IV

Excavation of a Late Second/Early First Millennium B.C. Unenclosed Roundhouse at Halls Hill, near East Woodburn, Northumberland

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INTRODUCTION

Prehistoric earthworks on Halls Hill farm were first recorded by field-walking in February 1980 following an announcement by the Forestry Commission that it intended to acquire 67 ha of rough moorland grazing for afforestation. Subsequently, a plane table survey, carried out by the author and Stewart Ainsworth, confirmed the presence of a solitary ring-bank which, it was thought, might represent the site of an unenclosed roundhouse. To the W of the suspected roundhouse, and immediately adjacent to it, lay a small embanked field or paddock enclosing four small cairns which seemed more likely to be the product of stone clearance for agriculture rather than burial monuments. Additionally, two larger groups of small cairns, between them containing more than eighty individual piles of stone, were scattered within a radius of 300 m to the W and S.

In its general character, the unenclosed settlement at Halls Hill was typical of a growing number of sites which were coming to light at this time, particularly in the more remote upland districts of Northumberland where a campaign of fieldwork and air photography was aimed at offsetting threats posed by blanket afforestation and moorland 'improvement' (Gates 1983). In the case of Halls Hill, the earthworks were not judged to be of sufficient quality to justify long term protection and for this reason rescue excavation was chosen as the most appropriate mitigation strategy. At the same time, the opportunity to excavate was by no means unwelcome as it offered the chance to investigate a type of settlement that was becoming more commonly recognised but about which very little was then known.

The excavations were completed in two separate campaigns, in 1981 and 1986, as dictated by the progress of the anticipated land sale and the availability of funds. In the first season, work began in early October but remained unfinished when a heavy fall of snow at the end of November brought proceedings to a premature halt. Thereafter, the sale of the land fell through and further funding did not become available for another five years. By this time all the hill land belonging to Halls Hill farm had been acquired by the Economic Forestry Group (EFG) and, apart from a small area around the site, had already been ploughed and planted with conifers.

Access to the site and permission to excavate was readily granted by the owners, Messrs Jimmy and Norman Elliott and latterly the EFG. Funding in the first season was provided by the Department of the Environment and in the second by English Heritage, with logistical support from the North-East Archaeological Unit based at Newcastle University. Thanks are due to Dr Piers Dixon who acted as supervisor in 1981 and to all the following who worked

