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Carronbridge, Dumfries and Galloway: the excavation of Bronze Age cremations, Iron Age settlements and a Roman camp

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ABSTRACT

Cropmarks of a square, double-ditched Iron Age/Romano-British enclosure, a Roman temporary camp and another sub-rectangular enclosure were excavated in advance of road building. All the monuments were plough damaged. The square enclosure had three main enclosure phases. It contained six intersecting circular buildings, one of which was surrounded by a large ditch and three large sunken features with complex, charcoal-rich fills. A cobbled surface (probably a Roman road) crossed its south-east corner. Radiocarbon dates from the enclosure ranged from 145 BC to AD 415; earlier activity was dated to between 1285 and 230 BC. A brooch, sword, and sickle, deposited probably in the ninth or tenth century AD, were found within the enclosure.

The primary fill of the Roman camp ditch was redeposited turf. A group of internal post-holes was rich in charred barley and wheat. The third and earliest enclosure was defended by a ditch and palisade; the temporary camp re-used part of its ditch. An oven found within the third enclosure was probably associated with the temporary camp.

Three cremation burials were found north of the square enclosure. Two were contained in collared urns, which were found in small cists. The third was in a pit, and unaccompanied.

The excavation was arranged and funded by Historic Scotland.

THE BACKGROUND

LOCATION

Topography

The site (NGR: NX 869 977) lies in improved pasture at the north end of a gravel terrace on the east side of the River Nith, south of Carronbridge village (illus 1). A steep slope down to the

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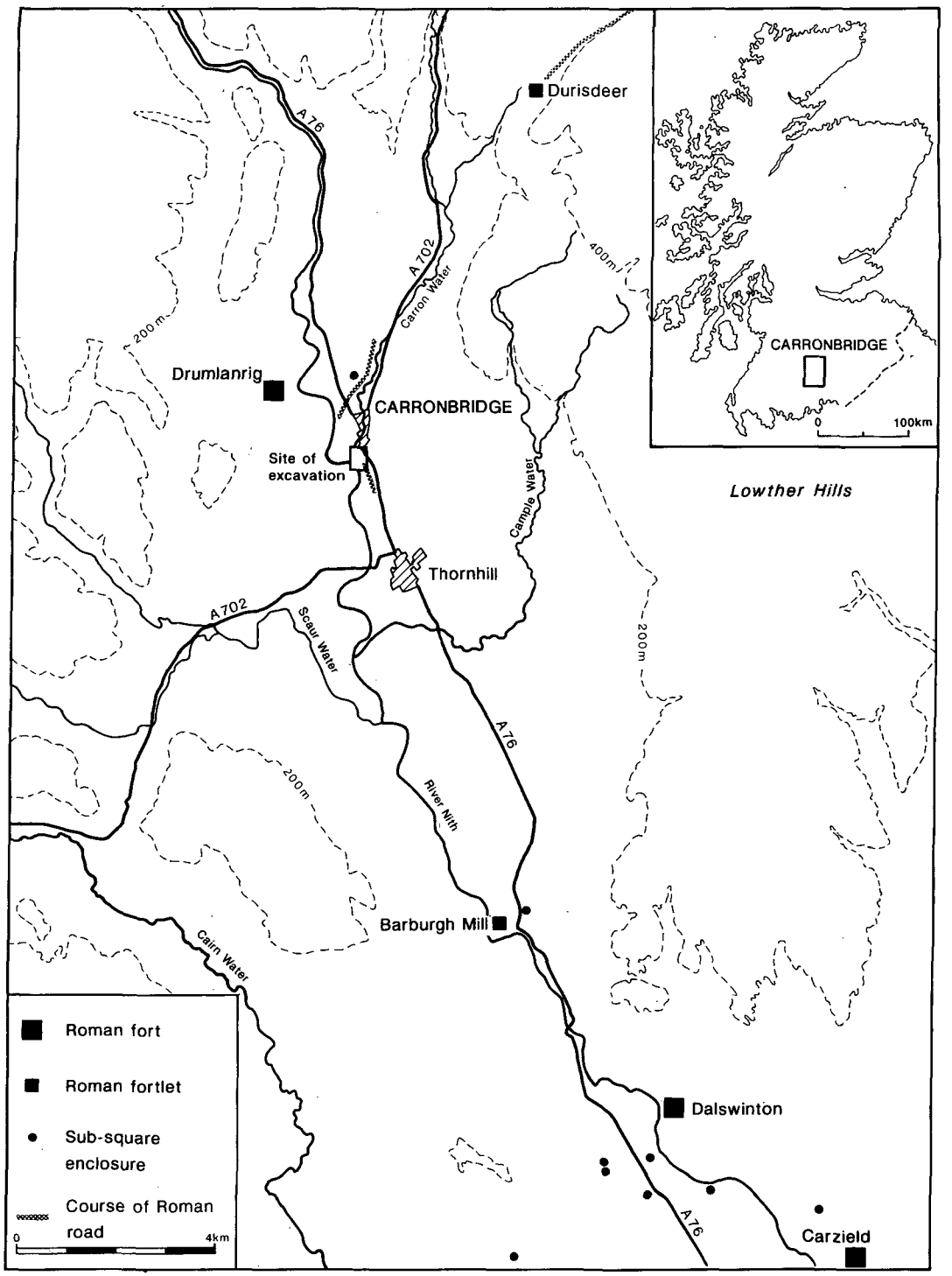


ILLUS 1 Location of Carronbridge. *Based upon the Ordnance Survey map © Crown copyright*

floodplain of the Nith forms the west edge of the site, and a cliff on the north side overlooks the river Carron. The level surface of the terrace stretches away southwards. To the east the site is dominated by a steep bluff some 100 m to the east, beyond which the land rises in a series of ridges, aligned NW/SE, which separate the valley bottom from the Lowther Hills. The ridges end at a steep escarpment on the south-east side of the Carron valley. This topography makes Carronbridge a bottleneck on the route up the east side of the Nith valley.

Subsoil

The subsoil comprises mixed coarse sands and gravels, crossed by braided old stream channels which leave bands of well-sorted gravel and sand. This type of subsoil would normally drain freely, but, as parts of the terrace have standing puddles in winter, impermeable deposits may be present not far below the surface. In the north end of the field, some areas have a very soft, red, silty sand subsoil in which archaeological features survive poorly, due to pedological processes (Carter, pers comm). There is a well-developed B horizon in most of the field, through which the archaeological features were cut. This horizon is absent in parts of the north end of the site, although the soft sand areas have a less developed B horizon whose formation post-dates the archaeological features in this area.

THE ARCHAEOLOGICAL BACKGROUND

The archaeology of the area

Three enclosures are visible on the aerial photographs of the threatened area (illus 2 & 3): (A) a square double-ditched enclosure; (B) a Roman temporary camp; (C) a smaller sub-rectangular enclosure adjoining Enclosure B to the north-east, sharing one side.

A Roman road is visible on some photographs in the adjacent field to the south. It runs towards the south-east corner of Enclosure A and then under the modern road. Features located between the enclosures were interpreted as quarry-pits for the road. Other unclear linear features were interpreted initially as further Roman enclosures (Clarke & Webster 1954), but it is clear from the photograph above (illus 2) and from these excavations that they are old stream channels or ploughing marks.

The cropmarks of a curvilinear enclosure, the circuit of its ditch (apparently incomplete) containing one clear hut-circle (illus 2), have been recorded in an adjacent field to the south-east. In the village of Carronbridge, a high, steep-sided mound ('Faery Knowe') is traditionally thought to be a Roman burial ground, an hypothesis which rests on the chance find of a 'cinerary urn' (now lost) in the mid-19th century.

The Roman road visible in aerial photographs ran up Nithsdale from the first-century fort at Dalswinton and its second-century successor at Carzield, respectively 16 km and 18 km to the south, and probably crossed the Carron Water immediately to the north of Carronbridge. The main branch, heading for the fort at Drumlanrig, may be presumed to have then crossed the Nith at a point opposite Tibbers Castle, and continued through upper Nithsdale towards the Ayrshire coast. The other branch, now identified on air photographs (illus 1; G Maxwell, pers comm), ran to the NNE along a shoulder of high ground on the right bank of the Carron Water (not, as previously thought, on the left); its immediate goal was the pass at Durisdeer, which gives access to the headwaters of the Clyde, and connects with the N/S route up Annandale towards the Biggar Gap.

ILLUS 2 Carronbridge from the west in 1977. (© *Crown copyright RCAHMS*)

Previous excavation

Limited investigation of the site by narrow trial trenches (c 0.6 m wide) took place in the 1950s (Clarke & Webster 1954), concentrating mainly on Enclosures B and C. It was concluded that Enclosure C was a small permanent fort, predating the temporary camp, Enclosure B. Iron Age occupation was identified in Enclosure A. The excavators recognized that their small-scale investigation could not produce secure interpretations on such a large site, and they recommended area excavation.

In 1989, the impending construction of the A76 Carronbridge bypass threatened parts of Enclosures A and C and the area between them. A rescue excavation was carried out over six weeks in the late summer of 1989, and a further four weeks in the early spring of 1990, by a team of about thirty archaeologists. The project was funded by Historic Scotland and directed by the author.

PROJECT DESIGN AND EXECUTION

Site assessment

A field assessment was undertaken in advance of excavation. A magnetometer survey (by Geophysical Surveys of Bradford) provided little archaeological information that was not already available from aerial photographs (the full report is housed with the site archive). Those anomalies not visible on the aerial photographs proved, when tested by excavation, to be of recent or non-archaeological origin. A soil profile survey (by Dr Stephen Carter) revealed the anomalous distribution of the B horizon over the site. A site grid was established, and the accuracy of the aerial photograph plot by RCAHMS was tested by opening two slit trenches to locate the ditches of Enclosure A.

Project design (illus 3)

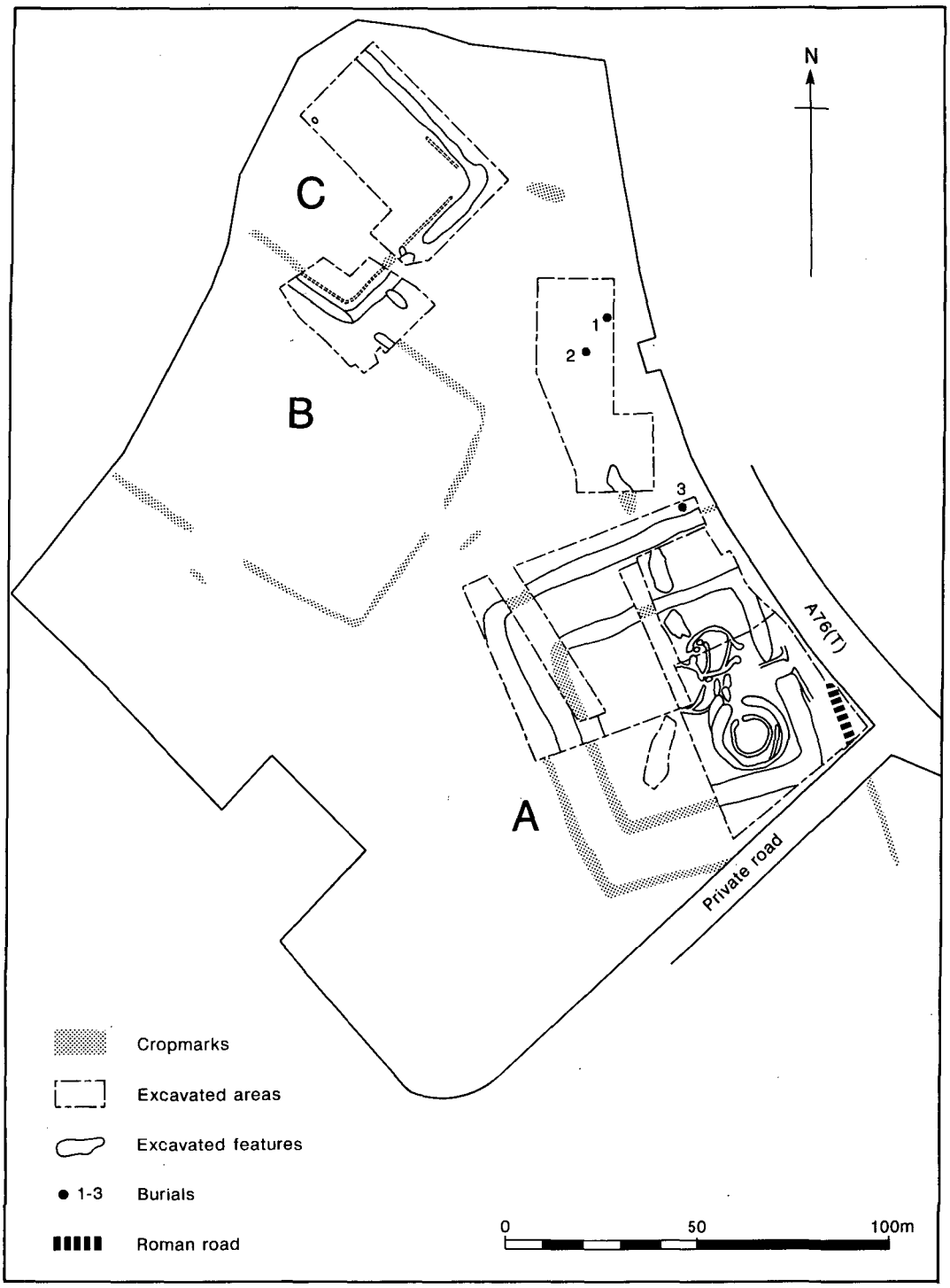
The broad aim of the project, defined in rescue terms, was to excavate as much of the threatened area as possible. However, as the proposed road line ran obliquely across the site, it was recognized that it would also be necessary to excavate some areas beyond the directly threatened area, in order to adequately characterize and date the full range of archaeological deposits present. Although the site had been plough-truncated, its archaeological potential was considerably enhanced by the close proximity of a Roman camp or camps, a putative Roman road, and a native Iron Age settlement. A primary aim was therefore to establish the chronological relationship between the three enclosures, and to define their periods of use.

Given the lack of previous area excavation, it was necessary to address the fundamental issues, viz: relative and absolute chronology; the nature of the enclosures; and the nature and function of the enclosed and unenclosed features. Sites similar, or related to, Enclosure A have often been shown to be internally divided into functional zones (eg Jobey 1960, 1974), and this was an important consideration in planning the excavation of this enclosure.

The excavation strategy was devised as follows. For Enclosure A the aim was to excavate the whole of the threatened area; at least 50% of each potential functional zone; the penannular cropmark in the interior; and to locate the putative Roman road and, if possible, to establish its relationship with Enclosure A. For Enclosures B and C the aim was to excavate the threatened area; 50% of Enclosure C, including the entrance; the junction of the two enclosures, in order to examine their chronological relationship; the north-east entrance and traverse of Enclosure B.

In the unenclosed area: to examine a selection of the amorphous cropmarks visible on the aerial photographs; to examine a selection of the magnetic anomalies; to prospect for archaeological evidence which might not have formed cropmarks or magnetic anomalies; to sample topographic variations within the field. The total area excavated was 7580 sq m, which included approximately 75% of A, 60% of C and 5% of B.

It was anticipated that in the prevailing soil conditions, the only significant palaeoenvironmental evidence to survive would be carbonized remains. A comprehensive soil



ILLUS 3 General plan. The small disparity between the position of the excavated features and the plotted positions of the cropmarks of Enclosures B and C arises from the different resolutions of the information sources and has no archaeological significance

sampling strategy was adopted to maximize the recovery of such remains, thereby allowing some analysis of the site's economy and of its contemporary landscape.

Where radiocarbon dates are quoted in the text, the calibrated range given has a probability of 95% of being correct (see Dalland, below, for fuller details of calibration).

THE EXCAVATION REPORT

ENCLOSURE A

General description

Enclosure A (illus 4) was approximately square, with an internal area of roughly 0.63 ha. It was defined by an inner and an outer ditch. The gap between the ditches varied from 6 m to 14 m. A penannular cropmark with a north-facing entrance is visible on the aerial photographs, occupying the south-east corner of the inner enclosure. Close examination of the aerial photographs revealed that this represented a number of features.

The outer enclosure

The outer ditch enclosed an area roughly 75 m by 85 m; the east side and parts of the north and south sides lie under modern roads. The entrance was located probably in the centre of the east side, opposite the entrance through the inner ditch. The north and south sides diverge slightly towards the east.

The ditch was V-shaped, 3.6–4.1 m wide and 1.2 m deep (illus 5, N–N'). The primary fill was a shallow deposit of small gravel, overlain by a deeper deposit with large cobbles, forming a ridge near the centre. This sequence indicates rapid initial erosion of the sides, followed by stabilization. The ditch was cut probably deliberately with relatively gently sloping sides in order to minimize this erosion. The base of the ditch was slightly steeper in places than the rest of the sides; this probably represented the original angle of the ditch sides.

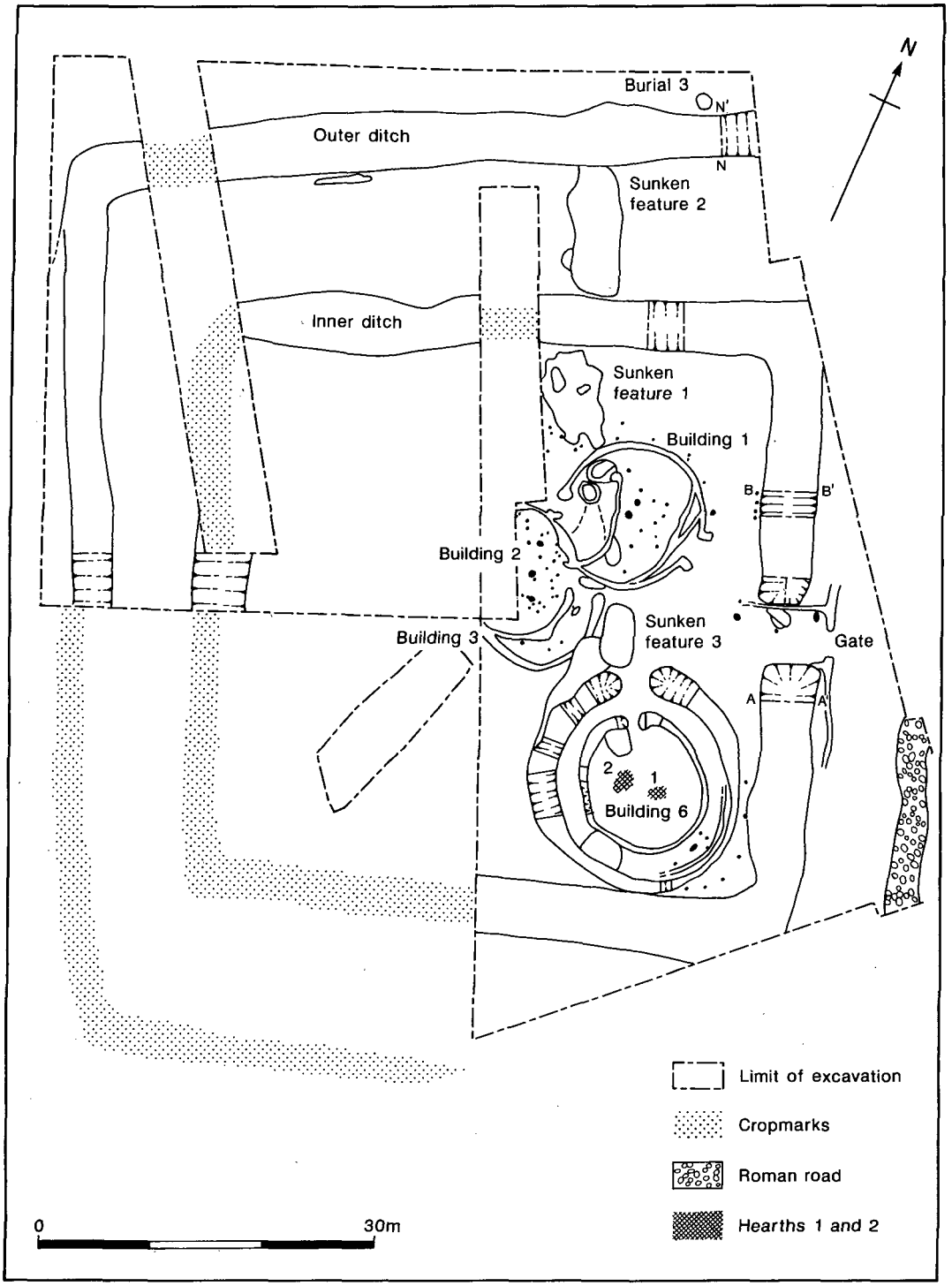
No sign of an internal bank or of a counterscarp bank was found. A short stretch of possible palisade trench, represented by a line of packing stones, was recognized in the north-west quadrant. It ran parallel to the inner edge of the outer ditch on the north side for approximately 10 m. This feature was not fully investigated, as it lay outside the threatened area.

In 1954, Clarke and Webster had observed a gap in the cropmark of the outer ditch, near the west end of the north side, which they interpreted as an entrance. Area stripping in 1989 revealed that the apparent gap was in fact caused by a change in the subsoil where the ditch crossed an old stream course.

The only stratigraphic relationship between the outer ditch and any other feature was with Sunken Feature 2 (see below), which appeared to be cut by the ditch (although this relationship was not clearly visible in excavation, and was complicated by occurring exactly on the boundary between areas excavated in successive years) and no dating evidence was recovered. It was therefore difficult to confirm the chronological or functional relationship between the two ditches.

