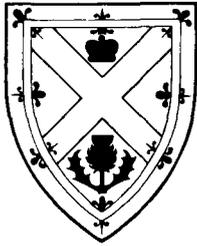

C L CURLE

**PICTISH AND NORSE FINDS FROM THE
BROUGH OF BIRSAY 1934-74**

ILLUSTRATION T BORTHWICK

APPENDIX J R HUNTER & C D MORRIS

SOCIETY OF ANTIQUARIES OF SCOTLAND EDINBURGH 1982
MONOGRAPH SERIES NUMBER 1



SOCIETY OF ANTIQUARIES
OF SCOTLAND
MONOGRAPH SERIES

EDITORS IBM RALSTON HK MURRAY AN SHEPHERD

Volume editors: HK Murray AN Shepherd

The Society is indebted to the Scottish Development Department
(Ancient Monuments) for funding the publication of this volume

British Library Cataloguing in Publication Data
Curle, C L

Pictish and Norse finds from the Brough of Birsay
1934-74.—(Society of Antiquaries of Scotland monograph
series, ISSN 0263-3191; 1)

1. Excavations (Archaeology)—Scotland—Birsay
2. Birsay (Orkney Islands)—Antiquities

I. Title II. Series
941.1'3201 DA890.B/

ISBN 0 903903 01 6

Printed by Waverley Press (Aberdeen) Limited

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FOREWORD

Birsay is one of the most numinous of Scotland's archaeological sites standing as a rich outpost of Pictish and Viking culture as though defying the Atlantic. The finds discovered over the last half century have added more to our knowledge of Scottish history of the 1st millennium of our era than any single site in the whole of the country. The excavations conducted by a whole range of scholars, Scottish and English, have produced for us material which is only now being gradually released to a more general scholarly audience.

Mrs Curle's volume is a labour of love and has produced many new and rich facets, particularly concerning the manufacture and embellishment of metalwork on the site in pre-Viking times. I have read it with great attention and interest and am sure it will stand for a long time as a major tool of Orcadian and Scottish scholarship and as such is highly to be recommended.

David M Wilson
Director, The British Museum

ACKNOWLEDGEMENTS

I am most grateful to Mr R B K Stevenson, then of the National Museum of Antiquities of Scotland, for encouraging me to undertake this report, and for his generous and expert advice throughout. I would like to thank Dr Joanna Close-Brooks also of the National Museum of Antiquities of Scotland for her expert help. Mr S H Cruden and Dr R Radford kindly gave me permission to include finds from their excavations, and the former is due many thanks for the facilities he provided in his capacity as Principal Inspector of Ancient Monuments, not least for arranging for me to receive help from Mr N Robertson and Mr T Borthwick of the Inspectorate. Mr Robertson gave unfailingly of his time, skills and expertise while Mr Borthwick patiently and meticulously produced drawings of the finds, which are greatly valued. Professor Rosemary Cramp of Durham University freely gave encouragement, advice and practical help; and through her kind offices Dr J R Hunter, now of Bradford University, who supervised on the Brough in 1973 and was joined by Mr C D Morris in 1974. Their work led directly to a clearer understanding of the Pictish and later periods and their unstinting help then and ever since is deeply appreciated. Publication of their continuing work on the Brough will carry research a great deal further. Dr Ethel Eaton, then doing research at the National Museum laboratories, carried out all the experiments on bronze casting, using moulds and crucibles formed by Mr Robertson; without her help the technical aspects of this report would have been far less complete.

In addition I wish to thank those who have so kindly advised me on particular problems: Professor L Alcock, Mrs Brighitt Arrhenius, Dr E Bakka, Mr J Graham-Campbell, Dr Kristine Danielson-Ambrosiani, Dr A Lundström, A Leistøl, Mr Arthur MacGregor, Dr H B Madsen, Professor O'Kelly, Mr D J Rackham, Dr R Tylecote and Dr D M Wilson.

I am indebted to those who contributed specialist reports: Dr J R Hunter and Mr C D Morris for the appendix containing their report on the excavation below Room 5 of 1973 and 1974, together with Dr Seller's exhaustive report on the animal bones, that of Miss Alison Donaldson on plant remains and of Dr Woodward on shell. Mr Robertson contributed an account of his experiments in constructing two piece moulds. Mr Rackham identified the species of bone used for artifacts. Dr Hunter has contributed a valuable report on the glass fragments.

I must also thank Mr Larner for the excellent photographs of the finds, Mr Bryce and Miss McQueen of the National Museum laboratory for the conservation of the perishable objects and Mrs K Antonio for providing X-rays. A special debt is due to Miss Bell of the Museum for all the care and interest she took with typing the text and catalogue, and to Mr W G Ford for kindly checking the measurements of the finds.

I gratefully acknowledge the constant encouragement, advice and interest of Dr Anna Ritchie and Dr Graham Ritchie of the Royal Commission for the Ancient and Historical Monuments. Lastly I must express my gratitude to Mr Patrick Ashmore of the Ancient Monuments Division of the SDD for the patient and invaluable help he gave me and all the trouble he took during the completion of the work.

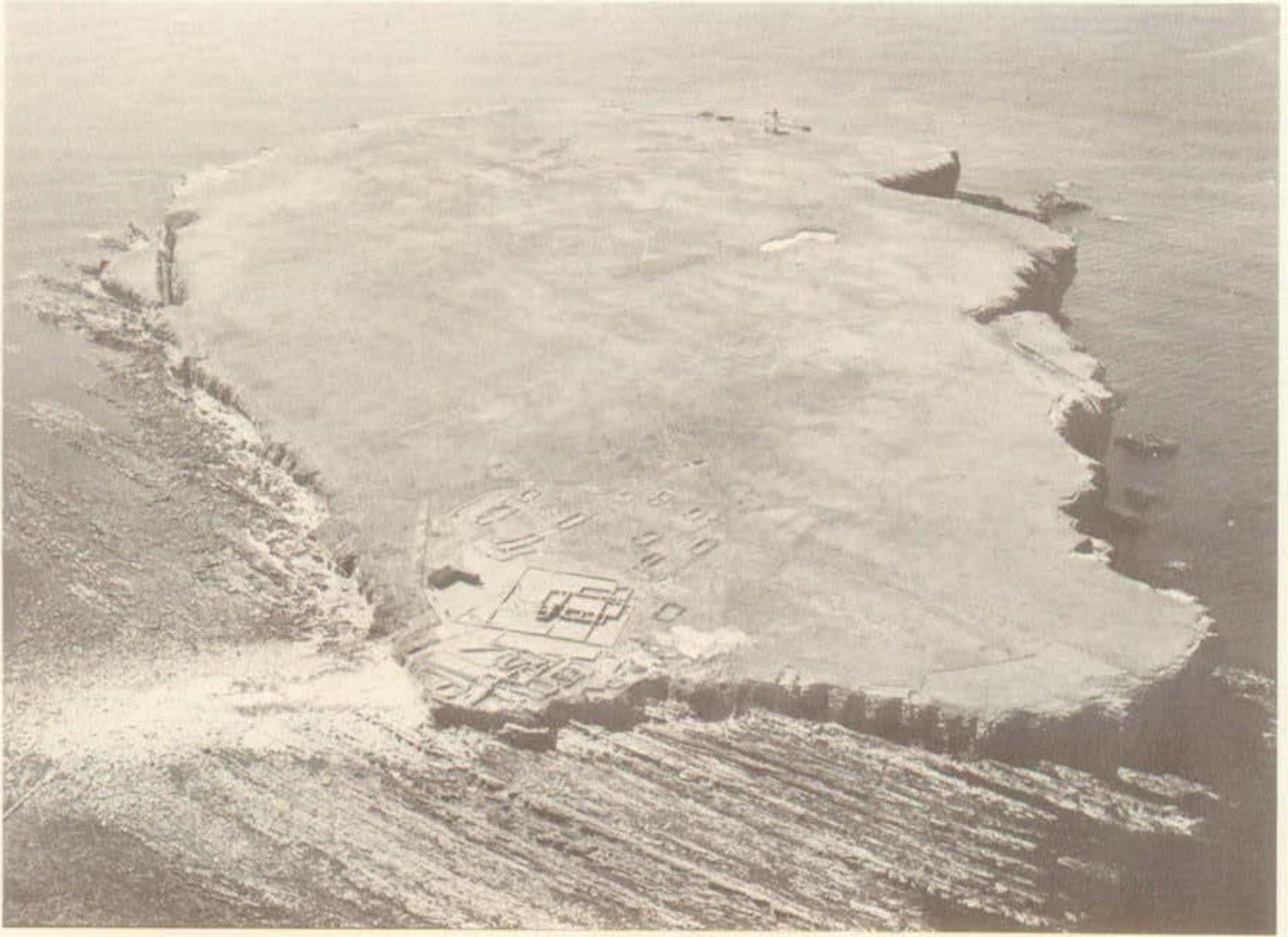
ACKNOWLEDGEMENTS FOR THE ILLUSTRATIONS

I am also indebted to those who contributed the following illustrations: 15:b, 29: 449b, 51, E Helen Jackson; 2, 3, 61, C D Morris; 31:c, 58, 59, 60:a, A N Shepherd. Permission to reproduce the undermentioned photographs has kindly been given by the following who retain the copyright: 17:e, Bergen Historisk Museum; 1, 12, 27a, b, 37, 41x, 46, 52, 54, Crown Copyright: reproduced by permission of the Scottish Development Department; 4, 11, 14, 15: 298, a, 452, c, d, 16:c, 17:c, d, 21: 294, 295, a, 266, 22: 357-9, 24, 28, 29: 449a, 31a, 57, Crown Copyright: reproduced by permission of the National Museum of Antiquities of Scotland; 40:a, Tromsø Museum.

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ILL 1 : Aerial view of the Brough of Birsay

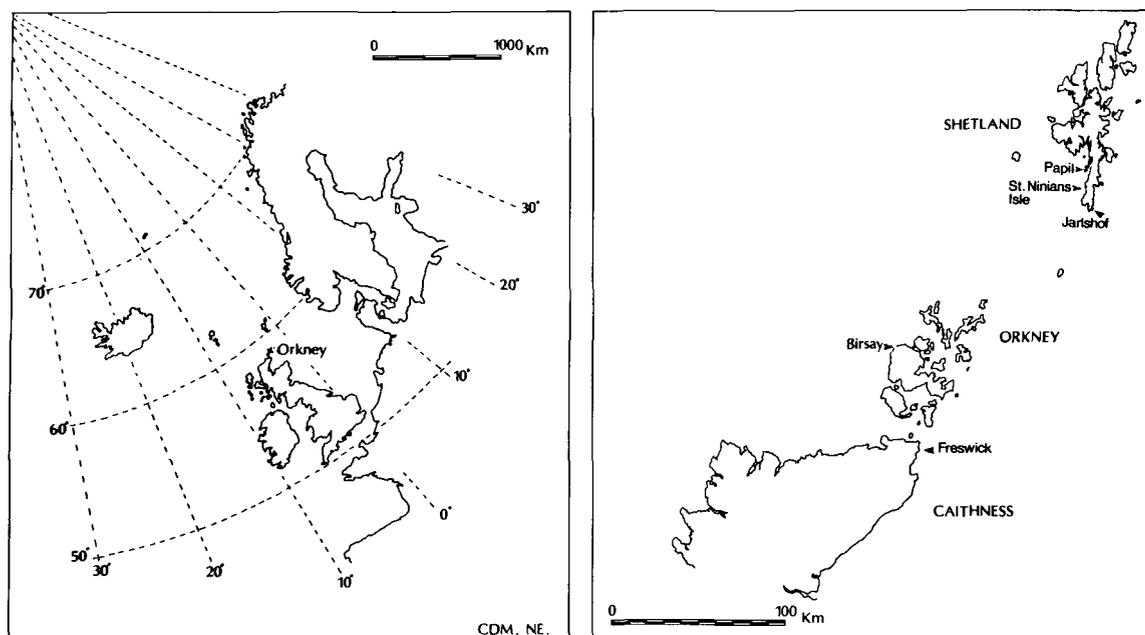
1 INTRODUCTION

The Brough of Birsay (Grid ref: HY239285) is an uninhabited tidal island approximately 21 ha in extent, lying off the NW coast of Mainland, the largest of the Orkney islands (Ill 1, 2). Rising sheer from the sea, the cliffs on the W side reach a height of 45 m; from there the land slopes gradually down to a promontory on the E side where the cliffs rise to no more than 4 m above the rocky beach and at one point have crumbled away. Just here a rough track leads up from the beach to the promontory where the ruined 12th-century church and the remains of Norse habitations are sited. The island, which is treeless, is grazed by sheep in the summer months, but in the winter, when waves of the Atlantic storms beat against the cliff, salt water streams down almost the whole length of the Brough. There are springs but no fresh water streams. Erosion of the cliffs, which, centuries ago, destroyed at least a part of the Norse settlement, still continues, although where it threatens the ruins it is halted by preventive work carried out by the authorities. A modern causeway, passable for three hours either side of low tide, leads across to Mainland and to a corresponding headland on which lie the recently excavated Pictish and Viking Age farmsteads of Buckquoy (Ritchie 1974 and 1977) and other early sites. From here a track continues to the village of Birsay.

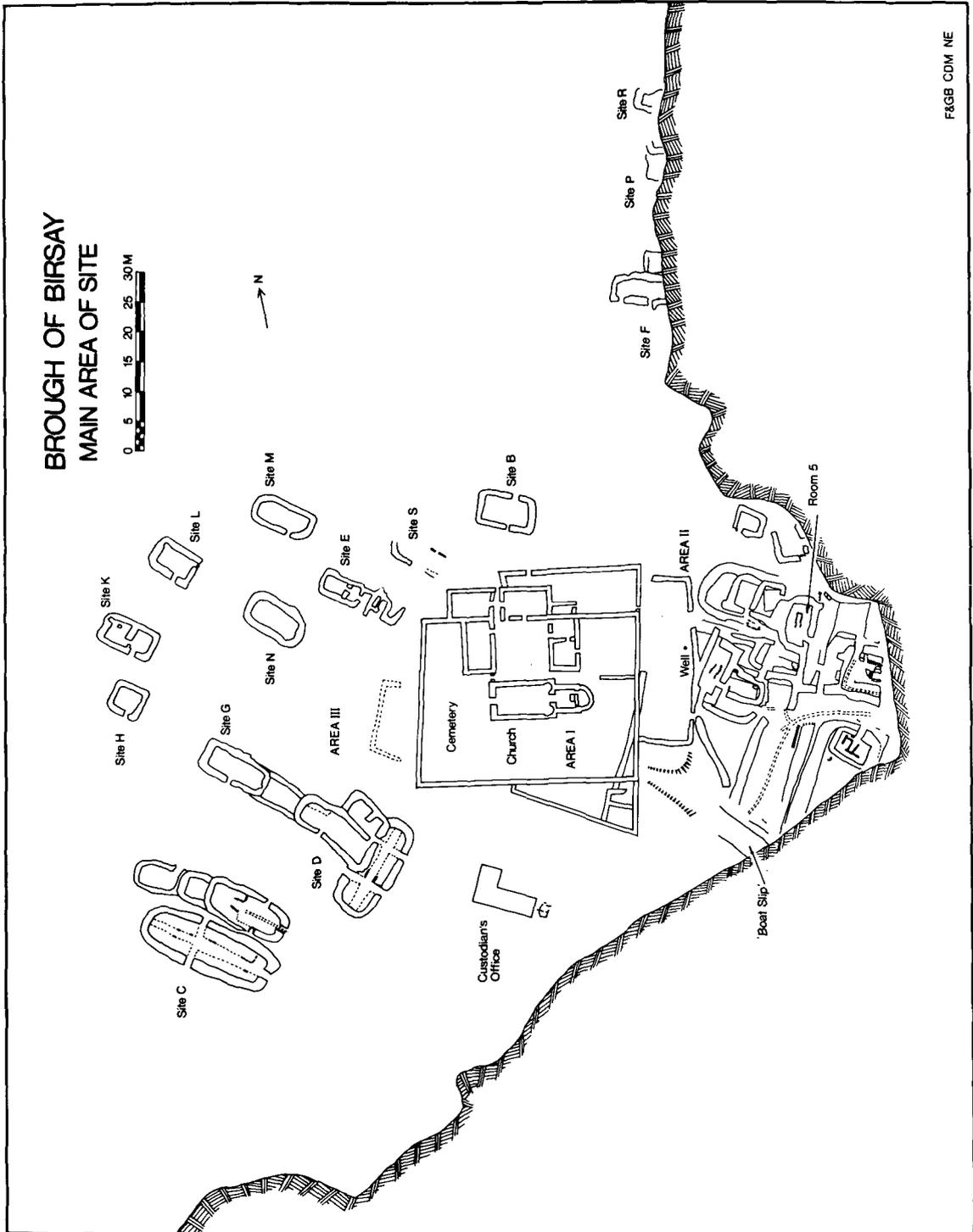
Little is known of the history of the Brough. In the account of Birsay published in the Inventory (RCAHMS 1946, 1-3) the writer quotes from a document of 1627:

‘. . . Ane littell holme within the sea callit the brughe of Birsay quhilk is thought by the elder sort to have belongit to the reid friars, for there is the fundations of ane kirk and kirkyaird thair as yet to be seen.’

The writer points out that the church and cloister are considerably earlier than the date when the Friars arrived in Europe. However it does seem to imply a folk memory of a monastic settlement on the island. In the Statistical Account of 1795 (Low 1795) the remains of the church are referred



ILL 2 : Location maps of (a) Orkney and (b) Brough of Birsay



ILL 3 : Brough of Birsay: plan of the main Pictish and Norse settlement

to as having been dedicated to St Peter and that is the name given to it in the plans published by Sir Henry Dryden (1878). But, in an 18th-century drawing in the University Library in Edinburgh which is reproduced in the Inventory (RCAHMS 1946, fig 69), it is designated as 'St Come's Church'. This drawing is dated to c 1774 by Marwick (1970) who also discussed the church. The dedication is discussed in detail in Lamb (1974).

The plan (Ill 3) shows the site which was divided into three areas. Area I includes the church with its adjacent buildings and the cemetery. Area II, the E Cliff Settlement, covers the ground between the E of the cemetery and the cliff edge including the main complex of Norse buildings and the 'boat slip'. Area III covers the slope above and to the W of the church, where a series of isolated buildings are scattered across the width of the island.

The purpose of this publication is to give a comprehensive catalogue of the finds recovered from the Brough between the years 1934 and 1974. In view of the length of time involved and the fact that so little has been published about the excavations, it may be helpful to begin with an outline of the various periods during which work was carried out, especially the pre-war years when the majority of the finds were excavated.

Area I was the first part of the site to which attention was directed. In 1934, the late Dr J S Richardson, H M Inspector of Ancient Monuments, concerned at the deterioration in the structure of the 12th-century church, began a major programme of repair and partial restoration, the first to be undertaken since an excavation carried out by Sir Henry Dryden in 1866 (RCAHMS 1946, 3). Under Dr Richardson's direction, the buildings adjacent to the church were excavated, the precinct wall foundations were rebuilt and the long task of clearing and levelling the cemetery was begun, a task which was to continue intermittently over a number of years. Earlier foundations were uncovered below the S wall of the church. These were found to be on a slightly different and more accurate E-W orientation. It was also noted that there were two layers of graves. The lower graves, some outlined with upright slabs, were on the same orientation as the building below the church. Two carved grave slabs, which are now in the site museum at Birsay, were also uncovered (RCAHMS 1946, 4, fig 53) and in 1935 the fragments of the well-known Pictish symbol stone, now in the National Museum of Antiquities of Scotland, were discovered and pieced together (Ill 4). A few graves were examined and a brief report on one of them was written in a letter by Dr Richardson and is included in this report. A detailed account of the church, then referred to as St Peter's Chapel, and a report on its restoration and repair and on the excavation of the claustral buildings (as Dr Richardson assumed them to be) was published in the Inventory (RCAHMS 1946, 3-4, figs 54-6).

In 1936, Dr Richardson embarked on the excavation of the Norse dwellings in Area II, the outlines of which were apparent beneath the turf between the cemetery and the cliffs facing the Mainland. He himself retained the overall direction of the excavation and the team of four Orcadians with their foreman, the late Mr Thomas Drever, who had worked on the site since 1934, were employed on the new work. However, as Dr Richardson was unable, owing to his other commitments, to be in Orkney all the time, a supervisor who could be resident in Birsay was required. I was fortunate in being selected and continued in this work throughout two seasons. In 1938 my place was taken by the late Mr James Henderson and the work extended to Area III. Nearly at the end of his second season work came to an abrupt halt on the imminent declaration of war. Dr Richardson never resumed the excavation after the war and his only report referring to it is a very short summary with a site plan of Area II published in the same volume of the Inventory of Orkney (RCAHMS 1946, 7, fig 65).

No more work was done on the Brough until 1956, when Mr Cruden, with Dr Radford, spent a number of seasons interpreting the earlier excavations as well as continuing with further excavation. Dr Radford is the author of the official guide book *The Early Christian and Norse Settlements, Birsay* (1959) and papers on aspects of the site were read by Mr Cruden at the Third and Fourth Viking Congresses (1958 and 1965) and published in the proceedings of those congresses.

When it was agreed that I could prepare the finds for publication, prior to a full report on the site to be written later by Dr Radford, permission was given by the Department of the Environment to re-open a small area with the aim of clarifying Pictish and Norse levels. This was



ILL. 4 : The Pictish stone from the settlement

carried out during 1973 under the direction of Dr John Hunter. In 1974 Mr Christopher Morris and students from Durham University helped to continue the excavation below Room 5, while a new series of excavations was initiated elsewhere. In the Catalogue the finds from this small excavation have been added to those from the work of Mr Cruden and Dr Radford as well as to all those from the pre-war years, the total numbering over 600. The pre-war finds, except for a small number which were kept at Birsay, had been sent to Edinburgh for safe keeping on the outbreak of war. Some have now been allocated to Tankerness House Museum, Kirkwall. Only a very few have been published: some of the glass (Harden 1956), a few of the bone pins (Stevenson 1955) and a lead disc with a few of the moulds (Curle 1974). The bones and all the other specimens had also been packed up and sent off but there is no record as to their destination and they have never been traced. However, their loss is not as serious as it might be since a full account of the animal and organic remains from the 1973-4 excavation is included in this publication. Although this excavation was limited to a small area it is important as it covers the transition between Pictish and Norse occupation. The information it supplies is supplemented by the recently published reports on the neighbouring site of Buckquoy (Ritchie 1974 and 1977).

The site records available for the pre-war years include my own field notes for 1936-37 with a drawing of every object as it was unearthed, my photographs, and the plans drawn up by the then Office of Works when Mr Cruden came up in 1936 and made the first survey of the site. For 1937-38 there are Mr Henderson's notes and drawings together with his site plans. Finally there is the foreman's report, written by Mr Drever when he was in charge of the work of levelling the cemetery.

The system of recording the finds which was adopted in the pre-war years has been followed but needs some explanation. There is no problem over the horizontal location of the finds, which had been noted in every case, but the vertical stratigraphy is unclear in both Area I, the church and cemetery, and Area III, the isolated houses up the hill. In Area I, with the exception of a find from inside the church and another from the W apartment of the adjacent buildings, the objects were all dug up in the course of clearing and levelling the cemetery and, although carefully noted in the Foreman's records, they can only be classed as surface finds. In Area III, work which had begun in 1938 was unfinished when the war started. The house-sites had been partially excavated and it had been found that, in most cases, surface walling overlay earlier building. In the 1950s when Dr Raleigh Radford fully examined two adjoining house sites in this area (Radford 1959, 22-3, fig 2) he discovered three periods of building and re-building and was able to disentangle the essential features of the structures succeeding the original Norse farmsteads. The soil over this part of the Brough was thin, the situation was exposed, and the walls were in a poor state, owing to winter storms, animals grazing and people and dogs having wandered at will throughout the centuries; many of the finds must have been displaced.

In 1936 excavation on the Norse buildings in Area II had been started and was carried on through to 1939. Here the situation was different from that pertaining in Area III. For one thing the site was less exposed, for another the walls of the main complex had been strongly built. When the turf which overlay them was removed they were found to be standing in some cases as high as two feet (0.60 m), with the floors and hearths of the rooms substantially intact. Around this complex was a number of later, more lightly constructed buildings, while below it were the rooms and passages of an earlier occupation. So it was possible to distinguish in this area, and in this area only, separate horizons of occupation: lower Norse, middle Norse and upper Norse and below these, and not related to any identifiable structures with the exception of one small well, was the Pictish horizon.

The plans (Ill 5) illustrate these various phases. The buildings of the middle and upper Norse horizons are identified by Arabic numerals (Ill 5:1). The lower Norse horizon is divided into areas identified by Roman numerals (Ill 5:2); more than one phase of building is included in this horizon. The contemporary stratigraphy below Room 5 has been subdivided by Hunter and Morris into Room V phases 3a, 3b and 4a (Appendix 8:1). The Pictish horizon has been subdivided into zones identified by Arabic numerals (Ill 5:3). Zone 4 is subdivided into phase a and phase b. Zone 5, below Room V, has been subdivided by Hunter and Morris into phases 1a (pre-bronze working phase), 1b, 2a and 2b.

Because the finds from Area II are the only ones to be stratified they have been discussed first, and form the framework for the chronology of the whole. This discussion is followed by that of the Area III finds, then those from Area I. When finds from Area III clearly belonged to a type found in Area II they have been discussed with the latter and merely listed under the discussion of Area III.

This text was written before the publication of Mr Graham-Campbell's *Viking Artifacts* (Graham-Campbell 1980). A comparison of the Norse finds from Birsay with those in *Viking Artifacts* indicates that, although there is no doubt that the middle Norse horizon at Birsay was built over the ruins of the lower Norse horizon, they can both be placed within the Middle Viking Period dating from the late 9th to the second half of the 10th century (Graham-Campbell 1980, 6-7) and that the upper Norse horizon of Birsay, as is indicated in the discussion of the finds, falls within the Late Viking or Medieval Periods from the second half of the 10th century to the 12th century.

2 AREA II : THE PICTISH ASSEMBLAGE

THE PICTISH HORIZON

The Pictish horizon in Area II followed the original natural ground surface sloping downwards from the E side of the cemetery to the cliff edge. It has been divided into five zones where the objects were found (Ill 5: 3). Zones 4 and 5 were the only two zones where Pictish objects were recovered from more than some 20 mm above the natural clay. In Zones 4 and 5 the stratigraphy was deeper; Zone 4 is subdivided into phases a and b. Zone 5 is subdivided by Hunter and Morris (Appendix) into phases 1a, 1b, 2a and 2b.

These levels are assigned to the Pictish period on the basis of the pins and the mould types excavated. The finds include a large number of small pins, a few combs, fragments of coloured glass, a couple of stone bar moulds and other small items, but the main finds from the Pictish horizon in Area II consist of debris from what appears to have been an important bronze-working centre.

A small well had been constructed at the W side of Zone 1 and is possibly the only known Pictish well (Ill 6). It was built of flat, rounded beach stones, about eight of which formed the circle in each course, and it was approximately 0.75 m deep and 0.35 by 0.25 m at the top. There was some evidence of clay-bonding at foundation level where the wall rested on solid bedrock but there was no bonding in the upper courses. The fill was of loose earth and stones and yielded no finds. A short distance away there were two post-holes, each about 0.07 m in diameter and cut to a depth of about 0.12 m into the natural clay. Between the post-holes and the well there was a layer of ashes



ILL 6 : The Pictish well

and loose earth which contained broken clay moulds, crucibles and small fragments of coloured glass. The entire zone was rich in broken moulds, crucibles and fragments of bronze plating.

Zones 2 and 3 both contained quantities of broken moulds, fragments of crucibles and burnt stones, the last of which were scattered across a larger area than the zones indicated on the plan.

Zones 4 and 5 both relate to areas where extensive Norse building had followed. The natural grey clay in Zone 4 was approximately 0.60 m below the level of the lower Norse horizon paved passageway, with an intermediate level of rough paving between the two. Pictish finds occurred both above and below this paving. The earliest level of Zone 4, where some of the finds were actually embedded in the clay, is referred to as Zone 4 Phase a, and the level between the intermediate paving and the lower Norse horizon paving of Passage 1 as Zone 4 Phase b. Zone 5 was thoroughly investigated in 1973 and 1974 by Dr John Hunter and Mr Christopher Morris (Appendix). Here too the natural clay was c 0.60 m below the paving of the lower Norse horizon.

The Zone 5 phases (Appendix) which most nearly equate with those of Zone 4, are 1b, 2a and 2b. 1a belonged to an earlier Pictish occupation than that of the bronze workers. The only find was a small hipped pin (47).

BONE AND ANTLER

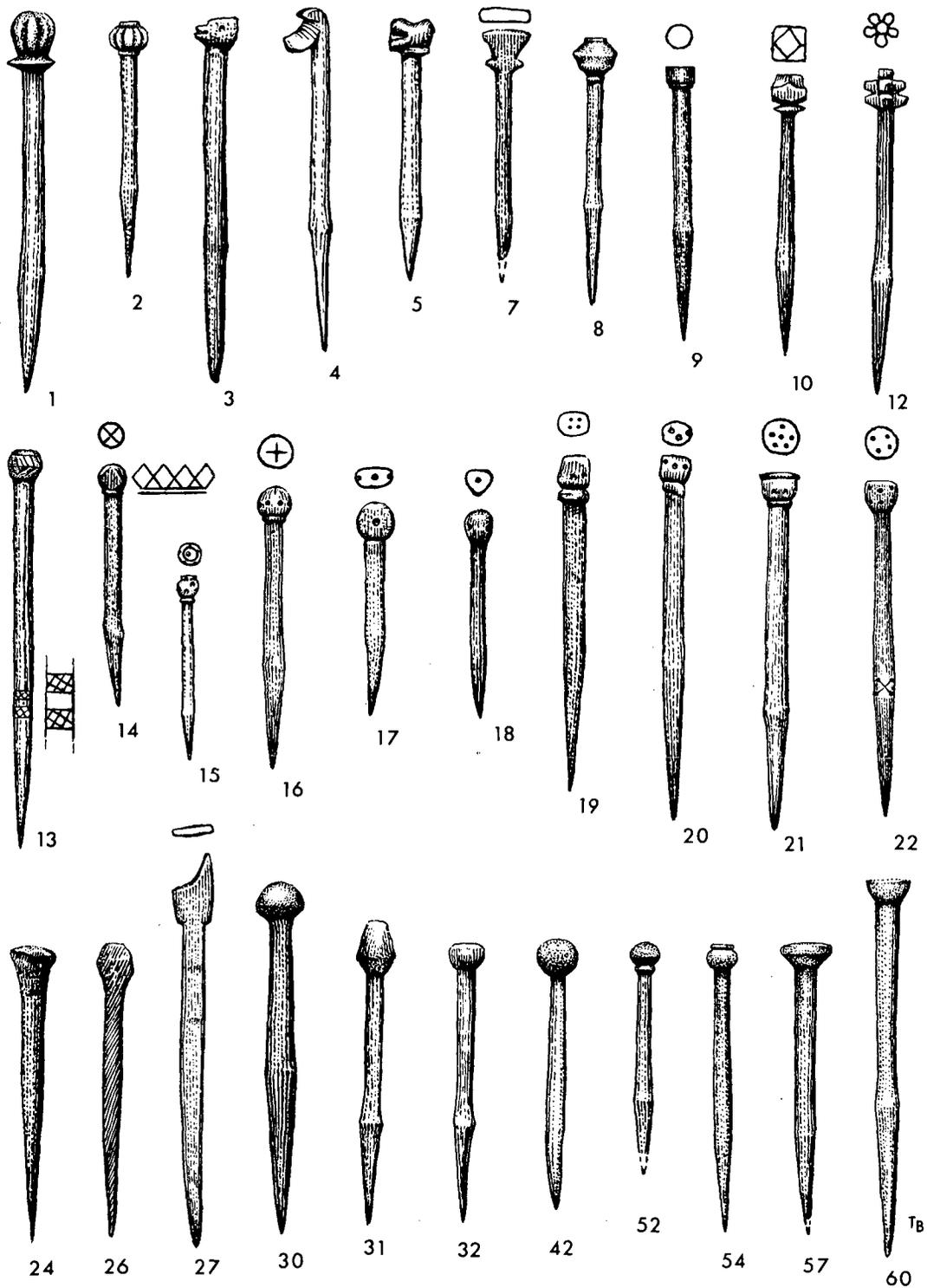
Small hipped pins (Ill 7)

The small pins are the most typically Pictish of all the finds on the Brough. The majority are 'hipped' pins, defined by Stevenson (1955, 285, fig A) because of the swelling which occurs on most of them part of the way down the shank which is thought to have been designed to impede slipping. Tracing their derivation from the Romano-British pins with simple ball-heads, Stevenson dates their appearance in N Scotland to a late post-Broch period not far removed from the 7th century. Seventy-seven of these pins have been found at Birsay, nearly every one in perfect condition.

The majority were scattered among the Pictish zones, one of these (47) was found in the earliest phase (1a) of Zone 5 and may pre-date the bronze working period. Of the rest, seventeen were found in the lower Norse horizon, two were found in the middle Norse horizon, five were from house sites in Area III and six were unstratified. They are all discussed together as a type.

The Birsay small pins (1-77) vary in length from 28 mm to 66 mm. By this period, the ball-head, although still retained, was only one of many decorative head-styles. Some of the heads were elaborately carved; for example two are melon-headed (1, 2) and three have animal heads set at right angles to the shank (3, 4, 5). Another (7) has a thistle-shaped head which is unusual as in section it is flat and all the other heads are carved in the round. Most elaborate of all is a mace head (12) with two rows of five projections and another projection on top. Pins 13-22 have patterns made up of incised lines, crosses and chevrons and different groupings of dots rather than elaborate carving. One (13) has panels of hatching round the shank which may be an additional guard against slipping. No two are alike, and as none of the decoration could have been noticeable at a distance of more than a few feet (1 m), it seems possible that it was designed as a mark of ownership. Illustrated pins 24, 26, 27, 30-32, 42, 52, 54, 57 and 60 show the more common head-types which had no additional ornamentation: mushroom, acorn, button (ten examples), simple ball, the original type (ten examples), ball with collar (three examples), ball surmounted by disc (three examples) and the half ball (eleven examples).

The distribution of these pins not only covers N Scotland but extends to the W islands and more sparsely to Ireland. It is interesting to note how true to type they all remained; the same basic head shapes were repeated endlessly and even the more elaborately carved heads had parallels far and near. There is, for example, a mace-headed pin from a late wheelhouse at Jarlshof (Hamilton 1956, fig 39), and there are two melon-headed pins from Lagore (Hencken 1950, 193, fig 105). The animal heads, although they were not replicas of each other, all followed the same tradition, the finest of all being a horse's head with open mouth and even the teeth clearly cut on a pin from the island of Kerrera near Oban (Lethbridge 1950, 95, fig 1). A group of pins from Dun Cuier, Isle of Barra, consists of types which could equally have come from Birsay (Young 1956, pl 20).



ILL 7 : Small bone pins. Scale 1/1

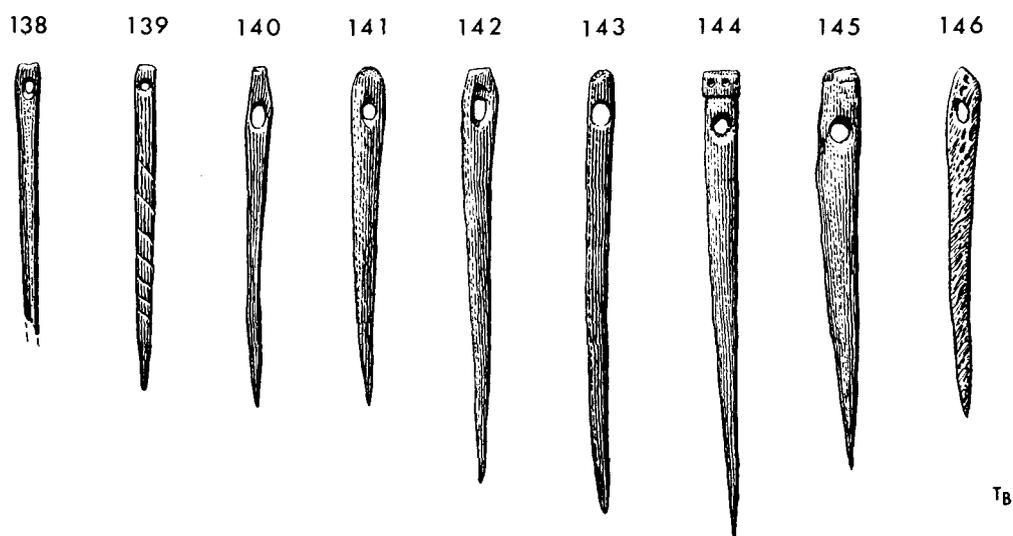
Stevenson (1955, 286) has suggested that these bone pins might also have served as patterns for bronze-casting, to be pressed into a clay mould. That this was in fact the case can be shown by some of the Birsay pin-moulds (Ill 18: 331, 332 and Ill 57). Stevenson (1955, 286-7) considers that such pins date from around the 7th Century AD.

Large pins not perforated (Ill 48)

Only one large pin, 87, came from the Pictish horizon. The shank was broken and the remaining length is 62 mm. The head is large and flat with elaborate wings.

Needles (Ill 8)

Of the thirteen small needles that have survived only four were from the Pictish horizon (*139, 141, 142, 149*). *139* is finely cut, with a small eye and a spiral line incised down the length of the shank.



ILL 8 : Small bone needles. Scale 1/1

Pins with iron shanks and globular heads (Ill 38)

Pins with large globular heads of hollow bone and iron shanks have been found on broch sites in Orkney, in the W islands, and in Irish crannogs. There are four examples from Birsay; only one, *262*, is from the Pictish horizon. The other three, *259, 260* and *261* were found in a Norse context, but Stevenson (1955, 292-3) considers them to be a native type, Scottish rather than Irish.

Picks and pointed implements (Ill 35)

Only one of the many picks and small pointed implements (*172*) is from the Pictish horizon.

Hair combs

In all there are thirty-eight combs (*193-230*) from the Brough, including fragments which are sufficiently complete to be placed in their correct category. In addition there is one nearly complete comb-case and there are fragments of two others. The combs comprise a number of different types, both native and Norse, the larger number being native, and they provide a sequence from Pictish to late Norse. In discussing the technical details of these combs the terminology set out by Galloway (1976, 155-6, fig 48) has been followed with one exception: the term 'high-backed' has been substituted for the phrase 'single sided with tooth segments extending above the connecting plate'.

The native examples are all composite antler combs with iron rivets. They include both single-sided high-backed combs and double-sided combs, the latter being sub-divided into Type A and Type B.

Double-sided combs: Type A (Ill 10)

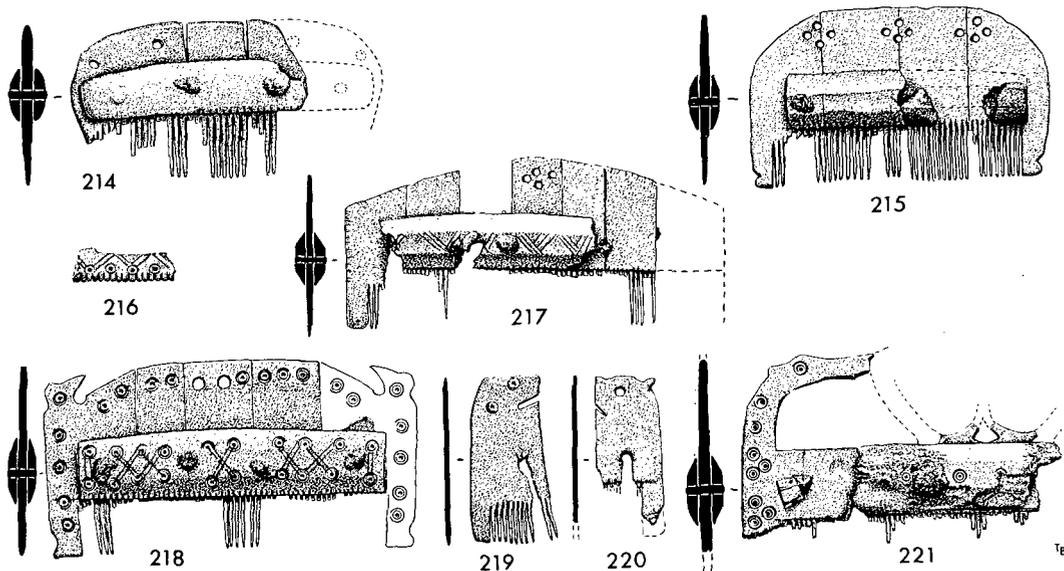
Double-sided combs, of which there are nineteen examples, outnumber all the rest at Birsay but they appear to be derived from two different traditions and can be divided into two groups, those of Type A which were exclusively found in the Pictish horizon and those of Type B which were only found in the lower Norse horizon. The latter will be described with the Norse finds.

Type A is a small group with only four examples (195-198). Their distinguishing feature is that the teeth are graduated, becoming progressively shorter over the last 30 mm or so of the end of the comb, thus leaving a triangular or D-shaped solid zone which is generally decorated. The connecting plates are rather thick in cross section and are often bevelled at the ends and sometimes also along the length of the plate. The segments were not always of equal length; use must have been made of ready cut tooth segment blanks which differed in width, examples of which were found from the comb factory in Southampton (Addyman and Hill 1969, 75, pl 6a). Consequently, the decoration of each end of a comb sometimes differed. Sometimes there are holes for suspension. No empty space was left undecorated. 196 and 197 illustrate these features. This type of comb was often found on the same sites as the single-sided high-backed combs and was, judging by the similarities in disposition and type of decoration, probably contemporary. Both types of comb are represented on Class I Pictish Symbol Stones the implications of which will be considered below. They were also common in Ireland, for example at Cahercommaun (Hencken 1938, 42, fig 26).

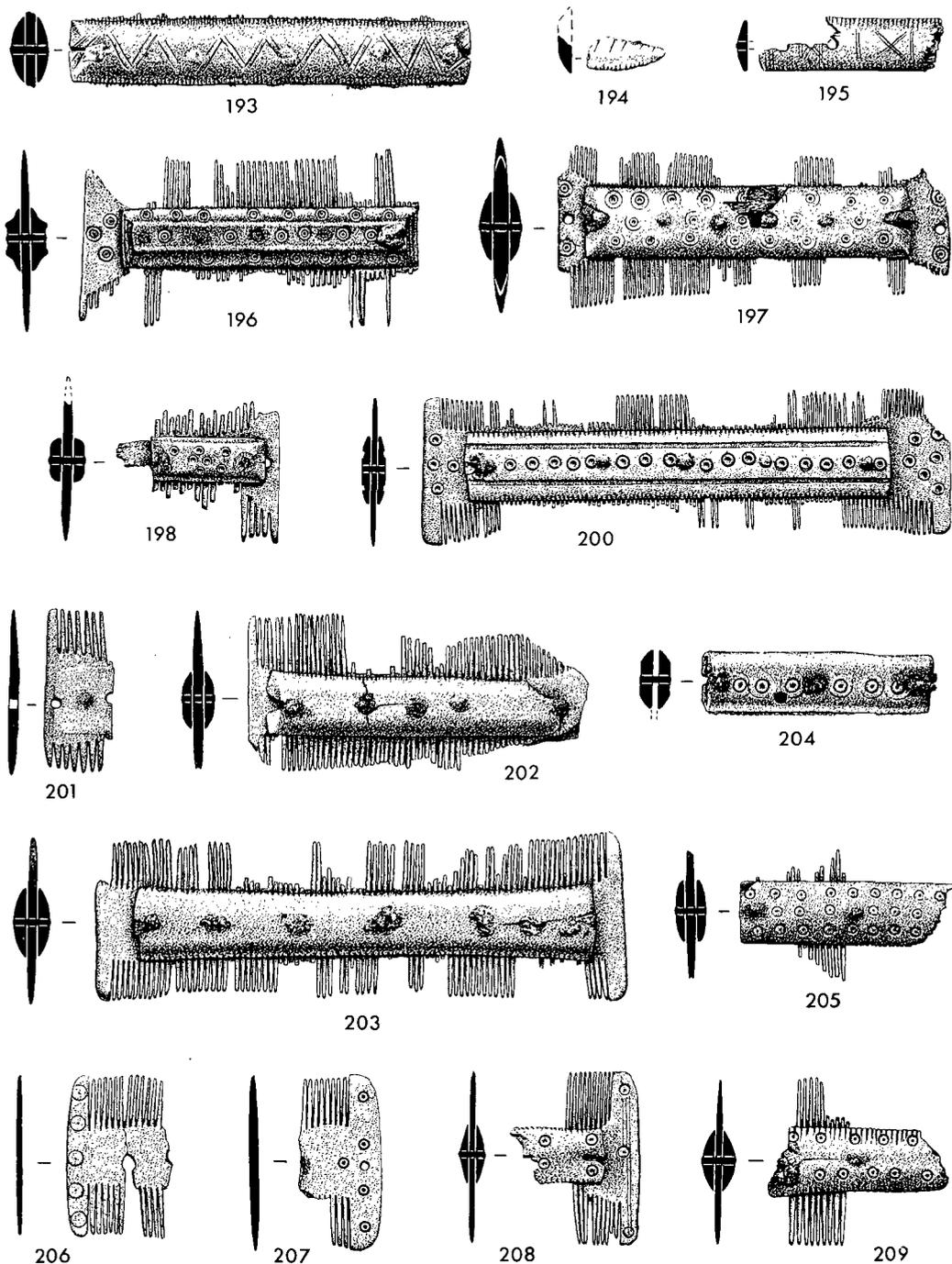
Single-sided combs: high-backed (Ill 9)

There are five single-sided high-backed combs which are nearly complete and fragments of two others. Of these seven examples, only three (214, 215, 219) were from the Pictish horizon, four were from the lower Norse horizon and a stray half of one from the Pictish horizon was found in Area III. They are known from so many other sites in N Scotland that they can be classified as Pictish. No two are alike and because of their highly individual treatment and comparative rarity they are described in some detail.

214 has a simple rounded back with two small perforations. One end has been broken and smoothed for re-use. There is a close parallel from the Broch of Burrian (MacGregor 1974, fig 11: 150). 215 also has a rounded back and small nicks at the base of each end segment; a broken fragment of a connecting plate is bevelled. The whole comb had evidently fallen apart and two of the segments were found in Area III, one in the upper part of House Site C, the other in the adjoining building, while the remaining two segments, still with a portion of the connecting plates attached, were found on the other side of the cemetery in Area II, in the Pictish horizon Zone 1. There is a parallel to this comb from Burrian (MacGregor 1974, fig 11: 149) which also has a rounded back and groups



ILL 9 : Single-sided high-backed combs. Scale 1/2



ILL 10 : Double-sided combs. Scale 1/2

of decorated holes. 217 from the lower Norse horizon is a longer comb with two of seven original tooth segments missing. The one remaining end segment is straight-sided, the back is curved, and the outline decorated with short, oblique, incised lines. There is also a group of four decorative holes, similar to those on 215.

218 from the lower Norse horizon is a more elaborate comb. One end segment is missing but the one that remains has been carved at the top in the shape of a bird's head; there is also a nick at the base similar to those on 215. There are two holes in the central segment, presumably in this case for suspension not decoration, and the whole is outlined with dot-in-double-circle. The pattern

on the connecting plates is unusual, having been carefully planned to fit around the rivets, the short space at each end having a vertical double line connecting the ends of two rows of dot-in-circle, while the centre has groups of crossed lines.

220 and 219 are single end tooth segments only. Each has a short oblique cut near the top of the inner side, this combined with dot-in-circle on one and a perforation on the other, gives a false impression that they are zoomorphic. The top of 220 has a curved wavy outline and has a parallel in a high-backed comb from Lagore (Hencken 1950, 188).

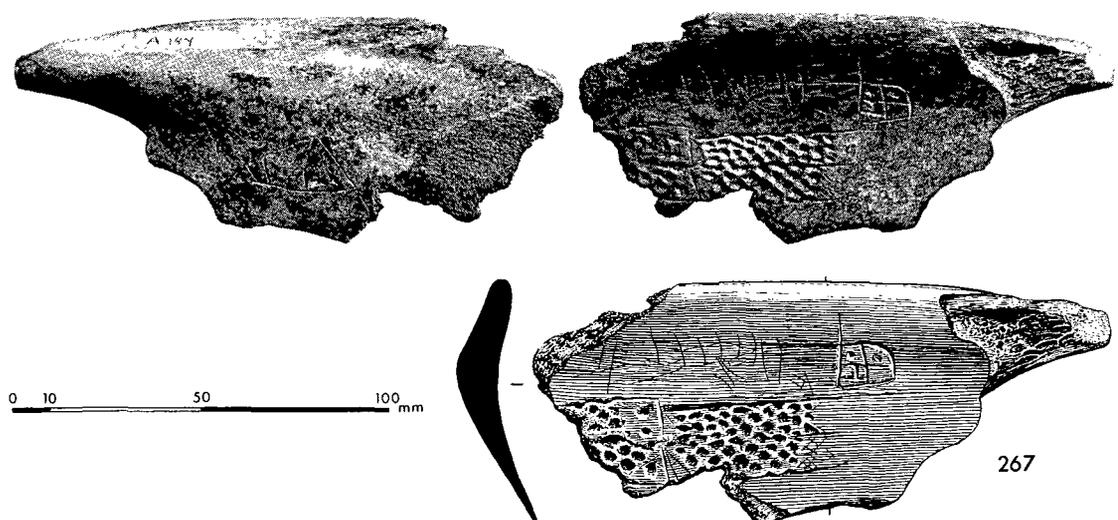
Of the last of these combs, 221, only fragments remain. It has clearly had an openwork back; a narrow band curves upwards and inwards from the only nearly complete segment to survive, and from the centre segment the beginning of other curved bands have been broken off. The decoration is dot-in-double-circle. A comb, also with an openwork back, but heavier, from Dun Cuier, Isle of Barra, is carved on somewhat similar lines. A date in the early-7th century has been suggested (Young 1956, 316-7, fig 13: 1).

The decoration on the tiny fragment, 216, resembles that of 218. 222, is a thin, shaped fragment of curved plate decorated with random dot-in-circle, it is possibly a trial piece for a high-backed comb. 223 is a piece of a rather thicker shaped plate also decorated with dot-in-circle and is possibly a botched end segment.

Trial pieces (Ill 11)

Apart from the small pins and combs there were few bone artifacts from the Pictish horizon. The most interesting, 267, is a fragment from an ox scapula which had been used as a trial piece. Three sides had been broken and the remaining surface smoothed and polished. On one face was a roughly drawn design based on a triangle, and on the other, under a row of random incised lines and a figure somewhat resembling a flag, rectangular panels showed an attempt at chip-carving. Guidelines in the form of a criss-cross pattern of diamond shapes had been incised, not very accurately, on either side of the trial carving. This consisted of rows of depressions, some diamond shaped, others circular, which had been gouged out rather than excised. To the left of this panel further guide-lines extended, but the few shallow holes in this part of the bone were irregularly spaced and it would seem that the trial had been abandoned before any attempt at interlace.

This use of bone as a trial piece for chip-carving, albeit a failure, is not uncommon. There is a well-known parallel from Lagore (Henry 1965, 93-4, pl 37) where a variety of designs is set out on a single large bone, some with the outline only incised, others complete including interlaced animal forms and chip-carving set in panels. These, it was suggested, might have been used directly as patterns from which casts could have been taken in wax. Chip-carving does not appear on any other artifacts



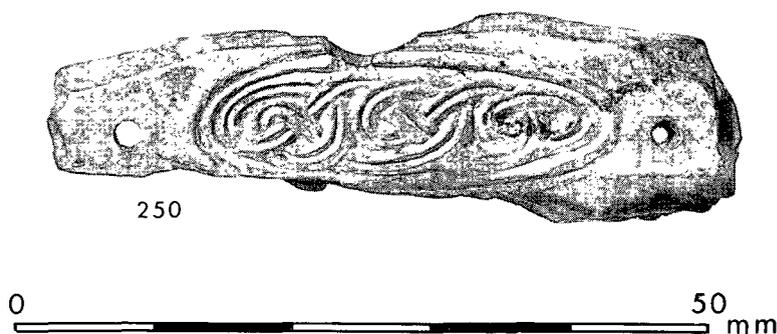
ILL 11 : Bone trial piece: views to show section and trial decoration

found at Birsay, but it is plain that the technique was known. It occurs on the panels of a brooch in the St Ninian's Isle hoard (Small et al, 1973, 67-8, pl 31), with which links will be demonstrated later. It is also well known in Ireland, and there are several parallels between objects from Birsay and from Irish sites such as Lagore, Loch Gur and Cahercommaun.

Another fragment from an ox scapula, 268, has a broad arrow engraved at one edge and so may be cited as a trial piece. An unstratified fragment of long bone, 269, has faint incisions, including part of a circle on it.

Mount (Ill 12)

250 is a small oblong mount, 50 mm long, with a small perforation at each end. The edges have been broken and consequently the outline is irregular. Along the centre an oval panel, slightly pointed at one end, is outlined by a double incised line filled with a design of looped, rather than interlaced, double strand which stops short of the narrow end where a separate oval ring has been inserted to fill up the space. While not typically Pictish, in the opinion of Mr Graham-Campbell (pers comm) it may be accepted as such. This looped form of interlacing with additional rings can be compared (Ill 59) with that in the almond-shaped spaces between the arms of the cross on the Papil cross-slab and the loose double-stranded knotwork on the Bressay Stone in Shetland (Allen and Anderson 1903, fig 4, 6).



ILL 12 : Bone mount with interlace decoration

Ox phalanx (Ill 38)

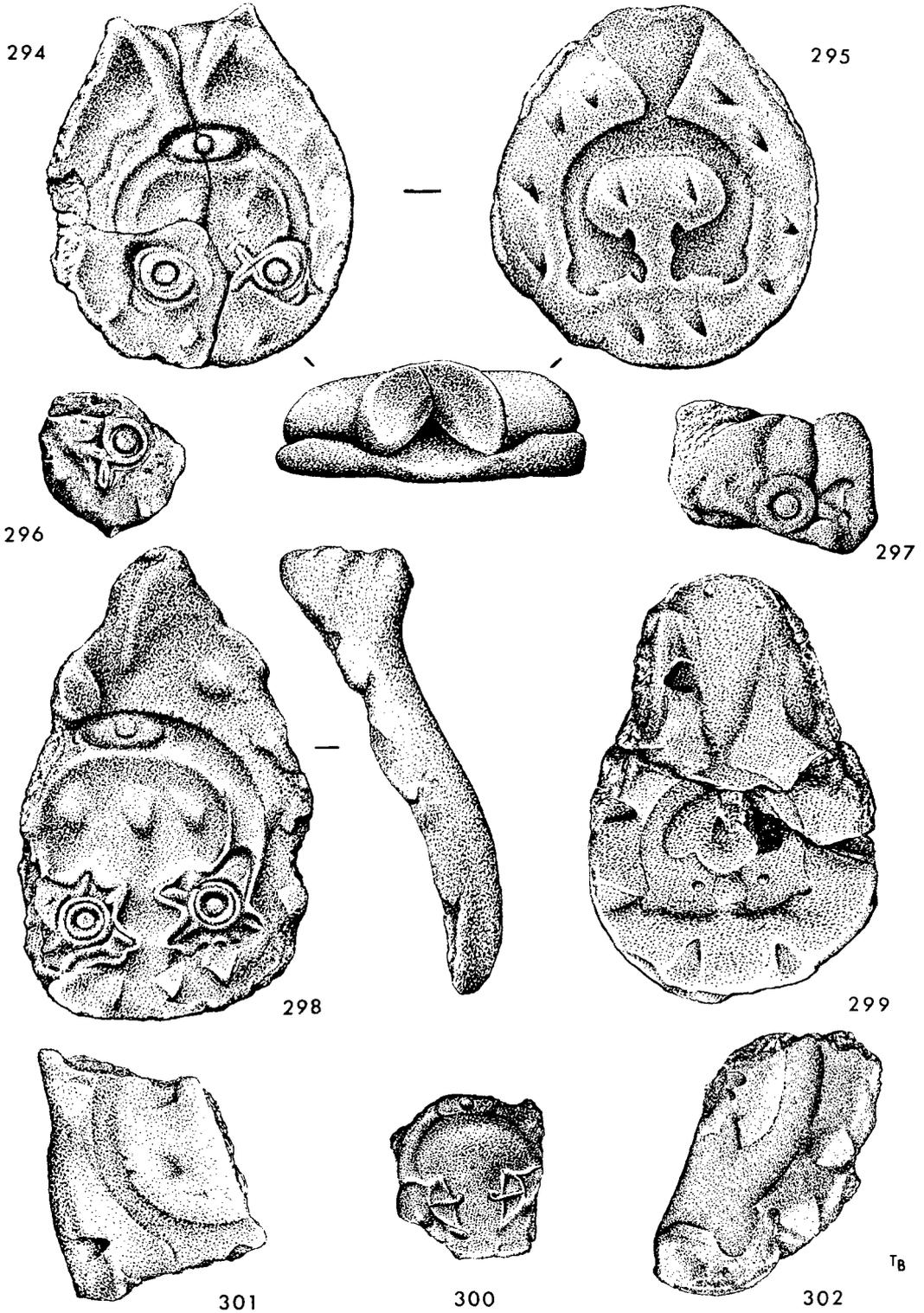
272 was made from the first phalanx of an ox. It has two holes at the posterior end and is socketed at the base. It superficially resembles two bones from the Broch of Burrian (MacGregor 1974, 88, fig 16: 210, 211), which have been identified as playing pieces and one of which is engraved with a symbol on each side. The Birsay bone shows none of the signs of wear characteristic of such playing pieces. A third phalangeal bone from Burrian (MacGregor 1974, fig 16: 212) has been tentatively identified as a socketed handle, but the hole in the Birsay example is very small and shows no signs of wear.

Former (Ill 38)

A small tapered object of antler, 266, has no apparent function, it may have been connected with bronze-casting and its possible use will be discussed in connection with moulds.