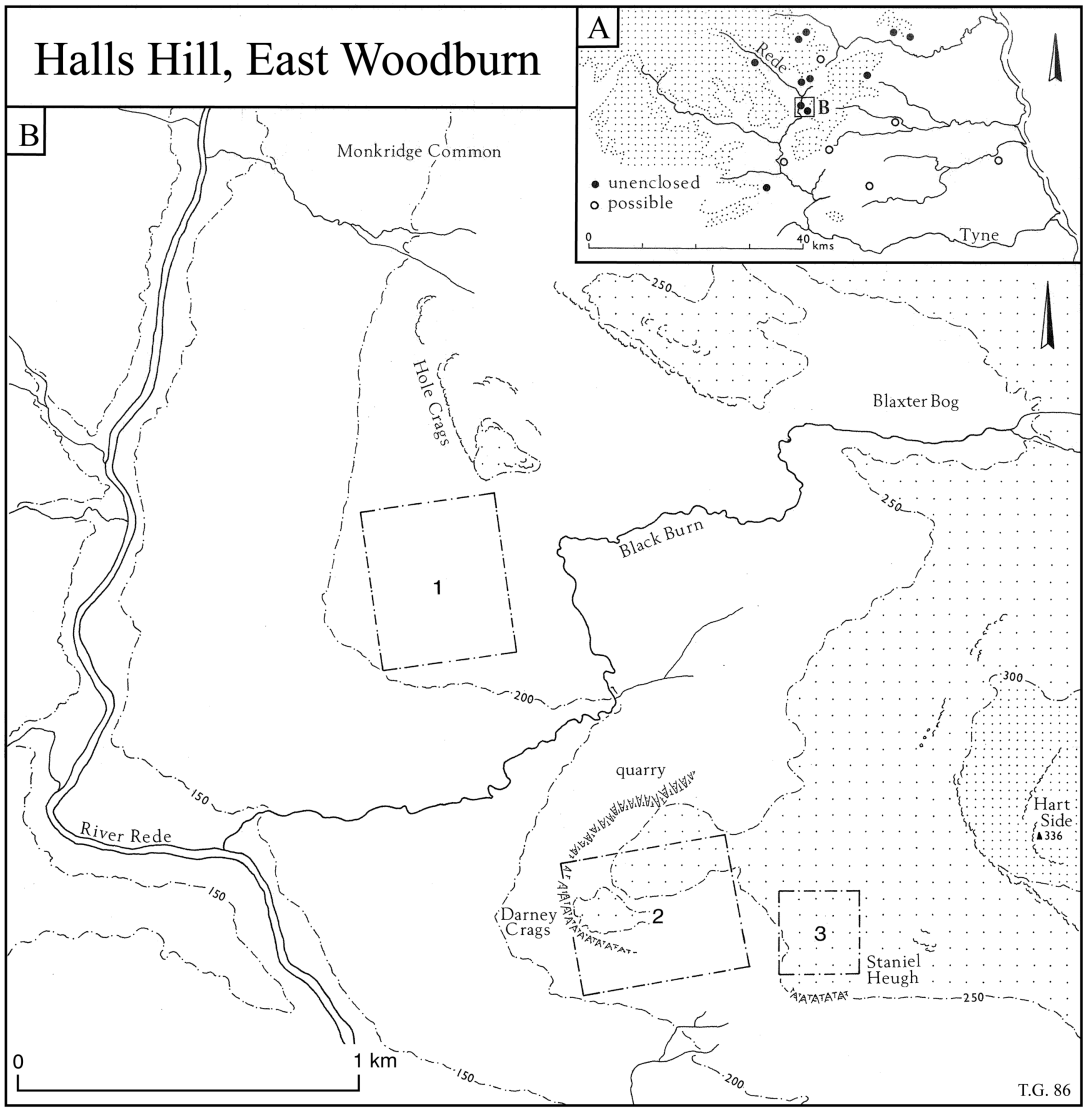

Fig. 1 Site location. 1, Halls Hill; 2, Darney Crag; 3, Staniel Heugh.

on the site, cheerfully withstanding extremes of weather that could test the resolve of even the hardiest of outdoor enthusiasts: Victoria Brandon, Ann Carter, Anne George, Susan Hedley, Julia Henderson, Graham MacIlearney, Graeme McFadd, Greg Priestley-Bell, Duncan Ross, Paul Sharman, Simon Savage, and Veronica Yuill. For practical help in times of need, grateful thanks are due to P. C. Ken Lindup and the Bellingham Scouts, and to John Wilson who succeeded the Elliotts at Halls Hill farm. Specialist reports and advice were kindly provided by the following: David Gurney (soil phosphate); Mrs Anne Miles (identification of wood charcoal); Dr (now Professor) Marijke van der Veen (carbonised plant material); Dr Jill Walker and Dr Bob Otlet of the Low Level Measurements Laboratory at Harwell, and Dr David

Haddon-Reece and the staff of the Ancient Monuments Laboratory (radiocarbon dating). Margaret Finch drew the finds and Trevor Pearson very generously gave much needed help in preparing digital versions of the illustrations for publication. Al Oswald and Stewart Ainsworth read and made helpful comments on draft versions of the text. Finally, the author would like to take this opportunity to pay a personal tribute to the memory of the late Professor George Jobey whose pioneering work at Green Knowe paved the way for the recognition of Bronze Age settlement in Northumberland and the Borders.

THE SITE (NY 907 887)

The site lies on the eastern flank of Redesdale, 1.9 km N of the small hamlet of East Woodburn and 8 km upstream of the confluence of the rivers Rede and North Tyne at Redesmouth (fig. 1). The earthworks depicted in fig. 2 occupy some 9 ha of gently undulating ground on one of a series of natural rock terraces which rise step-like from the haugh lands beside the river and constitute such a distinctive feature of the landscape hereabouts. To the E of the site the land rises towards the crest of the escarpment which separates the catchments of the Rede and the Wansbeck, achieving its highest point on the summit of Hart Side (336 m) 2 km away to the SSE. Southwards, a gentle slope leads downhill to the Black Burn before rising up again to the foot of Darney Crag, a vertical wall of bare rock which stands out black against the skyline. This outcrop of massively-bedded sandstone has long been valued for its qualities as a freestone and the tumbled spoil heaps at its base bear testimony to almost a century of quarrying. In the immediate vicinity of the site, the underlying Carboniferous rocks consist mainly of a medium- to fine-grained yellow sandstone interleaved with occasional thin beds of shale and limestone. These in turn are covered to depths of up to a metre by a superficial layer of glacial drift, here consisting of a stony yellow clay with a stiff, buttery consistency. Before afforestation, the natural vegetation was dominated by a mixture of heather and acid-loving grasses, interspersed with occasional patches of bracken in more sheltered spots. Apart from intrusive ranks of conifers, native tree cover is limited to the odd stand of alder, birch, willow and rowan, found mostly along the banks of the Rede and its tributary streams.

At 229 m (750 ft) above sea level, the altitude of the site at Halls Hill is not especially great and is noticeably lower than some other unenclosed settlements, for example in the Cheviots where more than thirty settlements have been recorded at heights of 300 m and above (Gates 1983). Yet Halls Hill is completely without shelter from the prevailing westerly winds and on that account is considerably more exposed than many other settlements which lie at significantly higher altitudes. From this elevated position there are spectacular views up and down the length of Redesdale for distances of up to 60 km, taking in the long chain of hills which extends down the western horizon from Cheviot southwards all the way to Cross Fell. Yet, despite these natural advantages, the site is not well suited for defence as there is dead ground close at hand to the S and W, while from the N it is overlooked at close range by a rocky outcrop known as Hole Crags.

