered 187-194 was first given an identity by Anderson (1872, 560) who stated confidently that 'they are the "rubbing bone" so well known to the Irish hand loom weaver, used for smoothing down the weft as it is woven'. More elaborately wrought plaques, often with carved terminals of opposing animal heads are known from Migration-Period and Viking contexts in Scandinavia, where a large proportion of them come from rich female graves and are interpreted as 'ironing boards' for smoothing linen (Sjøvold 1971, 1202 f). While flax was grown in Scotland by the Bronze Age at least (Jessen and Helbæk 1944, 55 f) it seems unlikely that the ladies of broch and post-broch society had a great deal of linen to care for, and once again Anderson's interpretation is probably the correct one, these bones representing a further facet of the Burrian weaving assemblage.

No explanation has ever been offered for the blocks of bone numbered 195 and 196. Both have been considerably worn, apparently by ropes, but their purpose remains quite unknown for the present.

Only slightly less obscure are the five mattock-type implements illustrated in fig 15. The most conventional of these is 197, although it is unclear why it should have been provided with two holes instead of the usual one; a similar (undated) large blade with three holes from Berneray, Harris, was thought (Crawford 1967, 89 f) to have been secured to its haft by both pegging and lashing. A different method of hafting is obviously implied for 198: perhaps it was mounted in a split shaft like an axe, although there are no visible signs of wear to verify this suggestion. Those numbered 199-201 may be compared with forty similarly shaped pieces from Foshigarry (Beveridge and Callander 1931, 303, 351 f) but unlike them are not provided with opposing notches for hafting; 199 and 201 have instead been pierced with central shaft-holes like mattock blades.

A variety of functions has been suggested for implements of this general class: some have been called blubber mattocks (Clark 1947, 97; Scott, W L 1948, 84); others may have been used as rasps in the preparation of skins and clothing (Beveridge and Callander 1931, 351); some of the larger ones may have been peat spades or even oar blades (Crawford 1967, 88 ff). Differences in size and shape would certainly allow for a variety of purposes although at present their identification is very much a matter of speculation. On the other hand, the similarities between examples from Burrian and elsewhere in Orkney (from Saverock (Clark 1947, 101) for example) and those from sites on the west coast already mentioned, are sufficiently marked to show that a degree of standardisation of these tool types had developed over quite a wide area.

The remaining implements in fig 15 (202 and 203) are marked by having one face flattened and smooth. These are not coarse, cancellous sections which might have been rasps but are rather to be seen as smoothing or burnishing tools, perhaps used in leatherworking.

Gaming pieces (fig 16)

A small group of objects from Burrian may be identified as gaming pieces, some (204-206) certainly and others (207-212) more tentatively. The three parallelepiped bone dice were among those recently catalogued and fully discussed by D V Clarke. Little remains to be added here except to note that the second-century AD date proposed by Clarke (1970, 216 ff) as the earliest

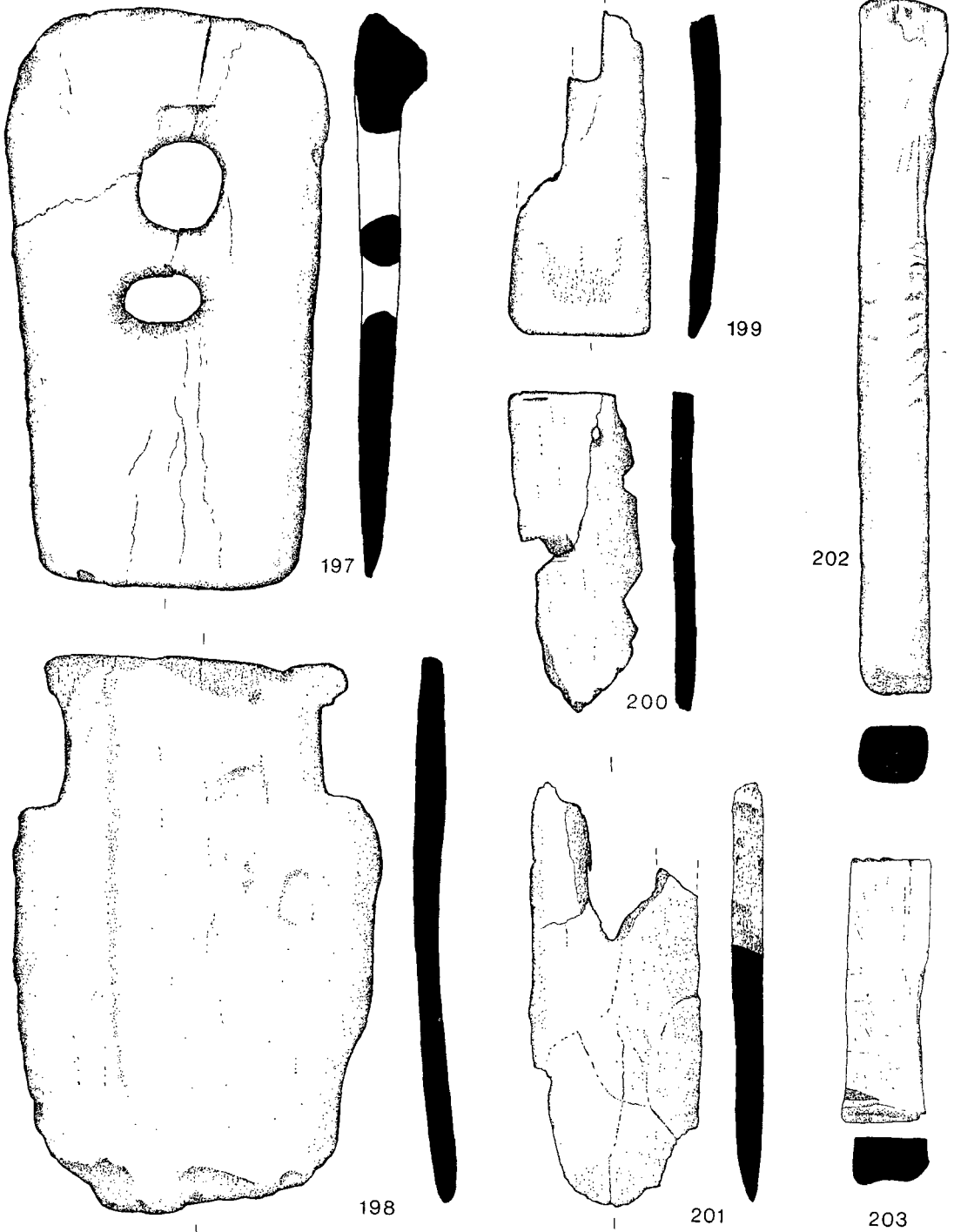


FIG 15 Implements of cetacean bone (1 : 3)

likely date for any of the Scottish dice has been disputed by MacKie (1971a, 68) who claims that one die from Clickhimin (Hamilton 1968, 114) may have been deposited as early as the close of the first century BC, when parallelepiped bone dice were still current in the south. Whether or not this one possibility is enough to justify MacKie's claim (1969b, 57) that bone dice in the Atlantic province should be seen as evidence of direct contacts between Wessex and/or SW England and Scotland is still a little doubtful.

Although varying somewhat in form from one to another, 207-209 may all be explained as playing pieces: comparable examples are known from the continent in the Migration Period (Roes 1963, 54, pl XLIV) and antler tips like 208 have been similarly identified from Dun Cuier (Young 1956, 320).

Only recently has the suggestion been made (D V Clarke, personal communication) that the three ox phalanges 210-212 may be playing pieces. Phalangeal bones were used for this purpose until fairly recent times in the Low Countries (Roes 1963, 55 ff), sets of them being collected and often remaining in use over a long period. Possibly the practice was once current in this country too: at à Cheardach Mhor, for example, the excavators recorded (Young and Richardson 1960, 171) that ox bones were not particularly abundant except for first and second phalanges, which were 'exceedingly numerous'. More recently a single phalanx inscribed with runes was recovered from a Saxon context in Southampton (Addyman and Hill 1969, 86 ff, pl VIIIc) but it lacks the heavy wear on the base which marks 210 and 211 and which is evidently the result of their having been manoeuvred on end. A roe-deer astragalus inscribed with runes, found in the Anglo-Saxon cemetery at Caistor-by-Norwich, has also been tentatively identified as a playing piece, perhaps the king in a board game (Myres and Green 1973, 117, pl XIX, b).

On either face of 210 is inscribed a Pictish symbol, on one side a crescent and V-rod and on the other a circular disc and rectangle with square indentation: these obviously have an important chronological significance, which is discussed below (p 102). The design on 211 is less clear, its form being confused by many subsidiary cuts, but it is certainly not one of the standard Pictish series. Clarke has produced an impression of how the primary symbol may once have looked, included here to the right of the bone (fig 16), and to the right of that again is shown an ogham character from the *Book of Ballymote* (p 313) as a very tentative suggestion for the possible derivation of this symbol, which seems otherwise to be unparalleled. The third phalanx (212) is undecorated but has a hole in the base, perhaps for a peg (see p 76). Alternatively it may be seen as a socketed tool handle, the indentations on either side perhaps serving a similar purpose to the lateral peg-holes in 128; although not a very obvious choice, the use of phalanges as tool handles is recorded from early medieval Denmark (Andersen *et al* 1971, 210).

Bone spindle whorls (fig 17)

The majority of the whorls illustrated in fig 17 are manufactured from the femur heads of oxen, in most cases probably from young animals in which the epiphyses remained unfused; this practice was widespread in northern Europe and there seems little doubt now that these perforated femur heads were in fact whorls. There have been dissenting voices in the past, however, suggesting that they may have been dress fasteners (Young 1956, 321) or perhaps pendants (Scott, W L 1948, 78 f).

Stone spindle whorls (fig 18)

There is a general contention (see, for example, Forbes 1956, 153) that the weight of a whorl is largely determined by the strength of the yarn desired from a given fibre. The Burrian whorls, however, display an almost continuous spectrum of weights between the lightest (248) and

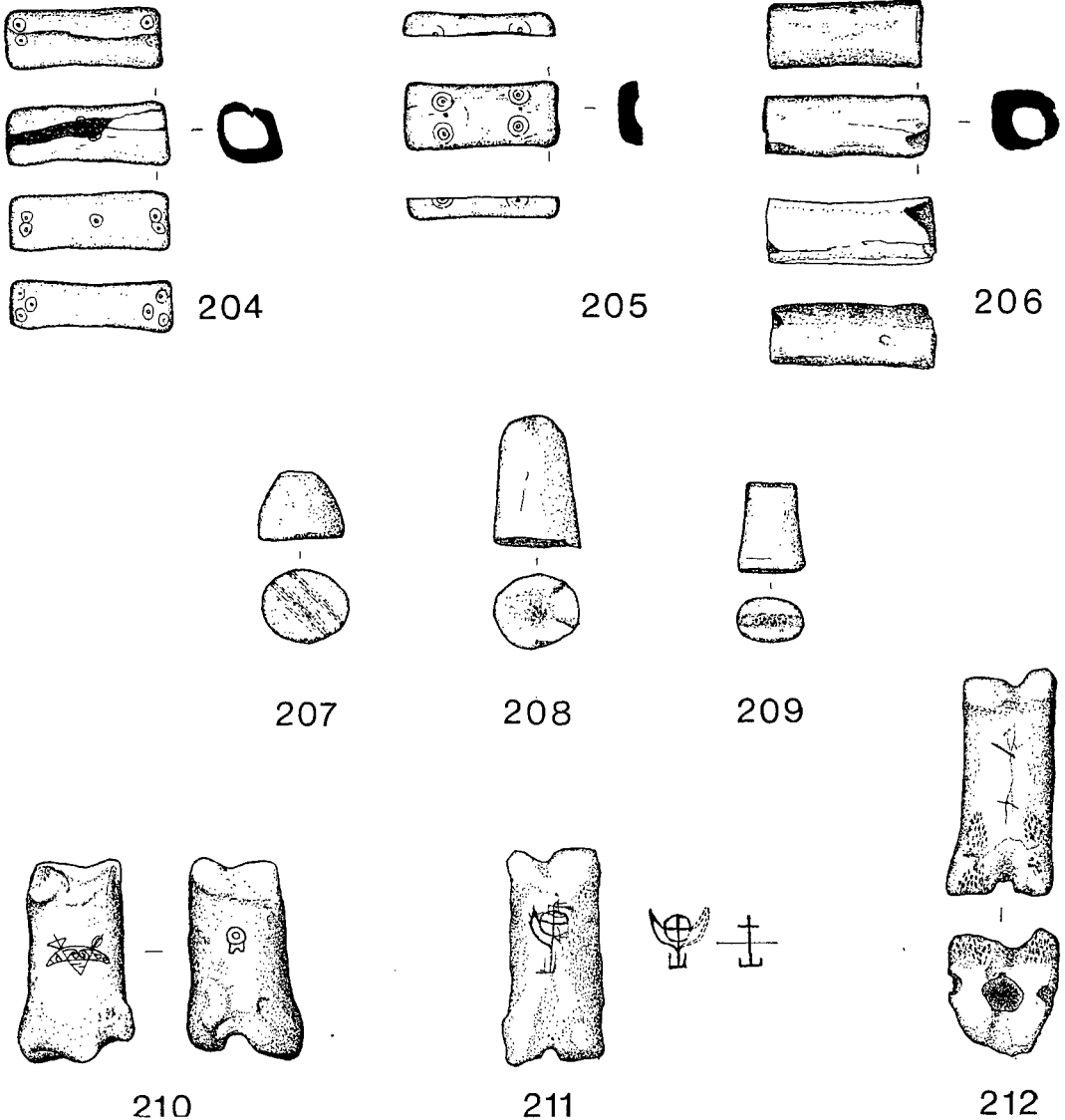


FIG 16 Bone dice, gaming pieces, etc (1 : 2)

the heaviest (230) with no apparent tendency to cluster around any particular point. While it is clear that examples at either end of the scale would not have been interchangeable in their functions there seems no reason to suppose that the weight of the whorls from Burrian was considered critical. In any case, even the lightest of these is heavier than the 8 gm suggested as a suitable weight for the free spinning of Soay-type wool (Ryder 1968b, 81) and while Orkney wool is rather more manageable it may be that these and other whorls like them were used, as Ryder suggests, with the spindle resting on the ground or otherwise supported. It is also possible that some of the heavier whorls may have been used for doubling or plying yarns, to give them greater strength.