The inner enclosure

The inner ditch enclosed a more precise square, about 55 m by 55 m in size. The entrance was a gap of 5.3 m between roughly square-ended ditch terminals, in the centre of the east side. The profile of the ditch was generally V-shaped (illus 5, B–B'). Immediately south of the entrance, the



ILLUS 4 Enclosure A

ditch was shallower, with a more U-shaped section (illus 5, A–A'). It varied between 4.6 m and 5.6 m wide, and from 1.4 m (in the U-shaped section) to 1.95 m deep. In places it was much steeper-sided than the outer ditch, and this was reflected in the fills of a section away from the entrance (illus 5, B–B'). Large cobbles had rolled to the centre and formed a ridge in the base, with smaller gravel and finer deposits building up either side until an equilibrium was reached. This process must have occurred fairly rapidly, followed by stabilization when the ditch was filled to about one-third of its depth. Slightly more of this large rubble seems to have fallen from the inside than the outside. This section is adjacent to four post-holes and an extensive sandy loam deposit on the inner edge of the ditch, which are absent elsewhere (below).

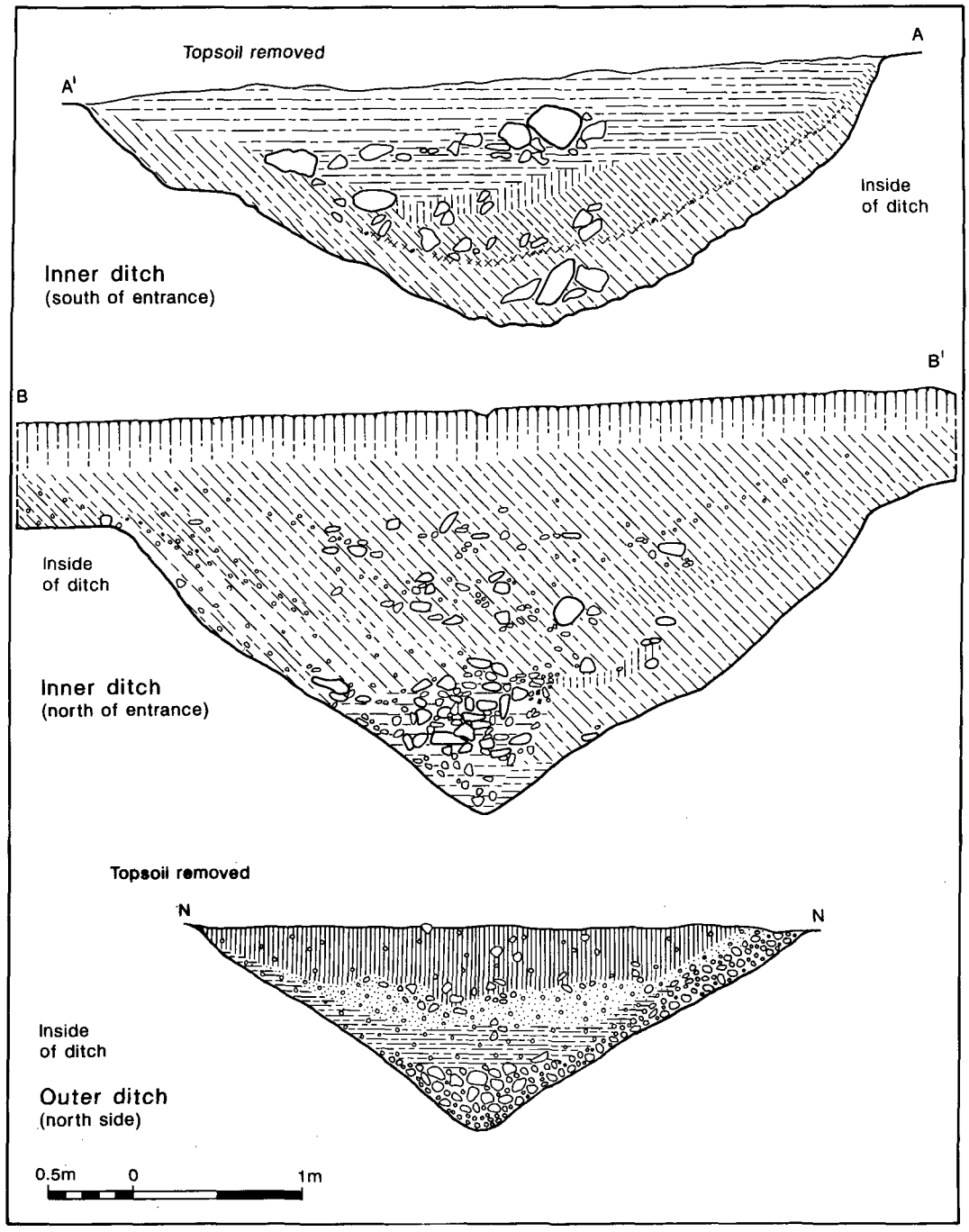
At the terminals on either side of the entrance, a more complex process of filling seems to have taken place. A section excavated 3 m south of the entrance (illus 5, A–A') revealed a U-shaped profile with gently sloping sides. This was the shallowest excavated section of the inner ditch, at 1.4 m. Its lesser depth and relatively gently sloping sides are reflected in the primary fill, which contained much less gravel than those of other ditch sections, representing a more gradual and uniform silting process. When partly full, it had been re-cut to only about 75% of its original depth; this re-cut was recognized only in this section, and should therefore be seen as a local feature, rather than a general recutting of the whole ditch. A very thin soil deposit mixed with carbonized material accumulated in the base of the re-cut. This was sealed by another phase of silty clay fill, with cobbles, coarsest near the centre. This material had been cut into by a shallow pit (Pit 5), the fill of which contained much carbonized material, which gave an uncalibrated radiocarbon date of AD 70 ± 50 (calibrated to AD 25–240; GU-2771). A deposit of large cobbles had then been dumped over the pit and ditch fills. This left the top of the ditch almost level with the surrounding subsoil surface.

The north ditch terminal (only one quadrant of which could be fully excavated) differed significantly from the south terminal. It was broader and deeper (5.6 m by 1.75 m), and V-shaped in profile. The ditch bottom was filled with large voided rubble, indicating initial rapid erosion from the sides. This deposit incorporated some finer material containing carbonized remains and charcoal, and was radiocarbon-dated to 20 BC ± 50 uncal (calibrated to 105 BC–AD 135; GU-2770). Most of the fine components had filtered in from the main overlying fill of loam with smaller gravel and a high content of carbonized remains. This deposit was up to 0.5 m deep, and contained considerable lensing. The top of this deposit was only 0.9 m below the top edge of the ditch. It was sealed by an accumulation of silty loam. This was itself covered by a thick deposit of large cobbles and boulders in a silty loam matrix, similar to that which occurred near the top of the south terminal fills. Above this there was another deep accumulation of loam with gravel.

The gateway (illus 6)

A gully ran parallel to the outer edge of the inner ditch, adjacent to the entrance. A gap 2.1 m wide coincided with the southern half of the entrance through the ditch. North of the entrance, the gully was clearly visible over a length of c 5 m, but then became unclear. To the south, the gully was traced for 9.7 m, but again became unclear. Both the northern and southern ends appeared to fade away rather than reach clear terminals (as they do at the entrance); it is likely that they were originally shallower away from the entrance, and had been truncated by ploughing. There were indications that the southern end turned eastwards, away from the ditch, but this could have been a different feature. Unfortunately, the area between the inner ditch and the modern road was disturbed, possibly by tree roots, and only the largest and most durable features were clear.

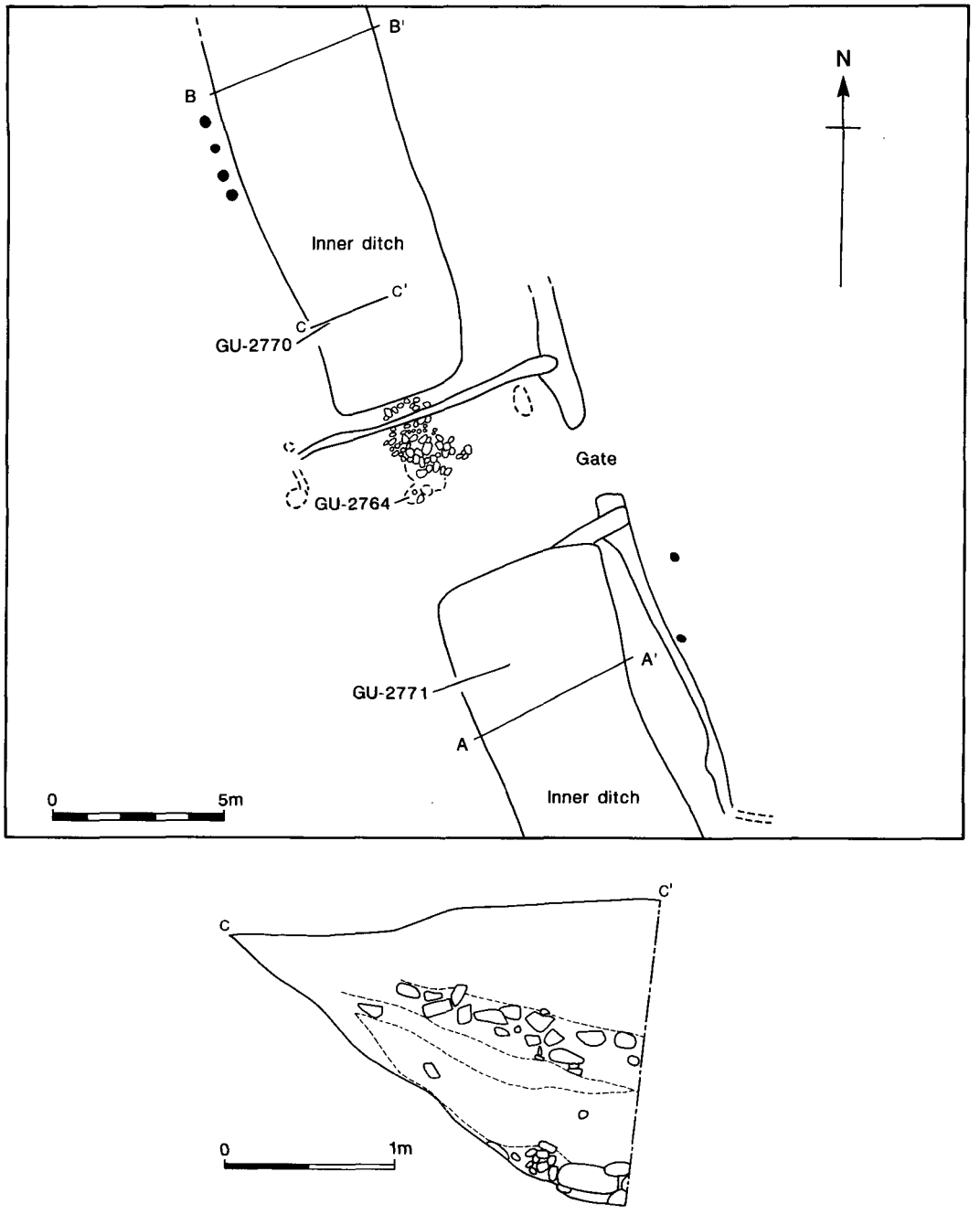
The gully was heavily packed with large to medium stones, particularly near the entrance,



Key to sections

loam	clay/silt	gravel	may be combined		
silt	charcoal rich clay/silt	sand			
silt/loam	modern turf /topsoil	buried turf			

ILLUS 5 Sections of the ditches of Enclosure A



ILLUS 6 The gateway area and section, Enclosure A

but few post-positions were even tentatively recognizable. The northern terminal of the gully had been re-cut to a greater depth (0.5 m, as opposed to 0.37 m), creating a 'stepped' profile; it was unclear whether the southern terminal had also been re-cut. Some 1.9 m from the entrance, the southern part of the feature abruptly halved in width and depth, and ceased to be heavily packed.

Both terminals of the gully had been cut by shallower grooves which ran into the interior, at right angles to the gully. No post packing was recognized in these features. Their eastern ends were both within the width of the gully. They defined a trackway 4.6 m wide, running into the interior. The northern groove passed through the entrance, within 0.2 m of the edge of the northern terminal of the ditch. It extended for 8.5 m before petering out in a similar manner to the main gully. The southern groove of the pair was cut by the south ditch terminal, suggesting that the group of features was earlier than the ditch. It is possible that the groove was cut when the ditch itself was re-cut, but part of the primary fill survived *in situ* right up to the terminal, so this seems unlikely. Nor did the relationship appear to be the result of erosion; the ditch end had retained a very square shape and fairly sharp corners, which it would be unlikely to do if it had suffered from significant erosion. This groove could not be traced on the inside of the ditch.

Other features in the entrance (illus 6)

The northern groove of the trackway cut a small area of sandstone paving located in the entrance area, which overlay the edge of a small charcoal-rich deposit (possibly the site of a hearth). This deposit was radiocarbon dated to AD 130 ± 50 uncal (calibrated to AD 85–325; GU-2764). However, charcoal was scattered fairly widely around this area, and there were signs of possible burning on the surface of the paving. It is therefore possible that the dated material was contaminated by the incorporation of later charcoal.

Other enclosure features

Four closely spaced post-holes were identified adjacent to the inner lip of the inner ditch, 9 m north of the entrance (illus 6). They were initially thought to indicate the presence of a palisade, but an intensive search along the ditch edge showed them to be the remains of an isolated structure, the nature of which remains obscure. They had been covered by a thin sandy loam spread, 3.5 m wide, which extended some 11 m to the south, not quite parallel to the ditch, and partly across the line of the entrance. No other features underlay this deposit where it was removed, and, although it appeared to be cut by the inner ditch, the relationship was most unclear and the boundary diffuse. The area lies within a small patch of very sandy subsoil, and it is possible that the layer is a product of relatively recent pedological processes, as occurs in Structure C.

In the north-east quadrant of the inner enclosure, a row of five large stones marked the position of the inner edge of the ditch. Set in the upper fill, they must have been placed after the ditch was filled. The stones included both water-rolled and angular types. One was a pivot stone made from a water-rolled boulder (Clarke below). They were spaced at 5 m intervals, except for one 7 m interval. No equivalent stones or markers were observed in any other areas.

Ring-groove buildings

In the centre of the enclosure and part of the north-eastern quadrant there was a complex of three intercutting ring-groove buildings (Buildings 1–3) and other features (illus 7 & 8). Fragmentary

remains of structures which may have been a fourth (and possibly a fifth) similar building (Buildings 4–5) were observed in the south-eastern corner of the inner enclosure, most of which was occupied by a later, much more substantial building (Building 6; illus 9).

The degree of truncation of the features increased rapidly from the east towards the interior of the enclosure, causing many features on the west wide of the complex to become very slight or to peter out altogether (eg the ring-groove of Building 2).

Building 1

This structure lay entirely within the excavated area and was the best preserved of the northern group of buildings. Almost exactly 13 m in diameter, Building 1 had two entrances, one facing east and one west. The ring-groove was 0.42–0.6 m wide, and 0.15–0.47 m deep (on average c 0.4 m deep: illus 8). There were two fills, the lower consisting of finer gravel and sandy loam, the upper containing packing stones but no recognizable post positions. A radiocarbon date of AD 210 ± 50 uncal (calibrated to AD 140–415; GU- 2776) was obtained from the lower fill.

The entrance on the east side, which faced the entrance to the inner enclosure, was formed by massive out-turned terminals, more than twice the depth and width of the groove. In the interior, a shallow gully ran behind the eastern entrance, conjoining with the main ring-groove either side of the entrance. This gully had been replaced once, on a slightly different line.

The western entrance was also flanked by expanded terminals, but these were much shallower than those at the eastern entrance, little deeper than the ring-groove. They were also smaller in plan than those to the east, and did not turn outwards. The northern terminal of the west entrance had been re-cut once.

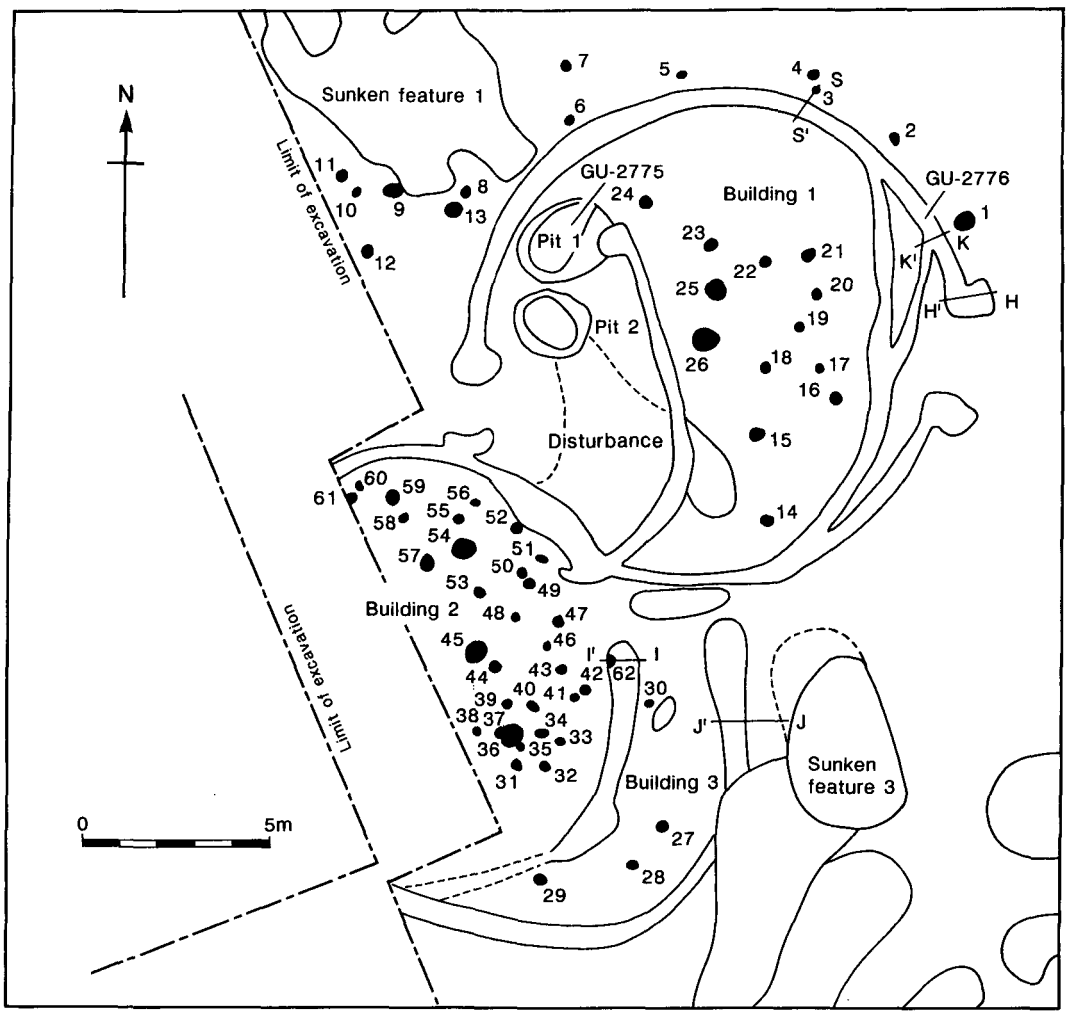
Building 1 had an external arc of six post-holes (illus 7; post-holes 1–6) on the north-east side of the building, spaced at intervals of about 3 m and located 0.2 to 0.4 m from the edge of the ring-groove. Post-holes 7, 8 and 13 could also have been associated with Building 1, although they were farther away from the groove, and may have been associated with a large feature just to the north.

Inside the building there was a scatter of 13 post-holes (post-holes 14–26), most of which were very shallow. Post-hole 26 was central; all the others lay in the eastern half of the building. The absence of post-holes in the western half may have been at least partly due to the presence of a complex of non-contemporary features in this area. It was impossible to determine whether all, some, or none of these post-holes in the interior were contemporary with the building; but as they form a distinct group entirely within, and respecting, Building 1, it seems likely that most of them were part of it. Post 24 had been burnt *in situ*, but it was peripheral to the main group of internal posts, and may not have been part of the building.

Building 2

The ring-grooves of Buildings 1 and 2 adjoined (illus 7). As excavated, they shared approximately 4.4 m of groove, which was double the width of other parts of either groove. Only the eastern half of Building 2 was in the excavated area, but the degree of truncation was so severe further west that it is unlikely that the west half of the building survived. The surviving part of the ring-groove was mostly very shallow.

Building 2 appears to have been oval, with the long axis aligned north/south. Its maximum diameter was 12.8 m. There were 32 probable internal post-holes (post-holes 31–62) but, as this building lay outside the directly threatened area, most were not tested and confirmed by excavation. The clearest post-holes seem to have formed a double internal ring.



ILLUS 7 Buildings 1–3 and associated features, Enclosure A

An entrance to Building 2 occurred in the east side of the ring-groove. The north side of the entrance was complicated by an intersection exactly at the terminal with the ring-groove of Building 1, and another linear feature (below).

Building 3

Only about a third of the circuit of this ring-groove had survived truncation. North of the entrance, only the terminal survived, cut by other features from one of which a radiocarbon date provides a *terminus ante quem* of AD 20 ± 60 uncal (calibrated to 55 BC–AD 210; GU-2768) for Building 3. The ring-groove was very wide near the terminals, perhaps indicating that it had been re-cut. Building 3 had three shallow internal post-holes (post-holes 27–29), 0.9 m from the edge of the ring-groove, and another (post-hole 30) 1.6 m from the edge of the groove.