Before excavation, the site of the roundhouse appeared as a penannular, turf-covered mound, measuring 12.0 m in diameter from crest to crest. On the SE-facing side, a 2.0 m wide break in its circuit seemed the most likely position for an entrance. Compared with some other earthworks of this type, the dimensions of the bank were relatively modest, not exceeding 2.5 m in width or 0.25 m in height, and apart from an occasional stone projecting up through the surface cover of heather and moor grass, there was little to indicate the nature

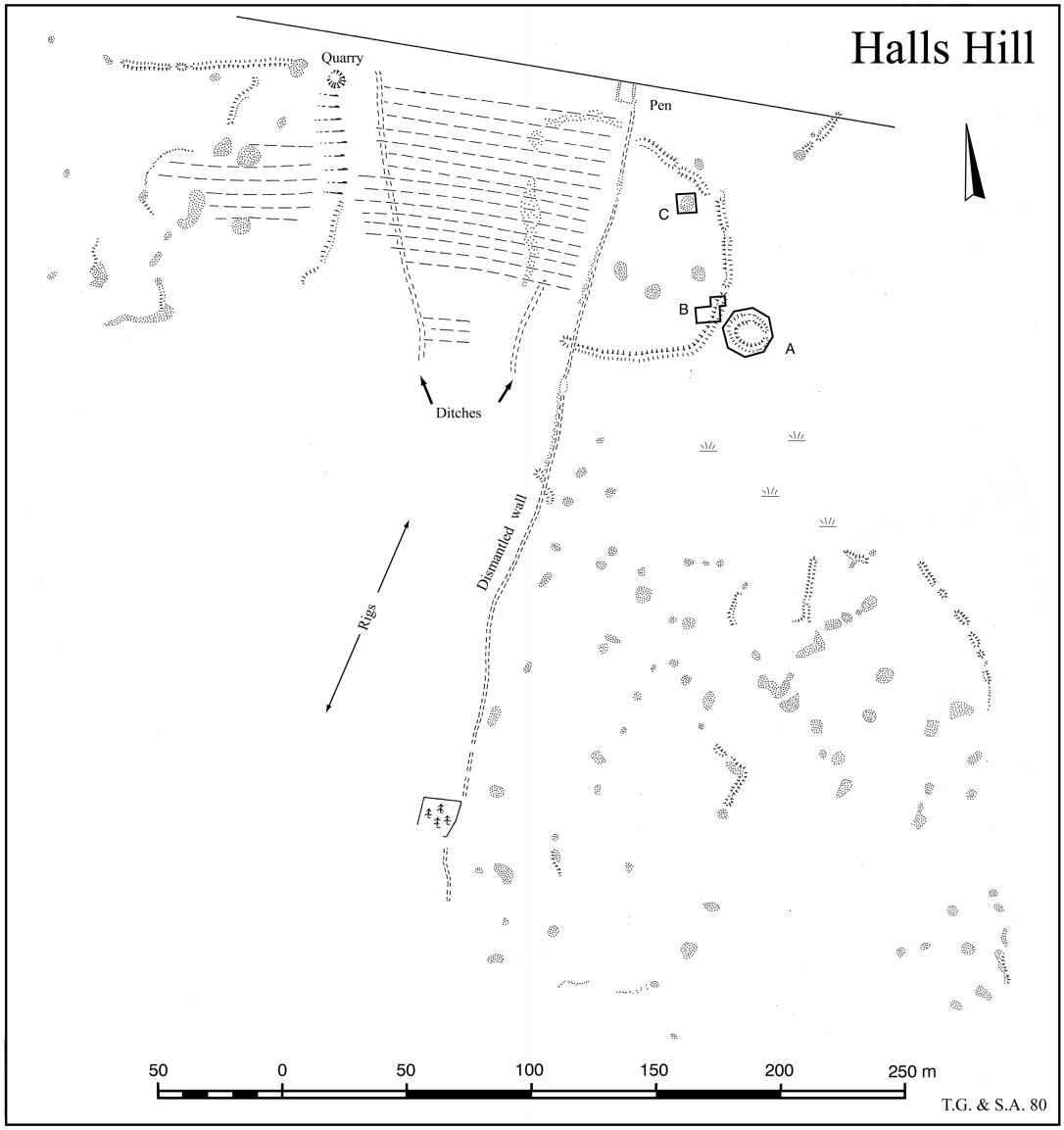

Fig. 2 Halls Hill earthwork survey.

of the underlying structure. On the other hand, a slight but noticeable lowering and spreading of the bank on the NW side suggested that it had suffered some degree of disturbance, most probably as the result of stone robbing to build one or other of the two boundary walls which cross the site.