CLAY: MOULDS

Birsay must have been an important centre of bronze casting before the arrival of the Norsemen, for by far the most numerous of the Pictish finds are the many hundreds of fragments of clay moulds



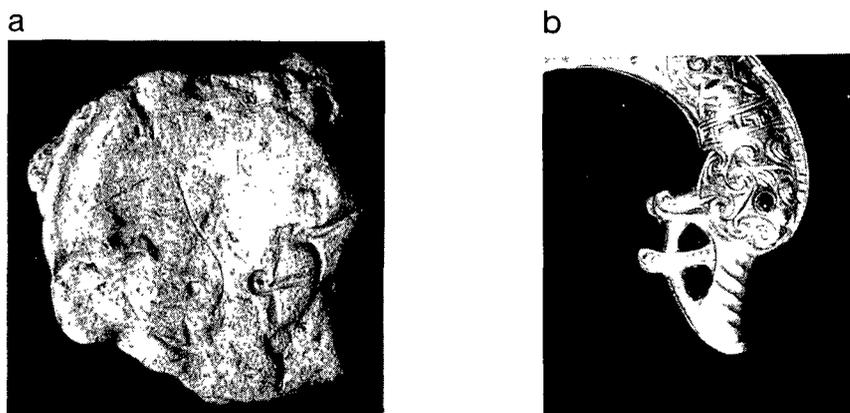
ILL 13: Brooch moulds. Scale 1/1

found scattered throughout the Pictish horizon, the largest concentration being around the small well. The fragments are nearly all wasters from two-piece moulds; one or other of the two halves having been broken in the extraction of the casting. Perhaps not surprisingly it is the smaller moulds which have remained relatively intact; these were chiefly for the manufacture of personal and often ornamental small objects: brooches, finger rings, dress pins and small plates which were sometimes attached to rings.

Moulds for penannular brooches

Moulds for sixteen penannular brooches which can be grouped into seven different types have survived and, although only one mould is complete, it is these brooches which supply the evidence for dating the bronze working period on the Brough, through their close links with the brooches of the St Ninian's Isle hoard. The Birsay brooches vary in size from 21 mm across the hoop, to an estimated 58 mm. There is no evidence of pins and the distinction between ring-pin and brooch would be difficult to make, were it not for the fact that they are brooch types and that elsewhere other equally small brooches have been found with their pins still attached for example at Culbin Sands (Close-Brooks 1974, fig 2: 962).

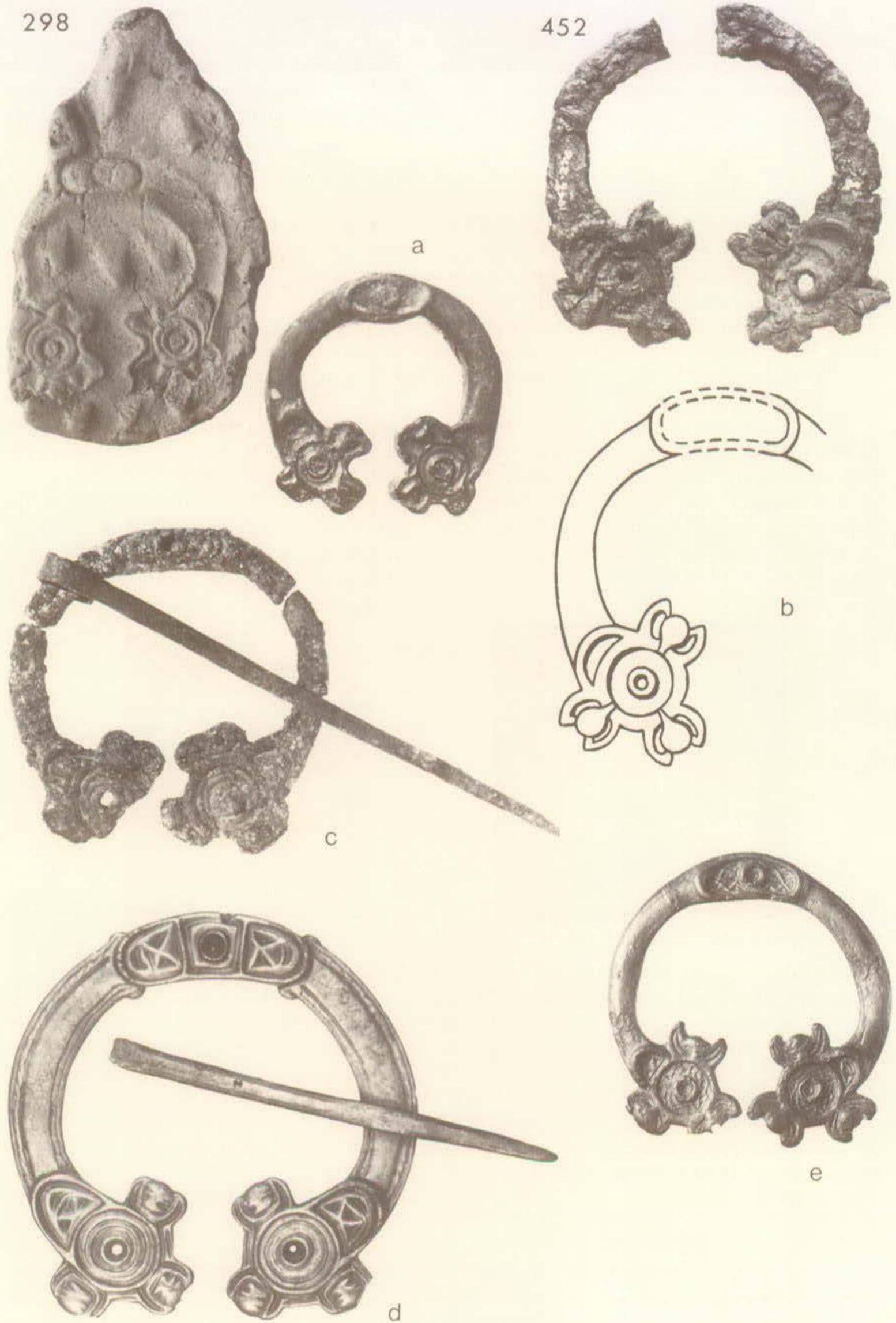
300 (Ill 13), the smallest of all the Birsay brooches, has the most direct connection with the St Ninian's Isle hoard and strangely the parallel is not with one of the penannular brooches but with the smaller of the two sword chapes (No 16: Small et al 1973, 65-7, pl 30). The brooch has the conventional oval cartouche with central setting at the top of the hoop that is one of the characteristics of the St Ninian's Isle brooches, but the terminal appears to be based on the design of the sword chape with its porpoise-like head, (Ill 14). The intricate spiral pattern and the ornamental



ILL 14 : (a) Penannular brooch mould 300 (b) St Ninian's Isle sword chape terminal (not to scale)

collar of the chape are missing but it would be difficult to reproduce such detail on a smaller scale. However, although on the brooch part of the broad snout is missing and what remains of the head is incomplete, there can be no mistaking the angle of the wide open jaw with its long triangular teeth gripping the protruding tongue. Possibly this brooch gives evidence of the significance of the porpoise in the Early Christian period, referred to by Dr Wilson (Small et al 1973, 123) in discussing a porpoise bone found amongst the St Ninian's Isle treasure. Porpoises are, to this day, common mammals in Scottish waters, particularly in the W, and it is perhaps relevant to mention that they are portrayed, usually in pairs, on a number of the Class II Christian symbol stones, for example at Ulbster in Caithness and at Brodie near Elgin (Allen and Anderson 1903, fig 30a, 136), also on a corner post of a shrine at St Ninian's Isle (Small et al 1973, 33-4, pl 4a) where they are described as 'a pair of opposed S-dragons', and just recognisable on a shrine corner post from Papil (Small et al 1973, pl 13: 27a).

There are four, possibly five, other brooch-moulds from Birsay where the terminal is formed from a single bird or animal head (Ill 13). One of these, 294 and 295, is the only mould found on the site where both sides are virtually complete; the back half had been broken into three pieces in the extraction of the casting but no part is missing. The terminals are so designed, as were those



ILL. 15 : Penannular brooch mould 298 and penannular brooch 452 with comparisons; (a) cast from mould 298 (b) reconstruction of 452 showing terminal and cartouche (c) penannular brooch from Machrins, Colonsay (d) brooch No. 24 from St Ninian's Isle (e) brooch from Helgheim, Sogndal, Norway (not to scale)

of 300, that it was the wearer of the brooch looking down on it who would get the correct view. Each terminal was modelled on the head of a large-eyed crested young bird with wide open beak confronting that of the other. The base of each head forms a cusp at its junction with the hoop and each bird's eye forms the central setting of a terminal. 296 is a small fragment of a terminal showing part of a bird's head similar if not identical to that on 294; it is rare to find a repeat of the same design. 297 is a damaged fragment bearing a circular terminal. Unfortunately only the back halves of two other brooch-moulds, which judging by the outline of the matrices almost certainly had zoomorphic terminals, have survived; 299 is for a small brooch 26 mm across the hoop, while 302 would, if complete, have been the largest brooch on the site, an estimated 58 mm across the hoop. The outlines of both matrices compare, although distantly, with the outline of Birsay 295, described above, and of a St Ninian's Isle brooch (No. 28: Small et al 1973, 79, pl 34). 301 is only a fragment and little remains of the matrix of the brooch beyond a part of the hoop.

There is only one example of a brooch mould with lobed terminals 298 (Ill 15). Only the front half remains and that is not complete; the measurement across the hoop would have been 38 mm. It belongs to a group typified by the eight silver brooches of the St Ninian's Isle hoard (eg No 24, 28: Small et al 1973, pl 33, 34) which are based on animal heads set between pairs of horns, distantly derived from one of the Rogart brooches (Anderson 1881, 2, fig 7). An actual bronze brooch of this type (452) but with rather less degenerate terminals than those shown on the mould, was found at Birsay in the lower Norse horizon (see p.62). Other parallels include a brooch from Machrins, Colonsay (Small et al 1973, 89-90, 95, pl xlvii: b) and a brooch from Helgheim, Norway (Small et al 1973, 89-90, 95, pl xli: b).

303 (Ill 16) is a mould for a brooch almost as small as 294, measuring only 24 mm across the hoop. Its cartouche with the central setting is its only link with the St Ninian's Isle tradition; the small terminals are circular consisting of a plain band surrounding a central setting and a plain band forms the junction with the hoop. Moulds for brooches no larger than these come from the Mote of Mark (Curle 1914, 144, fig 13: 4-8) and from Dunadd (Christison and Anderson 1905, 313, fig 35).

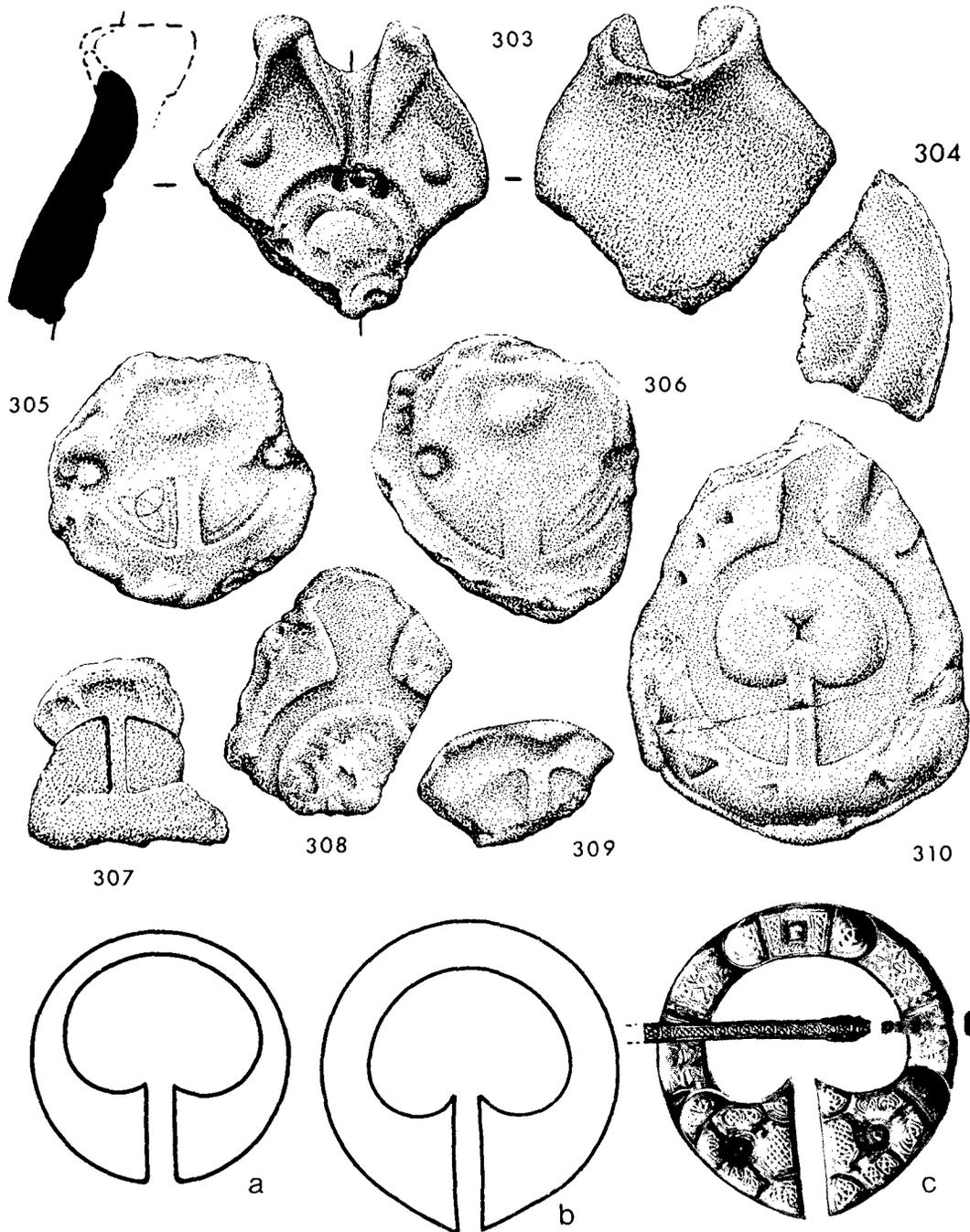
Brooches in the older tradition of triangular terminals are represented on four brooch mould fragments. None are sufficiently complete to show the top of the hoop, but two, 305 and 306, (Ill 16) appear to have the terminals outlined with a narrow raised band and there is the possibility of interlacing in the fill. These, although they are much smaller, resemble a brooch from near Abergeldie (Small et al 1973, pl 44c) which has the same raised outline to the triangular terminals and, what is more important, the same circular setting at the junction with the hoop; its cartouche has the usual central setting, but it is rather longer than is general and is rectangular instead of oval in shape. 310 (Ill 16) has triangular plate terminals with the same flared up-turned ends and kidney shaped interior zone, although to a lesser degree, as one of the St Ninian's Isle brooches (No 17: Small et al 1973, pl 31). It is probable that the many fragments of coloured glass found at Birsay were the source from which the fillings for the many sockets of the penannular brooches were made.

315 (Ill 18) is a fragment of the front half of a small brooch mould of which only a part of the hoop and the cartouche remains. The cartouche is in the form of a long, narrow rectangular panel, the sunk field enclosed within a clearly defined edge; in the centre a small rectangle is flanked by a vertical bar on one side, the corresponding bar on the other side is missing. This unusual design of the cartouche also occurred on a large bronze brooch from Coll which was exhibited at a meeting of the Society of Antiquaries of Scotland in 1881 but has not been seen since (Stewart 1881, 79-81). In the centre of the panel on the Coll brooch was a socket, shown as empty, but presumably once having held coloured glass as some of the sockets on the terminals still did. The central rectangle on the Birsay mould, however, was excised and would therefore have been a plain raised form when the brooch was cast.

317 (Ill 18) was too small to identify but it also had a rectangular decorated panel. 316 (Ill 18) although also having a rectangular decoration, is unlikely to have been a brooch mould as it is atypical of the Birsay brooch moulds on which the ingate invariably leads into the top of the hoop.

Moulds for small ornamental objects

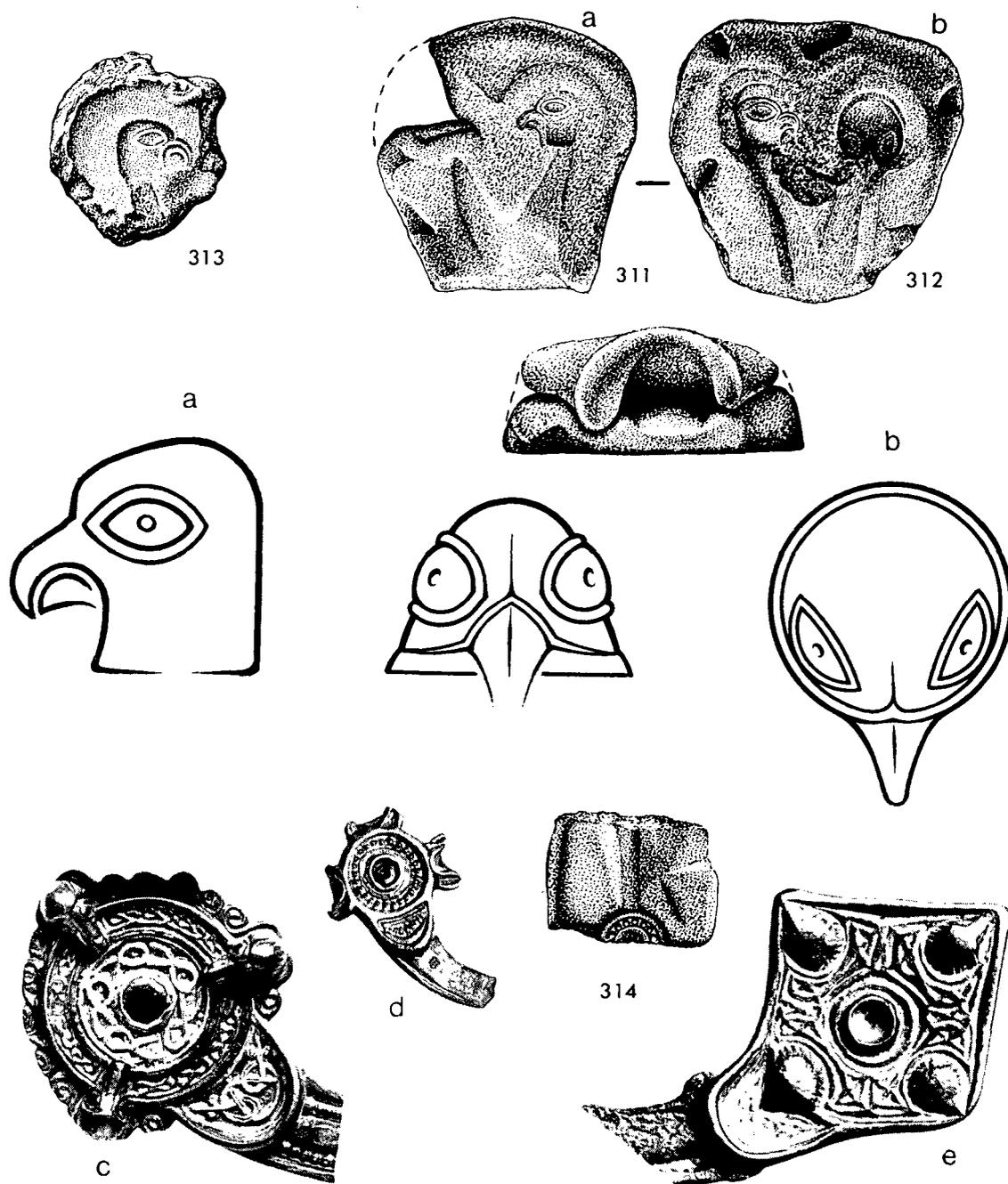
Several moulds were designed for small castings which could have had no independent function. The castings could have been components of larger objects or, less probably, they could have been



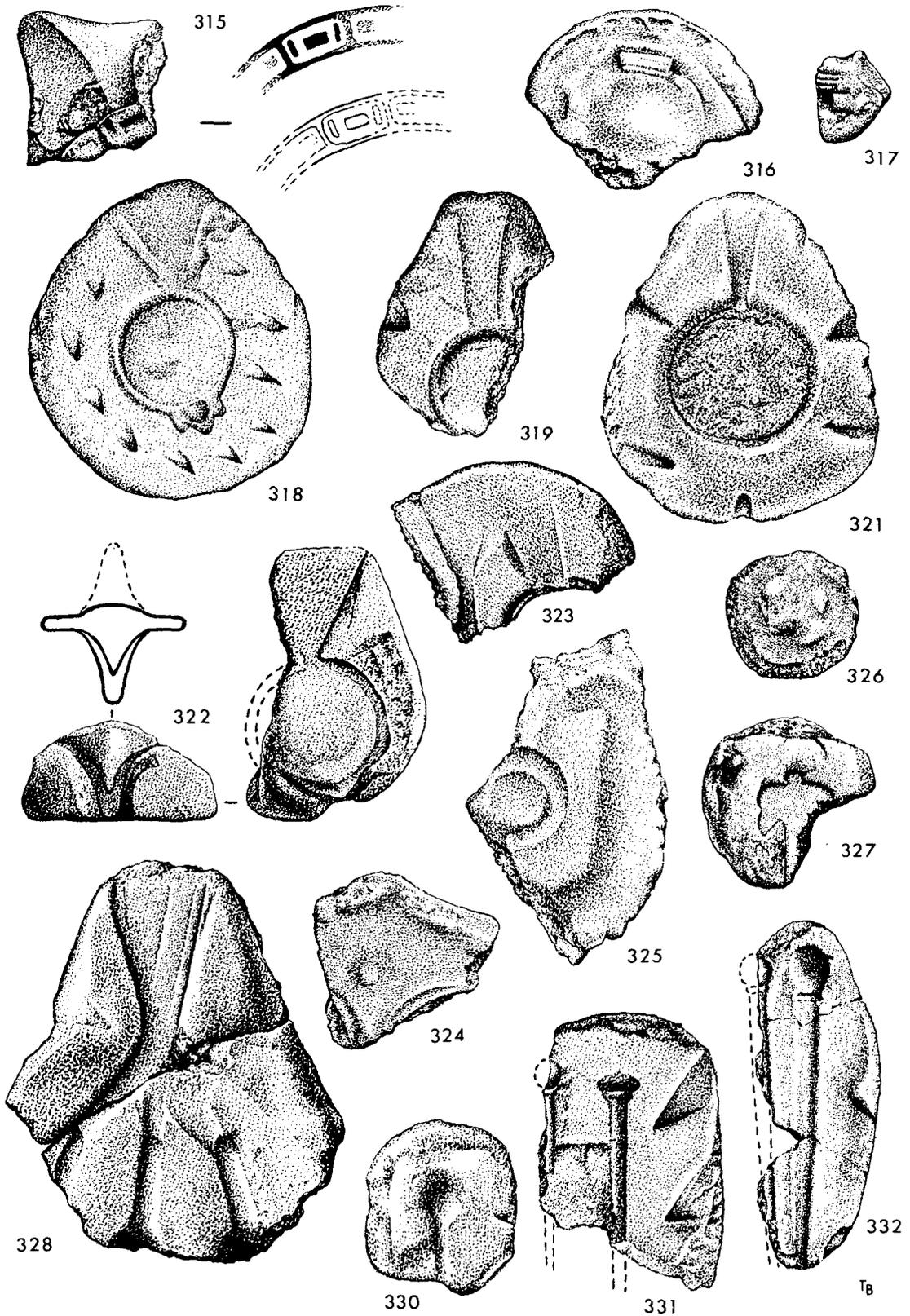
ILL 16 : Penannular brooch moulds. Scale 1/1 (a) and (b): patterns for kidney-centred brooches (c) brooch No. 17 from St Ninian's Isle (not to scale)

used as part of a composite pattern die. 311 and 312 are the front and back halves of the same mould (Ill 17). The back half is complete and shows two bird's heads; the first head (a) is in profile, with rounded skull, large almond shaped eye and small parrot like beak. The second head (b) might represent a similar bird; the head is viewed as it were upwards from the inside of the round skull, with both large eyes visible and the small pointed beak protruding into the ingate. The front half of the mould is very worn and is incomplete, showing only a matrix of the bird's head in profile identical to that on the back half. Both heads would have had flat bases. Another small mould, 313 (Ill 17) shows a bird's head in profile, almost identical to (a).

The bird's head modelled in the round is similar both in appearance and in size to four heads on the square terminal of a brooch from what was probably a woman's grave of the Early Viking period found at Hålen in Norway (Petersen 1951, 54, fig 58). Degenerate versions of a similar terminal are found on two of the brooches from St Ninian's Isle (Nos 21, 22: Small et al 1973, pl 33). In both cases the heads are cast in one with the terminals but this was not always the case; on the Rogart



ILL 17 : Moulds for birds head attachments; upper and lower half of mould showing bird's heads a and b (c) terminal of brooch from near Perth (d) terminal of brooch from Urquhart Castle, Invernesshire (e) terminal of brooch from Halen, Leikanger, Sogn, Norway (not to scale)



ILL 18 : Moulds for pins, rings and enamel inlay. Scale 1/1

brooch (Small et al 1973, pl 42d) the bird's heads are separate castings pegged in from the back of the brooch.

314 (Ill 17) is a mould for a small flat disc with a central setting surrounded by a ring of pellets. What may very well be a casting from this mould is described with other bronze objects from the Pictish horizon (p. 43). A parallel for the decoration on this disc is found in the centre of the lobed terminal of a brooch from Urquhart Castle (Ill 17d) (Small et al 1973, pl 44b).

It is improbable that either the bird's heads with the high profile or the disc were designed for attachment to a brooch; it is not only to brooches that attachments were made. For example the little animal head at the junction of the stem and the bowl on the St Ninian's Isle spoon is a separate casting attached by a rivet (No. 9: Small et al 1973, 57).

Moulds for pins (Ill 18, 22)

Pins for a variety of uses were evidently cast in quantity; moulds for different types were distributed throughout all the five Pictish zones. The majority appear to have been for dress-pins but many were incomplete. Of the heads which survived, three in particular closely resemble those of the bone pins illustrated beside them (Ill 57): 330 animal headed, 331 a flattened round head with collar, and 332 a barrel shaped head.

327 (Ill 18) might be an elaborately shaped head, but has no parallel at Birsay. 328 (Ill 18) is for three pins; the heads are incomplete but were either large ball or half ball and the shanks were thick and short with blunted points. 329 was for similar pins.

357 to 367 (Ill 22) are fragments from a group of moulds on each of which were the matrices for perhaps half a dozen small pins with heads formed either by a single or double disc. The heads averaged 5 mm across and the shanks 30 mm in length. It is not certain whether they were intended to be single pins, or whether they would have been left joined to each other for ornamental use. Fragments of two similar moulds 368, 369, were found in Area III, House Site D.

Moulds for rings (Ill 18)

The majority of the rings are plain, such as 319, 320 and 321. Only two are ornamental; 318 has a cluster of four knobs, the effect almost resembling precious stones, 322 is incomplete but the surviving back of the mould shows a deep triangular extension.

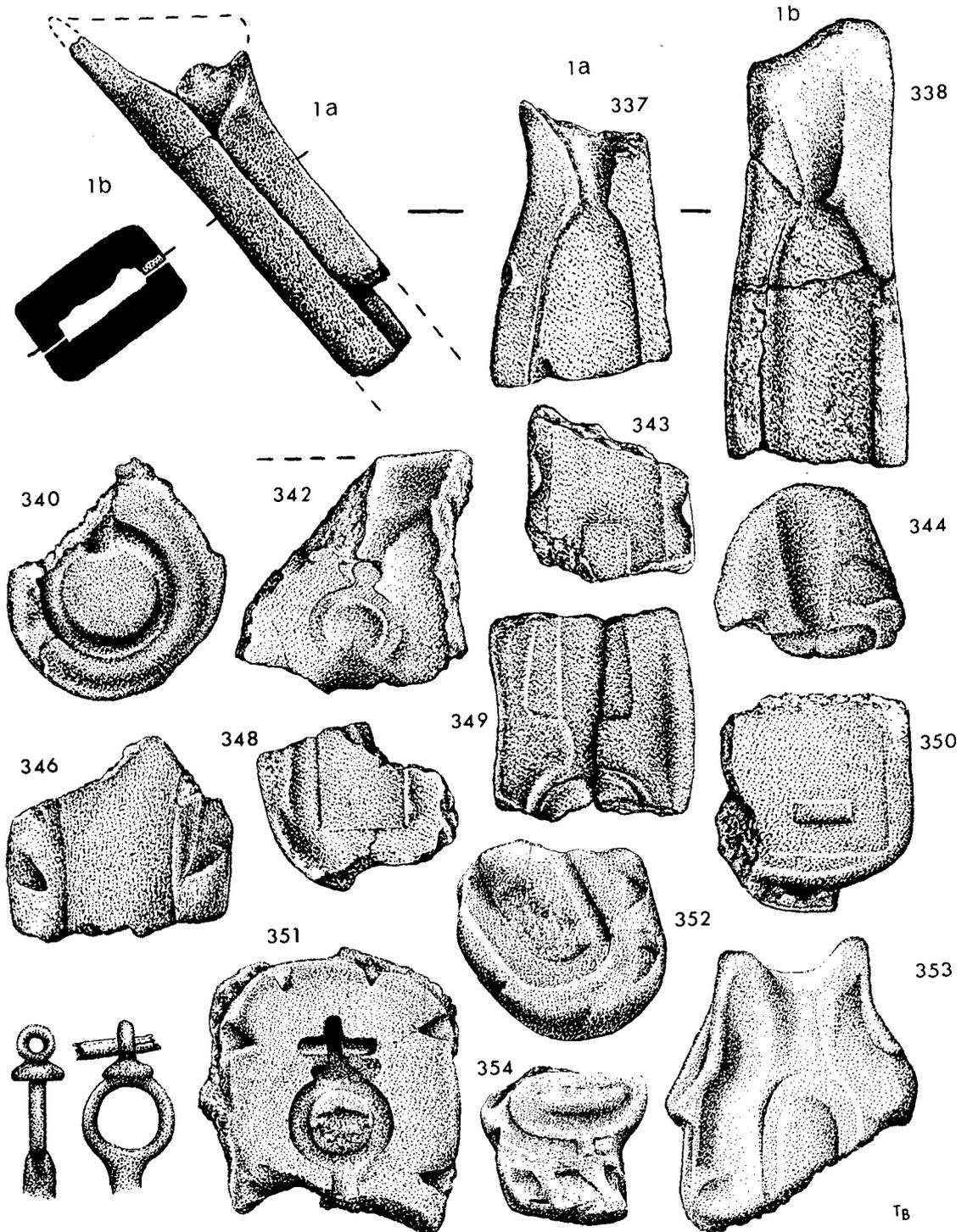
Moulds for small links and plates (Ill 19)

About a dozen mould fragments were for casting objects such as small links and plates but on none was the matrix complete. 337 and 338, in spite of having been found on different parts of the site, were from the front and back of the same mould and show it to have been for a plate, rather thick in section, curving to a point as it reached the ingate. Other plates, possibly buckle-plates of which only the bottom end remains, were for straight sided plates with squared ends, such as 348 and 350, the latter having had a small panel cut out of the centre. 349 was intended for a tapering plate with a raised panel down the centre which continued beyond the top of the plate and was cast with a fixed ring. On 351 only a ring, with a subsidiary ring attached to it at right angles, remains. Another plate, on 346, has curved sides. There are two other fragments for what might have been buckles: 352 the terminal of the back of a mould and 353 the top end of a mould with the ingate intact, both showing part of an oval band of which one side was rather wider than the other. 354 shows a small portion of the matrix for an open ended oval ring.

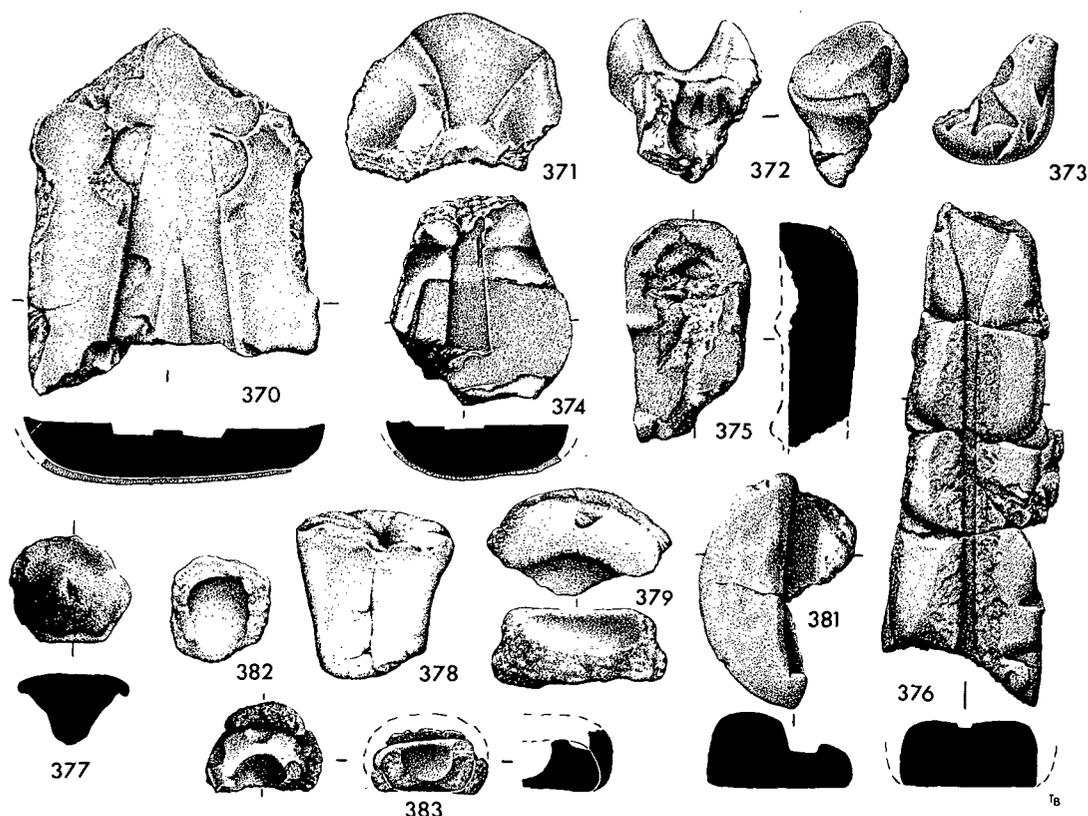
Larger moulds (Ill 20)

Finally, there is a group of fragments of larger moulds, surprisingly few in number considering the extent of bronze working for which there is evidence on the Brough. 370 is more incomplete than most, having no outside edge and not a single key remaining, so there is no evidence as to whether it is the back or the front. It measures 99 mm by 77 mm and is by far the largest worked mould waster on the site. The terminal of the matrix is nearly complete and shows a tapering shaft ending in a trefoil with a pointed groove down the centre. Immediately above the trefoil are two semicircular loops, one on each side of the shaft. The second of the large moulds, 376 was in four pieces. It is a back half with keys down the edge. The ingate is small indicating that only a small amount

of bronze was required. The matrix was clearly intended for a pin; although the head is missing, the point as usual leads directly from the ingate. A clue to what the head might have been like is given by 374, the terminal of the back half of another large mould, showing the end of a matrix of a tapering shaft which nearly fits onto the end of 376 and could be the head of a brooch pin which would have been bent over the hoop.



ILL 19 : Moulds for plates and links. Scale 1/1



ILL 20 : Larger moulds. Scale 1/2

The technology of the moulds

The second aspect of the study of the moulds was the technical one of their manufacture. Mr Norman Robertson, with whom much of the work on the moulds was shared, experimented with the reproduction of similar moulds and his account is as follows:

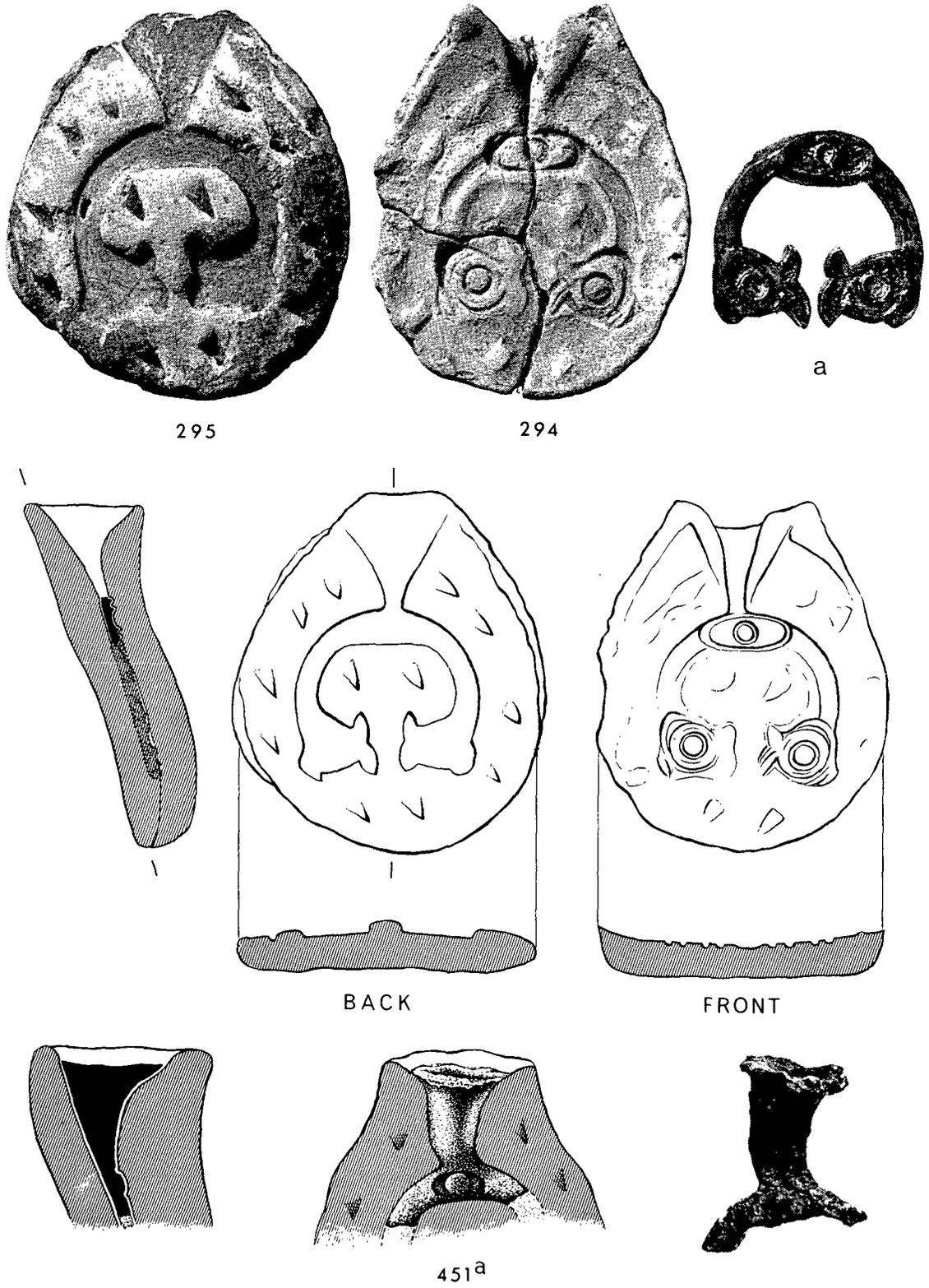
“It is evident that during the working life of the Birsay foundry, numerous moulds were constructed but many of them are now represented by no more than a single fragment. Seemingly most of the moulds had been broken into pieces when the castings were extracted from them. The predominance of unbroken back portions suggests that the front pieces, with the more elaborate matrices, suffered most damage at this stage in the operation.

Only one example of a two-piece mould has survived complete with its two parts fitting neatly together (294 and 295). However, there are many other fairly substantial fragments still bearing well-preserved impressions. These waste pieces are not only important for their record of the original products extracted, but equally for the evidence they provide of the method used by the Birsay bronze-founders to construct these somewhat elaborate moulds.

In order to gain a better understanding of this casting technique, some trial moulds were made as an experiment. They were formed, each part in turn, by following precisely the same procedure as the original examples appear to suggest. After a few attempts, it was found that with a little practice it was not difficult to obtain a satisfactory and serviceable mould.

The following reconstruction of the technique used at Birsay is based partly on the experience gained from these experiments and partly from observations made on the original material.

At Birsay, a very fine clay was used to form the moulds for castings bearing small details. For larger and less ornate work, the moulds were made of a clay tempered with



ILL 21 : Techniques of casting. Front and back sections of mould, 294 and 295, and the cast (a) from them. The two sections of mould fitted together for casting. Ingot remnant 451a and its relationship to the mould

a coarser grit such as granulated quartz. A fine natural clay similar to the Birsay material was used in the experiments.

To achieve the best results, it is necessary, first of all, to prepare the clay by mixing it thoroughly to an even consistency. It should be worked well in the hands until it is soft and pliable. It is also very important that it should not be sticky. In the first attempts, the little pads of clay which make up the two halves of the moulds were dusted with talcum powder. This was done to make sure that the pattern would not adhere to the wet clay. However, subsequent attempts proved that this practice was unnecessary. If the clay is in the required condition when the master pattern is pressed on to it, then the pattern will part from the mould without any difficulty.

To begin the operation, the first part of the mould to be formed is the back portion. It is made by pressing a small pad of clay, somewhat larger than the object to be cast, on to a flat board or stone. After trimming the pad to a suitable outline, its edge is finished with a rounded bevel. This convex edge is intended for fitting into a corresponding concavity on the edge of the front portion. Its main purpose is to ensure that the two halves of the mould are positioned correctly when they are re-assembled later. The master pattern is now pressed firmly on to the pad of clay to a depth of approximately half its thickness. Similarly a funnel-shaped former (*451a*: Ill 21), already fashioned for the purpose, is squeezed in above the object to form the ingate for the mould. Lastly, several impressions made with the tip of a knife-blade are set around the edge of the mould to serve as keys for registration afterwards. At this stage, this half with the object and former still in place, is left exposed to the air for several hours to allow some of the moisture to evaporate.

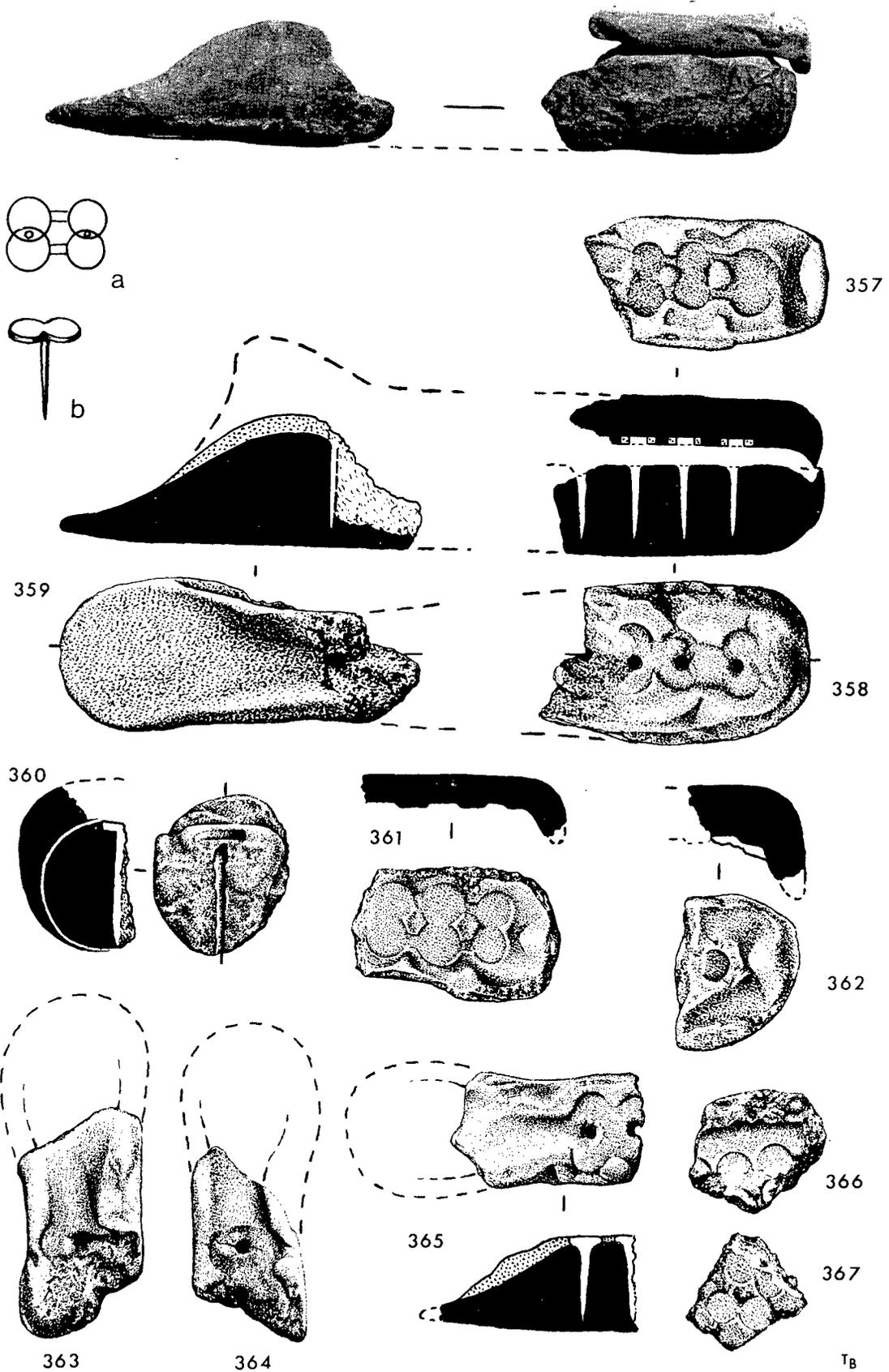
When the clay is firmer, it is time to make the front portion of the mould. It is formed by carefully covering the master pattern and the keyed edge of the first half with another pad of clay. This pad should be squeezed down very gently on to the object and former in order to get the best impression possible. Special care should be taken not to distort the back portion. At the same time, the top of the ingate is opened out and shaped to provide the filler for conveying the liquid metal into the mould. Again, the whole mould with its contents is laid aside to dry off slowly for a further period at room temperature. Artificial heat should never be used to hurry the drying process; the clay should be allowed to contract naturally.

In a few hours, the two parts of the mould can be separated quite easily to extract both pattern and former. By now, the clay is in a leather-like state but still flexible enough to allow manipulation of the mould-parts if perchance there are any undercuts in the pattern.

When the mould is re-assembled, all that remains to be done is to seal the join. Following the original method, a very thin strip of clay is applied along the seam between the two portions, allowing a little of it to project over the back of the mould. Such a strip is visible in *383*. Using a wet finger, one edge of the strip is worked well into the front portion while the projecting edge is turned downwards to clasp the back half firmly. By this simple technique the two halves of the mould are held tightly together for the duration of the casting process.

Finally the complete mould is put aside in a cool dry place until it has dried out and is ready for oven-drying which is the next stage in the operation.’’

Two moulds made by Mr Robertson were handed over to Dr Ethel Eaton at the laboratory of the National Museum of Antiquities. She first fired them in a pottery kiln to make sure no moisture was left. Then the requisite quantity of bronze was placed in a small crucible made from clay with the addition of a little sand. It was then melted in a charcoal furnace. The moulds were placed in sand at a slight slant, evidence for which had been observed when the two halves of one mould from Birsay had been placed together (*294, 295*: Ill 21) and this observation was confirmed when other moulds were found with both halves nearly complete. Then the melted bronze was poured in. The first attempt was not entirely successful as too much metal had been used and this had led to a leakage



ILL 22 : Moulds for small ornamental pins. Scale 1/1

round the matrix, but with the second experiment the amount had been judged correctly and an almost perfect replica emerged of the coin that had been used as a pattern. The only fault was that a small piece had come off the edge probably when the ingate filling was detached.

There were small variations in the construction of the moulds according to the shape of the object, or objects, to be cast. The back half of the mould being normally shallow, the ingate was the same and usually triangular in shape; the ingate of the front half was deeply rounded. The small, D-shaped antler object, 266 (Ill 38), might have served as a former for such a mould ingate.

When several pins were cast in the same mould they were set fanwise, the points almost meeting at the ingate as in 332; but, if the shanks were too thick, extensions were added to the ingate to form channels to reach each pin point as in 328 (Ill 18). If two objects wider than pins were to be cast in the same mould, the whole ingate was widened and then divided to reach the matrix of each object, as in 323 (Ill 18). An exception to the shallow back halves of the moulds was found in the group of moulds for small ornamental pins (357-369: Ill 22) where the pins were pressed vertically into the back of the mould instead of horizontally. This led to an awkward adaptation where the back ingate, instead of lying flat, was tilted at a steep angle. The construction of the pins with double heads appears curious, the shanks being attached to the double disc-shaped heads at the narrow point where the discs overlapped (Ill 22a, b). The pins were jointed together in a series by tiny bridges. They could have been extracted from the mould in one piece, as was the case at the Mote of Mark, where a rake-like bronze object emerged from a somewhat similar mould (Curle 1914, 147, fig 15). Alternatively, as first suggested by Lloyd Laing (1973, 67-8) it may have been intended for a number of small pins which would have been broken off individually. That the Birsay pins were not intended to be kept intact in one long series is indicated by the fact that each of the moulds had been broken off transversely for the extraction of the casting some way along the mould.

The general custom is that a two-sided object was placed with its back, that is the plain side, against the back of the mould. An exception is seen on mould 312, (Ill 17) on the matrix for the three-dimensional bird head seen in plan. In this case the pattern had been pressed head first downwards into the clay of the back of the mould and, had it not broken off, its flat disc base would have appeared as a shallow depression on the front half of the mould 311. In this case also, the back half of the mould is deeper than was normal.

All these moulds so far discussed used a simple technique, but evidence of a more complicated technique is shown in 351 (Ill 19), where a small ring was set at right angles to the larger ring to which it was attached. To accomplish this, a core had to be made to fit through the pattern for the upper ring. This core would have been taken out with the pattern when it was removed after drying, replaced before the two halves were finally joined and only finally removed after the cast ring had been extracted from the mould. Its impression can be seen in the matrix.

The last detail to be described in considering the moulds is that of the keys. As has been explained, they were only used for positioning the two halves during the initial drying before the pattern was taken out. They vary in size, shape and number and also in their position on the mould, not apparently following any particular rule. This can be seen by comparing the illustrations of moulds. Sometimes they are set right on the centre, sometimes near the edge. In one case there are both large and small key sockets on the same mould, 310 (Ill 16). It seems possible that an individual craftsman would have had his own method as regards the making and the placing of the key sockets, using a large or a small pointed instrument as best suited him. In some of the moulds, usually those of finer clay, they are so small as hardly to be seen and are placed almost on the edge. In the case of the moulds for the small ornamental pins (357-369) an additional method of positioning the two sides appears to have been the formation of an overlapping end to the top half of the mould, this can be seen clearly in both the diagram and the photograph (Ill 22).

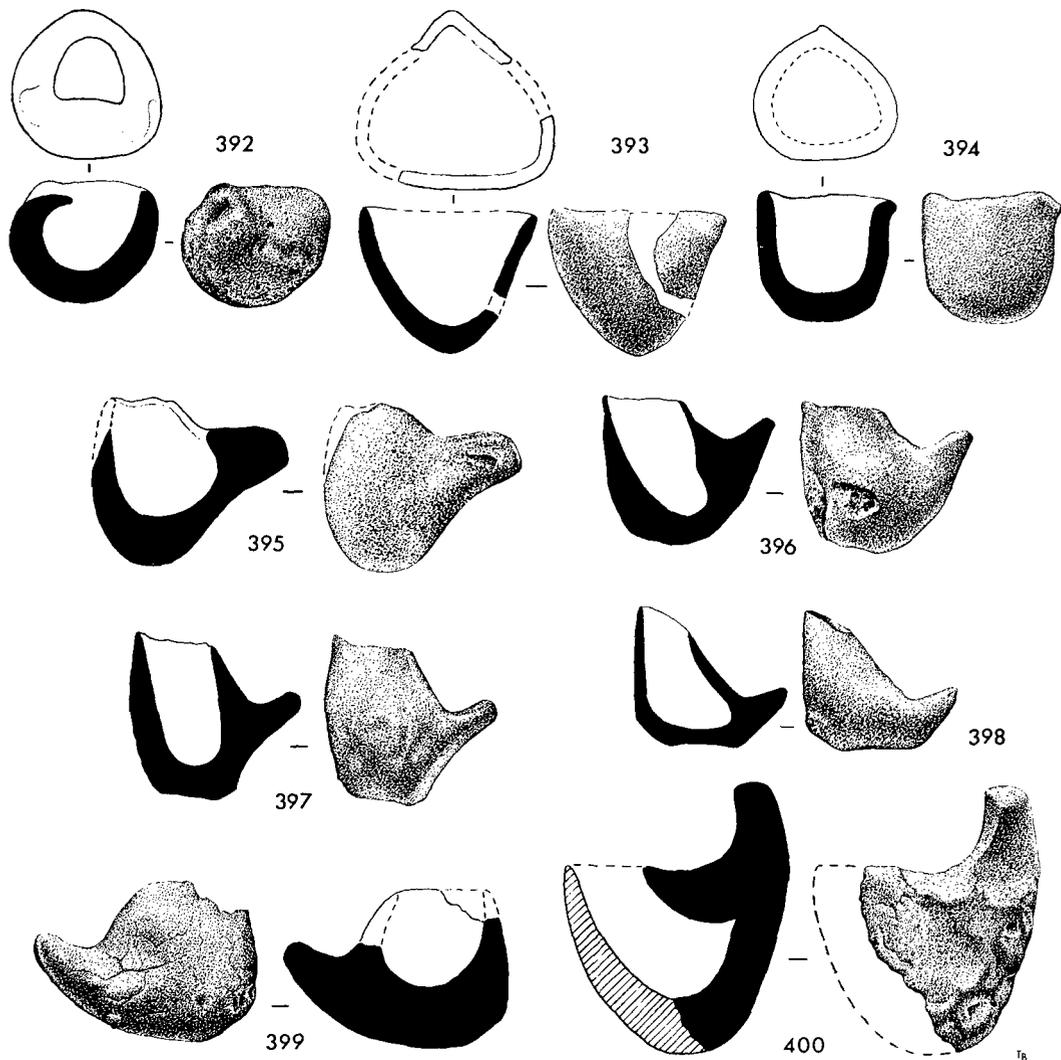
Not all the problems were resolved. There is evidence that perhaps additional pieces were introduced in the mould construction to overcome undercutting and so allow the object to be withdrawn more easily, particularly in the case of larger castings. Examples of such additional pieces for small moulds are 377 (Ill 20) and 384.

In addition to the moulds described, some 185 fragments of minor interest are catalogued in groups under numbers 385 to 391 and there are several hundred less easily recognisable fragments.

CLAY: MISCELLANEOUS

Crucibles (Ill 23, 24)

A large number of fragments represented at least sixty small crucibles; nine were nearly complete. Of these only three were without lugs. The first, 392, from the Pictish horizon is the only one of its type; it is 30 mm high, bag shaped, with rather thick sides curving in from a rounded base to a D-shaped opening, on each side of which is a small protuberance, presumably to enable tweezers to obtain a grip. The base is vitrified. 393*a* and 393*b* are two fragments of another crucible. It is 44 mm high, pyramidal in shape with a pointed base, the sides sloping outwards to a large triangular



ILL 23 : Crucibles: profiles and sections. Scale 1/2

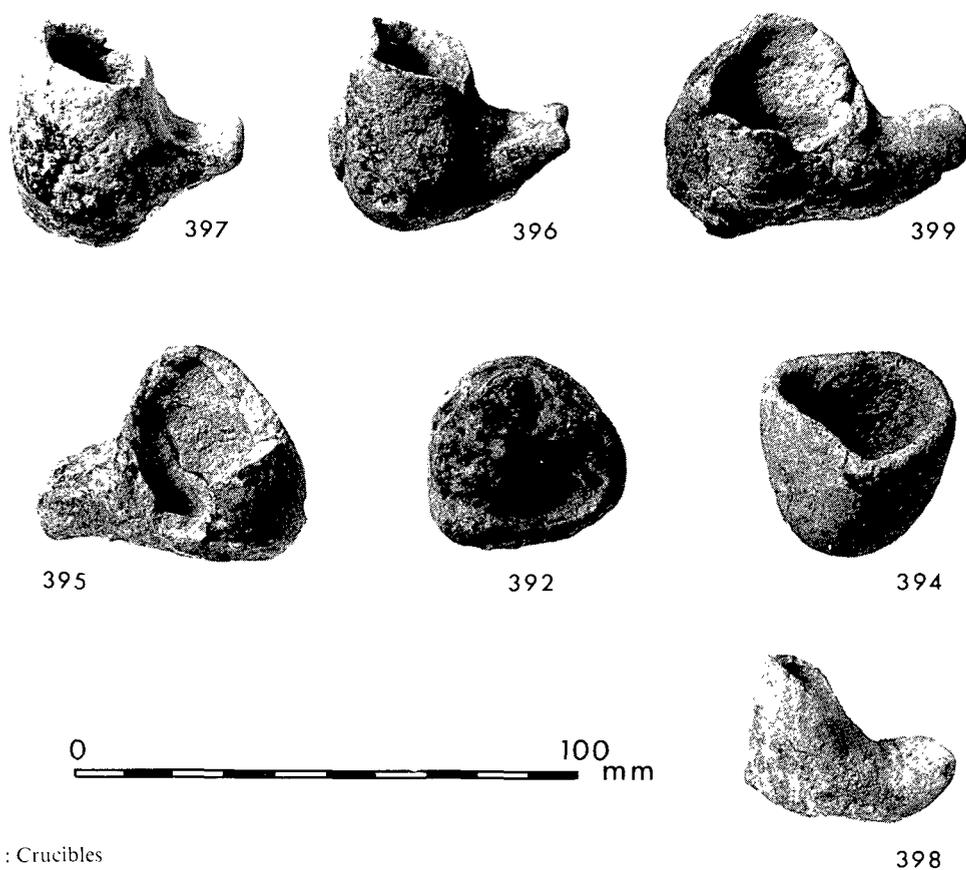
opening with a pointed lip. This type was common at Lagore where there were twenty-four examples (Hencken 1950, 235, fig 117). There were no signs of either burning or vitrification.

The third crucible without lugs, 394, was found in Area III. It is 33 mm high with upright sides and a rounded base, the opening is rounded with a pointed lip.

The other six crucibles all had lugs, they were relatively deep, and the sides narrowed as they reached the top so there was no possibility of seating for a lid. They varied in height from 42 mm to 56 mm. Their differences were minimal; the lug could be set high as on 395, 396 and 400, half way up the side of the bowl as on 397, or almost at the bottom as on 398 and 399. The bases were rounded except in the case of 397 and 398 where they seem intended to be flat, but neither crucible

could remain upright without support. All show signs of vitrification but 400, which was incomplete, may have been spoiled in the firing. Three similar crucibles were found at Dunadd with lugs set low, half way up and near the top respectively (Christison and Anderson 1905, 313, fig 35).