Other features associated with Buildings 1–3

A curvilinear gully formed a 'horn' attached to the north side of the entrance to Building 2, which curved rapidly northwards, and then straightened. It had a large inturned terminal at its northern end. The gully cut the north terminal of Building 3, and lay almost entirely within Building 1. Stratigraphically, it seemed to be cut by Building 1, and to be contemporary with Building 2. The terminal at the north end of the gully was dated by radiocarbon to AD 20 ± 60 uncal (calibrated to 55 BC–AD 210; GU-2768). This feature could represent another building, but this seems unlikely, as there is no continuation of its groove at the south-west end and no northern terminal to match the southern one (although this could have been destroyed by other features); none of the other buildings has such a long straight stretch as is present in this feature.

West of the 'horn' there was a very shallow hollow, 3 m wide, which appeared to represent a disturbance of the natural gravel surface rather than a cut feature. The agency of disturbance is unknown, but it may be contemporary with the 'horn', as it is sharply defined on its east side by that feature. It is also defined to the south-east by the ring-groove of Building 2.

Two shallow pits were located in the north-west part of Building 1 (illus 7, Pits 1 and 2). Each had a sandy loam fill with a capping of gravel and cobbles, with some charcoal. Pit 1 was cut by the terminal of the gully, and produced a radiocarbon date of 460 BC ± 70 uncal (calibrated to 800–385 BC; GU-2775) from its capping.

Buildings 4 & 5 (illus 9)

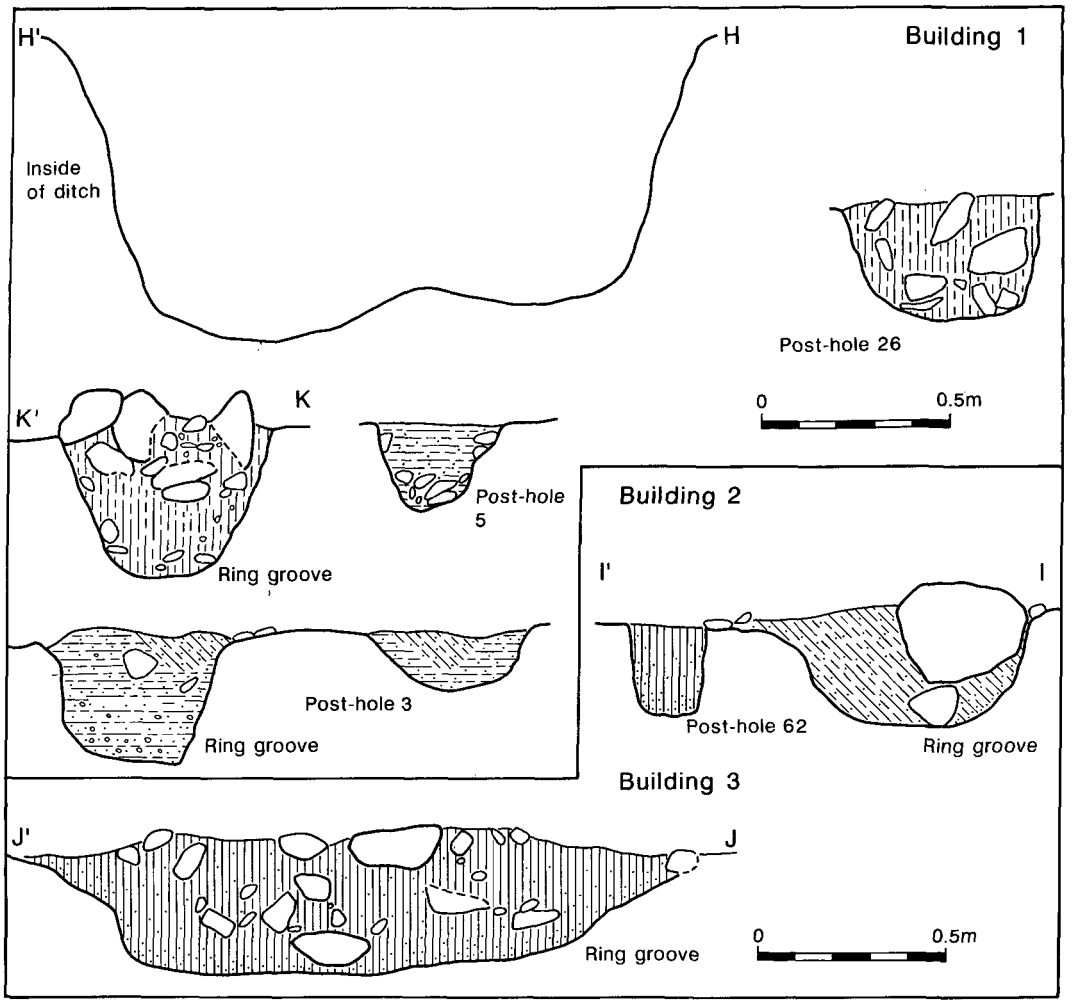
Fragmentary remains of two possible buildings, one built in a ring-groove and one in an arc of post-holes, were observed in the south-east corner of the enclosure. Neither could be proved to be buildings; they could, alternatively, represent the corners of two successive fences along the inside of the inner ditch. They could not, however, be traced further along the edge of the ditch, where there was no reason to believe that truncation has been any worse than where the features survived. It is therefore as likely that they originally formed parts of buildings, and that the remainder was destroyed by later features to the north-west.

The features designated Building 4 were a fragment of truncated gully, of which about a quarter of a circle survived, and a scatter of five post-holes (69–73) close to its inner edge. If this did represent a building, it would have had a maximum diameter of approximately 15 m. The ends of the surviving section were unclear, but were not cut by features. The loss of the remainder of the building seems to have been caused by truncation pre-dating or associated with the construction of Building 6 (below). No entrance was visible in the surviving section of ring-groove; any entrance must therefore have been differently aligned from those of Buildings 1–3.

Building 5 was represented by part of a ring of post-holes (63–8) at irregular intervals east of the ring-groove of Building 4, eccentric with it, and at a distance of 1.6–2.5 m away. The post-holes became progressively farther apart towards the north, in which direction the arc straightened slightly, recalling the ring-groove of Building 4. Building 5 was very close to the edge of the inner ditch; one post-hole was in contact with the edge of the ditch, but their stratigraphic order could not be discerned.

Features cut by Building 6 or the penannular ditch (illus 9)

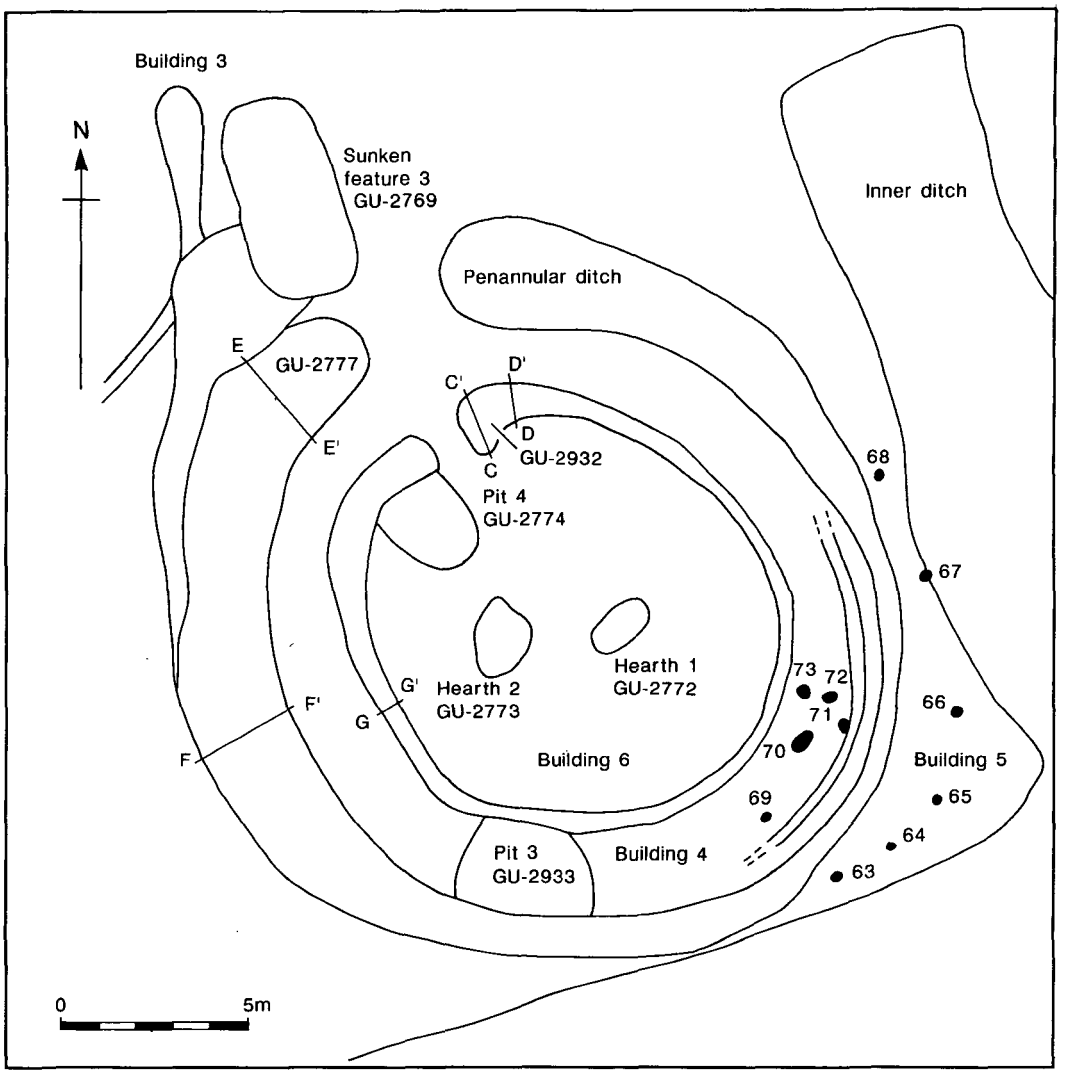
Pit 3, a shallow, flat-bottomed pit, lay between the penannular ditch and the ring-groove of Building 6 (see below), and was cut by both. It had a complex series of interleaving stony and charcoal-bearing fills, and there was some evidence that it had been re-cut at least once. The pit



ILLUS 8 Sections of ring-grooves and post-holes associated with Buildings 1–3, Enclosure A. The lowest section from Building 1 (below K'–K) is S'–S on illus 7.

had been been badly truncated from above, as well as partly cut away on two sides. A radiocarbon date of 650 BC ± 50 uncal (calibrated to 850-570 BC; GU-2933) was obtained from one of the upper fills. The feature also contained 18 charred wheat seeds (Boardman, below) and a fragment of glass armlet (Henderson, below) dating from the first to the second century AD. These contradictory dates are discussed in the section on dating evidence, below.

Pit 4, a shallow, truncated, sub-oval pit in the interior of Building 6 (illus 9), was cut by its ring-groove. The roughly cobbled floor of the pit was overlain by a deep layer of white ash (Carter, below), with some charcoal. Over this there was a loamy, very charcoal-rich deposit, another loamy layer with many large worn cobbles and some charcoal, and finally a charcoal-rich patch in the centre. The final charcoal deposit has been radiocarbon dated to 340 BC ± 50 uncal (calibrated to 480–230 BC; GU-2774).



ILLUS 9 Buildings 4, 5 and 6 and other features in the south-east corner of Enclosure A

Building 3 was cut on its south-east side by a large, irregular hollow, which was in turn cut by the penannular ditch, establishing a chronological sequence (Building 3 was earlier than the hollow, which was earlier than the penannular ditch). The purpose of this feature is unclear, but it was too shallow to be an original line of the penannular ditch. Its charcoal-rich fill was very similar to that of the adjacent part of the penannular ditch, contrasting with the fill of the remainder of this ditch (below). It is possible that material from the destroyed part of this feature has formed part of the fill of the ditch cutting it. The north-east end of the hollow was cut by Sunken Feature 3, which was radiocarbon dated to 70 BC ± 50 uncal (calibrated to 145 BC–AD 115; GU-2769).

The penannular ditch and Building 6 (illus 9)

These were the only internal features visible on the aerial photographs within Enclosure A. The penannular ditch formed an oval enclosure with a maximum internal diameter of 17.3 m, and a north-facing entrance 2.4 m wide. It enclosed a substantial ring-groove building (Building 6), with internal diameters of between 10.1 m and 11.6 m and an entrance 0.9 m wide. The gap between the ditch and the ring-groove varied from 1.5 m to 2.7 m (illus 9).

The ditch was V-shaped in profile. The parts of the ditch closest to the inner ditch of Enclosure A were less than half the width and depth of other parts, and presented no obstacle to movement accross it. In the east terminal and the south and west sides there was a simple sequence of fills, indicating initial rapid erosion of gravel from the sides, followed by more gradual silting. Some sections indicated that much more rubble had fallen from the interior than from the exterior (illus 10, F–F'), possibly indicating the former presence of an internal bank. The west terminal, and an adjacent length of ditch, were more complicated (illus 10, E–E'). This terminal cut a large hollow to the north-west (above), and on the inside edge of the ditch there were charcoal-rich deposits which had been heavily disturbed in antiquity. The fills in this part of the ditch were very dark, with a high content of charcoal and other carbonized material, which probably derived from these earlier deposits. The upper fills contained frequent large cobbles. Boundaries were very indistinct, and the inner side of the ditch could not be securely identified. This section could not be fully excavated due to flooding; the area had been cut by several narrow excavation trenches in the 1950s, disturbing and damaging the deposits.

A radiocarbon date of 970 BC ± 50 uncal (calibrated to 1285-930 BC; GU-2777) was obtained from one of the fills in the west terminal of the ditch, a date which exactly matches that for one of the cremation burials 54 m to the north (see below). However, a bronze trumpet-brooch of the mid-late first century AD was found in the upper fill of the east terminal of the ditch (Allason-Jones, below).

Building 6 (illus 9, 11, 12) was represented by the largest structural feature on site, which contrasted sharply with the other ring-grooves. It was between 0.5 m and 0.8 m deep, and 0.79 m to 0.85 m wide. Post-pipes, packed with large cobbles, were recognised in several parts of the ring-groove, spaced at intervals of 0.4–0.7 m. Most of the ring-groove was flat-bottomed with near-vertical sides (illus 11, G–G'), but the terminals were U-shaped.

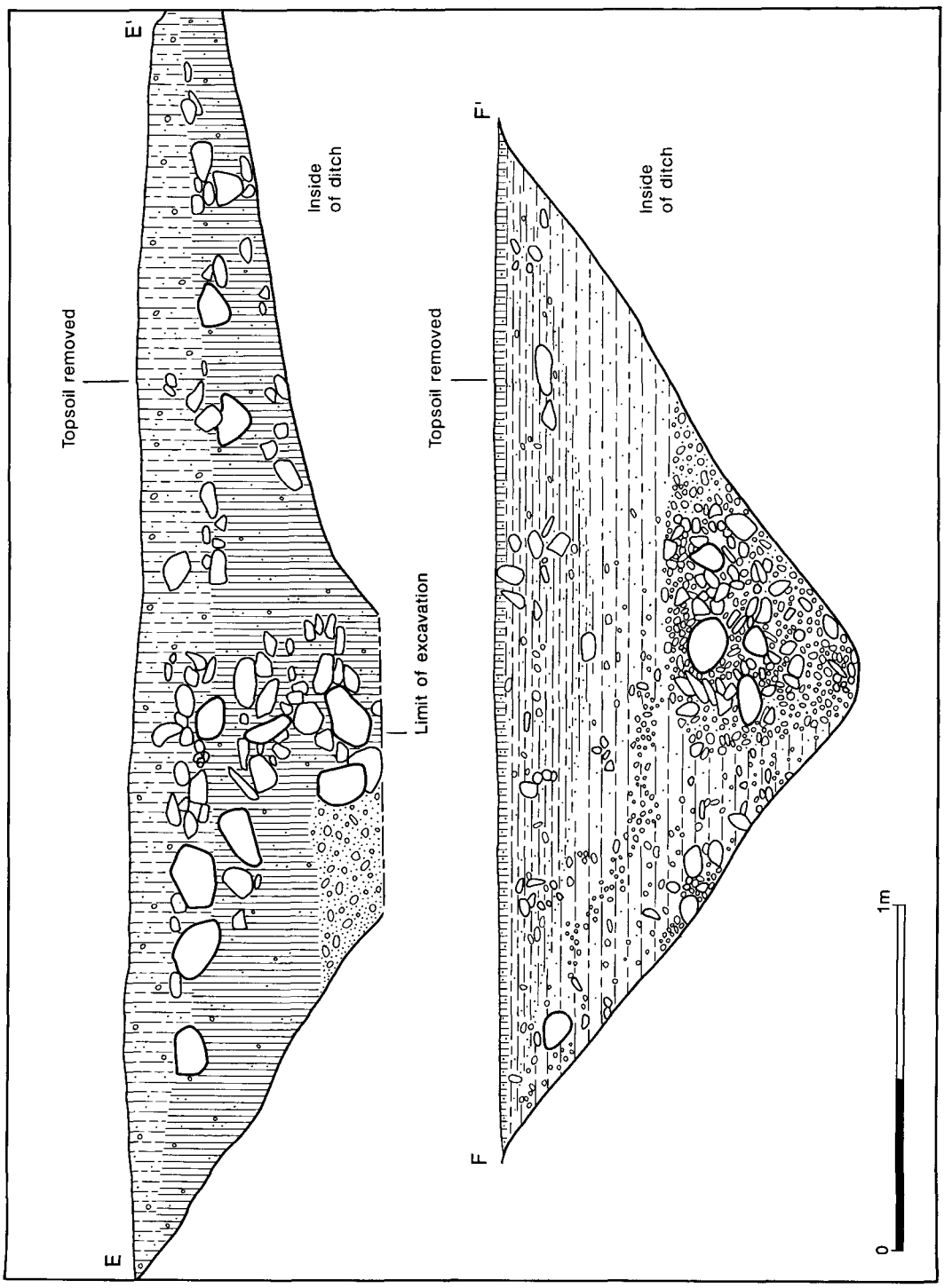
The east terminal (illus 11, C – C') had been disturbed by the excavations of 1953–4, but its plan, profile, and most of its fill were intact. This terminal had less post-packing than other parts of the same ring-groove. The west terminal was less clear as it was affected by the recent disturbance which had damaged the ditch in this area. The post-pipe in the east terminal was radiocarbon dated to AD 30 ± 50 uncal (calibrated to 25 BC-AD 205; GU-2932).

Hearths 1 and 2 were located near the centre of Building 6. Each consisted of a shallow, irregular hollow filled with interleaving layers of charcoal-rich sandy loam with gravel and very small fragments of burnt bone. Hearth 1 had an arc of heavily burnt pebbles in its fill; this represents the only possible structure in either hearth. The same hearth was radiocarbon dated to AD 40 ± 50 uncal (calibrated to 20 BC–AD 210; GU-2772); Hearth 2 was dated to AD 90 ± 50 uncal (calibrated to AD 25-245; GU- 2773).

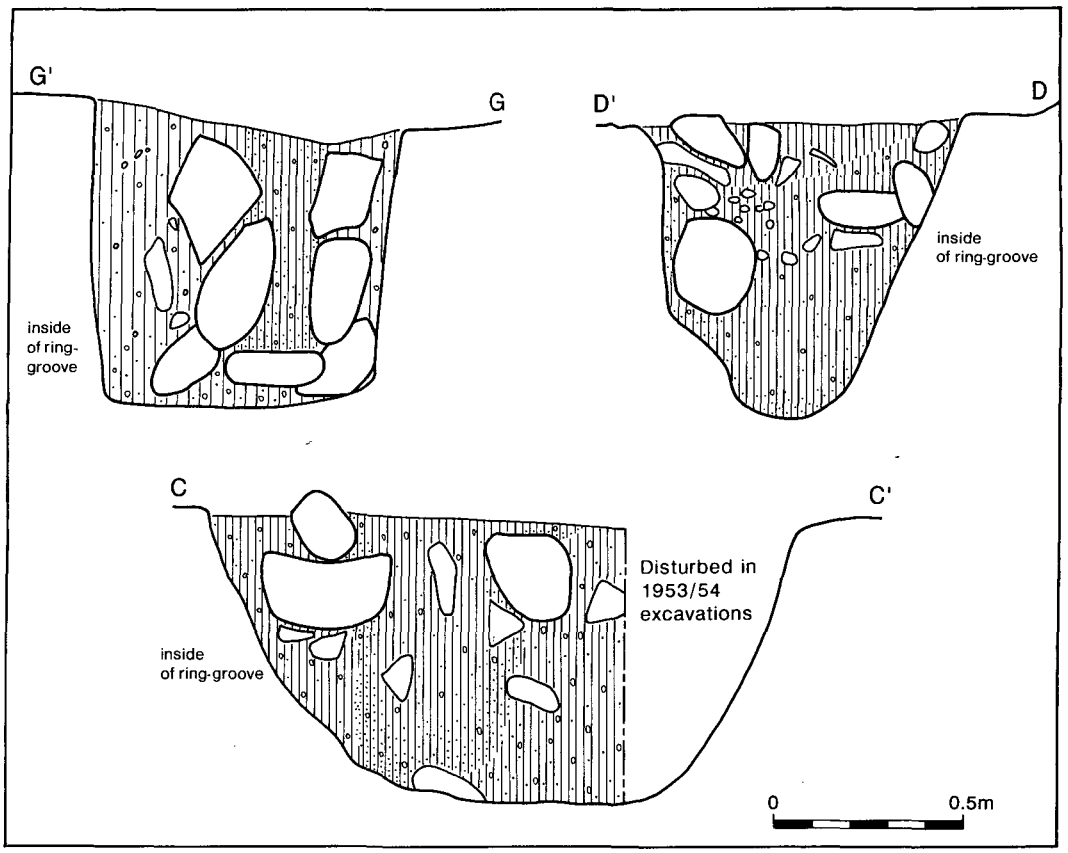
A silver-gilt penannular brooch of the eighth to ninth century AD, part of an iron sword, and a small iron sickle (Owen & Welander, below), were all unstratified finds from the base of the topsoil overlying the enclosure. This group of finds is discussed separately.