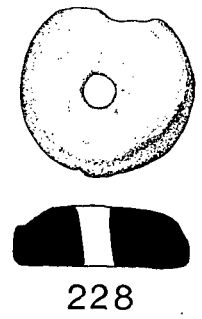
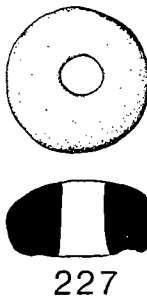
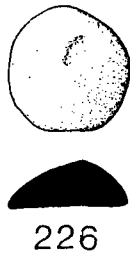
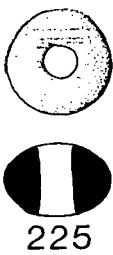
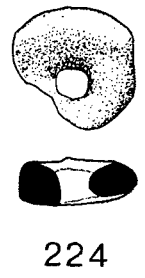
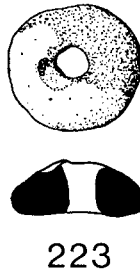
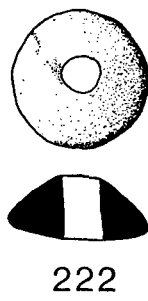
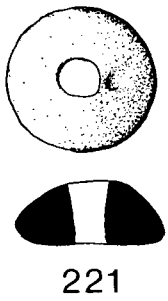
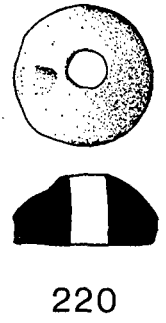
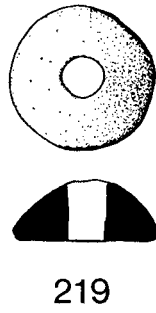
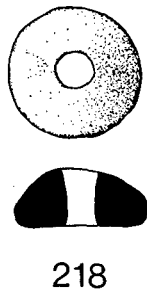
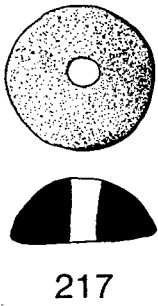
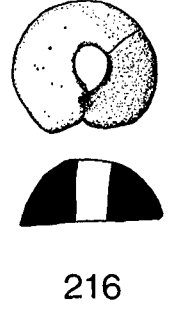
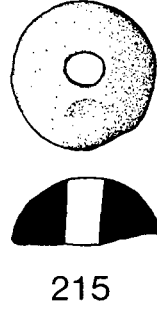
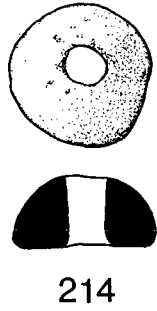
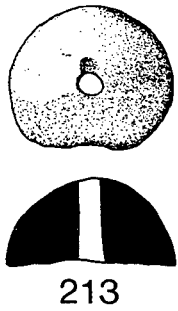


FIG 17 Bone spindle whorls (1 : 2)

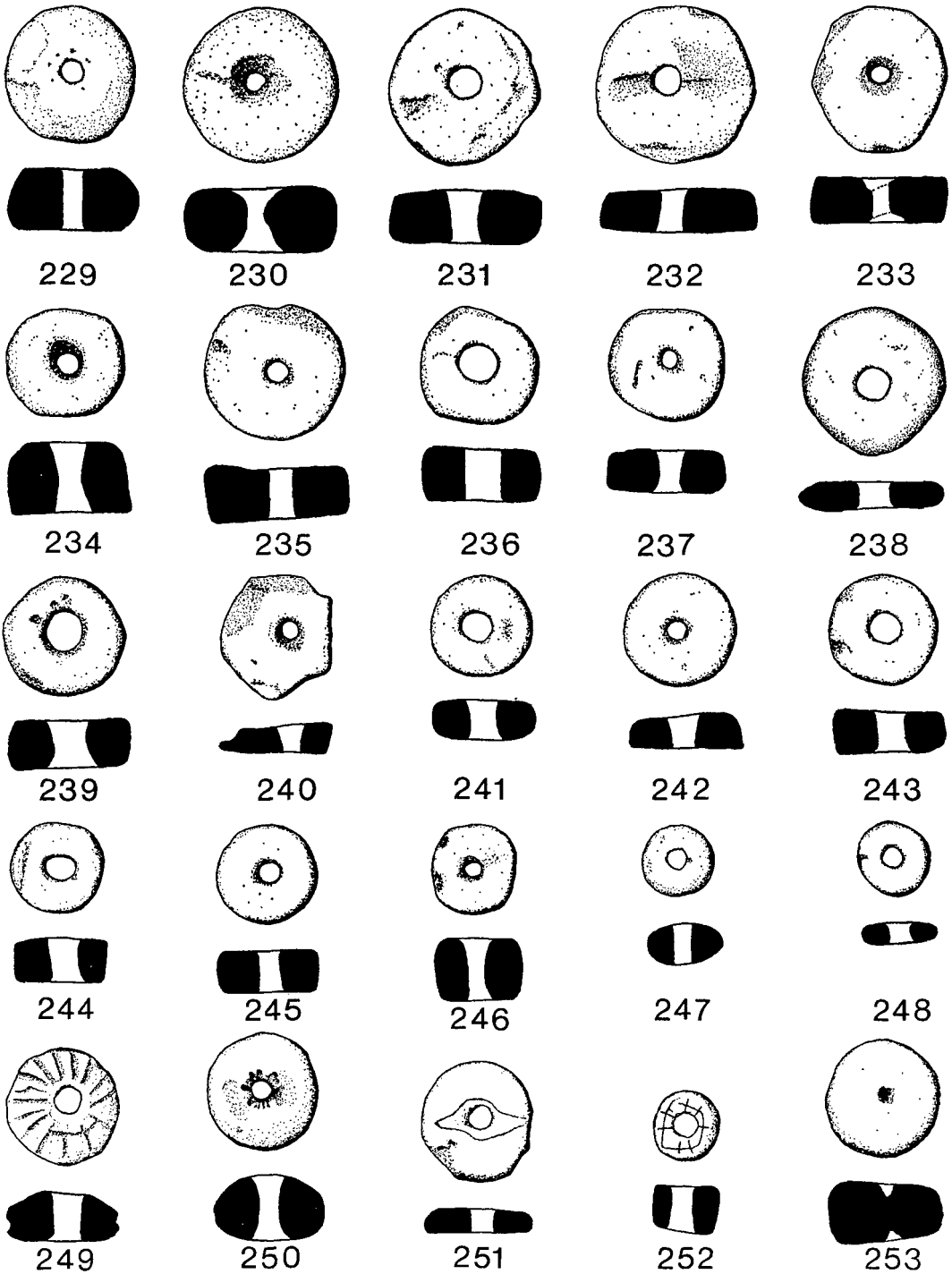


FIG 18 Stone spindle whorls (1 : 2)

One or two of the whorls deserve particular mention. The fact that 229 is made of chalk seemed to open up exciting possibilities of direct importation from the chalk downlands of the south but it seems that a derivation from erratics in the local Cretaceous drift is much more probable.⁵ Several other chalk whorls in the National Museum come from broch sites in the north including Lingrow (GE 11), Burray (GC 29) and Oxtrow (GD 16) in Orkney and Ousedale (GA 353) in Caithness.

No 249 is a 'pulley whorl', having a continuous groove around its edge, and is also decorated with radial grooves on its upper surface. In discussing a similar whorl from the hillfort at Dinorben, Denbighshire (Gardner and Savory 1964, 181 f, fig 30.1), the excavators mention a number of examples from Iron Age and Roman contexts and by adding to their list what seems to be another radially decorated whorl in lead from Dinas Powys (Alcock 1963, 44, 122), found in a context suggesting a date from the fifth to seventh centuries AD, it becomes obvious that these characteristics are of little chronological value. In Scotland they do seem to be found most frequently in brochs and duns, pulley whorls coming from the Tappoch, Stirlingshire (NMA, GM 15), and Dun Mor Vaul, Tیره (Hunterian Museum A. 1965, 244) and disc whorls with radial decoration appearing in Dun Telve, Glenelg (Curle 1916, 254, fig 10), and Dun an Iardhard, Skye to name but a few.

Notches like those around the perforation of 250 do not seem to be paralleled elsewhere in the Atlantic Province but there are several examples from Meare (Bulleid and Gray 1948, 90, pl XXIII) and one from Glastonbury (Bulleid and Gray 1917, 584 f, pl XCI). Presumably they represent wear marks from some secondary function rather than attempts at decoration; alternatively, the suggestion that some stone 'whorls' may in reality have been girdle fasteners (Lethbridge 1931, 76) could offer an explanation.

The ogham-like appearance of the decoration on 252 seems to be purely coincidental, although it might be viewed as an illiterate attempt at an inscription, particularly in view of the recent discovery of an ogham-inscribed whorl at Buckquoy (Ritchie, *A Proc Soc Antiq Scot*, forthcoming). Other ogham inscriptions arranged on circular stem lines are known, on the Logie-Elphinstone stone (Allen 1903, (3), fig 189) for example, and in the *Book of Ballymote* (p 313), but better comparisons may perhaps lie with other whorls on which similar but purely decorative motifs have been incised, most notably a tenth-century example from Jarlshof (Hamilton 1956, fig 66, 7) and one from a Romano-British context at Coygan Camp, Carmarthen (Wainwright, J G 1967, 168, fig 43, 4).

Pumice (fig 19)

The nine pieces of pumice (255-263) from Burrian all show signs of wear suggesting that they had been used for abrading some softer material, and in addition 255-258 have been perforated with suspension holes. Some of the worked bone on the site may have been shaped by this method and a number of other possibilities may be suggested: the presence of a piece of pumice in an early wooden tool box from Howe, Evie (Orkney) (Cursiter 1886, 49) probably indicates that it proved a useful abrasive in the smoothing and shaping of woodwork; twenty-nine fragments found on a neolithic site on Eilean an Tighe, N Uist (Scott, W L 1951, 11 f), where pottery may have been made, had apparently been worn into a concave shape, perhaps through prolonged use in the burnishing of leather-hard pots; it has also been suggested (Binns 1971, 22) that these hard and abrasive pebbles may have proved useful in the treatment of skins. Certainly pumice turns up regularly enough and in sufficiently large quantities to indicate that it was considered a fairly normal accessory on a number of the coastal sites which have been shown to have some contemporaneity with Burrian: forty-one pieces were recovered from Foshigarry

(Beveridge and Callander 1931, 350) for example, sixteen from Garry Iochdrach (Beveridge and Callander 1932, 41) and eleven from Bac Mhic Connain (*ibid.*, 60). A volcanic source in the NE Atlantic, probably in the region of Iceland, has been proposed as the likely origin of the pumice (Binns 1971, 27, 180), whence it would have drifted to the contemporary beaches of northern and western Scotland.

Miscellaneous stone objects (figs 19, 20)

The function of the steatite object no. 264 is unclear and it seems likely to be in an unfinished state; possibly it was intended, with the perforation completed, to be a sinker.

Although all the blade implements from Burrian have perished (see below, p 100) their existence is attested not only by various tool-marks on the worked bones but also by two whetstones (265–266), both with characteristically flattened surfaces and, in addition, abraded ends indicating that they had been used as hammer-stones or pounders as well.

The true identity of 267 has been overlooked until the present time but its general shape and characteristic striations clearly mark it as the tip of a bar share. These implements have an ancestry in the northern isles stretching back to the mid second millennium BC or earlier (Calder 1956, 394 ff; *Radiocarbon*, 13 (1971), 177) and in some instances reached a length of about 1.0 m, although no more than the tip would have protruded from the housing in the ard. Fenton (1964, figs 1 and 2) illustrates the method of mounting and also the characteristic pecking on the rearward portions, intended to improve the fit. The asymmetric shape of the point is the result of its having been habitually canted over to one side in use (Payne 1957, 75 f), the right-hand side as in the Burrian example being usually the most abraded.

Two finds from further south provide evidence of the general sort of ard which would have been in use in Orkney: a heavy wooden plough beam from a peat bog near Lochmaben, Dumfriesshire (Fenton 1964, 269 pl XLIV) and a combined plough-head and stilt of oak which came from under the floor of the Milton Loch crannog (Piggott 1953, 143 f, pl XVI). A radiocarbon age of 2350 ± 100 has recently been obtained from the latter implement (*Tools and Tillage*, 1, 2 (1969), 128), suggesting a date in the region of 400 bc.

A number of pebbles from the site show signs of utilisation (268–273), of which only 269 needs any comment: the wear marks on each face of this particular one identify it as a strike-a-light or ‘tracked stone’ of the type listed by Childe (1936, 233 ff) from brochs, wheelhouses and contemporary structures. From the presence of similar stones in Norway and the Baltic, Childe postulated a pre-Norse period of contact across the North Sea, but there is no other support for such a theory.

Although large by any standards, the oval steatite bowl no. 274 is remarkably light and thin-walled, evidently the product of a very skilled hand. With the exception of a few small outcrops elsewhere (Hamilton 1962, 71), steatite occurs in Scotland only in the prolific Shetland quarries. Hamilton (1956, 206 ff) describes the method used there in fashioning bowls from the living rock during the Viking period and this example (if not itself a stray-find from the tenth or eleventh centuries, when large oval bowls were particularly favoured) may well have been produced in a similar manner. The techniques involved were obviously fairly specialised and it might be assumed that production was largely in the hands of the population in the immediate vicinity of the quarries. Oblique chisel marks cover the surface of the bowl, made with a rather narrow-bladed implement.

Presumably the partially drilled sandstone ball (275) had not reached its finished state, although the occurrence of another example in a similar condition at Dun Beag, Skye (Callander 1921, fig 9, 1), might suggest that they had some utility in their present form.