In addition to the crucibles described there was a large number of fragments some of which could be identified as belonging to small crucibles, including eight rounded bases, eight pointed bases



ILL. 24 : Crucibles

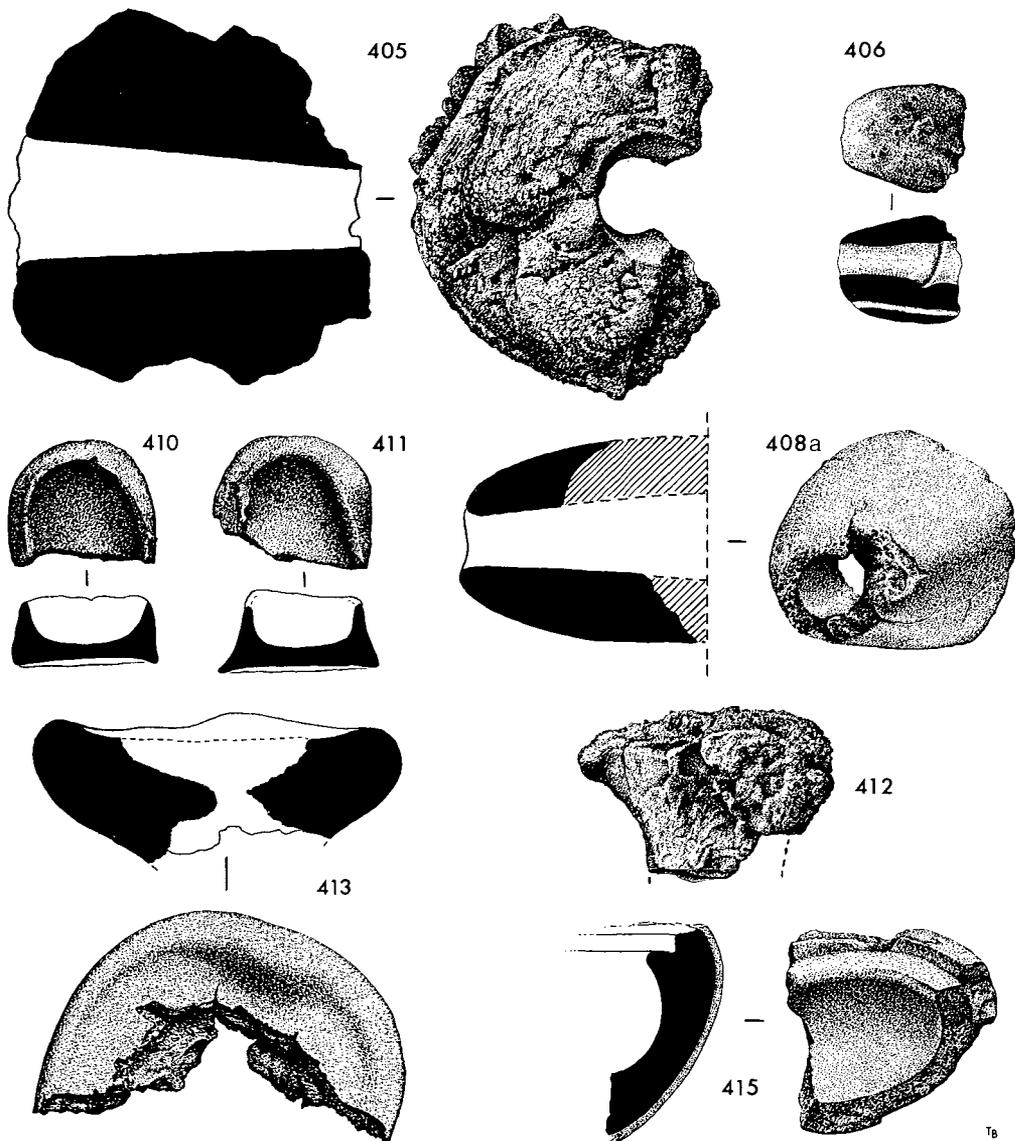
and nineteen rim fragments. There were also rim fragments from large crucibles. All came from the Pictish horizon with the exception of 395, 402 and 404, which were unstratified finds from Area II.

The quantity of bronze that the Birsay crucibles could have contained must have varied considerably. When Dr Eaton carried out her experiment in casting she was struck by the very small amount of bronze that was required to make approximately the size of object for which the majority of the Birsay moulds were intended.

It seems possible that the crucibles, which could be formed in a matter of minutes, were each made of a size to suit the amount of bronze required for a particular object. They are entirely different types from the earlier, shallower, lidded crucibles such as were found at Helgö (Lamm 1973, fig 2) or Dinas Powys (Alcock 1963, 12) and are nearer in form to those from Ireland, for example from Carraig Aille II (O'Riordáin 1949, fig 20), and from Scotland at Dunadd (Christison and Anderson 1905, fig 36-7).

Flat bottomed containers (Ill 25)

410 and 411 are fragments of flat bottomed oval containers; about half of each remains. They have rounded ends and vertical sides. Both show signs of firing. Parallels, referred to as crucibles, were found at Lagore (Hencken 1950, 237, fig 117).



ILL 25 : Flat-bottomed containers, tuyères and blowpipes. Scale 1/2

Dishes (Ill 25)

Fragments of dishes of uncertain purpose, *413-417*, were found unstratified and in the Pictish horizon.

Tuyères and Blowpipes (Ill 25)

Many of the fragments of burnt clay, particularly of those scattered around the well in Zone 1, and in Zone 5, may have come from tuyères or blowpipes, but only three (*405*, *406*, *408a*) are clearly recognisable, (*405* and *406* were from Area X).

BRONZE

Miscellaneous cast bronze

With few exceptions the small number of bronze finds from the Pictish zones were all connected with various aspects of bronze casting and in some cases were actual products from the local moulds.

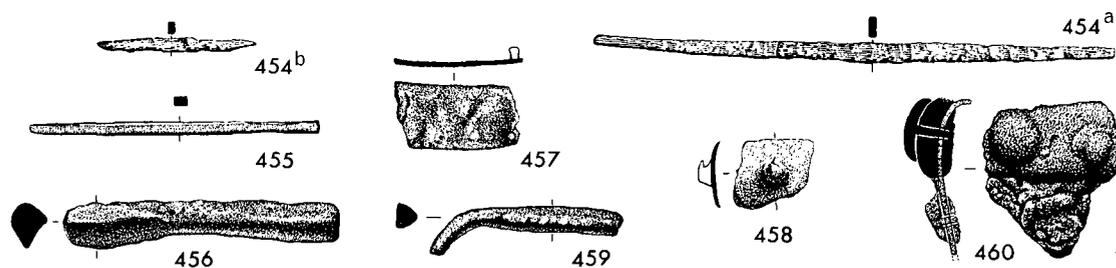
Of these the most interesting is *438a*. It is a small disc, 11 mm in diameter. It was considerably corroded but after conservation it was possible to distinguish on the front a small central boss surrounded by a ring of pellets and a narrow raised band around the edge of the disc. The disc is of the same size and the pattern appears to be identical with that of the matrix on the broken mould *314*. This is further proof, if proof be needed, of the manufacture of small pieces, which having no independent function could only have served either as an attachment to some larger object, or as part of a master pattern for some such object. A second disc, *438b* of which not much more than half has survived, appears to be similar. Its surface is badly worn but from the way corrosion has left small regular indentations all around the edge it would seem that it too may have had a ring of pellets. Its present reduced diameter is 10 mm. A third disc, *439*, which is perforated at the centre, is incomplete and too worn to be identified in any way. Its estimated diameter is 20 mm. Finally there is a small hemispherical object, *437* (Ill 39), 12 mm in diameter, the base of which is too worn to give an accurate estimate of its original size. The rounded top is roughened by wear but it is approximately the size of the matrix of mould *383* (Ill 20). Unfortunately only the back half of this mould has been found so it is impossible to know what the front half of the matrix would have been like, so no suggestion that there might be any connection between this half mould and the hemispherical object can be made.

There are also fragments of two bronze rings which could well have been cast on the site. *446* would certainly have been a finger ring. Only about half of it survives; it would have been 20 mm in internal diameter. It is plano convex and extremely delicately moulded with a section of only 1 mm. *445* is circular in section. Its estimated internal diameter of 26 mm is too large for a finger ring and it might belong to any of the many categories of rings for suspension, fragments of matrices for which appear on many of the moulds.

Two strangely shaped fragments, *451a* (Ill 21) and *451b* must have come from the actual casting of an object, having been formed inside the ingate at the top of a mould from the overflow of liquid bronze. Each would normally be cut off from the completed casting when it had been extracted from its mould. This had been done to *451b* but in the case of *451a* something had gone wrong in the extraction of a small penannular brooch. The top part of the hoop had broken off and remained attached to the ingate filling, the small cartouche with its central disc can clearly be seen. The shape of the ingate shows the flat back and the sharply curved front typical of the majority of the Birsay moulds.

Sheet bronze

A few fragments of sheet bronze provide some evidence that bronze working other than casting took place. *420* consists of what appear to be small, flat, broken pin shafts between 36 mm and 6 mm in length. The longest of these is tapered and expanding at the top. It is possible it could have been a pin for one of the small penannular brooches. It contrasts with the more usual cast pins such



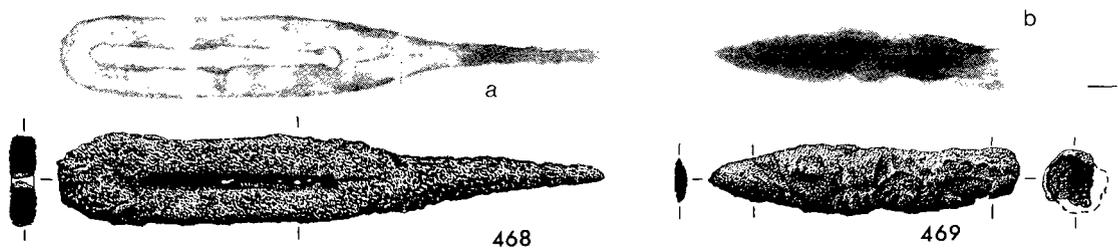
ILL 26 : Bronze objects. Scale 1/2

as *418* and *419*. The other fragments (*426*: Ill 39, *464*, *465*) are too small for conclusions to be drawn; they are rectangular in section. All these are little more than scraps of metal, which had probably been discarded as had the mould and crucible fragments amongst which they were found. However *458* (Ill 26) must have broken off an artifact. It is a fragment of a sheet of bronze plating roughly diamond shaped about 40 mm by 20 mm with a small solid square angled hook formed by a rivet

in the centre. *454b* (Ill 26), a small bar only 43 mm long, pointed at both ends and with rough surfaces, fits in no particular category. An unstratified find *454a* (Ill 26) is a similar bar, although at 140 mm much longer, narrowing at each end with the same type of deliberately roughened surface.

IRON

Evidence of iron-working was apparent from small quantities of iron slag found principally in Zone 5; a small number of worked iron fragments, too corroded to be identifiable, were scattered amongst debris from all the Pictish zones with the exception of Zone 2. Only two pieces from the Pictish horizon have survived in recognisable form. *469* appears to be a socketed spear-head, 80 mm long, the major part of the socket broken off (Ill 27); it resembles a type of spear-head from Dunadd (Craw 1930, fig 5: 38) but is too corroded to make a certain comparison. *471* (Ill 41, 41x), a socket with pointed end, is incomplete; no impression can be formed of the tool or weapon of which it was once a part.



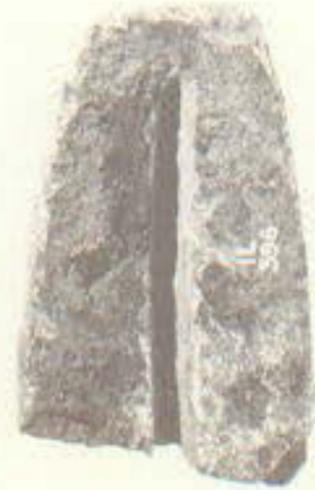
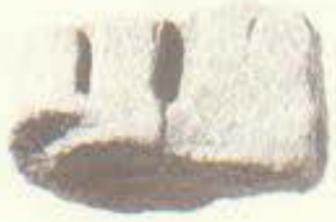
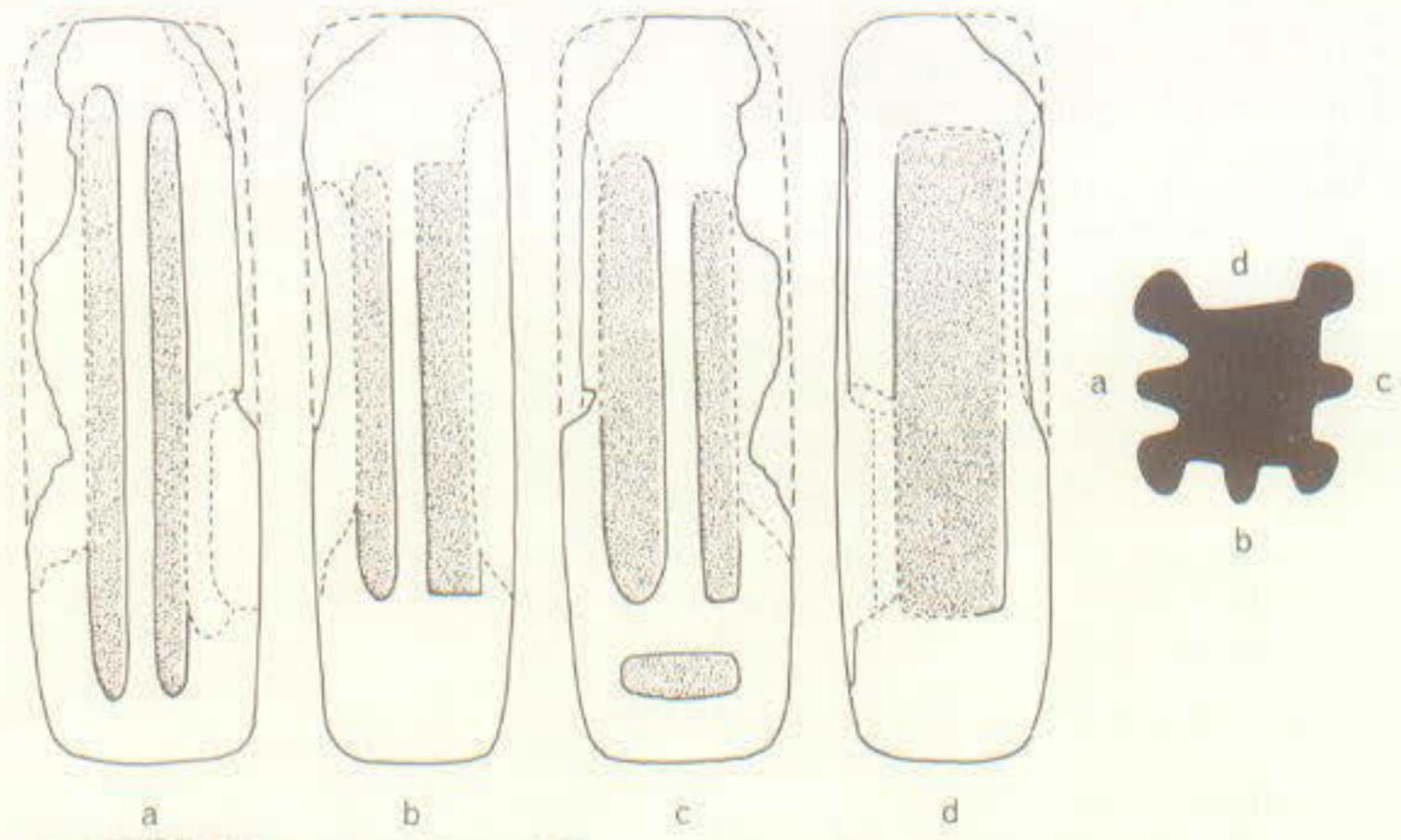
ILL 27 : Spearhead 469 and iron implement 468. Scale 1/2

Finally, *468* (Ill 27), an unstratified find from Area II, is of such a distinctive type and one with such a wide distribution, not only in Pictish territory but also from Irish and Scottish sites, that it seems justifiable to place it with the pre-Norse finds. It is a slotted pointed tool, made, as are all the others, from a narrow flat plate ending in a long point; such plates vary in length from 87 mm to 150 mm. An X-ray photograph of the Birsay example revealed hitherto unknown details of the slot and show it to be a more complicated implement than had been realised. The slot is 74 mm in length, 5 mm in width at the upper end tapering gradually to 4 mm at the bottom; the bottom is ogival in shape, a little more than halfway down two opposing curves have been cut in the sides of the slot to form a circle and at the bottom it expands slightly to form another circle. The long point could have been fitted into a socketed handle. Hencken (1938, 53) suggested that they could be connected with the making of some coarse fabric, such as rush matting. The X-ray of the Birsay tool has made known details of its construction but makes its function no clearer.

Parallels have been found, for example in Ireland where there were three from Cahercommaun (Hencken 1938, 53, fig 32), one from Lagore Crannog with a suggested date of 8th to 10th century (Hencken 1950, 118), two from Oldcourt in County Cork (Murphy 1961, 88, fig 5: 14 and 15) and another from Carraig Aille (O'Riordáin 1949, 78, fig 10: 343). From a Scottish area, no less than eight have come from Dunadd (Christison and Anderson 1905, 318, fig 53).

LEAD

There was only one fragment of lead, *507* (Ill 53), a ferrule formed from a strip 4 mm wide bent into a circle with an eyelet hole at each end.



ILL. 28 : Stone bar-moulds

STONE

Stone moulds for metal bars (Ill 28)

The majority of the few stone artifacts from the Pictish horizon were found in Zone 1. Two were connected with metal-working. 570 is a fragment of a mould of flaggy sandstone, 92 mm long, with one side and one end broken off, leaving only part of a matrix for a wide bar. 573 is of fine-grained sandstone, 82 mm in length, but only part has survived. On one side is the matrix for a bar and on the other the matrix for a circular disc. A somewhat similar mould to this comes from Dunadd, but with a matrix for a smaller disc (Christison and Anderson 1905, fig 34). 572, a similar sandstone mould from Area III, is 38 mm long. It is also incomplete, part of the matrices for one wide and one narrow bar remaining.

Spindle whorls and discs (Ill 43)

Several possible spindle-whorls were found in the Pictish horizon. Two are dome shaped; 524 is of siltstone, and 525 is of laminated sandstone. 545 is part of a flat disc of tuffaceous sandstone with part of a large central perforation remaining. 536 is a shallow sandstone disc, probably natural, with a small central perforation. 523, an unstratified dome shaped disc, with rudimentary borings on either side, may be an unfinished spindle whorl.

Porphyry or Verde Antico

608 is a fragment of dark green porphyry. When it was found near the well it measured approximately 36 mm by 15 mm by 110 mm in section, but it has now been broken into three pieces. Both sides have been dressed and polished. Quite a number of fragments of porphyry have come from other sites in Scotland including St Ninian's Isle (Small et al 1973, 31-2), Hunday in Orkney (Nat Mus Antiq, Scotland: AL 51), Moorland Moor, Caithness (Nat Mus Antiq, Scotland: GJ 193) and Balmerino, Fife, (Nat Mus Antiq, Scotland: NX 512). It has been suggested that such pieces were brought to Scotland by pilgrims (Stevenson, pers comm).

GLASS: A REPORT BY JOHN HUNTER

Vessel fragments

The vessel fragments are those which might be expected in NW European contexts of the 8th and 9th centuries and possibly slightly earlier. Few can be assigned with any certainty to specific vessel types. Nevertheless certain characteristics are worthy of comment and can be paralleled elsewhere, notably in Scandinavia. Glass in British contexts is rare in the Christian era and the material from Birsay is therefore of some importance.

Of the eight vessel fragments, 635 is a light blue body fragment decorated with an applied filigree rod containing an opaque white spiral. It is from a particularly rare group the distribution of which has been discussed by Holmquist (Holmquist and Arrhenius 1964, 251-6). There is a strong Scandinavian frequency now supplemented by British examples from Whitby, North Yorkshire (Peers and Radford 1943), Saxon Southampton (Hunter 1980) and Repton, St Wystan (Hunter forthcoming: b). They reflect a high degree of technical expertise and must be considered to be among the best quality vessels available in the period.

A second body fragment, 623, also light blue decorated with an applied rod wound with a fine opaque white trail is of similar style although the technique of manufacture is different. Here the trail is wound on the exterior of the rod and not within as with filigree glass proper. Many of the Scandinavian filigree vessels are also decorated with horizontal opaque yellow trailing. It is conceivable that the Birsay fragment 631, decorated with marvered opaque yellow trails, may also belong to a filigree decorated vessel.

The opaque red body fragment 633, with colouring formed by layering of light and dark red giving a streaked effect, is perhaps the most remarkable in colouring terms. A similar example is known from Valsgårde, Sweden (Arwidsson 1942, 70). Opaque red glass is rare and a particularly fine example from Repton, St Wystan has been interpreted as possibly belonging to a lamp (Hunter

forthcoming: b). Again the Birsay fragment is evidence of a high quality product. More common is the vessel represented by 634, a body fragment from a mould-blown vessel, probably from a small squat jar of the type illustrated by Harden from Barfriston, Kent (Harden 1956, fig 25: VIII). This is probably the earliest type represented and may be dated to the 7th century.

Only one rim fragment, 636, appears in the material and was recovered from below the paving in Zone 4 phase a. The rim is rounded, thickened and slightly out-turned. This form is common to many small vessel types of the period and although in poor condition can be hesitantly ascribed to a later form of palm cup.

Window glass

Perhaps the most remarkable fragments from the site are the three examples of window glass. One, 641, is a dark green but badly weathered rectangular quarry, grozed on three edges and chipped at one corner. This was discovered in the cemetery near the apse and may have belonged to the church.

The other two are earlier. Window glass of this period is only known from a few sites in Britain, notably the monastic establishments at Monkwearmouth and Jarrow, Repton, St Wystan and Winchester (Hunter forthcoming: a). The blue fragment 640 with the curved grozed edge indicates that the original quarry was part of a window mosaic. The quarry shape of the dark yellow fragment 639 is unknown. It would seem unlikely that either belonged to a building on the site.

Miscellaneous glass

Several of the glass fragments probably belonged to decorative mounts. Three of these are likely to have been semi-spherical in form. 642 was manufactured using layers of opaque red and black glass paste, the outer surface being smoothed and decorated with opaque white marvered trails set in loops. 646 and 647 are similarly decorated but on a surface of black and opaque blue respectively. 644 is in the form of a square mount with flattened base and right-angled corners. The colour is opaque blue with opaque white marvering on the surface. There is some evidence that these items were manufactured around a core of re-used glass. Similar fragments have been found at Kaupang, Norway and I am grateful to Mrs C Blindheim for kindly showing them to me. A complete example has recently been discovered at Dundurn, Scotland and I am grateful to Professor L Alcock for bringing this to my attention.

The opaque light blue cube 645, slightly damaged on one face, may have belonged to a larger mosaic decoration form. These are known to have existed on the continent during the Carolingian era and several found their way to Scandinavia. Some are known to have been partially covered with gold foil and their significance has been discussed by Lundstrøm (1971, 52-68).

Equally interesting is the square garnet mount 648 with the two chamfered edges. Miss J Cronyn of the University of Durham kindly examined the mount microscopically to determine its material. This undoubtedly belonged to an item of cloisonné jewellery and is sufficiently thin to have merited the use of a gold foil underlay. It is a significant item in the assemblage and one which strongly points towards the re-use of materials on Birsay. It is unlikely that this type of jewellery was manufactured on the site, or indeed that any of the vessel fragments reached the site in complete vessel form. Apart from the rectangular window quarry all the items were discovered in close proximity and represent a collection brought together for a specific purpose. The common factor is colour and brightness. Their relationship to vessels, windows or specific objects is to some extent irrelevant. In effect they constitute a type of hoard and the assemblage can be dated accordingly. Their function was seemingly in re-use and it would seem most likely that they were brought together for melting down to make beads, inlays for metalwork or mosaics. The latter may be evidenced by the waster 643, one end rounded with the other cut showing an oval section, the outer surface wound with firm opaque white marvered trail, probably from a rod used in the production of mosaic or mounts. Such processes have already been suggested at Dinas Powys, Wales (Alcock 1963, 52), at Helgö, Sweden (Holmquist and Arrhenius 1964, 243-60) and more recently at Ribe, Denmark (Bencard 1973, 42). Trade in brightly coloured fragments would seem to have been an accepted commercial routine across NW Europe. The garnet which is easily mistaken for glass seems to have been included accidentally.

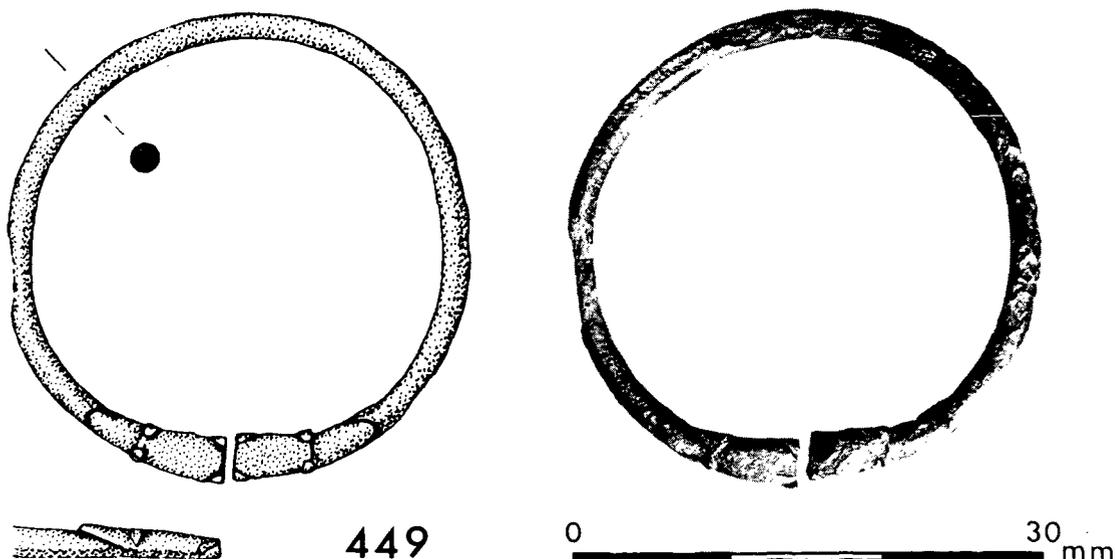
**ISOLATED PICTISH FINDS FROM BELOW LOWER NORSE
HORIZON**

There are two objects, 509 and 449 found in 1956 below the lower Norse horizon in areas where the Pictish occupation was not fully excavated. They cannot be attributed with certainty to the bronze-working phase of the Pictish occupation, and indeed seem to be earlier and have therefore been treated separately.

BRONZE

Penannular brooch (Ill 29)

449 which was below the paving of Room VI, was excavated in 1956; it is a small bronze penannular brooch, 22 mm across the hoop, the hoop showing wear half way up one side, presumably from its pin. The terminals are zoomorphic, belonging to Mrs Fowler's Class F, (Fowler 1960, 151, fig 1), which may date to the 4th and 5th centuries AD (Fowler 1964, 103-7. Close-Brooks 1975, 227). A brooch which is a close parallel has been found in an excavation at The Howe, near Stromness (Hedges and Bell 1980, 50-1). It was found in a context which the authors related to a Pictish building succeeding the dilapidation of the adjacent broch. It is in excellent condition. It is larger, at 30 mm across the hoop, than the Birsay example.



ILL 29 : Bronze penannular brooch 449

LEAD

Disc (Ill 30)

A lead disc, 509 (Curle 1974, 301-7, pl 24), was excavated in 1956 from below Room IV of the lower Norse horizon. It is 50 mm in diameter by 5 mm in section, decorated on one side with an engraved spiral pattern. Scratches and surface irregularities give the impression that the design has been poorly executed but it might even have been a trial piece. The centre point for a compass is clearly visible

however the imperfections could have been caused solely by later abrasions. The design is a version in negative form of the trumpet spiral pattern known from a number of varying sources, in MSS for example on the spiral page of the *Book of Durrow*, in champlevé enamel on the escutcheons of hanging bowls such as that from Hitchen (Henry 1936, pl 32), in impressed silver on the Moylough



ILL 30 : Decorated lead disc. Scale 1/1 (a) Birsay disc, negative (b) Birsay disc, positive (c) hanging-bowl mount from Hitchen

belt-shrine (O'Kelly 1965, pl 19a) and nearer at hand, also in impressed silver on the disc attached to the omphalos of the St Ninian's Isle hanging bowl No 8 (Small et al 1973, 56, pl 25b). The ornamentation of the design on the Birsay disc has been considerably simplified from the classic versions cited above; the trumpet endings have been omitted and the simple pelta form substituted, and the three leaved twigs around the circumference have been reduced in each case to single leaves. It could not have been used directly as a pattern for a two piece mould, being a negative, but could have been used for *cire-perdue* or as a die or stamp for impressed silver, or in view of the scratches and surface irregularities it could have been a trial piece. It has been discussed in detail (Curle 1974, 301-7, pl 24) and recently Professor Alcock has pointed out that a disc from such a pattern could have been found anywhere in Britain in the 6th, 7th or even 8th centuries.

PICTISH FINDS FROM NORSE LAYERS

There was a significant number of Pictish finds found in the lower Norse horizon, and one from a room in the middle Norse horizon, whereas there were no diagnostically Norse finds from the Pictish zones. The implications will be discussed later.

BONE AND ANTLER

Small hipped pins (Ill 7)

There were seventeen small hipped pins scattered through the various dwellings of the lower Norse horizon and two hipped pins, 4, 42, from the middle Norse horizon. Five others were from House Sites in Area III.

Pins with Iron shanks and globular heads (Ill 38)

Four pins of this type were found at Birsay. 259, 260 and 261, came from the lower Norse horizon, Room VII and Passage 1 and only 262 was from the Pictish horizon, but it is generally accepted (Stevenson 1955, 292-3) that they are a native type.

Single-sided combs: high-backed (Ill 9)

The high-backed combs are undoubtedly a native type. Of the seven examples found, four (217, 218, 220, 221) were from the lower Norse horizon. They are discussed fully with the Pictish examples.

BRONZE

Pin (Ill 39)

418 a small unmistakably Pictish pin, with spatulate flattened head 30 mm long, was found on the pavement of Room VII in the lower Norse horizon.

Brooch

A Pictish penannular brooch (452) and the fragment of a similar terminal of another (453) were both found in the lower Norse horizon. 452 is the same type of brooch as that shown in the matrix of mould 298 and was probably cast on the Brough. Its discovery in the lower Norse horizon is discussed below.

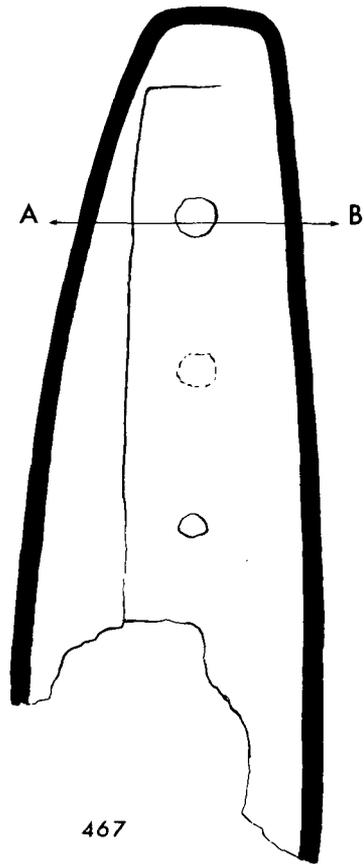
IRON

Bell (Ill 31)

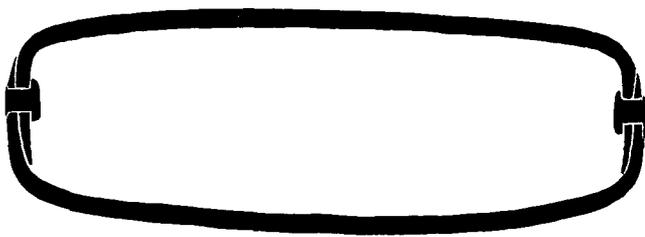
467 another interesting find was the remains of a bell in the ashes of the sunk hearth of Room VI in the lower Norse horizon. Corrosion was such that it was not possible to determine exactly how it had been constructed. Other bells of similar appearance were made from a single sheet of iron, bent round into a quadrilateral form with the overlapping edges joined by riveting; possible rivet holes were visible on the Birsay bell and it was probably fashioned in the same manner. The estimated measurements are 255 mm in height by 175 mm in width, with a breadth of 38 mm across the top and 178 mm across the bottom.

During cleaning and restoration, traces of copper corrosion were discovered. These corrosion products give the impression of being sandwiched between two layers of iron, but preliminary X-ray fluorescence and microscopic analyses show that the inner crust of this sandwich is iron corrosion rather than basic metal. The bell therefore appears to have had an internal bronze coating, but it is not yet possible to say whether the coating was originally over the outer surface as well.

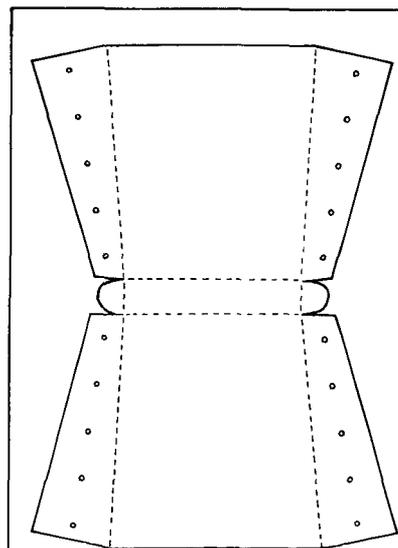
Other examples of iron bells coated on both inner and outer surfaces have been found. Originating with the early hand-bells of Ireland, hand-bells of this type were not uncommon in Scotland and are said to have been in use until the 12th century. Joseph Anderson (1881, 158, fig 54) lists a number of them including one found buried at the Knowe of Saverough (Saeve Howe) less than two kilometres from the Brough of Birsay village. A bell (Ill 31a) in almost perfect condition and approximately the same size was found in S Scotland near Kelso in 1882 (Smith 1882, 227-8); it was of iron with



0 50 100 mm



SECTION A - B



ILL 31 : Iron bell 467 with a diagram to show the suggested pattern for cutting and constructing the bell (not to scale)



0 100 mm

ILL 31a : Iron bell from Kelso

some of its original coating of bronze still adhering, and was fastened down each side with three iron flat-headed rivets. As was usual there was no clapper but a rounded handle of thinner iron plate had been pushed through each side of the top of the bell and strongly riveted.

PICTISH FIND FROM THE CEMETERY

The only characteristically Pictish find from Area 1 was the symbol stone and it is discussed later with other finds from the cemetery.

3 AREA II : THE NORSE ASSEMBLAGE

THE LOWER NORSE HORIZON

The lower Norse horizon included a number of phases of which the plan (Ill 5: 2) shows in detail only the two most recent: Rooms VI and VII, Passage-ways 1 and 2, the drainage system; and VIII, the so-called Boat Slip.

Paving slabs protruding from the edge of the cliff had indicated occupation below the middle Norse horizon and when the loose earth above them was removed the rectangular sunken hearth of Room VI was revealed. The middle Norse horizon Rooms, 9, 10, 11, 12, and the upper Norse horizon Rooms 13 and 14 were removed to open up the wide Passages 1 and 2 and to expose part of the five stone-lined and slab-covered drains which radiate from a point just to the S of the main complex (Ill 32).

Although Rooms VI and VII both opened into Passage 2 it is agreed that they were of later construction. The E end of Room VI had been destroyed by a cliff fall either before or after a fire. The floor of the room was paved. It was covered by a layer about 130 mm deep of a mixture of wood ash and red peat ash, above that was a layer of sandblow about 50 mm thick and then a tumble of fairly large stones and earth. A channel lined and covered with slabs ran alongside the remaining walls, leading under the W wall to a pit lined by one end slab and two side slabs. When excavated, the pit was damp and full of the shells of whelks and limpets, with damp earth and a few bones.



ILL 32 : Passages 1 and 2 and the drainage system of the lower Norse horizon

The channels were interpreted by Dr Richardson as drains and the pit as a sump. Inside the room on a raised slab built against the W wall was a large heap of oyster shells and animal bones. Some of the covering slabs of the channels were tilted on edge and inside the channels were fragments of boat nails, including 491, 492, 494, 496. The hearth was rectangular, the bottom roughly paved. Buried in the ashes filling it were the remains of bell 467, Dr Richardson's first impression on the finding of the bell was that this building had belonged to the Celtic monastery which the discovery of the Pictish symbol stone had led him to expect, and it is described as such in the account and the plan published in the RCAHMS Inventory 1946; but the presence of Norse objects render this unlikely. Dr Radford (1959) subsequently identified it as the remains of Earl Thorfinn's hall and interpreted the channels as heating ducts and the sump as a fire pit.

Room VII, which Dr Radford called a Bath House, is also built of dressed stones, the room divided into compartments by upright slabs. There was no trace of a hearth but a considerable amount of peat ash was found on the floor of the W half of the room and over a hundred small round stones were scattered over the floor. They showed no signs of firing.

In 1956 Dr Radford found evidence of an earlier longhouse, the N end forming the foundation of Room VII, stretching SE along the cliff edge. Few traces remained as it had largely been destroyed by coastal erosion. There were no finds recorded.

VIII (Ill 33) has been always referred to as a Boat Slip, which it might well have been, continuing to a lower level before cliff falls cut it off some 3 m above the height of the beach. It has also been suggested that it might have been a passage up to the Brough. There is no evidence for or against either possibility. There were few finds but it was filled with some rubbish and a very large amount of peat ash.

The compact complex of interconnecting rooms (Rooms 1 to 6 of the middle Norse horizon) being considered too important for destruction, the excavation of the earlier occupation levels below was limited; a few of the hearths and paved floors were temporarily raised to expose some earlier walling and to trace the line of the drains, but the earlier floor levels were never fully determined. A number of finds were recovered. Since their horizontal location is known only in relation to the



ILL 33 : The boat slip

standing walls of the middle Norse horizon their position is referred to by the number of the middle Norse horizon room above, using Roman instead of Arabic numerals.

Other earlier Norse phases were revealed in the 1973-74 excavations under Room 5 and a full report on these by J Hunter and C Morris, and analyses of bone and organic remains are included in the Appendix, but the finds from these excavations are included in the main catalogue. Consequently subdivisions have been added to the stratigraphy below Room 5; 3a, 3b, 4a, 4b are discussed as lower Norse horizon Room V, although 4a and 4b could be middle Norse.

As far as the finds are concerned, there are problem areas which could belong to either the lower or middle Norse horizons. The first of these consists of Room VII and Passage 1. On neither of these areas was there subsequent building, and when excavation began in 1936, the outline of the S and W walls of Room VII was visible with a hollow in the turf between the walls. Both areas became rubbish tips in the middle Norse horizon (Ill 5: 1, Midden a and Midden b). Both were filled with a mixture of loosely packed bones, stones and small broken finds, often in groups; for example five nail-headed pins in one small heap. The best solution seems to be to group only the finds from on the early pavement level with those from the lower Norse horizon and the finds in the fill with those from the middle Norse horizon, regardless of typology. VIII (the Boat Slip) was a similar case. After it was abandoned, possibly due to a cliff fall or to changing circumstances, it too became a rubbish tip (Midden c) but there were few finds above the pavement level, and the space between the walls was almost entirely filled with ashes. A similar grouping of the finds has been followed.

Two other areas also present a difficulty as they are not related to standing walls. Area X is to the W and N of Zone 1, in part overlying the area of the well. Area Y is W of Room VII and S of Passage 2 (Ill 5). They both have rough paving. Both yielded a quantity of finds comparable to those from the lower Norse horizon and they are discussed with the finds from stratified lower Norse levels.

BONE AND ANTLER

Small hipped pins (Ill 7)

Seventeen small hipped pins (2, 20, 22, 23, 25, 26, 28, 29, 32, 33, 38, 39, 49, 51, 52, 59, 69) were found in the lower Norse horizon. They are generally regarded as a Pictish type and are fully discussed with the comparable pins from the Pictish horizon.

Large pins not perforated (Ill 48)

88 is made from animal bone and has an elaborately carved head formed of rectangular facets each with a narrow rim and a dot in the centre. This type of head is more usually found on bronze pins than on bone (Armstrong 1922), but two bone examples from York are cited by Waterman (1959, 81, fig 12: 8, 9). Other long unperforated bone pins are 84 with a roughly carved head, 82 with a globular head, and 85 with a double button head and coarse incomplete shank. The remaining seven large bone pins from the lower Norse horizon either have flat straight heads or are skewer pins varying in length from 74 mm to 110 mm. With the exception of one made from antler and another of whalebone, they are made from pig fibula.

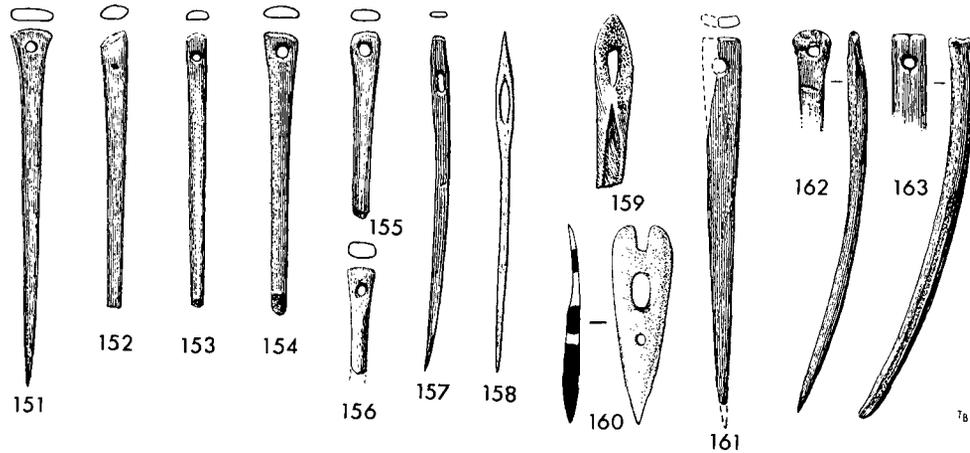
Large pins with perforated heads (Ill 48)

The greater numbers of large perforated pins are from the middle Norse horizon; only six (107, 109, 121, 122, 126, 128) came from the lower Norse horizon. They are unremarkable, the heads either flat-topped or annular; all are of long bone except for one which is of antler. They are indistinguishable from pins or netting needles from sites in Scandinavia (Andersen et al 1971, 110) and from York (Waterman 1959, 83, 84, fig 14).

Needles (Ill 8, 34)

The needles too are unremarkable, for the most part similar to those from the Pictish or middle Norse horizons; there are thirteen from the lower Norse horizon including 144 (Ill 8) which is unusual

in having a flat head decorated with a horizontal line of dots. *158* (Ill 34) has an unusually long pointed head and an elongated eye. *159* (Ill 34) is made from antler with a pointed head and large oblong eye, rather larger than the Pictish variety but broadly similar to those from the middle Norse horizon; the shank is incomplete, broken off at 30 mm length.



ILL 34 : Large bone needles. Scale 1/2

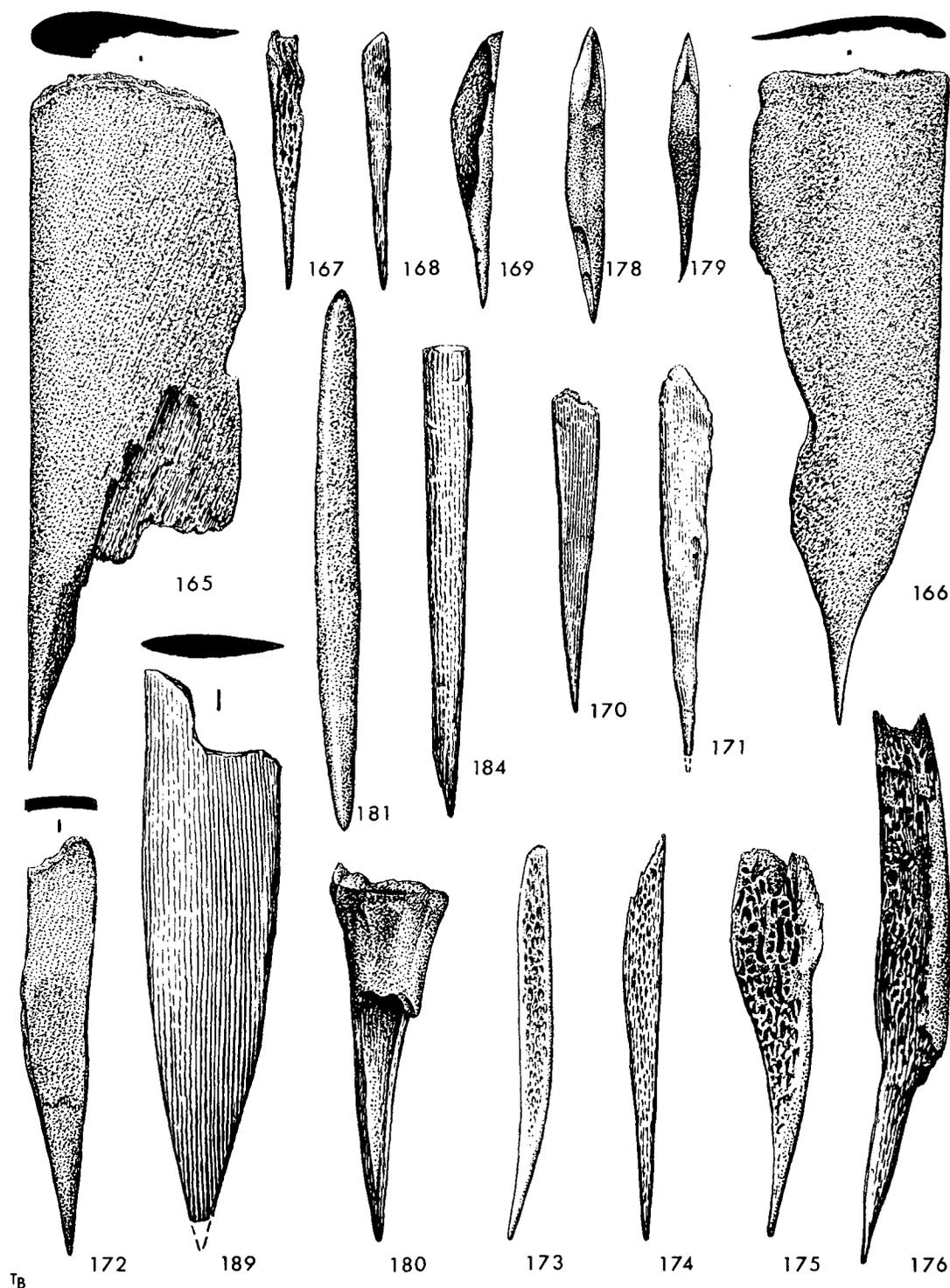
Picks and pointed implements (Ill 35)

There were many bone picks which were unshaped except for being sharply pointed. Two of these, *165* and *166* were large, 105 mm and 97 mm long respectively. The remainder varied in length from 38 mm to 86 mm, the majority came from rib fragments; the exceptions were *180* from a sheep or goat metatarsal, and *178* and *179*, which were simply pig incisors with sharpened roots. One of these picks (*172*) came from the Pictish horizon and one (*174*) from the middle Norse horizon. The others were all from the lower Norse horizon, six from the paving of VIII, the Boat Slip, and the rest from the floor level of Passage 1. It seems possible that the smaller of these picks may have been used as 'winkle-pickers'. A large number of limpets and winkles were found in the drains and particularly in the stone sump in Passage 1 outside Room VI. In the report on the bone material Dr Sellar (Appendix 8: 2) mentions shell fish as a source of food on the Brough.

Other pointed implements are in a different category having been carefully shaped. Their purpose is not clear. *183* is a rod tapered at both ends. Two other examples come from the upper Norse horizon. They are not unlike the thread pickers found at Southampton (Addyman and Hill 1969, 76, pl 7b) and in Denmark (Andersen et al 1971, III, CEC) but the ends are not so sharp and there is little other evidence of weaving on the site except for the small weaving tablet *243* (Ill 38) from the lower Norse horizon and a perforated stone which could have been a loom weight, *580*, from the upper Norse horizon. Two other rounded bone implements *184* and *185*, are pointed at one end only, their tops cut off square; *185* has a dot in the centre of the top. Another group consists of objects still with pointed ends, but flat; *189* is wide at the top, narrowing to a pointed end. *191* is leaf-shaped, only 42 mm long.

Double-sided combs: Type B (Ill 10)

The double-sided combs are divided into Types A and B. The distribution of Type A both on Pictish sites and in Ireland suggests that they were a native type. All the Type A combs at Birsay were from the Pictish horizon. Type B combs, on the other hand, were, with one exception, from the lower Norse horizon. The thirteen discovered vary considerably one from another and it is easiest to define their characteristics by comparing them with the Type A combs; they are longer; the teeth are not graduated and do not usually extend to the end of the comb, where there is a narrow vertical band; their connecting plates are not bevelled, are shallower and are semi-elliptical in form; their decoration



ILL. 35 : Bone picks, awls and borers. Scale 1/1

is less ornate. It seems appropriate to describe them as native in the sense that they cannot be claimed as Pictish, nor are they imported. Rather there is a resemblance to English combs (Peers and Radford 1943, 63, fig 14). However, there does seem to have been a mingling of styles typified by 200. It is a long comb. The teeth, only slightly graduated, have a wide vertical band as large as those of Type A between each end of the comb and the connecting plates, which are decorated with a row of dot-in-circle flanked by rather widely grooved lines. 193 also follows the earlier tradition with

the connecting plates decorated with a row of incised oblique opposing lines. The end segments being missing it would be assumed to be a Type A comb if it were not that an exact parallel with an end complete, from Buckquoy (Ritchie 1977, fig 7: 55), shows it to be of Type B. The other combs vary considerably in decoration. Two are undecorated; 202 has had one end broken off and has been filed smooth for re-use, while 203 is almost complete. Fragments of nine other combs were found, all decorated with dot-in-circle.

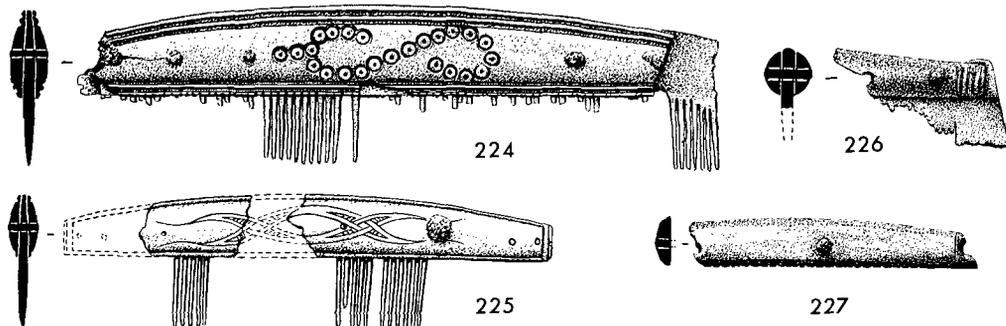
This type of long comb is represented on Class II Pictish Symbol Stones, which were carved in low relief and, while Christian, still made use of Pictish symbols. Examples are the Maiden Stone, Pitcaple, Aberdeenshire (Allen and Anderson 1903, 191, fig 207) and three stones in Angus: Kingoldrum, Kirriemuir and Monifieth (Allen and Anderson 1903, 226-8, fig 238, 239, 241).

Single-sided combs: high-backed (Ill 9)

Four examples of this type of comb have been found in the lower Norse horizon (217, 218, 220, 221, fragments 216, 222, 223) and three were found in the Pictish horizon. They are thought to be a Pictish type and have been discussed with the examples from the Pictish horizon.

Single-sided combs: Norse types (Ill 36)

In contrast to the number of native double-sided combs only three Norse combs are represented in the lower Norse horizon; they are single-sided, all of antler and all have iron rivets. 224 represents a widespread Norse type; the base of the connecting plate is flat, the upper side curved, outlined by a double contour line. The central decoration is formed from dot-in-circle in the well known recumbent S pattern, with in this case a short projection added at one side. A Franco-Frisian type, it is known from Haithabu, Dorestad, Birka and other Scandinavian sites (Roes 1965, 60-1, pl 27); a particularly good example is from the Black Earth at Birka (Danielsson 1973, 41, fig 25). Another example from Scotland came from a Norse grave on South Uist (Greig 1940, 74, fig 42). 225 is a

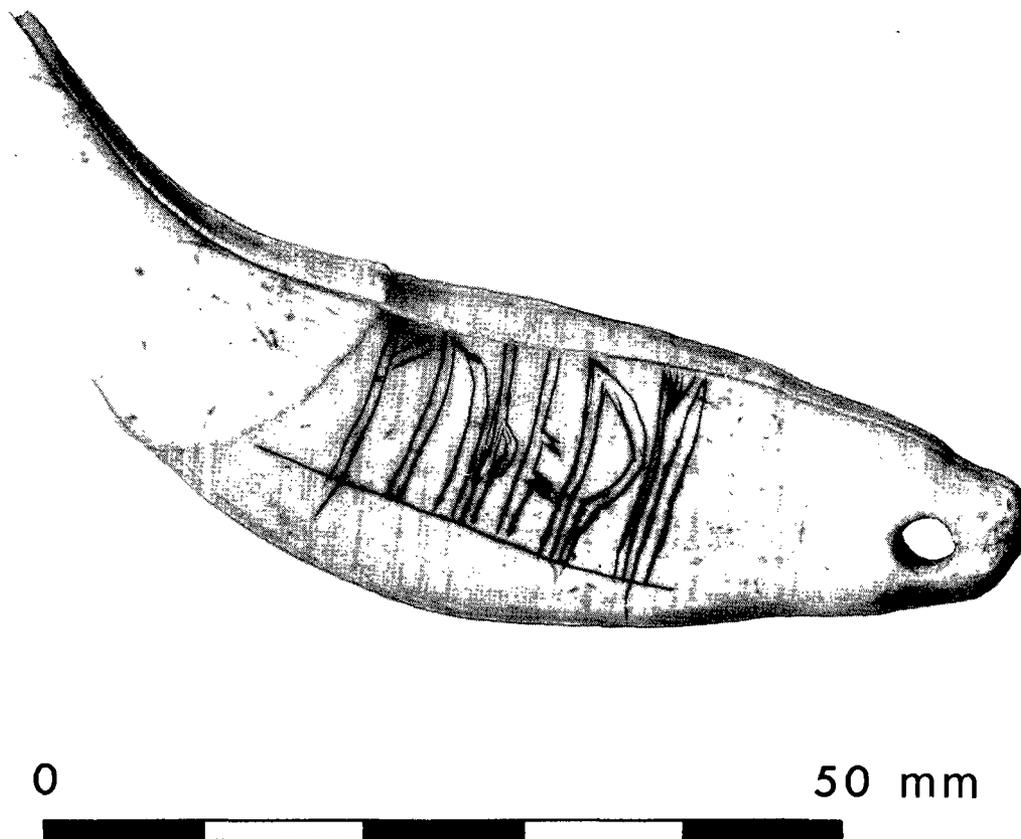


ILL 36 : Norse single-sided combs. Scale 1/2

smaller comb, incomplete, in a similar tradition. The remaining connecting plate is outlined by a single contour line with a central ornament composed of interwoven lines with cross hatching. 227 was unstratified, and all that remains is part of one connecting plate with one rivet.

Another single-sided comb, 226, of which there remains only a short piece of the connecting plates and a fragment of one end tooth plate, is of a different although also widespread, Norse type. The connecting plates are hemispherical in cross section, with a short band of vertical incised lines, the 'coiled rope' pattern, at each end. The end tooth segment protrudes above the plates at the end of the comb and has an outward slant. It is one of the most common of the later Norse types. Blomqvist (1942, 136, fig 8) has described several examples from Lund. An example from York has been dated by Waterman (1959, 87, pl 18: 6) to the late-10th or 11th century and others have been found in Dublin in an 11th-century context (O'Ríordáin 1971, pl 9).

That there were nearly three times as many native combs as imported ones seems curious. The Norse may have had readier access to a local factory similar to that recorded at Southampton (Addyman and Hill, 1969, pl 6a) than to supplies from abroad. Native combs are never found in Norse graves and it may well be that the Norse single-sided combs were in short supply and more highly treasured.



ILL 37 : Seal's tooth pendant 253 with runic inscription

Pendant from a seal's tooth (Ill 37, 38)

An unusual and possibly unique object is a pendant, 253, found on the paving of Passage 1. It is in the form of a seal's tooth, polished, perforated for suspension, and engraved with a runic inscription. Pendants such as this but without inscriptions were not it seems uncommon in Norway and continued in use over a considerable period of time. Two examples in the museum at Tromsø date from the Merovingian and Viking periods and another at Trondheim is attributed to the Middle Ages (not published, seen in Museum collections by author).

In the opinion of Aslak Liestøl of the University of Oslo the Birsay pendant was an amulet, a charm protecting the wearer from evil. He has kindly contributed the following:

“The seal's tooth from the Brough of Birsay is an unusual object. No seal's tooth with an inscription in runes is previously known, if we exclude walrus tusks, the ivory of the north. The inscription itself is most extraordinary: just the first part of the runic alphabet, the six first runes, with the values fuþark, which have given the rune alphabet its modern

name *futhark*. The runic forms are those used in Old Norse inscriptions throughout the rune-writing period, from the early Viking Age up to about 1200. They are thus of no help in dating the object. The lines are double except for the arms of the first rune 'f'. We may choose to regard the two strokes as one double-lined arm, which will give a rune with the value 'k'. There is however no doubt that 'f' was intended, and probably the inscriber felt he had completed an 'f' after the two strokes, forgetting for the moment that he was writing double lines. In Scandinavia and Greenland double-lined runes are known in inscriptions from the 12th and 13th centuries and this might suggest a late dating of the futhark on the seal's tooth. Inscriptions consisting of, or containing, a futhark or part of one are found in great numbers. Some of them are undoubtedly the result of practising in the course of learning to write runes, or just attempts to show off, or even mere doodling. Quite a few however seem to have been used for some magical purpose or other. They occur in connection with clearly magical formulae and are presumably put there to enhance the effect. In such usage the rune sequence may have been considered just another powerful formula, as occasionally also befell our Latin alphabet."

In the case of the Birsay inscription one must suggest that it was a magic formula, for the letters were so lightly inscribed that they could not have been deciphered at a distance of more than a few centimetres and were certainly not intended to be ornamental.