The sunken features

Sunken Feature 1 (illus 13) lay immediately to the north-west of Building 1 (illus 4); it was a large, very irregularly shaped scoop, some 7.6 m by 4.1 m across and 0.3–0.5 m deep. The primary fill in the north-west quarter of the feature was a reddish sandy loam with very large cobbles. The surface



ILLUS 10 Sections of the penannular ditch



ILLUS 11 Sections from Building 6

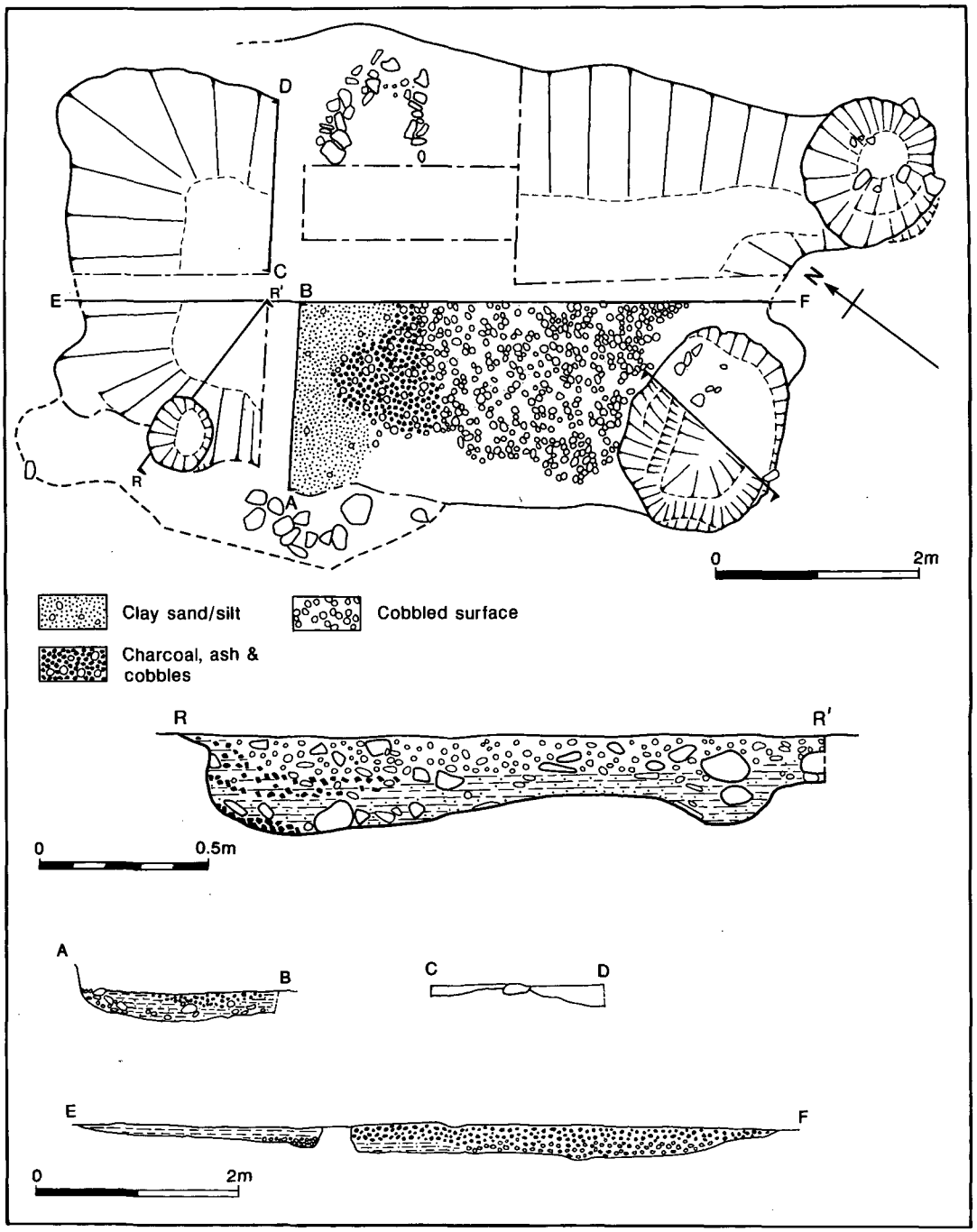
of this deposit formed a gentle slope into the centre of the scoop. A small circular pit had been cut through the primary fill and into the underlying natural gravel near the north-west corner. This feature had a slight overhang on the west side, but (because it was cut into a slope) almost no east side at all. The walls and floor of the pit had been discoloured by heat. Its fills, particularly the basal fill, were dominated by charcoal, and it was surrounded by a smooth yellow/grey deposit, identified in the field as ash. This interpretation has been supported by microscopic examination (Carter, below). The ash formed the second fill of the main scoop, and extended over about 40% of the base of the feature, mainly in the northern half. It interleaved with more gravelly, charcoal-rich fills in the southern part of the scoop, which were capped with a rough cobbled surface. This was cut by a pit, with charcoal-rich fills, in the south-west corner. A smaller, similar pit occupied the south-east corner of the scoop. The whole complex had been capped by a gravelly upper fill with frequent charcoal; a horseshoe-shaped setting of medium cobbles in its surface, which did not relate to any underlying structure, may have been the base of a positive feature which had been truncated.

Virtually every excavated soil context in the complex (14 in all) contained small, unidentifiable fragments of burnt animal bone. Two metal artefacts similar to large washers were

ILLUS 12 Section of the ring-groove of Building 6

found on the southern edge of the cobbled surface, one was made of iron and a smaller one of copper alloy. A number of fragments of cinder and heavily burnt clay, some partly vitrified, were also found (Slater & Johnston below). The lowest deposit in the heavily burnt pit in the north-west corner was radiocarbon dated to 40 BC ± 50 uncal (calibrated to 105 BC–AD 120; GU-2765); the stratigraphically later pit in the south-west corner was dated to AD 40 ± 60 uncal (calibrated to 20 BC–AD 210; GU-2767). There was a scatter of small post-holes around the south end of the feature (illus 7); in some cases it was unclear whether these were associated with the sunken feature or with Building 1.

Sunken Feature 2 lay to the north, between the inner and outer ditches of Enclosure A (illus 4); it was a larger, irregularly shaped hollow, 11.5 m by 5 m across and 0.3 to 0.4 m deep. Sunken Features 1 and 2 each extended to within a few centimetres of opposite sides of the inner ditch, but did not intersect it. Sunken Feature 2 appeared to have been cut by the outer ditch at its north end, although this relationship was not entirely clear in excavation. There were several post-holes associated with the complex, but no pattern could be discerned. In its southern half, the hollow had an irregular profile, deepest on the west side of the feature. The primary fill of sterile gravel was thickest on this west side, creating a more regular, dished upper profile. Over this was a thick charcoal deposit, probably derived from a series of large *in situ* fires, which petered out into lenses in the centre of the hollow. The north end was largely taken up with large cobbles, mostly more angular than those elsewhere on site. The charcoal deposit contained fragments of heavily burnt



ILLUS 13 Sunken Feature 1

bone, cinder and burnt clay, similar to those in Sunken Feature 1 but in smaller quantities. This deposit was radiocarbon dated to AD 50 ± 50 uncal (calibrated to AD 1–230; GU-2766).

Sunken Feature 3, 4.2 m long by 2.8 m wide, lay between Buildings 1 and 6 (illus 4 & 9); it was the most regular of the three sunken features in plan, and had the simplest sequence of fills. The main fill was sterile gravel, almost indistinguishable from the surrounding subsoil. A single post-hole was found cut into the side of the feature, just below its southern edge.

In a secondary phase the south end of the feature had been re-cut, similar in form to the first but much smaller (3.3 m by 1.9 m). The fill was a black, charcoal-rich deposit, capped with a heap of small rounded pebbles. This phase was radiocarbon dated to 70 BC ± 50 uncal (calibrated to 145 BC–AD 135; GU-2769). It contained two lumps of heat-modified, ferrous material, possibly slag (Slater & Johnston, below). A melon bead of broadly Roman date was found in the capping (Henderson, below).

ENCLOSURES B AND C

Enclosures B and C are adjoining, sub-rectangular enclosures, aligned NW/SE (illus 3). Their north-west sides, which are hidden from view by trees on the aerial photographs, coincide with a cliff. No ditches were sought here during the present or the 1953–4 excavations. The cliff may have provided an adequate defence in itself, or it may have receded, destroying part of the enclosures.

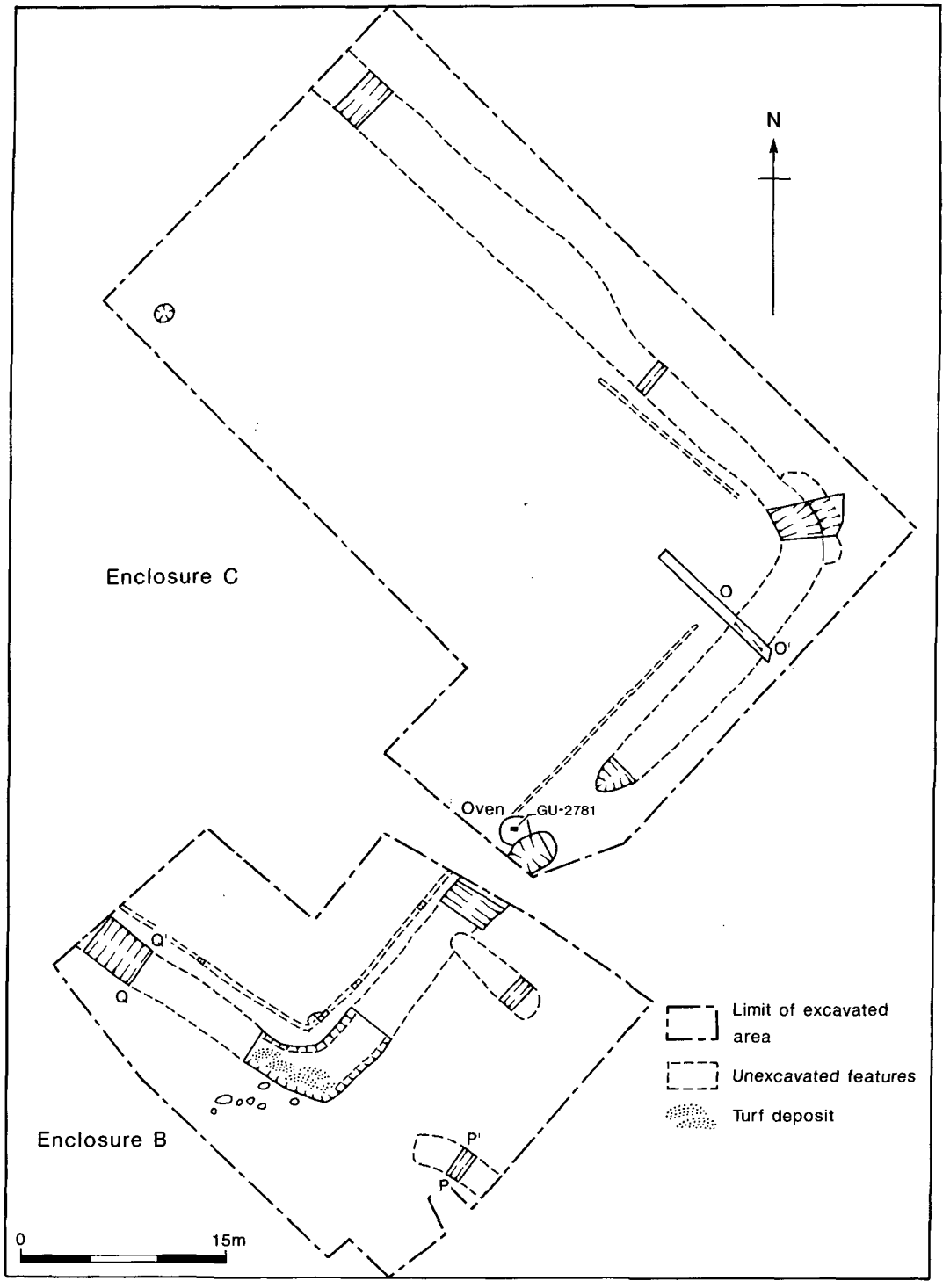
The position of the ditches, as plotted from the aerial photographs, was found to be offset to the north of their actual position. This resulted in the edge of the excavated area being closer to the south-east ditch of Enclosure C than intended.

The morphology of Enclosure B indicates that it is a Roman temporary camp. Enclosure C was interpreted as a Roman fortlet by Clarke & Webster (1954), who concluded that its south-west ditch was cut across at an acute angle by the ditch of Enclosure B. The 1989/90 excavations have shown that they correctly identified the stratigraphic relationship (Enclosure B post-dates Enclosure C), but also that the ditch of Enclosure B was exactly aligned with that of C. The sides of C were not, therefore, parallel (illus 14).

The archaeological evidence in Enclosures B and C was badly affected by variations in subsoil across the site. The B horizon, into which features in the south half of the field had been cut, was absent in the northern half, perhaps due to turf-stripping in antiquity (below), which would have left the B horizon vulnerable to destruction by ploughing. In addition, about 60% of the area excavated had a very soft, silty sand subsoil into which roots and invertebrates had penetrated to a greater depth than elsewhere. In this subsoil, pedological processes effectively destroyed the upper part of the fills and cuts of features, leaving only stone components in place. The remainder of the excavated area had a mixed subsoil of soft sand and cobbles, producing an unstable surface which had been disturbed by ploughing. These processes effectively destroyed nearly all small or shallow features, especially those with no stone component in their fills. Enclosure B also suffered from the loss of the B horizon, but the C horizon in this area is more stable, and the features had survived in better condition than in most of Enclosure C.

Enclosure B

This enclosure is clearly identifiable from the aerial photographs as a Roman temporary camp, approximately 0.59 ha in area. It is approximately 84 m long by 70 m wide, and has a *titulum* approximately 12 m in front of each entrance. The enclosure lies entirely outside the directly threatened area, and was therefore not closely examined.

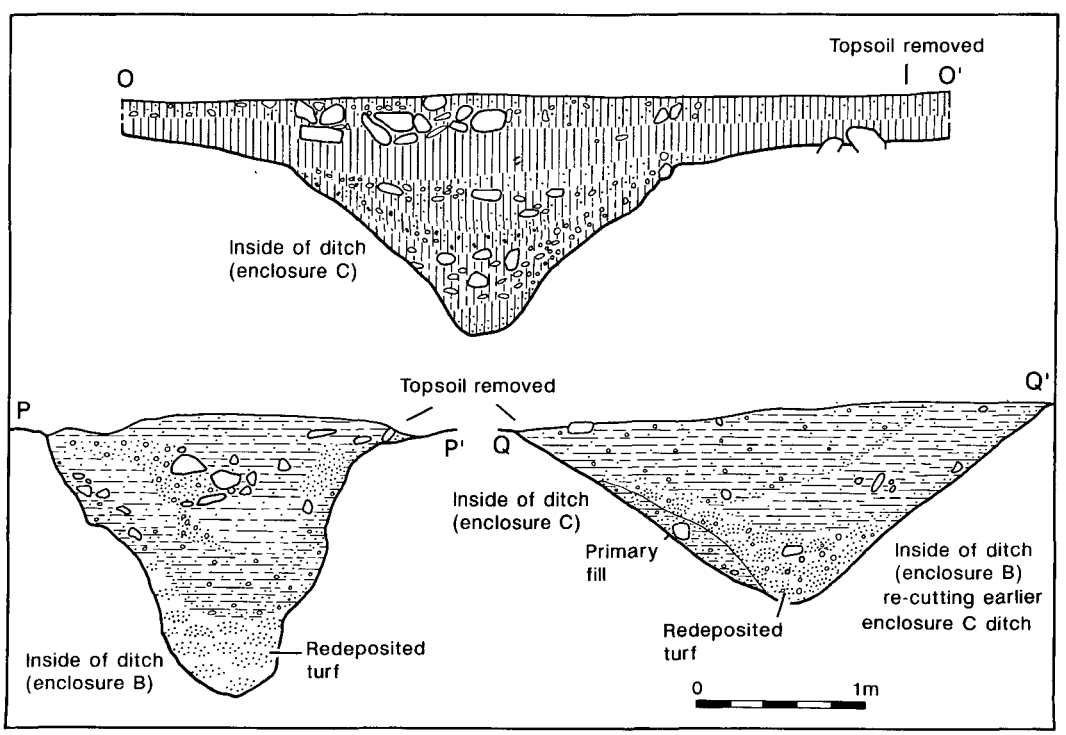


ILLUS 14 Enclosures B and C: the excavated areas

The north-west side, not visible on the aerial photographs, is not mentioned in the 1953–4 excavation report (Clarke & Webster 1954) and was not investigated during the present project, because it lay well away from the threatened area. Excavation around the north-east entrance aimed to examine the relationship between Enclosures B and C, and to determine the spatial and stratigraphic relationship between their ditches.

The ditch north-west of the excavated entrance followed the line of the ditch of Enclosure C exactly and terminated at the southern corner of C (illus 14). Its profile was V-shaped, with a slight basal slot (illus 15), Q–Q'). This part of the ditch had been created by cleaning-out the ditch of Enclosure C which was over half-full, but still visible, when B was constructed. This action produced a profile very similar to the original, in sharp contrast to the profile of the same ditch south-east of the entrance. Here it had been dug as a completely new feature (illus 15, P–P'), with a narrower, steeper and more irregular profile. The section across the ditch of the *titulum* was similar, but less pronounced.

The primary fills of the temporary camp ditch were identified as turf, both in 1953–4 and in these excavations. This interpretation has been confirmed by micromorphological analysis of samples from these fills (Carter, below). Few clear boundaries between turves and no whole turves were found, perhaps because the turves had formed part of an internal bank, and had partly decayed within the bank before their redeposition in the ditch. The redeposition could have taken place as a deliberate slighting of the rampart when the camp was abandoned; the 'turf' deposit forms the basal fill of each section and there is no sign of interleaving with material eroded from the sides and all the excavated sections were consistent. Alternatively, there could have been a



ILLUS 15 Ditch sections in Enclosures B and C

rapid natural collapse of the rampart before any significant erosion of the sides took place. No sign of an internal bank survived *in situ*.

The only features recognized in the small internal area excavated were seven post-holes of widely varying size and shape, located just inside the entrance. Six of them formed an irregular line about 6 m long, running east to west at an angle to the ditch. The seventh was located 1 m north of this line. A significant concentration of charred emmer wheat was recovered from this possible structure. Wheat is more commonly associated with Roman military sites than with contemporary native ones in Scotland, and appears to have been the staple diet of the Roman army (Boardman, below).

Enclosure C

Each of the three ditched sides of Enclosure C was roughly 55 m long. The enclosure was trapezoidal in plan, with a maximum width of over 60 m along the cliff edge. It was therefore very similar in area to the inner enclosure of Enclosure A. A single entrance occurred in the centre of the south-east side.

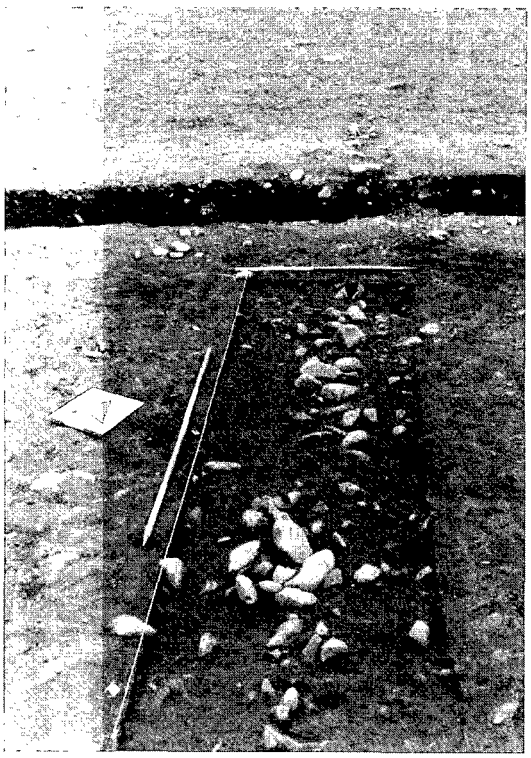
Only three features were recognized within Enclosure C (illus 14); a palisade trench which ran parallel to the ditch, a pit near the north-west side of the enclosure, and an oven in the edge of the ditch near the entrance. The ditch and palisade were best preserved at the southern corner of the enclosure, near where they met Enclosure B.