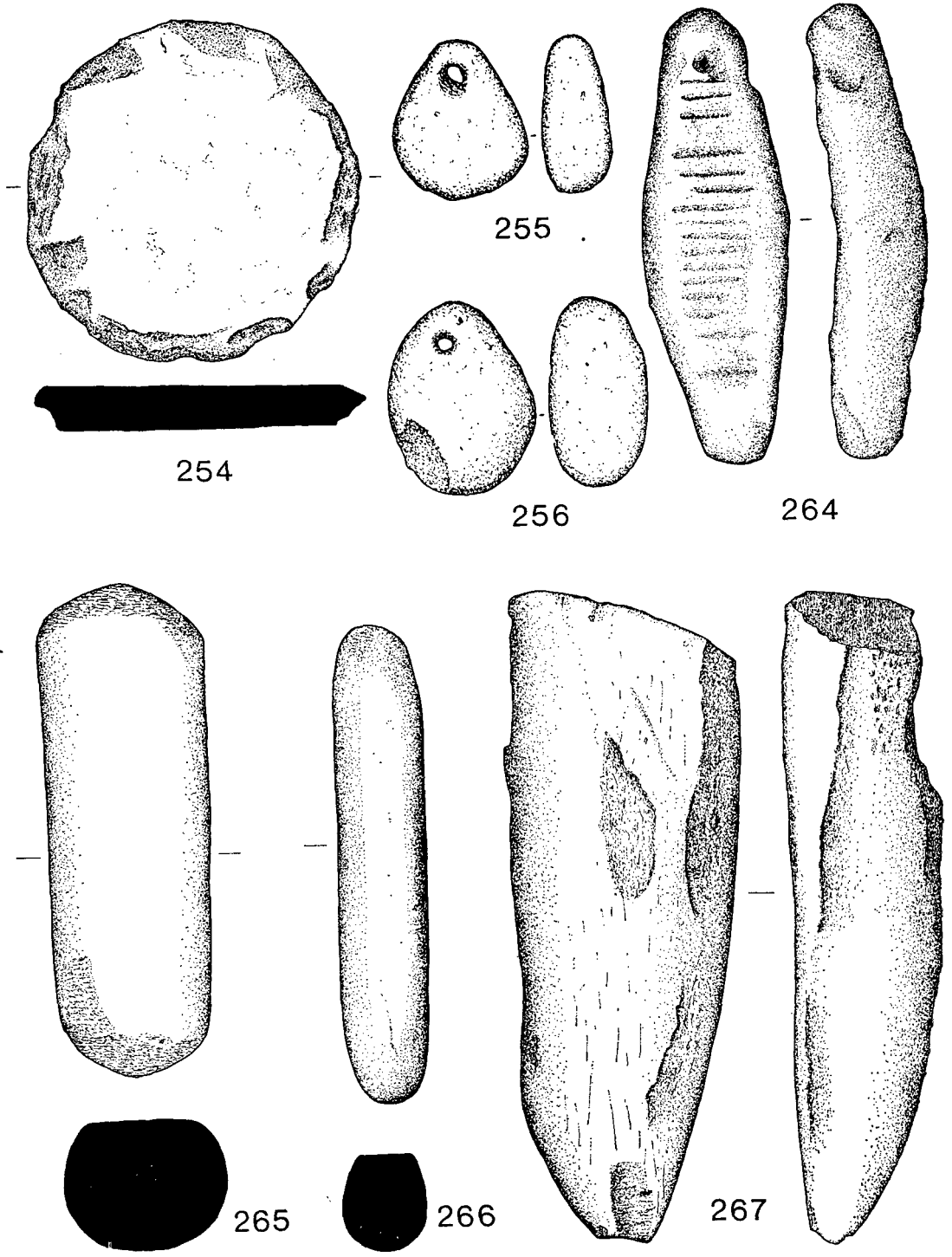


FIG 19 Stone implements (1 : 2)

Decorated pebbles (fig 20)

No context was recorded by Dr Traill for the two small quartz pebbles (276-277) with painted decoration in dark brown pigment but the evidence from elsewhere strongly suggests that they belong to the secondary phase. Thomas (1963, 45 ff) includes them in his discussion and catalogue of Pictish *art mobilier*, along with similar painted pebbles from Jarlishof, where those from the more recent excavations at least came from the wheelhouse phase (Hamilton 1956, 59), and from Keiss where apparently they were all found in secondary buildings outside the (four) brochs (*Proc Soc Antiq London*, 17 (1897-9), 191). Since Thomas completed his survey further painted pebbles have been found at Clickhimin (Hamilton 1968, 79, fig 37, 1), at Crosskirk (*Discovery Excavation Scot* 1970, 20) and Buckquoy (Ritchie, A 1972). With the exception therefore of

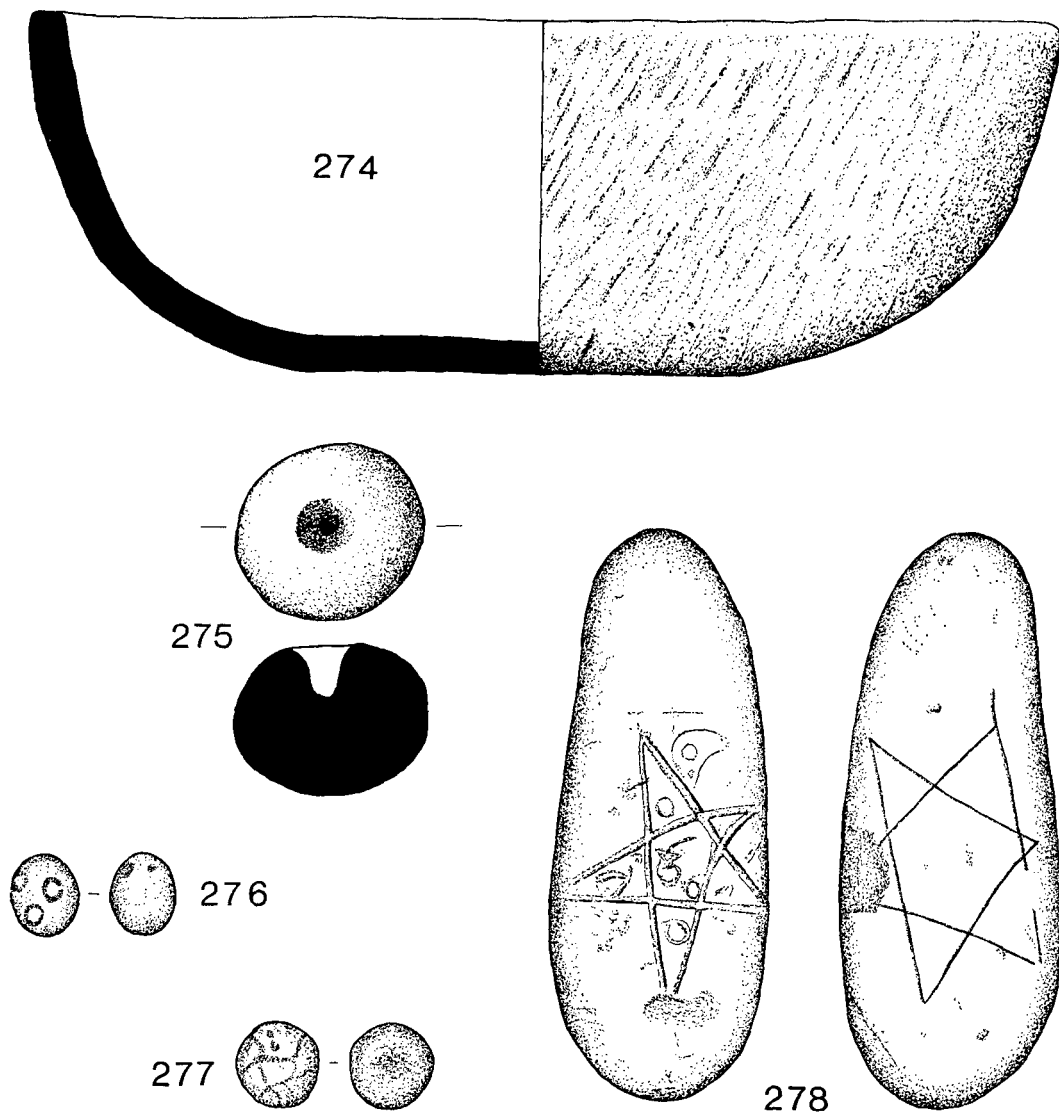


FIG 20 Miscellaneous stone objects (no. 274, 1 : 3, others 1 : 2)

Clickhimin, where the pebble apparently occupied a rather ambiguous position in a beach deposit outside the pre-broch fort (Hamilton 1968, 79) all the pebbles seem to fall within the period of the secondary occupation at Burrian and not earlier as suggested by Hamilton (*ibid*). Several explanations have been offered for them, including playing pieces (Young 1962, 180), sling bolts decorated with an emblem or message (Hamilton 1968, 104), cult objects (Hamilton 1956, 90) and curative charm stones (Ritchie, A 1972, 299).

One of the best known finds from Burrian is the sandstone pebble (278) with incised decoration on both faces, the character of which clearly shows it to be another part of the demonstrably Pictish assemblage. The two principle symbols are a hexagram and a pentacle (or pentagram), the latter executed in shallow channels rather than sharp grooves and enclosing a number of circles and indeterminate markings, including what may be a goose, or, according to one writer, is a 'goose of undeniably Pictish appearance' (Feachem 1963, 168). Neither hexagrams nor pentacles actually feature in the Pictish symbolical canon as represented on the stone monuments but two pentacles do appear on the wall of a cave at Covesea, Morayshire, in association with other more conventional symbols (Allen 1903 (3), 129 f, fig 135A) and a third is represented on one of the painted pebbles from Keiss (Hamilton 1968, fig 37, 3).

The cross slab (fig 21)

Traill (1890, 346) recorded that the incised cross slab (279) was found 'towards the south side of the broch, where the wall was so low that, though the slab lay not much above the floor of the tower, it was also not far from the surface'. There seems no reason to suspect that it differs greatly in date from the other late material, however. The form of the cross with its hollowed-out intersections is paralleled on an altar frontal panel from Flotta, Orkney, probably of the late eighth century (Thomas 1971, 187 f), a date which proves equally acceptable for the ogham inscription (Jackson 1955, 139). In character the inscription appears to be fairly developed, the ends of the digits being tied in groups to form 'bind oghams' of the type known from two other sites in the north, Lunasting and Cunningsburgh (Allen 1903 (3), 16 ff, figs 11-12), both in Shetland. A number of translations have been published in the past but all are rejected by today's scholars, who pronounce it untranslatable in the light of present knowledge.

The fragmentary symbol below the cross is usually identified as a fish, one of the standard Pictish symbols, but it should be noted that the photograph published by Traill (1890, pl XLVI) shows that this interpretation has always rested on the few lines which survive today and that these are not entirely consistent with the conventional representations. Fish symbols occur side by side with ogham inscriptions on a number of stones but the significance of both is still very much a matter of conjecture. While there is no place here for an excursus on the meaning of either, it is worth noting that the symbol stones have most recently been interpreted as territorial markers (Henderson 1971, 66 f), those in a Christian context perhaps serving as 'the ecclesiastical community's visible title to certain land or even dues', a view which agrees well in the context of the Burrian stone with the suggestion that some of the (Irish) ogham-inscribed stones may also have been boundary markers (Plummer 1923, 387 ff).

A number of unutilised stones from the site are also in the Museum, including eighteen rounded pebbles, twelve flakes of flint and four fragments of a fossil crinoid; all are apparently of local origin.

Pottery (figs 22, 23)

Little in the way of restorable pottery survives from the site and what there is proves difficult to classify in any very meaningful way. For example, the two largest vessels (280-281) are

of rather thick reddish ware and correspond to the deep cooking-pots with high shoulders from Clickhimin (Hamilton 1968, 120), but pottery of this type was recovered from both primary (broch) and secondary (wheelhouse) contexts at the Shetland site.

The rope-cordon effect of the impressed neckband on 282 is also recorded from primary levels at Clickhimin (*ibid.*, 121, fig 54) although its thin smoothed fabric is more characteristic of

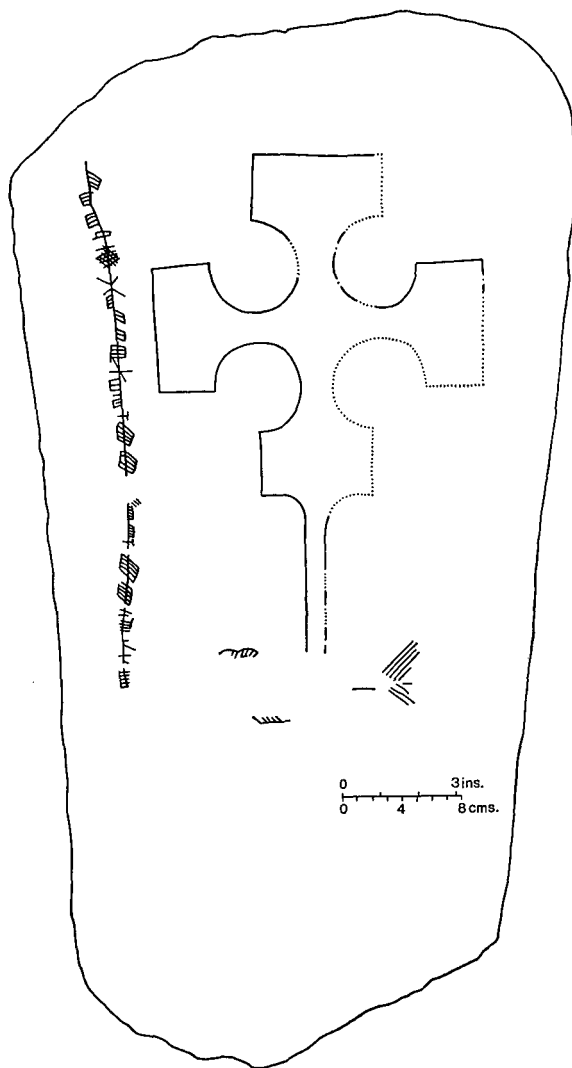


FIG 21 Incised cross-slab (1 : 5)

the secondary phases. Other sites which have produced similar decorative neckbands include the brochs of Lingrow (Childe 1935, pl XVI) and Ayre (Graeme 1914, 45) in Orkney and the Cumlins, Northmavine, in Shetland (Hamilton 1956, 46, fig 26, 1), none of them with any recorded stratification. Several Hebridean wheelhouses have produced pottery with similar decorative motifs, mostly in the form of slashed fillets or cordons applied to the body of the vessel as at Kilpheder (Lethbridge 1952, 68, fig 7) and Dun Cuier (Young 1956, fig 11, 97).

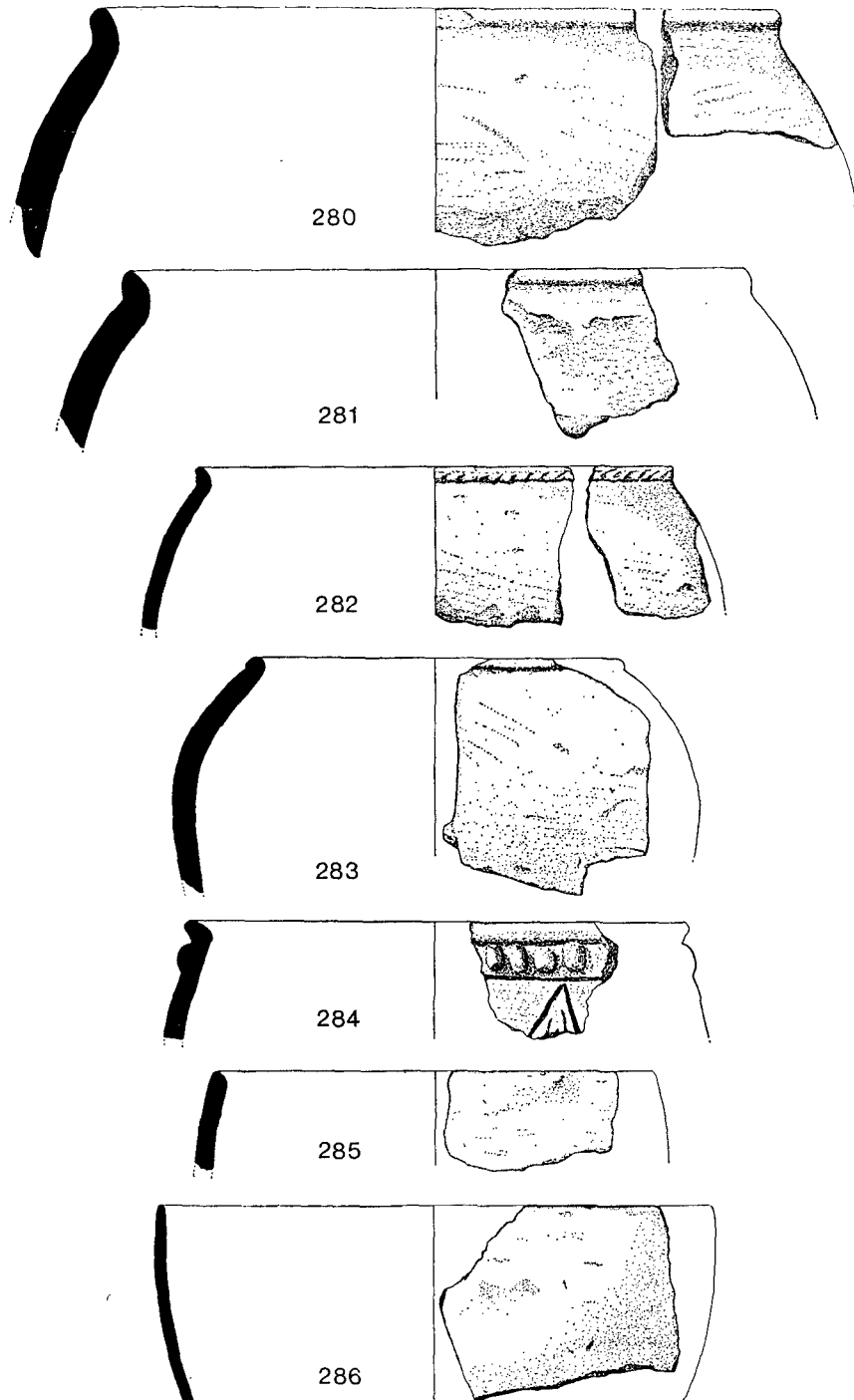


FIG 22 Pottery (1 : 3)

