8 APPENDIX :

EXCAVATION OF ROOM 5 CLIFFTOP SETTLEMENT BROUGH OF BIRSAY 1973-4

J R HUNTER AND C D MORRIS

8 : 1 THE SITE

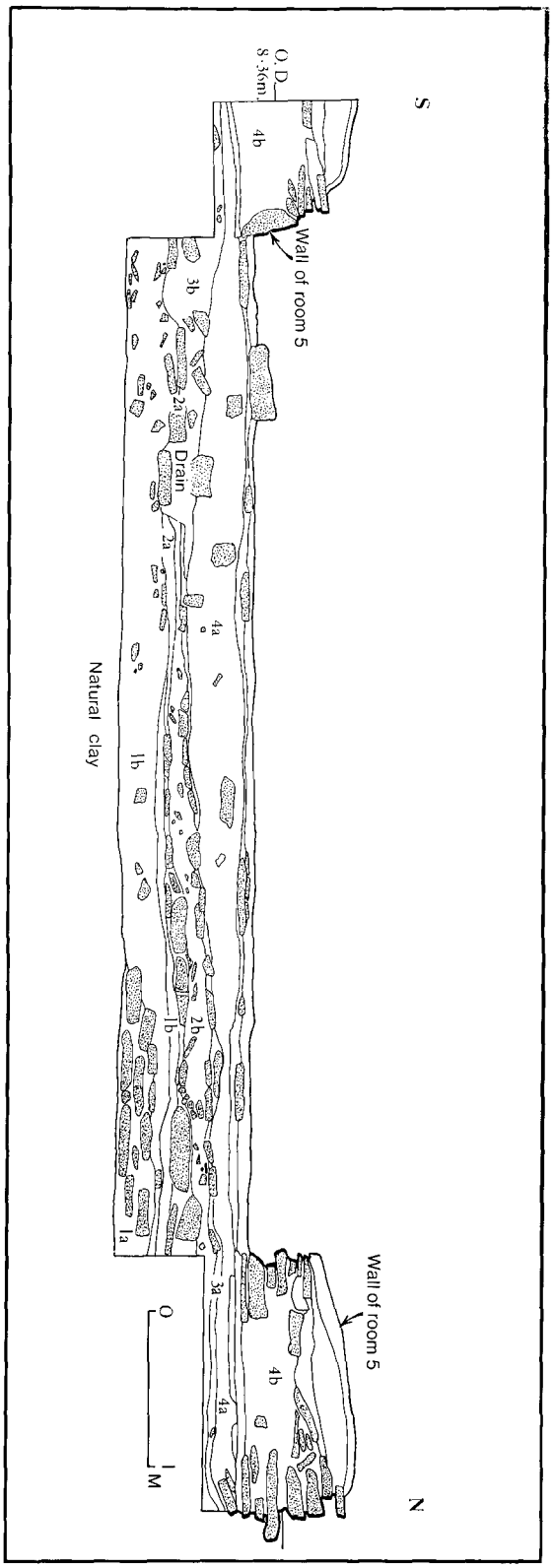
INTRODUCTION

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



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 C^{14} 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 C^{14} 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/aspen
	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/aspen, 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/aspen
	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 facetted 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/aspen (C^{14}: 1305±55 bp (GU-1229))
	BB74 QR Charcoal	Willow/aspen, 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/aspen C^{14} determination 995±60 bp (GU-1193)
	BB74 QD, QP Charcoal	Willow/aspen, 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/aspen, pine, birch
	BB74 QB Shell	Common limpet, edible winkle, periwinkle, flat winkle, 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	Part of bronze plate
	BB74 PW 255	Iron
	BB74 PW 256	Iron. Nail-shank?
	BB74 PW 257	End of pointed bone pin or needle (hipped?)
	BB74 PW 273	Fragment of bone comb-plate
	BB74 PW 282	Iron nail
	BB74 PW 283	Iron nail-shank
	BB74 PW 376	Tooth-root, non artifactual
	BB74 PX 258	Iron nail
	BB74 PX 261	Iron nail-shank
	BB74 PX 262	Folded iron sheet
	BB74 PX 271	Iron nail-head
	BB74 PX 377	Sandstone fragment, non artifactual
	BB74 PZ 259	Iron
192a	BB74 PZ 260	Unfinished rod, long bone
	BB74 PZ 269	Curved iron object
387	BB74 PZ 276	Fragment of mould, with pouring-gate
220	BB74 PZ 378	Animal-head terminal of bone comb
	BB74 PZ 379	Iron
	BB74 QA 263	Iron
	BB74 QA 264	Iron
	BB74 QA 265	Iron
	BB74 QA 267	Iron
	BB74 QA 268	Iron
	BB74 QA 270	Iron plate?
234b	BB74 QA 277	Shaped flat longbone. Comb-plate rough-out?
	BB74 QA 278	Burnt bone fragment, non-artifactual
	BB74 QA 279	Iron
300	BB74 QA 280	Half of mould
	BB74 QA 284	Iron nail
	BB74 QA 285	Iron rivet-plate
	BB74 QA 286	Iron object
	BB74 QA 287	Iron slag
	BB74 QA 288	Iron
	BB74 QA 290	Iron
	BB74 QA 291	Iron object
	BB74 QA 292	Fragment of mould, featureless
	BB74 QA 293	Iron
	BB74 QA 294	Iron object with wood. Knife-blade?
	BB74 QA 295	Iron nail-shank
	BB74 QA 296	Square-section iron object. Tool?
	BB74 QA 297	Iron
	BB74 QA 298	Iron
	BB74 QA 299	Iron rivet-head/shank
391	BB74 QA 304	Fragment of clay mould for unidentifiable object
391	BB74 QA 306	Fragment of pouring-gate of mould
	BB74 QA 307	Iron