Vice or clamp (Ill 50)

A further unusual bone object, 287, found in the layer of sandblow just over the ashes of Room VI is made of whalebone, 76 mm long, the base flat, the top curved, decorated with four rows of dot-in-circle, and with one end rounded; part of the other end is broken off but enough remains to show it was square and pierced by an iron pin or screw, too corroded to identify in detail. I am grateful to Dr A Lundström for sending me drawings of two parallels, also in whalebone, from the Black Earth at Birka, which show it to be the top half of a vice or clamp: one object (Stockholm Hist Mus inv nr 914) is 93 mm long, with flat base, and curved top decorated with dot-in-circle, one end round, the other squared, pierced with an iron pin; the other, (Stockholm Hist Mus inv nr 915) is complete in two parts and thus shows the function of these objects. It is smaller, 56 mm long and undecorated. The top half is similar to SHM inv nr 914 and to the Birsay object. The lower half is nearly flat on both sides. A curious feature is that in each case the iron pin or screw pierced the vice nearer to one end rather than half way along. A simpler form in antler from Hedeby is illustrated by Graham-Campbell (1980, 135: 472), and another was found in an 11th-century context at Trondheim (Long 1975, 30, fig 11g).

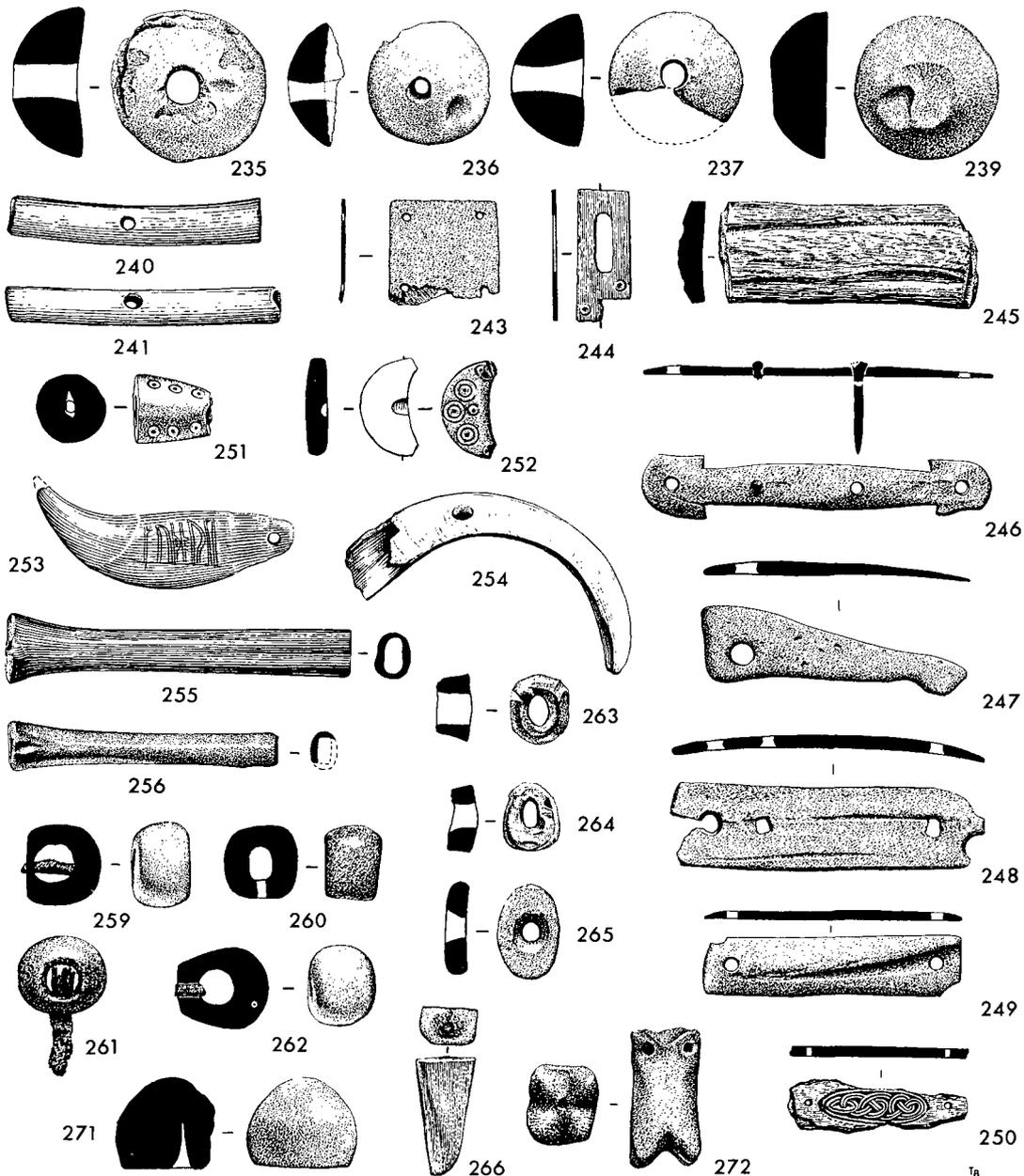
Weaving Tablet (Ill 38)

243 is a small square weaving tablet, probably made from the scapula of a small ungulate; it is 30 mm across and perforated at each corner. Such tablets, used in weaving narrow braids, were not uncommon in Scandinavia in the 9th and 10th centuries (Geijer 1938, 65, 76-98, pl 39 and Shetelig 1937, 336, pl 56b).

Mountings (Ill 38)

246 is made from antler cortex. It is 98 mm long with shaped terminals and four perforations in one of which its original bone peg, 16 mm long with rounded head, was still in place; this is not unique. An example of a mount with three remaining pegs came from the Broch of Burrian (MacGregor 1974, fig 9: 130). 248 appears to have been broken and re-used with fresh perforations cut further in from the ends; the two original holes were circular, and the later rectangular.

249 is smaller, 72 mm long, and the circular perforations may have been bored; a horizontal groove is natural. Two opposing corners have had a small chip taken out. 247 which is very worn, with only one large perforation remaining, may have been a mounting. 245 is perhaps a rough out for one.



ILL. 38 : Miscellaneous bone objects. Scale 1/2

Handles (Ill 38)

There are two socketed handles, 255 and 256 both made from sheep or goat metatarsals pierced centrally with the distal end hollowed out. Unstratified objects 251 and 257 may have been parts of similar handles.

Hollow Bird Bones (Ill 38)

There are two hollow cylinders (240, 241) pierced laterally, each was made from the long bone of a large bird, possibly a goose. A third, 242, came from middle Norse horizon Midden a, just above the lower Norse horizon Passage 1. These are common objects from house sites in Norway (Petersen 1951, 323, fig 177) and are described variously as 'otter whistles' or 'needle cases'. One example was found in a Norse grave on Oronsay (Grieg 1940, 43, fig 24). It may be relevant to mention that

Dr Sellar in his analysis of the bone material below Room 5 (Appendix 8: 2) mentions otter bones and the possibility that there were tame otters on the Brough.

Pins with iron shanks and globular heads (Ill 38)

Three pins of this type, 259-261, were found in the lower Norse horizon. Another (262) was found in the Pictish horizon. It is generally accepted that they are a native type (Stevenson 1955, 292-3).

Beads (Ill 38)

263 and 264, are beads with large perforations cut from tusks, possibly of seal.

CLAY

Tuyères and Blowpipes (Ill 25)

405 is a fragment of a tuyère probably used for iron working, while 406 is a fragment of a blowpipe (O'Kelly pers comm). Both were found in Area X, possibly contemporary to the lower Norse horizon.

BRONZE

Pins (Ill 39)

There are only three bronze pins from the lower Norse horizon. The smallest, 418, is of a Pictish type with spatulate head. 422, a ring pin with free circular head and the point of the shank flattened, is an Irish type but with a wide distribution. Another bronze pin, 425, now badly corroded, has a lozenge shaped head resting on a collar; when found there was a small protuberance at each point, now missing; the edges on the front side are decorated with short oblique engraved lines. In his article on Irish bronze pins of the Christian period, Armstrong (1922, 85, fig 410, pl 13) mentioned a pin resembling 425; this is one of a number of Irish type pins found in York (Waterman 1959, fig 11, 15). Two other bronze pins of well known Irish types from Area III can be placed in the same group as 425; both types are described by Armstrong (1922, 76, fig 23b); 423 is bramble headed, 52 mm long (the shank incomplete) and 424 is crutch headed; a parallel for the latter, found in the Outer Isles, is in the Mackenzie Collection (Close-Brooks and Maxwell 1974, fig 2: 974).

421, is an Irish enamelled pin with a fixed ring. The head is complete although the shank is broken. Long rectangles of yellow alternate with short panels of blue on a green ground now faded to white. A close parallel, now in the National Museum of Ireland, was found in a crannog in Ireland, the panels on this example differing, being in threes instead of fours, and with an additional square panel between the head and the shank (Armstrong 1922, pl 16, fig 1. Henry 1936, 243, fig 13). 421 was found in Area X, overlying Pictish Zone 1, it may belong to the lower Norse horizon, but the stratigraphy is uncertain.

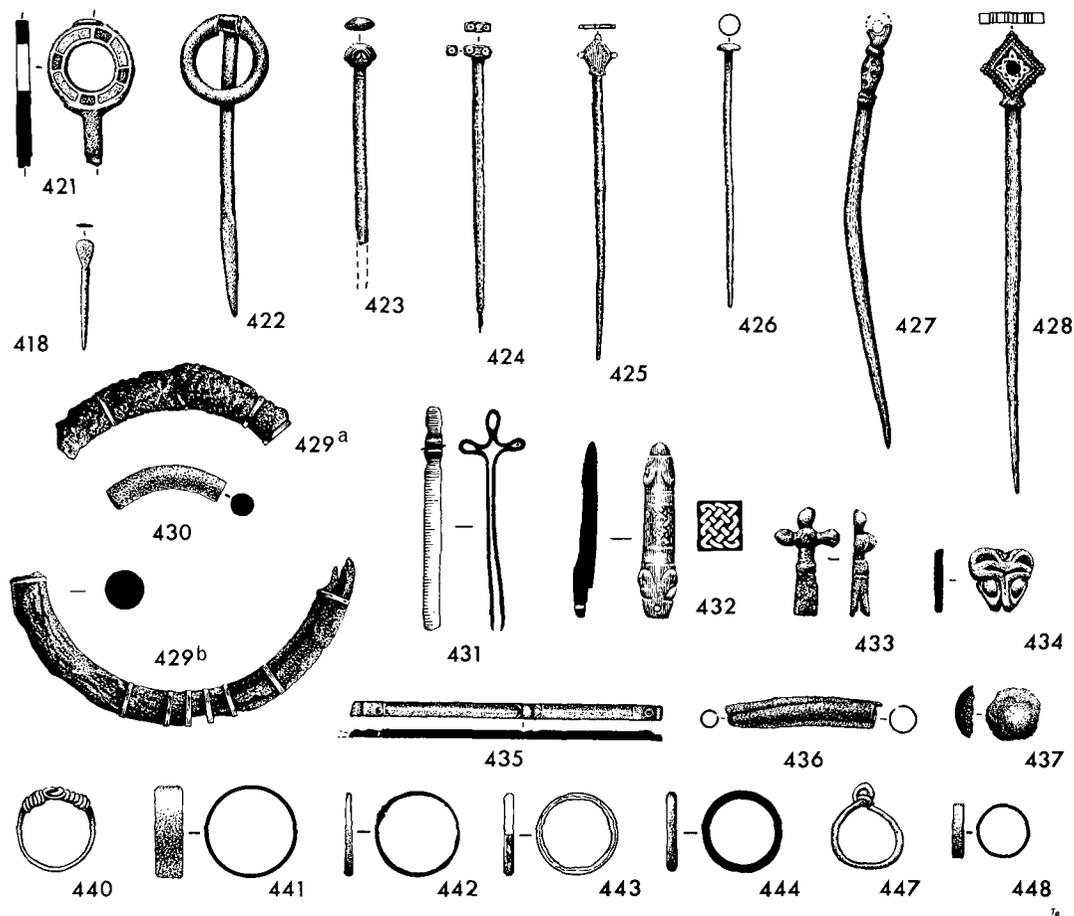
Finger and other rings (Ill 39)

There is a group of three rings; 440, a finger ring of wire with the ends entwined to form a bezel, is a well known type found in England from the Anglo-Saxon period (British Museum Guide to Anglo-Saxon Antiquities, 1923, 45, fig 45). Two other rings, 442 and 443 are both made from thin sheet bronze folded over to form a circle.

Penannular brooch and fragment (Ill 15)

One of the most interesting finds from the whole site is a bronze penannular brooch, 452, found on the paving of Room VI. It was in five fragments, the only part missing being half the cartouche. It is the same type of brooch as that shown on the matrix of mould 298 (Ill 13) but larger, 70 mm across the hoop, and with rather more elaborate terminals, showing a less degenerate version of the animal head between two horns. The central setting also shows signs of a linear decoration of

close-set short oblique lines and central perforations implying attachment of glass studs. Here is a brooch which one can assume to have been cast on the Brough and in the very pattern of a St



ILL 39 : Bronze pins, rings and tweezers. Scale 1/2

Ninian's Isle brooch. This raises an interesting question as to whether the Norsemen acquired it by raiding, trading, or gifts. Often native brooches were found in Norse women's graves. A fragment (453) may be from the terminal of a similar brooch.

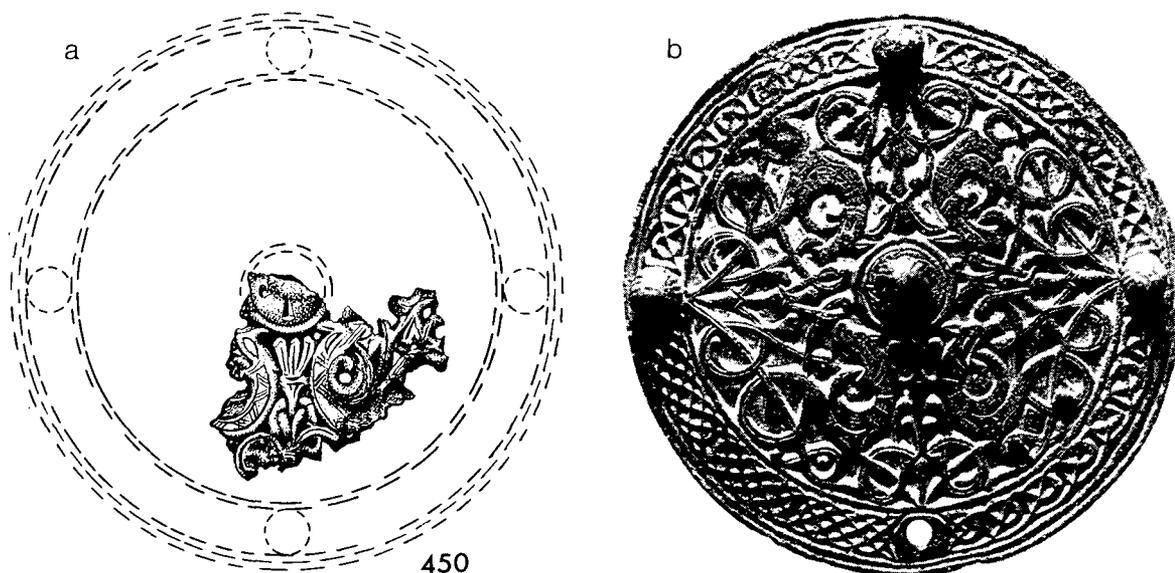
Tweezers (Ill 39)

431 is a pair of tweezers made from a single strip of bronze; a fragment of wire held inside the loop of one of the arms. It is not an uncommon Norse type (Gustafson 1906, 116, fig 499). Graham-Campbell (1980, 50-1: 177) cites a similar pair which have suspension-loops of bronze wire through each arm, from one of which hangs a small toilet article.

Gilt-Bronze Disc (Ill 40)

One of the most puzzling finds was a group of four fragments of a gilt-bronze ornamental disc, 450, found on the paving beneath the layer of ashes in Room VI. The largest fragment, measuring 45 mm by 35 mm, is in a less damaged condition than the other three and on it sufficient detail can be distinguished of entwined animals and foliage to identify the design with that on the central part of a circular gilt-bronze disc from Hillesøy, Tromsø, in Norway, found in a woman's grave of the 9th century (Sjøvold 1951, 127). Not only in design but even in details of casting, the two

are so similar that even though the border, consisting of panels of interlacing on the Hillesøy disc, is too damaged for identification on the Birsay find, it seems at first glance possible that they were cast from the same master pattern. The Hillesøy central boss is ornamented with a design of curving



ILL 40 : (a) Gilt bronze ornamental disc fragments 450 (b) ornamental disc from Hillesøy, Tromsø, Norway (not to scale)

lines and dots, while on that of the Birsay fragment an equal armed cross with slightly expanded arms can just be distinguished and appears to have been cast but could have been engraved subsequently. The other differences are secondary to the casting; the Hillesøy animal bodies are decorated with rows of incised short horizontal lines set between vertical bars and with decorative dots, those of Birsay with oblique opposing incised lines between narrow borders.

The Hillesøy disc is well known and has been discussed in detail by Dr Bruce-Mitford (1956, 199, pl 31b) and Mr Bakka (1963, 6-11, figs 1-4); both agree that it is Anglo-Saxon in origin and an 8th-century piece. Bakka states that it had been re-used as a brooch and that the pin mechanism is secondary. He considers its original purpose uncertain.

Bar (Ill 39)

435, a bronze bar, 83 mm long and 4 mm wide, is triangular in section, one end is fractured; at what may have been the centre is a transverse depression with two possibly zoomorphic figures on each side. The end which is complete has two transverse ridges and is perforated. At the fractured end two somewhat broader transverse ridges survive.

IRON

Iron was in use in all the Norse phases. Fragments of iron objects were common although many were too fragmentary and corroded to be identifiable.

Some or all of the various individual items could well have been of local manufacture. There was evidence of iron working at all levels, chiefly in the form of iron slag and small indeterminate pieces of corroded iron, but more specifically the tuyères already described and two furnace bottoms, 499 and 500a; 499 is from middle Norse horizon midden c and 500a from lower Norse horizon Room V, Phase 4a. But more detailed evidence must wait for Mr Hunter's reports on iron furnaces on other parts of the Brough.

Nails (Ill 41x)

The only objects found in any quantity were nails. One group of these is of particular interest because it was found in the drain, or duct, running along the S side of Room VI, sealed in beneath the layer of ashes and the subsequent deposit of sandblow. It is composed of at least twelve broken boat nails, recognised as such because two, 492 and 497 have the 'roove', a flat disc resembling a washer approximately 25 mm in diameter, still attached to one end of the nail, the head being missing; while another two, 491 and 494, have the flat head, 15 mm and 11 mm in diameter still in place but no roove. The modern method of fastening the planks of clinker built boats uses copper instead of iron nails but the technique is otherwise unchanged: the end of the nail, inserted through a prepared hole in the overlapping planks, protrudes through the roove; a larger hammer is then held against the head of the nail while the end, which has been cut off, is riveted or 'clinched' over the roove. Other nail fragments (496, 498) found with this group are almost certainly also boat nails.

Rings (Ill 41)

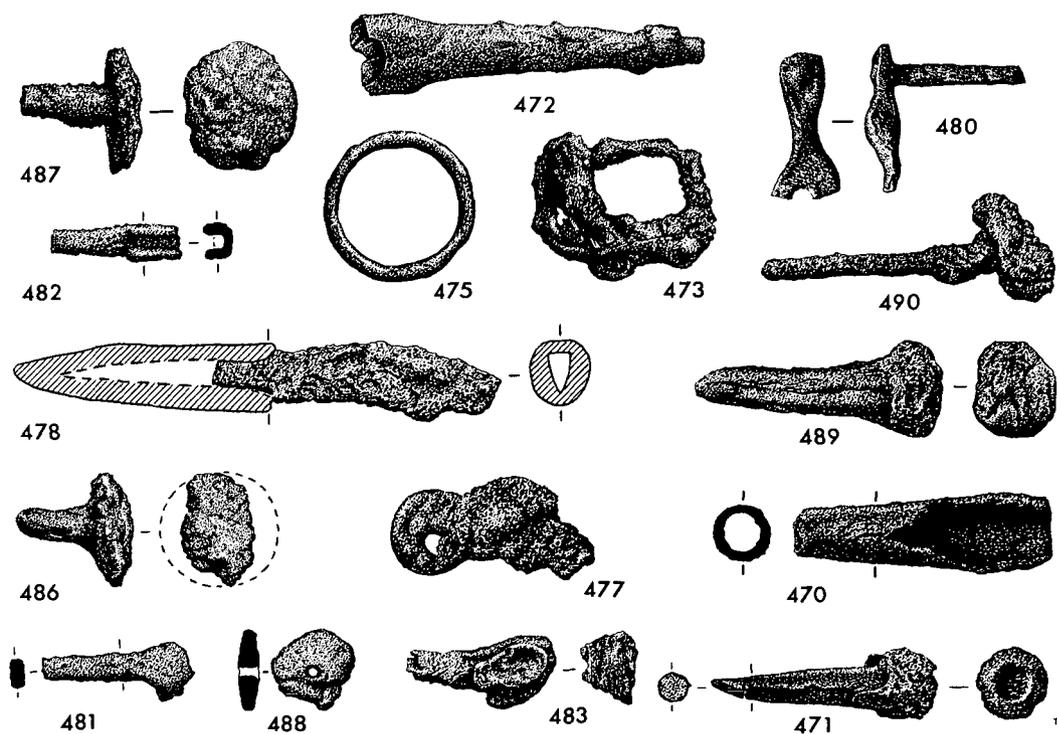
475 has an inner diameter of 40 mm and is oval in section. 474 is rather smaller with an inner diameter of 30 mm and is flatter in section. Such rings were common in Norway and formed part of a variety of objects from harness mounts to vessels handles.

Buckle (Ill 41, 41x)

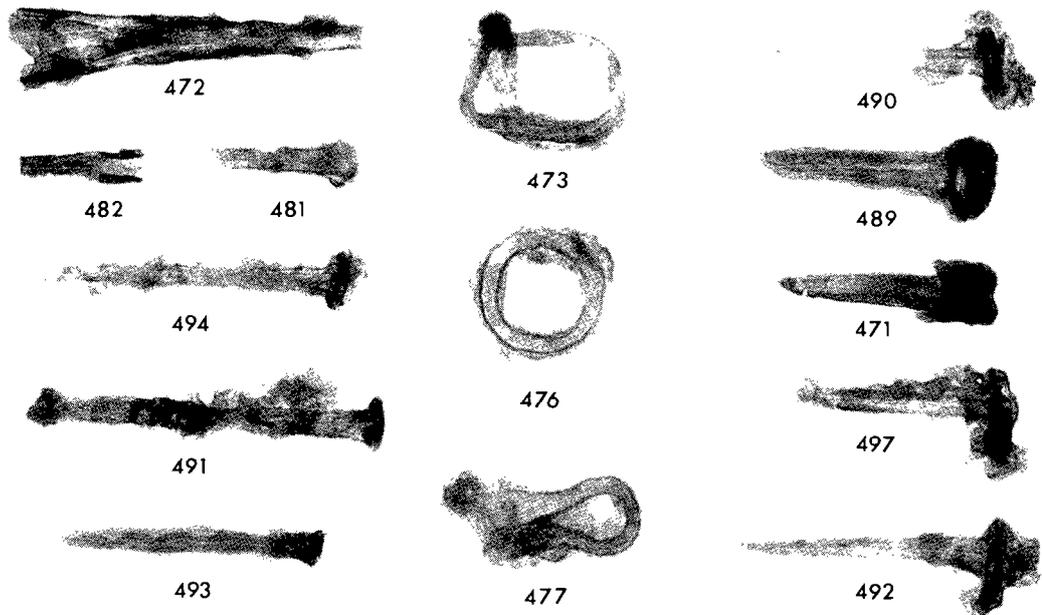
473 is a buckle, it is bent out of shape but the X-ray photograph reveals the pin to be still in place.

Handle (Ill 41, 41x)

477 is part of a handle made from a circular rod bent round and the ends flattened to form a plate. Parallels from Norway include handles from iron vessels (Petersen 1951, 526, fig 198).



ILL 41 : Iron objects. Scale 1/2



ILL 41x : X-ray photographs of iron objects

Knife (Ill 41)

478 is a small knife blade with part of a tang.

Socket (Ill 41)

470 from Area X is part of a large socket, 66 mm long, the point is missing and part of the other end is flattened and bent round.

Bars (Ill 41, 41x)

482 is the remnant of a small bar, with one end flattened and the sides turned in. 485 is part of a long flat strip.

LEAD (Ill 53)

505 is a small object in the shape of a spindle whorl but with a very small perforation approximately 20 mm in diameter; it may possibly have been a washer, but it has been damaged by fire and the base is incomplete. It is the only lead from the lower Norse horizon.

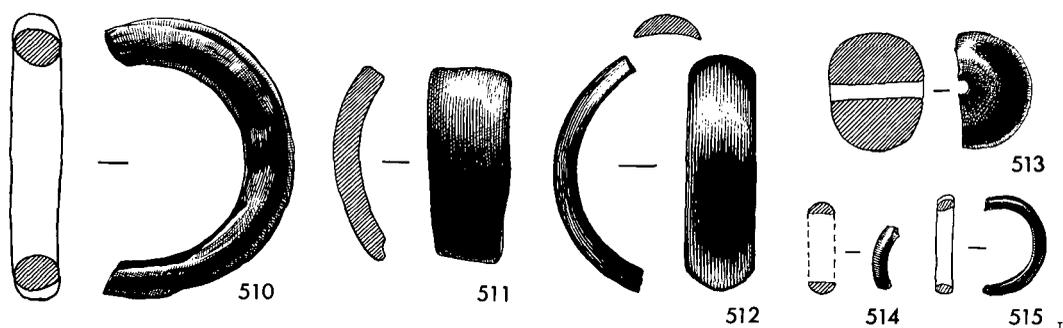
JET

Armlets (Ill 42)

There were two jet armlets, both incomplete: 511 with a wedge-shaped section and inner diameter of 63 mm and 512 with a D-shaped section and inner diameter of 60 mm. Jet armlets were clearly in common use and particularly so in Ireland; at Carraig Aille alone there were thirty-three fragments (O'Riordain 1949, 87, fig 17).

Bead (Ill 42)

513 is a large circular jet bead, 20 mm diameter, broken in half and with the perforation off-centre.



ILL. 42 : Jet objects. Scale 1/2

Finger and other rings (Ill 42)

Two fragments of finger rings were found, *514*, plano-convex in section, and *515*, oval in section. Both were approximately 20 mm in diameter.

STONE

A large proportion of the circular stone objects came from the lower Norse horizon in Area II. Some are undoubtedly spindle whorls; others because of irregularity of shape and size of perforation are doubtful. Some irregularity occurs in examples from both Jarlshof and Burrian and although accepted as spindle whorls they bear little relation to the carefully finished Norse types; possibly there were different requirements in spinning flax and wool. Other objects must simply be classed as perforated discs of unknown use, possibly weights.

Spindle whorls—truncated cone (Ill 43)

There are only two of this type, *516* and *517* both of steatite and almost the same size, 32 mm and 34 mm in diameter, 22 mm and 19 mm in height; in both the perforation is larger at the base and tapers to a smaller size at the top. This type is common in Norwegian graves (Petersen 1951, 523, fig 164).

Spindle whorls—dome shaped (Ill 43)

522, 50 mm in diameter and 15 mm high, of laminated sandstone, is a larger and flatter type than the truncated cone. The perforation is only slightly larger at the base than the top, narrowing from 11 mm to 9 mm.

Spindle whorls—discoidal (Ill 43)

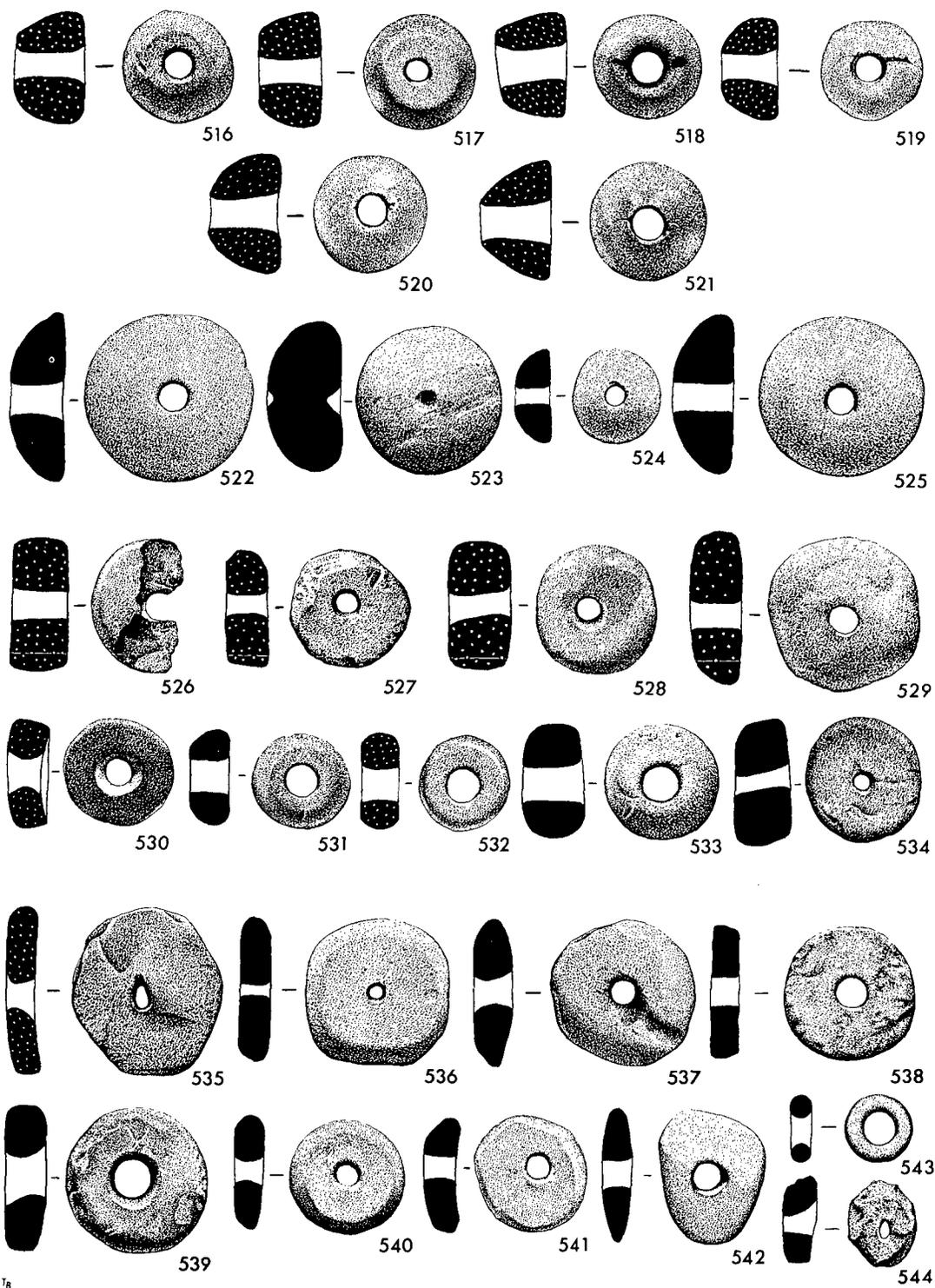
538, of fine grained sandstone, is 41 mm in diameter and 10 mm high, straight-sided. This is a type found in Norse graves (Petersen 1951, 523, fig 166). *540*, of siltstone, is 34 mm in diameter and 7 mm high with curved sides.

Spindle whorls—ring shaped (Ill 43)

532, of steatite, should perhaps be classed as a ring rather than a whorl. The diameter of top and bottom are the same, 27 mm. It is 15 mm high, with curved sides and a large perforation of 11 mm.

Discs of uncertain purpose (Ill 43)

Discs (*528*, *537*, *539*, *527*, *546*, *591*), variously made of steatite, claystone and sandstone, could not be classified.



ILL 43 : Stone spindle whorls and discs. Scale 1/2.

Whetstones (Ill 44)

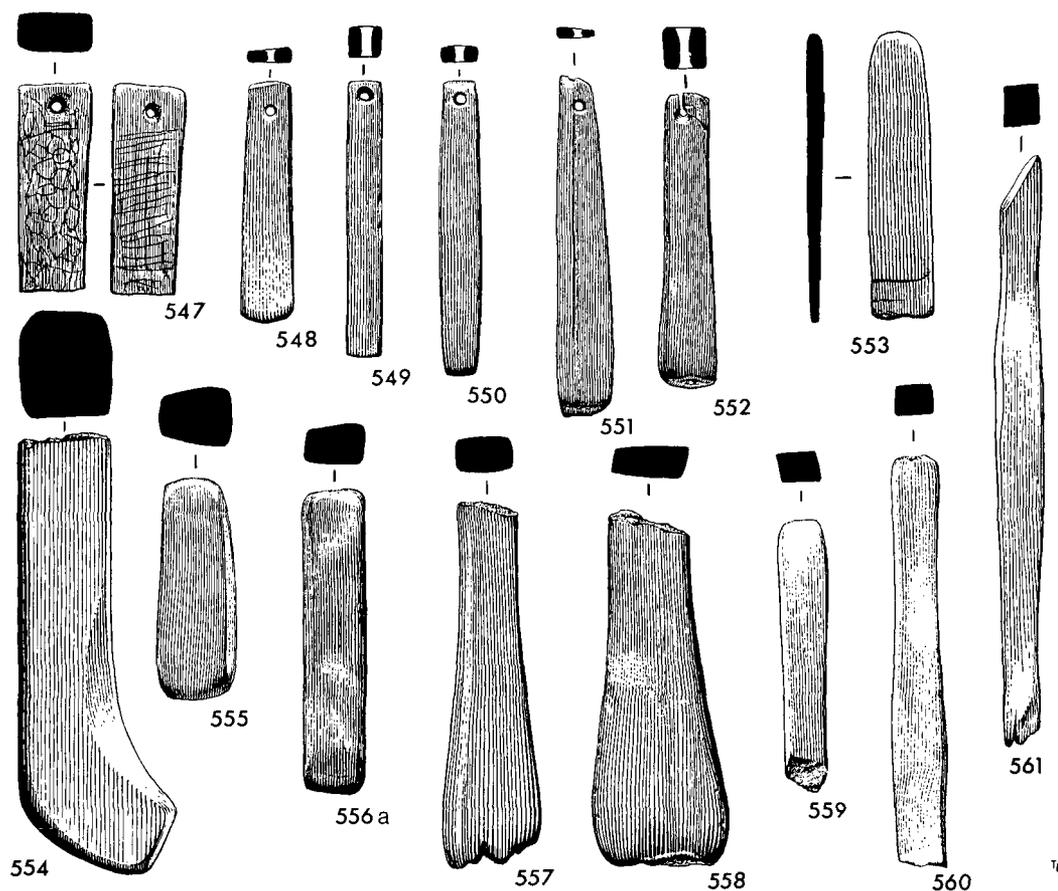
There were five whetstones from the lower Norse horizon and for the most part they are large and heavy with rectangular or square sections. 554 (Ill 44) 115 mm long, is of siltstone, almost square in section with an unusual upturned end. 566 is one of the few examples that are unbroken. It is rectangular in section, 200 mm long, all the edges rounded. 556*b* is small in comparison, 112 mm long, the edges rounded and smooth from handling.

There are two exceptionally long whetstones of slate, 568, from Area II but unstratified, is 246 mm long, and roughly square in section, the edges still distinct except near the centre where they have become smoothed through handling. The ends are squared. 567 from the lower Norse horizon, Room VI, may have been even larger but it is incomplete; its present length is 220 mm. The section is irregular but the edges are still sharp.

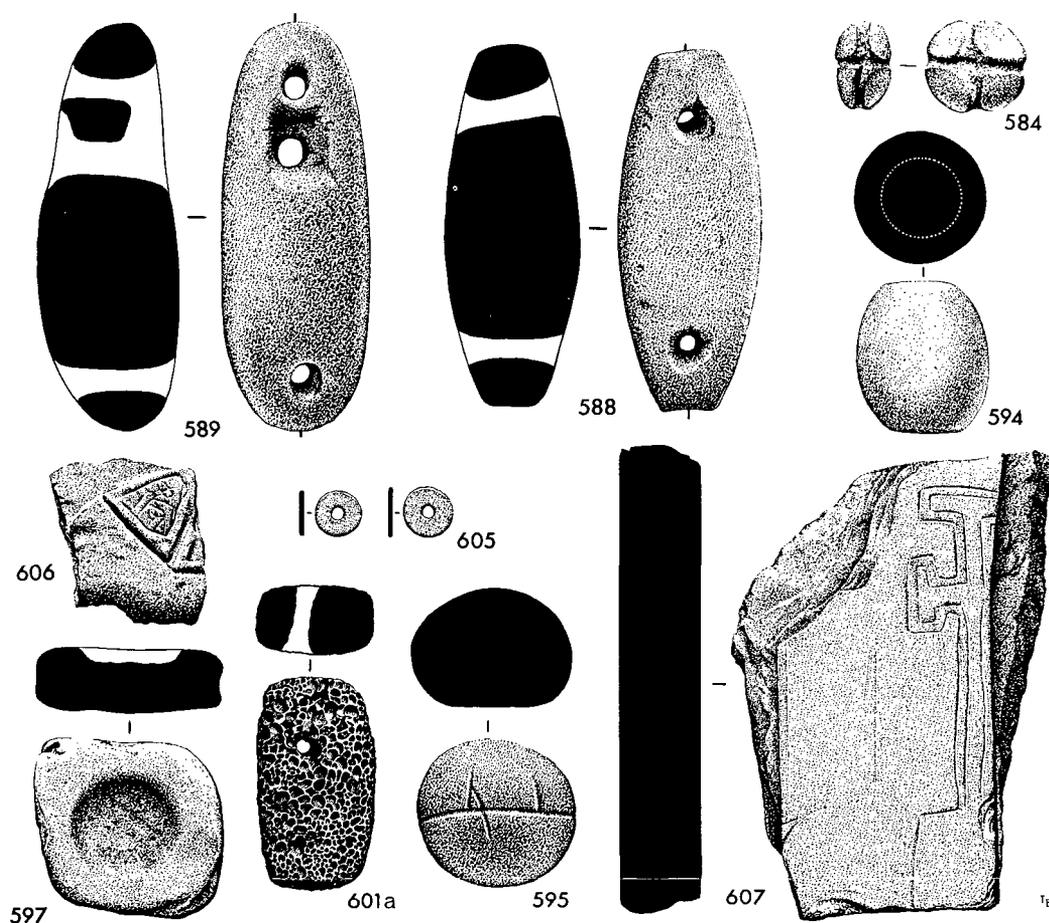
Finally there is a natural piece of fine grained sandstone, 565, 160 mm long, with signs of use as a whetstone.

Ball

596 is a granite ball, 53 mm in diameter. A similar ball, although larger with a diameter of 60 mm, was found at Cahercommaun (Hencken 1938, fig 37: 90). About 200 smaller stone balls were also found at Birsay in Room VII, scattered over the paved floor. They were not marked by fire and so it is unlikely that they were for heating water. It has been suggested that they may have been used as loom weights. They have not been catalogued.



ILL 44 : Whetstones. Scale 1/2



ILL 45 : Miscellaneous stone objects. Scale 1/2

Barrel shaped object (Ill 45)

594 is a barrel shaped object of sandstone with flat top and base.

Trial piece (Ill 45)

606 is a broken fragment of sandstone showing part of what would have been a circular pattern formed of triangular segments. One segment is complete, a triangle outlined by double incised lines, infilled with random incised markings, a small corner of the base of a second adjoining segment remains.

Worked stone: sandstone (Ill 45)

597 is a rectangular natural sandstone approximately 45 mm square with a natural shallow circular depression at the centre accentuated by pocking.

Pumice Stone (Ill 45)

Two pieces of pumice stone (601a, 601b) were found; both were shaped and perforated. MacGregor (1974 92-3) has pointed out the frequency of pumice on coastal sites. It is suggested that pumice could have drifted from Iceland to the N and W beaches of Scotland. The Birsay objects might have been used as abrasives but the pumice shows no sign of wear and use as fishing floats is an alternative possibility.

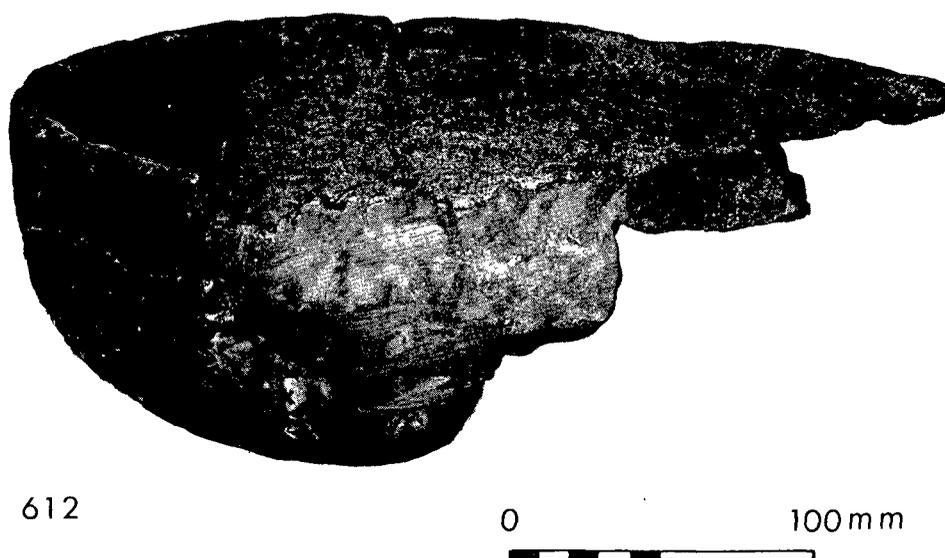
Stone weight (Ill 45)

584 a grooved line sinker, is discussed with those from the middle Norse horizon.

Steatite vessels

Few fragments of vessels were recovered and the majority of these came from Area III. Fragments of three vessels were found in the lower Norse horizon (619, 620b, c).

The only nearly complete steatite vessel from the site, 612, came from the possibly contemporary Area III (Ill 46).



ILL 46 : Steatite vessel

GLASS

Beads (Ill 55)

There were three glass beads (650, 654, 656) from the lower Norse horizon. 650 is an opaque white cylindrical bead decorated with a crudely wound trail in red and blue, and 656 is a fragment of an opaque blue circular bead. 654 is also opaque blue with four segments.

THE MIDDLE NORSE HORIZON

The central groups of rooms of the middle Norse horizon, Rooms 1-11 formed a solidly built complex, some of the walls still standing nearly a metre high with the outline showing beneath the turf (Ill 5: 1). Although some of the internal walls were shared, the dwellings were not intercommunicating; their main doorways lead outwards. The builders evidently used a number of dressed stones from the earlier constructions mingled with natural boulders and slabs. They seem to have been unaware of the elaborate system of drains passing beneath some of the floors, although they must have benefited from it. The floors were roughly paved. The hearths of Rooms 1 and 5, which were two of four rectangular central hearths, were almost undamaged, with the base paved and upright slabs along the sides and across one end (Ill 47). Traces of other central hearths survived elsewhere in the complex. The two rooms which extended E to the cliff edge, 9 and 10, had no hearths, and their



ILL 47 : The middle Norse horizon: Room 5

walls, built partly on top of earlier walling, were less well-preserved; the E wall of Room 9 had almost disappeared. Room 12, of which little remained, was completely detached.

Three areas described as Middens a, b and c presented a problem of stratigraphy. They were not built over during the middle Norse horizon and were evidently used as rubbish dumps. These middens lay respectively over the lower Norse horizon Passage 1, Room VII and VIII, the Boat Slip. Middens a and b were filled with loosely packed stones, earth and shells. Twenty-five objects were found in Midden a, some, such as five broken nail-headed pins, had apparently been discarded in groups. Midden b yielded thirty-two artifacts, animal bones, a fragment of a human skull, a human femur and much shell. Midden c, over the Boat Slip, yielded few artifacts and was largely filled with a great mass of peat ash. It had gone out of use perhaps due to a cliff fall or a change in the activities of the inhabitants of the Brough. The finds from these three areas have been classified on the assumption that those found on the paved floors belonged to the lower Norse horizon, and those in the midden fill to the middle Norse horizon, regardless of typology. None of the finds on the paved floors are types distinctive of the middle Norse horizon, but those from the midden fill include some objects which may have been long discarded at the time of deposition.

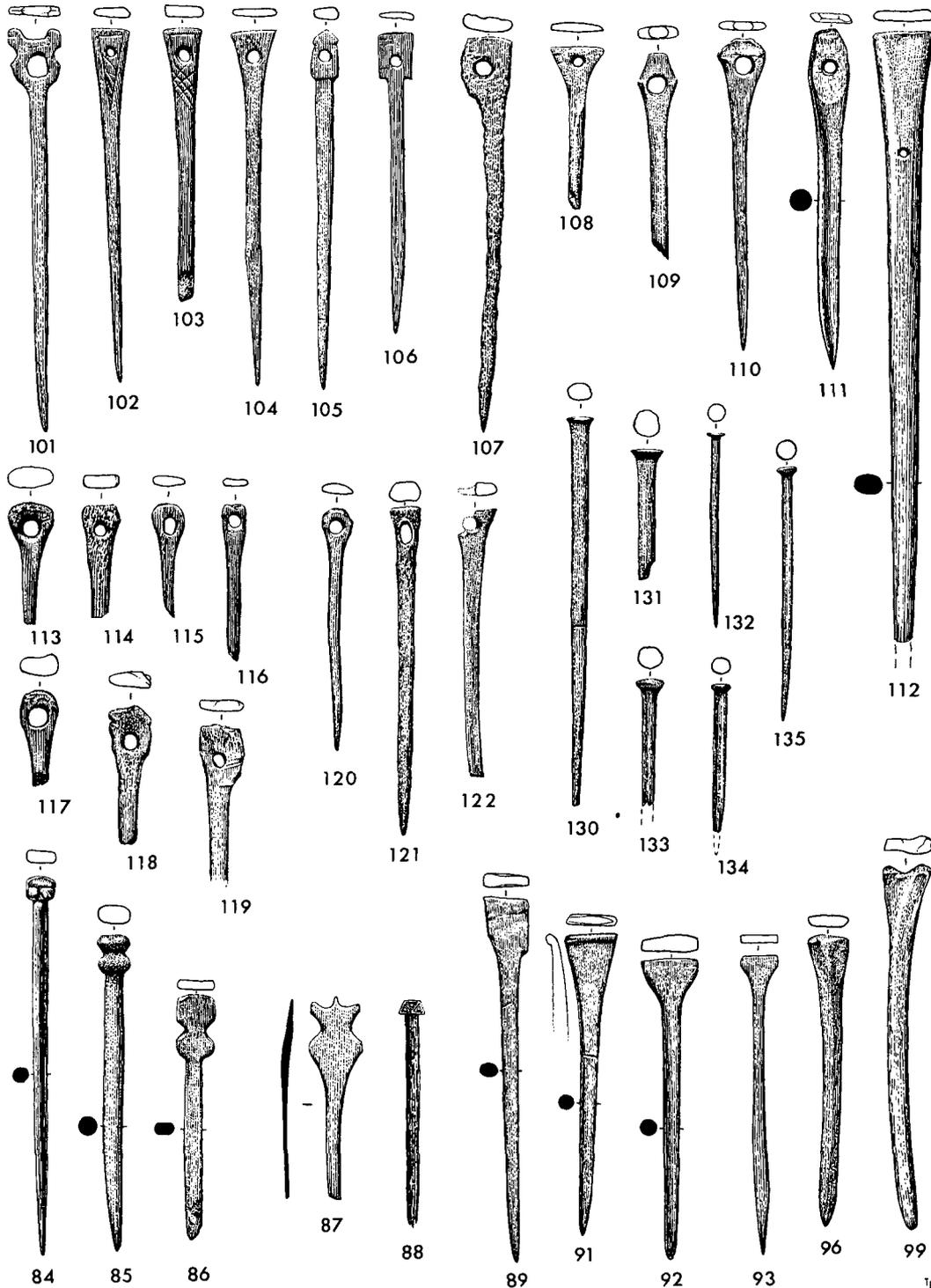
BONE AND ANTLER

Small pins: hipped type (Ill 7)

In contrast to the number of Pictish pins found in the lower Norse horizon, only two, 4, 42, were found in the middle Norse horizon. 4 had a finely carved animal head, and 42 was a common type with ball head, constricted neck and swelling shank.

Larger pins (Ill 48)

Only six large pins without perforations were found. 83, is incomplete with a carved, globular head and incomplete shank. Four others (91, 93, 96, 99) were skewer types all made from pig fibula with flat expanded straight-topped heads. A fifth of the same type (100), was possibly made of whalebone.



ILL 48 : Large bone pins. Scale 1/2

Large pins with perforated heads (Ill 48)

Large pins with decoratively carved perforated heads were not found in the lower Norse horizon, but were typical of the middle Norse horizon at Birsay. Perforated pins have been found on other sites, for example Burrian, and it has been suggested (MacGregor 1974, 71) that the perforation was for attaching a cord which would have been tied round the point to keep the pin in place.

Most of the pins at Birsay were clearly dress pins; there were six distinctive head types. With one exception all the pins were of long bone, all have flat heads.

Two are decorated with incised lines; on *102*, a triangle with zig-zag lines at the point surrounds the unusually small perforation, and on *103*, the top and sides of the head are outlined with a single line with irregular cross-hatching below the perforation, the shank is broken. These have parallels at York (Waterman 1959, figs 12, 14). *104* has a straight expanded top and a large perforation, the shank giving the impression of being hipped. *105* has a rectangular head surmounted by a pediment. *118* is also of this type although very rough and worn. *106* has a plain rectangular head. *119* has an eccentrically placed flat head. Finally *110* has an angular head with a large perforation. All these pins were perhaps the equivalent of the long bronze pins with decorative heads.

There was a separate group of four pins (*113*, *115*, *117*, *120*) with annular heads, roughly made and, with the exception of *120*, all with incomplete shanks. They were indistinguishable from pins from Scandinavian sites (for example: Anderson et al 1971, 110). They may have been needles.

Two other exceptional pins, *111* and *112*, were evidently not dress pins. Both were from the long bones of large animals. *111* has a flat head and a very thick shank ending in a sharp point. *112* is an extremely long pin measuring 160 mm even though the shank is incomplete; its head is straight and flat and the perforation is small and set low.

Nail headed pins (Ill 48)

There are eight nail headed pins, *130-137*, from the middle Norse horizon. The longest is 117 mm, the smallest 58 mm. They are of long bone or antler. Pins of this type, of bone or bronze, have been found on many sites, for example from Burrian (MacGregor 1974, fig 5: 10), from a Norse house in South Uist (MacLaren 1974, pl 2) and from Cahercommaun (Hencken 1938, 38, fig 23: 47).

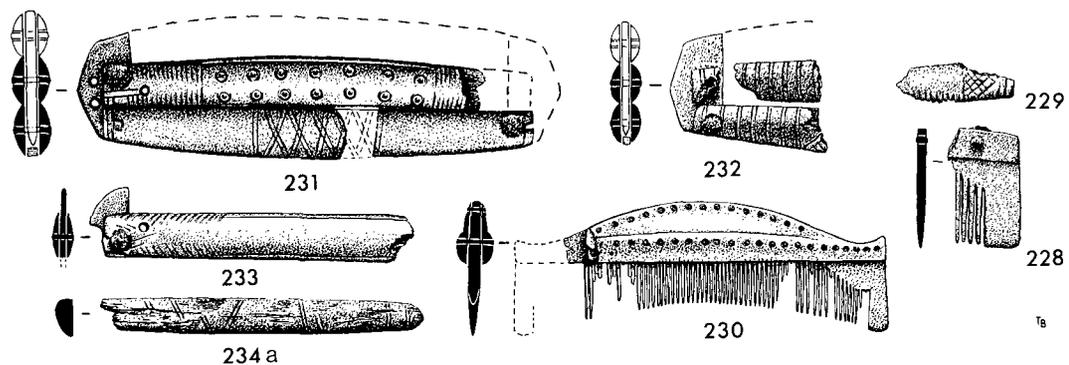
Stevenson (1955, 286) traces their descent from Romano-British pins and mentions moulds from the Mote of Mark and Dunadd with matrices for this type of pin. None of the pin moulds from Birsay are for this type of pin.

Needles (Ill 35)

There are only two (*161*, *162*) needles from the middle Norse horizon and they are netting needles.

Combs: single-sided (Ill 49)

The only comb from the middle Norse horizon, *228*, is possibly part of a single-sided comb which could have been used with a comb case. It consists of part of an end tooth segment with a fragment



ILL 49 : Combs and comb cases from the middle Norse horizon. Scale 1/2

of a connecting plate attached to it by an iron rivet. It resembles those from the comb cases from Skail (Wainwright 1962, pl 16) and from York (Hall 1976, fig 12) and also a single-sided type of comb from Lund (Blomqvist 1942, 143, fig 22).

229 is a small fragment of connecting plate from the possibly contemporary Area III, House Site C. It shows two vertical incised lines at the end, and then a short panel of cross hatching, and bears a resemblance to the comb belonging to the comb case from York previously cited.

Comb cases (Ill 49)

There are three comb cases from the middle Norse horizon, one nearly complete and the other two in fragments. 231 is nearly complete, 120 mm long, and consists of one separator with a pair of holes for suspension, and the major part of both connecting plates, the upper one with a perforation intended for the insertion of a peg to hold a comb in place. Both ends of the upper plate are decorated with vertical incised lines, and the central area with two rows of dot-in-circle; the lower plate has been broken near the centre but it is sufficiently complete to show that the ends were plain and the decoration confined to a central panel filled with oblique cross strokes forming a lozenge pattern. A comb case, complete with comb, was found in Orkney in a grave at Skail (Wainwright 1962, pl 16) and the lower connecting plate of a comb case from Jarlshof (Hamilton 1956, fig 77: 8) resembles the lower plate of the Birsay case. Examples from Scandinavia are cited by Blomqvist (1942, fig 4), but the closest parallel is from York (MacGregor 1978, 48, fig 29: 11).

Only fragments remain of the other two comb cases (232, 233). 232 would have been similar to 231.

Spindles whorls (Ill 38)

There are three bone spindle whorls, 235, 236 and 237, all hemispherical in shape and all from the femur heads of ox or deer. An unstratified example, 238, is similar but badly burned. This type also occurs at Birsay in steatite. It was common in Ireland; for example twenty-one made of ox femurs, came from Cahercommaun alone (Hencken 1938, 43-4, fig 27).

Playing Piece (Ill 38)

271 is a playing piece made of a femur head; it is 25 mm high, the base socketed centrally. A number of similar playing pieces came from Kilmainham in Ireland (Bøe 1940, 54, fig 36) and from Dorestad (Roes 1965, 55, pl 23: 178), and others are illustrated by Rygh (1885, 474a and b).

Pierced bones (Ill 50)

Two bones were found pierced at each end. 280, 125 mm long, is from the metatarsal of a very young calf; 281, 66 mm long, is also from the metatarsal of a juvenile animal, either sheep or goat. 282, a third metatarsal, this time from a young pig, is pierced centrally and may have been a toggle for clothing, or used in some sort of game; it was unstratified. It is a type also found in York, and Waterman (1959, 93, fig 19: 18) suggested its use as a toggle for clothing.

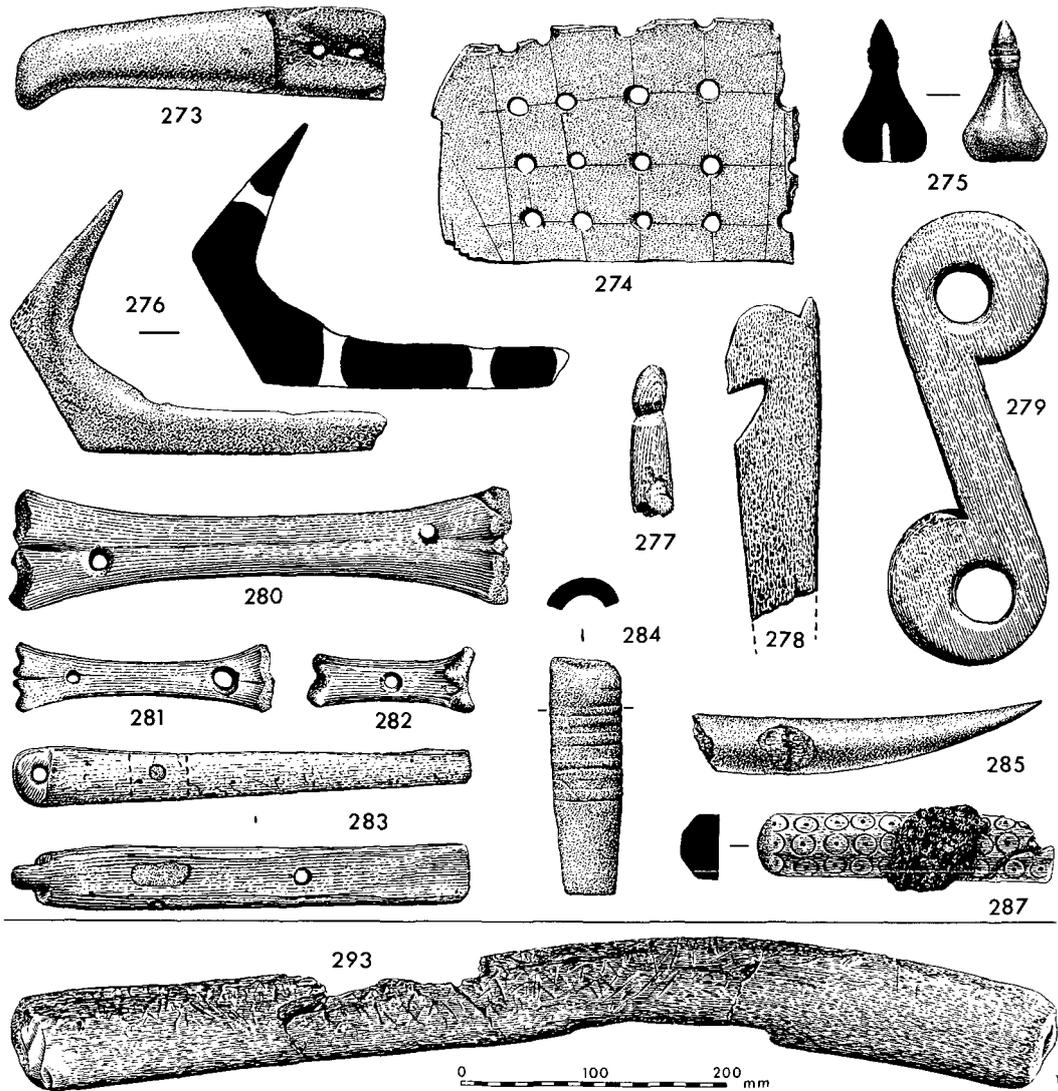
Unidentified tool (Ill 50)

283 is 112 mm long and slightly wedge shaped, with the top cut and perforated to form a ring; it is also pierced laterally lower down the shaft. For a tool of such complexity it is rather roughly shaped. The surface has a slightly oily feel which suggests contact with wool.