The ditch profile was V-shaped, with a slot in the base on the north-east and south-east sides (illus 15, O–O'), but not on the south-west side (illus 15, Q–Q'). The south-west terminal was rounded and slightly out-turned, and the north-east terminal was more pointed. The ditch varied from 2.4 m to 3.35 m wide, and from 1.06 m to 1.28 m deep. Where it cut the sandy subsoil it was virtually impossible to recognize in plan, particularly on the south-east side, as the upper fill had been homogenized by pedological processes. It was located in section and by emptying the 1953–4 trial trenches. In a few places (such as the terminal south-west of the entrance) it was not visible in plan until partially truncated in box trenches.

The fill of the basal slot had a high proportion of large gravel and cobbles, which increased where the slot was cut through more gravelly subsoil. This indicates rapid erosion of the sides, with larger stones sorting to the base, until a stable profile had been formed. The ditch had then filled more gradually by natural accumulation. The south-east side had a high proportion of cobbles in the centre of the ditch in the uppermost fills. These may have been deliberately deposited to level the ground, at a time later than the abandonment of Enclosure B (they are higher in the section than the level to which the ditch had filled when it was cut by that of Enclosure B).

A narrow slot (0.3–0.4 m wide), possibly a palisade trench, ran parallel to, and 1 m from, the inner edge of the ditch. Although it seemed to be clearly related to the ditch, it ran across the entrance. Despite being badly truncated, it was clear on the south-west side and at the south corner, where the subsoil is fairly stable; on the south-east and north-east sides, its cut and fill had been entirely obliterated by pedological processes. Some stretches were recognizable in this area by the presence of packing stones (illus 16); where these were less abundant, it was invisible. At the southern corner, it had been reinforced by additional posts on the inside edge.

A feature interpreted as an oven was located on the inner edge of the south-west terminal of the ditch, cutting the palisade trench (illus 14). It was a shallow, flat-bottomed pit, floored with small sandstone slabs. The sides were lined with roughly coursed cobble walling, standing 0.3–0.4 m high (illus 17 & 18). The walls leaned inwards slightly and may have originally formed a dome. Access to the oven was from a position in the ditch. Charcoal and burnt material, removed from the oven



ILLUS 16 The palisade trench on the east side of Enclosure C

between uses, formed one of the upper fills of the ditch terminal, indicating that the ditch was over half full when the oven was in use. The level at which this material appeared in the ditch fill matched the level to which the ditch had filled when it was cut by the ditch of Enclosure B.

The oven had collapsed during its last firing; it was filled with rubble, which sealed *in situ* a charcoal-rich deposit, dated to AD 80 ± 50 uncal (calibrated to AD 25–240). It is likely, on stratigraphic grounds, that the oven was built when Enclosure C was disused; possibly by the occupiers of the temporary camp, a view supported by the radiocarbon date.

The only internal feature identified was a small flat-bottomed pit near the north-west side of the enclosure, equidistant between the side ditches, which contained no artefactual or datable material. Most of the excavated area lay in zones of homogenized subsoil, making the recognition of small features virtually impossible. The investigation of the junction between Enclosures B and C indicated that the subsoil in the remaining unexcavated area may be more favourable for preserving features.

THE 'ROMAN ROAD'

A cobbled surface (illus 4 & 19) up to 3 m wide, was found in the extreme south-east corner of the field, parallel to the east side of Enclosure A. The eastern edge of the cobbling was sharp, and the western edge diffuse, perhaps because of differential plough damage.

The band of cobbling was aligned with a faint cropmark visible on some aerial photographs

ILLUS 17 The oven from above and to the south

ILLUS 18 The oven, viewed through the opening, from the ditch

ILLUS 19 The 'Roman road' surface, as first recognized, from the north

in the field to the south, which had been interpreted as a Roman road (G Maxwell, pers comm). A similar feature, perhaps part of the same one, was observed by local people in a service trench some 200 m to the north, on the same alignment, near the point where the modern road enters the village.

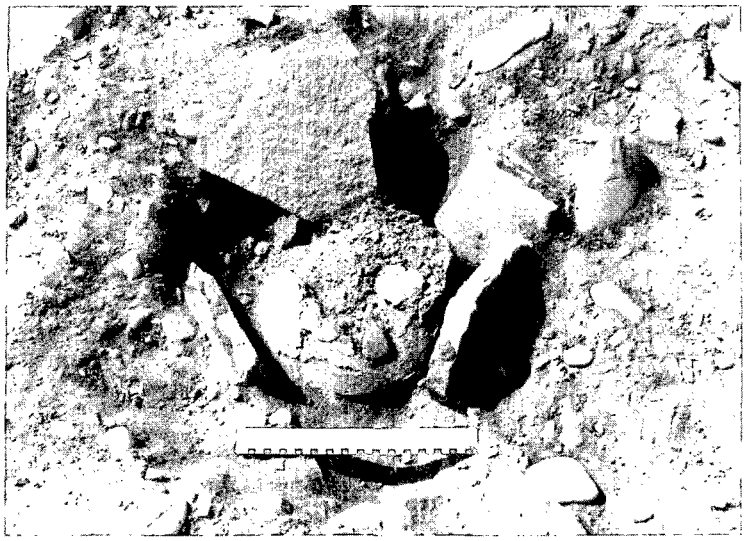
No dating evidence was recovered from the cobbled surface, which must intersect the outer ditch of Enclosure A in the corner of the adjacent (unexcavated) field (illus 3). It is essential that the relationship between these two features is established through excavation at some future date. At present, it remains reasonable to regard the road as Roman.

CREMATION BURIALS

Three cremation burials were found between Enclosures A and C (illus 3, 1–3). Burials 1 and 2 were contained in slab-lined pits located on a knoll (the highest point of the gravel terrace). Burial 3 was in a pit only 2 m north of Enclosure A.

Burial 1

Burial 1 was contained in a slab-lined pit (illus 20 & 21), 0.45 m square and 0.35 m deep internally, formed of irregular, smooth-sided stone slabs. The side stones had been shifted and damaged by ploughing; one had been broken in two and one piece had been pulled out of the pit. No capstone was preserved.



ILLUS 20 Burial 1

A Collared Urn (MacSween below, illus 20 & 22) probably dating to the mid-second millennium (in terms of uncalibrated radiocarbon dates), containing cremated bone and some charcoal, had been placed in the pit upside-down. The base of the urn had been smashed by ploughing, but most of the contents remained in position. The bones represented the remains of three individuals: an adult of indeterminate sex; a child aged between 3 and 12 years; and an infant (Parker, below).

A radiocarbon date of 5040 BC ± 50 uncal (GU-2779), obtained from charcoal in the urn contents, is clearly anomalous and was not calibrated. It may have resulted from the use of much older wood which had been preserved in peat ('bog oak') in the funeral pyre.

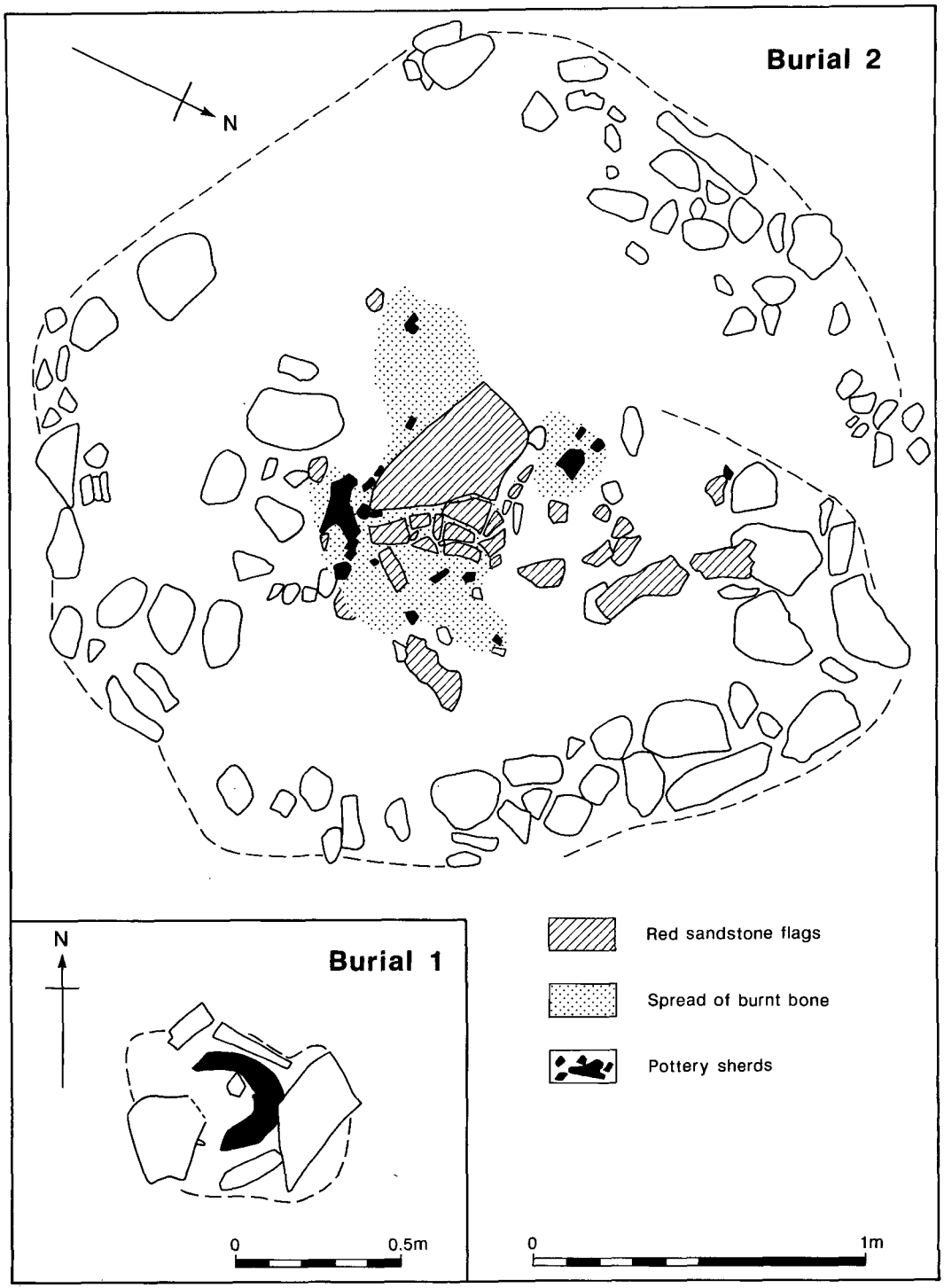
Burial 2

This burial was much less well preserved than Burial 1. It had been in a pit lined with red sandstone slabs; the base slab lay only a few centimetres below the modern surface level of the subsoil, and the sides had collapsed and had been smashed. One of them had fallen onto the urn, completely crushing it and its contents. The cist was surrounded by a roughly circular kerb, 2.6 m in diameter, composed of large to medium-sized cobbles (illus 21).

The cremated bone appears to represent a juvenile, not over 15 years old, and of unknown sex (Parker, below). The urn was not reconstructable or datable, although it was shown that it had been fired in the same way as the urn from Burial 1 and had other points of similarity (MacSween, below). A radiocarbon date of 1000 BC ± 50 uncal (calibrated to 1380-1020 BC; GU-2780) was obtained from charcoal with the bone.

Burial 3

This was contained in a shallow, roughly circular pit, which had been capped with a red sandstone slab similar to those lining Burial 2. The cremated bone was found in several small lenses within the soil fill of the pit, concentrated in the lower part of the fill. There was no evidence to suggest



ILLUS 21 Plans of Burials 1 and 2

more than one individual (Parker, below). Charcoal and smaller quantities of burnt bone were present throughout the fill, which was darker and more loamy than most fills on the site. No artefactual material was found. Charcoal from the burial was radiocarbon dated to 970 BC ± 50 uncal (calibrated to 1285–930 BC; GU-2778), exactly the same date as that obtained from charcoal in the penannular ditch within Enclosure A (above).

THE EXCAVATED MATERIALS

THE POTTERY *A MacSween*

Two fragmentary vessels were recovered from the burials. Both had been buried upside-down and their basal sherds lost. The vessel from Burial 1 is a tripartite Collared Urn; that from Burial 2 was too badly crushed to reconstruct. Full catalogue descriptions are on microfiche.

The tripartite Collared Urn (illus 22) is an early form, fitting into Longworth's (1984) Primary Series. Two or more 'early' traits qualify a vessel as Primary in Longworth's scheme. The Carronbridge vessel has two such traits: short line motifs (twisted cord impressions) repeated on the neck and collar, and a narrow or straight-profiled collar.

Most Collared Urns from south-west Scotland belong to Longworth's Primary Series. Decoration with impressed twisted cord is most common (Morrison 1968, 91). The vessel from Burial 1 can be compared with an early urn from Durisdeer (6 km to the north-east), which has similar decoration on the collar and neck, but also has decoration inside the collar and a row of impressed chevrons below the shoulder.

Burgess (1986, 345), using typology and associations, further divided Collared Urns into Early (1800-1600 BC uncal), Middle (1600–1450 BC uncal) and Late (1450–1250 BC uncal) groups. Early group vessels have at least three of Longworth's 'early' traits. Middle group urns have up to three early traits, but would normally have late traits in addition. Under this scheme, a date between 1600 and 1450 BC uncal would be expected for the Carronbridge vessel.

Unfortunately, the radiocarbon date for material in the vessel from Burial 1 is unusable. The radiocarbon date for Burial 2 is later than would have been expected for Vessel 1. However, although similar in fabric, the vessel associated with Burial 2 is so badly crushed that it is impossible to say whether its form and decoration are similar to the Collared Urn from Burial 1.

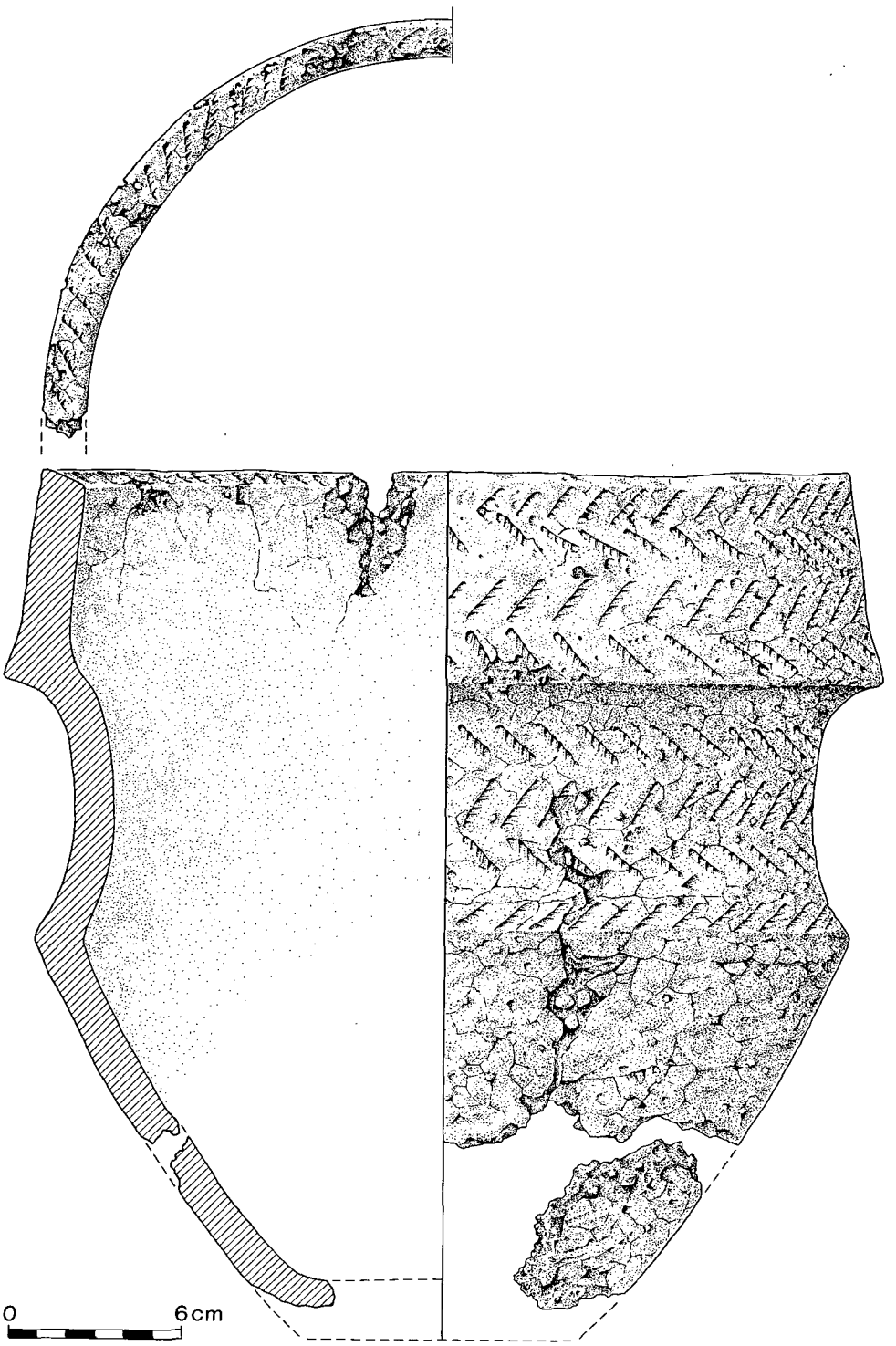
THIN SECTION PETROLOGY OF THE VESSELS *D Dixon*

The Carronbridge vessels were probably made locally. The fabric contains basalt, the most likely source of which is one of the flows in the 'Carron Basalt Formation', a series of early Permian basalts which covered the Thornhill Carboniferous Basin. (Fuller details are on the microfiche.)

Longworth (1984, 81) noted that thin section analysis of Collared Urns usually indicates local sources for the raw materials; and that it is rare to find pairs of urns showing close similarities in form and decoration. He concluded that the tradition was a domestic one, rather than a specialized industry. The thin section results for the vessel from Burial 1 at Carronbridge support this hypothesis.

THE CREMATED BONE *S Parker*

Burial 1 and 2 had both suffered plough damage, and the bone from Burial 2, which had suffered the worst disturbance, was more heavily worn than that from Burial 1. However, the most heavily worn bone was found in Burial 3, which had not been disturbed.



ILLUS 22 Vessel 1

Most of the bone from all three burials had been burnt at a consistently high temperature; although some bones from Burial 1, notably from the pelvis and spine, were less well burnt.

The bone fragments from Burial 1 were the largest, and those from Burial 3 the smallest; and this is reflected in the amount of physical anthropological data which could be recovered from them. It was not possible to identify the sex of any individual. (Further details are on the microfiche.)

Burial 1: This burial contained the remains of three individuals – an adult, a child between three and 12 years old (probably towards the lower end of the range), and an even younger child.

Burial 2: One individual, a juvenile under 15 years old.

Burial 3: Probably only one individual.

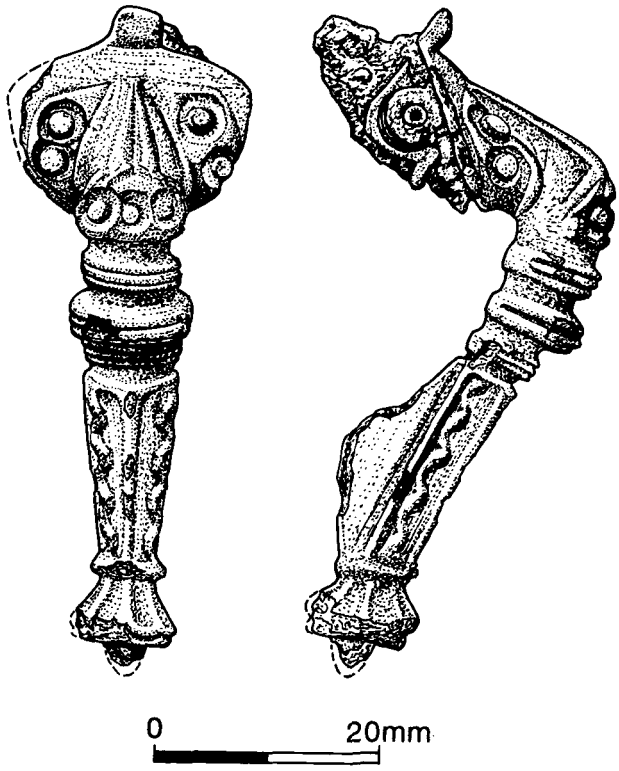
THE TRUMPET BROOCH *L Allason-Jones*

A copper alloy trumpet brooch with part cast and part stamped decoration; the original copper alloy pin has been replaced with an iron one. (Fuller details are on the microfiche.)

The trumpet brooch has been recognized as a characteristically British form, although its origins have been traced to the Pannonian brooches which entered the country during the Claudian invasion (Collingwood & Richmond 1969, 197). The later forms were widespread in Scotland and the north of England in the early second century AD, but the brooch under discussion has more in common with a Welsh group of first century date. The heavy-handed application of the decoration has resulted in an ungainly, debased product, but its individual elements can all be paralleled in a small group of copper alloy brooches from the south-west of England and from Wales. Boon & Savory (1975, 41–61) traced this group back to an elegant silver brooch with relief parcel-gilt decoration from Carmarthen. Of the group, two brooches in particular bear a striking resemblance to the Carronbridge fibula: one from Segontium (Caernarvon: Boon & Savory 1975, pl XVa), and one from Wroxeter (*ibid* pl XVb). Both have double bosses on either side of the triangular central motif and a row of three bosses above the knee. Both also have three projecting ribs below the knee, with secondary rib-and-groove decoration, a zigzag line down both registers of the lower bow, and a splayed foot ending in a boss. The shape of all three is squatter and thicker than the later second-century forms. The differences between the three brooches are largely due to the varying skill and techniques of their makers. The rounded bosses on the Wroxeter and Segontium brooches have been reduced to heavily stamped, rather haphazard circles on the Carronbridge brooch. Stamped circles, however, were also employed on the lower bow of a comparable brooch from Thirst House Cave, in Derbyshire (Boon & Savory 1975, p XIVc). The decoration on the lower bow of the south-western examples is clearly defined zigzags which fill the space available, whilst the Carronbridge lines are more curved in outline and only fill part of the field. This may mark a development from the flowing scrollwork of the earlier brooches, as exemplified by the silver brooch from Carmarthen, and the later angular zigzags which finally deteriorated into enamelled triangles. This 'half-way stage' may also be present on two copper alloy brooches from Forden and Cirencester (Boon & Savory 1975, pl XIV a & b).