100	BB74 QA 308	Bone pin
659	BB74 QA 310	Two minute fragments of amber
	BB74 QA 311	Iron nail-head
	BB74 QA 312	Iron
	BB74 QA 313	Iron
500a	BB74 QA 314	Furnace bottom
	BB74 QA 315	Iron
	BB74 QA 316	Iron
	BB74 QA 317	Iron. Nail-shank?
	BB74 QA 320	Iron
	BB74 QA 382	Iron. Plate-fragment?
	BB74 QA 383	Iron nail-head
401a	BB74 QA 384	Fragment of crucible
	BB74 PW, PX, PZ, QA Charcoal	Willow/aspen, birch, oak, pine, hazel
	BB74 PW, PX, PZ, QA Shell	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, *calliostoma annaclid* 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/aspen, 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/aspen, 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 winkle, flat winkle
	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/aspen
	BB74 PB, PF, PG Shell	Common limpet, edible winkle, rough winkle
	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 obdurator 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.

	PHASES					
SPECIES	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		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.

		PHASES					
BONE TYPE	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	Soay Sheep	PHASES 1	2	3a	3b	4	Drain 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 carcase weights were estimated using data from R E Chaplin (1971) *The Study of Animal Bones from Archaeological Sites* and these expressed as pecentages 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 carcase 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 carcase 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 carcase 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 carcase 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 carcase 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 carcase 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	%
< oo	7	23	30	100	3½- oo	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									
< oo	14	37	52	100	3 - oo	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									
< oo	1	8	9	100	2 - oo	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					
	1	2	3a	3b	4	Drain fill
COW: Milk/draught (>3½ years)	4	2	3	0	3	4
Meat fattened (<3½ years)	0	2	1	4	1	0
SHEEP: Wool/milk (>3 years)	3	2	2	3	1	4
Meat fattened (<3 years)	1	2	2	1	3	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						SHEEP					
	1	2	3a	3b	4	Drain fill	1	2	3a	3b	4	Drain fill
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 situtation. 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.