The most elaborately decorated sherd from Burrian (284) combines both plastic and incised ornament. Beneath the narrow, everted rim a series of billets has been applied, pinched into vertically aligned ridges; at a lower level, below a shallow horizontal channel, the apex of a chevron or zig-zag ornament is just visible, cut or rather channelled into the burnished surface of the hard grey fabric. Applied decoration was widely favoured in the later Iron Age in the north but its use in this manner is comparatively rare. The closest parallel comes from the broch phase at Jarlshof (Hamilton 1956, 46, fig 25, 1) and other comparable pieces are known from Mailand, Uyeasound, Shetland (*ibid* fig 26, 3), and Garry Iochdrach (Beveridge and Callander 1932, 42). It may perhaps be seen as a development from neck cordons with heavily impressed finger-tip decoration as practised in the broch period at, for example, Clickhimin (Hamilton 1968, fig 53). Herring-bone or chevron decoration is found on much of the pottery from early broch excavations where the stratigraphy is unrecorded and also at Clickhimin (*ibid*, fig 66) where it was certainly current in the wheelhouse phase.

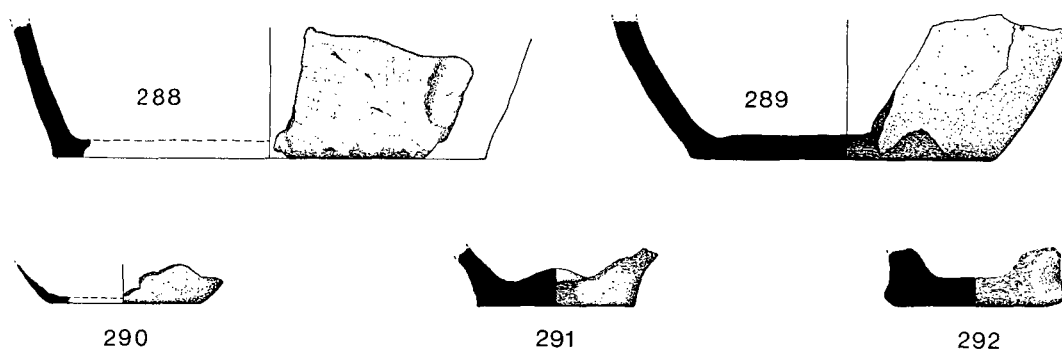


FIG 23 Pottery (1 : 3)

Comparisons may be made between 288 and the late wheelhouse wares of Jarlshof (Hamilton 1956, 89) and Clickhimin (Hamilton 1968, 159, fig 71), its exterior being striated in a manner which Hamilton attributes to the practice of trimming or paring down the surface before firing.

Small vessels like 290–292 are much less common but the base of one (NMAS, GA 806) was apparently found in one of the Caithness brochs excavated by Sir Francis Tress Barry.

The pottery therefore proves to be disappointingly intractable; parallels can be found for it, but with the exceptions of a few sherds of neckband ware from Traprain Law (Cree 1924, 256 ff, fig 13) they come from early excavations on similar sites with evidence of equally long occupation, where the stratigraphy is as problematic as at Burrian. Even where more systematic records have been kept, many of the broch-period pottery forms apparently survive into the succeeding phases, making it impossible to distinguish positively between the unstratified products of one phase and another.

Metalwork (fig 24)

Two bronze dress pins from the site are clearly related to the late bone pins discussed above (p 70): 303, with its ball head and swelling shank, is indistinguishable in form from those in bone; the same is true for the nail-headed example numbered 304. Possibly the connection is more than purely stylistic, since bone originals may well have been used in making moulds for those in metal. Ornamental hatching like that around the head of 304 is found on another bronze pin from

Kildonan, South Uist (NMAAS, GS 203), while the zones of linear decoration on the shank are paralleled at Buston Crannog (Munro 1882, figs 242 and 243) and at the Broch of Burray (Stevenson 1955a, fig A 17).

Traill recorded (1890, 362) that the various fragments of bronze numbered 306 were all found together. Most probably they represent the remains of a small penannular brooch of the type known, for example, from Midhowe (Callander and Grant 1934, fig 44).

The most interesting of the iron objects is the bell no. 307, the smallest of a series from Scotland of which the largest is about five times this size. From an account of these bells by Joseph Anderson (1881, 179) the following general characteristics may be observed: they are constructed of thin sheet iron, bent into a tapering quadrangular shape and rivetted on one side; they are usually provided with a loop handle at the top and occasionally have a clapper; frequently they have been given a coating of bronze to improve their appearance and tone. The Burrian bell conforms to most of these conditions except there is no sign of its ever having had a clapper: the advanced state of corrosion makes it difficult to be certain about this but it seems likely to have belonged to the group of bells which were rung with separate strikers. Even when it was first illustrated in the excavation report (Traill 1890, fig 20) it lacked a handle, although Anderson (1881, 175) states that it did have a loop handle. A few traces of bronze remain adhering to the outside, but it seems that this was not applied by dipping the bell in molten bronze as has been suggested in the past (Eeles 1926, 409) but was in fact cast on (Dr McKerrell, personal communication). The principal concentration and original source of these bells is in Ireland, where Anderson thought there might be fifty or sixty of them. More have since been found there, including one from Cahercommaun (Hencken 1938, fig 29, 592). A derivation as early as the fifth century is possible, and the bell attributed to St Patrick himself is of precisely this form. By the ninth century a new type, cast entirely in bronze or bell-metal had appeared, but within that bracket it is difficult to detect any development. It seems that the bells were carried abroad by missionaries of the Irish Church and many of them later came to be venerated as relics, several ultimately being enshrined in caskets of precious metal. Anderson (1881, 184) noted that wherever preserved the associations of these bells were always with Irish saints.

Listed among the iron finds from Burrian are several knife blades, a tanged arrowhead, several possible spearheads including perhaps one still mounted in a shaft, a hatchet, two broken rings and a number of articles of unknown use (Traill 1890, 362 ff), but apart from the bell only the items numbered 307-312 survive in recognisable form, all of them greatly corroded.

Glass (fig 24)

Two articles of glass were found (313-314), their presence presumably indicating some sort of contact with more southerly areas having access to Roman glass, but whether the relationship between the two areas was direct (see, for example, Hamilton 1962, 68) or whether Roman artifacts reached the north at second or third hand (Robertson 1970, 210) is not clear.

THE OCCUPATIONAL TIME SPAN

Such evidence as there is for the opening date of the occupation at Burrian is best provided by the structure of the broch itself rather than the finds. Parallels from well-defined broch contexts have been given above for a few of the finds, but it will have been noted that the dating evidence at these other sites tends to be rather imprecise and that in any case there seems to have been a very large element of continuity from primary to secondary phases, making it even more difficult to accurately date any insecurely stratified finds. Solid-based brochs are generally accepted as

being fairly mature representatives of this type of fortification (see, for example, Hamilton 1962, 83; MacKie 1965b, 110). A date towards the end of the first century BC or early in the first century AD has been suggested for the solid-based tower at Clickhimin (MacKie 1971a, 68) and perhaps this is the sort of horizon which might be accepted here.

It is clear from the various subsidiary structures at Burrian that after an initial period as a purely defensive structure the role of the broch changed to meet more specifically domestic

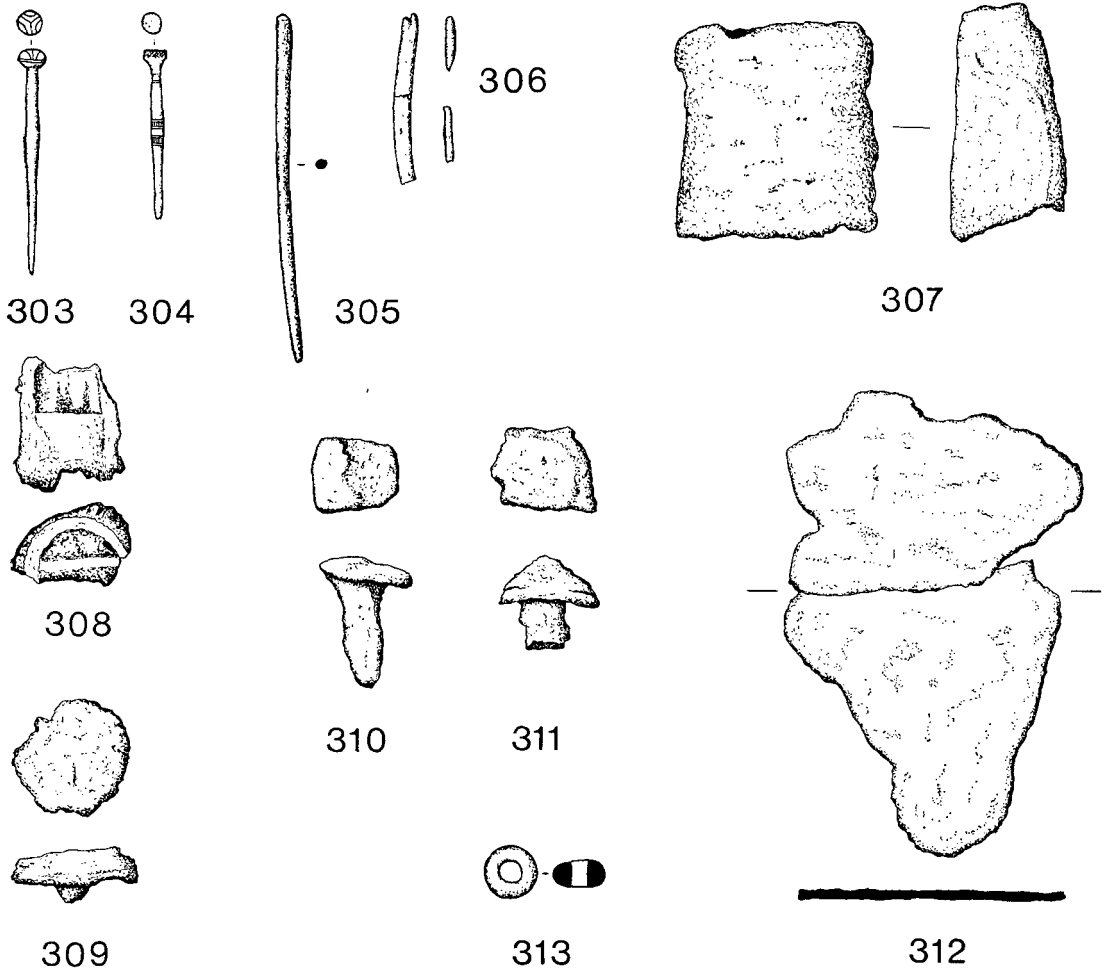


FIG 24 Objects of bronze, iron and glass (1 : 2)

requirements. We have no way of knowing when this change took place, but the fact that comparable sites were undergoing a similar transition at a comparatively early date – around AD 200 at Keiss (MacKie 1971b, 19) and Jarlshof (Hamilton 1956, 90) – suggests that the secondary occupation at Burrian was either very prolonged or else was constituted of two phases at the very least. Feachem (1963, 168) states that ‘The broch had first been turned into a sort of wheelhouse with septal divisions, and then reoccupied at least by squatters at a much later date’ but it is doubtful if we shall ever know whether this was in fact what happened or whether occupation went on unbroken for many centuries. Certainly the interior of the broch can produce no new evidence to

clarify matters, but careful examination of the undisturbed exterior levels to the north and west and those underlying the secondary chambers, where the sections (fig 2) show considerable build up, might yield a great deal of information which could clarify the true succession of events. From this point in the sequence only the finds can demonstrate that occupation (in whatever form) did continue for some time. Although a considerable body of material can be shown to belong to a period several centuries later than the broch there is, unfortunately, comparatively little which can be dated within narrow limits, so that it could represent the accumulation of several centuries or a comparatively short time-span. For convenience of discussion this later material may be divided into three groups: *a*, bone pins and composite bone combs; *b*, the Pictish assemblage; *c*, the Early Christian assemblage.

a Bone pins and composite bone combs

These have already been discussed at some length (pp 70ff, 80ff) and all that need be mentioned again is their probable date range, that is, from about the fifth century until the coming of the Norsemen. Scandinavian settlement in the northern isles is now thought to have begun in the early years of the ninth century (Klindt-Jensen 1969, 194) and place names certainly suggest that it was about this time that North Ronaldsay received its first Norse settlers.

b The Pictish assemblage

Whatever the obscurities of Pictish history we need have no hesitation in classifying the inhabitants of the site in its secondary phases as Picts, meaning simply that they formed one element in the loose confederacy of peoples known historically from AD 297 as the Picts. At Jarlshof the undoubted Picts (Thomas 1963, 45) of Phases III and IV were thought by the excavator (Hamilton 1956, 90) to be newcomers from the south, but at Burrian it is impossible to tell whether the occupants achieved Pictish status in the course of political evolution or whether they had Pictish ancestry thrust upon them from the mainland. Certainly there is no reason why the situation at Jarlshof should have been repeated everywhere, for it is no longer a matter for dispute that the population of Northern Pictland was composed not of a single ethnic group but of several disparate elements (see, for example, Wainwright, F T 1955, 11 f). Some of these were certainly the occupants of post-broch settlements and many were no doubt descended from the broch dwellers themselves. Several broch sites in the north have produced Pictish symbol stones, including four in Orkney (Ritchie, J N G 1969, 130 ff).