The foot of the Carronbridge brooch is its most elegant feature, and reflects the curled petal motif of the Carmarthen brooch. The makers of the Segontium and Wroxeter brooches may have had a similar theme in mind, but the final result is a splayed drum shape with vertical ribbing.

Boon & Savory (1975) concluded that 'AD 50 would . . . seem to be the latest date for the creation of the Carmarthen brooch, and 60 for the first derivatives' (1975, 57). It is often a tempting simplification to see an object of poor workmanship as later than a more polished product. In this case, however, the decoration of the lower bow and foot of the Carronbridge



ILLUS 23 The trumpet brooch

brooch suggests a closer relationship with the Carmarthen brooch than the examples from Wroxeter and Segontium, despite the impression made by the stamped circle decoration, whilst the plain ribbing at the knee marks it as being earlier than the petalling on the other derivative examples from Cirencester, Holcombe, Lydney and Ogof-yr-Esgyrn (Boon & Savory 1975, 60). This suggests a possible date of manufacture of AD 50–60, at least 20 years before the Agricolan advance into Scotland. However, the Carronbridge brooch would appear to have seen long service, on the evidence of the replacement of the copper alloy spring and pin by iron at some time in its life, and its deposition may well have been some decades after manufacture.

THE PENANNULAR BROOCH, SWORD AND SICKLE *O Owen & R Welander*

A silver-gilt 'Pictish' penannular brooch with expanded, rounded terminals was recovered from ploughsoil immediately overlying the penannular enclosure within Enclosure A at Carronbridge. One of the terminals had been broken off. An incomplete sword with mineralized remnants of a scabbard was found in the same area, also in the ploughsoil, and with it were found a sickle and the missing brooch terminal. (Some further details are provided on the microfiche.)

The brooch is probably late eighth to early ninth century in date, by analogy with others in the 'Pictish' brooch series. Its find location in south-west Scotland is unusual and, whilst entering

a caveat about the fallibility of distribution of portable metalwork, it highlights the growing impression that this type of brooch may, in fact, result from a cultural exchange involving Irish, Dalriadic and Pictish stylistic influences, and the term 'Insular Celtic' might be preferred. The brooch pin was a replacement, suggesting that the brooch was fairly old by the time of its deposition.

The sword was in eight joining fragments. The blade, bent at the midpoint, tapers to a blunt point at one end and is broken obliquely at the other. It has a lentoid cross section. No evidence of the tang survives, and all remains of the hilt assembly (guard, hand grip and pommel) are lost. The blade surfaces are covered extensively with mineralized organic material, representing the remnants of a scabbard.

The sickle was in three joining pieces. The tip and upper section of the blade survive; the tang and handle are lost. The blade is backed and curved, and like the sword it is covered in mineralized organic material.

This group of artefacts is to be fully reported elsewhere (Owen & Welander, forthcoming).

OTHER COPPER ALLOY AND IRON OBJECTS *B A Ford*

(Numbers refer to the Catalogue, presented on Microfiche)

Among the nine iron objects recovered are fragments of two knives. No 4 (unstratified) comprises the badly corroded fragments of a triangular blade. No 3 (from the upper fill of the inner ditch) is a very large knife with a triangular blade 210 mm in length a form found in a number of medieval contexts. One from London is dated to the late 14th century (Cowgill *et al* 1987, 88, fig 59, 76). Another, from Somerby, Lincolnshire, is dated to the 11th–15th centuries (Maynard 1969, 83, fig 12, IW70). They could have been used as single edged knife-daggers or carving knives.

Two fragments of a very small, corroded horseshoe have the remains of two rectangular nail holes of a type introduced shortly before the middle of the 14th century. The horseshoe came from a deposit overlying the possible Roman road, in the south-east corner of Enclosure A.

A single woodworking nail (No 5) was found in the upper fill of the north terminal of the Iron Age inner ditch. Two fragments of nail shanks came from one of the ring-grooves and a charcoal deposit in the entrance through the inner ditch of Enclosure A.

A second sickle (No 6) is of a type commonly found in the medieval period, used for harvesting cereal crops. A sickle of comparable proportions, with a similar saw-toothed edge, was found at Stonar, Kent, in a 13th/14th-century context. A straight-edged example came from a late Saxon/13th-century context at Northolt Manor, Greater London (Hurst 1961). This example came from one of the contexts overlying the possible Roman road.

THE GLASS *J Henderson*

(Numbers refer to the Catalogue, presented on Microfiche)

The glass assemblage from Carronbridge comprises three glass beads, a fragment of a faience bead, a fragment of an opaque white armlet, and a fragment of vessel glass. A discussion of the results of microprobe analyses is provided on the microfiche.

No 2 is an annular green bead of a type common on Roman sites such as Wroxeter, and significantly less common in the Iron Age (Charlesworth 1972, 214–15; 1984, 173). No 5 is a brown globular bead, and is a common Roman type. The faience melon bead (No 6) is another form common to sites of the Roman period in Britain (Charlesworth 1972, 214–15).

The armlet fragment (No 3), which is triangular in section, can be classed as Kilbride-Jones (1938) type 3A. Similar armlet fragments are common on sites dating to the Roman period in the south of Scotland and in England. About 190 fragments came from Traprain Law alone (Stevenson 1976, 45). Kilbride-Jones suggested a date in the first to second centuries AD for these armlets, although they may have remained in production longer than this (Harden & Price 1971, 366).

The chemical analyses of the green annular bead and the armlet fragment add weight to the Roman date suggested by their typology. The third bead, No 1, was of an unusual composition and may be post-medieval. The vessel fragment was from a post-medieval wine bottle.

THE COARSE STONE *A Clarke*

(Numbers refer to the Catalogue, presented on Microfiche)

Six coarse stone objects were found; five were unstratified or from the topsoil. The unstratified objects are two, shaped sandstone balls, a pebble whetstone, a piece of notched siltstone, and a fragment of vesicular lava. The stratified object is a probable pivot stone from the upper fill of the inner ditch of Enclosure A.

Few of the pieces are particularly diagnostic of period. Whetstones made from pebbles are common throughout the Iron Age, whilst stone balls have been dated to Early Iron Age contexts in south-east Scotland (Cool 1982). The two sandstone balls, in particular No 1, are perhaps slightly larger than those observed on Iron Age sites in south-east Scotland (Cool 1982; Strong 1988), and the finishing of the surfaces does not appear to be as fine or as smooth as on many of the examples.

The notched piece (No 5) resembles an object from Traprain Law (RMS 1923.234) which is of similar proportions and has small irregular notches worked on two sides (MacSween, pers comm).

THE VITREOUS WASTE FROM ENCLOSURE A *E Slater & D A Johnston*

(Further details are presented on the Microfiche)

The vitreous material from Sunken Features 1 and 2 was interpreted in the field as furnace waste, possibly from a smelting process. The absence of significant amounts of slag, and the fact that the fragments thought to be furnace lining were heated from the outside, not the inside, mitigate against this interpretation. These pieces of partially vitrified clay from Sunken Feature 1 appear to have formed part of a hollow structure, such as a small dome; two pieces preserve part of a small hole (c 40 mm diameter) which pierced this structure, but do not seem to have been part of a tuyere. It is unlikely that this clay structure could have supported itself. The clay fragments were heated from the outside, sufficiently to partially vitrify the surface. The exterior surfaces were heated under reducing conditions, the interior surfaces under oxidizing conditions. A few other fragments were formed from similar clay, but had a more laminar structure and had been heavily burnt but not vitrified. Some had irregular surfaces with striations caused by smoothing actions when the clay was wet. Some of the fragments are similar to burnt daub in material or form.

Other fragments are cinder or other vitrified material, and the contexts were all charcoal-rich; the lower deposits in them were the products of *in situ* burning, producing large quantities of ash (Carter, below) and charcoal.

THE CHARRED PLANT REMAINS *S Boardman*

(Further details are presented on Microfiche)

Standard Bulk Samples (SBS) were collected from 175 soil contexts and processed in the standard AOC manner (Appendix I, on fiche). Charcoal, slag/cinder and a few fragments of unidentifiable bone were recovered. About 90 samples also produced charred plant remains. These are presented in Tables 1–4 and are discussed below. Nomenclature follows Clapham *et al* 1987.

Most samples contained small quantities of poorly preserved mixed plant remains. Cereal culm (straw) nodes and free threshing cereal chaff (rachis internodes) are normally taken as the most reliable indicators of local crop cultivation. These are present in unthreshed barley plants, but whole crops are bulky and difficult to transport (Hillman 1981; 1984). Only one culm node was recovered from the Carronbridge samples and the majority of chaff fragments came from the glume wheat emmer. Even here, the numbers were too small to suggest storage in the form of whole spikelets or local grain dehusking following threshing, transportation or storage.

Cereal chaff and straw are also less likely to survive charring than cereal grain (Boardman & Jones 1990). There was no indication of longer-distance imports among the wild species. Most are very common weeds which occur today in a wide variety of disturbed habitats. Post-depositional activities may have had much greater effects on the Carronbridge plant material. The freely draining soils are subject to great moisture fluctuations, which would not have aided the survival of fragile chaff, straw and weed seeds. Contamination between contexts also may have resulted from invertebrate mixing, the reworking of old deposits and the deep ploughing.

Published records suggest that hulled six row barley (*Hordeum vulgare* L.) was the principal crop on Scottish Iron Age sites; emmer wheat (*Triticum dicoccum* Schubl.) has been recorded as a secondary cereal on sites from the Forth Valley to the Northern Isles. Oats (*Avena* sp.) first occur widely on Iron Age sites and by the Roman period the cultivated oat (*A. sativa* L.) and perhaps the black oat (*A. strigosa* Schreb.), also cultivated in Scotland's past, were present (Boyd 1988; Greig 1991).

At the Roman military sites of Bearsden and Castlecary on the Antonine Wall, emmer and spelt wheat appear to have been the principal cereals (Dickson 1989). The prominence of these cereals on Roman military sites in Scotland and northern Britain, together with longer-distance imports in the form of the fig, horse bean and lentil, has led to the hypothesis that these were standard military supplies (Dickson 1989; Clapham unpublished).

Bread wheat was also present at Castlecary and Rough Castle, and hulled barley was a major component of samples from the latter and from Lyne (Dickson 1989). At Elginhaugh Roman Fort, the dominance of hulled barley and the presence of corn drying ovens suggests a more local grain supply (Clapham, unpublished; Hanson 1988, 320). Variations in the species present at military sites may therefore reflect differences in the extent to which cereals were locally produced. In general, however, wheat seems to have been the preferred staple of the Roman army.

At Carronbridge, the only hints of possible grain imports come in the form of the increased representation of emmer wheat in the post-hole structure in Enclosure B, and the possible occurrences of bread wheat and spelt. Local cultivation of cereals could not be demonstrated for any of the phases, but it remains possible that all were locally produced. Little can be said about localized activities in the three enclosures. Poor preservation conditions and post-depositional disturbance may mean that much of the material bears little relation to that originally deposited or in use during the various phases of the site.

THE SOILS *S Carter*

The routine soil analyses

Samples from all soil contexts were subjected to analyses of three characteristics: pH, loss on ignition, and easily available phosphates. Details of methodology and full results are given in the microfiche section.

Most samples gave high phosphate ratings, but there is a clear difference in the frequency of medium and low ratings between Enclosure A and Enclosures B and C. The few low and medium readings from Enclosure A were from fills of the main enclosure ditches.

Loss on Ignition results are almost all in the range 2–8% and only 12 samples exceeded 10%. Of these, the nine from Enclosure A are from contexts noted in the field as charcoal- rich. The two samples from the unenclosed area are associated with a cremation burial, and one sample from Enclosure B was turf redeposited in the ditch. This was the only context on site which was rich in organic matter.

The pH results were in the range 5.3–6.9. The mean value for Enclosure A was 6.4 and for Enclosures B and C, 6.

The results show broad differences between Enclosure A and Enclosures B and C. This reflects differences in the dominant types of context excavated. Most contexts in Enclosure A were fills of small features or spreads of sediment caused by human activity. In the other enclosures, most of the contexts were sterile ditch fills, and the occupations were apparently much briefer than that of Enclosure A. With one exception, elevated loss on ignition results were caused by the presence of charcoal, and were concentrated in Enclosure A. Individual pH and phosphate results seem to have no archaeological significance.

Micromorphological analysis of 'turf' forming the lower ditch fills of Enclosure B

The stoneless, banded loams forming the lower fill of the ditch of Enclosure B contrast sharply with all other ditch fills on site, including those of the earlier Enclosure C ditch which was on the same line. They were interpreted as turf in the field, in both Clarke & Webster's excavations in 1953–4, and in the present excavations. The sediments were sampled for thin sectioning to address the following questions: (a) Does this sediment represent turves? (b) If it does, in what condition were they deposited? (c) What was their original nature?

Full descriptions of the thin sections are given in the microfiche section. The distinctive sediment in the base of the Enclosure B ditch is a mixture of turf and turf-derived soil. It was dumped into the ditch, presumably from an adjacent turf bank, in one episode. Iron mobilisation in waterlogged conditions has created abundant amorphous ferruginous pedofeatures, and this is the cause of the banding visible in the field rather than actual turf boundaries. Modern soil profile depths may indicate the source of the turves close to Enclosure B.

Materials interpreted in the field as 'ash'

Three, very similar, yellow-white deposits, two from Sunken Feature 1 and one from Pit 4, were identified in the field as ash. This interpretation was tested by microscopic examination of samples from these deposits.

All three samples are dominated by mineral grains (mostly quartz), and there is no actual plant ash. There is abundant fine charcoal (as observed on site). Large numbers of phytoliths were observed in all three and in one of those from Sunken Feature 1, there are, in addition, many

calcium oxalate crystals. Concentrations of these two components indicate the former presence of quantities of plant debris, burnt or unburnt. Given the archaeological evidence for burning, it is likely that they indicate the burning of leafy and fleshy (not woody) plant tissue (grasses, dried leaves, etc). The absence of actual ashes is explained by the neutral pH of the site (6–7 generally), which would not preserve them.

In conclusion, these three contexts are sandy loam sediments typical of the site, but lacking the usual gravel, with large quantities of inorganic plant residues. These derive from the burning of both woody and non-woody plant tissues.

DATING EVIDENCE

RADIOCARBON SAMPLES

Most of the dating evidence from Carronbridge is in the form of radiocarbon determinations. In all, 16 radiocarbon dates were obtained for features in Enclosure A, one from Enclosure C, and one from each cremation.

Of those from Enclosure A, 12 tend to confirm the predicted late Iron Age/Roman date for the enclosure as a whole, with a possible date range of 70 BC ± 50 uncal to AD 210 ± 50 uncal (calibrated to 145 BC–AD 415). The shortest calibrated ranges for most of these 12 determinations overlap, so they are of limited usefulness for clarifying the site's phasing. The three earliest dates of this group (Sunken Feature 3, the burnt pit in Sunken Feature 1, and the primary fill of the inner ditch) do not overlap with the latest date (Building 1). However, in some cases strong probabilities have been calculated for certain dates being older than others with which they overlap (Dalland, below). In such cases, the radiocarbon dates have sometimes been used to support stratigraphic or other evidence in determining the phasing of certain features.

The radiocarbon dates from four features in Enclosure A were much earlier than the twelve discussed above. The date for the west terminal of the penannular ditch (970 BC ± 50 uncal; calibrated to 1285–930 BC; GU-2777) must be an anomaly, caused by the inclusion in the sample of wood which had been preserved in a bog, or by the incorporation of charcoal from much earlier sources. The penannular ditch is certainly a Roman Iron Age feature, contemporary with Building 6 which is dated to the first/second century AD (GU-2932). The charcoal used for the date came from part of the penannular ditch which cut deposits that were rich in charcoal of obscure origin. However, the date is exactly the same as that for Burial 3, located some 50 m away. Other radiocarbon dates also have ranges overlapping with these two (Pits 1, 3 & 4, below), indicating an early phase of activity, predating the enclosure. It is probable that the charcoal in the ditch derived from this phase of activity.

Pit 3 also has an anomalously early radiocarbon date of 650 BC ± 50 uncal (calibrated to 850–570 BC; GU-2933), derived from charcoal in its top fill. This pit, however, also contained a fragment of a glass armlet, dated to the first or second century AD (Henderson, above) in the third of its five fills. The charcoal could have derived from earlier activity, so the later date suggested by the armlet has been preferred to the early radiocarbon date.

Pit 4, inside Building 6 and cut by it, contained charcoal burnt *in situ*, dated to 340 BC ± 50 uncal (calibrated to 480–230 BC; GU-2774). The shape of the probability distribution graph shows that the date is most likely to fall in the early part of this range.

Pit 1 was dated to 460 BC ± 70 uncal (calibrated to 800–385 BC; GU-2775) and again there is no reason to doubt this date. Pit 2 may have been broadly contemporary; it was adjacent to Pit 1, very similar in size and shape, and its fill shared the distinctive characteristic of a charcoal-rich cobble capping.

One radiocarbon date was obtained from Enclosure C: from a charcoal deposit on the base of the oven, which is phased together with Enclosure B on stratigraphic grounds (above).

All the cremations were radiocarbon dated. Burials 2 and 3 produced dates of 1000 BC ± 50 uncal (calibrated to 1380–1020 BC) and 970 BC ± 50 uncal (calibrated to 1285–930 BC) respectively. The date for Burial 1, 5040 BC ± 200 uncal, is anomalously early, and was not therefore calibrated. The charcoal came from the contents of a Collared Urn, dated typologically to about 1650–1550 BC in terms of uncalibrated dates (MacSween, above).

RADIOCARBON DATES *M Dalland*

Calibration (Tables 6–7) and the statistical treatment of radiocarbon dates (Table 8)

The dates were calibrated using data from Pearson *et al* (1986), and a calibrated probability distribution (PD) curve was produced for each date (illus 24; Dalland, forthcoming).

Statistical analysis enables radiocarbon dates to be adjusted to take account of their stratigraphic relationships with each other (Dalland, forthcoming). Five dates from Carronbridge could be adjusted in this way, and their adjusted PDs have been used in illus 24 (the adjusted and unadjusted figures are compared in Table 8). The effects of the adjustment were fairly minor.

Statistical treatment of the PDs also allows the probability of date 'x' being older or younger than date 'y' to be calculated, where the date ranges of x and y overlap.

This method was used to test four hypotheses:

Hypothesis		Probability
1 GU-2767 is older than (Sunken Feature 1)	GU-2776 (Building 1)	97.0%
2 GU-2766 is older than (Sunken Feature 2)	GU-2776 (Building 1)	97.0%
3 GU-2771 is older than (Pit 5, cutting the south terminal of the inner ditch)	GU-2776	95.2%
4 All three hypotheses above are correct		89.6%

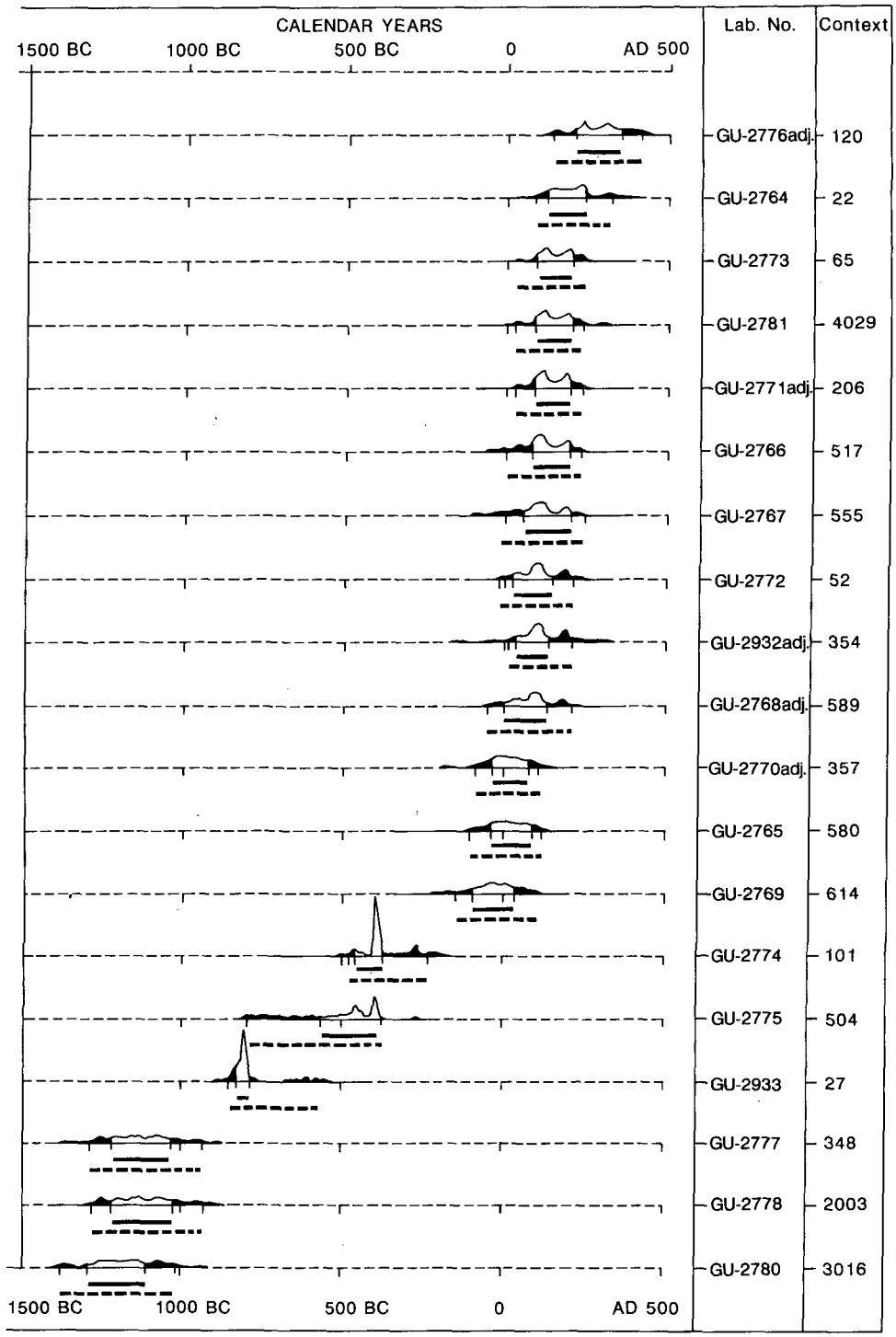
ARTEFACTUAL DATING EVIDENCE

Enclosure A

Very few datable artefacts were found in stratified positions in Enclosure A, but those which were tend to confirm the broad late Iron Age/Roman Iron Age date range. Many of the unstratified objects seem to be much later in date.