Immediately W of the ring-bank, a small, oval-shaped field or paddock with an area of *c*. 0.6 ha lay on a gentle downhill slope. Where it was best preserved, on the upslope side, the boundary of this field was formed by a low, heather-clad bank with dimensions similar to

those of the ring-bank. On the W side of the field, however, the bank had been levelled and all but obliterated by post-medieval rig ploughing, and here its course was only traceable as a scatter of surface stones lying in the furrows between the rigs. Yet, even where it had not been encroached on by cultivation, it did not seem likely that the bank had ever been a continuous feature, since it was interrupted at irregular intervals by at least five gaps not all of which could be accounted for in terms of later stone robbing. At the same time there was nothing to suggest that any of these breaks represented formal gateways into the field, such as might have been indicated by the presence of flanking stone uprights. In its present form, therefore, it did not appear that this boundary could have been intended to act as a stock-proof barrier, unless it had been augmented by some additional obstacle, such as a fence, a hedge or a wall of turves, of which no trace would in any case be expected to survive.

As none of the four small cairns situated within the field had a regular shape or showed any signs of a surrounding kerb, it seemed they could better be explained as a by-product of stone clearance for agriculture rather than as burial monuments. On the other hand, it did not necessarily follow that they belonged to the same period of land use as that represented by the field itself. Indeed, the possibility of more than one phase of land clearance was hinted at by the presence of two irregularly-shaped cairns and a length of stony bank outwith the NE perimeter of the field, as well as by the two larger groupings of cairns to which attention has already been drawn.

The larger of these neighbouring cairnfields occupied an area of *c.* 3 ha and contained around 70 individual cairns and some additional banks of stone. It lay on the slopes of a low knoll a little distance to the S of the ring-bank and on the far side of a shallow depression now occupied by a bog. Although the bog was tested with an auger in the hope that it might yield a core suitable for pollen analysis, it proved to be nowhere more than 1.75 m deep and no usable samples were obtained from it.

The smaller cairnfield, comprising some fifteen cairns and linear banks scattered over an area of *c.* 1 ha, was situated downhill from the field plot beyond a natural break in the slope. Although the later rig ploughing had intruded within the area of stone clearance it did not seem that any cairns had been destroyed as a result.

Apart from the earthworks described above, all other signs of human activity in the vicinity of the site post-date the enclosure of Monkridge Common. A secure *terminus post quem* for this event is provided by the first of two private agreements between the proprietors (NRO 1888/6). This document is dated 1734/5 and establishes a likely context for the building of the two stone boundary walls depicted on fig. 2. In any case, as both walls are shown on the first edition of the OS six-inch map, we can be sure they were in existence by 1863, the date when the survey for this particular sheet was completed. The first of these walls, which runs E to W across the northern perimeter of the site, is robustly built and perfectly straight and as it also marks the division between Halls Hill and Hole Mill, the neighbouring farm to the N, it can reasonably be inferred that it was constructed before the other. The second wall, by contrast, was built on a narrower foundation and followed an irregular, sinuous course across the slope from N to S, its purpose evidently being to separate off the area of rig cultivation from unimproved grazing land further up the hill. As examination of the footings of this wall showed, it had finally been dismantled down to its foundations and most of the stone removed for re-use elsewhere.

Most of the stone used for wall building was obtained from small quarries situated either side of the main farm boundary, including the one shown on the plan at the N extremity of

the site. Small quantities of stone were also taken from some of the clearance cairns where these lay conveniently close at hand, as well as from the ring-bank.

Before ploughing took place, an attempt seems to have been made to improve the drainage and to this end two shallow ditches were dug across the terrace downhill from the ring-bank. However this operation seems not to have been effective as both ditches were ploughed over after what was probably only a short interval of time. While it has not been possible to establish a precise date for this cultivation, the appearance of the rigs, which were relatively straight and narrow with widths of 5.0 to 6.0 m, suggests a context in the late eighteenth or early nineteenth century.

A small, stone-built lambing pen or 'keb house', which had once stood in the angle formed where the wall demarcating the area of cultivation butted up against the main farm boundary, is depicted on the first edition of the OS six-inch map but was in ruins at the time of the survey. 300 m to the S, a now derelict plantation of Scots pines stood inside a walled enclosure. As the latter is not shown on the 1863 map it must be of more recent date.

THE EXCAVATIONS

Three trenches were opened to examine: (A) the roundhouse; (B) a 5 m long section of the field boundary where it passed close to the ring-bank, and part of the field interior; and (C) one of the clearance cairns situated within the field. A single series of context numbers was assigned to structural features and soil layers alike, and references to these in the text are given in square brackets. It should be noted that not all context numbers appear on the illustrations.

Area A: The Roundhouse

The ring-bank and its interior were exposed by stripping off a superficial layer of peaty turf, 5–20 cm thick [1], followed by a deposit of leached sandy soil that contained numerous weathered sandstone fragments [2] and was heavily matted with heather and grass rootlets. This leached soil extended over the whole of the trench to an average depth of 4 cm, increasing to 12 cm where it rose up against the basal rubble of the ring-bank, filling the interstices between the stones.

When fully exposed, the ring-bank [3] was found to consist of a loose dump of weathered sandstone boulders, such as might easily have been collected from the land surface hereabouts. As foreseen, the bank had suffered from stone robbing to some minor degree, especially in the NW quadrant where the smaller rubble had been scattered in the course of extracting some of the larger boulders. Occasionally, where stones had been taken from the bottommost part of the bank, peat-filled hollows in the underlying soil showed from where they had removed. Even in the NE and SW sectors, where it was least disturbed, the dimensions of the ring-bank of stone were relatively modest, nowhere exceeding 1.2 m in breadth or 0.35 m in height. On plan, the structure was sub-oval rather than strictly circular (fig. 3), with an average internal diameter of about 10.9 m. On the SE-facing side, there was a 4.0 m wide break in the rubble.