Adomnan (II, 42) records that in the mid-sixth century the ruler of the Orkneys was lodged at the court of Brude mac Maelchon, King of the Northern Picts, who was in a position to issue orders to the Orcadian *sub regulus* regarding the safety of Columban missions to the north (Anderson and Anderson 1962, 441). Over a century later, in 683, Brude mac Bile was apparently maintaining the mainland influence in the Orkneys in a more forceful manner with a punitive expedition (Wainwright, F T 1955, 34 f). The evidence of place names, although rather obscure for this period, also brings Orkney within the sphere of the main Pictish province, with which it was physically linked by the Pentland Firth (Old Norse *Pettalandsfjörðr*, 'Pictland Firth'). One or two place names on North Ronaldsay may date from this period (Marwick 1923, 54 ff), including perhaps the name of the island itself (Taylor 1931, 44); on the other hand it has been questioned whether any pre-Scandinavian place-names survive in the northern isles (Wainwright, F T 1962, 106).

As far as the dating evidence of the Pictish material from Burrian goes, the cross slab may perhaps be assigned to the seventh or eighth centuries on the strength of its incised symbol

(Stevenson 1955b, 97 ff) and more definitely to the late eighth century by its ogham inscription (Thomas 1971, 187 ff). Stevenson (1955b, 104) suggests that crescent symbols decorated with a pelta design fall at the beginning of the series and that they are probably 'hardly earlier than the seventh century', so presumably the double spiral decoration (which is later in the series) on the Burrian phalange would place it too in the seventh or even the eighth century. (Stevenson's chronological sequence has been questioned in the past (Thomas 1961, 42 f) but more recently (Stevenson 1970, 66 f) has been convincingly defended. Referring to the circles which were occasionally used to decorate the angles of V-rods on Pictish symbol stones, Stevenson (1955b, 104) suggests that they might have been developed from the lenses performing a similar function in the initial letters of the *Cathach* of St Columba, an Irish manuscript of about AD 600. Perhaps some connection might also be implied for the circles decorating the incised pebble. Alternatively they may simply be the open circles found on several painted pebbles, one of which (with closed circles or dots) from Keiss includes a pentacle in its scheme of decoration (Hamilton 1968, fig 37, 3). The only other occurrence of the pentacle symbol seems to be on the cave walls at Covesea, Morayshire, where it may be rather early (Thomas 1961, 24), perhaps being related to occupation levels of the early second to mid-fourth centuries AD (Benton 1931, 191 ff), although a later date is preferred by some authorities (for example, Henderson 1967, 116).

Radford (1962, 170) says that 'The symbols carved on the pebble and the bone may be compared with the votive crosses cut on pebbles found in St Ninian's Cave, Wigtownshire'; the relationship seems to be rather obscure, however, as are his reasons for including these items in his evidence (*ibid*) for the existence of a monastery or hermitage on or near the site.

c *The Early Christian assemblage*

Two specifically Christian artifacts were found on the site, namely the iron bell and the cross slab. As already mentioned, the technique of execution, the character of the inscription and the form of the cross all combine to suggest a date in the later eighth century for the cross slab. The bell is less closely datable but presumably it is no earlier than the time of the Columban missions in the late sixth century and no later than the cross slab. An eighth-century date was suggested for the evidence of missionary activities at Jarlshof (Hamilton 1956, 88) and if the St Ninian's Isle treasure is to be allowed any ecclesiastical significance (McRoberts 1961, 301 ff) then it confirms the presence in the far north by that time of celebrant priests with all the paraphernalia of the Celtic ritual (but see Small *et al* 1973, 46-148).

Marwick (1952, 1) ascribed the Early Christian material at Burrian not to a Columban but to a Ninianic mission, equating the name of the island as given in the *Orkneyinga Saga* (*Rinansey* or *Rinarsay*) with Rinan or Ringan, two alternative early styles of the Saint's name. The specifically Irish form of the bell and the late date of the cross weigh against this however, and the semantic connection between Ninian and Ronaldsay has also been refuted (Taylor 1931, 44).

Several writers (for example, Marwick 1923, 54; Radford 1962, 170) interpret the presence of the Christian artifacts at Burrian as evidence that a chapel, hermitage or monastery had been founded in the neighbourhood of the site, or even that it may have been 'laid out under the protection of the chief who occupied the broch at that time' (Scott, A B 1926, 48). While there are many instances of defensive sites having been occupied by Early Christian missionaries, whenever this happened the ramparts took on a new significance, shutting in the religious community and, more specifically, excluding the secular world. Any period of monastic settlement at Burrian would therefore have post-dated its secular use, but no recognisable structural remains of such a phase were noted by the excavators.

The latest datable objects from Burrian are therefore likely to belong to the later eighth

century. Perhaps the occupational sequence was brought to an abrupt end by the arrival of the first Norsemen, but whether they found an ecclesiastical community or a secular one living in the depleted remnants of the great broch tower (or whether, indeed, it had been uninhabited for a hundred years or more) is a question to which the answer was lost a century ago. Clearly the structure itself still held some echoes of its former impressiveness, for the Scandinavian immigrants, when they began to settle the island and to identify its features in their own language, gave it the name which survives in anglicised form to the present day, *borg-in*, 'The Fortress'.

BIOLOGICAL REMAINS

Using the evidence gleaned from the finds and from the biological remains mentioned below, an attempt may be made to reconstruct a rather generalised picture of the quality of life enjoyed by the occupants of the site, with particular reference to their subsistence economy.

Human remains

The numerous generations of families who made their homes here over several centuries may be represented physically by the single fragment of human jawbone which was recovered in the excavations, although there is no information on its original location. The following characteristics may be noted⁶: the jawbone is of fairly slender build, suggesting that it may perhaps be female; the first premolar and the first permanent molar only remain *in situ*, though there is nothing to suggest that any of the other teeth were lost before death; there is no evidence of dental caries but some signs of mild periodontal disease are detectable, not an uncommon condition among older age groups in early populations; the degree of attrition would suggest a probable age range of thirty-five to forty.

Animal remains

Animal bones were much more plentiful, many of the long bones and skulls having been cracked open in a manner which suggested to Dr Traill (1890, 343) that the marrow and brains respectively were much sought after. Indeed, he continues, 'so universally has this custom been practised, that among the many barrow loads of bone which were removed we could not find a single marrow bone entire'. Of these many barrow loads a total of fourteen bones and a handful of teeth survive today in the National Museum, a sample on which only the most general of conclusions may be based.⁷

Domestic animals are represented by cattle, sheep, pig and horse; dog bones apparently were found too (*Proc Soc Antiq Scot*, 10 (1872-4), 23). Several individuals are represented among the teeth and bones of cattle, ranging from comparatively immature animals to one of at least ten years, the latter suggesting that some cows at least were kept for their milk. The left and right frontal bones of a single yearling sheep are all that survive of the considerable flocks that seem to be implied by the presence of large numbers of whorls etc. Good grazing is plentiful enough on the island today, but even if this represents much-improved pasture the current practise of confining the sheep to the rocky foreshore, where they subsist largely on seaweed (a commodity which is if anything more plentiful in the stormy winter months than in the summer) demonstrates that there would have been little difficulty in wintering a fairly large proportion of the animals. (For accounts of the present sheep see Fenton 1969; Ryder 1968a, Tribe and Tribe 1949.) A few skull fragments of pig survive, together with twenty-three teeth including eighteen lower canines, evidently selected by the excavators from the mass of animal bones on account of their appearance. Traill (1890, 343) suggested that two varieties of pig were indicated by the range of tusk (lower

canine) sizes, but accurate measurement shows a fairly continuous spectrum of sizes and no more variation than might be expected from ageing and from sexual dimorphism within a single breed. Possibly the presence of numerous tusks at Midhowe (Callander and Grant 1934, 493) may also be accounted for solely by their impressive appearance, but at à Cheardach Mhor nearly all remains of pig were from the head, suggesting to the excavators (Young and Richardson 1960, 170) that they may have had some totemistic or ritualistic significance. The widespread occurrence of tusks in contemporary sites in the Atlantic province has been thought (MacKie 1965b, 114) to indicate hunting, but there is nothing to suggest that the Burrian teeth are from wild animals, although some may have been.

The single horse tooth from the site can tell us very little. Presumably horses could have provided the motive power for ploughing as evidenced by the broken bar share, but if the bone peg (146) is disallowed as a lynch pin then there is nothing to suggest that they would have been encumbered by wheeled vehicles. Neither is there any other evidence of wheeled transport in the northern isles at this period, with the possible exception of another rather dubiously identified lynch pin from Oxtrow Broch, Birsay (NMAS, GD 28). The importance of carts and waggons to a community of this nature would have been limited in any case, and even at the beginning of the last century, when the population was approaching five hundred, it seems that 'there was but one cart on the island which was never used, as the horse showed some disinclination to go into it' (*New Stat Acct*, 109 f); transport at that time was effected for the most part in sacks or wooden creels on horseback.

Wild animals also played a part in the economy but unfortunately there is no way of assessing their relative importance. Red deer is represented by part of a shed antler and a number of sawn tines and other fragments fashioned into tools. These would certainly have been acquired on one of the larger islands but the two species of seal present would have been fairly easily attainable nearer home. From the last century there is a description of midnight expeditions made in the winter months to Seal Skerry just off the N end of the island, where on a good night as many as sixty seals might be taken with clubs, 'a matter for great rejoicing, as a good supply of oil is obtained from the seal' (*New Stat Acct*, 104). An eighteenth-century writer mentions the use on the island of nets in catching seals for their skins and oil, and also the young ones for eating (Marwick 1924, 52). The remains of seal were found in some quantities at Jarlshof from the broch period onwards (Hamilton 1956, 213) and are known on several other sites, for example Dun Cuier (Young 1956, 327) and the Broch of Ayre (Graeme 1914, 49).

Cetacean bones are not uncommon on northern and western coastal sites of this period, frequently utilised to produce tools and appliances of various sorts, but this represents only one small aspect of the value of whales to such a community. Olaus Magnus records how the proceeds from a single whale might fill many waggons with meat for salting, blubber for lighting and heating, small bones for fuel, large ones for house-building and sufficient hide to clothe forty men (quoted in Clark 1947, 90). Although one intervertebral disc from Burrian came from a moderately large whale, neither of the two identifiable species would have produced materials on anything like this scale – Risso's Dolphin may grow up to about 4 m in length and male Killer Whales to about 9 m (Fraser 1949, 26 f) – though they would certainly have been welcomed if stranded on the rocks.

From time to time the question is raised whether or not whales were deliberately hunted by communities like that at Burrian. There is some evidence that whaling had already been an established practise in Scandinavia for several millennia by that time (Clark 1947, 98) and in purely technological terms the maritime inhabitants of the Atlantic province would presumably have been at least as well equipped; admittedly we have no knowledge of their sailing craft, but any vessel adapted to the Orkney waters would have been capable of pursuing whales by one or other of the

methods described by Clark (*ibid*, 87 f). Whether or not they actually did so must remain hypothetical, but there is one factor which favours the idea of deliberate hunting: it may be implied that a fairly steady supply of cetacean bone would have been a pre-requisite for tool types in cetacean bone to have developed a degree of standardisation over the northern and western seaboard as shown above (p 86). Over the past sixty years, during which time systematic records have been kept, only nine strandings have been recorded in Orkney,⁸ and while this may not be a wholly complete record the number falls far short of the sort of level necessary to encourage the development of such a process. Although not proven, therefore, whaling may very possibly have had a part to play in the economy at Burrian and in comparable settlements.

Fish bones apparently were found in the excavations (*Proc Soc Antiq Scot*, 10 (1872-4), 23) but do not survive, and of the birds identified (*ibid*) only the utilised radius (47) and a single gannet's skull found their way to the National Museum. It is quite probable that both fish and birds formed an important element in the diet of the community and the loss of the information which could have been gained from the large stratified deposits at Burrian is a matter no less serious than that relating to the stratification of the finds. A wide range of sea birds was found at Jarlshof (Hamilton 1956, 213 f) including gannet, which until recent years provided the population of St Kilda with their major source of protein. The fulmars which proliferate around the site today may well have been sought after too, for according to Clark (1948, 126) ten fulmars will yield a litre of oil. Birds' eggs would almost certainly have been collected, but none were noted in the excavation.

Botanical remains

The importance of agriculture to the community must not be underestimated, even though its products are not so well represented. It was possible, however, to add something to the picture by carefully sifting the few ounces of carbonised material collected by Dr Traill as a sample 'from the floor' and which was found to contain thirty-two cereal grains, all of them seemingly from six-row barley. The following characteristics were noted in the sample⁹: remains of lemmas and paleas survived on many of the grains, suggesting that the barley was a hulled variety; the asymmetric shape of the grains, the conformation of the base and the manner of the insertion of the glumes were all typical of six-row barley. Two of the grains retained their rachillas, with long straight hairs, while the base of one lemma showed spiculation characteristic of a rough-awned barley. Interestingly enough, all these characteristics are consistent with those of 'Scottish Bere', a variety grown in the north until the present century. Carbonised barley grains were found in the excavations at Lingrow (*Proc Soc Antiq Scot*, 9 (1870-72), 360) and at Jarlshof (Hamilton 1956, 211), while seeds which were thought to be either oats or rye came from Dun Beag (Callander 1921, 121). Three querns were recovered in the Burrian excavations (Traill 1890, 364) but were subsequently lost: on analogy with the Jarlshof products (Hamilton 1956, 57, 59) they could have been of the trough, saddle or rotary type according to context but the fact that their function was readily recognised by the excavators may suggest they were of the rotary variety, which was still used in Orkney at that time. The ard was apparently still used for ploughing, and indeed continued in use into the Viking period (Small 1971, 78). Hay-making was probably important then just as silage is to the Orcadian farmer today.

The part played in the economy by trade is less easy to define; contact of some sort with the north is obviously implied by the two articles of steatite and with the south by two items of glass. Certainly a good deal of material was finding its way to the far north from the Roman province from the second or perhaps even the first century AD (Curle 1931, 392 ff; Robertson 1970, 198 ff), but most of these items are likely to be at best no more than the by-products of sporadic trading

contacts, of which no convincing first-degree evidence now survives. The nature of the goods which the northern populations could have offered in any such transaction – skins, fish, and perhaps some agricultural products – makes it inherently unlikely that any trace of them would survive. The other major possibility, wool and woollen textiles, certainly formed the basis of a fairly major industry at Burrian but once again the end-products are impossible to detect and we have no way of knowing whether they were bartered on the neighbouring islands or, perhaps through any number of middle men, further south on the mainland. With the few exceptions mentioned above it is difficult to see what could have been received in exchange either. Quite possibly some (or all) of the pottery may have been secured in this way and also the iron tools; little remains now of the iron but the pottery may yet hold the answer to the question of trading contacts within the Atlantic province, an answer which could be revealed by a comprehensive programme of thin-sectioning or by one of the X-ray spectrometric analytical techniques. If we are able to imply a degree of specialisation in some communities such as those producing soapstone utensils in the north, and, perhaps, textiles at Burrian, it is equally likely that the production of pottery and other commodities was in the hands of a number of recognised groups and that the large measure of uniformity in the material culture of contemporary northern and western settlements may yet be shown to be the result of a hitherto undetected but possibly quite extensive trade network.