Miscellaneous antler

285 (Ill 50) is an antler tine, polished and smoothed with the tip sharpened, broken off near the root, with a wide V-shaped cut on one side.

286 is another antler tine, with transverse cuts around the end and apparently pierced by an iron rivet. It was unstratified.



ILL 50 : Miscellaneous bone and antler objects. Scale 1/2

252 (Ill 38) is a small highly polished, crescent shaped object, 28 mm wide with the points broken off. It is decorated with three large dot-in-circle with three small dot-in-single-circle below. The back is flat with a short round-ended groove cut out at the centre of the inner curve. It is possible that the broken points could have formed prongs, but its original form and purpose are not known.

Handle (Ill 50)

284 is half a circular hollow handle 60 mm long, which has been broken longitudinally and is decorated with wide bands of low relief. It could be from an antler cortex or a large tine.

Panel (Ill 38)

244 is a small rectangular panel, 37 mm × 14 mm, shaped from the plate of an antler cortex; one end is stepped and cut by a large oblong slot with rounded ends. It is decorated on both sides with two small dot-in-circle.

Hook or Bracket (Ill 50)

276 is a hook shaped object of unknown use, possibly a bracket. An incomplete shaft, perforated in two places, meets the base at an oblique angle; another exterior angle separates the base from an upturned sharp point, which is also perforated; the perforations are cut from either side. It has been made from the crown portion of antler, probably red deer, and is 80 mm long by 40 mm across the flat base.

Bird bone

242 (Ill 38) is a hollow cylinder, pierced at the centre, from Midden a. It is similar to 240 and 241 from the lower Norse horizon, Passage 1, immediately below.

Fishbone (Ill 50)

277 is an incomplete toggle or handle, 40 mm long, with a rounded end and constricted neck, made from the bone of a large fish.

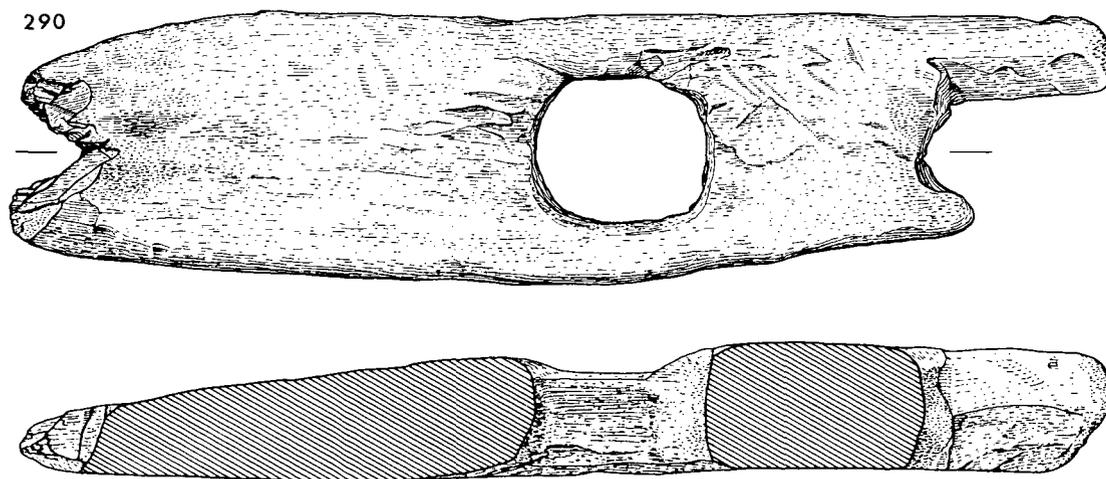
WHALEBONE

Notched peg (Ill 50)

278 is a large wide notched peg with flat section, 80 mm long, the shaft tapering but incomplete.

Line stretcher or Guy (Ill 50)

279 is a 'line-stretcher' in the form of a figure-of-eight, 118 mm long. It is a well known Norwegian type. There are two examples made of whalebone, from Vestfold and Rogaland, and one made of wood from the Oseberg ship (Petersen 1951, 522, fig 153, 154). These are now thought to have been used in connection with tents rather than boats.



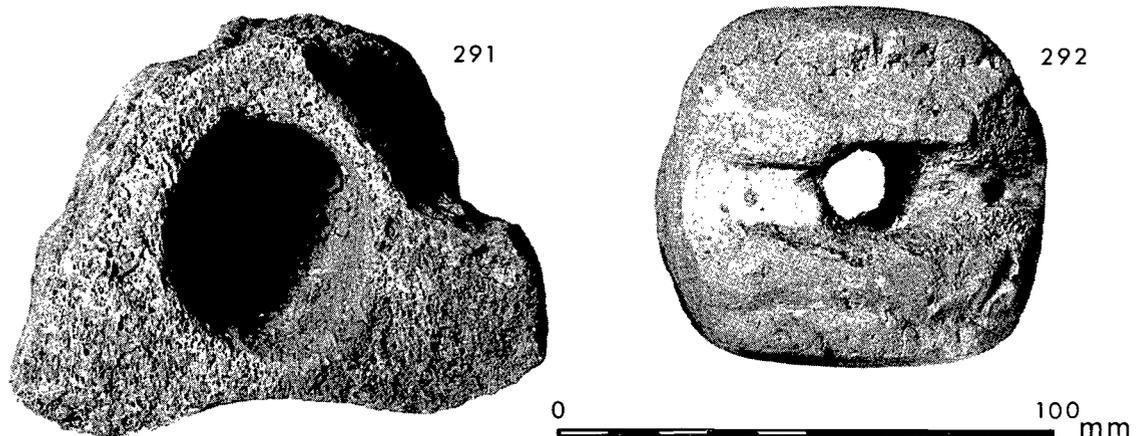
ILL 51 : Perforated whalebone implement. Scale 1/2

Miscellaneous

290 is a large whalebone implement, 290 mm long, with a large circular perforation at the centre; one end has wide V-shaped cut and the other end is a blunted hook showing considerable signs of wear (Ill 51).

288 comprises two roughly cut blocks of whalebone, 85 mm × 60 mm × 6 mm and 90 mm × 63 mm × 8 mm; they were found together on the paving at the edge of the cliff just outside

the sunk hearth of Room VI. It seems probable that they had been washed down with the loose earth from the middle Norse horizon above and are therefore included in this section.



ILL. 52 : Whalebone objects

291 and 292 (Ill 52) were objects made from two blocks of whalebone; both have been lost. 291 was roughly triangular in shape with a large cup-shaped hollow approximately 100 mm in diameter in the centre. 292 was roughly square with rounded corners, 100 mm across, with a large perforation in the centre with wide grooves on either side. It may quite possibly have been used in ship's rigging. 293 (Ill 50) is part of a whale's rib, 750 mm long, the many cut-marks showing its probable use as a cutting-block.

BRONZE

Pin (Ill 39)

Pin 427 is 110 mm long but incomplete. The head is baluster shaped with a decoration of sunken dots placed haphazardly; a double raised collar separates it from the shank, and a single raised collar from a fixed ring of which only a part remains. It is a Norse rather than an Irish type. A parallel in the British Museum from Gotland (Curle collection) is attached to a chain 270 mm long. Another is from a grave-find from Bergan in Vestfold. The head is complete showing a small ring through the perforation (Petersen 1955, 26, pl 82).

Rings (Ill 39)

441 is a large heavy ring of cast bronze, 21 mm in diameter and 7 mm high. 444 is also of cast bronze, but plano convex in section. Matrices for similar rings occur on some of the Birsay moulds, such as 319 and 321 (Ill 18).

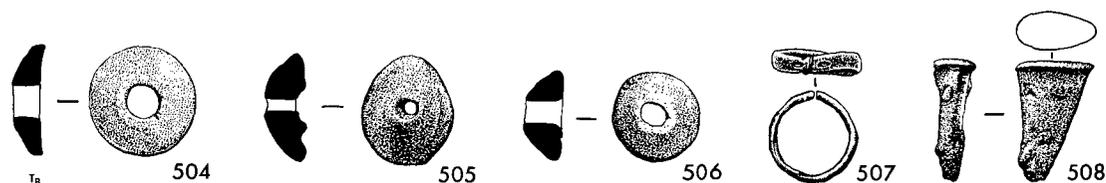
Strap-end (Ill 39)

432 is a strap-end, each end in the form of an animal head with laid back rounded ears. The larger of the two heads has oval protruding eyes and the square end is perforated, while the smaller has a short, rounded snout. The centre is filled with a square panel of angular interlace. A parallel to this strap-end comes from the Wirral in Cheshire (Bu'Lock 1960, 11, fig 4c) and an example from Ireland from Stokestown Crannog is in the National Museum of Ireland.

Mask (Ill 39)

434 is a small heart shaped animal mask in bronze. With its large rounded ears and round flat eyes it is clearly in the Borre style. The back is flat and four triangular nicks, almost certainly secondary,

have been cut round its edge, one between the ears, one on each side of the face and the fourth placed clumsily not quite in the centre of the muzzle. It closely resembles the animal masks found



ILL 53 : Lead objects. Scale 1/2

on many pieces of Borre style jewellery, for example on a small circular brooch from Nordheim (Petersen 1955, pl 48), where the animal mask is shown with the same winged eyebrows, on a tortoise brooch from Trøndelegan (Petersen 1955, pl 24) and also on ornamental horse trappings (Rygh 1885, 595a). The animal masks on the the Trøndelegan tortoise brooch were separate castings, as was usual with tortoise brooches of this period, and were pegged in from the back. The Birsay mask had no perforation at the back for a socket and therefore could not have been attached to such a brooch. Dr Madsen of the Danish Institute of Conservation (pers comm) has put forward as a possible, although not a probable, solution that it could originally have been a pattern die used in the manufacture of a tortoise brooch; one brooch having sometimes as many as seven identical animal heads attached.

Armlet (Ill 39)

429a is part of an iron hoop, 9 mm thick; it is encircled by eight open ended narrow bronze bands, some out of place and others probably missing. *429b* was unstratified but may very well belong to the same object, which may be an armlet. Its estimated diameter is 80 mm.

IRON

Not a great deal of iron survived from the middle and upper Norse horizons. *480* (Ill 41) is incomplete, probably broken in half, 40 mm long; a humped plate fractured at a perforation in the hump, and with a square iron nail through the surviving end. *472* (Ill 41, 41x) is a large socket, 90 mm long, the point broken off and the end split and expanded. *484* is a fragment of strip 90 mm long by 19 mm wide. One end is fractured and slightly expanded, the other cut half way down with a point extending below it. *481* (Ill 41, 41x) is a small rod 30 mm long, one end broken off, the other flattened and expanded.

499 is a furnace bottom from Midden c.

LEAD

Three lead objects survive (Ill 53). Two are small spindle whorls, *504*, 22 mm diameter, and *506*, 24 mm diameter. *508* is a small object with a flat oval base, 21 mm by 10 mm, tapering to a narrow top which is incomplete. A somewhat similar object from Southampton (Addyman and Hill 1969, 71, fig 28) is referred to as a weight.

JET

510 (Ill 42), the only piece of jet from the middle Norse horizon, is an incomplete armlet, oval in section, with a rough finish.

STONE

Spindle whorls (Ill 43)

There were six spindle whorls from the middle Norse horizon, three of dark green polished steatite, similar to those from the lower Norse horizon, but shaped as a true instead of a truncated form of cone. *520* and *521* are almost identical in size, 35 mm and 36 mm in diameter at the base and 22 mm and 20 mm in height respectively. *519* is a little smaller, 30 mm across the base and 17 mm in height. This form was also found in bone at Birsay (*235, 236, 237, 238*: Ill 38). Other examples of this high conical shape, of a similar size, were found in Norse graves at Birka (Arbman 1937, 178, pl 22). At Cahercommaun (Hencken 1938, 44, fig 27) where it was one of four types, there were twenty-three examples, two made from split shale pebbles, all the others from the femur heads of oxen.

518 from Area III is also conical and made of steatite, but with the addition of two notches at the top, one on either side of the enlarged perforation, which, unlike the others, is larger at the top than the bottom, expanding from 11 mm to 13 mm. It is badly worn. Two of the remaining three spindle whorls from the middle Norse horizon were also of steatite but discoidal in shape (*526, 541*), the third was of siltstone (*542*).

Ring

531 is a small carefully shaped ring of red sandstone.

Whetstones: small perforated (Ill 44)

There are six of this type of whetstone; four made of siltstone (*547, 548, 549, 550*). Two other examples were made of slate, one (*551*) unstratified, the other (*552*) from Area III. All are perforated and, with the exception of *547*, they are all narrow and rectangular, the section varying from narrow to square and the length from 63 mm to 88 mm. They belong to a well known Norse type known as 'hanging whetstones', which have been found in graves of both the Viking and Late Viking periods, (Petersen 1951, 520-1, fig 142). They have also been found at Jarlshof, Viking phases II-III (Hamilton 1956, fig 65), and in Ireland at both Cahercommaun (Hencken 1938, fig 35: 259) and Carraig Aille (O'Riordain 1950, 86, fig 16: 83 and 244).

Only one of the Birsay examples, *547* from Midden b, does not conform to the usual type, being, at 20 mm, wider than the average. The length is not known as it has been broken off at 55 mm. Also it is unusual in being decorated with incised markings, on one side with a random arrangement of pointed or oval forms overlapping rather in the manner of fish scales, on the other with irregular vertical and horizontal lines. A whetstone from Cahercommaun (Hencken 1938, fig 35: 393) is also covered with apparently formless incised patterns.

Whetstones: haunched (Ill 44)

There are only two haunched hones; *558* was from the middle Norse horizon, *557* was from Area III. Both are of schist and both are incomplete. This type was common at Jarlshof and a number from Phase III are illustrated by Hamilton (1956, fig 65).

Whetstones: chisel type (Ill 44)

Long narrow whetstones are not uncommon. They characteristically have a rectangular or square section which sometimes has a slight swelling along the shaft and one end is often cut to a chisel point. None are complete and some of the smaller fragments have not been catalogued. *559* and *560* are both made of schist; *559* being unusual in that the chisel point has been cut from both sides. *561* and *562* also from the middle Norse horizon are of slate, as are two other examples (*563* and *564*) from Area III.

Bar moulds (Ill 28)

574 is a steatite mould for a single bar, carefully shaped, the surviving end straight and the sides curved. 576 is made from a fragment of the curved side of a large steatite vessel, and is probably also a mould for a single bar. 575 was unstratified but like 576 is made from a fragment of a heavy steatite vessel. The matrix for one bar is clear and there are indications of the matrix for a second bar with vertical sides.

Stone weights and line sinkers (Ill 45, 54)

A number of stone weights from the site can be identified as line sinkers by comparison with parallels from Norway. The majority of well stratified examples were from the middle Norse horizon, others were from House Sites B, L and D in Area III and one from the lower Norse horizon. Petersen (1951, 263-84, fig 143-149) discusses objects related to fishing, including a number of different types of line sinkers found in graves in the coastal regions, principally from Vestfold and Rogaland. A similar object is referred to by Rygh (1885, 477) as a weight for use with scales.

Two of the types Petersen describes are represented at Birsay. The most common, of which he cites forty-six examples varying in length from 80 to 170 mm, were in use throughout the late Iron Age (Petersen 1951, 267, fig 143). They are oval in shape with grooves scored round the edge and sometimes crossing the stone horizontally and vertically. Four of this type were found at Birsay. 582 is of sandstone, 146 mm long by 115 mm wide with a widely scored groove all round the edge and a short transverse groove across the top. 583 also of sandstone, is incomplete, 75 mm long and with only part of one groove remaining. 584 found in the lower Norse horizon is also of this grooved type. It is of sandstone, very small and nearly a flattened sphere, 15 mm × 24 mm × 28 mm, with a groove all round the edge and additional grooves scored vertically and horizontally. 585, made of steatite, is also very small, 25 mm long, and roughly shaped with deep triangular cuts at top and bottom linked by shallow grooves. In addition to the parallels from Norway, this type was found at Jarlshof, House 6 (Hamilton 1956, 180, pl 34).

The second type described by Petersen (1951, 270, fig 144) was less common, only ten examples being cited, all from the Late Viking period. They are oval in shape, nearly circular in section and perforated at both ends. There are certainly three, possibly five, sinkers of this type from Birsay. 586 is of sandstone, 130 mm long. Narrow triangular grooves have been scored from each side of the only remaining perforation to the top of the stone, no doubt to hold the line in place. The base has been fractured exposing a section which shows half the horizontal groove from the lower perforation and part of a vertical socket, 45 mm long, possibly intended to replace the perforation and groove with a metal ring. 589 of steatite is 108 mm long and is complete but both perforations show signs of wear and a third perforation has been somewhat clumsily added. 590 is also of steatite. It is 130 mm long, but incomplete; the stone has broken off at one end and the second perforation has been replaced by a socket hole, 45 mm deep, extending up the centre. 588 is of steatite, and at 95 mm long, rather smaller than the three just described. In section it is nearly square at the centre, whilst the other weights are cylindrical, but the perforations show the same signs of wear and there are cord marks across the ends.

587 has been made from a fragment of a steatite vessel, only one end remaining; it measures 95 mm in length by 55 mm across the widest point and 22 mm in section. The perforation shows the usual signs of wear and there is a mark which could have been made by a cord across the top.

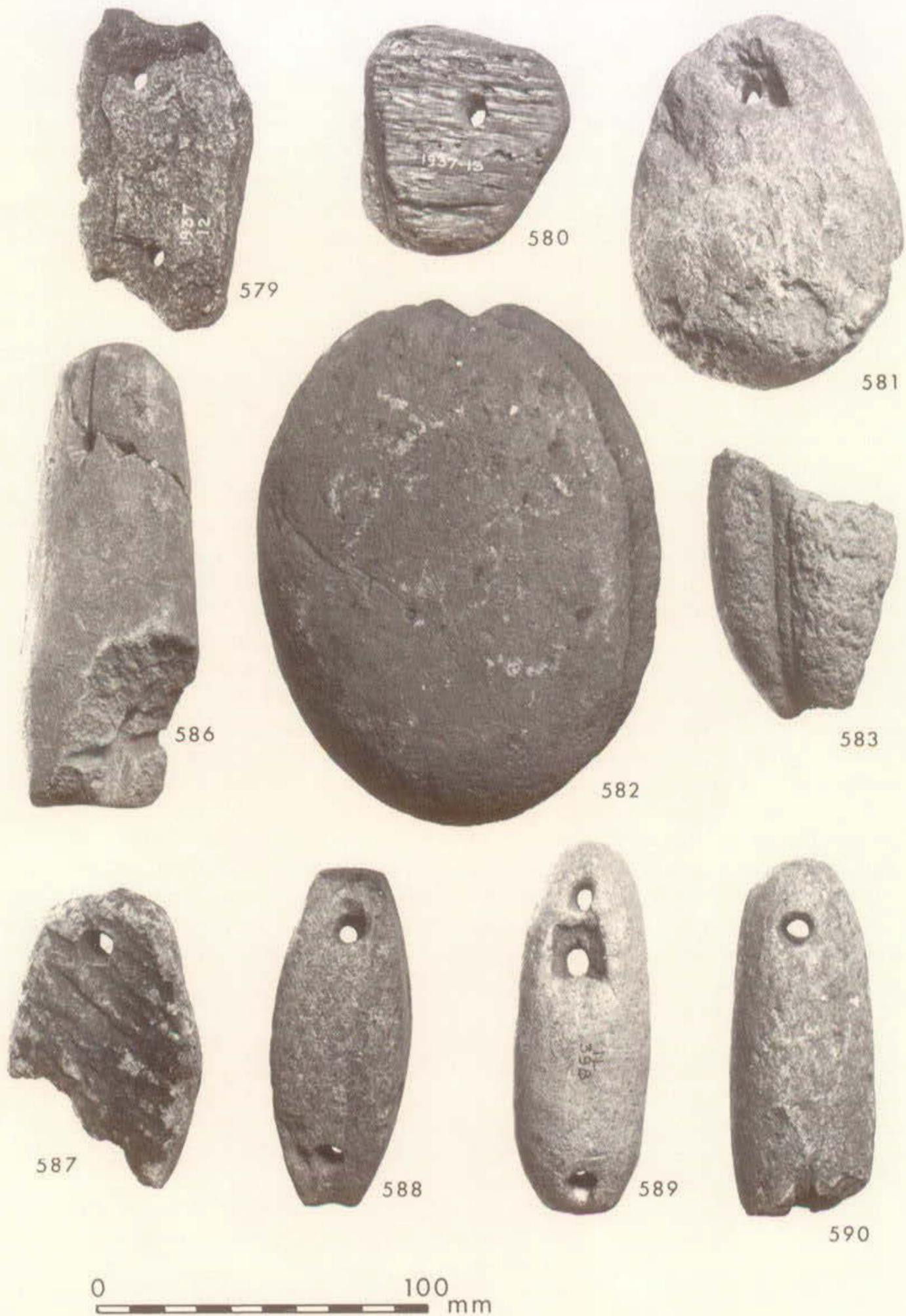
There is no indication as to how these weights were used but, judging by the wear on the perforations and the marks or grooves above or below, the pull seems to have been applied straight up and straight down and not at an angle.

There is what appears to be a parallel to these sinkers from Jarlshof (Hamilton 1956, 183, pl 37: 3). It is referred to as a line sinker or tetherblock, but it could not have been the latter as the perforations are too small to allow a rope to be passed through.

Other weights (Ill 54)

579 is a roughly rectangular flake of steatite, approximately 90 mm × 50 mm × 12 mm thick, with one corner broken off. Each end has a perforation of diameter 8-10 mm. 581 is a pear shaped natural

stone of quartzitic steatite from Midden a, 110 mm long, with a single perforation at the apex. It resembles a loom weight. 604 is a small polished oval pebble.



ILL. 54 : Stone weights and line sinkers

Miscellaneous stone

599 is a natural beach stone, 115 mm long, the rounded end showing use as a hammerstone.

GLASS

Beads (Ill 55)

Two beads were found. 652 is opaque blue, circular, with eight evenly spaced undulations; 653 is also opaque blue, with three segments.



ILL. 55 : Glass beads. Scale 1/1

UPPER NORSE HORIZON

In the upper Norse horizon, Rooms 13-19 (Ill 5: 1) had been built on the periphery of the buildings from the middle Norse horizon; the walls were incomplete when excavated and did not include dressed stones. Only the barest outline of the rooms was visible. Rooms 13 and 19, had been constructed on top of buildings of the middle Norse horizon. There were no surviving traces of hearths. But in spite of their ruinous condition the buildings yielded a few valuable finds.

BONE AND ANTLER

Large pins with perforated heads (Ill 48)

101 is an exceptionally large perforated bone pin, 123 mm long, with a winged head.

Needles (Ill 34)

163 is a netting needle with curved shank, 105 mm long.

Picks and pointed implements (Ill 35)

181 and 182, are picks, pointed at both ends, and both 83 mm long. They are somewhat similar to the pointed objects from Southampton (Addyman and Hill 1969, pl 7) which are classified as thread pickers used in weaving, but the points from Birsay do not seem to be sufficiently sharp for such a purpose. A similar object, 183 came from the lower Norse horizon.

Single-sided combs: Norse types (Ill 49)

230 is a comb which completes the sequence of combs found throughout the earlier phases, both Norse and native. It differs from all the other combs in having bronze instead of iron rivets, not made in the form of a nail, but shaped from fragments of thin sheet bronze curled round into tiny tubes. Another difference is that although it bears a superficial resemblance to the high-backed Pictish combs it is merely a variant of the single-sided Norse combs such as 224 and 225 (Ill 36) from the lower Norse horizon. The connecting plates extend to form an arch covering the upper extensions

of the comb segments and the upper row of rivets follow the curve of the arch. It is a fairly widespread late Viking type. Blomqvist (1942, 144-5, fig 28-34) illustrates a number from Scandinavia and a similar comb came from Danish London (Baldwin Brown 1937, 391, pl 87).

BRONZE

Pins (Ill 39)

426 is a pin 68 mm long with a button head; it might be of any date. Pin 428 is 120 mm long, the lozenge shaped head perforated with a clearly defined collar at the junction with the shank. The perforation, 3 mm in diameter, is surrounded on the front by a double twist of silver inlay enclosed by a band of beading, the back is outlined by incised double lines and the sides by pairs of raised lines set transversely at the points and half way along. There is a near parallel from Birka (Roes 1965, 9, pl 2: 8).

Buckle (Ill 26)

459 is an incomplete rod of gilt bronze, 50 mm long, circular in section with one end curved. It may have formed part of a buckle.

STONE

Open Bar moulds

577 is a mould of smooth steatite from the upper Norse horizon, Room 15. Although the edges are badly worn, it is nearly complete. It is rectangular, 145 mm long by 35 mm wide and approximately 25 mm deep and has matrices for bars of different sizes on each of the four sides, some with rounded and some with squared ends. It clearly belongs to the same group as mould 578 from Area III which has only one end complete and measures 70 mm long, 35 mm across and approximately 20 mm thick. The end is roughly squared and there are matrices for different sizes of bars on each of the four sides.

These moulds are of a very different quality from those found at Birsay in the middle Norse horizon. Another example of this type of mould was found in Ireland at St Michael's hill, Dublin (Bøe 1940, 69, fig 46). Parallels from Norway include examples published by Gustafson (1906, 109, fig 448); some were found in male graves with blacksmith's tools (Petersen 1951, fig 77). They are generally referred to as being for making silver bars.

Steatite Vessel

614 is a rim fragment of a round bowl showing part of a repair hole.

4 AREA III : ISOLATED HOUSE SITES W OF AREA I

Work on this part of the site (III 3) was started in July 1938 and carried on during the season of 1939 under the direction of Dr Richardson and Mr William Henderson, but was abruptly halted on the imminent outbreak of war when little more than a rough survey of the individual buildings and a superficial internal examination of each had been carried out. There has been no publication referring to this work and the only source for the excavation and the finds was Mr Henderson's notes together with plans of the buildings prepared by the then Ministry of Works. In 1956 Dr Radford made a detailed examination of a pair of adjacent buildings referred to as House Site C. He distinguished four periods of construction, the earliest being a Norse farmhouse of the 9th century. A brief account of this excavation with a plan is published in the official Guidebook (Radford 1959).

In 1974 Mr Christopher Morris began further work in Area III to elucidate the relationships of some of these buildings and to examine the confused series of structures, work which has continued over a number of years and has extended to sites on the Brough outside the Guardianship area. The finds from these excavations will be published when work on the Brough is completed. In 1975 Dr John Hunter began excavations on a series of buildings at the N end of the Guardianship site. I am grateful to them both for giving me brief summaries of the individual house-sites to which the pre-war finds, included in this survey, belong. These finds cover, with few exceptions, the same time-span as do those from Area II and both complement and supplement the latter; where an individual find clearly belongs to a type found in Area II it has already been described with that group. The full description of each of the listed finds is in the Catalogue.

HOUSE SITE B

A small rectangular building, 33ft by 20ft (10 × 6 m) which appeared to overlie an earlier construction, is situated to the N of the cemetery buildings. A drain appears to have run between it and the building assumed by Dr Richardson to be the kitchen of the monastery; the majority of the finds were found in the immediate vicinity of the drain.

Catalogued Finds

423, 448, 460, 543, 586, 632, 657.

Uncatalogued Finds

A small fragment of bone comb (not identified).

HOUSE SITE C

House Site C was excavated by Dr Radford in 1956 (Radford 1959, 22-3, fig 2), this complex contains the two largest of the scattered buildings and is situated to the S of the group. Radford distinguished four occupation levels, going back to a Norse farmhouse of the 9th century.

Catalogued Finds

6, 72, 140, 215, 229, 265, 424, 500b, 529, 533, 552, 578, 605, 613.

HOUSE SITE D

House Site D includes a complex series of structures of various dates stretching to the W, with another long building at right angles across the lower end.

Catalogued Finds

17, 347, 456a, 582.

Uncatalogued Finds

Fragment of bone pin.

Two nail heads and fragments of iron (unidentified).

Small clay mould fragments.

Fragment of a whetstone.

Several fragments of steatite.

HOUSE SITE E

Work on this site in 1938 and 1939 distinguished a small building and three annexes to the E. Further excavations undertaken by Mr Morris between 1976 and 1980, revealed a number of building phases and clearance phases predating these buildings. An 11th-century Anglo-Saxon coin in the wall-fill of one annexe gave a terminus post quem for the latest phase. Radiocarbon determinations centering in the 7th century AD date early phases. A bronze mount with cross design and interlace and an ogham stone are notable non-Scandinavian finds which will be discussed in Mr Morris' publication of the site.

The only finds from the 1938-39 excavation of the site are two small bone pins.

Catalogued Finds

65, 67.

HOUSE SITE F

This site was examined by Dr Hunter.

Catalogued Finds

564, 600.

Uncatalogued Finds

Several unidentifiable fragments of iron.

HOUSE SITE K

House Site K was a rectangular building 32ft by 19ft (9.8 × 5.8 m) with round corners, comprising two rooms.

Catalogued Finds

563, 651.

Uncatalogued Finds

An iron bolt (lost).

Samples of hazel were scattered over NW corner, possibly matting or a creel since rotted away (identified by Donaldson).

HOUSE SITE L

House Site L was examined fully by Mr Morris in 1975 and found to be a dwelling, which has had one major rebuilding phase which reduced the length of the building by some 2 m and added an entrance in the E wall, itself blocked in the latest phase. Walls were of earth/turf and were faced with stone. New finds were few, offering no clear dating evidence.

Catalogued Finds

394.

Uncatalogued Finds

Iron nail and an iron bolt (lost).

HOUSE SITE M

House Site M was a rectangular building with rounded corners.

Catalogued Finds

518, 557.

Uncatalogued Finds

Unidentified iron fragment.

HOUSE SITE N

House Site N was investigated by Mr Morris in 1975. The building measured 10.75 m by 6.5 m externally, with identical wall construction to House Site L. Recent excavations have shown earlier structures with gulleys around them. Finds are few but carbonised material below the N wall gave a radiocarbon dating around the 8th century AD. The only pre-war find was an uncatalogued piece of iron.

HOUSE SITES P AND R

No finds survive from the pre-war excavations at House Sites P and R; both sites have been re-excavated by Dr John Hunter.

5 AREA I : THE CHURCH AND CEMETERY

Area I (Ill 3) consisted of the church with its adjacent buildings and the cemetery. The finds from Area I were recorded by the Foreman, the late Mr Thomas Drever, during the summers of 1935 and 1936. Dr Richardson himself supervised the work on the church and adjoining buildings, but the levelling of the cemetery and preparing the ground for seeding with grass was carried out by Mr Drever and his team, with periodic visits from Dr Richardson.

MISCELLANEOUS FINDS

There were only two finds, other than pottery, within the church and the adjacent buildings, both were of bone and both, surprisingly, connected with gaming. 274 (Ill 50) is a fragment of a gaming board of whalebone, 92 mm by 62 mm, found in the W apartment of the building beside the church. Two of the sides have been broken off; the remainder is divided into rough squares by incised lines and there are perforations at the intersections, but in one of the rows they are out of place. The squares would link it with the gaming boards from Buckquoy (Ritchie 1977, fig 9), but the perforations put it in the class of the board with peg-holes instead of line intersections from Ballinderry Crannog I (Hencken 1936, 175-90, pl 25). However the Birsay example lacks the incised circle of the central perforation, or intersection clearly marked on the other boards. Possibly it was a trial piece or was too imperfect to complete. The second object, 275, is a small playing piece of polished antler with an acorn shaped terminal and basal peg socket, found under one of the stone seats in the NE corner of the church. It is a well known type, found as near at hand as Jarlshof (Hamilton 1956, pl 37: 8) and as far afield as Greenland where there are examples from Gårdar and Sandnes, (Nørlund 1936, 84), one of which is made of polished walrus ivory. Not connected with Area I but from the middle Norse horizon in Area II, another socketed playing piece, 271 (Ill 38), was found made from the femur head of an ox. Four draughtsmen similar to this, each with a basal peg socket, came from Kilmainham, Dublin (Bøe 1940, fig 36).

Still probably connected with the church is a fragment of dark green window glass, 641; Dr Hunter's report is as follows: "it is a dark green but badly weathered quarry, grozed on three edges and chipped at one corner". He considers it to be one of the most interesting of the glass finds from the site.

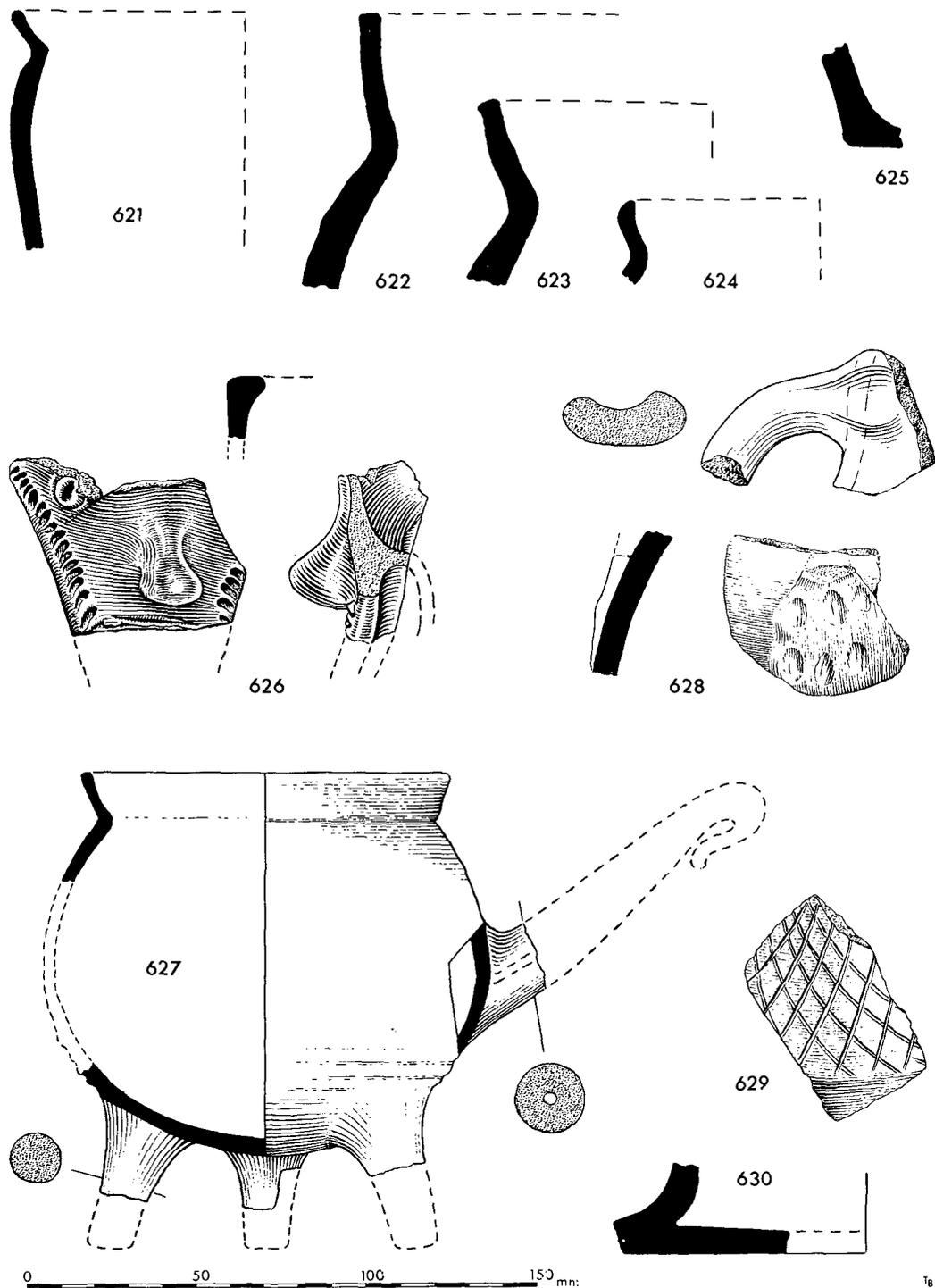
There were a few other finds from the cemetery. 273 was a handle made from an antler tine; one end was narrowed and had two perforations and the other was a curved point (Ill 50). A boar's tusk with its end cut and a George III penny have not been catalogued.

POTTERY

A number of fragments of pottery (Ill 56) were found in unstratified contexts in the buildings and the courtyard and a small number from the cemetery.

Two sherds (621, 625) of grass-tempered pottery were found which can be paralleled in the Norse material from Freswick (Curle 1939, 104-6).

The medieval and post-medieval pottery has been identified in the catalogue (626-630).



ILL. 56 : Pottery

TOMB STONES

Two early tomb-stones are illustrated in the Inventory (RCAHMS 1946, 4, fig 53) and are now in the Site Museum at Birsay. The first was found according to Mr Drever's carefully kept record "3ft

from the apse wall and 24ft from S graveyard wall at a depth of 8in". These measurements are incompatible if taken literally; presumably he meant the stone lay on N-S line passing 3ft E of the apse. It has an inscribed cross with a circle at the intersection of the arm, the shaft is incomplete. The second is a narrow tapering grave slab found "lying close alongside the W wall". On it are inscribed two wheel-headed crosses with segmental hollows at the inner junction of each expanded arm. The meeting point of the two shafts is enclosed by an oval band. This grave slab was mentioned in a letter dated 24 8 37 from Dr Richardson to Mr Edwards at the National Museum of Antiquities of Scotland when sending some samples of nails, 502 in the catalogue, for examination:

"Yesterday we removed the sculptured grave slab with the two Celtic crosses on it to the museum building, and made an examination of the underlying grave.

The length of the grave was defined by two stones at the head and one stone at the foot. Like the others we have opened, the grave was firmly packed with the natural clay of the sub-soil, the skeleton which was in a very decayed condition appeared to be that of a young person, of slim construction but of fair height.

There were traces of wood especially near the upper part of the body suggesting that it had been boxed over. We also recovered a number of rusty nodules with wood adhering to them—suggesting clinker nails—as wood was scarce they may have used bits of an old boat—but you no doubt will be able to determine what they really are."

These nails 502 were recently examined at the laboratory of the National Museum of Antiquities of Scotland. Two out of five heads are almost free of corrosion and measure 23 mm in diameter. The attached shanks have completely perished but their diameter of between 4 mm and 6 mm can be estimated from the circular hollows left in the midst of the accretion of corrosion. In one case the hollows extend to a depth of 46 mm giving an idea at least of the minimum length of the nail.

Pictish Symbol Stone (Ill 4, 59)

An entry in Mr Drever's record dated July 16th 1935 refers to the discovery of the fragments of the Pictish Symbol Stone which is now, pieced together and mounted, in the National Museum of Antiquities in Edinburgh. His description of it is as follows:

"Another carved gravestone close to the West graveyard wall, depth 12 inches. Broken in many pieces, some of which seem to be missing. The carving is very beautiful but in its present state it is rather difficult to trace the exact design".

The first published account of the symbol stone is in the Orkney Inventory of 1946, and gives a different version of its discovery, saying that it had been found enclosed by two upright slabs outlining a grave set against the S wall of the precinct, "lying prone and shattered into no fewer than 29 fragments" and that fourteen of the fragments bore traces of carving and when put together displayed "an assemblage of symbol and figure sculpture, all of well known types, but hitherto not found in a similar combination". It is noted that the fragments were only approximately one inch thick (c 25 mm), and that the monument could never have stood upright. It is assumed to have been flaked off and that the other side had disappeared.

This account is at variance with that given in the Foreman's record but appears to be borne out by amendments to a plan which is in the Scottish Development Department (Ancient Monuments). The latter was drawn in 1934 before the symbol stone was found and is the basis of the plan published in the Guidebook of 1959 (Radford). However, manuscript amendments were added to the original plan in 1935 showing the symbol stone as a pile of stones set against an upright slab outlining a grave inside the S wall and adding further to the E a drawing of the second grave slab said by the Foreman to have been found, like the symbol stone, against the W rather than the S wall. It is surprising that Mr Drever should have made such a mistake. Certainly the Inventory account that it was found broken into twenty nine fragments is incorrect. A few days after it had been found I went to the Brough with Dr Richardson. The fragments, nine or ten, had been laid out on the flat ground outside the S wall where I photographed them lying on uncleared ground and thus not in their original position. I understood at the time that not all the fragments had been found together and after further searching three more were found and a fourth from over the cliff, these were then photographed with the original fragments. Subsequently yet more fragments were discovered.

The next account to be published was in the official Guidebook (Radford 1959, 13) when it was assumed that it had originally stood erect at the head of the triple grave, the three figures represented on the stone commemorating the three warriors buried beneath. This grave was opened in August 1938. A verbal description was given to me by Mr W G Moar who was a member of the team working on the brough. He said that there were three skeletons laid in a row on the clay soil with about one foot distance between each. One had the skull smashed in. Over two of the bodies boulders had been placed. I understood that no further examination has taken place. These boulders were replaced and the earth filled in.

The symbol stone is carved from a natural slab of old red sandstone. When complete it would have measured nearly 2 m by 0.8 m. The symbols represented are a 'mirror case', a crescent and V-rod, the elephant and an eagle. Below these is a procession of warriors. A fuller description is given in the discussion below, where the affinities and significance of the stone are assessed. It is, however, worth noting here that none of the Class II and other slabs with which it is compared have been shown to be grave markers, and this is an additional reason for doubting that the Birsay stone marked the triple grave.

Incised Cross From Area II

A fragment of flaggy sandstone (607: Ill 45) 115 mm long and found unstratified as a surface find in Area II bears an irregularly incised cross. The stone is dressed and smoothed on both sides. That part of the cross surviving, has expanded rectangular arms and a rectangular base. There are two scratched lines near the cross which, taken with the irregularities in the drawing of the cross, might imply that it was a trial piece. But it could be a grave marker (Cramp, pers comm). It is the only small explicitly Christian object from the site, and is therefore included with the finds from Area I.

6 CONCLUSIONS

Several aspects of the assemblage are of particular importance. They include the time span covered from the Pictish bronze casting period of the late-8th century through several Norse phases to the medieval period (the Pictish objects found in the lower Norse horizon indicating the possibility of continuity), and of equal importance the size of the assemblage, the multiplicity of objects of each type and their range of variation in different phases. The pins and bone combs which occur in all phases, have proved particularly informative. Also contacts, although not necessarily direct ones, are indicated between the Picts and Irish, between the Norse and Irish, and between the Norse and their home country. Finally, and this applies to the Pictish phases only, the insight given into the technology of bronze casting is of great value.

In assessing the worth of the assemblage a number of points must be borne in mind. These include the limitations of the objectives and the archaeological techniques employed in the pre-war excavations and the loss of all the bone and shell samples. The area available for study was limited by the decision to keep the buildings of the middle Norse horizon in Area II intact, and added to this, continuing coastal erosion destroyed at least part of the earlier Norse phases in Area II. The cemetery was not excavated and Area III was only partly opened. Thus only a partial view of the settlements is available.

Although with the above qualifications there remains a possibility of continuity between Pictish and Norse, the pre-Norse activity will be discussed in isolation since it flourished before the Norsemen reached Birsay and is culturally distinct.

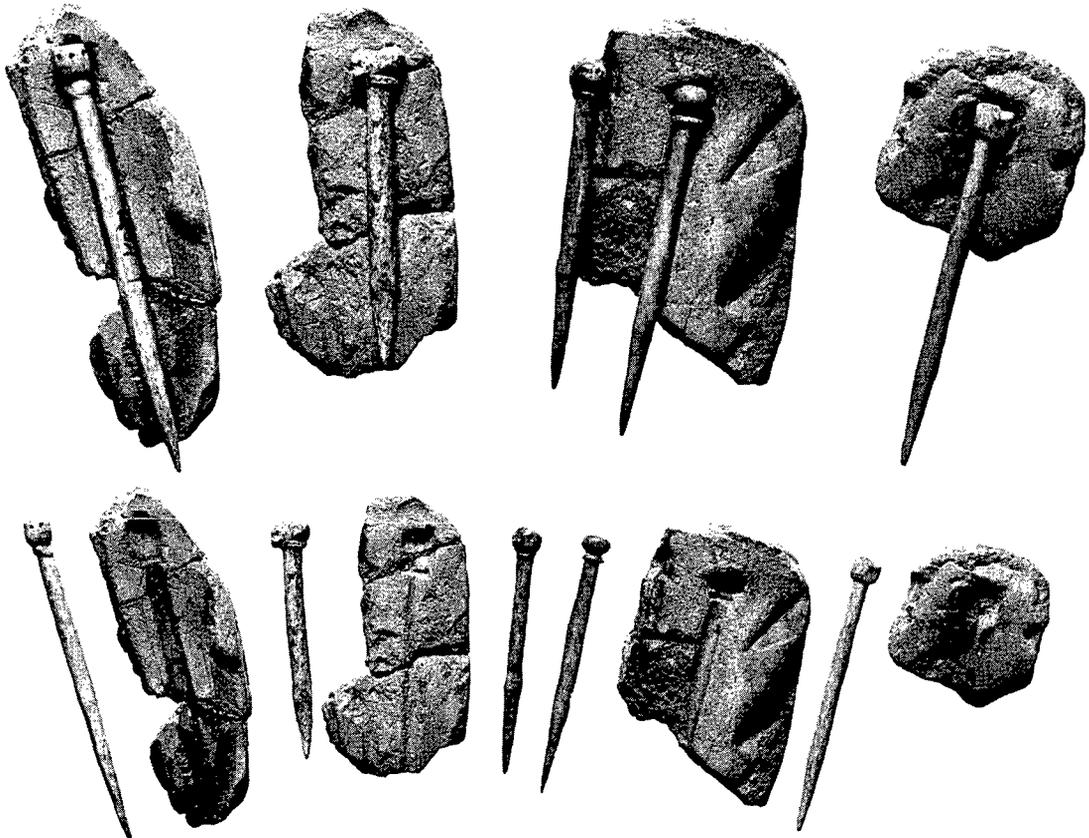
No habitations were found in the Pictish horizon. Even taking into account the Pictish dwellings found recently in and outside the Guardianship area of the Brough by Dr Hunter and Mr Morris (forthcoming), the probability of Pictish building beneath the Norse houses in Area III, the well with its surrounding paving, and the Pictish symbol stone, there is little evidence of a large Pictish community living on the Brough.

With the exception of a large number of small bone pins which include almost every type of ornamental head known from Scotland and Ireland, a few comb fragments, and an interesting small bone mount decorated with a panel of interlacing, the finds from the Pictish horizon belonged to an important bronze industry which would have served the needs of the widely scattered community which is represented by the excavated sites at Buckquoy (Ritchie 1974, 1977) and further along the cliff towards Birsay village (Morris forthcoming).

Evidence of bronze working was largely confined to Area II. Much of the bronze working debris was found amongst piles of burnt stones; lesser amounts were scattered on the basal clay, particularly around the well, much of it preserved by paving and levelling up in the Norse period. Found there and very probably connected with the manufacture of bronze objects, were two incomplete open sandstone bar moulds, many fragments of coloured glass, some fragments of sheet bronze and a bone trial piece. But the most important component of the assemblage consisted of several hundred fragments of used two-piece clay moulds and a quantity of crucibles, mostly shattered. They allow a valuable insight into the technology of bronze working on the Brough and the finding of both sides of particular moulds allows fairly close definition of the methods used.

Mr Robertson has, in his construction of experimental moulds, demonstrated how simple the techniques used at Birsay could have been. The techniques used in Scandinavia for some types of object seem to have been essentially similar. Mrs Lamm, in a discussion of bronze casting at Helgö, illustrates a mould for four pins set fanwise (Lamm 1973, 4, fig 6) which is like the Pictish multiple dress-pin moulds from Birsay. The Scandinavian moulds for elaborate brooches, however, were used

to produce more three-dimensional forms such as the square-headed brooches of Helgö with their deeply arched bows (Lamm, 1973, fig 4). This is in contrast to the Birsay moulds from which only shallow sectioned objects could be produced. Even the Birsay pin moulds referred to above conform to this rule; circulation of molten bronze in the mould was possible because of the shallowness of the matrix and the porosity of the mould fabric. Nor does the method of casting the larger objects seem to have differed; the moulds for the long pin 376 and the mount 370 were both shallow in section. The only object to test this general rule is the small finger ring mould 322 of which only one side remains and which is thus difficult to interpret. The Birsay moulds seem to follow the earlier native tradition shown in the moulds of Dinas Powys (Alcock 1963, 52), Mote of Mark (Curle 1914), Dunadd (Christison and Anderson 1905) and Clatchard Craig (Stevenson 1976).



ILL 57 : Multiple pin moulds

Only one element of the bronze casting process is perhaps missing; there are no purpose made pattern models such as that from Dinas Powys (Alcock 1963, 120-2, fig 23: 2). The lead disc (509) from below the lower Norse horizon cannot have been used directly as a pattern for a two piece mould because it is in a negative form; it has been discussed in detail elsewhere (Curle 1974, Alcock 1980). Mr Stevenson has suggested (1955, 286) that bone pins may have served as models; that this was the case at Birsay is shown by the moulds with matrices into which specific bone pins can be fitted (Ill 57). Providing any insets or applied castings were removed, any existing brooch could have served as a pattern and the same could be said for almost any of the bronze objects. Possibly then, Birsay did not produce its own purpose made patterns, but the attempted chip carving motif on the ox scapula trial piece (267) shows that some such work was at least contemplated.

The majority of the moulds appear to have been for small, and in many cases decorative, objects of personal use: brooches, pins, finger rings and small plates which were often attached to rings for suspension. In addition more elaborate products are implied by moulds for small decorative castings. Of all these moulds the most revealing are the brooch moulds both for their variety in size and in type.

The first impression of the moulds for the penannular brooches is that they were for the production of a cheap form of jewellery. Many are in effect a simplified form of the brooches of the St Ninian's Isle hoard, having the oval cartouche with central setting, the cusp at the junction of the hoop and the terminal and, usually, a setting at the centre of each terminal. The lobed terminal typical of many of the St Ninian's Isle brooches occurs on one mould, at Birsay, 298, (it should not be forgotten that a brooch and terminal of this type were found in the lower Norse horizon; their significance will be discussed below), and it is interesting to note that, like the dragonesque head from the St Ninian's Isle hoard (No 28: Small et al 1973, 79, pl 34a), the realistic bird's head from Birsay 294, is designed for a brooch to be worn with the terminals at the top. The mould 300 for a brooch with terminals formed by a head with gaping jaws, long pointed teeth gripping an extended tongue, is also paralleled in the St Ninian's Isle hoard, but, interestingly, on a sword chape rather than a brooch (No 16: Small et al 1973, 65-7, pl 30). The insets on the St Ninian's Isle brooches were of coloured glass and varied in number from three to nine. The settings in the Birsay moulds varied in number from three to seven, and it is surely no coincidence that many fragments of coloured glass were found in close proximity to those moulds near the well. Even on those moulds from Birsay which were for brooches most similar to the St Ninian's type there are distinctive differences: apart from the fact that they would have been for bronze instead of silver, the casting was simple, the hoops were undecorated plano-convex with none of the beaded edgings or other embellishments usual on the silver brooches, and the terminals, even though similar in form, were without much of the elaborate detail. The Birsay brooch moulds varied far more in size than the brooches from St Ninian's Isle, and included types belonging to a different tradition. Without minimizing the importance of the similarity with the St Ninian's Isle types it must be noted that parallels of the various Birsay types were also found on the mainland of Scotland. Two of the Birsay moulds were for brooches with plate terminals bearing traces of interlacing, and with a ring at the junction of hoop and terminals in place of the St Ninian's Isle cusp, while a third had a terminal in the form of a small disc outlined by a plain band; these were for brooches as small as those from the island of Uist (Close Brooks and Maxwell 1974, 289-90, fig 2) and those on the brooch moulds from Dunadd (Christison and Anderson, 1905, 42, fig 35).

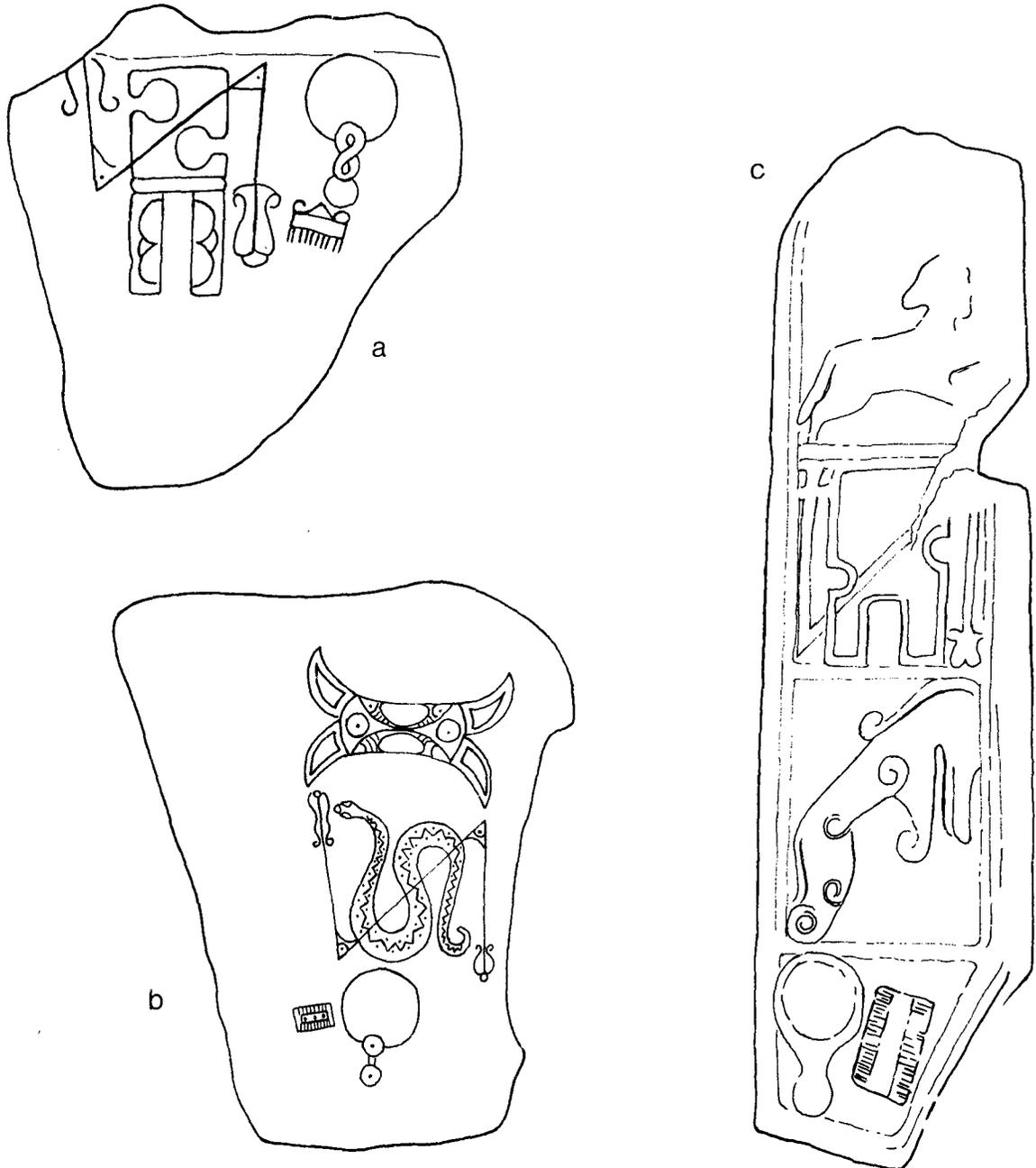
In addition more elaborate objects are indicated by the moulds for small pieces such as the bird's heads (311, 312, 313) and the small disc surrounded by pellets (314). The bird's head moulds recall those pegged onto the terminals of one brooch from Rogart. Indeed, the Rogart brooch can act as an exemplar for the use of applied castings to some of the most highly decorated insular brooches of this period; but it should be recollected that castings could be applied to other objects such as the spoon from the St Ninian's Isle hoard discussed above. Thus it cannot be assumed that the small Birsay castings were for attachment to brooches.

The chronological spread of the Pictish occupation cannot be determined with precision from the finds. By analogy with brooches from the St Ninian's Isle hoard the bronze working phase on the Brough should belong in the late 8th century. An earlier occupation is hinted at by the penannular brooch 449 of Fowler's Class F which may date to the 4th or 5th centuries AD. Phase 1a of Zone 5 which underlies the bronze working layer is not dateable by the small bone pin (47) which was the single find within it. A date for the cessation of Pictish occupation on the Brough is similarly elusive and will be discussed below when the occupation of the lower Norse horizon is considered.

Although no general view of Pictish life can be gained, links with the mainstream of Pictish culture are apparent. The mould 300 (Ill 14) has already been discussed in connection with the St Ninian's Isle chape; the heads forming the terminals recall porpoise heads and may give evidence of the significance of the porpoise in the Early Christian period. As has already been mentioned they are portrayed, usually in pairs, on some Class II symbol stones such as the Brodie stone near Elgin and other examples, such as the stone from Ulbster, are known. Similar representations of porpoises are also found, just recognisably on a shrine corner post from Papil and more clearly on a shrine corner post at St Ninian's Isle itself.

Another link between objects found at the Brough and Pictish symbol stones is provided by the bone combs. The link persisted through the change of comb types. High-backed combs and double-sided combs of Type A are represented on Class I Pictish symbol stones, while the Type B long double-sided combs found on the Brough exclusively in the lower Norse horizon are depicted on

Class II symbol stones (Ill 58). The high-backed comb occurs at least eight times, the double-sided Type A comb at least nine times and the double-sided comb of Type B at least four times on Pictish symbol stones between Orkney and Angus. Beside emphasising that the pre-Norse occupation on the Brough was Pictish, the possibility of linking the chronology of the Brough to Pictish symbol stones is of high importance. It should be noted, however, that those Class II symbol stones with combs of Type B cannot be considered to be amongst the earliest of the Class II stones.



ILL 58 : Comb types represented on Pictish symbol stones (a) High-backed: Clyne-Milton No. 2, Sutherland (b) Short double-sided Type A: Golspie, Sutherland (c) Long double-sided Type B: the Maiden Stone, Pitcaple, Aberdeenshire (not to scale)

PICTISH SYMBOL STONES DEPICTING COMBS

The following list of stones depicting such combs is intended to be indicative rather than comprehensive; it includes only examples illustrated by Allen and Anderson (1903) and the references are all to that work.