Neither at this stage, nor later when it was completely dismantled, did the bank show any of the characteristics that might be expected of a collapsed stone wall. For example, there was

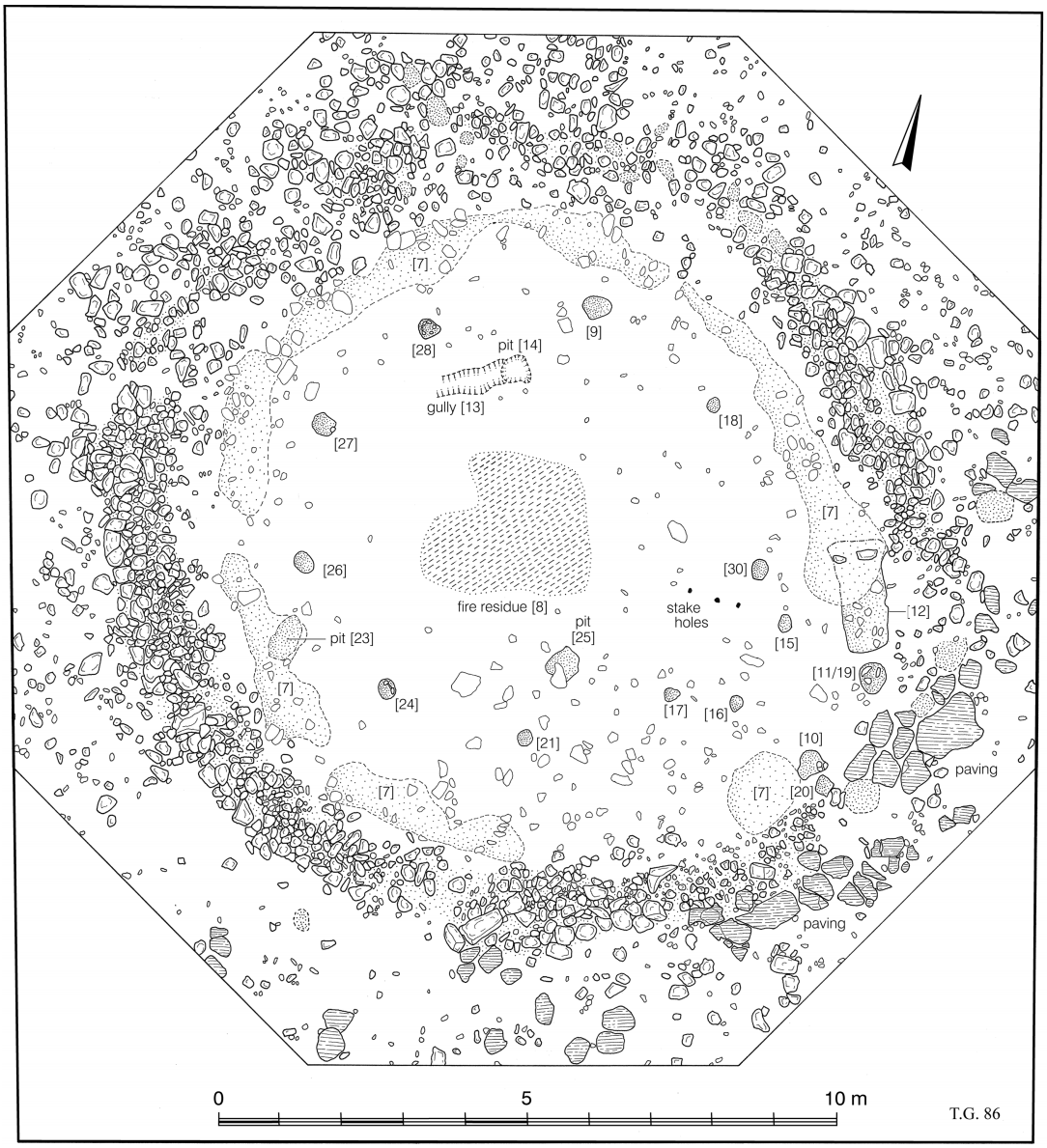

Fig. 3 Area A: The roundhouse.

no evidence of coursing, however crude, and no care had been taken to select stones that were regular in shape or matched for size. Nor was anything found that could be interpreted as a wall face, either on the inside or the outside of the ring. Indeed, the only sign of purposeful arrangement was an alignment of larger stones placed round the outside of the rubble bank where they formed a crude retaining kerb, helping to prevent the loose rubble from collapsing outwards. Except in the NW quadrant, where most of these kerb stones had been selectively

robbed, this outer revetment remained substantially intact. After some of the smaller rubble had been removed from the upper portion of the bank, it became clear that the stones of the kerb had been set out in more or less straight sections, each about 4 m long, with the outside edges of adjacent stones roughly in alignment. As will become apparent at a later stage in this report, what at first seemed a relatively insignificant detail of the ring-bank's structure assumed greater importance when the time came to consider the reconstruction of the roundhouse (see below).