ACKNOWLEDGMENTS

The writer is indebted to the staff of the National Museum of Antiquities for much patient attention over many visits and to the various specialists mentioned in the notes, without whose help this paper would have been considerably impoverished. Dr David Clarke, Dr Anna Ritchie and Dr Graham Ritchie kindly provided both helpful comment and free access to material in advance of publication by them.

CATALOGUE OF FINDS

The National Museum of Antiquities' catalogue number (or, in the case of no. 238, the Hunterian Museum's catalogue number) is given for each entry.

Bone and Antler

- 1 Bone pin with squat ball head and swelling shank. Length 46 mm. (GB 119) (fig 5)
- 2 Bone pin with ball head and swelling shank. Length 39 mm. (GB 114) (fig 5)
- 3 Bone pin with ball head and swelling shank. Length 34 mm. (GB 112) (fig 5)
- 4 Bone pin with squat ball head and hipped shank. Length 34 mm. (GB 110) (fig 5)
- 5 Bone pin with ball head and swelling shank. Length 36 mm. (GB 113) (fig 5)
- 6 Bone pin with ball head and swelling shank. Length 52 mm. (GB 126) (fig 5)
- 7 Bone pin with ball head and swelling shank. Length 57 mm. (GB 128) (fig 5)
- 8 Bone pin with flat top and swelling shank. Length 67 mm. (GB 131) (fig 5)
- 9 Bone pin with squat ball head and hipped shank. Length 49 mm. (GB 120) (fig 5)
- 10 Bone pin with rudimentary nail head and swelling shank. Length 48 mm. (GB 121) (fig 5)
- 11 Bone pin with irregular nail head and swelling shank. Length 42 mm. (GB 116) (fig 5)
- 12 Bone pin with squat ball head and swelling shank. Length 42 mm. (GB 115) (fig 5)
- 13 Bone pin with roughly shaped ball head and swelling shank. Length 55 mm. (GB 129) (fig 5)
- 14 Bone pin with irregularly shaped head and hipped shank. Length 54 mm. (GB 122) (fig 5)
- 15 Bone pin with rather square head, flattened on top; broken. Length 23 mm. (GB 107) (fig 5)
- 16 Bone pin with conical head and swelling shank; broken. Length 28 mm. (GB 109) (fig 5)
- 17 Bone pin with ball head and swelling shank. Length 25 mm. (GB 101) (fig 5)
- 18 Bone pin with irregular head and swelling shank. Length 31 mm. (GB 106) (fig 5)
- 19 Bone pin with rudimentary nail head and swelling shank. Length 29 mm. (GB 105) (fig 5)
- 20 Bone pin with ball head and hipped shank. Length 37 mm. (GB 111) (fig 5)

- 21 Bone pin with nail head decorated on top with a pattern of dots and having a hipped shank. Length 63 mm. (GB 130) (fig 5)
- 22 Bone pin with flattened head encircled by a medial groove and having a swelling shank. Length 39 mm. (GB 124) (fig 5)
- 23 Bone pin with flattened head with a collar below and having a swelling shank. Length 41 mm. (GB 125) (fig 5)
- 24 Bone pin with thistle-shaped head and with a swelling shank encircled by three grooves. Length 35 mm. (GB 123) (fig 5)
- 25 Bone pin with flat head and a swelling shank encircled by a groove. Length 42 mm. (GB 117) (fig 5)
- 26 Bone pin with squat ball head and a swelling shank encircled by three grooves. Length 48 mm. (GB 127) (fig 5)
- 27 Bone pin of flattened section with square head and hipped shank. Length 65 mm. (GB 140) (fig 6)
- 28 Bone pin with flattened ovoid head and slightly swelling shank. Length 67 mm. (GB 139) (fig 6)
- 29 Bone pin with flattened ovoid head and swelling shank; broken. Length 48 mm. (GB 137) (fig 6)
- 30 Bone pin with flattened ovoid head (broken) and swelling shank. Length 54 mm. (GB 173) (fig 6)
- 31 Bone pin with flattened ovoid head and swelling shank. Length 54 mm. (GB 136) (fig 6)
- 32 Bone pin with flattened ovoid head and swelling shank. Length 61 mm. (GB 138) (fig 6)
- 33 Bone pin with flattened fan-shaped head and with a swelling shank encircled by a groove. Length 34 mm. (GB 135) (fig 6)
- 34 Bone pin with flattened fan-shaped head and swelling shank. Length 35 mm. (GB 133) (fig 6)
- 35 Bone pin with flattened fan-shaped head and swelling shank. Length 34 mm. (GB 134) (fig 6)
- 36 Bone pin with fan-shaped head and with a swelling shank encircled by a groove. Length 33 mm. (GB 132) (fig 6)
- 37 Bone pin with U-shaped head (broken) and swelling shank. Length 31 mm. (GB 108) (fig 6)
- 38 Bone pin with Y-shaped head and hipped shank. Length 24 mm. (GB 176) (fig 6)
- 39 Bone pin, the head carved with addorsed horses heads and a swelling shank encircled by a groove. Length 47 mm. (GB 141) (fig 6)
- 40 Bone pin with flattened ovoid head and hipped shank. Length 25 mm. (GB 103) (fig 6)
- 41 Bone pin with flattened ovoid head and slightly swelling shank. Length 29 mm. (GB 104) (fig 6)
- 42 Bone pin with tapering shank; perhaps a peg for a bone mount. Length 26 mm. (GB 102) (fig 6)
- 43 Bone needle with elongated perforation; broken. Length 50 mm. (GB 180) (fig 6)
- 44 Bone needle with elongated perforation. Length 44 mm. (GB 179) (fig 6)
- 45 Bone needle with elongated perforation. Length 27 mm. (GB 181) (fig 6)
- 46 Bone needle with circular perforation. Length 27 mm. (GB 178) (fig 6)
- 47 Bone (?) pin, being a bird's radius cut and smoothed at one end. Length 135 mm. (GB 212) (fig 6)
- 48 Bone pin with plain head and tapering shank. Length 100 mm. (GB 162) (fig 6)
- 49 Bone pin, head formed by articular end. Length 93 mm. (GB 159) (fig 6)
- 50 Bone pin with plain head and tapering shank. Length 67 mm. (GB 202) (fig 6)
- 51 Bone pin with plain head and tapering shank. Length 65 mm. (GB 201) (fig 6)
- 52 Bone pin with broken head and hipped shank. Length 87 mm. (GB 175) (fig 6)
- 53 Bone pin with plain head and tapering shank. Length 80 mm. (GB 207) (fig 6)
- 54 Bone pin with plain head and tapering shank. Length 101 mm. (GB 161) (fig 6)
- 55 Bone pin, head formed by articular end. Length 39 mm. (GB 118)
- 56 Bone pin, head formed by articular end; broken. Length 54 mm. (GB 165)
- 57 Bone pin, roughly cut; unfinished. Length 115 mm. (GB 211)
- 58 Bone pin, greatly worn. Length 96 mm. (GB 208)
- 59 Bone pin, roughly cut; broken. Length 78 mm. (GB 204)
- 60 Bone pin, roughly cut. Length 80 mm. (GB 206)
- 61 Bone pin, roughly cut; broken. Length 57 mm. (GB 197)
- 62 Bone pin with tapering shank; broken. Length 48 mm. (GB 194)
- 63 Bone pin with tapering shank; broken. Length 64 mm. (GB 195)
- 64 Bone pin with irregular shank; broken. Length 53 mm. (GB 198)
- 65 Bone pin with tapering shank; broken. Length 51 mm. (GB 196)
- 66 Bone pin with tapering shank; broken. Length 47 mm. (GB 192)
- 67 Bone pin with tapering shank; broken. Length 46 mm. (GB 193)
- 68 Bone pin with tapering shank; broken. Length 43 mm. (GB 177)
- 69 Bone pin with tapering shank; broken. Length 45 mm. (GB 191)
- 70 Bone pin with tapering shank; broken. Length 40 mm. (GB 172)
- 71 Bone pin with hipped shank; broken. Length 25 mm. (GB 174)
- 72 Bone pin with tapering shank; broken. Length 41 mm. (GB 164)
- 73 Bone pin with square section head decorated with shallow pits. Length 110 mm. (GB 186) (fig 7)
- 74 Bone pin, head formed by articular end, shaped symmetrically with 'ears'. Length 112 mm. (GB 157) (fig 7)
- 75 Bone pin, head formed by articular end, roughly shaped. Length 114 mm. (GB 156) (fig 7)
- 76 Bone pin, head formed by articular end, U-shaped. Length 55 mm. (GB 158) (fig 7)

- 77 Bone pin, head formed by articular end; unfinished. Length 65 mm. (GB 142) (fig 7)
- 78 Bone pin, roughly cut; unfinished. Length 81 mm. (GB 169) (fig 7)
- 79 Bone pin, head formed by articular end; roughly shaped. Length 93 mm. (GB 154) (fig 7)
- 80 Bone pin, head formed by articular end. Length 108 mm. (GB 155) (fig 7)
- 81 Bone pin, head formed by articular end; roughly shaped. Length 92 mm. (GB 153) (fig 7)
- 82 Bone pin, head formed by articular end. Length 81 mm. (GB 146) (fig 7)
- 83 Bone pin, head formed by articular end. Length 83 mm. (GB 151) (fig 7)
- 84 Bone pin, head formed by articular end. Length 80 mm. (GB 147) (fig 7)
- 85 Bone pin, head formed by articular end. Length 81 mm. (GB 150) (fig 7)
- 86 Bone pin, head formed by articular end. Length 83 mm. (GB 152) (fig 7)
- 87 Bone pin, head formed by articular end. Length 76 mm. (GB 149) (fig 7)
- 88 Bone pin, head formed by articular end. Length 82 mm. (GB 145) (fig 7)
- 89 Bone pin, head formed by articular end. Length 80 mm. (GB 144) (fig 7)
- 90 Bone pin, roughly cut, head formed by articular end. Length 66 mm. (GB 143) (fig 7)
- 91 Bone pin, head formed by articular end; broken. Length 78 mm. (GB 163) (fig 7)
- 92 Bone pin, head formed by articular end; broken. Length 88 mm. (GB 205) (fig 7)
- 93 Bone pin, head formed by articular end; broken. Length 84 mm. (GB 160) (fig 7)
- 94 Bone pin, head formed by articular end, decorated with a pattern of dots and perforated. Length 125 mm. (GB 187) (fig 8)
- 95 Bone pin, head formed by articular end; perforated. Length 125 mm. (GB 188) (fig 8)
- 96 Bone pin, head formed by articular end; perforated. Length 92 mm. (GB 184) (fig 8)
- 97 Bone pin, head formed by articular end; perforated. Length 90 mm. (GB 183) (fig 8)
- 98 Bone pin, head formed by articular end; perforated. Length 90 mm. (GB 185) (fig 8)
- 99 Bone pin, head formed by articular end; perforated; broken. Length 114 mm. (GB 185) (fig 8)
- 100 Bone pin, head formed by articular end; perforated. Length 124 mm. (GB 189) (fig 8)
- 101 Bone pin, roughly cut; broken. Length 70 mm. (GB 203)
- 102 Bone pin, roughly cut; broken. Length 71 mm. (GB 148)
- 103 Bone pin, roughly cut; broken. Length 73 mm. (GB 170)
- 104 Sliver of bone, slightly polished. Length 86 mm. (GB 210)
- 105 Sliver of bone, roughly pointed. Length 67 mm. (GB 166)
- 106 Sliver of bone, slightly polished. Length 54 mm. (GB 167)
- 107 Sliver of bone, slightly polished. Length 61 mm. (GB 168)
- 108 Sliver of bone, pointed and slightly polished; perhaps an awl. Length 88 mm. (GB 209)
- 109 Bone pin of flat section decorated on one face by cut marks in the form of a discontinuous zig-zag; broken. Length 75 mm. (GB 199) (fig 8)
- 110 Bone pin of ovoid section decorated on one face with transverse cut marks. Length 60 mm. (GB 200) (fig 8)
- 111 Pin-head of bone; solid, bun-shaped, retaining remains of iron shank. Height 20 mm. (GB 239) (fig 8)
- 112 Pin-head of animal tooth; bun-shaped, perforated. Height 18 mm. (GB 36) (fig 8)
- 113 Pin-head of ivory; triangular section, with iron oxide stained pin socket; broken. Length 19 mm. (GB 235) (fig 8)
- 114 Globular pin-head, cut from a section of long-bone. Height 20 mm. (GB 244) (fig 8)
- 115 Globular pin-head, cut from a section of long-bone, retaining remains of iron shank and having a secondary transverse perforation. Height 21 mm. (GB 243) (fig 8)
- 116 Globular pin-head, cut from a section of long-bone; broken. Height 20 mm. (GB 243) (fig 8)
- 117 Globular pin-head, cut from a section of long-bone, retaining part of iron oxide stained pin socket; broken. Height 22 mm. (GB 241) (fig 8)
- 118 Bone tool handle, socketed longitudinally, faceted externally. Length 115 mm. (GB 216) (fig 9)
- 119 Antler tool handle, socketed longitudinally, retaining remains of iron tang. Length 72 mm. (GB 218) (fig 9)
- 120 Antler tool handle, socketed longitudinally. Length 68 mm. (GB 217) (fig 9)
- 121 Bone tool handle, socketed longitudinally. Length 56 mm. (GB 213) (fig 9)
- 122 Bone tool handle, socketed longitudinally, the socket stained with iron oxide; perforated transversely; broken. Length 62 mm. (GB 219) (fig 9)
- 123 Bone (?) tool handle, being a section of long-bone now broken longitudinally. Length 75 mm. (GB 275) (fig 9)
- 124 Bone tool handle, narrowed by cutting at lower end; broken. Length 34 mm. (GB 171) (fig 9)
- 125 Bone tool handle or implement, faceted externally and waisted by friction at lower end, broken. Length 54 mm. (GB 214) (fig 9)
- 126 Bone tool handle or implement, waisted at lower end, broken. Length 85 mm. (GB 215) (fig 9)
- 127 Tool handle of cetacean bone, socketed transversely, perhaps for an auger. Length 60 mm. (GB 278) (fig 9)
- 128 Tool handle of cetacean bone, socketed transversely and having lateral peg-holes. Length 78 mm. (GB 277) (fig 9)
- 129 Bone hilt-plate with two perforations, broken. Length 85 mm. (GB 248) (fig 9)
- 130 Bone mount with three perforations, retaining three bone pegs, one broken. Length 78 mm. (GB 250) (fig 9)