High-backed combs

Sutherland: Clyne Milton (40, fig 37), Kinradwell (44, fig 42). Elgin: Easterton of Roseisle (126, fig 130). Banff: Inveravon (153, fig 159). Aberdeenshire: Daviot (161, fig 170), Newbigging Leslie (177, fig 192), Rhynie (183, fig 198). Angus: Aberlemno (205, fig 221).

Double-sided combs, Type A

Caithness: Sandside (29, fig 26). Sutherland: Dunrobin (42, fig 39). Invernesshire: Drumbuie (152, fig 158). Aberdeenshire: Drummies (163, fig 171).

Double-sided combs, Type B

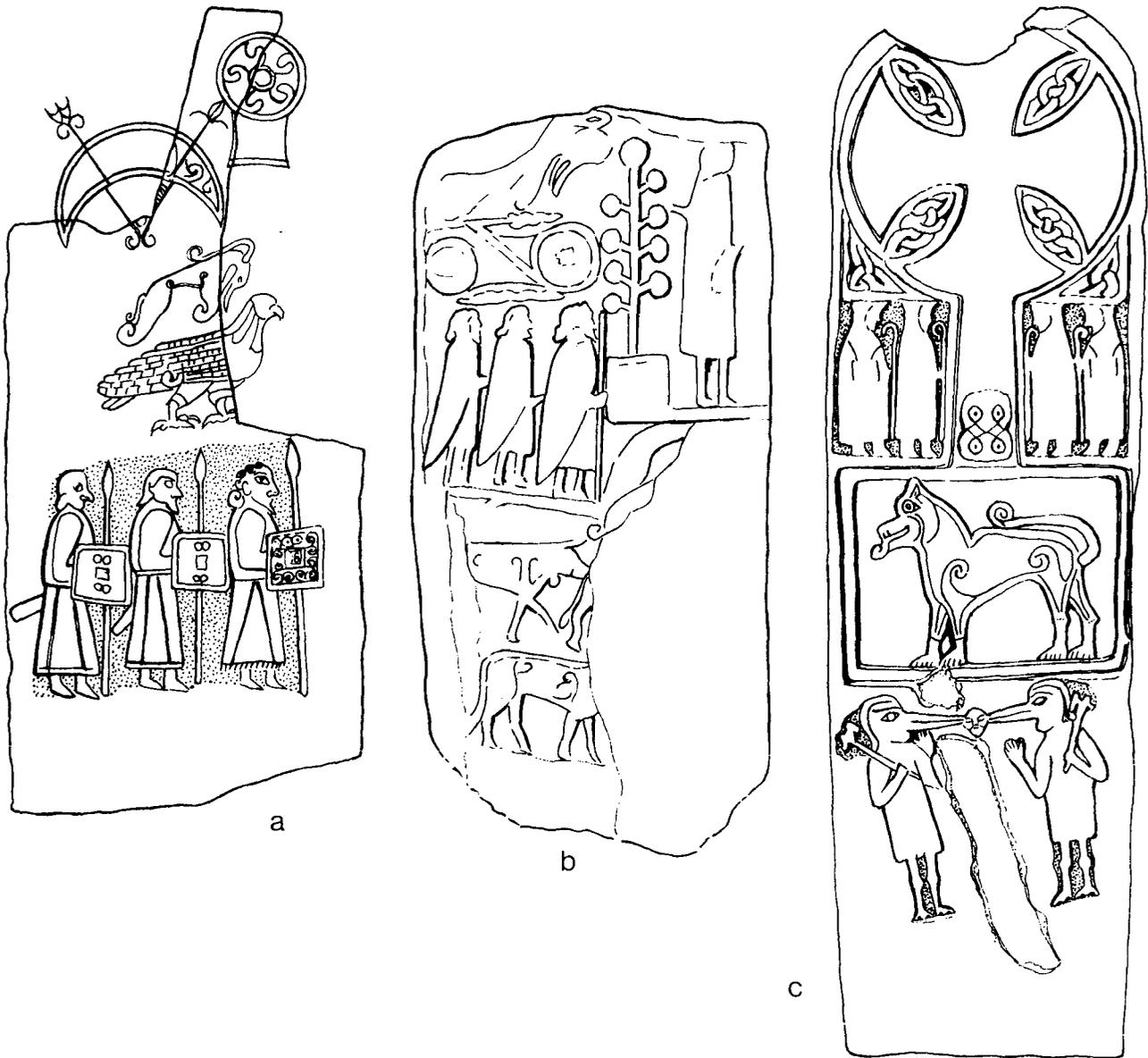
Aberdeenshire: Maiden Stone, Pitcaple (191, fig 207). Angus: Kingoldrum (226, fig 238), Kirriemuir (227, fig 239) and Monifieth (228, fig 241).

The Birsay symbol stone (Ill 59) is incomplete but its associations are with Class II symbol stones of a very early type. Although the back of the stone is missing, sufficient remains to show that it had straight sides. The Pictish symbols are incised; the eagle is clumsily executed: the feathers are represented by alternating rows of rectangles; but a curled feather behind the back leg is exactly like that on the elegant line drawing of the eagle on the symbol stone from the Knowe of Burrian (RCAHMS 1946, 18, fig 58). The spiral design on the disc is very similar to that on the Class I symbol stone from Dunnichen (Allen and Anderson 1903, fig 223) where it occurs with symbols including a high-backed comb. It also occurs on some hanging bowl escutcheons (Curle 1940, pl 29a). An effect of a carving in low relief is obtained by recession of a small area around the figures. The recessed area is defined to the right by the outer edges of the shield and spear of the foremost figure. Its base forms shallow steps following the feet of the figures. Elsewhere the edge of the recession follows fairly closely the outlines of the figures except above them where it extends around the lower part of the eagle's talons. The leading figure is more elaborately presented than his followers; his shield is more highly decorated and the spiral elements of its embellishment are identical to those on the disc symbol.

Taken together, these features suggest that the Birsay stone is an early member of Class II, although it is impossible to be categorical since one face of the stone is missing. It is tending towards carving in two planes which became the normal technique of many monuments in Ireland and which is that of nearly all Class II symbol stones in Scotland.

That the figures represent a theme rather than a memorial to the individuals assumed to have been buried below, as proposed by Radford (1959, 17), is suggested by a parallel on a Class II slab at Eassie, Angus where a comparable, although stylistically different, procession of three men, each with a spear, is depicted below symbols. On the Eassie stone the figures, which form one amongst other themes, are carved in low relief, and are set against a fully recessed background.

Some relationship exists between the Birsay stone and the Papil cross slab. It must be borne in mind that the Papil stone seems to have been carved at two different periods, or at least by two different hands. It is a carefully shaped monument with rounded top, the stone dressed and smoothed on one side only. The top third of the stone is filled with an equal armed cross with expanded terminals set within a circle. The almond shaped spaces between the arms which are carved with interlace in low relief have already been mentioned in comparison with the decoration on a small bone mount from the Brough (250). The shaft is narrow with spaces on either side, each filled with a pair of clerics in low relief (Curle 1940, pl 24a). This form of cross is not found on the Pictish monuments of E Scotland, but occurs incised on rocks or stone pillars, or carved in low relief on well shaped



ILL 59 : Comparisons of symbol stones and their motifs (a) stone from the Brough of Birsay, Orkney (b) stone from Eassie, Angus (c) stone from Papil, Shetland (d) stone from Golspie, Sutherland (e) lion from St Mark's Gospel, Book of Durrow (f) stone from Bressay, Shetland

slabs in W Ireland (Henry 1936) and on a number of cross slabs in W Scotland. It is combined with symbols on the Raasay cross slab (Curle 1940, pl 18c) and is found on an incomplete cross slab from Cladh Bhile, Ellary in Argyll (Allen and Anderson 1903, 401, fig 418) and on a stone found on Great Cumbræ (Curle 1962, pl 14). Immediately below the cross and clerics is an incised beast set in a rectangular border. It is unmistakably the lion of St Mark of the *Book of Durrow*. The lion and cross are part of a single design, and they provide a link with the Columban tradition.

The lowest third of the Papil stone carries a theme quite obviously of a different tradition, and carved in a different hand. The two half bird, half human, figures are set slightly asquint and are



not in a frame. The long beaks of the figures appear to be pressed against a small human head; there may originally have been a body below the head, but a large flake has been detached from the area it would have occupied. They form a theme, perhaps of St Anthony being tempted in the desert by two women disguised as birds (for a discussion of such themes see Curle 1940, 83-5). The carving technique is similar to that used for the Birsay men: partial recession of the background (particularly noticeable on the Papil slab around the axe heads), the combination of incision with carving in low relief, the large eyes complete with eyebrows, the shape of the heads and the arrangement of the hair.

The Golspie slab has elements which relate it both to the Papil cross slab and the Birsay stone. It is a fully developed Class II symbol stone with one side devoted to a cross surrounded by panels of interlace and of key pattern, all in relief. The other side is pictorial and is partly incised, partly in low relief, and partly in low relief with incised detail. The whole face is covered with randomly placed decoration. The central theme consists of a figure, perhaps David, confronting a lion, all surrounded by a proliferation of symbols. Details of the dress and physiognomy of the figure are very like those of the Birsay men: the prominent eyes and nose, the cap-like hair style, and the tunic which although short rather than long has the same broad hem and diverging lines which may represent pleats. These details are also found on the newly discovered stone from Rhynie; other male figures are discussed by Shepherd and Shepherd (1978, 214-17). The lion is recognisably that of the *Book*

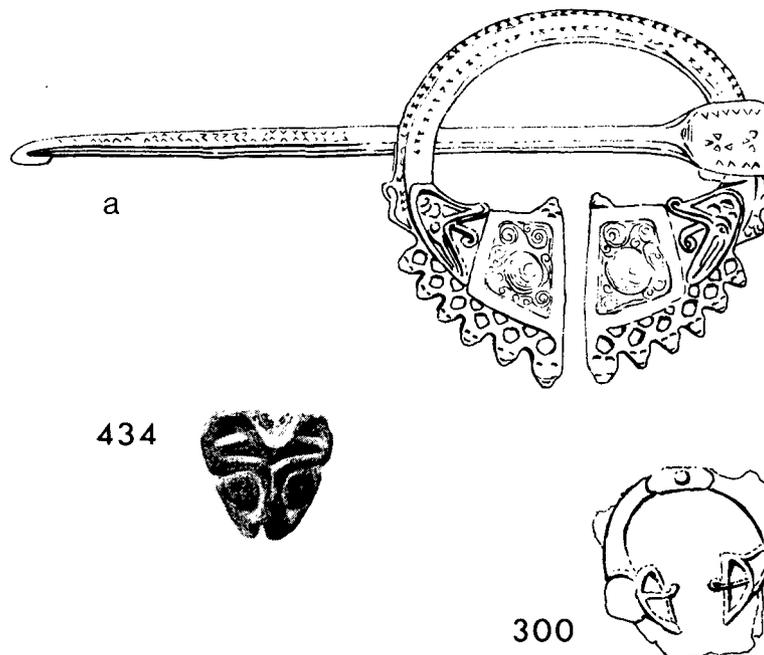
of *Durrow* and thus there is a link between Golspie and the upper, Irish influenced, portion of the Papil cross slab.

Golspie and Papil are thus related to each other and to the Birsay stone; but it is not here suggested that there was a direct relationship between Birsay, Papil and Golspie, but rather that the carvers had available a glossary of themes and decorations which reflected the intermingling of the E and W traditions at that time, when the first Class II symbol stones were being carved. The Irish and Pictish connections shown by the artifacts found in the bronze working level on the Brough are thus reflected in the stone.

In the ensuing discussion of the Norse levels considerable attention is given to the possibility of a continuing Pictish presence on the Brough during the early Norse period there. Given the possible link between the Birsay stone and the Papil slab it is possibly appropriate to mention the Bressay cross slab, for it is closely related to the latter. It combines a cross similar to that on the Papil stone with a debased form of the lion of the *Book of Durrow*. On its side is an inscription in Pictish ogham which includes the Norse word *dattr* and other Norse elements. The inscription may be later than the other carvings on the Bressay stone, but in its own right it shows a mingling of Pictish and Norse elements in Shetland which may thus be considered a possibility in Orkney independent of the evidence from the Brough.

The three clearly differentiated Norse horizons of Area II contain no evidence of continuity. The finds illustrate not only types of differing periods but the differing life styles of the inhabitants. The Norse buildings of the three horizons which remain differ radically one from another, from the large-scale layout in the lower Norse horizon with its elaborate drainage system and the use of dressed stones, to the rough stonework of the complex of interconnecting dwellings of the middle Norse horizon. Finally, there are the scattered outlying structures in the upper Norse horizon which were only in part built over some of the main buildings, and the rest outside the core of the earlier interconnecting dwellings which must have been abandoned with the major part of their walls still standing.

The Norse buildings of the lower Norse horizon, which covered and preserved the debris of the Pictish bronze working, do not necessarily belong to the earliest Norse settlements on the Brough. Dr Radford (1959) traced an earlier long-hall, largely eroded by cliff falls, of which only the N end remains forming the foundations of Room VII of the lower Norse horizon, and he attributed the earliest Norse farmstead in Area III, House Site C, to the 9th century.



ILL 60 : (a) The penannular brooch from Hatteberg, brooch mould 300 and bronze mask 434

Only in the lower Norse horizon are there indications of an enduring local Pictish influence; but there is no evidence of continued bronze working on the Brough. The sixteen small pins found in the lower Norse horizon are in such contrast to the Norse type of dress pin that it is unlikely that they would have been adapted to Norse use; they provide the strongest argument for a continuing Pictish presence on the Brough. A tiny bronze pin with spatulate head (418) can be cited with them. Other evidence, however, is more ambiguous. The native combs have already been discussed, the implication drawn from the paucity of Norse examples in the same levels being that they were adopted by the Norsemen. The suggestion was made that they were manufactured in a native comb factory elsewhere and imported. Two of the most intriguing Pictish objects from the Norse levels are penannular brooch 452 and the terminal of another, 453, which were found on top of the paving of Room VI and Passage 1 respectively and are therefore unlikely to have been rubbish survivals; they are so close in style to the Birsay brooch mould 298 that it is probable that they were cast on the site. It cannot be known whether the brooch and terminal fragment were finally abandoned by a Pict or a Norseman, but the predilection of the Norse for such brooches cannot be ignored. It could be suggested, then, that the brooch and terminal were made before the Norsemen arrived but had continued in use. There are no examples of the mingling of Celtic and Viking art on the Brough such as might suggest the continuity of a bronze casting tradition, but the mould 300 discussed above contains a motif of a head with gaping jaw and extended tongue which occurs not only on the St Ninian's Isle chapes but also on a penannular brooch found at Hatteberg in Sunnhordland in Norway (Shetelig 1954, 118, fig 36). On the Hatteberg brooch this motif forms the beginning of an elaborate terminal which includes such Scandinavian elements as an open fringe ending in a row of tiny Borre style masks (Ill 60). A fragment representing an exact duplicate came from a hoard at Cuerdale, Cumberland (Bøe 1934, 159). That such a mixture of motifs should occur on a single brooch emphasises the fact that although on Birsay no more brooches were cast, the acquisition or manufacture, of penannular brooches remained in fashion with the Norsemen.

There are other finds from a variety of sources. For instance the globular headed pins are described as Pictish by Stevenson (1955, 292-3) but three out of four of them were found in a Norse context at Birsay. The Celtic bell is of too indeterminate a date to be discussed here. The implications of the presence of three bronze dress pins of Irish type, of which one is very similar to an example found in York, should not be neglected. The finger ring with entwined bezel is of an Anglo-Saxon type, as is the bronze disc brooch (450). It is clear therefore that the Norse of that period were obtaining goods from a number of sources so it is possible that the Pictish objects may have been acquired from neighbouring communities rather than having been used by Picts on the Brough itself. Thus the question of a continuing Pictish presence on the Brough has not been resolved, but it can be argued that contacts between the Norse and the Picts, amongst others, existed at this time. Finds from the lower Norse horizon which are indubitably of Norse manufacture are comparatively few. The most important is the seal's tooth amulet inscribed FUTHARK in runes. The others comprise three bone combs, a small bone weaving tablet, two bone otter whistles or needle cases, a pair of bronze tweezers and two spindle whorls of polished steatite. There was also a quantity of broken boat nails.

A little of the way of life of the Norse on the Brough in this period can be deduced from the finds. The general impression is of a community importing many of its needs. Spinning and weaving took place although perhaps only on a small scale. The vice or clamp, the only piece of whale bone from the lower Norse horizon, is the only industrial object. The presence of boat nails does not imply that either boat building or boat repairing took place on the Brough; with a shortage of timber the planks from any wrecked or abandoned boat would have been of value. All the nails were broken and parts were missing, implying that they had been extracted. Such timbers were probably used constructionally, for it appears that peat and not wood was the usual fuel: the ash filling up Midden c was peat ash, and so was the ash in Room VII and in the sunk fire-pit in Room VI, while the ash covering the whole floor of Room VI was part wood and part peat including both meadow peat and hill peat. Miss Donaldson (Appendix 8: 3) in her analysis of charcoal from below Room 5 mentions the lack of wood from forest trees but the abundance of the smaller local birch and hazel which would have been used in the charcoal burning process both for bronze and iron smelting.

In assessing the finds from the middle Norse horizon, it must be remembered that the central complex of interconnecting rooms was abandoned with the walls left standing and presumably all the objects of value would have been removed before the roofs fell in. Few personal or ornamental objects were found and, unlike those from the lower Norse horizon, all were known Norse types with the exception of an iron armlet encircled by narrow hoops of bronze for which no parallels have been found. Among the personal objects were a strap end of bronze with an animal head at either end which has a parallel from the Wirral Peninsula and another in the National Museum, Dublin and a bronze animal head in the Borre style. The most nearly complete of the three bone comb cases has an almost exact parallel from York, and the long bone dress pins also can be paralleled at York. There were coloured glass beads, circular and segmented, of widespread types. A small crescent-shaped bone object, highly polished and with its tips broken off presumably had some decorative purpose.

Tools and objects of utility were more abundant than in the lower Norse horizon. They included spindle whorls made of femur heads and over a dozen others of stone of which two, truncated cones in shape, were of dark green steatite. A number of large curved needles supply evidence of netting, possibly for fishing. A number of line sinkers, perforated at either end, give evidence of fishing from boats and Mr Sellar (Appendix 8: 2) mentions the occurrence of large fish bones in the lower Norse horizon below Room 5. The use of whalebone had become common. A large fragment of whale's rib shows signs of having been used as a cutting block, and a large hook and a 'line stretcher' similar to one from the Oseberg ship were also made of whalebone. Other tools were made from longbones, and a large bracket had been devised from the crown portion of an antler.

Whetstones were the most common of the objects, and were of varied type: chisel ended, haunched and also the small perforated hanging type often found in Norse graves. Iron objects were, for the most part, too corroded to be identified, but furnace bottoms and slag showed that iron working was carried out. In addition to the steatite spindle whorls mentioned above, two steatite bar moulds and fragments of steatite vessels show utilisation of that resource.

The general impression, then, from this part of the Brough, is of a relatively poor community with a strong emphasis on local crafts to supply its needs.

So little remained of the structures in the upper Norse horizon that it is surprising that valuable finds were recovered, showing a return to elegance, with Norse parallels which can be dated to the Early Medieval period of Scandinavia. They include a single-sided comb with side bars extending to form an arch and a long bronze pin with baluster shaped head which has parallels from Norway and with Gotland. A second long pin has a perforated lozenge shaped head, the perforation surrounded with threads of silver inlay. The only stone find was an open bar mould with matrices on all four sides, parallels have been quoted from blacksmiths' graves in Norway. These finds may be linked in time with the gaming board and playing piece from the church and adjacent buildings.

Finally, the medieval and post-medieval pottery fragments from the cemetery show continued use of the site, perhaps by pilgrims.

There is little evidence from which to make valid generalisations but, broadly speaking, the finds show the changing cultural links of the site. In the Pictish horizon they include Pictish and Irish elements. These, mixed with Northumbrian and Anglo-Saxon elements, continue in the lower Norse horizon, predominating over Norse objects. In the middle Norse horizon, the emphasis changes to predominantly Norse, but still with parallels in Northumbria and Ireland. Finally, in the upper Norse horizon the cultural background becomes fully Scandinavian.

7 CATALOGUE

All finds are in the National Museum of Antiquities of Scotland, Edinburgh, except those noted as in Tankerness House Museum, Kirkwall, Orkney (THM) or Birsay Site Museum (BSM). The finds in the National Museum are registered with the numbers in this catalogue prefixed by the letters HB.

Finds from the Hunter and Morris excavations are listed with their full site reference and phasing eg phase 1b (H and M.BB74: QX452). The appropriate Curle phasing is also given as it is generally in these groupings that the objects are discussed in the text.

Finds from Areas X and Y have been classified as belonging to the lower Norse horizon.

BONE

SMALL PINS (HIPPED-TYPE)

- 1 Bone pin, carved segmented head with collar and swelling shank. 60 mm long.
Area II. Unstratified. THM. Ill 7.
- 2 Bone pin, carved segmented head, with disc and collar, hippered shank. 38 mm long.
Area II. Lower Norse horizon, Room VIII. Ill 7.
- 3 Bone pin, rudimentary animal head set at right angles to shank. 57 mm long.
Area II. Pictish horizon, Zone 3. Ill 7.
- 4 Bone pin, finely carved animal head set at right angles to hippered shank. 53 mm long.
Area II. Middle Norse horizon, Room 2. Ill 7.
- 5 Bone pin, animal head with collar, set at right angles to shank. 39 mm long.
Area II. Pictish horizon, Zone 1. THM. Ill 7.
- 6 Bone pin, poor condition, animal head set at right angles to shank. 48 mm long.
Area III. House Site C. Not illustrated.
- 7 Bone pin, flat thistle-shaped head. 34 mm long (tip broken).
Area II. Pictish horizon, Zone 5 Phase 1b. (H and M.BB74: QX452). Ill 7.
- 8 Bone pin, circular head with disc and collar, hippered shank. 43 mm long.
Area II. Unstratified. Ill 7.
- 9 Bone pin, flat head with vertical sides and collar, dark colour. 42 mm long.
Area II. Pictish horizon, Zone 4. Ill 7.
- 10 Bone pin, faceted head over collar, swelling shank. 42 mm long.
Area II. Pictish horizon, Zone 1. Ill 7.
- 11 Bone pin, roughly faceted head, hippered shank. 37 mm long.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 12 Bone pin, mace-headed, 2 rows of projections round sides and 1 on top, hippered shank. 51 mm long.
Area II. Pictish horizon, Zone 4 Phase a. Ill 7.
- 13 Bone pin, flattened ball head decorated with incised oblique opposing lines, two incised bands of hatching on shank. 60 mm long.
Area II. Pictish horizon, Zone 1. Ill 7.
- 14 Bone pin, ball head decorated with incised cross, lozenge pattern on circumference, hippered shank. 39 mm long.
Area II. Unstratified. Ill 7.
- 15 Bone pin, circular head with disc and collar, decorated overall with dots, hippered shank. 28 mm long.
Area II. Pictish horizon, Zone 3. THM. Ill 7.
- 16 Bone pin, ball head with collar decorated with cross and dots, swelling shank. 42 mm long.
Area II. Pictish horizon, Zone 4 Phase a. Ill 7.
- 17 Bone pin, disc headed, single dot on either side, 3 dots round edge of disc. 32 mm long.
Area III. House Site D. Ill 7.
- 18 Bone pin, triangular ovoid head, with dot in each sector and on top. 31 mm long.
Area II. Pictish horizon, Zone 4 Phase a. Ill 7.
- 19 Bone pin, square head with flat top and collar. Decorated with dots, tapering shank. 52 mm long.
Area II. Pictish horizon, Zone 1. Ill 7.
- 20 Bone pin, irregular circular head with flat top decorated overall with dots, swelling shank. 55 mm long.
Area II. Lower Norse horizon, Passage 2. THM. Ill 7.
- 21 Bone pin, circular head with 5 dots on flat top, ring of dots round circumference, disc and collar. 55 mm long.
Area II. Pictish horizon, Zone 1. Ill 7.
- 22 Bone pin, circular head with flat top decorated with dots, swelling shank with band of 2 rows of dots joined by intersecting lines. 51 mm long.
Area II. Lower Norse horizon, Room IV. Ill 7.
- 23 Bone pin with circular flat topped head, decorated with dots and outlined by incised lines. 45 mm long (tip broken).
Area II. Lower Norse horizon, Room IV. Not illustrated.
- 24 Bone pin, flat, expanded head, tapering shank. 45 mm long.
Area II. Pictish horizon, Zone 5 Phase 1b. (H and M.BB74: QX453). Ill 7.
- 25 Bone pin, flat, angular head and swelling shank. 55 mm long (tip broken).
Area II. Lower Norse horizon, Room VII. Not illustrated.

- 26 Bone pin with flat, angular head and tapering shank. 44 mm long.
Area II. Lower Norse horizon, Room VII. Ill 7.
- 27 Bone pin, flat spade shaped head (part broken off), tapering shank. 60 mm long.
Area II. Pictish horizon, Zone 1. Ill 7.
- 28 Bone pin, flat, elongated head partly split and tapering shank with constricted neck. 66 mm long (tip broken).
Area II. Lower Norse horizon, Room VII. Not illustrated.
- 29 Bone pin, elongated head, and tapering shank. 64 mm long.
Area II. Lower Norse horizon, Room VII. Not illustrated.
- 30 Bone pin, large mushroom shaped head and thick hipped shank. 53 mm long.
Area II. Pictish horizon, Zone 4. Ill 7.
- 31 Bone pin, acorn shaped head and hipped shank. 45 mm long.
Area II. Pictish horizon, Zone 5 Phase 2b. (H and M.BB73: AM10). Ill 7.
- 32 Bone pin, button shaped head and hipped shank. 45 mm long.
Area II. Lower Norse horizon, Passage 1. THM. Ill 7.
- 33 Bone pin, button shaped head and hipped shank. 48 mm long.
Area II. Lower Norse horizon, Passage 1. Not illustrated.
- 34 Bone pin, button shaped head and hipped shank. 45 mm long.
Area II. Pictish horizon, Zone 3. THM. Not illustrated.
- 35 Bone pin, button shaped head and hipped shank. 41 mm long.
Area II. Pictish horizon, Zone V Phase 2b. (H and M.BB74: QO440). Not illustrated.
- 36 Bone pin, button shaped head and hipped shank. 40 mm long.
Area II. Pictish horizon. Not illustrated.
- 37 Bone pin with button shaped head and hipped shank. 39 mm long.
Area II. Pictish horizon. Zone 2. Not illustrated.
- 38 Bone pin, button shaped head and hipped shank. 39 mm long.
Area II. Lower Norse horizon, Room VII. Not illustrated.
- 39 Bone pin with button shaped head and hipped shank. 39 mm long (tip broken).
Area II. Lower Norse horizon, Room I. Not illustrated.
- 40 Bone pin with button shaped head and hipped shank. 39 mm long.
Area II. Pictish horizon, Zone 4 Phase b. Not illustrated.
- 41 Bone pin with button shaped head and hipped shank. 35 mm long.
Area II. Pictish horizon, Zone 4 Phase b. Not illustrated.
- 42 Bone pin with large ball head, constricted neck, and swelling shank. 41 mm long.
Area II. Middle Norse horizon, Midden b. THM. Ill 7.
- 43 Bone pin with ball head and hipped shank. 58 mm long.
Area II. Pictish horizon, Zone 4 Phase a. Not illustrated.
- 44 Bone pin with ball head and hipped shank. 56 mm long.
Area II. Pictish horizon, Zone 4 Phase a. Not illustrated.
- 45 Bone pin with small ball head, highly polished. 48 mm long.
Area II. Pictish horizon, Zone 2. Not illustrated.
- 46 Bone pin with ball head and hipped shank. 38 mm long.
Area II. Pictish horizon, Zone 4 Phase a. Not illustrated.
- 47 Bone pin with ball head and hipped shank. 35 mm long.
Area II. Pictish horizon, Zone 5 Phase 1a. (H and M.BB74: QZ459). Not illustrated.
- 48 Bone pin with faceted head, worn, and hipped shank. 36 mm long.
Area II. Pictish horizon, Zone 5 Phase 2b. (H and M.BB74: QO437). Not illustrated.
- 49 Bone pin with very small ball head and swelling shank. 53 mm long.
Area II. Lower Norse horizon, Room VII. Not illustrated.
- 50 Bone pin with very small ball head and swelling shank. 30 mm long (tip broken).
Area II. Pictish horizon, Zone 4 Phase a. Not illustrated.
- 51 Bone pin with globular head and swelling shank. 55 mm long.
Area II. Lower Norse horizon, Room VIII. Not illustrated.
- 52 Bone pin with round head with collar, hipped shank. 33 mm long (tip broken).
Area II. Lower Norse horizon, Room VIII. THM. Ill 7.
- 53 Bone pin with round head and collar, hipped shank. 44 mm long (tip broken).
Area II. Pictish horizon, Zone 1. Not illustrated.
- 54 Bone pin with round head surmounted with flat disc, swelling shank. 45 mm long.
Area II. Pictish horizon, Zone 4 Phase b. Ill 7.
- 55 Bone pin with round head surmounted by disc, hipped shank. 35 mm long.
Area II. Pictish horizon, Zone 2. Not illustrated.
- 56 Bone pin with ball head surmounted by disc, hipped shank. 45 mm long.
Area II. Pictish horizon, Zone 4, Phase b. Not illustrated.
- 57 Bone pin with truncated large flat topped head, hipped shank. 42 mm long (tip broken).
Area II. Pictish horizon, Zone 1. THM. Ill 7.
- 58 Bone pin with half-ball flat topped head and hipped shank. 45 mm long.
Unstratified. Not illustrated.
- 59 Bone pin with half-ball head and hipped shank. 67 mm long.
Area II. Lower Norse horizon, Passage 1. Not illustrated.
- 60 Bone pin with half-ball head and swelling shank. 66 mm long.
Area II. Pictish horizon. Ill 7.
- 61 Bone pin with half-ball head and hipped shank. 54 mm long.
Area II. Pictish horizon, Zone 4 Phase b. Not illustrated.
- 62 Bone pin with half-ball head and hipped shank. 45 mm long.
Area II. Unstratified. THM. Not illustrated.
- 63 Bone pin with half-ball head and hipped shank. 43 mm long.
Area II. Pictish horizon, Zone 4 Phase b. Not illustrated.
- 64 Bone pin with half-ball head and curved shank. 44 mm long.

- Area II. Pictish horizon, Zone 4 Phase b. Not illustrated.
- 65 Bone pin with small half-ball head, hipped shank. 40 mm long.
Area III. House Site E. Not illustrated.
- 66 Bone pin with half-ball head and swelling shank. 40 mm long.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 67 Bone pin with half-ball head and hipped shank. 39 mm long.
Area III. House Site E. Not illustrated.
- 68 Bone pin with half-ball head and hipped shank. 37 mm long.
Area II. Pictish horizon, Zone 4 Phase a. Not illustrated.
- 69 Bone pin with half-ball head and collar, hipped shank. 47 mm long.
Area II. Lower Norse horizon, Room VII. Not illustrated.
- 70 Bone pin with half-ball head and collar, hipped shank. 40 mm long.
Area II. Pictish horizon, Zone 4 Phase a. Not illustrated.
- 71 Bone pin with straight-sided head encircled by incised line. 37 mm long.
Area II. Pictish horizon, Zone 4 Phase b. Not illustrated.
- 72 Bone pin with ovoid head. 35 mm long.
Area III. House Site C. Not illustrated.
- 73 Bone pin, flattened half-ball head. 37 mm long.
Area II. Pictish horizon, Zone 4 Phase b. THM. Not illustrated.
- 74 Bone pin, flattened half-ball head. 52 mm long.
Area II. Pictish horizon, Zone 4 Phase a. THM. Not illustrated.
- 75 Bone pin, flattened half-ball head. 60 mm long (tip broken).
Area II. Pictish horizon, Zone 4 Phase b. Not illustrated.
- 76 Bone pin, flattened straight-topped head (rough condition). 66 mm long.
Area II. Pictish horizon, Zone 5, layers to the E. (H and M.BB74: PT250). Not illustrated.
- 77 Bone pin, (shank only) narrow incised band with oblique strokes. 26 mm long.
Area II. Unstratified. Not illustrated.
- 84 Bone pin, globular head roughly carved, oval section. 114 mm long (shank repaired).
Area II. Lower Norse horizon, Room VIII. Ill 48.
- 85 Bone pin, double button head, oval section. 95 mm long.
Area II. Lower Norse horizon, Passage 1. Ill 48.
- 86 Bone pin, flat straight topped head with constricted waist. 72 mm long (shank incomplete).
Area II. Unstratified. B S M. Ill 48.
- 87 Bone pin, flat winged head. 62 mm long (shank incomplete).
Area II. Pictish horizon, Zone 4 Phase b. Ill 48.
- 88 Bone pin, head carved with triangular segments, a dot in centre of each. 68 mm long (shank incomplete), poor condition.
Area II. Lower Norse horizon, Room I. Ill 48.
- 89 Bone pin, from pig's fibula, flat roughly squared head. 110 mm long.
Area II. Upper Norse horizon, Room 13. Ill 48.
- 90 Bone pin, from pig's fibula, straight topped flat head. 87 mm long (shank incomplete).
Area II. Lower Norse horizon, Passage 1. Not illustrated.
- 91 Bone skewer pin, expanded flat straight topped head rolled over at top. 92 mm long.
Area II. Middle Norse horizon, Room 6. Ill 48.
- 92 Antler pin with straight topped flat expanded head. 93 mm long (tip broken).
Area II. Lower Norse horizon, Passage 1. Ill 48.
- 93 Bone pin with straight topped flat expanded head and swelling shank. 90 mm long.
Area II. Middle Norse horizon, Room 10. Ill 48.
- 94 Bone pin, from pig's fibula, with straight topped expanded head. 83 mm long.
Area II. Unstratified. Not illustrated.
- 95 Bone pin, from pig's fibula, with straight topped expanded head. 87 mm long.
Area II. Lower Norse horizon, Room IV. Not illustrated.
- 96 Bone skewer pin, from pig's fibula. 80 mm long.
Area II. Room 5, unstratified (H and M.BB74: PA200) THM. Ill 48.
- 97 Bone skewer pin, from pig's fibula. 88 mm long.
Area II. Lower Norse horizon, Room III. Not illustrated.
- 98 Bone skewer pin, from pig's fibula. 98 mm long.
Area II. Lower Norse horizon, Room I. Not illustrated.
- 99 Bone skewer pin, from pig's fibula. 112 mm long.
Area II. Middle Norse horizon, Room 7. Ill 48.
- 100 Bone skewer pin, possibly whalebone, split and roughly formed. 78 mm long.
Area II. Lower Norse horizon, Room V, Phase 4a. (H and M.BB74: QA308). Not illustrated.

LARGER PINS AND SKEWERS

- 78 Bone pin, flattened head. 35 mm long (shank broken).
Area II. Unstratified. Not illustrated.
- 79 Bone pin, small circular flat-topped head with dot in centre. 95 mm long.
Area II. Lower Norse horizon, Passage 1. Not illustrated.
- 80 Bone pin, flattened head. 99 mm long.
Area II. Lower Norse horizon, Passage 1. Not illustrated.
- 81 Bone pin, from pig's fibula, flattened head. 82 mm long.
Area II. Unstratified. Not illustrated.
- 82 Bone pin, globular head, rough condition. 100 mm long.
Area II. Lower Norse horizon, Passage 1. Not illustrated.
- 83 Bone pin, globular head. 55 mm long (shank incomplete).
Area II. Middle Norse horizon, Midden a. Not illustrated.

LARGE PINS WITH PERFORATED HEADS

- 101 Bone pin, flat winged head, large perforation. 123 mm long.
Area II. Upper Norse horizon, Room 14. Ill 48.
- 102 Pin from long bone, flat straight head outlined by single incised line with hatching. 106 mm long.
Area II. Middle Norse horizon, Room 8. THM. Ill 48.
- 103 Pin, long bone, flat straight head outlined by incised lines with hatching. 80 mm long (shank incomplete).
Area II. Middle Norse horizon, Room 6. Ill 48.
- 104 Pin, long bone, flat expanded head, hipped shank. 105 mm long.
Area II. Middle Norse horizon, Room 8. Ill 48.

- 105 Pin, long bone, flat rectangular head with pedimented top. 108 mm long.
Area II. Middle Norse horizon, Room 4. Ill 48.
- 106 Pin, long bone, flat spade shaped head. 90 mm long.
Area II. Middle Norse horizon, Room 7. Ill 48.
- 107 Pin, antler, flat irregularly shaped head, perforated, rough condition. 128 mm long.
Area II. Lower Norse horizon, Room V, Phase 4b. (H and M.BB74: PO202). Ill 48.
- 108 Pin, long bone, flat expanded head, perforated. 49 mm long (shank incomplete).
Area II. Unstratified. THM. Ill 48.
- 109 Pin, antler, angular head. 60 mm long (shank incomplete).
Area II. Lower Norse horizon, Passage 2. Ill 48.
- 110 Pin, long bone, roughly rounded head. 97 mm long.
Area II. Middle Norse horizon, Midden a. Ill 48.
- 111 Pin, long bone from large animal, very thick shank. 105 mm long.
Area II. Middle Norse horizon, Room 2. Ill 48.
- 112 Pin, long bone from large animal, flat straight head. 160 mm long (shank broken).
Area II. Middle Norse horizon, Room 4. Ill 48.
- 113 Pin, bone or antler, annular head. 35 mm long (shank broken).
Area II. Middle Norse horizon, Room 2. Ill 48.
- 114 Pin, long bone or pig's fibula, flat straight head. 35 mm long (shank broken).
Area II. Middle Norse horizon, Midden a. THM. Ill 48.
- 115 Pin, long bone or pig's fibula, annular head. 35 mm long (shank broken).
Area II. Middle Norse horizon. Midden a. Ill 48.
- 116 Pin, antler, flat straight head. 50 mm long (shank broken).
Area II. Middle Norse horizon, Midden a. Ill 48.
- 117 Pin, antler, annular head. 28 mm long (shank incomplete).
Area II. Middle Norse horizon, Midden a. Ill 48.
- 118 Pin, long bone, roughly pedimented head. 44 mm long (shank incomplete).
Area II. Middle Norse horizon, Midden a. Ill 48.
- 119 Pin, long bone, flat irregular head. 60 mm long (shank incomplete).
Area II. Middle Norse horizon, Room 11. THM. Ill 48.
- 120 Pin, long bone, flat annular head. 74 mm long (tip broken).
Area II. Middle Norse horizon, Midden b. Ill 48.
- 121 Pin, long bone, straight head set at an angle. 74 mm long.
Area II. Lower Norse horizon, Room V, Phase 4b. (H and M.BB74: PR209). THM. Ill 48.
- 122 Pin, long bone, flat straight head (incomplete). 98 mm long (shank incomplete).
Area II. Lower Norse horizon, Room IV. THM. Ill 48.
- 123 Bone pin, carved head with large perforation. 87 mm long (shank incomplete).
Area II. Middle Norse horizon, Midden a. THM. Not illustrated.
- 124 Bone pin, broken at perforation. 77 mm long.
Area II. Middle Norse horizon, Midden c. Not illustrated.
- 125 Bone pin, flat straight topped head. 63 mm long (shank incomplete).
Area II. Middle Norse horizon, Room 1. Not illustrated.
- 126 Bone pin, flat expanded straight topped head. 34 mm long (shank incomplete).
Area II. Lower Norse horizon, Room I. Not illustrated.
- 127 Bone pin, annular head, fractured at perforation, spatulate shank (incomplete). 77 mm long.
Area II. Pictish horizon, Zone 5 Phase 2b (H and M.BB74: QO434). Not illustrated.
- 128 Bone pin, fractured at perforation. 44 mm long (shank split and incomplete).
Area II. Lower Norse horizon, Room V, Phase 4b (H and M.BB74: PR219). Not illustrated.
- 129 Bone pin, flat head, coarse thick shank. 97 mm long (tip broken).
Unstratified. Not illustrated.

NAIL-HEADED PINS

- 130 Pin, long bone, nail-headed. 117 mm long (shank mended, tip broken).
Area II. Middle Norse horizon, Midden a. Ill 48.
- 131 Pin, antler, nail-headed. 40 mm long (shank broken).
Area II. Middle Norse horizon, Room 11. Ill 48.
- 132 Pin, long bone, nail-headed. 58 mm long.
Area II. Middle Norse horizon, Midden a. Ill 48.
- 133 Pin, antler, nail-headed. 40 mm long (shank broken).
Area II. Middle Norse horizon, Midden a. Ill 48.
- 134 Pin, long bone, nail-headed. 42 mm long (shank broken).
Area II. Middle Norse horizon, Midden a. Ill 48.
- 135 Pin, antler, nail-headed. 79 mm long.
Area II. Middle Norse horizon, Room 11. THM. Ill 48.
- 136 Pin, antler, nail-headed. 115 mm long (shank repaired, tip missing).
Area II. Middle Norse horizon, Midden a. Not illustrated.
- 137 Pin, long bone, nail-headed. 30 mm long (shank broken).
Area II. Middle Norse horizon, Room 1. Not illustrated.

NEEDLES

- 138 Bone needle from long bone. 35 mm long (shank incomplete). Area II. Lower Norse horizon, Room II. Ill 8.
- 139 Bone needle, shank encircled by spiral incised line. 42 mm long.
Area II. Pictish horizon, Zone 2. Ill 8.
- 140 Bone needle, eye set low, tapering shank. 45 mm long.
Area III. House Site C. THM. Ill 8.
- 141 Bone needle, tapering shank. 45 mm long.
Area II. Pictish horizon, Zone 2. THM. Ill 8.
- 142 Bone needle, tapering shank, imperfectly cut. 55 mm long.
Area II. Pictish horizon, Zone 1. Ill 8.
- 143 Bone needle, slightly curved shank. 62 mm long.
Area II. Lower Norse horizon, Area Y. Ill 8.
- 144 Bone needle, rectangular top decorated with dots, tapering shank. 62 mm long.
Area II. Lower Norse horizon, Passage 1. Ill 8.
- 145 Bone needle, tapering shank. 52 mm long.
Unstratified. THM. Ill 8.
- 146 Bone needle, tapering shank. 47 mm long.
Unstratified. Ill 8.
- 147 Bone needle, roughly shaped. 45 mm long (shank incomplete).
Area II. Lower Norse horizon, Passage 1. THM. Not illustrated.

- 148 Bone needle, wide, flat, eye set low. 45 mm long. Area II. Unstratified. Not illustrated.
- 149 Bone needle, fractured at eye, slender shank. 55 mm long. Area II. Pictish horizon, Zone 2. Not illustrated.
- 150 Bone needle, not completed, eye not pierced through, slightly curved shank. 44 mm long. Unstratified. Not illustrated.
- 151 Bone needle from pig's fibula, curved top. 95 mm long. Area II. Lower Norse horizon, Room I. Ill 34.
- 152 Bone needle, head slanting, perforation not fully bored through. 73 mm long. Area II. Lower Norse horizon, Passage 2. Ill 34.
- 153 Bone needle, pointed head. 70 mm long (shank incomplete). Area II. Lower Norse horizon, Area Y. Ill 34.
- 154 Bone needle, flat slanting head. 73 mm long (shank incomplete). Area II. Lower Norse horizon, Room VII. Ill 34.
- 155 Bone needle, flat head. 46 mm long (shank incomplete). Area II. Lower Norse horizon, Passage 2. Ill 34.
- 156 Bone needle, straight head. 28 mm long (shank incomplete). Area II. Lower Norse horizon, Room V, Phase 4b. (H and M.BB74: PO205). Ill 34.
- 157 Bone needle, from rib bone, elongated head and eye, curved shank. 88 mm long. Area II. Lower Norse horizon, Passage 1. Ill 34.
- 158 Bone needle, sharply pointed elongated head, elongated eye. 88 mm long. Area II. Lower Norse horizon, Room VIII. Ill 34.
- 159 Antler needle, wide flat section, elongated eye. 45 mm long (shank incomplete). Area II. Lower Norse horizon, Room I. Ill 34.
- 160 Bone needle, polished, triangular in shape, with notch at top, wide oval eye, with small perforation below. 53 mm long. Area I. Surface find. Ill 34.
- 161 Bone netting needle, flat head, broken at eye, tapering shank. 98 mm long (tip broken). Area II. Middle Norse horizon, Room 8. Ill 34.
- 162 Bone netting needle, flat slightly curved head, curved shank. Area II. Middle Norse horizon, Room 10. THM. Ill 34.
- 163 Bone netting needle, flat straight head, curved shank. 105 mm long. Area II. Upper Norse horizon, Room 14. Ill 34.
- 164 Group of eighteen shanks for large pins or needles, all with points.
- 169 Pick, rib fragment. 41 mm long. Area II. Lower Norse horizon, Room VIII. THM. Ill 35.
- 170 Pick, fragment long bone. 49 mm long. Area II. Lower Norse horizon, Room VIII. Ill 35.
- 171 Pick, rib fragment. 62 mm long. Area II. Lower Norse horizon, Room VIII. Ill 35.
- 172 Pick, rib fragment. 64 mm long. Area II. Pictish horizon, Zone 4 Phase a. Ill 35.
- 173 Pick, rib fragment. 60 mm long. Area II. Lower Norse horizon, Room VI. Ill 35.
- 174 Pick, rib fragment. 64 mm long. Area II. Middle Norse horizon, Room I. Ill 35.
- 175 Pick, rib fragment. 65 mm long. Area II. Lower Norse horizon, Room VII. Ill 35.
- 176 Pick, rib bone from ungulate. 86 mm long. Area II. Lower Norse horizon, Room VIII. Ill 35.
- 177 Pick, pointed both ends. 45 mm long. Unstratified. THM. Not illustrated.
- 178 Pick, from pig's incisor tooth (root is point). 45 mm long. Area II. Lower Norse horizon, Room VII. THM. Ill 35.
- 179 Pick, from pig's incisor tooth (root is point), 38 mm long. Area II. Lower Norse horizon, Room VIII. Ill 35.
- 180 Pick, from sheep or goat metatarsus. 56 mm long. Area II. Lower Norse horizon, Room VII. Ill 35.
- 181 Bone implement, pointed both ends, polished, from long bone. 83 mm long. Area II. Upper Norse horizon, Room 14. Ill 35.
- 182 Bone implement, pointed both ends, from long bone. 83 mm long. Area II. Upper Norse horizon. THM. Not illustrated.
- 183 Bone implement, pointed both ends, from long bone. 90 mm long. Area II. Lower Norse horizon, Room V, Phase 3b (H and M.BB74: QB358). Not illustrated.
- 184 Bone implement, round with straight top, pointed end; antler or long bone. 79 mm long. Area II. Unstratified. Ill 35.
- 185 Bone implement, similar to 184, round with straight top with dot in centre, pointed end, antler or long bone. 80 mm long. Area II. Lower Norse horizon, Room V, Phase 4a. (H and M.BB73: AG8). THM. Not illustrated.
- 186 Bone implement, round, pointed end. 88 mm long (tip broken). Unstratified. Not illustrated.
- 187 Bone implement, pointed top broken, antler or long bone. 73 mm long. Area II. Lower Norse horizon, Passage 2. Not illustrated.
- 188 Round pointed implement, flat, slightly expanded top. 70 mm long. Unstratified. Not illustrated.
- 189 Wide flat pointed implement, antler or long bone. 81 mm long (top and point broken). Area II. Pictish horizon, Zone 4, Phase a. Ill 35.
- 190a Wide flat pointed implement, antler or long bone. 60 mm long (top and tip broken). Area II. Unstratified. THM. Not illustrated.
- 190b Flat pointed implement, widening at top. 56 mm long (top broken). Unstratified. Not illustrated.
- 191 Leaf shaped implement. 42 mm long. Unstratified. Not illustrated.
- 192a Unfinished rod, long bone, possibly rough-out for large pin. 110 mm long.

PICKS AND POINTED BONE IMPLEMENTS

- 165 Bone implement, sharply pointed, flat section, from rib bone of large ungulate. 105 mm long. Area II. Lower Norse horizon, Passage 2. Ill 35.
- 166 Bone implement, sharply pointed, flat section, from rib bone of large ungulate. 97 mm long. Area II. Lower Norse horizon, Room VIII. THM. Ill 35.
- 167 Pick, rib fragment. 39 mm long. Area II. Lower Norse horizon, Room IV. THM. Ill 35.
- 168 Pick, rib fragment. 39 mm long. Area II. Lower Norse horizon, Room VIII. THM. Ill 35.

- Area II. Lower Norse horizon, Room V, Phase 4a. (H and M.BB74: PZ260). Not illustrated.
- 192b Cut bone, possibly rough-out for pin, 75 mm long. Area II. Pictish horizon, Zone 5, Phase 2b. (H and M.BB74: QO438). Not illustrated.

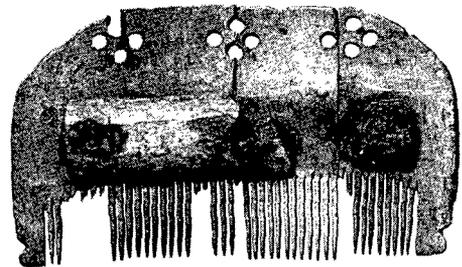
ANTLER HAIR COMBS: DOUBLE-SIDED

- 193 Pair connecting plates, convex section, incised with chevron pattern, 6 iron rivets, teeth broken off. 115 mm long.
Area II. Lower Norse horizon, Room V, Phase 4a. (H and M.BB73: AC6). Ill 10.
- 194 Fragment of connecting plate, decoration oblique incised lines. 22 mm long.
Area II. Lower Norse horizon, Room V, phase 4a. (H and M.BB74: PW273). Ill 10.
- 195 Fragment of connecting plate, decoration alternate vertical and crossed incised lines and extended tooth cuts. 52 mm long.
Area II. Unstratified. Ill 10.
- 196 Comb with one end tooth segment missing. Connecting plates with raised panels. Decoration dot-in-double-circle, 5 iron rivets, teeth graduated. 96 mm long.
Area II. Pictish horizon, Zone 1. THM. Ill 10.
- 197 Comb with convex connecting plates, bevelled ends, 6 iron rivets, ? teeth graduated, decoration dot-in-double-circle, suspension hole at each end. 112 mm long.
Area II. Pictish horizon, Zone 1. Ill 10.
- 198 Comb (incomplete) one end tooth segment, fragments of connecting plates, flat section, 2 iron rivets, decoration dot-in-circle, teeth graduated, 1 suspension hole. 48 mm long.
Area II. Pictish horizon, Zone 1. Ill 10.
- 199 Fragments of connecting plates, decoration dot-in-circle, 2 iron rivets, 3 tooth segments. 70 mm long.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 200 Almost complete comb, connecting plates, flat section, with a line of dots-in-ring between grooved horizontal lines, 5 iron rivets, end tooth segments with dot-in-circle, teeth slightly graduated. 153 mm long.
Area II. Lower Norse horizon, Room VI. Ill 10.
- 201 End tooth segment only, teeth slightly graduated, coarse, 1 iron rivet, hole for suspension. 18 mm long.
Area II. Lower Norse horizon, Room IV. Ill 10.
- 202 Comb, incomplete but broken end smoothed for re-use. Connecting plates flat section, plain, 5 iron rivets, teeth slightly graduated. 96 mm long.
Area II. Lower Norse horizon, Room I. Ill 10.
- 203 Almost complete comb, connecting plates convex, plain, 7 iron rivets, teeth slightly graduated. 150 mm long.
Area II. Lower Norse horizon, Passage 1. THM. Ill 10.
- 204 Pair connecting plates only, flat section, decoration single row of dot-in-double-circle, 3 iron rivets. 60 mm long.
Area II. Pictish horizon, Zone 1. Ill 10.
- 205 Pair connecting plates, incomplete, flat section, decorated 3 rows dot-in-circle, 2 iron rivets, 1 tooth segment. 60 mm long.
Area II. Lower Norse horizon, Room I. Ill 10.
- 206 One end tooth segment, decorated with vertical row of dot-in-circle, and one middle tooth segment. 30 mm long.
Area II. Lower Norse horizon, Passage 1. Ill 10.

- 207 One end tooth segment, suspension hole and decorated with dot-in-circle. 24 mm long.
Area II. Lower Norse horizon, Passage 1. Ill 10.
- 208 One end tooth segment decorated with dot-in-circle and faintly incised vertical lines, and one connecting plate (incomplete) with dot-in-circle, 1 iron rivet. 36 mm long.
Area II. Lower Norse horizon, Passage 1. THM. Ill 10.
- 209 Single connecting plate, convex section (incomplete), decoration dot-in-circle, extended tooth cuts, 2 iron rivets, 1 tooth segment. 53 mm long.
Area II. Lower Norse horizon, Passage 1. Ill 10.
- 210 Single connecting plate (incomplete), dot-in-circle decoration, 1 iron rivet, 1 tooth segment (incomplete). 35 mm long.
Area II. Lower Norse horizon, Passage 1. Not illustrated.
- 211 Single undecorated end tooth segment, ogival, and 3 tooth segments, 1 iron rivet. Teeth fine. 55 mm long.
Area II. Pictish horizon, Zone 4. Not illustrated.
- 212 Group of one end tooth segment, and 3 central tooth segments, 2 fragments connecting plates. Approx 60 mm long.
Area II. Lower Norse horizon, Passage 1. Not illustrated.
- 213 Small fragment connecting plate, decorated with fine vertical lines. 32 mm x 11 mm.
Area II. Lower Norse horizon, Room I. Not illustrated.

SINGLE-SIDED COMBS: HIGH BACKED

- 214 Round-backed comb, one end broken and smoothed for re-use, two decorative perforations, plain connecting plates, 3 iron rivets. 62 mm long.
Area II. Pictish horizon, Zone 4 Phase b. Ill 9.
- 215 Round-backed comb, three decorative groups of 4 punched holes set at junction of segments, plain bevelled connecting plates (incomplete), 3 iron rivets. 76 mm long.



215

Half of comb from Area III, House Site C; other half from Area II, Pictish horizon, Zone 1. THM. Ill 9.

- 216 Fragment of connecting plate with decoration of incised oblique opposing lines and dot-in-circle showing tooth marks. 26 mm long.
Area II. Lower Norse horizon, Room V, Phase 3b. (H and M.BB74: QB363). Ill 9.
- 217 Comb (incomplete) with curved top, the edge ornamented with short oblique lines and one group of 4 punched holes, connecting plates (incomplete) bevelled, decorated with incised oblique opposing lines. 80 mm long.
Area II. Lower Norse horizon, Room VIII. Ill 9.

- 218 Comb (incomplete) with curved back ending in outline of bird's head, decorated with dot-in-circle, connecting plates with crossed double lines ending in dot-in-circle, 4 iron rivets. 87 mm long.
Area II. Lower Norse horizon, Passage 2. Ill 9.
- 219 End tooth segment of high-backed comb only, flat top ornamented with 2 dot-in-circle, short oblique cut on inward side. 19 mm wide.
Area II. Pictish horizon, Zone 4. Phase b. Ill 9.
- 220 End tooth segment only of high-backed comb, top forms wavy line, single perforation, short oblique cut in inward side. 17 mm wide.
Area II. Lower Norse horizon, Room V, Phase 4a (H and M.BB74: PZ378). Ill 9.
- 221 Comb (incomplete), remaining end segment forms curved openwork outline decorated with groups of dot-in-circle. 83 mm long.
Area II. Lower Norse horizon, Area X. Ill 9.
- 222 Fragment of thin curved bone plate, decorated with random dot-in-circle, perforations. Possibly trial piece for comb. 28 mm × 15 mm.
Area II. Lower Norse horizon, Room VII. Not illustrated.
- 223 Fragment of shaped antler bone plate, decorated with dot-in-circle. Possibly end segment of high-backed comb. 22 mm × 16 mm.
Area II. Lower Norse horizon, Room I. Not illustrated.

SINGLE-SIDED COMBS: NORSE TYPES

- 224 Comb, with straight base and curved back, ends missing, outlined by double grooved line, and with recumbent S-form in centre, 5 iron rivets, tooth segments incomplete. 168 mm long.
Area II. Lower Norse horizon, Room IV. THM. Ill 36.
- 225 Comb (incomplete), connecting plates with straight base and curved back, outlined by incised line, ornamented by interwoven incised lines, 2 iron rivets. 70 mm long.
Area II. Lower Norse horizon, Room VII. Ill 36.
- 226 Fragments of connecting plates, hemispherical section and with band of cording at one end, tooth segment (teeth missing). 44 mm long.
Area II. Lower Norse horizon, Room I. Ill 36.
- 227 Connecting plate (incomplete), straight base and curved top, end decorated with band of cording, single iron rivet. 76 mm long.
Unstratified. Ill 36.
- 228 End tooth segment with graduated teeth, 1 iron rivet. 18 mm long.
Area II. Middle Norse horizon, Room 2. Ill 49.
- 229 Fragment of connecting plate, band of cording at end and band of hatching. 30 mm long.
Area II. House Site C. Ill 49.
- 230 Comb with connecting plates extending to form arched back, copper rivets, graduated teeth. 83 mm long.
Area II. Upper Norse horizon, Room 13. Ill 49.

COMB CASES

- 231 Comb case (incomplete, 1 connecting plate, 1 separator missing), upper connecting plate with bands of cording at ends, panel with dot-in-circle in centre, lower connecting plate with panel of crossing incised lines, 2 suspension holes, 3 iron rivets. 120 mm long.
Area II. Middle Norse horizon, doorway to Room 1. THM. Ill 49.

- 232 Fragments of comb case, one end separator and fragments of two connecting plates with pattern of vertical incised double lines. 38 mm long.
Area II. Middle Norse horizon, Room 6. Ill 49.
- 233 One connecting plate and fragment of separator, single contour line and short oblique incised lines along edge. 88 mm long.
Area II. Middle Norse horizon, Midden a. Ill 49.

COMBS: MISCELLANEOUS FRAGMENTS

- 234a Bar, of long bone, resembling connecting plate of comb, flat base, curved section, with pattern of vertical and crossing double lines, worn. 84 mm long.
Unstratified. Ill 49.
- 234b Bone plate, possibly rough-out for comb segment, 103 mm long.
Area II, Lower Norse horizon, Room V, Phase 4a (H and M. BB74: QA277). Not illustrated.