At no stage in the dismantling of the ring-bank was anything found which might suggest that any timbers, load-bearing or otherwise, had been embedded in the rubble. Indeed, given its slight stature, it is most unlikely that the bank could have provided a stable support for upright posts of any size unless they had also penetrated the natural clay sub-soil on which the basal stones of the bank rested. Certainly there was no evidence of this and no stake- or post-holes were found in the clay surface under the rubble, although numerous burrows of small mammals were detected without difficulty.

Several smoothed or battered stones were recovered from the rubble of the ring-bank. These included a stone with concave facets, which may have been used to polish or sharpen some form of bladed instrument, and a fist-sized pebble that had been used as a rubber or hammer stone (v. Finds). When all the rubble had been removed, the surface of the natural clay was found to be flecked with small pieces of charcoal, of which a sample sent for identification proved to consist entirely of oak. While the origin of this material remains unclear, it could perhaps represent burning associated with some earlier phase of land clearance or else preparation of the site immediately prior to the building of the roundhouse.

Outside the ring-bank, on the SE-facing side, several large slabs of sandstone formed a paved approach to what was later confirmed as the doorway into the roundhouse. Additional patches of more crudely laid paving extended for short distances on either side of the entrance, though somewhat further to the S than the N. Eventually, it was discovered that some of these paving stones had been laid on top of a roughly cobbled surface, most probably to make good areas that needed repair or levelling up. As it happens, one of the flat stones used for this purpose proved to be the broken half of a heavily worn saddle quern of which a conjoining piece was later recovered from a small pit [14] in the interior of the roundhouse (fig. 8.2a; see below). To the S of the doorway, the paving extended up to but not beneath the kerbstones of the ring-bank and here it may have served as a base for stacking firewood or other materials, protected from the weather by the low, overhanging eaves of the building.

While removing the leached soil from the interior of the ring-bank, a deposit of soft carbonaceous earth [8] came to light at the approximate centre of the ring where it formed a low mound, up to 10 cm deep in the middle and spread over an area of more than four square metres. On further investigation, the mound was found to consist of a mass of wood charcoal and carbonised plant matter mixed together with a quantity of fire-reddened stones. Although at first it was thought that this material might represent the accumulated debris from a domestic hearth this could not explain either the large volume of material that was involved or the unexpectedly large amount of wood charcoal that was contained in it. This included numerous lumps of charcoal up to 4 cm across that were distributed at random throughout the undifferentiated mass, as well as one especially large piece of burned wood, measuring 10 cm across, recovered from a shallow depression at the very base of the deposit.

On balance, the mound of carbon-rich earth can best be explained as the residue of a single large fire in which some fairly substantial pieces of timber had been burned. While the exact

circumstances of this burning remain unknown, it is clear that the timber roundhouse could not have been standing at the time. Moreover, as there was no sign of the charcoal having been crushed or scattered by animal or human feet, it is likely that the site had already ceased to be occupied before the burning took place or else that it was abandoned immediately afterwards. It is even tempting to see this burning as a ritual act intended to mark the final dismantling of the building and the abandonment of the site.

Over 1100 g of wood charcoal were collected by hand from the burned mass. Two samples sent to Harwell for radiocarbon dating gave results of 2520±70 BP (HAR-4788) and 2560±60 BP (HAR-4789). As these are genuine replicate samples, the two dates can be combined for the purposes of calibration, giving a mean calendar age of between 810 and 520 cal BC at the 95% probability level. With the exception of small amounts of oak, hazel and birch, all the charcoal not actually consumed in the dating process proved to be alder.

Flotation of a 70 litre sample of this same soil also yielded a substantial quantity of carbonised plant material, including grains of emmer and spelt wheat, six-row barley and one grain of either wild or cultivated oats (v. specialist report by van der Veen, below). Unlike the grain samples obtained from other contexts, the fire debris contained almost no chaff and only four seeds of plant species other than cereals, namely blackberry or raspberry, dock and hoary plantain. A single grain of emmer wheat from this same sample was submitted to the Oxford Radiocarbon laboratory for accelerator dating by Dr van der Veen in 1988 and gave a result of 2560±70 BP (OxA-1766). Statistically, this date is indistinguishable from the two conventional dates previously obtained by Harwell (Van der Veen, 1992, 53).

Within the ring-bank, the leached soil [2] rested directly on a thin layer of occupation earth [6], up to 5 cm deep, which extended across the whole of the interior as far as the inner edge of the ring-bank but did not continue under the rubble. In excavation, this earth was readily distinguished from the overlying soil by its more compact texture and greasy, charcoal-flecked surface. It was also more variable in colour, ranging from light ochre to dark brown, according to the differing fractions of sand and clay that it contained. In the N part of the interior, the occupation earth filled a narrow slot or gully [13] which deepened at its eastern extremity to form an irregularly-shaped pit [14], 10–15 cm in depth. In this pit was found a small sharpening stone and another part of the same saddle quern that had been recovered earlier from the paved area outside the ring-bank (see above) (fig. 8.2b). Other finds obtained from the occupation earth included a barbed and tanged flint arrowhead (fig. 8.1) which, as we shall see, must be residual and unrelated to the occupation of the roundhouse, a flint blade, several small chips of flint waste, and four irregularly-shaped chunks or slabs of sandstone with smoothed facets or surfaces (v. Finds).