- 131 Bone hilt-plate with three perforations, one retaining a fragment of bone peg; broken. Length 63 mm. (GB 246) (fig 9)
- 132 Bone mount with one perforation; broken. Length 18 mm. (GB 247) (fig 9)
- 133 Bone (?) collar. Diameter 25 mm. (GB 240) (fig 9)
- 134 Bone sneck with two perforations; broken. Length 30 mm. (GB 234) (fig 9)
- 135 Thin slip of bone, rounded at one end and polished from use. Length 85 mm. (GB 251) (fig 9)
- 136 Thin slip of bone; broken. Length 55 mm. (GB 249)
- 137 Thin slip of bone; broken. Length 138 mm. (GB 252)
- 138 Bone 'dagger beater' polished from use. Length 180 mm. (GB 222) (fig 10)
- 139 Bone awl (ulna). Length 112 mm. (GB 223) (fig 10)
- 140 Antler awl (tine). Length 110 mm. (GB 221) (fig 10)
- 141 Antler awl (tine). Length 178 mm. (GB 286) (fig 10)
- 142 Antler awl (tine); broken. Length 46 mm. (GB 190) (fig 10)
- 143 Bone gouge or chisel-like implement. Length 131 mm. (GB 253) (fig 10)
- 144 Antler tine with transverse perforation, perhaps a straw-needle; broken. Length 123 mm. (GB 220) (fig 10)
- 145 Bone implement with three ridges at one end; perhaps a leatherworking tool. Length 98 mm. (GB 225) (fig 10)
- 146 Bone peg, rectangular in section, with perforated mushroom head. Length 70 mm. (GB 224) (fig 10)
- 147 Disc of bone with two perforations; perhaps a button or decorative embellishment; broken. Diameter 37 mm. (GB 237) (fig 10)
- 148 Disc of bone with two hour-glass perforations and a central ring-and-dot ornament; perhaps a weaving tablet; broken. Diameter 36 mm. (GB 236) (fig 10)
- 149 Round-backed single-edged composite bone comb of five plates; iron rivets. Decorated with ring-and-dot ornament and drilled perforations. 45 teeth, 41 remaining. Length 80 mm. (GB 68) (fig 11)
- 150 Ogival-backed single-edged composite bone comb of four plates: iron rivets; central suspension hole. (?)51 teeth, 19 remaining. Length 80 mm. (GB 69) (fig 11)
- 151 Hollow-backed single piece single-edged bone comb. 9 teeth, 7 remaining. Length 38 mm. (GB 77) (fig 11)
- 152 Double-edged composite bone comb of seven plates; iron rivets; end suspension hole. Decorated with ring-and-dot ornament. 80/80 teeth, 53/74 remaining. Length 140 mm. (GB 71) (fig 11)
- 153 Double-edged composite bone comb of four plates; iron rivets; end suspension hole. Decorated with ring-and-dot ornament and with longitudinal grooves on transverse ribs. 30/32 teeth, 30/31 remaining. Length 66 mm. (GB 70) (fig 11)
- 154 End plate of double-edged composite bone comb; iron rivet. Decorated with double-ring-and-dot ornament. 11/12 teeth, 10/10 remaining. Length 22 mm. (GB 73) (fig 11)
- 155 End plate of double-edged composite bone comb; iron rivets; suspension hole. 12/12 teeth, 12/12 remaining. Length 26 mm. (GB 72) (fig 11)
- 156 End plate of double-edged composite bone comb; iron oxide stained rivet hole. Decorated with circular pits. 9/9 teeth, 9/9 remaining. Length 16 mm. (GB 76) (fig 11)
- 157 End plate of double-edged composite bone comb; iron rivet; suspension hole. Decorated with double-ring-and-dot ornament. 18/18 teeth, 15/4 remaining. Length 30 mm. (GB 82) (fig 11)
- 158 Rib fragment and plate from a double-edged composite bone comb; iron rivet. 12/? teeth, 12/0 remaining. Rib decorated with diagonal cut marks arranged in groups of three. Length 44 mm. (GB 81) (fig 11)
- 159 Rib fragment and plate from a double-edged composite bone comb; iron rivets. 10/9 teeth, 4/0 remaining. Decorated with ring-and-dot ornament. Length 39 mm. (GB 79) (fig 11)
- 160 Rib fragment from a composite bone comb; iron rivets. Decorated with double-ring-and-dot ornament. Length 52 mm. (GB 78) (fig 11)
- 161 Rib from a composite bone comb; rivet holes. Decorated with circular pits. Length 86 mm. (GB 84) (fig 11)
- 162 Plate from a double-edged composite bone comb; iron oxide stained rivet hole. 10/10 teeth, 10/9 remaining. Length 18 mm. (GB 83)
- 163 Plate from a double-edged composite bone comb; iron oxide stained rivet hole 9/9 teeth, 9/8 remaining. Length 15 mm. (GB 75)
- 164 Plate from a double-edged composite bone comb; iron rivet 9/10 teeth, 7/10 remaining. Length 19 mm. (GB 74)
- 165 Plate from a double-edged composite bone comb; iron rivet. 10/? teeth, 8/5 remaining. Length 22 mm. (GB 80)
- 166 Weaving comb of cetacean bone. 8 teeth, 5 remaining. Length 77 mm. (GB 93) (fig 12)
- 167 Weaving comb of cetacean bone. 16 teeth, 5 remaining. Length 85 mm. (GB 86) (fig 12)
- 168 Weaving comb of cetacean bone. 12 teeth, 1 remaining. Decorated with incised saltire. Length 100 mm. (GB 87) (fig 12)
- 169 Weaving comb of cetacean bone. 8 teeth. Length 124 mm. (GB 85) (fig 12)
- 170 Weaving comb of cetacean bone. 9 teeth, 8 remaining. Decorated with a saltire, apparently cut with a saw. Length 110 mm. (GB 99) (fig 12)
- 171 Weaving comb of antler. 12 teeth, 10 remaining. Length 115 mm. (GB 100) (fig 12)

- 172 Weaving comb of cetacean bone. (?) 8 teeth, 0 remaining. Length 68 mm. (GB 164) (fig 12)
- 173 Weaving comb of cetacean bone; handle fragment only. Length 60 mm. (GB 92) (fig 12)
- 174 Weaving comb blank of cetacean bone. Length 115 mm. (GB 245) (fig 12)
- 175 Weaving comb of cetacean bone with fish-tail end. 15 teeth, 0 remaining. Length 142 mm. (GB 91) (fig 13)
- 176 Weaving comb of cetacean bone; broken. Decorated with incised diagonal line. Length 137 mm. (GB 97) (fig 13)
- 177 Weaving comb of cetacean bone. (?) 11 teeth, 2 remaining. Length 114 mm. (GB 98) (fig 13)
- 178 Weaving comb of cetacean bone. 13 teeth, 1 remaining. Length 110 mm. (GB 96) (fig 13)
- 179 Weaving comb of cetacean bone. 10 teeth. Length 123 mm. (GB 94) (fig 13)
- 180 Weaving comb of cetacean bone. 10 teeth, 0 remaining. Length 110 mm. (GB 88) (fig 13)
- 181 Weaving comb of cetacean bone. 8 teeth. Length 112 mm. (GB 95) (fig 13)
- 182 Weaving comb of cetacean bone. 8 teeth. Length 100 mm. (GB 90) (fig 13)
- 183 Weaving comb of cetacean bone. 10 teeth, 6 remaining. Length 134 mm. (GB 89) (fig 13)
- 184 Stake of cetacean bone, irregular in shape, showing traces of saw cuts and of wear from a rope. Length 295 mm. (GB 270) (fig 14)
- 185 Stake of cetacean bone, triangular in section; pointed. Length 390 mm. (GB 271) (fig 14)
- 186 Implement of cetacean bone with a deep groove running round its entire length; perhaps a net sinker. Length 185 mm. (GB 273) (fig 14)
- 187 Rubber of cetacean bone, rounded on all edges. Length 85 mm. (GB 269) (fig 14)
- 188 Rubber of cetacean bone, polished on all edges. Length 108 mm. (GB 268) (fig 14)
- 189 Rubber of cetacean bone, thick and circular. Diameter 85 mm. (GB 276) (fig 14)
- 190 Rubber of cetacean bone, highly polished on one side. Length 200 mm. (GB 259)
- 191 Rubber of cetacean bone, polished. Length 150 mm. (GB 261)
- 192 Rubber of cetacean bone, polished at one end. Length 179 mm. (GB 260)
- 193 Rubber of cetacean bone, polished on one edge. Length 160 mm. (GB 258)
- 194 Rubber of cetacean bone, rounded on one edge. Length 125 mm. (GB 267)
- 195 Robust block of cetacean bone with two perforations. Length 195 mm. (GB 256) (fig 14)
- 196 Robust block of cetacean bone with two perforations. Length 195 mm. (GB 257) (fig 14)
- 197 Implement of cetacean bone, perhaps a blubber mattock; two perforations. Length 258 mm. (GB 254) (fig 15)
- 198 Implement of cetacean bone, perhaps a blubber axe. Length 258 mm. (GB 255) (fig 15)
- 199 Implement of cetacean bone, worn at the end; socketed; broken. Length 150 mm. (GB 266) (fig 15)
- 200 Implement of cetacean bone, notched at the side; perforated by a small hole. Length 148 mm. (GB 265) (fig 15)
- 201 Implement of cetacean bone, rounded and tapered at the bottom; apparently socketed; broken. Length 192 mm. (GB 262-3) (fig 15)
- 202 Implement of cetacean bone, square in section, smoothed flat on one face; rounded from handling at one end. Length 317 mm. (GB 272) (fig 15)
- 203 Implement of cetacean bone, square in section, smoothed flat on one face. Length 120 mm. (GB 287) (fig 15)
- 204 Parallelepiped bone die with values marked in freehand ring-and-dot. Length 44 mm. (GB 231) (fig 16)
- 205 Parallelepiped bone die with values marked in ring-and-dot; broken. Length 42 mm. (GB 230) (fig 16)
- 206 Parallelepiped bone die, no value distinguishable. Length 42 mm. (GB 229) (fig 16)
- 207 Bone playing piece, polished from use. Height 18 mm. (GB 238) (fig 16)
- 208 Antler playing piece, polished from use. Height 34 mm. (GB 232) (fig 16)
- 209 Bone playing piece, polished from use. Height 24 mm. (GB 233) (fig 16)
- 210 Ox phalange incised on one side with a crescent and V-rod, on the other with a circular disc and rectangle with square indentation. Length 55 mm. (GB 227) (fig 16)
- 211 Ox phalange incised with a symbol, partly obliterated. Length 58 mm. (GB 228) (fig 16)
- 212 Ox phalange, socketed longitudinally, with lateral notches. Length 60 mm. (GB 226) (fig 16)
- 213 Femur head spindle whorl. Diameter 43 mm. (GB 20) (fig 17)
- 214 Femur head spindle whorl. Diameter 37 mm. (GB 28) (fig 17)
- 215 Femur head spindle whorl. Diameter 39 mm. (GB 26) (fig 17)
- 216 Femur head spindle whorl. Diameter 39 mm. (GB 25) (fig 17)
- 217 Femur head spindle whorl; cortex removed. Diameter 39 mm. (GB 30) (fig 17)
- 218 Femur head spindle whorl. Diameter 35 mm. (GB 31) (fig 17)
- 219 Femur head spindle whorl. Diameter 38 mm. (GB 21) (fig 17)
- 220 Femur head spindle whorl. Diameter 38 mm. (GB 23) (fig 17)
- 221 Femur head spindle whorl. Diameter 39 mm. (GB 29) (fig 17)
- 222 Femur head spindle whorl. Diameter 36 mm. (GB 24) (fig 17)
- 223 Femur head spindle whorl. Diameter 35 mm. (GB 27) (fig 17)
- 224 Femur head spindle whorl; broken. Diameter 36 mm. (GB 34) (fig 17)
- 225 Bone spindle whorl; ovoid. Diameter 28 mm. (GB 33) (fig 17)

- 226 Femur head (top) perhaps in the process of manufacture into a spindle whorl. Diameter 33 mm. (GB 35) (fig 17)
 227 Antler spindle whorl. Diameter 39 mm. (GB 22) (fig 17)
 228 Antler burr spindle whorl. Diameter 46 mm. (GB 32) (fig 17)

Stone

- 229 Chalk spindle whorl with decoration of dots around perforation. Diameter 40 mm. (GB 37) (fig 18)
 230 Sandstone spindle whorl. Diameter 46 mm. (GB 54) (fig 18)
 231 Sandstone spindle whorl. Diameter 45 mm. (GB 45) (fig 18)
 232 Sandstone spindle whorl. Diameter 47 mm. (GB 48) (fig 18)
 233 Sandstone spindle whorl, obliquely perforated, with beginnings of a larger perforation apparently made with a tubular drill. Diameter 43 mm. (GB 42) (fig 18)
 234 Sandstone spindle whorl. Diameter 36 mm. (GB 57) (fig 18)
 235 Sandstone spindle whorl. Diameter 42 mm. (GB 41) (fig 18)
 236 Sandstone spindle whorl. Diameter 35 mm. (GB 38) (fig 18)
 237 Sandstone spindle whorl. Diameter 35 mm. (GB 40) (fig 18)
 238 Sandstone spindle whorl. Diameter 42 mm. (B.1914.752) (fig 18)
 239 Sandstone spindle whorl. Diameter 37 mm. (GB 39) (fig 18)
 240 Sandstone spindle whorl; broken. Diameter 38 mm. (GB 50) (fig 18)
 241 Sandstone spindle whorl. Diameter 30 mm. (GB 46) (fig 18)
 242 Sandstone spindle whorl; one face scaled off. Diameter 34 mm. (GB 51) (fig 18)
 243 Sandstone spindle whorl. Diameter 33 mm. (GB 43) (fig 18)
 244 Sandstone spindle whorl. Diameter 28 mm. (GB 47) (fig 18)
 245 Sandstone spindle whorl. Diameter 30 mm. (GB 56) (fig 18)
 246 Sandstone spindle whorl. Diameter 25 mm. (GB 49) (fig 18)
 247 Sandstone spindle whorl. Diameter 22 mm. (GB 60) (fig 18)
 248 Stone spindle whorl or bead. Diameter 21 mm. (GB 59) (fig 18)
 249 Sandstone spindle whorl with circumferential 'pulley' groove and with decorative radial grooves on upper surface. Diameter 34 mm. (GB 55) (fig 18)
 250 Sandstone spindle whorl with arrangement of notches around perforation. Diameter 35 mm. (GB 44) (fig 18)
 251 Sandstone spindle whorl with perforation enclosed by an incised lens shape. Diameter 36 mm. (GB 52) (fig 18)
 252 Sandstone spindle whorl with incised ogham-like decoration on one face. Diameter 21 mm. (GB 58) (fig 18)
 253 Sandstone blank for a spindle whorl, with rudimentary borings. Diameter 35 mm. (GB 53) (fig 18)
 254 Stone pot lid, chipped roughly into a disc. Diameter 115 mm. (GB 12) (fig 19)
 255 Pumice pebble, with suspension hole; worn from use. Length 48 mm. (GB 18) (fig 19)
 256 Pumice pebble with suspension hole; worn from use. Length 59 mm. (GB 15B) (fig 19)
 257 Pumice pebble with suspension hole; worn from use. Length 44 mm. (GB 19)
 258 Pumice pebble with suspension hole; worn from use. Length 143 mm. (GB 16A)
 259 Pumice pebble; worn from use. Length 50 mm. (GB 17A)
 260 Pumice pebble; worn from use. Length 80 mm. (GB 16B)
 261 Pumice pebble; worn from use. Length 65 mm. (GB 14)
 262 Pumice pebble; worn from use. Length 65 mm. (GB 15A)
 263 Pumice pebble, differing from the others in being brown instead of black in colour and having large vessels. Length 82 mm. (GB 17B)
 264 Boat-shaped steatite object, partially perforated and marked with transverse grooves. Length 140 mm. (GB 8) (fig 19)
 265 Whetstone, worn flat on one face, abraded at both ends. Length 150 mm. (GB 4) (fig 19)
 266 Whetstone, worn flat on one face, abraded at both ends. Length 146 mm. (GB 7) (fig 19)
 267 Tip of a stone bar share, with characteristic wear, striations etc. Length 200 mm. (GB 2) (fig 19)
 268 Quartz pebble, stained with random streaks of iron oxide from use as a strike-a-light. Diameter 70 mm. (GB 10)
 269 Quartz pebble, abraded at both ends, worn on two faces from use as a strike-a-light. Length 82 mm. (GB 11)
 270 Stone pounder, abraded at both ends. Length 170 mm. (GB 3)
 271 Stone pounder, abraded at both ends. Length 158 mm. (GB 5)
 272 Stone pounder, abraded at both ends. Length 163 mm. (GB 6)
 273 Stone pounder, abraded at both ends. Length 82 mm. (GB 321)
 274 Steatite bowl, wide-mouthed and oval in shape; broken. 410 by 340 by 140 mm. (GB 315) (fig 20)
 275 Sandstone ball, partially drilled. Diameter 50 mm. (GB 13) (fig 20)
 276 Quartz pebble decorated on one side with open circles and on the other with dots, executed in brown pigment. Diameter 20 mm. (GB 67) (fig 20)
 277 Quartz pebble decorated on one side with irregular marks and smudged on the other, executed in brown pigment. Diameter 22 mm. (GB 67) (fig 20)