A fragment of a glass armlet, dating to the first or second century AD (Henderson, above), was found in Pit 3, suggesting a much later date than the radiocarbon determination for charcoal from the top fill of the same pit (GU-2933; above). A 'faience' melon bead of first or second century AD date (Henderson, above), found in the top fill of Sunken Feature 3, seems to corroborate a radiocarbon date of 70 BC ± 50 uncal (calibrated to 145 BC–AD 115) from a lower fill. A copper alloy trumpet brooch, made about AD 50–60 but old when deposited (Allason-Jones, above), was found in the upper fill of the east terminal of the penannular ditch.

An assemblage of Dark Age metalwork (Owen & Welander, above), found within the penannular



ILLUS 24 Probability distribution graph of radiocarbon dates

enclosure but lying loose on the surface of the natural subsoil, seems to be unconnected with the enclosure. Of a number of coarse stone objects, mostly recovered from topsoil, none was diagnostic, although a whetstone from Enclosure A is of a common Iron Age type. Several iron objects, including two knives and a medieval sickle (Ford above), were found in the top fill of the inner ditch, or in topsoil immediately overlying it, suggesting that it may still have been a slight hollow in the 14th century.

Enclosures B & C

The small area excavated within Enclosure B produced very few artefacts, none of which was diagnostic. No artefacts at all were found in Enclosure C.

OVERALL SITE PHASING

There were four main periods of activity at Carronbridge:

Bronze Age

This period is primarily represented by the three cremation burials north of Enclosure A. Evidence for Bronze Age activity in the area of Enclosure A itself is discussed below.

Later Bronze Age/early Iron Age

Pits 1 and 4, and possibly Pit 2, belong to this period.

Iron Age/Roman period

Enclosure C probably dates to the pre-Roman Iron Age (below), and could be contemporary with or pre-date the early phases of Enclosure A. A settlement, Enclosure A, was probably established in the first century BC and occupied into the Roman period, with at least five major phases of alteration or addition. The most complex phase appears to be contemporary with the Roman camp, Enclosure B. A Roman temporary camp was built and abandoned during the lifetime of the settlement. The road is probably also of Roman date, and may be contemporary with the camp.

Dark Age/Medieval

An assemblage of Dark Age metalwork was deposited during the ninth or tenth century AD, but was not associated with any features, and no features of this period have been identified. Later medieval ironwork was probably lost during agricultural operations.

INTERNAL PHASING OF ENCLOSURE A

Towards a structural sequence (illus 4 & 25)

The plough-truncated nature of the site, the relatively sparse distribution of features over much of the site, and the similar nature of the feature fills, render the internal phasing of Enclosure A problematic. It rests partly on stratigraphy, partly on radiocarbon dates (often with overlapping ranges), and partly on inference. Parts of the phasing must therefore be regarded as tentative. Further fieldwork, planned to coincide with road construction, may clarify or confirm parts of the sequence.

Pre-enclosure activity

Radiocarbon dates from residual charcoal in later features indicate that Bronze Age activity took place in the area which became Enclosure A, but no Bronze Age features were identified. The nature of the activity therefore remains obscure.

Pits 1, 2 and 4 probably date to the early to mid Iron Age. Pits 1 and 2 were probably contemporary, and there is a strong possibility that Pit 4 belonged to the same phase of activity. There is no evidence of an enclosure at this date; the earliest possible enclosure phase is undated, but neither of the dates for Pits 1 and 4 overlap with the earliest date from what is probably the second enclosure phase (GU-2769, Sunken Feature 3).

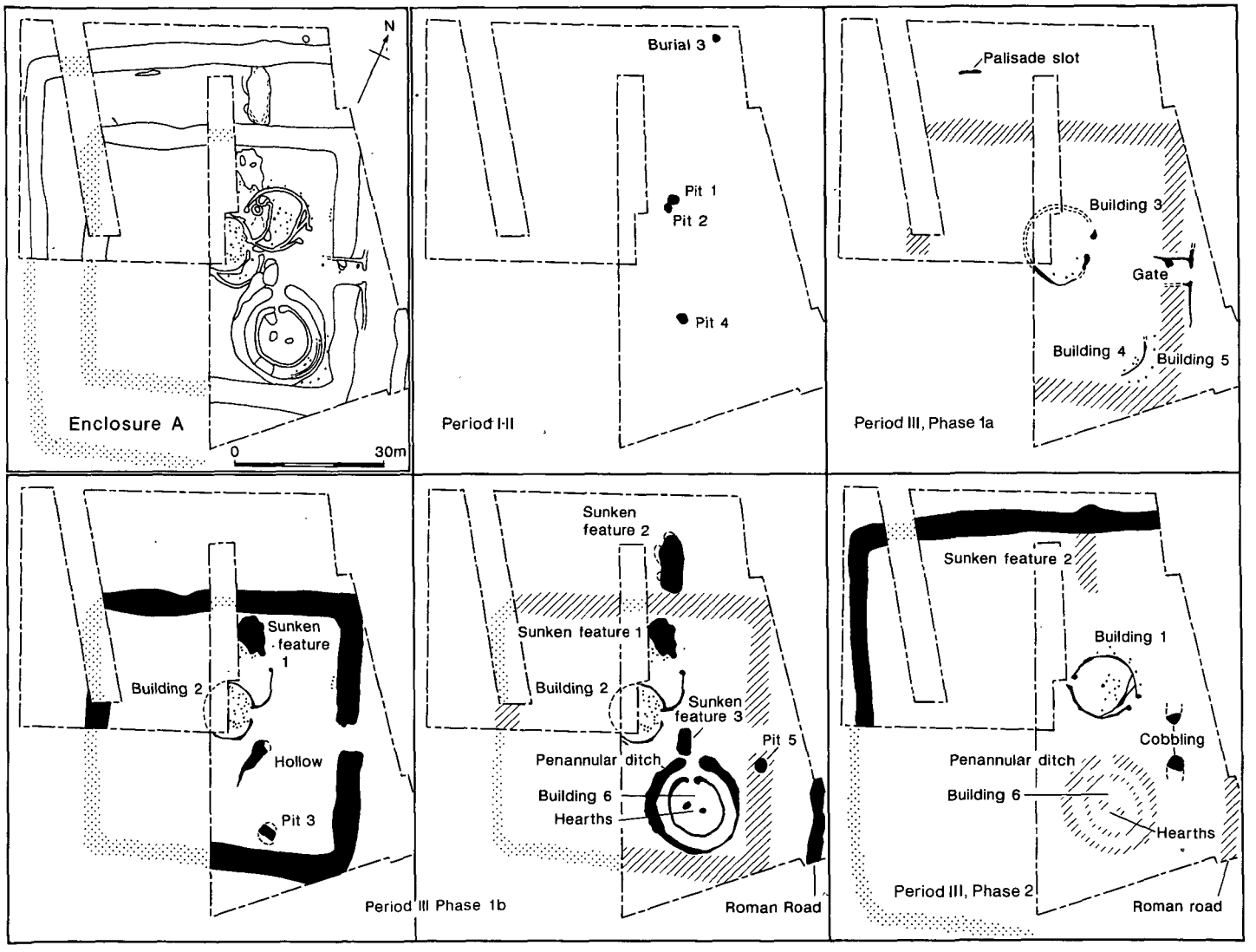
The gateway (illus 6)

The phasing of this post-built structure at the entrance through the inner ditch is somewhat problematic. All the dating and phasing evidence relates to the secondary gullies running into the interior. These were, however, clearly inserted while the gateway was still in use, possibly at the time of the re-cutting of the main features.

Stratigraphically, one of these gullies appears to be earlier than the inner ditch, but the other is stratigraphically later than a deposit which was radiocarbon dated to AD 130 ± 50 uncal (calibrated to AD 85–325), which is later (although with overlapping ranges) than the date from the bottom of the inner ditch (20 BC ± 50 uncal; calibrated to 85 BC–AD 110). Both the radiocarbon date and the stratigraphic relationship are subject to some doubt about their reliability (above). It therefore remains possible that the gateway predates the ditch. The presence of a gateway not associated with a ditch would imply the existence of a palisaded phase. The position of the gateway, on the outside of the ditch rather than the inside, could be seen as supporting this conclusion, as could the fact that the features ran on well beyond the entrance to north and south. A badly damaged feature near the outer ditch on the north side (illus 4 & 25) could also have been part of this putative palisade. Early palisaded phases are common on similar sites elsewhere (eg, Jobey 1962; 1978; Jobey & Jobey 1988). However, similar gates are also known from related sites, such as Burradon in Northumberland (although the gates here were on the inside of the ditches; Jobey 1970). The acceptance of a palisade requires the creation of an entire enclosure phase, the other evidence for which is slim. The alternative, that the gateway related to the inner ditch, and that the stratigraphic relationship with the ditch was caused by erosion, is probably simpler, and therefore easier to accept.

The order of construction of the ditches

There was no stratigraphic connection between the ditches; nor was any direct dating evidence recovered from the outer ditch. However, there is strong evidence to suggest that activity and occupation continued when the inner ditch was already nearly full. The radiocarbon date from the ring-groove of Building 1 (AD 140–415; GU-2776) was later than that for the primary fill of the inner ditch (85 BC–AD 110; GU-2770) with a probability of over 95.45%, and later than that from a pit cutting the secondary fills of the inner ditch (AD 30–235; GU-2771) with a probability of 95.2%. Cobbling overlay the fills of the inner ditch terminals, indicating that they had become inconvenient obstacles to continuing activity. Sunken Feature 2, which appears to have been inserted before Building 1 but when the inner ditch was over half full, was positioned outwith the ditch, perhaps because the interior had become overcrowded and the ditch was no longer a major obstacle (below).



ILLUS 25 Phasing of Enclosure A (hatching represents features possibly in use in an earlier or later phase)

If activity, including the construction of at least one building, continued after the inner ditch had become redundant, it implies either that the settlement became unenclosed, or that it was enclosed by the outer ditch. The latter conclusion is supported by the possible stratigraphic relationship between the outer ditch and the northern edge of Sunken Feature 2, which may be cut by the ditch.

The order of construction of the buildings

The six buildings or probable buildings within Enclosure A were restricted to only two sites. Buildings 1–3 occupied a north-central site, and faced east, towards the entrance of the enclosure. Building 1 was later than Building 3, and Buildings 2 and 3 could not have stood together. It is conceivable that Buildings 1 and 2 were conjoined structures, but more likely that they were not contemporary. Building 2 had a sort of 'hornwork' at its entrance (illus 7), which is likely to have been contemporary with the building; in which case, Buildings 1 and 2 could not be contemporary with each other. The radiocarbon dates indicate that Building 1 (GU-2776) is probably later than the hornwork (GU-2768), although their ranges overlap. The hornwork is also stratigraphically later than Building 3, completing the structural sequence for this group.

The structures referred to as Buildings 4–6 occupy a site in the south-east corner (illus 9). Only Building 6 was complete enough to show that it was certainly a building at all, and that it was aligned to the north; all that can be said of Buildings 4 and 5 is that, if they were buildings, they did not face east. None can have stood simultaneously, and Building 6 was certainly the latest one to be erected. It was not possible to determine in which order Buildings 4 and 5 were constructed.

The relationship between the buildings and the enclosure phases

Building 1 post-dates the inner ditch and is likely to have been enclosed by the outer ditch. The date for the hornwork putatively associated with Building 2, lies between, and is effectively indistinguishable from, the dates for the primary fill of the inner ditch, and the later pit which cuts it. Building 3 was probably earlier than Building 2 (above); it could simply be a predecessor of Building 2 within the inner ditch, or it could belong with the possible palisaded enclosure phase.

The radiocarbon dates for Building 6, the latest of the three structures in the south-east corner of the inner enclosure, and for the two hearths within it, are indistinguishable from the dates for the inner ditch. Furthermore Building 6 is associated with the penannular ditch, the design of which was influenced by the presence of the inner ditch (above). However, the penannular ditch cuts a feature which cuts Building 3; if Building 2 was a direct replacement for Building 3, its construction must therefore predate the excavation of the penannular ditch, and therefore the construction of Building 6. The latter is therefore likely to be a late development during the lifetime of the inner ditch. It could have continued in use after the inner ditch became redundant.

Buildings 4 and 5 both pre-date Building 6 and the penannular enclosure, but little can be said about their relationships with the enclosure phases.

The sunken features

The radiocarbon dates from Sunken Features 1 and 2 are statistically indistinguishable from each other, and from those for the inner ditch and Building 6. They are also earlier than that for the ring-groove of Building 1 with a probability of 97%. It is therefore likely that both are contemporary

with the inner ditch, and predate Building 1; the latter conclusion suggests that they were contemporary with Building 2. However, the position of Sunken Feature 2 outside the inner ditch is anomalous, unless it was constructed at a time when the inner ditch was no longer a serious obstacle. Furthermore, if Building 2, Building 6 with the penannular ditch, and Sunken Feature 1, were all in use simultaneously towards the end of the inner ditch phase (illus 25), the interior of the enclosure would have been crowded, in which case it is reasonable to assume that any new construction (particularly one whose function involved burning) would have taken place outside. Sunken Feature 2 may therefore be another late development within the lifetime of the inner ditch, possibly near its end.

Sunken Feature 3 was stratigraphically later than Building 3, and one of its lower fills is dated earlier than Building 1 (145 BC–AD 115). This seems to place it in the inner ditch phase (illus 25). A melon bead from the cobbling forming its top fill was probably of first to second century date, which tends to support the radiocarbon date.

The Roman road

There is very little information available on which to date the road-surface. Assuming that it is Roman (which is unproven), it could be of Flavian date, in which case it would certainly pre-date some of the activity in Enclosure A, and is likely to have been cut by the outer ditch (which it must intersect, and which is seen as contemporary with Building 1, radiocarbon dated to AD 140–415). If it was Antonine, the order of construction of road and outer ditch would be less certain, although the greater part of the possible date-range for Building 1 post-dates the Antonine period. Dates later than Antonine are much less likely.

Summary of internal phasing of Enclosure A (illus 25)

The dates given below indicate the spans within which phases could have occurred, and not the length of phases, for which the data is insufficient. For this reason, the spans given overlap.

Period I (c 1285–570 BC): A very early radiocarbon date from residual charcoal in the penannular ditch matches the date from Cremation 3. Another very early date, probably also from residual material, came from Pit 3.

Period II (c 800–230 BC): Pits 1 and 4 have early radiocarbon dates, placing them before the earliest likely date for any enclosure phase. Pit 2 was probably contemporary with Pit 1.

Period III Phase 1a (c 200–1 BC): A post-built gateway outside the entrance through the inner ditch, together with another feature near the north side of the enclosure, indicates the possible existence of a palisaded enclosure phase. The earliest of the central group of buildings, Building 3, could be associated with this phase, as could Buildings 4 and/or 5. The latter two could not be contemporary with each other, however, and either of them could be even earlier. It is unclear whether any or all of the features assigned to Phase 1a pre-dated the inner ditch or were contemporary with it.

Phase 1b (c 145 BC–AD 245): The inner ditch was dug during the first century BC or AD. Building 2 and Sunken Feature 1 belonged to this phase. A large hollow and Pit 3 were probably present early in the phase, but were redundant before the construction of Sunken Feature 3, and of Building 6

and its associated penannular ditch. Late in the phase, the inner ditch had largely silted up. Its fill was cut by a pit in the south terminal and Sunken Feature 2 was created. The Roman road and camp may have been constructed, although they were not necessarily contemporary with each other.

Phase 2 (c AD 140–415): The outer ditch replaced the inner one, enclosing more than double the original internal area. Building 1 was constructed to replace Building 2; this is the only confirmed internal structure in the new, larger enclosure. The position of the inner edge of the former inner ditch was marked with boulders at its north-east corner. The fills of the inner ditch terminals were capped with cobbles to level the ground.

INTERPRETATION

THE BRONZE AGE BURIALS

Burial 1

Collared Urns are the most common type of cinerary urn found in south-west Scotland (Morrison 1968). Of those recorded *in situ*, almost all were found inverted, as in Cremation 1. It is unusual, but not rare, to find them in cists or similar structures. Morrison (1968) lists 45 Collared Urns from the region, of which three were contained in cists or cist-like structures.

The presence of several individuals in one urn is also not unusual. Where this occurs, it often involves individuals of varying ages, as at Carronbridge. At Howford Farm, Aberdeenshire (Lockhart 1972), for example, at least three individuals were present, including an adult, an infant, and an individual of intermediate age. Such burials may represent multiple deaths in one family or community.

No bone appeared to have spilt from the urn containing Burial 1 as it was placed in position, which suggests that the mouth of the urn was blocked in some way. Clay capping on the mouths of urns has been recorded elsewhere (Morrison 1968), but this was not the case here. A wooden or organic lid would have left no trace in the prevailing soil conditions at Carronbridge. Alternatively, the flat base stone could have been placed on the urn before inversion, and the two placed in the pit simultaneously, with the cist then built around the inverted urn. When cinerary urns are found in cist-like structures, the cist sometimes appears to have been built around an *in situ* urn in this way (as at Aberdour Road, Dunfermline, Burial 4; Close-Brooks *et al* 1972).

Burial 2

The level of the base stone indicates that either there has been significant erosion from the top of the knoll, leaving the cist standing proud until it collapsed, or it was originally covered and supported by a cairn or mound. The presence of the kerb supports the latter hypothesis.

Not enough survives of the urn from Burial 2 for reconstruction or dating, although it had a similar fabric to the urn in Burial 1, dated to around 1600–1450 BC uncal by typology (MacSween, above). The radiocarbon date from Burial 2 is significantly later than this, however (1000 BC ± 50 uncal, calibrated to 1380–1020 BC; GU-2780), and is indistinguishable from that for Burial 3 (GU-2778). The dichotomy between the typological date for Vessel 1 and the radiocarbon date associated with Vessel 2 suggests that, despite the similarity of fabric, the two burials were separated in date by several hundred years, and their proximity is simply coincidence.

Burial 3

The way in which the bone was deposited in the pit suggests that it was either deliberately mixed with the soil fill, or that the soil fill had first been used to extinguish the pyre. The presence of charcoal and bone throughout the fill tends to support the latter interpretation.

This cremation was significantly different from the others, in that the pit was not stone-lined, and the bone was not contained in an urn (or, apparently, in any other container). The red sandstone slab used to cap the fill was, however, the same type of stone used for the cist-like structure of Cremation 2, and different from that used for Cremation 1. The radiocarbon dates for Cremations 2 and 3 are indistinguishable. Given the coincidence of location, date and type of stone, it is possible that Cremations 2 and 3 were in fact related in some way (individuals from the same community, for instance), and the major differences in the way the bone was deposited derive from some difference between the two individuals in life.

PERIOD III: THE ECONOMIC BACKGROUND IN THE IRON AGE AND ROMAN PERIODS

Economic evidence from Carronbridge was very limited, and there was little artefactual evidence which could be interpreted in economic terms. A reasonably large assemblage of charred plant remains was recovered (dominated by barley, with some wheat and oats), but it lacked key elements, such as threshing waste, which might have allowed fuller interpretation (Boardman, above). Neither unburnt bone nor pollen survived in these soil conditions.