When the surface of the occupation earth was first exposed, a discontinuous band of contrastingly dark soil, up to 1.0 m broad, was revealed running parallel to and just inside the inner edge of the ring-bank [7]. As shown on the plan (fig. 3), the most evident of several breaks in the course of this feature coincided with the entrance through the ring-bank, expanding on either side to form what looked like rounded 'terminals'. In view of their clear relationship on plan, it seemed that the band of darker soil must in some way be related to the ring-bank, as might be the case if, for example, it represented a 'ring-groove' or foundation trench for a solid timber wall. However, further investigation did not reveal the expected vertically-sided slot but only a series of shallow scoops or hollows with gently shelving profiles and depths that nowhere exceeded 10 cm. Charcoal of oak, alder, ash and birch were recovered from the fill but no packing stones were present, nor were any post or stake holes

detected either in the fill itself or in the underlying subsoil, despite a careful search. While the strict concentricity of this series of scooped hollows with the ring-bank and the coincidence of the break in its SE-facing side with the four-post structure of the porch, as later revealed, indicated that this feature was intimately related to the roundhouse, the potential significance of this relationship was not immediately apparent and will be further explored at a later stage in this report.

At the base of the occupation earth, an extremely well-marked horizon of ironpan had developed at the point of contact between the archaeological deposits and the underlying natural boulder clay. The first signs of this were noticed at a higher level, in the occupation earth itself, when a reticulated pattern of rust-brown streaks appeared in horizontal section. At only slightly greater depth, the ironpan formed an indurated crust in which stones and thin sheets of mineral pan were firmly cemented together and discoloured by meandering bands of redeposited iron. The resulting conglomerate was both impervious to the downward percolation of water and impenetrable to plant rootlets and was so hard that it could only be removed by the judicious use of pick-axes and mattocks. At the same time, the physical and chemical changes involved in its formation had obliterated all contrasts in colour and texture which would otherwise have enabled dug features, such as post-holes and pits, to be identified at this level. In these circumstances it is hardly surprising that only two post-holes, [9] and [11/19], were located before the ironpan was removed. However, there can be no doubt that all fourteen of the post-holes that were eventually identified had originally been dug from more or less the same level, at or close to the base of the occupation layer.

The same strongly developed formation of ironpan was a striking feature of the stratigraphy in all three of the areas that were excavated, and is fully consistent with the classification of these soils as stagnopodzols of the Belmont series (Soil Survey, 1983). In the context of the excavation of the roundhouse, it is significant that the ironpan extended in an unbroken horizontal sheet through the filling of all the post-holes and pits. It follows, therefore, that the ironpan had formed some time *after* the posts supporting the roof of the roundhouse had decayed or been withdrawn, though how long this interval of time may have been it is not possible to say. The unanswered question of precisely when the ironpan formed is arguably one of the most important matters left unresolved by the excavations at Halls Hill.

Of the fourteen post-holes that were eventually identified, nine formed an inner ring, 7.2 m in diameter, with a fairly regular spacing of 2.3 to 2.8 m between adjacent posts. As will be evident from the plan (fig. 3), this inner circle of posts was strictly concentric with both the ring-bank and the intervening series of shallow scoops [7]. On the SE-facing side, a rectangular arrangement of four additional post-holes formed a porch or passage entered through the gap previously noted in the ring-bank. On plan, this structure was trapezoidal rather than square, and consisted of an inner pair of post-holes, [15] & [16], with centres spaced 1.6 m apart, together with an outer pair, [10] and [11/19], slightly more widely spaced, at 1.8 m apart. An additional post-hole [20], situated immediately in front of the more southerly of the outer pair of porch posts, was not matched on the opposite side of the doorway and is unlikely to have formed part of the original porch structure. While its purpose remains unclear it may possibly represent a repair.

Measured from the base of the occupation layer, the post-holes of the inner ring had estimated depths of 27 to 36 cm, and diameters ranging from 20 to 38 cm where they penetrated the boulder clay. Allowing for some lowering of the floor level over time, due to wear and repeated cleaning out, the post-holes as originally dug could in theory have been a few

centimetres deeper than this. While the timbers they contained could have measured as much as 25 cm across, in seven instances where packing stones remained *in situ* their actual diameter appears to have been significantly smaller than this. In the case of post-holes [24] and [28], for example, the posts cannot have been greater than 16 cm in diameter, while the impression of an oval post at the base of post-hole [26] measured only 8 cm by 12 cm.