- 278 Sandstone pebble incised on one side with a hexagram and on the other with a pentacle and various subsidiary markings; ends abraded. Length 150 mm. (GB 9) (fig 20)
- 279 Stone slab incised with a cross, ogham inscription and fragmentary symbol. Length 700 mm. (GB 1) (fig 21)

Pottery

- 280 Vessel with slightly everted rim; hard orange-red fabric with grits; 2 rim sherds, 1 body sherd. Diameter (rim) 275 mm. (GB 309a) (fig 22)
- 281 Vessel with slightly everted rim; hard orange-red fabric with grey core; few grits; 1 rim sherd, 1 body sherd. Diameter (rim) 250 mm. (GB 309b) (fig 22)
- 282 Vessel with slightly everted rim and applied neck cordon with stabbed decoration; burnished hard brownish-red fabric; 4 rim sherds, 2 body sherds. Diameter (rim) 190 mm. (GB 309c) (fig 22)
- 283 Vessel with low relief bead rim; hard brownish fabric with grey core; some large grits; 1 rim sherd. Diameter (rim) 150 mm. (GB 309d) (fig 22)
- 284 Vessel with narrow, sharply everted rim; decorated with a series of applied billets, below which is an incised horizontal groove and the apex of a chevron; hard greyish fabric with blackened surface; few small grits; 1 rim sherd. Diameter (rim) 200 mm. (GB 310a) (fig 22)
- 285 Bowl with plain rim, slightly bevelled; hard brownish fabric; few small grits; 1 rim sherd, 1 body sherd. Diameter (rim) 175 mm. (GB 310c) (fig 22)
- 286 Bowl with plain rim; hard fabric, black interior, buff/black exterior; 1 rim sherd. Diameter (rim) 220 mm. (GB 310b) (fig 22)
- 287 Vessel with plain rim; reddish brown fabric; some grits. Diameter indeterminate. (GB 311b)
- 288 Vessel with flat base; hard reddish fabric with grey core; large grits; surface striated as though scraped down before firing; 2 body sherds. Diameter (base) 173 mm. (GB 310d) (fig 23)
- 289 Vessel with flat base; burnished brownish red fabric; some grits; 1 base sherd, 2 body sherds. Diameter (base) 122 mm. (GB 311a) (fig 23)
- 290 Small bowl or cup; burnished reddish-brown fabric; inner surface scaled off, revealing small grits and impressions of straw or grass; 1 base sherd. Diameter (base) 61 mm. (GB 311c) (fig 23)
- 291 Small bowl or cup; buff fabric with black core; few small grits; 1 base sherd. Diameter (base) 62 mm. (GB 311d) (fig 23)
- 292 Small bowl or cup; coarse red fabric with black core; large grits; 1 base sherd. Diameter (base) 72 mm. (GB 312a) (fig 23)
- 293 Body sherd, dark exterior, red interior, black core; seed impression on exterior, species indeterminate. 62 by 30 mm. (GB 310e)
- 294 Body sherds (2) from a large globular vessel; burnished dark brown fabric; few grits. 115 by 85 mm, 75 by 55 mm. (GB 312b)
- 295 Body sherds (3); smoothed reddish fabric with pink core. 55 by 45 mm, 50 by 45 mm, 50 by 30 mm. (GB 312c)
- 296 Body sherd; hard reddish fabric. 85 by 65 mm. (GB 313a)
- 297 Body sherd; reddish brown fabric with black core. 50 by 50 mm. (GB 313b)
- 298 Body sherd; brownish fabric; few large grits. 65 by 30 mm. (GB 313c)
- 299 Body sherd; brownish fabric; small grits. 45 by 40 mm. (GB 314a)
- 300 Body sherd; reddish fabric; few small grits. 39 by 37 mm. (GB 314b)
- 301 Body sherd; brownish fabric with dark core; traces of organic temper. 80 by 45 mm. (GB 314c)
- 302 Body sherd; orange-red fabric with grey core. 58 by 56 mm. (GB 314d)

Metalwork

- 303 Bronze pin with ball head and swelling shank; incised linear decoration on head. Length 60 mm. (GB 304) (fig 24)
- 304 Bronze pin with nail head and swelling shank; decorated around edge of head with incised cross hatching and on shank with three narrow zones of longitudinal lines enclosed by circumferential lines. Length 45 mm. (GB 302) (fig 24)
- 305 Bronze pin or bodkin, rounded at the head. Length 93 mm. (GB 303) (fig 24)
- 306 Fragments of bronze, apparently from a brooch. (GB 305) (fig 24)
- 307 Small quadrangular bell of sheet iron; traces of bronze coating. Height 60 mm. (GB 306) (fig 24)
- 308 Iron socket (fragmentary) with traces of wooden shaft and retaining pin. Diameter 28 mm. (GB 307b) (fig 24)
- 309 Iron nail head. Width 31 mm. (GB 308c) (fig 24)
- 310 Iron nail head. Width 22 mm. (GB 308a) (fig 24)
- 311 Iron nail head. Width 26 mm. (GB 308b) (fig 24)
- 312 Iron sheet fragment, greatly corroded. Length 120 mm. (GB 307a) (fig 24)

Glass

- 313 Bead of blue glass, highly iridescent. Diameter 14 mm. (GB 320) (fig 24)
- 314 Fragment from a glass vessel, having a blue iridescent sheen. 21 by 11 by 2 mm. (GB 319)

Animal remains:

Ox: 1 femur from a moderately large animal, broken; 2 femur heads from a fairly young animal; 1 molar from an animal of two years or more; 10 incisors: 8 from animals of two years or more; 1 from a five-year-old or more; 1 at least ten years old.

Sheep: Left and right frontal bones of a single young sheep, one to two years old.

Pig: Left and right mandibles from an animal of two years or more; 1 skull of a young animal, broken; 1 mandible of a young animal, broken; 18 lower canines, 4 upper canines, 1 lower incisor.

Horse: 1 lower left canine.

Deer: 1 antler from a Red Deer; broken

Seal: 2 mandibles from Grey Seal, broken; 1 ear bone from a Grey Seal; 1 upper pre-molar, possibly from a Ringed Seal.

Cetaceans: 1 intervertebral disc from a moderately sized whale, broken; 1 cancellous bone from a whale, broken; 3 teeth, probably from a Killer Whale; 8 teeth, possibly from Risso's Dolphin.

Gannet: 1 skull broken.

Human remains: 1 mandible, broken.

Botanical remains:

Timber: 12 fragments carbonised timber, all pine; 1 fragment carbonised timber, possibly willow or poplar.¹⁰

Cereals: 32 carbonised grains, all six-row barley.

NOTES

- 1 Figs 2, 4 and 5 are based on drawings compiled by Dryden and Traill during the excavations, now in the possession of the Society. The plan forming the basis of fig 3 is apparently contemporary with the others but its author is unknown. It varies from those of Dryden and Traill in several details but is included here as it records a number of features not illustrated by them.
- 2 The heights of most of the interval walls and the presence of steps were noted by the excavators (see *RCAMS* 1946, fig 89) but unfortunately the height of the 'blocking wall' was not recorded, so that even this minimal interpretation must remain tentative.
- 3 Possibly an unstable earthen core like that found in an outwork at Crosskirk Broch, Caithness (*DES* 1972, 54) may have been the source of the problem.
- 4 The writer hopes to undertake some of this work in the near future.
- 5 I am indebted to Mr Geoffrey Collins of the Institute of Geological Sciences for explaining the origin of this chalk.
- 6 Dr Dorothy Lunt of the Department of Oral Biology, University of Glasgow has provided these observations.
- 7 Dr Arthur Clark of the Royal Scottish Museum and Dr Michael Ryder of the Animal Breeding Research Organisation kindly helped with the identification of the bones in this section.
- 8 Information kindly supplied by Dr P E Purves of the British Museum (Natural History). It is also true, of course, that the population has been decimated by the world's whaling fleets in recent years.
- 9 Mr George Chadwick of the Department of Agriculture and Fisheries has identified the grains and supplied the description given here.
- 10 Mrs Heather Thomson of the Royal Botanic Garden, Edinburgh, and Dr Alan Hayes of the Department of Forestry, University of Edinburgh, have kindly identified the timber fragments.

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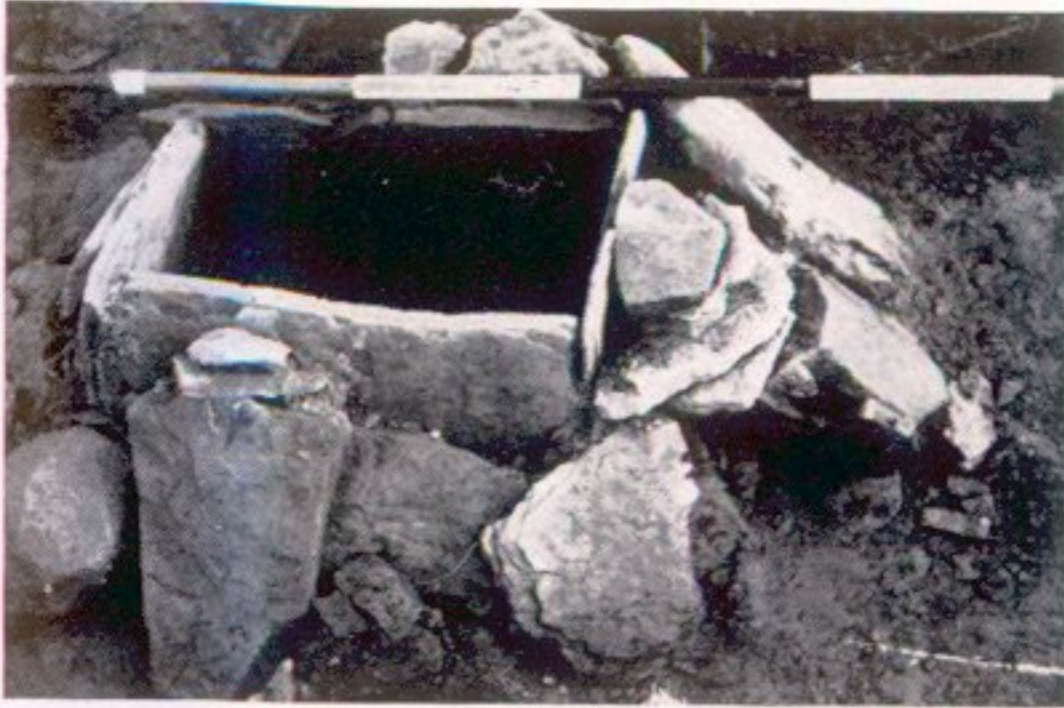
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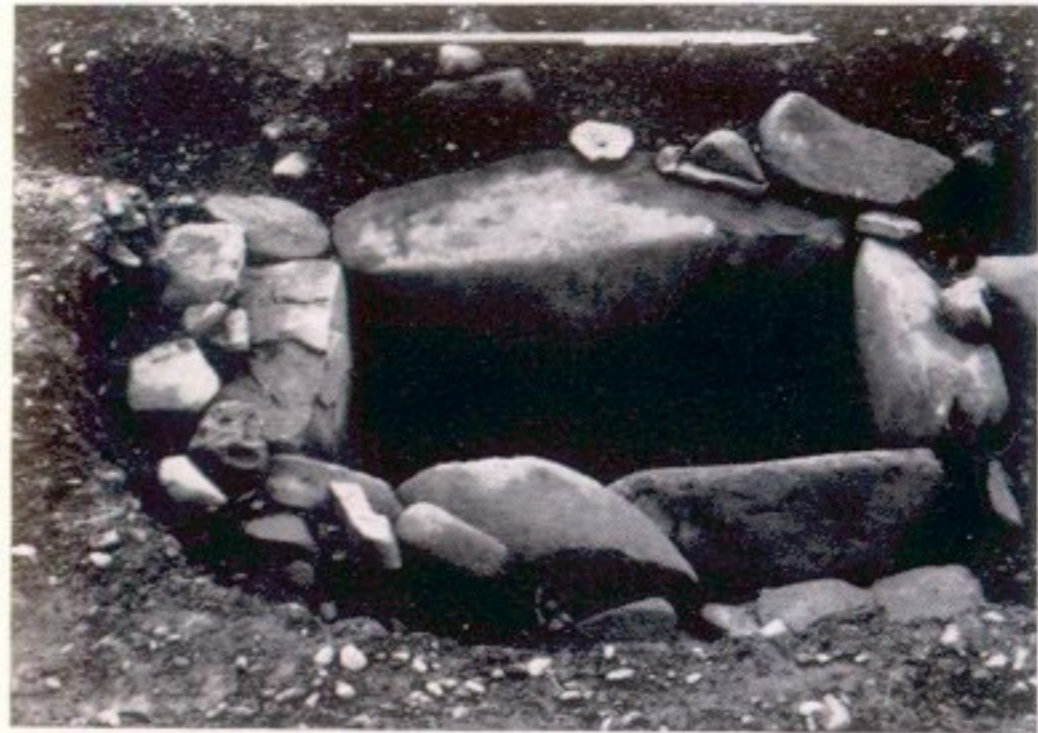
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a Summersdale cist (scale in ft)



b Horsbrugh Castle Farm, cist from E (1 m scale)



c The Broch of Burrian, North Ronaldsay, from the E