BONE: MISCELLANEOUS

- 235 Spindle whorl from femur head of ox or deer. 40 mm diameter.
Area II. Middle Norse horizon, Room 10. THM. Ill 38.
- 236 Spindle whorl from femur head of ox or deer. 35 mm diameter.
Area II. Middle Norse horizon, Room 10. Ill 38.
- 237 Spindle whorl (incomplete) from femur head of ox or deer. 36 mm diameter.
Area II. Middle Norse horizon, Room 10. Ill 38.
- 238 Spindle whorl (incomplete, burnt) from femur head of ox or deer. 29 mm diameter.
Area II. Unstratified. Not illustrated.
- 239 Femur head of ox or deer, base and top flattened and smoothed. 40 mm diameter.
Area II. Lower Norse horizon, Passage 1. THM. Ill 38.
- 240 Hollow cylinder, pierced laterally, bird long bone, goose-size. 66 mm long.
Area II. Lower Norse horizon, Passage 1. THM. Ill 38.
- 241 Hollow cylinder, pierced laterally, bird long bone, goose-size. 73 mm long.
Area II. Lower Norse horizon, Passage 1. Ill 38.
- 242 Hollow cylinder, pierced laterally, bird long bone, goose-size. 63 mm long.
Area II. Middle Norse horizon, Midden a. Not illustrated.
- 243 Weaving tablet with 4 perforations, one side damaged, probably from scapula blade from small ungulate. 30 mm square.
Area II. Lower Norse horizon, Room I. THM. Ill 38.
- 244 Rectangular panel, one end stepped, oblong perforation, 2 dot-in-circle on each side, from shaped plate of antler cortex. 37 mm long.
Area II. Middle Norse horizon, Room 4. Ill 38.
- 245 Rectangular plate from outer cortex with medulla IV of red deer, back flat, front convex with 2 horizontal grooves. 97 mm long.
Area II. Lower Norse horizon, Room VII. THM. Ill 38.
- 246 Mounting with shaped terminals from antler cortex, 4 perforations: retaining 1 complete antler peg and the head of a second. 98 mm long, peg 16 mm long.
Area II. Lower Norse horizon, Area Y. Ill 38.
- 247 Mounting of antler, worn, irregular outline, single perforation remaining. 73 mm long.
Area II. Lower Norse horizon, Passage 1. Ill 38.

- 248 Mounting, 2 perforations, with incomplete perforations at each end, from antler cortex. 85 mm long.
Area II. Lower Norse horizon, Passage 1. THM. Ill 38.
- 249 Mounting from antler cortex, slightly curved section, perforations at each end, broken perforations. 72 mm long.
Area II. Lower Norse horizon, Room VII. Ill 38.
- 250 Mounting, bone, small perforation at each end, irregular outline, oval panel of interlacing. 50 mm long.
Area II. Pictish horizon, Zone 4, Phase b. Ill 12, 38.
- 251 Handle from antler tine, turned, broken at top, pierced through centre, decorated with 4 rows dot-in-circle. 19 mm high.
Area II. Unstratified. THM. Ill 38.
- 252 Crescent-shaped object of antler, smoothly rounded, tips broken off, front decorated dot-in-double-circle, small oval depression on back. 28 mm wide.
Area II. Middle Norse horizon, Midden a. Ill 38.
- 253 Amulet, seal's canine, with suspension hole, engraved 'FUTHARK' in runes. 50 × 30 mm.
Area II. Lower Norse horizon, Passage 1. Ill 37, 38.
- 254 Pig's tusk (broken at root) large perforation. 80 mm across.
Area II. Lower Norse horizon, Passage 1. THM. Ill 38.
- 255 Handle, circular, sheep or goat metatarsus, pierced centrally, distal end hollowed. 95 mm long.
Area II. Lower Norse horizon, Room IV. THM. Ill 38.
- 256 Handle, circular, sheep or goat metatarsus, pierced centrally, partly split. 77 mm long.
Area II. Lower Norse horizon, Room II. Ill 38.
- 257 Fragment of sheep or goat metatarsus, pierced centrally: possibly handle. 22 mm long.
Unstratified. Not illustrated.
- 258 Fragment of sheep or goat metatarsus, pierced centrally, also transverse perforation for iron rivet: possibly handle. 25 mm long.
Area II. Lower Norse horizon, Zone 1. Not illustrated.
- 259 Pin with hollow globular bone head, fragment of iron shank embedded. 24 mm high.
Area II. Lower Norse horizon, Room VII. Ill 38.
- 260 Pin with hollow globular bone head, iron shank missing. 30 mm high.
Area II. Lower Norse horizon, Passage 1. THM. Ill 38.
- 261 Pin with hollow globular bone head, iron shank incomplete. 40 mm high overall.
Area II. Lower Norse horizon, Room VII. THM. Ill 38.
- 262 Pin with hollow globular bone head, fragment of iron shank embedded. 24 mm high.
Area II. Pictish horizon, Zone 4, Phase b. Ill 38.
- 263 Bead from tooth or tusk, possibly seal, large oval perforation. 18 mm long.
Area II. Lower Norse horizon, Room VII. Ill 38.
- 264 Bead from tooth or tusk, possibly seal, large oval perforation, discoloured by fire. 19 mm long.
Area II. Lower Norse horizon, Room VII. Ill 38.
- 265 Disc, oval, from tooth, possibly seal, pierced at centre. 18 mm long.
Area III. House Site C. Ill 38.
- 266 Pointed object of antler, D-shaped base with nail in core. 31 mm high.
Area II. Pictish horizon, Zone 1. THM. Ill 38.
- 267 Trial piece (incomplete) from ox scapula. 230 mm long.
Area II. Pictish horizon, Zone 4, Phase a. Ill 11.
- 268 Trial piece (incomplete) from ox scapula, incised with 'broad arrow'. 92 mm long.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 269 Fragment of polished long bone, formless pattern of faint incised lines on one side, and part of circle engraved on edge. 38 mm × 12 mm.
Area II. Unstratified. Not illustrated.
- 270 Fragment of thin polished bone from ox scapula, one edge cut and one large perforation, 152 mm long.
Area II. Lower Norse horizon, Passage 1. Not illustrated.
- 271 Playing piece, formed from femur, conical with flat base with vertical perforation. 25 mm high.
Area II. Middle Norse horizon, Midden b. Ill 38.
- 272 Ox first phalanx, 2 holes in posterior end, socketed longitudinally. 40 mm high.
Area II. Pictish horizon, Zone 1. Ill 38.

BONE : MISCELLANEOUS LARGE OBJECTS

- 273 Handle from tine, polished oval grip, one end curved, the other a narrowed section with two perforations for attachment. 95 mm long.
Area I. Ill 50.
- 274 Gaming board (incomplete), whalebone, 5 rows vertical lines, 3 horizontal, with perforations at junctions irregularly spaced. 92 mm × 62 mm.
Area I. W Apartment. Ill 50.
- 275 Playing piece of antler, polished, conical with acorn shaped terminal, socketed longitudinally. 37 mm high.
Area I. Church. Ill 50.



275

- 276 Hook or bracket from crown portion of antler (probably red deer), 3 perforations, cut from either side. 80 mm long.
Area II. Middle Norse horizon, Room 2. Ill 50.
- 277 Toggle, or handle, bone from large fish, with constricted neck (incomplete). 40 mm long.
Area II. Middle Norse horizon, Room 2. Ill 50.
- 278 Hook (incomplete), whalebone, flat section. 80 mm long.
Area II. Middle Norse horizon, Room 3. Ill 50.
- 279 'Line stretcher' or 'guy', whalebone, in form of figure of eight. 118 mm long.
Area II. Middle Norse horizon, Room 8. Ill 50.
- 280 Bone, pierced at each end, metatarsus of ox (very young calf). 125 mm long.
Area II. Middle Norse horizon, Room 3. Ill 50.
- 281 Bone, pierced at each end, metatarsus of sheep or goat, juvenile animal. 66 mm long.
Area II. Middle Norse horizon, Room 10. Ill 50.

- 282 Bone with central perforation cut from either side, metatarsus of pig, juvenile animal. 42 mm long. Area II. Lower Norse horizon, Area Y. THM. Ill 50.
- 283 Bone tool in form of wedge, top forming ring, pierced laterally by oval shaped bar (neatly cut off) and with perforation. 120 mm long. Area II. Middle Norse horizon, Room 4. Ill 50.
- 284 Circular hollow handle, antler or large tine, broken in half longitudinally with wide bands of low relief. 62 mm long. Area II. Middle Norse horizon, Midden c, THM. Ill 50.
- 285 Antler tine, tip artificially sharpened, surface shaped and polished, V-shaped cut. 92 mm long. Area II. Middle Norse horizon, Room 10. Ill 50.
- 286 Antler tine, transverse cuts around end, apparently iron rivet. 76 mm long. Area II. Unstratified. Not illustrated.
- 287 Whalebone clamp (incomplete), flat base, curved top with rounded ends, decorated with dot-in-circle pierced at centre by corroded iron rod. 76 mm long. Area II. Lower Norse horizon, Room VI. Ill 50.
- 288 Two rectangular whalebone tablets, roughly cut. 90 mm × 60 mm × 10 mm (approx). Area II. Middle Norse horizon, Room 11. Not illustrated.
- 289 Fragment of shaped whalebone, rough surface, with crudely incised cross. 70 mm long. Area II. Upper Norse horizon, Room 13. Not illustrated.
- 290 Large whalebone implement, with large circular perforation at centre, one end with V-shaped cut, the other end forming a blunted hook. 290 mm long. Area II. Middle Norse horizon, Midden c. Ill 51.
- 291 Block of whalebone with large cup-shaped depression in centre. 127 mm long. Area II. Middle Norse horizon, Room 5. Ill 52.
- 292 Block of whalebone, perforated centrally, with wide grooves on either side. 85 mm × 70 mm. Area II. Middle Norse horizon, Midden b. THM. Ill 52.
- 293 Part of whale's rib with many cutmarks, probably used as cutting block. 750 mm long. Area II. Middle Norse horizon, Midden c. THM. Ill 50.

CLAY

MOULDS

Penannular brooches

- 294 Front half of two-piece mould for penannular brooch, zoomorphic terminals with cusps at junction to hoop, oval cartouche with circular setting at top of hoop. Broken in three parts and repaired. 52 mm × 45 mm. Area II. Pictish horizon, Zone 4, Phase a. Ill 13.
- 295 Back half of mould no 294. 55 mm × 48 mm. Area II. Pictish horizon, Zone 4, Phase a. Ill 13.
- 296 Fragment of front half of mould for penannular brooch, showing zoomorphic terminal similar to Brooch 300. 23 mm × 19 mm. Area II. Pictish horizon, Zone 1. Ill 13.
- 297 Fragment of front half of mould for penannular brooch, showing circular terminal. 21 mm × 31 mm. Area II. Unstratified. Ill 13.
- 298 Front half of mould for penannular brooch, slightly damaged, terminals trilobate with central circular setting and with cusps, oval panel with circular disc at top of hoop. 71 mm × 42 mm. Area II. Pictish horizon, Zone 1. Ill 13.
- 299 Back half of mould for penannular brooch (repaired), terminals probably zoomorphic. 64 mm × 43 mm. Area II. Lower Norse horizon, Room V, Phase 3a. (H and M. BB73: A12). Ill 13.
- 300 Front half of mould for penannular brooch, incomplete, zoomorphic terminals, oval cartouche with central setting. 28 mm × 29 mm. Area II. Lower Norse horizon, Room V, Phase 4a. (H and M. BB74: QA280). Ill 13, 14.
- 301 Fragment of back half of mould for penannular brooch, part of hoop and beginning of swelling for terminals. 30 mm × 40 mm. Area II. Unstratified. Ill 13.
- 302 Fragment of back half of mould for penannular brooch, part of hoop and terminal with large lobe. 20 mm × 47 mm. Area II. Unstratified. Ill 13.
- 303 Front half of mould for penannular brooch (incomplete), terminals circular, outlined by plain band; joined to wide hoop with plain band, oval panel with circular disc. 44 mm × 43 mm. Area II. Pictish horizon, Zone 4, Phase a. THM. Ill 16.
- 304 Fragment of front half of mould for penannular brooch showing part of hoop, and plain band for attachment to terminal. 36 mm × 20 mm. Area II. Pictish horizon, Zone 2. Ill 16.
- 305 Front half of mould for penannular brooch (incomplete) showing triangular terminals outlined by raised band with faint signs of ornamentation in centre, plain rings at junction with hoop. 38 mm × 35 mm. Area II. Pictish horizon, Zone 1. Ill 16.
- 306 Front half of mould for penannular brooch (incomplete) showing triangular terminals, plain rings at junction with hoop. 40 mm × 30 mm. Area II. Unstratified. Ill 16.
- 307 Fragment of front half of mould for penannular brooch showing ends of triangular terminals. 22 mm × 30 mm. Area II. Pictish horizon, Zone 4, Phase a. Ill 16.
- 308 Fragment of back half of mould for penannular brooch showing ingate and upper part of hoop. 35 mm × 22 mm. Area II. Pictish horizon, Zone 4, Phase a. Ill 16.
- 309a Fragment of front half of mould for penannular brooch, showing ends of triangular terminals. 15 mm × 28 mm. Area II. Unstratified. Ill 16.
- 309b Fragment of front of two-piece mould, worn, showing ends of triangular terminals of penannular brooch. Similar to 309a. 23 mm × 17 mm. Area II. Pictish horizon, Zone 1. Not illustrated.
- 310 Back half of mould for penannular brooch showing triangular terminals with up-turned ends. 58 mm × 46 mm. Area II. Pictish horizon, Zone 1. THM. Ill 16.

Ornamental fragments

- 311 Front half of mould (incomplete), with matrix for bird's head in profile. 38 mm × 40 mm.
Area II. Pictish horizon, Zone 4, Phase a. Ill 17.
- 312 Back half of mould (pair to 311), with matrices for 2 birds' heads, one in profile, one in plan. 41 mm × 40 mm.
Area II. Pictish horizon, Zone 4, Phase a. Ill 17.
- 313 Fragment of mould with matrix for bird's head in profile (similar to 311). 25 mm × 27 mm.
Area II. Pictish horizon, Zone 1. Ill 17.
- 314 Fragment of front half of mould showing half of circular disc with central setting surrounded by pellets. 19 mm × 25 mm.
Area II. Pictish horizon, Zone 1. Ill 17.
- 315 Fragment of front half of mould with part of ingate leading to small panel, vertical and horizontal depressions. 26 mm × 20 mm.
Area II. Unstratified. Ill 18.
- 316 Part of bottom of back half of mould, showing shallow hoop with rectangular panel enclosing horizontal lines. 37 mm × 28 mm.
Area II. Unstratified. Ill 18.
- 317 Tiny fragment of mould with rectangular panel enclosing horizontal lines. 12 mm × 14 mm.
Area II. Pictish horizon, unstratified. Ill 18.

Finger and other rings

- 318 Back half of mould for finger ring with ornamental cluster of knobs. 50 mm × 45 mm.
Area II. Pictish horizon, Zone 1. THM. Ill 18.



318

- 319 Back half of mould for finger ring (incomplete). 29 mm × 22 mm.
Area II. Pictish horizon, Zone 1. Ill 18.
- 320 Fragment of mould, badly worn, for finger ring. 32 mm × 22 mm.
Area II. Pictish horizon, Zone 6. Not illustrated.
- 321 Back half of mould for finger ring. 52 mm × 43 mm.
Area II. Pictish horizon, Zone 2. Ill 18.

- 322 Back half of mould for finger ring (incomplete) with triangular extension. 40 mm × 76 mm.
Area II. Pictish horizon, Zone 1. Ill 18.
- 323 Back half of mould (incomplete) divided ingate for two objects, one a ring. 30 mm × 40 mm.
Area II. Unstratified. Ill 18.
- 324 Fragment of mould for two rings (incomplete). 29 mm × 27 mm.
Area II. Unstratified. Ill 18.
- 325 Mould, incomplete, for small wide ring. 52 mm × 21 mm.
Area II. Unstratified. Ill 18.
- 326 Circular fragment from front half of mould, probably broken off from centre of ring. 28 mm × 27 mm.
Area II. Unstratified. Ill 18.

Dress pins

- 327 End of front half of mould showing ornamental head and part of shaft, possibly for pin. 28 mm × 27 mm.
Area II. Pictish horizon, Zone 1. Ill 18.
- 328 Back half of mould (incomplete) for 3 short thick pins, round heads. 66 mm × 64 mm.
Area II. Pictish horizon, Zone 1. Ill 18.
- 329 Fragment of front half of mould, matrix for 2 round headed pins (incomplete) remaining. Similar to 328. 52 mm × 42 mm.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 330 End of back half of mould for pin with animal head. 27 mm × 23 mm.
Area II. Pictish horizon, Zone 1. Ill 18.
- 331 End of back half of mould (incomplete) showing one pin, round head with collar, part of shaft with runner crossing to fragment of second similar pin. 56 mm × 20 mm.
Area II. Pictish horizon, Zone 1. Ill 18.
- 332 Front half of mould (incomplete) showing one complete pin with barrel shaped head with collar, and traces of a second pin. 56 mm × 20 mm.
Area II. Pictish horizon, Zone 4, Phase b, THM. Ill 18.
- 333 Back half of mould (incomplete) for two pins, round heads. Similar to 332. 46 mm × 24 mm.
Area II. Pictish horizon, Zone 2. Not illustrated.
- 334 Fragment of back half of mould for two pins, incomplete, shanks only. 32 mm × 30 mm.
Area II. Unstratified. Not illustrated.
- 335 Ingate and part of front half of mould for shank of single pin. 40 mm × 22 mm.
Area II. Unstratified. Not illustrated.
- 336 Group of thirteen mould fragments for pins; 5 for multiple pins, 5 probably for single pins, 3 uncertain. From 10 mm to 35 mm long.
Area II. Pictish horizon. Not illustrated.

Incomplete objects, links and plates

- 337 Front half of mould for plate with oval shaped top. 44 mm long.
Area II. Pictish horizon, Zone 4, Phase a. Ill 19.
- 338 Back half of mould for plate with oval shaped top. 69 mm long.
Area II. Pictish horizon, Zone 2. Ill 19.
- 339 Front half of mould for plate, oval shaped top. 35 mm long.
Area II. Unstratified. Not illustrated.
- 340 Terminal of mould for ring, incomplete, with broken attachment at top. 35 mm × 35 mm.
Area II. Pictish horizon, Zone 4, Phase a. Ill 19.
- 341 Terminal of back half of mould for ring (incomplete). 35 mm × 25 mm.
Area II. Unstratified. Not illustrated.

- 342 Front half of mould (incomplete) for small wide ring. 40 mm × 32 mm.
Area II. Pictish horizon, Zone 2. Ill 19.
- 343 Centre part of front half of mould (incomplete) for plate with rectangular hollow at centre. 30 mm × 23 mm.
Area II. Pictish horizon, Zone 4, Phase a. Ill 19.
- 344 Back half of mould (incomplete) with ingate and top of plate. 26 mm × 28 mm.
Area II. Pictish horizon, Zone 1. Ill 19.
- 345 Fragment of front half of mould, pointed top of object with small bar across. 40 mm × 32 mm.
Area II. Unstratified. Not illustrated.
- 346 Centre part of back half of mould for plate with curved sides. 30 mm × 38 mm.
Area II. Unstratified. Ill 19.
- 347 Centre part of back half of mould for tapering plate with curved sides and small lugs. 35 mm × 36 mm.
Area III. House Site D. Not illustrated.
- 348 Fragment of front half of mould showing base of rectangular plate. 26 mm × 25 mm.
Area II. Pictish horizon, Zone 4, Phase a. Ill 19.
- 349 Centre part of mould for tapering plate with raised bar along centre, attached to a ring. 32 mm × 30 mm.
Area II. Pictish horizon, Zone 2. Ill 19.
- 350 End of front half of mould for wide rectangular plate, slightly curved base and small sunk transverse panel. 35 mm × 32 mm.
Area II. Unstratified. Ill 19.
- 351 End of back half of mould showing ring with smaller ring set at right angles. 46 mm × 40 mm.
Area II. Pictish horizon, Zone 1. Ill 19.
- 352 Terminal of back half of mould for part of oval link, one side wider than the other. 36 mm × 32 mm.
Area II. Pictish horizon, Zone 1. Ill 19.
- 353 Front half of mould (incomplete) for oval link, one side wider than the other. 45 mm × 40 mm.
Area II. Pictish horizon, Zone 1. Ill 19.
- 354 Fragment of back half of mould for oval link with terminals not joined. 25 mm × 28 mm.
Area II. Pictish horizon, Zone 1. Ill 19.
- 355 Fragment of back half of mould for oval object, possibly buckle. 48 mm × 35 mm.
Area II. Pictish horizon, unstratified. Not illustrated.
- 356 Group of 8 mould fragments for curved objects (including H and M. BB74: QW 457, BB74: QG357).
Area II. Pictish horizon, unstratified. Not illustrated.
- ### Small ornamental pins with single or double disc heads
- 357 Front half of mould (incomplete) for small, double-headed pins (matrix for three only remaining). 40 mm long.
Area II. Pictish horizon, Zone 4, Phase b. Ill 22.
- 358 Back half of mould 357 (incomplete). 42 mm long.
Area II. Pictish horizon, Zone 4, Phase b. Ill 22.
- 359 Back half of mould, ingate and matrix for one double-headed pin only, possibly part of 358. 58 mm long.
Area II. Pictish horizon, Zone 4, Phase b. Ill 22.
- 360 Fragment of back half of mould showing matrix for one single-headed pin. 18 mm long.
Area II. Pictish horizon, Zone 4, Phase b. Ill 22.
- 361 Front half of mould (incomplete) showing matrix for heads of three double-headed pins. 42 mm long.
Area II. Pictish horizon, Zone 4, Phase b. Ill 22.
- 362 Fragment of front half of mould showing matrix for flat head of single-headed pin. 20 mm long.
Area II. Pictish horizon, Zone 4, Phase b. Ill 22.
- 363 Part of ingate of back half of mould showing socket for one pin. 35 mm long.
Area II. Pictish horizon, Zone 4, Phase b. Ill 22.
- 364 Similar to 363, part of ingate showing socket for two double-headed pins. 33 mm long.
Area II. Pictish horizon, Zone 4, Phase b. Ill 22.
- 365 Similar to 363 and 364, part of ingate showing sockets for two double-headed pins. 40 mm long.
Area II. Pictish horizon, Zone 4, Phase a. THM. Ill 22.
- 366 Fragment of front half of mould with matrix for half of two flat double-headed pins. 22 mm long.
Area II. Pictish horizon, Zone 4, Phase a. Ill 22.
- 367 Fragment of front half of mould with matrix (incomplete) for two flat double-headed pins. 22 mm long.
Area II. Pictish horizon, Zone 4, Phase a. Ill 22.
- 368 Fragment of back half of mould for short single-headed pin with squared end to shank. 10 mm long.
Area II. Unstratified. Not illustrated.
- 369 Fragment of back half of mould for single-headed pin. 15 mm long.
Area II. Unstratified. Not illustrated.
- ### Larger objects
- 370 Fragment of front half of mould for tapering plate ending in trefoil, hollow centre and two open semicircular rings. 99 mm × 77 mm.
Area II. Pictish horizon, Zone 1. Ill 20.
- 371 Large ingate for back half of mould. 45 mm × 56 mm.
Area II. Unstratified. Ill 20.
- 372 Deeply curved ingate for front half of mould. 36 mm × 30 mm.
Area II. Unstratified. Ill 20.
- 373 End of back half of mould showing matrix terminating in fish-tail design. 40 mm × 25 mm.
Area II. Pictish horizon, Zone 1. Ill 20.
- 374 End of front half of mould for shallow expanding bar, heavy wide stain across mould. 51 mm × 48 mm.
Area II. Pictish horizon, Zone 4, Phase b. Ill 20.
- 375 End of front half of mould, matrix defaced. 60 mm × 33 mm.
Area II. Unstratified. Ill 20.
- 376 Back half of mould for long pin, small ingate, (repaired), end missing. 130 mm × 40 mm.
Area II. Unstratified. Ill 20.
- 377 Circular plug. 30 mm × 27 mm.
Area II. Pictish horizon, Zone 1. Ill 20.
- 378 Large lug (unused) of crucible. 40 mm × 42 mm.
Area II. Pictish horizon, Zone 1. Ill 20.
- 379 End of back half of large mould for curved object. 37 mm × 49 mm.
Area II. Pictish horizon, Zone 1. Ill 20.
- 380 End for back half of large mould. 30 mm × 50 mm.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 381 End for back half of large mould (incomplete) for transverse bar. 43 mm × 65 mm.
Area II. Pictish horizon, Zone 4, Phase b. Ill 20.
- 382 Fragment of end of mould for hemispherical object. 25 mm × 27 mm.
Area II. Unstratified. Ill 20.
- 383 Fragment of end of back half of mould for hemispherical object, circular key sockets. 11 mm × 30 mm.
Area II. Unstratified. Ill 20.
- ### Mould fragments
- 384 Three small pointed forms, probably plugs.
Area II. Pictish horizon. Not illustrated.

- 385a Thirteen fragments of ingates for large moulds, 9 front, 3 back, 1 unusual back ingate possibly for a multiple piece mould.
Area II. Unstratified. Not illustrated.
- 385b Fifteen fragments of large moulds, unidentifiable. 35 mm to 60 mm long, 10 mm to 20 mm thick.
Area II. Unstratified. Not illustrated.
- 386 Ingate of back half of mould possibly for two pins.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 387 Fifteen ingates for back half of small moulds, including 1 ingate (H and M. BB74: PZ276).
Area II. Pictish horizon. Not illustrated.
- 388 Ten ingates for front half of small moulds, including 1 ingate (H and M. BB74: QX479).
Area II. Pictish horizon. Not illustrated.
- 389 Twelve mould fragments of fine clay.
Area II. Pictish horizon. Not illustrated.
- 390 Twenty-nine fragments of small moulds showing keys or key sockets.
Area II. Pictish horizon. Not illustrated.
- 391 About 500 small fragments of moulds, mostly from Area II. Pictish horizon, Zone 4, also including fragments (H and M. BB74: QB388, BB74: PW226; BB74: QA304; BB74: QA306; BB74: QX477). Not illustrated.

CRUCIBLES, TUYÈRES, BLOW-PIPES ETC.

- 392 Crucible, bag-shaped, rounded base, D-shaped opening with small protuberances each side, base vitrified. 30 mm high.
Area II. Pictish horizon, Zone 1. Ill 23.
- 393 Crucible, two fragments, incomplete, triangular opening with lip, pointed base. 44 mm high.
Area II. Middle Norse horizon, Room 3. Ill 23.
- 394 Crucible, triangular opening with lip, rounded base. 33 mm high.
Area III. House Site L. Ill 23, 24.
- 395 Crucible (incomplete), lug set high, rounded base, vitrification high up on sides and on top of lug. 42 mm high.
Area II. Unstratified. Ill 23, 24.
- 396 Crucible, lug set high, rounded base, sides narrow at top, base vitrified. 40 mm high.
Area II. Pictish horizon, Zone 1. Ill 23, 24.
- 397 Crucible, lug set half way, flat base, sides narrowing at top. 42 mm high.
Area II. Pictish horizon, Zone 1. THM. Ill 23, 24.
- 398 Crucible, lug set low, flat base, sides narrowing, base vitrified. 42 mm high.
Area II. Pictish horizon, Zone 1. Ill 23, 24.
- 399 Crucible, incomplete, lug set low, rounded base. 44 mm high.
Area II. Pictish horizon, Zone 1. Ill 23, 24.
- 400 Crucible (incomplete, probably spoiled in firing), lug curving to top, rounded base, considerable burning, slight vitrification. 56 mm high.
Area II. Pictish horizon, Zone 1. Ill 23.
- 401a Base of small crucible. Area II. Lower Norse horizon, Room V, Phase 4a (H and M. BB74: QA384). Not illustrated.
- 401b Small crucible fragments; 8 rounded bases, 7 pointed bases, 17 rim fragments, 11 lugs, 67 other pieces.
Area II. Pictish horizon, Zones 4 and 5. Not illustrated.
- 402 Small crucible fragments, fired but unused.
Area II. Unstratified. Not illustrated.
- 403 Large crucible fragments, 12 rim fragments, 6 other pieces and one lug.
Area II. Pictish horizon. Not illustrated.
- 404 Fragment of very large crucible, heavily vitrified. 60 mm × 30 mm thick.
Area II. Unstratified. THM. Not illustrated.
- 405 Tuyère (incomplete). 35 mm diameter at tip, 87 mm long.
Area II. Lower Norse horizon, Area X. Ill 25.
- 406 Blow-pipe (incomplete). 7 mm diameter at base, 32 mm long.
Area II. Lower Norse horizon. Area X. Ill 25.
- 407 Blow-pipe (incomplete). 33 mm long.
Area II. Unstratified. Not illustrated.
- 408a Tuyère or large blow-pipe (incomplete). 17 mm tip diameter, 65 mm long.
Area II. Pictish horizon, Zone 5, Phase 1b. (H and M. BB74: AQ12) Ill 25.
- 408b Twenty-four small fragments of burnt and/or vitrified clay, probably from tuyères or blow-pipes.
Unstratified. Not illustrated.
- 408c Six large lumps, 55 mm × 100 mm long, and a few small fragments of heavily vitrified material.
Unstratified. Not illustrated.
- 409 Fragment of straight-sided container, rectangular flat base. 40 mm × 25 mm.
Area II. Pictish horizon. Unstratified. Not illustrated.
- 410 Crucible (incomplete) straight-sided, flat base, end rounded. 35 mm long.
Area II. Pictish horizon, Zone 4, Phase b. Ill 25.
- 411 Crucible (incomplete), straight-sided, flat base, end rounded. 35 mm long.
Area II. Pictish horizon, Zone 4, Phase b. THM. Ill 25.
- 412 Stopper or plug. 44 mm × 65 mm.
Area II. Unstratified. Ill 25.
- 413 Circular dish, repaired, (incomplete), flat, round-edged rim. 88 mm diameter.
Area II. Unstratified. Ill 25.
- 414 Fragment of round-edged rim for dish. 30 mm wide.
Area II. Unstratified. Not illustrated.
- 415 Fragment of circular dish, rounded slightly undercut sides with seating for lid. 68 mm across.
Area II. Unstratified. Ill 25.
- 416 Fragments, two, of circular dish with rounded sides and seating for lid (similar to 415). 45 mm × 35 mm across.
Area II. Unstratified. Not illustrated.
- 416b: THM.
- 417 Rim fragment of straight-sided, circular dish. 40 mm long.
Area II. Pictish horizon, Zone 1. Not illustrated.

BRONZE

- 418 Bronze pin (cast), the head spatulate, flattened. 30 mm long.
Area II. Lower Norse horizon, Room VII. Ill 39.
- 419 Bronze pin (cast) with spatulate head (point missing). 50 mm long.
Area II. Pictish horizon, Zone 2. Not illustrated.

- 420 Group of three fragments of pin shafts (sheet). 36 mm, 17 mm and 6 mm long.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 421 Bronze ring-headed pin with solid shank (incomplete); the head inlaid with four long panels of yellow enamel, and four squares of dark blue glass, each outlined in bronze, on a white enamel ground. Shank square in section, becoming round at break. 38 mm long, head 23 mm diameter.
Area II. Stratigraphy uncertain, level equates either with Pictish horizon, Zone 1, or the lower Norse horizon, Area X immediately above. Ill 39.
- 422 Bronze pin with free circular head, the point of shank flattened. 77 mm long.
Area II. Lower Norse horizon, Room VII. Ill 39.
- 423 Bronze pin (incomplete), rounded head, oval in section with brambling. 52 mm long.
Area III. House Site B. Ill 39.
- 424 Bronze pin with crutch head, decorated with dot-in-circle. 76 mm long.
Area III. House Site C. Ill 39.
- 425 Bronze pin with lozenge shaped head (projections broken off). 85 mm long.
Area II. Lower Norse horizon, Passage 2. Ill 39.
- 426 Bronze pin with button head. 68 mm long.
Area II. Upper Norse horizon, Room 13. Ill 39.
- 427 Bronze pin with fixed ring head above baluster moulding decorated with sunken dots. 110 mm long.
Area II. Middle Norse horizon, Room 1, Ill 39.
- 428 Cast bronze pin with lozenge shaped head; on the front a pattern of silver wire inlaid round the central perforation, bordered by beading; two incised lines bordering the plain back; transverse mouldings on the edges. 120 mm long.
Area II. Upper Norse horizon, Room 14. Ill 39.
- 429a Iron armlet (incomplete) encircled by eight open-ended bronze bands, similar to 429b. Estimated diameter of armlet 80 mm. Diameter of hoop 9 mm.
Area II. Middle Norse horizon, Midden b. Ill 39.
- 429b Fragment of iron hoop decorated by four narrow bands of bronze. 9 mm diameter of hoop.
Area II. Unstratified, but probably part of 429a. Ill 39.
- 430 Fragment of curved bronze rod. 6 mm diameter, 30 mm long.
Area II. Middle Norse horizon, Room 3. Ill 39.
- 431 Bronze tweezers, formed of single long strip, 4 mm wide, fragment of bronze wire in loop forming arm. 57 mm high.
Area II. Lower Norse horizon, Room VI. Ill 39.
- 432 Bronze strap end, each terminal in form of animal head with central panel of interlacing, split end (one fractured), one end perforated. 46 mm long.
Area II. Middle Norse horizon, Room 4. THM. Ill 39.
- 433 Bronze strap end with rounded terminals in form of cross, split end (one fractured). 29 mm long.
Area II. Pictish horizon, Zone 4, Phase b. Ill 39.
- 434 Bronze animal mask, rounded ears and large eyes, with secondary incisions. 29 mm × 17 mm.
Area II. Middle Norse horizon, Room 5. Ill 39.
- 435 Bronze bar, triangular section, decorated, one end fractured, one perforated. 83 mm long × 4 mm wide.
Area II. Lower Norse horizon, Room VII. Ill 39.
- 436 Seventeen fragments of sheet bronze, rolled up to form slightly tapering tubes. Lengths 40 mm to 12 mm by 7 mm diameter.
Area II. Pictish horizon, Zone 4. Ill 39.
- 437 Circular bronze object, flat base, curved top. 14 mm diameter.
Area II. Pictish horizon, Zone 5, Phase 1b (H and M. BB74: QW447). Ill 39.



428

- 438a Circular bronze disc, incomplete, ring of pellets between two plain bands. 11 mm diameter.
Area II. Pictish horizon, Zone 5, Phase 1b. (H and M. BB74: QX451). Not illustrated.
- 438b Circular bronze disc, incomplete. 10 mm diameter.
Area II. Pictish horizon, Zone 5, Phase 1b (H and M. BB74: QX451). Not illustrated.
- 439 Bronze disc, incomplete, perforated. Diameter (if complete) 20 mm.
Area II. Pictish horizon, Zone 5, Phase 1b. (H and M. BB74: QX450a). Not illustrated.
- 440 Finger ring of wire, ends entwined to form bezel. 20 mm diameter.
Area II. Lower Norse horizon, Room VII. Ill 39.
- 441 Ring of wide sheet bronze, corroded. 7 mm wide, 21 mm diameter.
Area II. Middle Norse horizon, Midden b. Ill 39.
- 442 Ring of narrow sheet bronze, corroded. 21 mm diameter.
Area II. Lower Norse horizon, Room VII. Ill 39.

- 443 Ring of thin sheet bronze, edges folded over. 18 mm diameter, 2 mm wide.
Area II. Lower Norse horizon, Room IV. Ill 39.
- 444 Ring of cast bronze, section plano-convex. 17 mm diameter.
Area II. Middle Norse horizon, Room 4. Ill 39.
- 445 Fragment of ring, cast bronze, circular section, section 3 mm. 26 mm diameter (approx).
Area II. Pictish horizon, Zone 5, Phase 1b. (H and M. BB74: QW449). Not illustrated.
- 446 Ring of cast bronze, incomplete, section 1 mm plano-convex. 20 mm diameter.
Area II. Pictish horizon, Zone 5, Phase 1b. (H and M. BB74: QW448). Not illustrated.
- 447 Twist of bronze wire with knot. 15 mm diameter.
Area II. Lower Norse horizon, Room IV. Ill 39.
- 448 Small ring of cast bronze. Height 2 mm, section 11 mm.
Area III. House Site B. Ill 39.
- 449 Penannular brooch with zoomorphic terminals, worn. 22 mm diameter.
Area II. Pictish horizon, below lower Norse Room VI. THM. Ill 29.
- 450 Fragments of gilt-bronze disc brooch with animal and foliaceous interlaced ornament. 45 mm × 35 mm; 3 small fragments.
Area II. Lower Norse horizon, Room VI. Ill 40.
- 451a Bronze filling of ingate; part of hoop of penannular brooch attached. 18 mm across top.
Area II. Pictish horizon, Zone 1. Ill 21.
- 451b Bronze filling of mould ingate, incomplete. 18 mm across top.
Area II. Unstratified. THM. Not illustrated.
- 452 Penannular brooch in five pieces, lobed terminals. 70 mm diameter.
Area II. Lower Norse horizon, Room VI. Ill 15.
- 453 Fragment of terminal of bronze brooch. 27 mm diameter.
Area II. Lower Norse horizon, Passage 1. Not illustrated.
- 454a Bar, bronze, narrowing at each end, rough surface. 140 mm long.
Area II. Unstratified. Ill 26.
- 454b Bronze bar, rough surface, pointed ends. 43 mm long.
Area II. Pictish horizon, Zone 2. Ill 26.
- 455 Bronze bar, rectangular section, square-ended narrowing at one end. 75 mm long.
Area II. Unstratified. Ill 26.
- 456a Thick bronze bar, irregular roughly triangular section. 72 mm long.
Area III. House Site D. Ill 26.
- 456b Thick bronze bar, rectangular section 72 mm. 72 mm long.
Unstratified. Not illustrated.
- 457 Fragment of sheet bronze plating with rivet. 30 mm × 18 mm.
Area II. Middle Norse horizon, Midden a. Ill 26.
- 458 Fragment of sheet bronze plating with rivet (broken in two). 46 mm × 16 mm.
Area II. Pictish horizon, Zone 1. Ill 26.
- 459 Rod of bronze, circular section, one end curved. 50 mm long.
Area II. Upper Norse horizon, Room 14. Ill 26.
- 460 Fragment of bronze vessel with curved edge, bound by iron band with bronze rivets. 38 mm × 42 mm.
Area III. House Site B. Ill 26.
- 461 Thin bronze plate (incomplete). 44 mm long.
Area II. Lower Norse horizon, Room V, Phase 4a. (H and M. BB74: PW251). Not illustrated.
- 462 Fragment of bronze sheet crushed and folded over to form parcel. 45 mm × 25 mm.
Area II. Lower Norse horizon. Not illustrated.
- 463 Twist of bronze wire. 10 mm diameter.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 464 Four strips of sheet bronze folded to form 'paper-clip' rivets. 10 mm × 10 mm (approx).
Area II. Pictish horizon, Zone 4, Phase a. Not illustrated.
- 465 Narrow strip of bronze twisted into a spiral. 8 mm diameter.
Area II. Pictish horizon, Zone 5, Phase 1b. (H and M. BB74: QX450b). Not illustrated.

IRON

- 466 Bar, broken at both ends, square section. 105 mm long, 15 mm wide.
Area II. Lower Norse horizon, Room III. THM. Not illustrated.
- 467 Bell, sheet iron folded over and riveted, thought to have been bronze coated. 225 mm high × 175 mm wide by 100 mm across.
Area II. Lower Norse horizon, Room VI. THM. Ill 31.
- 468 Slotted iron object ending in a point. 140 mm long.
Area II. Unstratified. Ill 27.
- 469 Spear head, socketed (socket incomplete). 80 mm long.
Area II. Pictish horizon, Zone 1. Ill 27.
- 470 Socket, fragmentary, pointed end broken off, the other flattened and bent round. 66 mm long.
Area II. Lower Norse horizon, Area X. Ill 41.
- 471 Socket with pointed end, top corroded. 60 mm long.
Area II. Pictish horizon, Zone 5, Phase 2a. (H and M. BB74: QV493). Ill 41, 41X.
- 472 Socket, point incomplete, end split and expanded. 90 mm long.
Area II. Middle Norse horizon, Room 10. Ill 41, 41X.
- 473 Buckle, rectangular, pin corroded and misplaced. 46 mm long.
Area II. Lower Norse horizon, Room VII. Ill 41, 41X.

- 474 Fragment of ring, corroded. 30 mm estimated diameter.
Area II. Lower Norse horizon, Room IV. Not illustrated.
- 475 Ring, oval section, in two parts. 40 mm diameter (approx).
Area II. Lower Norse horizon, Room IV. Ill 41.
- 476 Ring, corroded. 40 mm diameter.
Area II. Lower Norse horizon, Room IV. THM. Ill 41X.
- 477 Rounded handle attached to a plate (incomplete). 54 mm long.
Area II. Lower Norse horizon, Area X. Ill 41, 41X.
- 478 Knife blade, slightly curved, point incomplete, with broken tang. 76 mm long.
Area II. Lower Norse horizon. Ill 41.
- 479 Tang of small knife, incomplete. 43 mm long.
Area II. Unstratified. Not illustrated.
- 480 Plate, shaped, perforated, probably broken in half, with a square iron nail through one end. 40 mm long, nail 35 mm long.
Area II. Middle Norse horizon, Midden b. Ill 41.
- 481 Rod, small, flattened, one end expanded in same plane as rod. 30 mm long.
Area II. Middle Norse horizon, Midden a. Ill 41, 41X.
- 482 Small bar (incomplete), end flattened and sides turned in. 35 mm long.
Area II. Lower Norse horizon, Room II. Ill 41, 41X.
- 483 Small bar, head flattened and distorted. 40 mm long.
Unstratified. Ill 41.
- 484 Bar, one end broken, the other end apparently forked, now damaged. 90 mm long by 20 mm, and 3 mm thick.
Area II. Middle Norse horizon, Midden a. Not illustrated.
- 485 Bar, broken at both ends, shallow D-shaped section. 120 mm long, 27 mm wide.
Area II. Lower Norse horizon, Room III. Not illustrated.
- 486 Boat nail, head incomplete. 30 mm diameter, shank broken off at 30 mm.
Area II. Lower Norse horizon. Passage 1. Ill 41.
- 487 Boat nail, head complete. 30 mm diameter, incomplete shank.
Area II. Lower Norse horizon, Passage 1. Ill 41.
- 488 Nail head, perforated. 20 mm diameter.
Area II. Unstratified. Ill 41.
- 489 Peg, large flat topped round head, thick shank. 62 mm long.
Area II. Unstratified. Ill 41, 41X.
- 490 Nail head, with lumps of corrosion attached. 20 mm diameter.
Area II. Lower Norse horizon, Room VII. THM. Ill 41, 41X.
- 491 Nail with flat head, corroded. 94 mm long, 15 mm diameter.
Area II. Lower Norse horizon, Room VI. Ill 41X.
- 492 Nail shank with roove 25 mm diameter attached. 84 mm long.
Area II. Lower Norse horizon, Room VI. Ill 41X.
- 493 Nail, small flat head at oblique angle. 70 mm long. 11 mm diameter.
Area II. Unstratified. Ill 41X.
- 494 Nail, very corroded. Head 15 mm diameter, thick shank, 95 mm long.
Area II. Lower Norse horizon, Room VI. Ill 41X.
- 495 Nail shank, point bent, corroded. 60 mm long.
Area II. Unstratified. Not illustrated.
- 496 Group of three boat nail shanks, 40 to 60 mm long, and 1 nail with flat head, 70 mm long.
Area II. Lower Norse horizon, Room VI. Not illustrated.
- 497 Nail shank with roove 25 mm diameter. 60 mm long.
Area II. Lower Norse horizon, Room VI. Ill 41X.
- 498 Group of 4 fragments, probably from boat nails. One head 10 mm diameter with incomplete shank, three shanks 50, 44 and 40 mm long.
Area II. Lower Norse horizon, Room VI. Not illustrated.
- 499 Furnace bottom. Diameter 130 mm (approx).
Area II. Middle Norse horizon, Midden c. Not illustrated.
- 500a Furnace bottom. Diameter 120 mm (approx).
Area II. Lower Norse horizon, Room V. Phase 4a. (H and M. BB74: QA314). Not illustrated.
- 500b Massive furnace bottom and 3 indeterminate fragments.
Area III. House Site C. Not illustrated.
- 500c Eighteen lumps of iron slag.
Unstratified. Not illustrated.
- 501 Large iron tool, edges turned over to form sleeves. 210 mm long by 75 mm wide.
Unstratified. Not illustrated.
- 502 Group of fragments of from three to six boat nails with large flat heads. Traces of wood adhering. Diameter 42 mm to 35 mm.
Area I. From grave. Not illustrated.
- 503 Nail with possibly square head. 17 mm by 20 mm.
Area II. Not illustrated.

LEAD

- 504 Lead spindle whorl. 22 mm diameter, 10 mm high.
Area II. Middle Norse horizon, Room 9. Ill 53.
- 505 Lead spindle whorl or washer, much burnt. 27 mm diameter, 10 mm high (approx).
Area II. Lower Norse horizon, Passage 2. Ill 53.
- 506 Lead spindle whorl. 24 mm diameter, 10 mm high.
Area II. Middle Norse horizon, Room 3. THM. Ill 53.
- 507 Lead ferrule, formed from strip 4 mm wide bent in a circle with eyelet hole at each extremity. 21 mm diameter.
Area II. Pictish horizon, Phase 2b. (H and M. BB73: AM9) THM. Ill 53.
- 508 Lead object, flat oval base. 21 mm x 10 mm tapering to narrow top.
Area II. Middle Norse horizon, Room 1. Ill 53.
- 509 Lead disc with incised design of spirals. 50 mm diameter, 5 mm thick.
Area II. Below lower Norse horizon, Room IV. Ill 30.

JET

- 510 Jet armllet (incomplete), rough finish, oval section. 12 mm across, 50 mm inside diameter, 70 mm outside diameter.
Area II. Middle Norse horizon, Room 6. THM. Ill 42.
- 511 Jet armllet (incomplete), wedge-shaped section. 20 mm wide × 6 mm thick; 63 mm inside diameter.
Area II. Lower Norse horizon, Area X. THM. Ill 42.
- 512 Jet armllet (incomplete), section D-shaped, plano-convex. 60 mm inside diameter.
Area II. Lower Norse horizon, Room I. Ill 42.
- 513 Jet bead, circular (incomplete). 20 mm diameter.
Area II. Lower Norse horizon, Area X. THM. Ill 42.
- 514 Jet finger ring (small fragment), plano-convex section. 20 mm diameter (approx).
Area II. Lower Norse horizon, Room III. Ill 42.
- 515 Jet finger ring (incomplete), oval section 4 mm, 20 mm diameter.
Area II. Lower Norse horizon, Room III. Ill 42.

STONE

SPINDLE WHORLS, DISCS AND RING

- 516 Spindle whorl, steatite, truncated cone. 32 mm diameter at base, 22 mm high.
Area II. Lower Norse horizon, Room I. THM. Ill 43.
- 517 Spindle whorl, steatite, truncated cone. 34 mm diameter of base, 19 mm high.
Area II. Lower Norse horizon, Room II. Ill 43.
- 518 Spindle whorl, steatite, truncated cone, two notches at either side of perforation. 30 mm diameter of base, 20 mm high.
Area III. House Site M. THM. Ill 43.
- 519 Spindle whorl, steatite, conical. 30 mm diameter of base, 19 mm high.
Area II. Middle Norse horizon, Room 8. Ill 43.
- 520 Spindle whorl, steatite, conical. 33 mm diameter of base, 22 mm high.
Area II. Middle Norse horizon, Room 4. Ill 43.
- 521 Spindle whorl, steatite, conical. 36 mm diameter of base, 20 mm high.
Area II. Middle Norse horizon, Room 8. Ill 43.
- 522 Spindle whorl, laminated sandstone, dome-shaped. 50 mm diameter, 15 mm high.
Area II. Lower Norse horizon, Passage 1. Ill 43.
- 523 Sandstone blank for spindle whorl, dome-shaped, rudimentary borings on both sides. 45 mm diameter, 15 mm high.
Unstratified. BSM. Ill 43.
- 524 Spindle whorl, siltstone, dome-shaped. 27 mm diameter, 10 mm high.
Area II. Pictish horizon, Zone 1. THM. Ill 43.
- 525 Spindle whorl, laminated sandstone, dome-shaped. 47 mm diameter, 17 mm high.
Area II. Pictish horizon, Zone 1. THM. Ill 43.
- 526 Spindle whorl, steatite, discoidal (incomplete). 40 mm diameter, 18 mm high.
Area II. Middle Norse horizon, Room 5. BSM. Ill 43.
- 527 Spindle whorl, steatite, discoidal, sooted, made from fragment of cooking pot. 38 mm diameter, 14 mm high.
Area II. Lower Norse horizon, Room V, Phase 4a. (H and M. BB74: PW229). THM. Ill 43.
- 528 Spindle whorl, steatite, discoidal, sooted, made from fragment of cooking pot. 42 mm diameter, 18 mm high.
Area II. Lower Norse horizon, Room V, Phase 4b. (H and M. BB74: PR206). Ill 43.
- 529 Spindle whorl, steatite, discoidal, made from fragment of cooking pot. 42 mm diameter, 10 mm high.
Area III. House Site C. THM. Ill 43.
- 530 Spindle whorl, steatite, discoidal. 30 mm diameter, 10 mm high.
Area II. Unstratified. BSM. Ill 43.
- 531 Spindle whorl, red sandstone, ring shaped. 28 mm diameter, 10 mm high.
Area II. Lower Norse horizon, Room V, Phase 4a (H and M. BB73: AG1) Ill 43.
- 532 Spindle whorl, steatite, ring shaped. 27 mm diameter, 15 mm high.
Area II. Lower Norse horizon, Room IV. Ill 43.
- 533 Spindle whorl, fine grained sandstone, discoidal. 32 mm diameter, 18 mm high.
Area III. House Site C. BSM. Ill 43.
- 534 Spindle whorl, sandstone, discoidal. 38 mm diameter, 18 mm high.
Unstratified. BSM. Ill 43.
- 535 Spindle whorl, steatite, irregular, made from fragment of cooking pot. 42 mm diameter, 9 mm high.
Area II. Unstratified. Ill 43.
- 536 Spindle whorl, fine grained sandstone. 43 mm diameter, 10 mm high.
Area II. Pictish horizon, Zone 3. THM. Ill 43.
- 537 Spindle whorl, yellow claystone, discoidal. 40 mm diameter, 13 mm high.
Area II. Lower Norse horizon. Area Y. Ill 43.
- 538 Spindle whorl, fine grained sandstone, discoidal. 41 mm diameter, 10 mm high.
Area II. Lower Norse horizon, Passage 2. THM. Ill 43.
- 539 Spindle whorl, siltstone, discoidal. 38 mm diameter, 12 mm high.
Area II. Lower Norse horizon, Room IV. Ill 43.
- 540 Spindle whorl, siltstone, discoidal. 34 mm diameter, 7 mm high.
Area II. Lower Norse horizon, Room IV. Ill 43.
- 541 Spindle whorl, steatite, discoidal, made from fragment of cooking pot. 34 mm diameter, 8 mm high.
Area II. Middle Norse horizon, Room 2. Ill 43.
- 542 Disc, siltstone, natural with central perforation. 40 mm × 30 mm.
Area II. Middle Norse horizon, Room 2. THM. Ill 43.
- 543 Ring, fine-grained sandstone. 20 mm outer diameter, 10 mm inner diameter.
Area III. House Site B. Ill 43.

- 544 Flat perforated disc, discoidal, sandstone. 25 mm diameter.
Area II. Unstratified. THM. Ill 43.
- 545 Flat stone disc, tuffaceous sandstone, incomplete, trace of central perforation. 64 mm diameter × 9 mm thick.
Area II. Pictish horizon, Zone 4, Phase b. Not illustrated.
- 546 Flat stone disc, sandstone, incomplete, trace of large central perforation. 55 mm diameter × 6 mm thick.
Area II. Lower Norse horizon, Room IV. THM. Not illustrated.

WHETSTONES

- 547 Perforated whetstone, siltstone, incomplete, rectangular section, incised decoration. 55 mm long.
Area II. Middle Norse horizon, Midden b. Ill 44.
- 548 Perforated whetstone, siltstone, rectangular section. 63 mm long.
Area II. Middle Norse horizon, Room 8. Ill 44.
- 549 Perforated whetstone, siltstone, square section. 73 mm long.
Area II. Middle Norse horizon, Room 4. Ill 44.
- 550 Perforated whetstone, siltstone, rectangular section. 75 mm long.
Area II. Unstratified. THM. Ill 43.
- 551 Perforated whetstone, partly split, slate, rectangular section. 88 mm long.
Area II. Unstratified. Ill 44.
- 552 Perforated whetstone, broken at perforation, slate, rectangular section. 74 mm long.
Area III. House Site C. THM. Ill 44.
- 553 Whetstone (top broken), slate, narrow section, rounded base. 75 mm long.
Area II. Pictish horizon, Zone 5, Phase 1b. (H and M. BB73: AQ13). Ill 44.
- 554 Whetstone, incomplete, siltstone, one end upturned, square section. 115 mm long.
Area II. Lower Norse horizon, Room 1. THM. Ill 44.
- 555 Whetstone, siltstone, rounded edges. 57 mm long.
Area II. Middle Norse horizon, Room 1. Ill 44.
- 556a Whetstone, slate, rounded edges. 79 mm long.
Area II. Middle Norse horizon, Room 2. THM. Ill 44.
- 556b Whetstone, schist, rounded edges. 112 mm long.
Area II. Lower Norse horizon, Room V. Drain fill. (H and M BB74: Q1470.) Not illustrated.
- 557 Whetstone, incomplete, schist, haunched. 95 mm long.
Area III. House Site M. THM. Ill 44.
- 558 Whetstone, incomplete, schistose granulite, haunched. 92 mm long.
Area II. Middle Norse horizon, Room 8. Ill 44.
- 559 Whetstone, incomplete, schist, square section, chisel type. 70 mm long.
Area II. Middle Norse horizon, Room 1. Ill 44.
- 560 Whetstone, fractured both ends, schist, square section, chisel type. 107 mm long.
Area II. Middle Norse horizon, Room 6. Ill 44.
- 561 Whetstone, incomplete, slate, square section, chisel type. 155 mm long.
Area II. Middle Norse horizon, Room 8. Ill 44.
- 562 Whetstone, incomplete, slate, rectangular section. 72 mm long.
Area II. Middle Norse horizon, Midden a. Not illustrated.
- 563 Whetstone, incomplete, slate, rectangular section. 185 mm long.
Area III. House Site K. THM. Not illustrated.
- 564 Whetstone, incomplete, slate, rectangular section. 105 mm long.
Area III. House Site K. THM. Not illustrated.
- 565 Whetstone, fine grain sandstone, irregular shape. 160 mm long.
Area II. Lower Norse horizon, Passage 1. Not illustrated.
- 566 Whetstone, siltstone, rounded edges. 200 mm long.
Area II. Lower Norse horizon, Passage 1. Not illustrated.
- 567 Whetstone, incomplete, slate, irregular shape. 220 mm long.
Area II. Lower Norse horizon, Room VI. THM. Not illustrated.
- 568 Whetstone, siltstone, square section. 246 mm long.
Area II. Unstratified. Not illustrated.
- 569 Whetstone, siltstone, square section, incomplete. 80 mm long.
Area II. Middle Norse horizon, Room 5. Not illustrated.

OPEN MOULDS FOR CASTING METAL BARS

- 570 Flaggy sandstone, incomplete, matrix for wide bar. 92 mm long.
Area II. Pictish horizon, Zone 1. Ill 28.
- 571 Sandstone, incomplete, worn matrix for one bar, secondary use as whetstone. 58 mm long.
Area III. House Site C. THM. Ill 28.
- 572 Sandstone, incomplete, matrix for 1 wide, 1 narrow bar. 38 mm long.
Area III. House Site C. Ill 28.
- 573 Fine-grained sandstone, triangular, incomplete, matrix for single bar one side, and for circular object the other. 82 mm long.
Area II. Pictish horizon, Zone 1. Ill 28.
- 574 Steatite, incomplete, matrix for single bar. 95 mm long.
Area II. Middle Norse horizon, Midden a. Ill 28.
- 575 Steatite, incomplete, matrices for 2 bars; made from side of vessel. 120 mm.
Area II. Unstratified. Ill 28.
- 576 Steatite, incomplete, matrix for 1 bar, made from side of vessel. 145 mm long.
Area II. Middle Norse horizon, Room 7. THM. Ill 28.
- 577 Steatite, incomplete, matrices for multiple bars. 145 mm long.
Area II. Upper Norse horizon, Room 15. Ill 28.
- 578 Steatite, incomplete, matrices for multiple bars. 70 mm long.
Area III. House Site C. THM. Ill 28

FISHING AND OTHER WEIGHTS

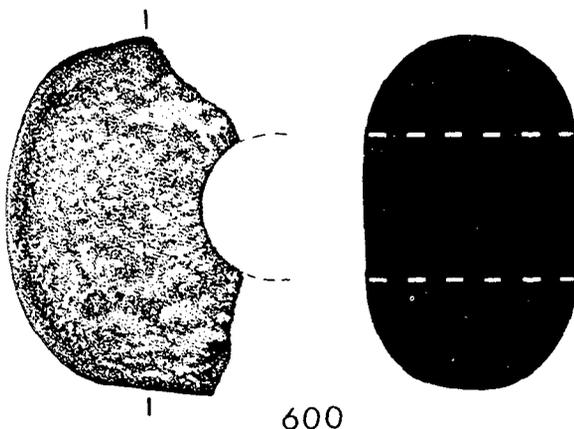
- 579 Steatite, roughly shaped rectangle, one corner fractured, two perforations. 95 mm × 50 mm × 17 mm.
Area II. Middle Norse horizon, Room 8. Ill 54.
- 580 Chlorite schist, natural stone with single perforation. 40 mm × 45 mm × 23 mm.
Area II. Upper Norse horizon, Room 18. Ill 54.
- 581 Steatite, pear-shaped, single perforation. 105 mm × 80 mm × 50 mm.
Area II. Middle Norse horizon, Midden a. THM. Ill 54.
- 582 Sandstone weight, oval, with groove round edge and short transverse groove across top. 146 mm × 115 mm × 72 mm.
Area III. House Site D. THM. Ill 54.

- 583 Sandstone weight, one end and one side fractured, single groove down remaining side. 75 mm long. Area II. Middle Norse horizon, Room 8. III 54.
- 584 Miniature sandstone weight, nearly circular, with groove round edge and vertical and transverse grooves. Diameter 25 mm × 24 mm × 28 mm. Area II. Lower Norse horizon, Area X. III 45.
- 585 Steatite, miniature oblong weight, triangular cut at each end and grooved round edge. 25 mm long. Unstratified. THM. Not illustrated.
- 586 Sandstone fishing weight, rounded top with one perforation, broken across lower perforation, also pierced vertically to a height of 45 mm from flattened base. 130 mm long. Area III. House Site B. THM. III 54.
- 587 Steatite fishing weight (incomplete), probably broken fragment from vessel, straight top, with single perforation, curved sides, bottom fractured. 86 mm × 55 mm × 22 mm. Area II. Unstratified. THM. III 54.
- 588 Steatite fishing weight, straight top and base, curved sides, single perforation at each end. 95 mm × 35 mm × 32 mm. Area II. Middle Norse horizon, Room 9. III 54.
- 589 Steatite fishing weight, oval with rounded top and bottom, 2 perforations at top, 1 at bottom. 108 mm × 50 mm × 50 mm. Area II. Middle Norse horizon, Room 6. THM. III 54.
- 590 Steatite fishing weight (incomplete), oval with rounded top, single perforation, bottom fractured with groove across. 100 mm × 48 mm × 40 mm. Unstratified. III 54.