Several similar sites elsewhere (eg Rispain Camp, Kirkcudbrightshire: Haggarty & Haggarty 1983) demonstrate evidence of an association with field systems, or have external features interpreted as boundaries. At Rispain Camp several ditched features surrounding the main enclosure were interpreted as field and trackway boundaries; their arrangement clearly related to the Camp. Several sites on the Solway Plain and in County Durham seem, from aerial photographs, to be associated with field and/or trackway systems (Higham & Jones 1975; Still & Vyner 1986), but it is generally not possible to say whether these related to arable or pastoral activities. Rotary querns, commonly found on this class of site (eg Gowanburn River Camp, Northumberland: Jobey & Jobey 1988), are generally taken to indicate that grain was an integral part of Iron Age diet; although other uses are possible for querns. It is thus worthy of note that no querns were found at Carronbridge.

It seems certain that the populations of at least some settlements of this type practised arable farming, but at Carronbridge, although grain was clearly a component of the diet, it is not possible to determine whether it was home-grown or obtained from elsewhere. In the absence of evidence for other foodstuffs, the importance of grain as compared with other food sources cannot be assessed. Very small fragments of burnt bone occurred in a number of contexts but were unidentifiable to species.

Whatever the status of grain at Carronbridge, barley seems to have been the main cereal, at least in Enclosure A. Barley was the dominant crop in Iron Age and Romano-British Scotland (Boardman, above). Wheat and oats were more prominent in the assemblage from Enclosure B, the Roman camp, and it is possible that representation of these in Enclosure A indicates contact between the occupants of the settlement and the army. The wheat in Pit 3, however, could derive from much earlier residual sources (above).

No pollen diagrams are available for the Nithsdale area, and little is known of its vegetation history. New Loch, an infilled basin near Carronbridge, was cored as part of this project, but proved to have been truncated in recent times, removing all post-Mesolithic material.

The lack of significant amounts of artefactual evidence from any of the enclosures is a major constraint on economic interpretation of the site. Such contemporary artefacts as were recovered from Enclosure A tended to be ornaments of Roman date (a glass armlet, a 'faience' melon bead, and a copper alloy brooch possibly from the south-west of England). These may indicate contact between natives and Romans, but tell us nothing about the nature of the contact. There is a possibility that some of the artefacts were of native manufacture, but again there is no evidence.

Clear evidence for non food-related economic activities was also absent. The three sunken features in Enclosure A were initially thought to relate to industrial activity, but the vitreous waste they contained could not be identified as belonging to any known industrial process (Slater & Johnston, above).

Internal elements of Enclosure A

The severe truncation of many parts of the interior and the sparseness of the artefactual and economic evidence make the interpretation of large parts of the interior problematic. The worst truncated area appeared to be the north-west quadrant, which contained virtually no features. It is impossible to say for sure whether this area was genuinely open space, or originally contained buildings. However, similar sites in Northumberland (Jobey 1960) frequently contain large open spaces, which are interpreted as having agricultural functions. The buildings tend to be in the rear half of the enclosure, the front half sometimes being divided into two cobbled yards either side of the entrance (for example, Riding Wood: Jobey 1960; Doubstead: Jobey 1982). Although the internal arrangements at Carronbridge were certainly different from this pattern, it seems likely against this background that the rear (western) half of the enclosure was genuinely devoid of buildings or other structural features. The difference in arrangements could derive in part from the location of Carronbridge on flat ground; many of the other sites are located on slopes, with the entrance facing downhill, and the buildings logically located on the higher ground at the rear. In the outer ditch phase (phase 2), there would have been room for a more conventional arrangement, but there is no evidence for internal subdivisions in this phase.

Buildings 1–3 are interpreted as houses, partly because there was no evidence for any other specific function, or of other domestic buildings. It is notable, however, that there was no sign of a hearth in any of them. This may be the result of truncation, although two hearths in Building 6 had survived. It seems likely that Buildings 1–3 were a series of replacements, as they occupy the same site; they were similarly aligned; and they did not stand simultaneously.

Building 1 was unusual among roundhouses, in that it had two entrances. A similar building was excavated at Rispain Camp, near Whithorn (Haggarty & Haggarty 1983). As at Carronbridge, its entrance faced approximately east and west, and the southern half of the building was slightly smaller than the northern half. The details of construction are also similar: their diameters are almost identical; both were built in a ring-groove; and both have expanded terminals which are out-turned at the east entrance, but not the west one. The house at Rispain, however, had a complete internal ring of ten post-holes, whereas that at Carronbridge had a partial ring of external post-holes and a general scatter of internal ones on the east side only. There is a very similar, apparently unenclosed, house at Kirkland, approximately 5 km south of Carronbridge, visible on aerial photographs in the National Monuments Record of Scotland (DF/2164). A smaller house, possibly with two entrances and otherwise similar to that at Rispain, was excavated at Broxmouth, East Lothian (Hill 1982, fig 8).

Buildings 4–6 may also have been a series of replacements, although in this case the argument rests solely on their occupation of the same site; there are major differences between

them in construction. Buildings 4 and 5 are relatively slight, and comprise an arc of post-holes and a ring-groove respectively. They were so badly damaged that they could not be proved to be buildings, although this seems the most likely interpretation. The ring-groove of Building 6 was extraordinarily large, and its site was defined by a substantial external ditch.

'Ring-ditch houses' are common in southern Scotland (Reynolds 1982), but in these the 'ditch' is typically a fairly shallow, annular depression, often paved, which forms an internal feature in the house, usually between two rings of posts; clearly, Building 6 at Carronbridge does not belong in this category. The single large house in the second phase at Burradon in Northumberland (Jobey 1970), and the central house at Thorpe Thewles, in Cleveland (Heslop 1983), were also surrounded by substantial ditches, although in these cases they were U-shaped, and functioned as drains. Drainage was not a problem at Carronbridge, where the building was erected on a free-draining gravel subsoil, adjacent to the large enclosure ditch.

There are a number of similar cropmarks of penannular enclosures in Nithsdale; one, 3 km to the south, certainly contains a substantial ring-groove building (NMRS AP DF/4386). None of these is contained within a larger enclosure, and none has ditches which appear to vary as much in size as that at Carronbridge.

Some of the sections of the penannular ditch at Carronbridge showed signs of a former internal bank (illus 10), although its presence could not be proved. Any such bank would probably have had to be piled up against the wall of Building 6, as the space between the wall and ditch is very narrow.

Large roundhouses seem usually to have supported their roofs by means of more than one ring of posts, either all in ring-grooves, or in rings of post-holes, or in some combination of the two (Reynolds 1982; Reid 1989). The late house at Burradon had at least three rings of posts, with the largest ones in the middle and at the entrance (although it is not clear whether they were all contemporary; Jobey 1970). To increase structural strength by increasing the depth of the ring-groove, as appears to be the case here, is much more unusual. It is unclear whether this would have been a successful solution to the problem of supporting a roof over a large area. A bank piled up against the wall may have been intended to solve this engineering difficulty.

Entrances to roundhouses are usually aligned somewhere south of the east-west axis; a north-facing entrance, as in Building 6, would exclude the only source of natural light, always assuming that the structure was roofed. However, taking all its unusual characteristics into account, it is at least possible that Building 6 was not roofed, and that it was an enclosure (possibly with an internally revetted bank) rather than part of a house. If this was the case, its function remains unknown.

Some or all of the sunken features may have been used for cooking and food processing, and/or other activities involving large fires. They were at first thought to represent some industrial activity, perhaps smelting, but the waste products recovered relate to no known industrial process; some of them could derive from the burning of certain organic materials, such as reeds or grass (Slater & Johnston, above). Small fragments of burnt bone were found in all of these hollows, which, although the bones unidentifiable to species, does tend to suggest that cooking took place, or that domestic rubbish from cooking was discarded in them. It could be that activities involving fire were confined in hollows to reduce the risk of igniting buildings constructed of highly flammable materials, primarily wood and thatch.

Enclosure A in its wider context

Enclosure A is a fine example of a monument type which was widespread in lowland areas of northern England and south-eastern Scotland in the late Iron Age and Romano-British periods, but less well known in south-western Scotland. Sub-square ditched enclosures containing variable

numbers of roundhouses are particularly common on the coastal plains and other low-lying parts of Durham, Northumberland and Lothian (Jobey 1960, 1982; Maxwell 1970; Still & Vyner 1986; Welfare 1980). They are usually recognized as cropmarks, and initially they often appear to be simple single-phase settlements; but excavation usually reveals them to have long, complex sequences, as at Thorpe Thewles, Cleveland (Heslop 1983).

Most of these enclosures comprise a single ditch, but some have two, for instance Burradon, Northumberland (Jobey 1970), where the sequence was the reverse of that proposed for Carronbridge; the inner ditch succeeded the outer. Burgess (1984, 164) has proposed that wide-spaced double enclosures such as Burradon and Carronbridge follow a standard sequence; the larger, outer enclosure belongs to the Iron Age and will usually have several houses; the inner enclosure is the Romano-British settlement and will usually have one large house. Sometimes a palisaded phase preceded the ditched enclosure, and the site may have had a primary phase as an open site (Jobey 1962). The evidence from Carronbridge fits this pattern in some respects, but conflicts with the main point about the order of construction of the ditches. This is an important conclusion, because Burgess proposed that the smaller, squarer sites could be provisionally dated to the Romano-British period without excavation on size and morphological grounds, especially when they have only one centrally placed roundhouse.

The late Iron Age/Romano-British settlements of the North Tyne valley were usually sub-rectangular (Jobey & Jobey 1988), although the sides could be more bowed than at Carronbridge. Where situated on drift, they are ditched enclosures in their final form, although they sometimes had several earlier palisaded phases, as at Kennel Hall Knowe, Northumberland (Jobey 1978). Sites which were located on outcrops sometimes had stone walls instead of a ditch (for example, Middle Gunnar Peak, Northumberland: Jobey 1981). The ditched examples usually had a slight internal bank, but no large rampart; this presented some difficulty at Carronbridge, where there was no evidence for an internal bank, and where Sunken Feature 1 was too close to the inner ditch to allow for the presence of a bank. Unfortunately, there was no evidence for an alternative method of disposing of the spoil from the ditches. Stone-built houses were common in the Romano-British period, even when sited on drift; they often overlay earlier timber houses, as at Bridge House, Northumberland (Charlton & Day 1974).

Rectilinear enclosures are less common in Dumfries and Galloway than nearer the east coast, but sites similar to Carronbridge are known, mainly in middle to lower Nithsdale; only one lies further north than Carronbridge. Several of them are close to Roman forts or fortlets: Whitespots (Truckell 1984) is close to Barburgh Mill; Butterhole Brae (St Joseph 1951) is adjacent to Dalswinton; West Gallaberry (Crawford 1939) is near Carzield; and there is a concentration of sites around Ellisland, just over the Nith from Dalswinton, including Lag's Tomb, which is double-ditched (Truckell 1984). Given the ephemeral nature of the Roman occupation north of Hadrian's Wall, it seems likely that Roman military establishments were deliberately sited near concentrations of settlement, rather than that settlements developed around them. However, these apparent concentrations could be exaggerated because of the increased chance of discovery of native sites near known Roman ones, through repeated overflying and re-photographing of the latter. Further sites are present in Annandale, where the distribution has recently been extended by the RCAHMS (J Sheriff, pers comm), and near the Solway coast. The Dumfriesshire sites are an extension of a larger distribution in lowland northern Cumbria, just over the Solway (Higham & Jones 1975; 1985). There are two western outliers to the distribution in Dumfries and Galloway: Barwhill (Truckell 1984), another double-ditched example near Gatehouse of Fleet which is adjacent to a Roman fortlet, and Rispain Camp, near Whithorn (Haggarty & Haggarty 1983).

All the examples given above are located on low ground, in river valleys or on the coastal

plain. There are far more known settlements in upland areas, although these are usually curvilinear, with only a few known rectilinear settlements. At Eskdalemuir Kirk, Dumfriesshire (Jobey 1971), the site was just visible on the ground as a scooped settlement, but it was surrounded by a sub-square enclosure ditch which was only visible as a cropmark. Both the rectilinear minority, and the curvilinear majority, of upland sites are similar to the rectilinear settlements North Tynedale, the Tyne-Forth coastal plain and County Durham, in their internal arrangements and size range.

A curvilinear enclosure lies in an adjacent field to the south-east of the excavated site at Carronbridge. There is no evidence for its date relative to Enclosure A; taken in isolation, it could belong to almost any phase of the pre-Roman or Roman Iron Age, or possibly to the late Bronze Age. The possibility does arise that some of the pre-enclosure activities within the area of Enclosure A were related to the curvilinear enclosure.

The early settlements in upland eastern Dumfriesshire are most often located in valleys, on or near a bluff formed by a minor stream or river entering a larger one (Jobey 1971). Carronbridge fits this pattern, as do most of the Nithsdale sites to some extent. Recent work by RCAHMS in Annandale and Eskdale has confirmed a pattern of distribution which suggests the subdivision of the landscape into blocks separated by topographic features (J Sheriff, pers comm). A similar pattern was observed in the North Tyne valley (Jobey & Jobey 1988). Here, it was suggested that the pattern might reflect land ownership, which raises the question of the function of the settlements as a whole and their place in the landscape.

In the past, functional interpretations of relatively small but substantial enclosures like Enclosure A have usually seen them either as fortifications, or as barriers to the movement of wild and/or domestic animals. However, many of them would have been inefficient or are badly sited as fortifications, and palisades would probably have been a better way of keeping animals in or out than banks and ditches. It has been suggested (Haselgrove 1984; Hingley 1990) that Iron Age/Romano-British enclosures of this type may have primarily served social functions. They propose that the earlier enclosures were 'boundaries of social exclusion', defining an area of settlement which was exclusive to a particular community. Further, they suggest that greater social stratification in the Romano-British period, indicated by the tendency for the later enclosures to contain one large house, led to a change in the significance of the boundary; it now defined the property and/or status of an individual. On this model, the primary function of the ditches surrounding Enclosure A would have been one of social symbolism, rather than purely practical. However, there is no reason why the two types of function could not both be relevant and it is important to note that small square or rectilinear enclosures can serve a wide variety of functions. Even where the apparent function of two enclosures was the same, the perception of each enclosure (through the eyes of its creators or users) could have been radically different.

ENCLOSURE C

Enclosure C was interpreted before excavation as being closely related to Enclosure B. Following Clarke & Webster (1954) it was thought that it was, perhaps, an earlier Roman fortification whose location had determined the siting of Enclosure B.

The ditch of Enclosure C was over half full when the temporary camp (B) was built, from which it is deduced that C had almost certainly already fallen out of use, although it was still visible as an earthwork. On the basis of these investigations there is no evidence to suggest that it is a Roman enclosure and it demonstrably pre-dates the known Roman activity at Carronbridge.

Both in size and morphologically, Enclosure C is similar to the first (inner) ditched phase of Enclosure A. Its points of difference lie in its possession of a palisade, the different shape of the

ditch terminals, the almost total lack (probably through truncation) of any internal features, and the absence of a (recognised) north-west side. Palisades, or early phases as palisaded enclosures are, however, common on similar sites in north-east England (Burgess 1984; Jobey 1962; 1978; Jobey & Jobey 1988). Enclosure A represents a class of Iron Age/native enclosures which, in the 1950s and earlier, were frequently assumed to be Roman (as occurred with Enclosure C), and to which Enclosure C could easily belong.

In conclusion, it is likely that Enclosure C is a Late Iron Age monument, either a precursor of Enclosure A or contemporary with its early phases, and that all the features in the excavated part of the interior have been destroyed by truncation or pedological processes. Given its state of preservation, the only evidence which could be sought to further test this hypothesis would be the presence or absence of a Roman traverse at its entrance, although none is visible on the aerial photographs.

THE COBBLED SURFACE: A ROMAN ROAD?

There are several permanent Roman works in and near central Nithsdale: the large forts at Dalswinton were occupied in the Flavian period; the fort at Carzield and the fortlets at Barburgh Mill and Durisdeer belong to the Antonine period; Drumlanrig probably saw use in both periods. Temporary camps are also common in Nithsdale. The permanent sites were presumably all linked by roads, although relatively few positively identified sections of roadlines are known. One of the best known stretches lies in the Carron valley, extending from the Weel Path pass at Durisdeer down the valley to Carronbridge and continuing southwards along the line later followed by the A76. It seems highly likely that this road was used both in the late first and the mid-second century AD. Because of physical and topographical constraints, the road must have passed very close to the excavation site, if not through it.

The cobbled surface excavated at Carronbridge contained no dating evidence. Its position, however, coincides more or less exactly with the expected alignment of the Roman road, traces of which can be seen as cropmarks in the field to the south. Therefore, although it could be later in date, the most likely interpretation of this surface is that it represents a Roman road.

ENCLOSURE B

Clearly, Enclosure B is a Roman temporary camp. There could be several reasons for the selection of this site for the camp: it may be close to a strategic road junction; it overlooks a formerly important ford over the Nith; and it is half a day to a day's march north of Dalswinton and Carzield. Specifically, this terrace is the nearest convenient area of level, well-drained land giving views up and down the valley as far as the ford and to the junction of Nithsdale with the Carron valley. Its position adjacent to the cliff edge both improves the view and adds to the defensive potential of the site.

The proximity of Carronbridge to the fort at Drumlanrig is rather surprising. Unfortunately, the dating evidence available is not sufficiently precise to determine whether the two sites were occupied simultaneously. While it is tempting to conclude that the two sites should not be contemporary, it is possible to imagine a number of potential military or other reasons for the use of a temporary camp close to a permanent fort; thus no conclusion can be reached at present.

The line, and even the profile, of part of the ditch of Enclosure C was re-used for one side of the temporary camp, presumably to save effort in digging the ditch. The oven, although physically in Enclosure C, was probably associated with the temporary camp (above). Four similar ovens,

constructed in pits, have been found in a temporary camp at Bromfield in Shropshire (Hughes *et al* 1995), although these used a second, intersecting pit for access rather than a disused ditch, and were found in the interior of the camp. No other ovens have been found in temporary camps in England (Welfare & V Swan 1995, 22, 150–3), and the author is not aware of any other Scottish examples.The construction of an oven, and the fact that it was fired several times before its collapse, may indicate that the camp functioned as more than an overnight stop. This interpretation may be supported by the presence of a post-built structure, associated with a quantity of charred wheat. This structure is located at the nearest possible point in the interior of the camp to the oven and could, among other things, represent a temporary facility for the preparation of bread dough for baking in the oven. The presence of turves which may have had time to partly decay in the bank before they came to lie in the ditch may also support the view that the camp had an unusually long occupation. There was a similar primary fill in the ditch at Bromfield, where it was interpreted as a deliberate slighting of the bank at the time of abandonment.

THE DARK AGE METALWORK ASSEMBLAGE

Three items of Dark Age metalwork were found, unstratified but close together in Enclosure A: a silver-gilt penannular brooch; most of a sword in its scabbard; and a sickle (Owen & Welander, above). They are unlikely to be associated with the enclosure as the latest phase of occupation has been dated to between AD 140 and 415, several centuries earlier than these 9th to 10th century artefacts. It is probable that they were deposited together, given the otherwise extraordinary coincidence of three metalwork items, probably of similar date, being dropped in the same place on separate occasions. We can only speculate about the possible reason for their deposition. This assemblage will be fully discussed elsewhere (Owen & Welander, forthcoming).

CONCLUSIONS

Enclosure A was certainly the longest-lived of the three excavated enclosures. Radiocarbon dates suggest intermittent pre-enclosure activity in the Bronze Age and the Iron Age; the earliest pre-enclosure activity could be associated with the Bronze Age cremation burials just to the north. The first enclosure phase probably took place during the last century BC. It is not possible to ascertain how long the settlement lasted, but it could be anything from about 200 years to about 650 years, ending at the earliest in the mid-late second century AD, and at the latest in the early fifth century AD; although the latter date seems unlikely on present indications. It is virtually certain, however, that the use of Enclosure A spanned the main periods of Roman involvement in south-west Scotland.

The Roman temporary camp, Enclosure B, was built probably during the lifetime of Enclosure A, and the balance of the evidence is that Enclosure A was not only occupied but thriving at the time of the Roman presence. It is possible that the occupants of Enclosure A temporarily moved out during the use of the temporary camp, but there is no evidence to suggest this, and certainly no evidence for a complete abandonment related to the short-lived Roman occupations of the area.

The quantities of wheat found in the temporary camp suggest that wheat was a major part of the diet of its users. It seems unlikely that the troops in the camp were obtaining their wheat locally, as wheat was very rare in the native settlement (Enclosure A), and this would probably be consistent with the nature of the camp (troops on the move would probably carry supplies with them, rather than risk delay by obtaining them enroute). The very sparse artefactual evidence

supports the idea that exchange between the native population of Carronbridge and the Romans was very limited; most of the artefacts are of Roman date, but there were very few of them, and most could as easily be of native manufacture as obtained from outside sources. There was no Roman (or any other) pottery, and none of the more basic artefact-types the presence of which might indicate that the Romans had a significant impact on the way of life of the local populace.

The evidence for any relationship between Enclosure C and either of the other enclosures is tenuous. It was definitely abandoned when the temporary camp was built, although still visible as an earthwork. It does possess similarities with the type of enclosure represented by Enclosure A, including a palisade, which is generally a feature of early examples of the class. It could therefore be a predecessor of Enclosure A, although it is impossible to say whether there was any chronological overlap between them. It is possible that some of the pre-enclosure features in Enclosure A could relate to activities undertaken by the occupants of Enclosure C; although this possibility cannot, unfortunately, be tested.

When road construction begins at Carronbridge, a watching brief will be necessary. This will provide the opportunity to address some of the outstanding problems relating to phasing or interpretation. In particular, the opportunity should be taken to examine the intersection of the outer ditch of Enclosure A with the Roman road, and to test for the presence or absence of a traverse outside the entrance to Enclosure C.

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