MISCELLANEOUS

- 591 Circular disc, crudely formed, fine grained sandstone, partially drilled perforations on each side. 84 mm diameter × 15 mm thick. Area II. Lower Norse horizon, Room VIII. THM. Not illustrated.
- 592 Circular disc, fine grained sandstone. 60 mm diameter × 3 mm thick. Area I. Unstratified THM. Not illustrated.
- 593 Small circular disc, sandstone, crudely cut. 23 mm diameter × 5 mm thick. Unstratified. THM. Not illustrated.
- 594 Barrel-shaped object, sandstone, flat top. 35 mm diameter at centre, 22 mm base diameter, 39 mm high. Area II. Lower Norse horizon, Room IV. III 45.
- 595 Rounded pebble, flat base with incised lines resembling ogham characters. 42 mm diameter. Area II. Lower Norse horizon, Passage 1. THM. III 45.
- 596 Granite ball. 53 mm diameter. Area II. Lower Norse horizon, Room IV. THM. Not illustrated.
- 597 Natural stone, with circular depression at centre with pick marks probably natural. 45 mm × 45 mm × 15 mm thick. Area II. Lower Norse horizon, Room I. THM. III 45.
- 598 Crescent-shaped object (incomplete), in sandstone, both ends fractured, flat base towards one side, other side curved. 30 mm base at centre, 35 mm high. Area II. Unstratified. Not illustrated.
- 599 Hammerstone, natural beach stone, hammered at one end. 115 mm long. Area II. Middle Norse horizon, Room 8. THM. Not illustrated.

- 600 Butt end of a pestle-shaped Late Neolithic macehead of amphibolite, broken across the cylindrical shafthole. 48 mm × 24 mm × 30 mm. Area III. House Site F.



- 601a Pumic stone, perforated, rectangular. 50 mm × 25 mm × 17 mm. Area III. Unstratified. THM. III 45.
- 601b Part of pumice stone, broken across perforated, rounded end. 40 mm × 35 mm × 16 mm. Area II. Lower Norse Horizon, Room V. Drain fill. (H and M. BB74: Q1399) Not illustrated.
- 602 Oval pebble, polished. 37 mm long. Area II. Pictish horizon, Zone 1. THM. Not illustrated.
- 603 Circular beach stone, highly polished. 40 mm diameter × 18 mm thick. Unstratified. THM. Not illustrated.
- 604 Oval pebble, polished. 40 mm × 12 mm. Area II. Middle Norse horizon, Room 4. Not illustrated.
- 605 Two small flat circular perforated discs, 'bead spacers', slate. 12 mm diameter × 10 mm. Area III. House Site C. III 45.
- 606 Trial piece, in sandstone, with incised triangular segment with formless design. 55 mm × 45 mm. Area II. Lower Norse horizon, Room IV. THM. III 45.
- 607 Fragment of flaggy sandstone slab, one side dressed, incised cross with expanded rectangular arms on rectangular base (incomplete). 115 mm × 22 mm. Area II. Surface find. III 45.
- 608 Fragment of dark green porphyry, 2 sides dressed and polished. 36 mm × approx 20 mm × 15 mm thick. Area II. Pictish horizon, Zone 1. THM. Not illustrated.
- 609 Fragment of fossil. 30 mm long, 10 mm diameter. Area II. Below Room 5. THM. Not illustrated.
- 610 67 flints, including 11 worked fragments. Area III. Not illustrated.
- 611 6 pieces of quartz, possibly worked. Area III. Not illustrated.

STEATITE VESSELS

- 612 Large oval bowl, incomplete reconstruction. Made up of fragments from Area III, the majority from House Site C. THM. III 46.
- 613 Three fragments of round bowl showing six repair holes with one iron tie still in position. Area III. House Site C. THM. Not illustrated.

- 614 Rim fragment of round bowl showing parts of two repair holes.
Area II. Upper Norse horizon, Room 15. THM. Not illustrated.
- 615 Rim fragment of oval vessel.
Area III. House Site D. Not illustrated.
- 616 Two rim fragments from large round bowl.
Area III. House Site C. Not illustrated.
- 617 Three rim fragments and several body fragments from round vessel with flat rim bevelled downwards and outwards.
Area II. Unstratified. Not illustrated.
- 618 Two rim fragments of a round bowl, sooted.
Area III. House Site C. Not illustrated.
- 619 Part of bottom of an oval bowl, burnt.
Area II. Lower Norse horizon, Room V, Phase 3a. (H and M BB74: QC330). Not illustrated.
- 620a Small rim fragment with beaded edge.
Unstratified. Not illustrated.
- 620b Fragment of bowl with part of two perforations.
Area II. Lower Norse horizon, Room V, Phase 4b. (H and M BB74: P0201). Not illustrated.
- 620c Fragment of thick bowl.
Area II. Lower Norse horizon, Room V, Phase 4b (H and M BB74: PR207). Not illustrated.
- 620d Two sherds of bowl, possibly oval, sooted.
Area III. House Site D. Not illustrated.
- 620e Seven sherds from at least three bowls.
Unstratified. Not illustrated.

POTTERY

(All the pottery is in THM)

- 621 Rim fragment. Hand-made, light brown-grey grass-tempered fabric.
Blackened externally by fire.
Rim diameter approx 120 mm. Area III, surface find. Ill 56.
- 622 Rim fragment. Hand-made, coarse gritty fabric, grey inside, light red outside. Blackened by fire.
Area I, Courtyard, Ill 56.
- 623 Rim fragment. Hand-made, coarse gritty fabric, grey inside, light red outside.
Area I. W apartment. Ill 56.
- 624 Rim fragment. Hand-made, grey inside, light red outside.
Area I, surface find. Ill 56.
- 625 Base sherd. Hand-made, light brown-grey grass-tempered fabric, light red exterior.
Area III, surface find. Ill 56.
- 626 Four fragments of a tall face-mask jug. Wheel-made, pale orange coloured fabric. Lustrous green glaze. Scarborough ware.
Area I, surface find. Ill 56.
- 627 Eight fragments of a three-legged skillet. Wheel-made, light red fabric, golden brown glaze with purplish patches inside, unglazed outside. Probably Dutch. Rim diameter 102 mm, approx height 140 mm.
Area I, surface find. Ill 56.
- 628 Part of the rim and handle of a small pitcher, also the terminal of the handle from the same pot decorated with finger-tip impressions. Wheel-made, light orange-coloured fabric, no evidence of glaze.
Area I, surface find. Ill 56.
- 629 Body sherd bearing incised lattice-work decoration. Wheel-made, light green glaze. Possibly aquamanile fragment.
Area I, surface find. Ill 56.
- 630 Base sherd of jug. Wheel-made, light orange-coloured fabric with a sparse light green glaze. Probably 16th/17th century.
Area I, surface find, Ill 56.

GLASS

VESSEL FRAGMENTS

- 631 Body fragment decorated with marvered opaque yellow trail. Light blue.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 632 Body fragment decorated with applied rod wound with fine opaque white trail. Light blue.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 633 Body fragment. Opaque red. Colouring formed by layering of light and dark red glass giving streaked effect.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 634 Body fragment from mould blown vessel. Indications of corrugated ribbing. Probably from squat jar. Blue.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 635 Body fragment decorated with applied filigree rod containing opaque white spiral. Light blue.
Area II. Pictish horizon, Zone 1. Not illustrated.

- 636 Rim fragment. Rounded, thickened and slightly out-turned rim. Probably from small hand cup. Light green.
Area II. Pictish horizon, Zone 4, Phase a. Not illustrated.
- 637 Body fragments. Conical shaped vessel. Light blue.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 638 Body fragment. Conical shaped vessel. Light green.
Area II. Pictish horizon, Zone 1. Not illustrated.

WINDOW FRAGMENTS

- 639 Surviving unbroken edge grozed in straight line. Dark yellow. Maximum dimensions 14 mm × 9 mm.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 640 One curved edge grozed. Blue. Maximum dimensions 10 mm × 8 mm.
Area II. Pictish horizon. Zone 1. Not illustrated.

- 641 Rectangular quarry. Chipped at one corner. Grozed on three edges. Badly weathered on all surfaces. Dark green. 40 mm × 14 mm.
Area I. Cemetery. Not illustrated.

GLASS AND GARNET OBJECTS

- 642 Fragment from semi-spherical mount. Manufactured using layers of opaque red and black glass paste. Outer surface smoothed and decorated with opaque white marvered trails set in loops.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 643 Waster. One end rounded with other end cut showing oval section. Outer surface wound with fine opaque white marvered trail. Probably from rod used in the production of mosaics or mounts. Opaque blue. Approx 8 mm × 4 mm.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 644 Fragment from square mount? Flattened base with right-angled corner. Opaque white marvering on exterior surface. Opaque blue. Estimated base dimensions 12 mm × 12 mm.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 645 Cube. Slightly damaged on one face. Probably used as a mosaic. Opaque light blue. Approx 6 mm × 6 mm × 6 mm.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 646 Fragment from semi-spherical mount. Manufactured around core of green glass. Exterior decorated with opaque white marvered trailing. Opaque black. Flat base of estimated diameter 20 mm – 25 mm.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 647 Fragment of semi-spherical mount. Manufactured around core of green glass. Exterior decorated with opaque white marvered trails in looped formation. Opaque blue.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 648 Garnet mount. Two adjacent edges chamfered. Probably used in jewelled setting. Square 4 mm × 4 mm. Thickness 1.1 mm.
Area II. Pictish horizon, Zone 1. Not illustrated.
- 649 Fragment. Light green, frosted appearance.
Area II. Pictish horizon, Zone 1. Not illustrated.

BEADS (GLASS AND CARNELIAN)

- 650 Cylindrical. Decorated with crudely wound trails in opaque blue and red. Trails lost in places. Fine central bore. Opaque white. Length 22 mm. Diameter 10 mm.
Area II. Lower Norse horizon, Area X. Ill 55.
- 651 Octagonal sided bead, carnelian. Length 21 mm. Diameter 11 mm. Octagonal faces each 21 mm × 4 mm. Diameter of central bore 2 mm.
Area III. House Site K. Ill 55.
- 652 Circular with outer face showing eight evenly spaced undulations. Opaque blue. Diameter 13 mm. Diameter of bore 6 mm.
Area II. Middle Norse horizon, Room 1. Ill 55.
- 653 Segmented bead. Three segments. Longitudinal striations on surface. Opaque blue. Length 16 mm. Maximum diameter 8 mm.
Area II. Middle Norse horizon, Room 6. Ill 55.
- 654 Fragment of segmented bead split down long axis. Four segments. Opaque blue. Longitudinal striations on surface. Length 17 mm. Maximum diameter 6 mm.
Area II. Lower Norse horizon, Room V, Phase 4a. (H and M. BB74: PW247). Not illustrated.
- 655 Circular. Unevenly formed. Pitted and with rough surface. Opaque green. Diameter 12 mm. Diameter of bore 4 mm.
Area II. Upper Norse horizon, Room 13. Ill 55.
- 656 Fragment of circular bead. Opaque blue. Estimated diameter 10 mm.
Area II. Lower Norse horizon, Room VII. Not illustrated.
- 657 Circular. Opaque blue. Diameter 9 mm. Diameter of bore 2.1 mm.
Area III. House Site B. Ill 55.
- 658 Circular. Marvered opaque dark red trail interposed by three marvered opaque green/yellow dots around girth. Translucent blue/green. Diameter c 8 mm. Diameter of bore c 4 mm.
Area II. Lower Norse horizon, Room V, Phase 3b. (H and M. BB74: QB333). Not illustrated.

OTHER MATERIALS

AMBER

- 659 Small fragments of amber.
Area II. Lower Norse horizon, Room V, Phase 4a. (H and M. BB74: QA310). Not illustrated.

WOOD

- 660 Pointed, rounded handle with triangular socket, traces of iron adhering. Length 70 mm.
Area II. Unstratified.



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8 APPENDIX :

EXCAVATION OF ROOM 5 CLIFFTOP SETTLEMENT

BROUGH OF BIRSAY 1973-4

J R HUNTER AND C D MORRIS

8 : 1 THE SITE

INTRODUCTION

The excavation of this area, initiated by Mrs C L Curle, had as its primary purpose the relating of artifacts of known types paralleled elsewhere on the site to clear stratigraphical contexts. The excavation was therefore limited in scope to the area known in its latest site phase as Room 5 (Ill 3). Evidence from earlier excavations on the island indicated that Room 5 would be stratigraphically representative of the full range of occupation observed elsewhere.

Work was undertaken within and across the standing walls defining this room and the main N-S section drawing is illustrated below (Ill 61). The investigation was specifically problem-orientated and hence although the structural sequences and phases can be presented accurately, the interpretation of features encountered is more strictly limited owing to the relatively small area excavated. The emphasis of this short report is on the major phases distinguishable in the area enclosed by the walls of Room 5 and on the significant finds of artifacts recovered from the stratigraphical contexts within those phases. The more important artifacts are described in detail in Mrs Curle's catalogue where they are grouped and discussed in relation to similar objects from other parts of the site. Here they are simply listed, along with other recorded finds, within their appropriate contextual phases together with the necessary information for cross-referencing. Non artifactual material is also listed by phase, based on specialist identifications where appropriate by Dr T J Seller, Imperial College of Science and Technology, University of London (bone); Dr R F Tylecote, Department of Metallurgy, University of Newcastle Upon Tyne (metallurgical material); Mrs A M Donaldson, Department of Archaeology, University of Durham (wood and charcoal); and Mr F R Woodward, Tyne and Wear Museums Service (shell). Also included are two short reports on the charcoal and shell by Mrs Donaldson and Mr Woodward, and the substantial report on the animal remains prepared by Dr Seller. Other information from Room 5 less strictly relevant to the artifactual and cultural theme of this monograph will be included by the authors in the future publications of their respective excavations on other parts of the site. All records and documentation, including plans and photographs relating to this excavation are deposited in the National Monuments Record for Scotland.

THE EXCAVATION

With the exception of the latest occupation level which had been extensively consolidated by the former Ministry of Works, the area examined had been undisturbed by previous excavations and provided an informative sample investigation. The work, which was completed in the summer of 1974, revealed four distinguishable major phases of occupation mostly identified by flagged flooring levels or structural modification. Between each major phase accumulation or deliberate levelling had occurred and the majority of objects belong to these contexts. A part of the material may therefore be residual but is nevertheless a valid indicator of overall trend, particularly with regard to the faunal

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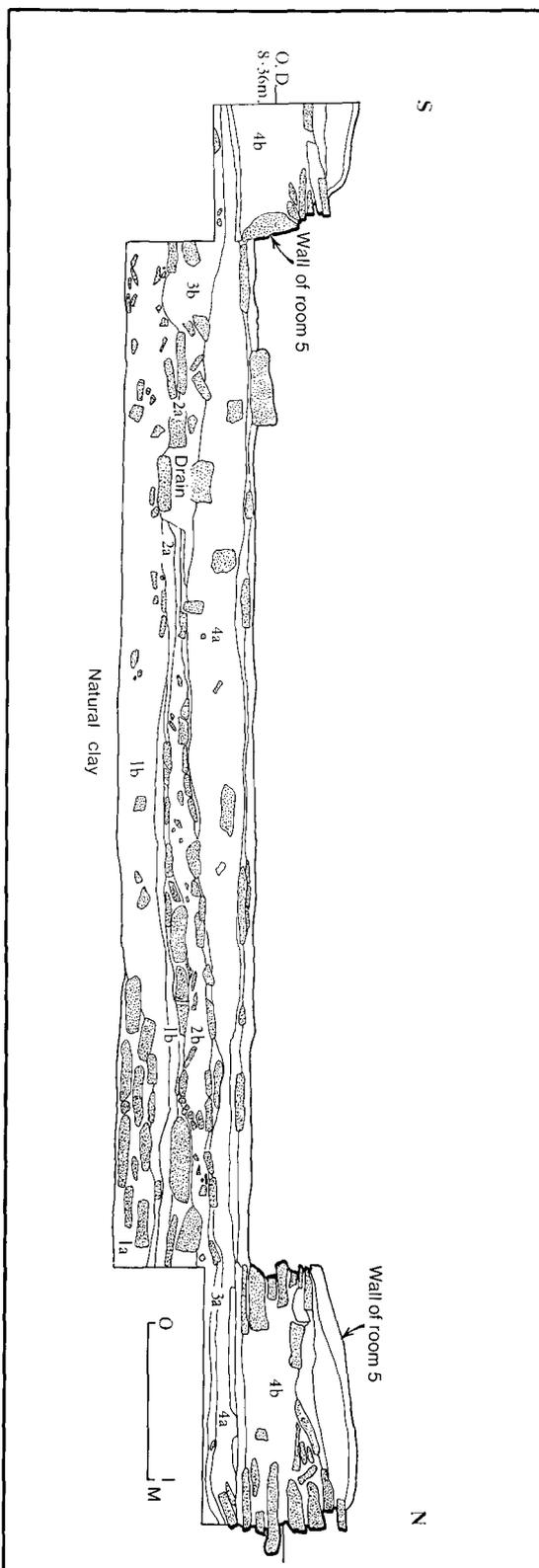
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ILL 61 : N-S section through Room 5

remains. Identifiable building material consisted entirely of flagstones, the adjacent shore providing a convenient source of supply. Robbing and reuse appears to have been an acceptable aspect of rebuilding. There was no evidence of roofing material and a single post socket belonging to Phase

3 was the only indicator of roofing support. Surviving wall foundations were stone-faced and in the case of the final phase where the walls still stand, were constructed with an earth fill.

Phase 1a

The earliest phase of settlement was represented by the deposition of a brown earth layer as a bonding agent for a primary structure situated to the N of the excavated area. The structure consisted of large stone slabs laid in rough courses and was of a type more substantial than any subsequent structures encountered.

Phase 1b

Robbing of the primary structure took place and the area was levelled in preparation for later building. Considerable quantities of organic waste material were used for this purpose and the fill showed substantial areas of burning. Final levelling was achieved by the use of burnt peat.

Phase 2a

A flagged floor was laid on this new surface and evidence of later repair was apparent. Both internal and external ground surfaces survived although again it was not possible to determine the shape or type of structure. A thin occupation layer had evolved on the internal floor surface with evidence of associated hearths.

Phase 2b

The collapse of this structure filled the area with rubble and debris which provided a suitable base for further levelling. Again there was a considerable quantity of organic refuse and large spreads of burning. A C¹⁴ determination gives an uncalibrated date of 645±55 ad (GU-1229).

Phase 3a

The third occupation phase was also represented by a flagged floor surface containing a thin occupation horizon. Again both internal and external ground surfaces were evident. The structure appeared to have been positioned as a replacement for the previous building and as far as could be observed, followed the same lines. Additionally there was internal evidence for a hearth and post socket. A C¹⁴ determination gives an uncalibrated date of 995±60 ad (GU-1193).

Phase 3b

The structure appeared to have fallen into a state of disrepair and was possibly abandoned. At this time a drain was cut through to service a different part of the site, and the area became a general tipping location for rubbish and general debris. The drain itself was constructed with stone-lined sides and a clay base. Although capped with large flat stones it had been contaminated by animal disturbance and the contents are treated as a separate context (Drain Fill). The construction of the drain and the subsequent dumping indicated that other areas of the site were still inhabited during this phase. In order to represent the total site occupation more accurately Phases 3a and 3b are treated separately in the bone report.

Phase 4a

The final major occupation phase relates to the visible standing wall remains. The levelling requirements for this settlement complex were considerable and consisted of thick organic deposits compressed with burnt material and general debris. The section through the building showed that this was used as a basis for the walls as well as the flooring.

Phase 4b

The consolidation of Room 5 for public presentation has left little trace of the final occupation horizon, although the position of the flooring survived mostly unchanged. The central stone-sided hearth had been affected only superficially and the lower fill of the walling was untouched. Throughout the structure the walls were stone-faced internally and externally with an earth and debris fill, the entrance lying to the E.

Layers to the E

In the E part of the area, around the entrance, a sequence of layers post-dated by the E wall and entrance (Phase 4b) and possibly post-dating the levelling layers (Phase 4a) were encountered and partially excavated. They overlay a wall which was not excavated but which relates to structures to the E of Room 5.

FINDS FROM THE 1973/4 EXCAVATION BELOW ROOM 5

CURLE CATALOGUE REFERENCE	HUNTER AND MORRIS EXCAVATION REFERENCE	FIND DESCRIPTION
Phase 1a		
47	BB74 QZ 459	Bone pin with rounded head (slightly hipped)
	BB74 QZ 484	Iron slag
	BB74 QZ Charcoal	Willow/aspens
	BB74 QZ Shell	Common limpet, edible winkle, common dog-whelk
	BB74 QZ Bone	Ox (some burnt), sheep (some burnt), pig, rabbit, bird, cod
Phase 1b		
	BB73 AP 11	Iron slag
408a	BB73 AQ 12	Clay tuyère
553	BB73 AQ 13	Small flat whetstone (broken)
437	BB74 QW 447	Small copper-alloy boss
446	BB74 QW 448	Half a plain copper-alloy ring
445	BB74 QW 449	Half a thick plain copper-alloy ring
356	BB74 QW 457	Mould fragment
439	BB74 QX 450A	Part of small copper-alloy disc with hole
465	BB74 QX 450B	Small copper-alloy spiral
438 a and b	BB74 QX 451	Fragments of copper-alloy discs
7	BB74 QX 452	Bone pin with thistle-shaped head
24	BB74 QX 453	Bone pin with nail head
	BB74 QX 455	Part of iron nail shank
	BB74 QX 456	Tiny fragments of clay mould
391	BB74 QX 477	Fragment of clay mould featureless
388	BB74 QX 479	Pouring-gate of clay mould
	BB74 QX 480	Iron
	BB74 QW, QX Charcoal	Willow/aspens, hazel
	BB74 QW, QX Shell	Common limpet, edible winkle, common mussel
	BB74 QW, QX Bone	Ox (some burnt), sheep (some burnt), pig, rabbit, small rodent, otter, bird, cod
Phase 2a		
	BB74 QV 483	Small open iron container within clay coating
	BB74 QV 485	Iron slag
471	BB74 QV 493	Small tapering iron object with hollowed end
	BB74 QT, QV Charcoal	Willow/aspens
	BB74 QT, QV Shell	Common limpet, edible winkle, common European oyster, mussel
	BB74 QT, QV Bone	Ox, sheep (some burnt), deer(?), rabbit, rat (sp), cod

CURLE CATALOGUE REFERENCE	HUNTER AND MORRIS EXCAVATION REFERENCE	FIND DESCRIPTION
Phase 2b		
507	BB73 AN 9	Lead ferrule
31	BB73 AM 10	Small hipped pin with prominent head
	BB74 QO 424	Iron slag
	BB74 QO 425	Iron slag
	BB74 QO 432	Iron
	BB74 QO 433	Iron
127	BB74 QO 434	Broken bone pin (hipped?)
	BB74 QO 435	Iron
	BB74 QO 436	Piece of bone, polished and possibly worked.
48	BB74 QO 437	Hipped bone pin with faceted head
192b	BB74 QO 438	Split longbone with sharpened end
	BB74 QO 439	Iron
35	BB74 QO 440	Hipped bone pin with flattened round end
	BB74 QO 446	Iron slag
	BB74 QO 490	Iron/ironstone
	BB74 QQ 444	Furnace material
	BB74 QR 445B	Metal-working slag
	BB74 QR 471	Iron
	BB74 QO Charcoal	Willow/aspens (C ¹⁴ : 1305±55 bp (GU-1229))
	BB74 QR Charcoal	Willow/aspens, birch
	BB74 QO, QR Shell	Common limpet, edible winkle, rough winkle, common dog-whelk, crab claw
	BB74 QO, QR Bone	Ox (some burnt), sheep (some burnt), rabbit, small rodent, otter
Phase 3a		
299	BB73 AI 2	Back half of brooch mould
	BB73 AI 3	Fragment of iron nail shank
	BB73 AI 4	Fragment of iron sheet
	BB74 QC 328	Iron
	BB74 QC 329	Small fragment of flint
619	BB74 QC 330	Part of steatite bowl
	BB74 QC 331	Iron fragment with charcoal
	BB74 QD 367	Iron
	BB74 QD 369	Iron
	BB74 QD 372	Part of iron nail-shank
	BB74 QD 373	Part of iron nail-shank
	BB74 QD 374	Bent iron nail-head
	BB74 QD 409A	Iron
	BB74 QD 410	End of iron nail
	BB74 QD 412	Iron
	BB74 QP 427	Small iron object in form of staple
	BB74 QP 428	Iron
	BB74 QP 429	Iron
	BB74 QP 430	Iron
	BB74 QP 442	Fragments of smithing furnace bottoms
	BB74 QC Charcoal	Willow/aspens C ¹⁴ determination 995±60 bp (GU-1193)
	BB74 QD, QP Charcoal	Willow/aspens, pine, oak
	BB74 QD, QF, QP Shell	Edible winkle, periwinkle, rough winkle, flat winkle, common dog-whelk, common limpet, horse mussel, common European oyster, top shell (sp), barnacle (sp), Noah's ark/ark shell
	BB74 QC, QD, QF, QP Bone	Ox (some burnt), sheep (some burnt), rabbit, pig, otter, bird, cod
	BB74 QF Fossil	Worm-tube
Phase 3b		
	BB74 QB 322	Iron object
	BB74 QB 327	Small iron object
	BB74 QB 332	Iron nail
658	BB74 QB 333	Green glass bead with red and yellow decoration
	BB74 QB 334	Small iron knife
	BB74 QB 337	Square-section iron nail-shank

CURLE CATALOGUE REFERENCE	HUNTER AND MORRIS EXCAVATION REFERENCE	FIND DESCRIPTION
	BB74 QB 338	Iron
	BB74 QB 339	Iron
	BB74 QB 342	Iron
	BB74 QB 344	Iron, nail-shank?
	BB74 QB 347	Part of iron nail-shank
	BB74 QB 348	Iron
	BB74 QB 349	Part of iron nail
	BB74 QB 350	Iron slag
	BB74 QB 351	Iron
	BB74 QB 352	Iron?
	BB74 QB 354	Iron?
	BB74 QB 355	Iron?
183	BB74 QB 358	Shaped bone
	BB74 QB 362	Iron nail-shank
216	BB74 QB 363	Fragment of bone comb-plate, with incised decoration
	BB74 QB 364	Iron rivet-plate
	BB74 QB 365	Iron
	BB74 QB 366	Slag/vitrified material
	BB74 QB 371	Tiny fragment of antler comb with teeth
	BB74 QB 375	Curved iron nail-shank
391	BB74 QB 388	Fragment of mould?
	BB74 QB 393	Flat iron object
	BB74 QB 394	Iron nail with traces of bronze
	BB74 QB 404	Iron
	BB74 QB 408	Iron-working slag
	BB74 QB Charcoal	Willow/aspens, pine, birch
	BB74 QB Shell	Common limpet, edible wrinkle, periwinkle, flat wrinkle, common mussel, common dog-whelk, common European oyster, top shell (sp)
	BB74 QB Bone	ox (some burnt), sheep (some burnt), pig, rabbit, cod, mackerel, ? ray (sp)
Phase 4a		
193	BB73 AC 6	Decorated plates from bone comb
	BB73 AD 7	Portion of thick burnt clay object, tuyère?
531	BB73 AG 1	Small clay spindle-whorl
185	BB73 AG 8	Bone peg
	BB74 PW 220	Iron nail
	BB74 PW 221	Shank of iron nail
	BB74 PW 222	Vitrified fuel ash
	BB74 PW 223	Iron rivet-plate
	BB74 PW 225	Curved iron nail
391	BB74 PW 226	Fragment of clay mould, featureless
	BB74 PW 227	Iron
	BB74 PW 228	Iron. Nail-shank?
527	BB74 PW 229	Steatite spindle-whorl, re-used from cooking vessel
	BB74 PW 230	Iron nail-shank
	BB74 PW 232	Iron nail fragment
	BB74 PW 233	Iron nail fragment
	BB74 PW 234	Iron nail and rivet-plate
	BB74 PW 235	Flat iron object with traces of bronze
	BB74 PW 236	Iron nail head
	BB74 PW 237	Iron
	BB74 PW 238	Iron
	BB74 PW 239	Iron
	BB74 PW 240	Iron object
	BB74 PW 241	Iron
	BB74 PW 242	Iron
	BB74 PW 243	Iron?
	BB74 PW 244	Curved iron nail?
	BB74 PW 245	Iron nail shank
	BB74 PW 246	Iron
654	BB74 PW 247	Bead
	BB74 PW 248	Fragments of iron nail-shank
	BB74 PW 249	Iron nail-shank or plate

CURLE CATALOGUE REFERENCE	HUNTER AND MORRIS EXCAVATION REFERENCE	FIND DESCRIPTION
461	BB74 PW 251 BB74 PW 255 BB74 PW 256 BB74 PW 257 BB74 PW 273 BB74 PW 282 BB74 PW 283 BB74 PW 376 BB74 PX 258 BB74 PX 261 BB74 PX 262 BB74 PX 271 BB74 PX 377 BB74 PZ 259	Part of bronze plate Iron Iron. Nail-shank? End of pointed bone pin or needle (hipped?) Fragment of bone comb-plate Iron nail Iron nail-shank Tooth-root, non artifactual Iron nail Iron nail-shank Folded iron sheet Iron nail-head Sandstone fragment, non artifactual Iron
192a	BB74 PZ 260 BB74 PZ 269	Unfinished rod, long bone Curved iron object
387	BB74 PZ 276	Fragment of mould, with pouring-gate
220	BB74 PZ 378 BB74 PZ 379 BB74 QA 263 BB74 QA 264 BB74 QA 265 BB74 QA 267 BB74 QA 268 BB74 QA 270	Animal-head terminal of bone comb Iron Iron Iron Iron Iron Iron plate?
234b	BB74 QA 277 BB74 QA 278 BB74 QA 279	Shaped flat longbone. Comb-plate rough-out? Burnt bone fragment, non-artifactual Iron
300	BB74 QA 280 BB74 QA 284 BB74 QA 285 BB74 QA 286 BB74 QA 287 BB74 QA 288 BB74 QA 290 BB74 QA 291 BB74 QA 292 BB74 QA 293 BB74 QA 294 BB74 QA 295 BB74 QA 296 BB74 QA 297 BB74 QA 298 BB74 QA 299	Half of mould Iron nail Iron rivet-plate Iron object Iron slag Iron Iron Iron object Fragment of mould, featureless Iron Iron object with wood. Knife-blade? Iron nail-shank Square-section iron object. Tool? Iron Iron Iron rivet-head/shank
391	BB74 QA 304	Fragment of clay mould for unidentifiable object
391	BB74 QA 306 BB74 QA 307	Fragment of pouring-gate of mould Iron
100	BB74 QA 308	Bone pin
659	BB74 QA 310 BB74 QA 311 BB74 QA 312 BB74 QA 313	Two minute fragments of amber Iron nail-head Iron Iron
500a	BB74 QA 314 BB74 QA 315 BB74 QA 316 BB74 QA 317 BB74 QA 320 BB74 QA 382 BB74 QA 383 BB74 QA 384	Furnace bottom Iron Iron Iron. Nail-shank? Iron Iron. Plate-fragment? Iron nail-head
401a	BB74 PW, PX, PZ, QA Charcoal BB74 PW, PX, PZ, QA Shell	Fragment of crucible Willow/aspens, birch, oak, pine, hazel Common limpet, blue-rayed limpet, keyhole limpet, edible winkle, flat winkle, rough winkle, common European oyster, common mussel, edible sea-urchin, hunchback scallop, cockle, top shell (sp), barnacle, crab, European cowrie, the Rock-borer, Noah's ark/ark shell, pale venus, oval venus, <i>calliostoma annae</i> tubes

CURLE CATALOGUE REFERENCE	HUNTER AND MORRIS EXCAVATION REFERENCE	FIND DESCRIPTION
	BB74 PW, PX, PZ, QA Bone	Ox (some burnt), sheep (some burnt), pig, rabbit (some burnt), lamb, small rodent, otter, cod, mackerel, bird
	BB74 QA Miscellaneous	Centipede
Phase 4b		
	BB74 PL 214	Iron nail?
620b	BB74 PO 201	Sherd of steatite cooking vessel, 2 perforations
107	BB74 PO 202	Tapering bone shaped for pin
156	BB74 PO 205	Bone needle with perforation
	BB74 PO 218	Iron
	BB74 PP 217	Iron
528	BB74 PR 206	Steatite spindle-whorl, re-used from cooking vessel
620c	BB74 PR 207	Sherd of steatite cooking vessel
	BB74 PR 208	Iron
121	BB74 PR 209	Bone pin, perforated
	BB74 PR 211	Iron slag
	BB74 PR 213	Iron nail
128	BB74 219	Fragment of bone needle
	BB74 PL, PO, PR Charcoal	Willow/aspens, pine, birch
	BB74 PO, PP, PR, PY Shell	Common limpet, edible winkle, periwinkle, dog-whelk, common European oyster, crab
	BB74 PL, PP, PO, PR, PY Bone	Ox (some burnt), sheep (some burnt), small deer/young sheep, pig, rabbit, small rodent, cod, bird
Drain Fill (see Phase 3b)		
	BB74 QG 356	Iron
356	BB74 QG 357	Half of mould
	BB74 QG 359	Iron
	BB74 QG 411	Iron
	BB74 QG 413	Iron slag
	BB74 QG 416	Iron
	BB74 QG 418	Iron
	BB74 QG 419	Iron
	BB74 QI 395	Iron slag
	BB74 QI 397	Bog-iron ore
	BB74 QI 398	Iron slag
601b	BB74 QI 399	Part of pumice stone, perforated
	BB74 QI 401	Perforated lump of mortar
	BB74 QI 402	Iron slag
556b	BB74 QI 470	Whetstone/hone
	BB74 QL 487	Iron
	BB74 QG, QI, QL Charcoal	Willow/aspens, pine
	BB74 QG, QI, QL Shell	Common limpet, dog-whelk, edible winkle, rough winkle, flat winkle, common European oyster
	BB74 QG, QI, QL Bone	Ox (some burnt), sheep (some burnt), pig, otter, rabbit, horse, cod, mackerel, flatfish, bird
Layers to the E		
76	BB74 PT 250	Bone Pin
	BB74 QJ 403	Iron
	BB74 QJ 406	Pointed cut bone
	BB74 QK 420	Iron rod of square section
	BB74 QJ, QK Charcoal	Pine, aspen/willow, hazel
	BB74 QJ Uncarbonised wood	Pine
	BB74 PT, QJ, QK, Shell	Common limpet, edible winkle, flat winkle, top shell (sp) Two have man-made perforations?
	BB74 PT, QJ, QK Bone	Ox (some burnt), rabbit, rat (sp), small rodent, horse (burnt), cod, ray, mackerel
Unstratified		

The upper parts of the walls and the floor of the standing structure of Room 5 had been consolidated with concrete and re-laid by the then Ministry of Works at some stage. Turf and topsoil were added above this disturbance.

CURLE CATALOGUE REFERENCE	HUNTER AND MORRIS EXCAVATION REFERENCE	FIND DESCRIPTION
	(i) Re-set floor and walls	
	BB74 PJ 203	Iron nail head
	BB74 PJ, PK Charcoal	Pine, oak?
	BB74 PJ Shell	Common limpet, edible wrinkle, flat wrinkle
	BB74 PJ, PK Bone	Ox (some burnt), sheep (some burnt), rabbit (some burnt), rat (sp), cod, ray
	(ii) Turf and topsoil	
96	BB74 PA 200	Roughly pointed and shaped bone implement
	BB74 PF Charcoal	Pine, willow/aspens
	BB74 PB, PF, PG Shell	Common limpet, edible wrinkle, rough wrinkle
	BB74 PB, PF Bone	Ox (some burnt), sheep (some burnt), pig, cod

8 : 2 BONE MATERIAL T J SELLER

This report concerns only the bone collected during the Hunter and Morris excavation of Room 5, Brough of Birsay, in 1973-4. A longer version of the report, including summaries of the bone from each phase of Room 5, will be held in archive. (Editor's note)

The animal remains from Room 5 have been assumed to be kitchen refuse. The species represented by the samples include cattle, sheep/goat, pig, rabbit, otter, rat, vole, bird, cod, mackerel and ray.

The sample of animal remains considered in this report contained 5681 fragments (Table 1) of which 4397 (77.40%) were identified. Of the latter, 66.2% came from Phases 1 and 4, therefore any conclusions on the small samples from Phases 2, 3a, 3b and drain fill were more than usually tenuous, since the likelihood of a representative collection was less. However, the analysis assumes the fragments were a representative sample from each period of settlement. With the exception of small bones such as carpus, tarsus and phalanges, all bones were broken, often into small pieces. This was probably to utilise the nutritive bone marrow that is rich in mineral salts. As a result of this breakage, it was impossible to determine the sex of any animal.

As the sample was of kitchen refuse, it was assumed that the remains were of food animals, unless the species was unlikely to have been eaten, as in the cases of small rodents. The indications are that slaughtering took place close to the site, because of the presence of metacarpal (cannon) bones and phalanges, these were usually removed at the site of killing and dumped nearby.

Although the number of individual animals represented by these samples is small an attempt is made in Table 5 to present them in terms of meat yield.

The weight of the skeletal elements of disarticulated skeletons of Chillingham ox and Soay sheep are expressed as percentages in Tables 3 and 4. The percentages of the skeletal elements for cattle and sheep for each of the phases from which samples were retrieved are presented in the same tables thereby enabling some assessment of the fate of the joints of meat to be made.

Traditionally high percentages of low meat yield bones, eg foot bones, may be interpreted as the remains of carcass dressing or as evidence of some animal based industry; while high percentages of high meat yield bones, eg thigh or arm bones, are interpreted as evidence of the remains of meals.

Throughout the period of settlement represented by Phases 1 to 4 the area was inhabited by farming communities with cattle the dominant animal. However, the use made of the domesticated farm animals (cattle, sheep and pigs) may have varied (Table 7). Cattle always provided more than 95% of the meat eaten (Table 5). During Phases 1, 3a, 4 and Drain Fill, they were apparently kept for a number of years and were presumably milked and used for heavy farm work. Unfortunately, as no data on sex were available, the relative importance of the animals, for milk and draught, could not be determined. Although there were no remains of old cattle in Phase 3b (Table 6d), some must have been present for reproduction. Possibly the settlement was transient, or a succession of groups inhabited the area, or the people were not farmers. During Phase 2, cattle were used equally for milk/draught and were fattened for meat. This may be partly as a result of the absence of pigs (Table 2), necessitating an even greater reliance on cattle for meat.

The importance of sheep to the communities was more variable (Table 7). During Phase 1, 3b and Drain Fill, they were predominantly wool and possibly milk producers; in Phases 2 and 3a they were used for wool and meat, while in Phase 4 most individuals were fattened for meat. In view of the latitude of the Orkney Islands, it might be expected that any sheep would be kept mainly for wool. This seems to have been the case, because even in Phase 4, the numbers of sheep killed did not provide a significant percentage of the meat available to the community. The slaughter of relatively young individuals (less than 3 years old), especially during Phase 4 but also Phases 2 and 3 may indicate cropping of the flock. The reason for this is obscure, since it could be due either to feed shortages, or to good reproductive records.

Maintenance of a herd of pigs introduced an element of flexibility into domestic food-animal husbandry. The species has a high fecundity and, as it is a non-selective omnivore, individuals were likely to be in better condition than cattle or sheep during periods of food shortage, for example in late winter. Such conditions may well have been a feature of life in the Orkneys. The absence of pig remains from Phase 2 is surprising therefore. Assuming this is representative, it may indicate that the settlement had less progressive farming methods than were practiced during other phases.

The carcasses were probably used to the maximum and some bones were not simply discarded after the meat was eaten (Table 8). From cattle, vertebrae, pelvic girdles, carpus/tarsus and cannon bones were taken and used, while in the case of sheep, skulls, vertebrae, pelvic girdles and cannon bones were absent presumably because they were also used. The small carpal and tarsal bones could have been lost but this does not account for the other losses. Skulls could have been used as trophies, the obturator foramen of pelvic girdles as stands for pots, the centra of vertebrae and cannon bones for carving.

One of the main contrasts between phases was the extent to which the sea was used as a food source (Table 2). During Phases 1, 2 and 3a there is no evidence to suggest that fishing for cod took place on a large scale. They may have been caught from the shore, for example off a headland. Few individuals were caught and they did not contribute significantly to the diet of the community. During Phases 3b and 4, larger quantities of cod, as well as other species, were exploited, in addition to shellfish which were collected along the seashore. Clearly the communities of these phases had much closer affinities with the sea than earlier groups,

and they probably fished from boats offshore. The contribution made to the diet by fishing is difficult to assess, certainly it was substantial, especially during Phase 4 when sea food may have provided a greater weight of food than the flock of sheep. The presence of a large amount of fish material in the drain fill sample proves its heterogeneous nature.

The rabbit remains probably represent occasional trappings, perhaps in times of food scarcity, or to provide variety in the diet. They were apparently never a significant source, except in the short term. Rodent remains are typically associated with human settlements. The bird bones may represent occasional trappings of wild species or domesticated chickens and geese. Finally there is a hint that at least during Phase 4, dogs were kept because a single bone from Phase 4 had apparently been gnawed by a dog or an otter.

Otters were indigenous to Orkney but their presence in kitchen refuse is difficult to explain. There are apparently no reports of scavenging in this species, and generally they avoid human settlements. They may have been tamed and trained to catch fish, however this was done usually to catch freshwater fish, of which there were no remains in the sample.

PHASE	NOS FRAGMENTS	IDENTIFIED %	% OF TOTAL SAMPLE
1	1515	72.87	26.67
2	489	80.57	8.61
3a	360	77.78	6.34
3b	461	82.21	8.11
4	2245	77.10	39.52
Drain Fill	611	83.31	10.76
Totals	5681	77.40	100.01

Table 1 Numbers of fragments in each phase of the sample.

SPECIES	PHASES					
	1	2	3a	3b	4	Drain Fill
Cow	47.37	34.77	34.29	35.62	25.53	32.61
Sheep	47.55	61.42	44.64	44.85	38.82	46.56
Pig	1.63	0	2.50	3.96	3.64	3.93
Otter	0.54	0.25	0.36	0	0.29	8.64
Rabbit	1.45	2.03	5.36	4.75	3.93	3.54
Rat	0.54	0.76	0	0	0.92	0
Vole	0	0	0	0	0.17	0
Bird	0.45	0	1.43	0	0.87	0.20
Cod	0.45	0.76	11.43	9.50	25.30	4.32
Mackerel	0	0	0	1.06	0.17	0
Ray	0	0	0	0.26	0.12	0
Other	0	0	0	0	0.23	0.20

Table 2 Numbers of fragments of the animals' bones, expressed as a percentage of the total number of fragments in each phase.

BONE TYPE	PHASES						
	Chillingham Ox	1	2	3a	3b	4	Drain Fill
Skull	16.20	10.22	5.51	23.69	10.17	23.07	12.19
Mandible	4.81	3.70	2.36	4.73	3.90	7.34	4.07
Vertebra	20.43	12.17	7.09	0	2.34	2.06	8.75
Rib	11.48	42.17	41.73	37.90	47.66	35.83	45.00
Scapula	4.44	9.13	6.30	4.21	3.12	3.87	1.88
Pelvis	5.62	0	0	0	0	0	0.63
Long bones	23.73	16.74	27.56	22.11	28.13	20.10	20.63
Carpus/Tarsus	4.32	3.48	1.58	2.10	0.80	1.55	1.88
Cannon bone	5.37	1.09	1.58	1.05	1.56	2.06	1.88
Phalanges	2.78	1.30	6.30	4.21	4.69	4.12	3.13

Table 3 Table of cattle bone types. For Chillingham ox, weights are expressed as a percentage of the total skeletal weight. In each phase, numbers of fragments are given as a percentage of the total.

BONE TYPE	PHASES						Drain
	Soay Sheep	1	2	3a	3b	4	Fill
Skull	33.20	7.73	6.82	4.47	4.76	12.80	4.93
Mandible	4.69	8.15	5.91	4.47	8.33	5.38	3.59
Vertebra	16.41	4.94	6.36	8.13	3.57	6.59	8.07
Rib	8.59	54.08	39.55	47.15	43.45	34.88	45.74
Scapula	13.13	3.00	6.82	0.81	3.57	3.15	5.83
Pelvis	3.52	0.20	1.82	0	0.60	0.74	0.90
Long Bone	19.54	16.09	25.91	30.08	29.76	30.43	28.70
Carpus/Tarsus	2.73	3.00	3.64	0.81	1.80	2.04	0.90
Cannon bone	5.86	1.50	1.36	1.63	1.79	1.30	0.45
Phalanges	1.56	1.29	1.82	2.44	2.38	2.78	0.90

Table 4 Table of sheep bone types. For Soay sheep, weights are expressed as a percentage of the total skeletal weight. In each phase, numbers of fragments are given as a percentage of the total.

Table 5 Estimates of maximum and minimum numbers of individuals from various bones, all bone material, teeth and the overall maximum values. From the latter, dressed carcass weights were estimated using data from R E Chaplin (1971) *The Study of Animal Bones from Archaeological Sites* and these expressed as percentages of the total for maximum and minimum numbers of individuals.

	COW		SHEEP		PIG	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Calcaneum	3	5	3	5	0	0
Alstragulus	3	5	2	3	0	0
Long bone	2	3	2	3	0	0
All bone	2	6	2	7	1	1
Teeth	2	5	4	9	2	3
Overall	3	6	4	9	2	3
Estimated carcass weight (lb)	10800	21600	100	225	200	300
% of total (minimum)	97.30		0.90		1.80	
(maximum)		97.63		1.02		1.36

Table 5a Phase 1

	COW		SHEEP	
	Minimum	Maximum	Minimum	Maximum
Calcaneum	1	2	2	4
Alstragulus	1	1	1	2
Long bone	2	3	1	3
All bone	2	2	3	6
Teeth	0	0	3	5
Overall	2	3	3	6
Estimated carcass weight (lb)	7200	10800	75	150
% of total (minimum)	98.97		1.03	
(maximum)		98.63		1.37

Table 5b Phase 2

	COW		SHEEP		PIG	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Calcaneum	1	1	1	1	0	0
Alstragulus	1	1	0	0	0	0
Long bone	1	1	3	5	0	0
All bone	0	3	2	3	2	3
Teeth	3	3	2	4	1	1
Overall	3	3	3	5	2	3
Estimated carcass weight (lb)	10800	10800	75	125	200	300
% of total (minimum)	97.52		0.68		1.81	
(maximum)		96.21		1.11		2.67

Table 5c Phase 3a

	COW		SHEEP		PIG	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Calcaneum	0	0	1	1	0	0
Alstragulus	1	1	1	1	0	0
Long bone	1	2	1	2	0	0
All bone	0	2	0	2	1	1
Teeth	2	2	3	5	2	2
Overall	2	2	3	5	2	2
Estimated carcass weight (lb)	7200	7200	75	125	200	200
% of total (minimum)	96.32		1.00		2.68	
(maximum)		95.68		1.66		2.66

Table 5d Phase 3b

	COW		SHEEP		PIG	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Calcaneum	2	3	2	3	0	0
Alstragulus	0	0	3	5	0	0
Long bone	3	5	4	7	0	0
All bone	1	3	2	6	1	2
Teeth	3	4	4	9	3	6
Overall	3	5	4	9	3	6
Estimated carcass weight (lb)	10800	18000	100	225	300	600
% of total (minimum)	96.43		0.89		2.68	
(maximum)		95.62		1.20		3.19

Table 5e Phase 4

	COW		SHEEP		PIG	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Calcaneum	2	3	1	2	1	1
Alstragulus	0	0	0	0	1	1
Long bone	3	5	3	5	0	0
All bone	3	3	2	4	1	1
Teeth	2	2	3	5	2	3
Overall	3	5	3	5	2	3
Estimated carcass weight (lb)	10800	18000	75	125	200	300
% of total (minimum)	97.52		0.68		1.81	
(maximum)		97.69		0.68		1.63

Table 5f Drain fill

Table 6 Age at death of cattle, sheep and pigs, in each phase, as judged by epiphyseal fusion (bone) and tooth eruption (teeth). Left hand columns, numbers killed before the given age; right hand columns, numbers killed in the age range.

CATTLE

Age (Y)	Bone	Teeth	Total	%	Age (Y)	Bone	Teeth	Total	%
< ∞	7	23	30	100	3½ - ∞	3	21	24	80
< 3½	4	2	6	20	2½ - 3½	1	2	3	10
< 2½	3	0	3	10	1½ - 2½	2	0	2	6.67
< 1½	1	0	1	3.33	0 - 1½	1	0	1	3.33

SHEEP

Age (Y)	Bone	Teeth	Total	%	Age (Y)	Bone	Teeth	Total	%
< ∞	14	37	52	100	3 - ∞	1	31	32	61.54
< 3	14	6	20	38.46	2 - 3	8	4	12	23.08
< 2	6	2	8	15.39	1 - 2	4	2	6	11.54
< 1	2	0	2	3.95	0 - 1	2	0	2	3.85

PIG

Age (Y)	Bone	Teeth	Total	%	Age (Y)	Bone	Teeth	Total	%
< ∞	1	8	9	100	2 - ∞	0	5	5	55.56
< 2	1	3	4	44.44	1 - 2	0	0	0	0
< 1	1	3	4	44.44	0 - 1	1	3	4	44.44

Table 6a Phase 1

CATTLE

Age (Y)	Bone	Teeth	Total	%	Age (Y)	Bone	Teeth	Total	%
<∞	2	0	2	100	3½-∞	1	0	1	50
<3½	1	0	1	50	2½-3½	0	0	0	0
<2½	1	0	1	50	1½-2½	1	0	1	50
<1½	0	0	0	0	0 -1½	0	0	0	0

SHEEP

<∞	4	11	15	100	3 -∞	2	6	8	53.33
<3	2	5	7	46.67	2 -3	2	2	4	26.67
<2	0	3	3	20	1 -2	0	2	2	13.33
<1	0	1	1	6.67	0 -1	0	1	1	6.67

Table 6b Phase 2

CATTLE

Age (Y)	Bone	Teeth	Total	%	Age (Y)	Bone	Teeth	Total	%
<∞	1	7	8	100	3½-∞	1	4	5	62.5
<3½	0	3	3	37.5	2½-3½	0	0	0	0
<2½	0	3	3	37.5	1½-2½	0	1	1	12.5
<1½	0	2	2	25	0 -1½	0	2	2	25

SHEEP

<∞	3	9	12	100	3 -∞	0	5	5	41.67
<3	3	4	7	58.33	2 -3	1	1	2	16.67
<2	2	3	5	41.67	1 -2	2	3	5	41.67
<1	0	0	0	0	0 -1	0	0	0	0

PIG

<∞	0	4	4	100	3 -∞	0	4	4	100
<3	0	0	0	0	2 -3	0	0	0	0
<2	0	0	0	0	1 -2	0	0	0	0
<1	0	0	0	0	0 -1	0	0	0	0

Table 6c Phase 3a

CATTLE

Age (Y)	Bone	Teeth	Total	%	Age (Y)	Bone	Teeth	Total	%
<∞	2	2	4	100	3½-∞	0	0	0	0
<3½	2	2	4	100	2½-3½	1	1	2	50
<2½	1	1	2	50	1½-2½	1	1	2	50
<1½	0	0	0	0	0 -1½	0	0	0	0

SHEEP

<∞	1	12	13	100	3 -∞	1	8	9	69.23
<3	0	4	4	30.77	2 -3	0	2	2	15.39
<2	0	2	2	15.39	1 -2	0	1	1	7.69
<1	0	1	1	7.69	0 -1	0	1	1	7.69

PIG

<∞	0	10	10	100	3 -∞	0	9	9	90
<3	0	1	1	10	2 -3	0	0	0	0
<2	0	1	1	10	1 -2	0	0	0	0
<1	0	1	1	10	0 -1	0	1	1	10

Table 6d Phase 3b

CATTLE									
Age (Y)	Bone	Teeth	Total	%	Age (Y)	Bone	Teeth	Total	%
<∞	7	22	29	100	3½ - ∞	0	19	19	65.52
<3½	7	3	10	34.48	2½-3½	5	2	7	24.14
<2½	2	1	3	10.35	1½-2½	2	1	3	10.35
<1½	0	0	0	0	0 -1½	0	0	0	0
SHEEP									
<∞	22	36	58	100	3 -∞	4	16	20	34.48
<3	18	20	38	65.52	2 -3	15	7	22	37.93
<2	3	13	16	27.59	1 -2	3	8	11	18.97
<1	0	5	5	8.62	0 -1	0	5	5	8.62
PIG									
<∞	1	28	29	100	3 -∞	1	17	18	60.07
<3	0	11	11	37.93	2 -3	0	3	3	10.35
<2	0	8	8	27.59	1 -2	0	7	7	24.14
<1	0	1	1	3.45	0 -1	0	1	1	3.45

Table 6e Phase 4

CATTLE									
Age (Y)	Bone	Teeth	Total	%	Age (Y)	Bone	Teeth	Total	%
<∞	3	10	13	100	3½ - ∞	3	10	13	100
<3½	0	0	0	0	2½-3½	0	0	0	0
<2½	0	0	0	0	1½-2½	0	0	0	0
<1½	0	0	0	0	0 -1½	0	0	0	0
SHEEP									
<∞	7	10	17	100	3 -∞	4	9	13	76.47
<3	3	1	4	23.53	2 -3	2	0	2	11.76
<2	1	1	2	11.75	1 -2	1	1	2	11.76
<1	0	0	0	0	0 -1	0	0	0	0
PIG									
<∞	0	2	2	100	3 -∞	0	0	0	0
<3	0	2	2	100	2 -3	0	0	0	0
<2	0	2	2	100	1 -2	0	1	1	50
<1	0	1	1	50	0 -1	0	1	1	50

Table 6f Drain fill

	PHASES				Drain fill
	1	2	3a	3b	
COW: Milk/draught (>3½ years)	4	2	3	0	4
Meat fattened (<3½ years)	0	2	1	4	0
SHEEP: Wool/milk (>3 years)	3	2	2	3	4
Meat fattened (<3 years)	1	2	2	1	0

Table 7 Main uses of cattle and sheep in each phase. Data from Table 6 scored for each use thus: >70% scored 4, 61-70% scored 3, 41-60% scored 2, 31-40% scored 1, <30% scored 0.

	CATTLE					Drain fill	SHEEP					Drain fill
	1	2	3a	3b	4		1	2	3a	3b	4	
Skull		*		*		*	*	*	*	*	*	*
Vertebra	*	*	*	*	*	*	*	*	*	*	*	*
Scapula						*			*			*
Pelvic girdle	*	*	*	*	*	*	*	*	*	*	*	*
Carpus/Tarus		*	*	*	*	*			*	*		*
Canon Bone	*	*	*	*	*	*	*	*	*	*	*	*

Table 8 Data from tables 3 and 4 showing those bone types notably less well represented than expected from the reference animals.

8 : 3 CHARCOAL A M DONALDSON

This report concerns charcoal collected during the Hunter and Morris excavations below Room 5, Brough of Birsay, in 1973-4.

The first point to mention is simply the abundance of charcoal, largely (see later) of native trees and shrubs. Early excavations revealing the widespread domestic use of stone led to the belief that Orkney had always been virtually treeless. Pollen diagrams later showed that though the large forest trees probably never grew in the islands, woodland dominated by birch and hazel did exist in some areas (Moar 1969, Davidson et al 1976, Keatinge and Dickson 1979). The presence of so many twigs and fragments of native trees and shrubs in the excavation indicates the exploitation of a local resource. Local woodland or scrub no doubt would have influenced the initial pattern of settlement and land use in the area.

Unfortunately charcoal of *Salix* (willow) and *Populus* (aspen) cannot be separated. Either is possible on ecological grounds. The willow/aspen type represented the bulk of the material, with birch, pine, hazel and oak occurring more rarely. Birch, hazel, willow and aspen are all components of the relict woodland on Hoy (Prentice and Prentice 1975) and all but aspen have a continuous pollen record throughout the Post Glacial. That of aspen is sporadic, probably because of poor preservation (Faegri and Iversen 1975). Dwarf willows are still a component of heath, montane and dune slack vegetation in Orkney.

It is fairly certain from pollen diagrams that oak never grew in Orkney, and its presence here probably indicates importation or the collection of driftwood. Although there is some doubt about the status of pine in the islands (Moar 1969) its presence as charcoal probably represents at least partially the collection of driftwood. It certainly grew on the Scottish mainland and in Scandinavia. Oak and pine therefore could indicate an element of beachcombing, cleaning of fishing nets etc. The sole uncarbonised fragment, of pine, looks very fresh and is probably a contaminant.

Although collected timber and brushwood cannot be taken as representative of local woodland, it is perhaps more likely that the main area exploited is of dwarf willow thicket

in the dune slacks, though birch-dominated woodland probably existed in the area, similar to that remaining in the high valleys of Hoy and that indicated in a pollen diagram (Donaldson, unpubl.) from Deerness, in a lowland coastal situation. Driftwood would have been a useful supplement to local sources of fuel and may have been more important in the later phases.

Table 9 Charcoal from below Room 5, grouped by phases

Phase 1

- (a) *Salix/Populus*
(b) *Salix/Populus, Corylus avellana*

Phase 2

- (a) *Salix/Populus*
(b) *Salix/Populus, Betula*

Phase 3

- (a) *Salix/Populus, Pinus sylvestris, Quercus*
(b) *Salix/Populus*

Phase 4

- (a) *Salix/Populus, Pinus sylvestris, Betula*
(b) *Salix/Populus, Pinus sylvestris, Betula*

Drain fill

Salix/Populus, Pinus sylvestris

Layers in E

Salix/Populus, Corylus avellana, Pinus sylvestris

- Betula* = birch, silver birch
Corylus avellana = hazel
Pinus sylvestris = pine, Scots pine
Populus = poplar, aspen
Salix = willow
Quercus = oak

8 : 4 SHELL F R WOODWARD

The finds mainly consisted of two varieties which have definitely been collected, presumably for food: *Patella vulgata* (L) (common limpet), and *Littorina littorea* (L) (edible

winkle). In some areas of the site, there are also remains of *Ostrea edulis* (common European oyster), which would also have been used for food.

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