The dimensions of the innermost pair of post-holes belonging to the porch were similar to those of the inner ring, but the outer pair, [10] and [11/19], were significantly larger, being 35 to 41 cm deep with maximum diameters of 42 cm and 45 cm. In each case, packing stones were present reducing the diameter of the individual timbers to no greater than 25 cm and 35 cm respectively. The post-hole situated just outside the porch [20], on the S side of the entrance, had dimensions similar to those of the inner ring. In the interior of the roundhouse, three stake-holes set out in a line between the northernmost of the inner pair of porch post-holes and the approximate centre of the building may have formed a screen protecting against draughts from the door.

All the post-holes contained a variable mixture of clay, silt and sand, ranging in colour from light grey to olive green, yellow or brown. In most instances, the sides and the bottoms of the post-holes were coated with a thin film of pale grey silt, most probably deposited by worm action or the percolation of water when the posts were in place. Most post-holes also contained fragments of sandstone which in two instances, [9] and [17], had been reddened by fire before they became incorporated in the fill. Fragments of charcoal were likewise distributed at random through the fill of all the excavated post-holes. In the case of twelve post-holes where identification of the wood was possible, several different species were represented, the dominant ones being oak and alder, with smaller amounts of ash, birch, beech, poplar or willow and possibly also hazel (*v*. specialist report by Anne Miles, below). In all but one instance, wood from at least two different tree species was present in the same post-hole, while six post-holes contained charcoal belonging to three and, in one case, four different species. In view of these findings, it should be stressed that there was nothing to suggest that any of this material might represent timber belonging to the roundhouse itself and the question of how, and when, the charcoal became incorporated into the post-hole fills remains unresolved. It would, for example, be possible to envisage a number of scenarios whereby residual charcoal could have been accidentally introduced into the post-holes at various stages during and after the life of the building, whether this be at the time of its construction, in the course of carrying out repairs or after the posts had rotted or been withdrawn.

Samples of charcoal from two post-holes, [10] and [21], were sent to Harwell for dating and yielded results of 2780±80 BP (HAR-4800) and 3130±60 BP (HAR-8184) respectively. Calibrated at two standard deviations, these indicate dates in the range 1190–800 cal BC and 1520–1260 cal BC. The relatively wide disparity between the two date ranges could be explained if, for example, the sample from post-hole [21] contained residual material. Indeed, in the light of the remarks made above, this is by no means unlikely.

Bulk soil samples obtained from ten post-holes all yielded significant amounts of carbonised plant material, including grain and chaff of emmer and spelt wheat, six-row barley and either wild or cultivated oats, as well as a range of weed species (*v*. specialist report).

In addition to the features that have already been described, three pits were discovered in the space enclosed by the ring-bank. The first of these, pit [23], was overlain by the fill of one of the hollowed scoops [7] and came to light only after this had been removed. While this may mean that the pit pre-dates the roundhouse, perhaps by a significant though undetermined

period of time, an alternative possibility, that it was dug at an early stage in the life of the building, before the scoop had been formed, cannot be entirely discounted. Pit [23] was oval in plan, with maximum dimensions of 77 cm by 43 cm, and was cut into the natural clay to a depth of 31 cm. As with the post-holes, the sheet of ironpan extended unbroken through the upper levels of the pit, dipping down slightly towards the centre. Beneath the ironpan, the fill of the pit consisted of a soft, olive-green clay incorporating numerous pieces of charcoal, including some small diameter twigs, identified as alder, birch, beech and either poplar or willow. At a level slightly above the mouth of the pit and to one side of it, a flat sandstone slab with one partly smoothed face, measuring 51 cm by 38 cm, was found embedded in the fill of the scoop and may originally have been used to seal the mouth of the pit. If so, it must have been displaced at some later stage, most probably during the life of the building.

A sample of charcoal from pit [23] was submitted to Harwell for radiocarbon assay and returned a date of 2960±60 BP (HAR-8183). Calibrated at two standard deviations, this is consistent with a calendar age in the range 1000 to 1390 cal BC. A bulk sample of soil from the same context was found to contain grain and chaff of emmer and spelt wheat, six-row barley and either wild or cultivated oats, as well as seeds from a range of weeds and grasses. Amongst the latter are several species commonly identified as weeds of cultivation, including fat hen, orache, black bindweed, field woundwort, dock, bromegrass and both ribwort and great plantain. Other possible food plants are represented by one seed of either blackberry or raspberry and several fragments of hazel nut shells. 36.8 g of burnt bone were also present in the filling of pit [23] but reduced to such small fragments that its origin, whether animal or human, proved impossible to determine. Additionally, the pit yielded one very small and abraded scrap of undiagnostic pottery (*v*. Finds). As it happens, this was the only piece of pottery found anywhere on the site.

In 1988, a single grain of spelt wheat and one fragment of spelt chaff from pit [23] were submitted to the Oxford Radiocarbon Accelerator Unit for dating and gave respective determinations of 2895±70 BP (OxA-1764) and 2840±70 BP (OxA-1763). These results compare closely with the date previously obtained by Harwell on charcoal from the same pit and, calibrated at the 95% confidence level, indicate a calendar age in the range 830 to 1390 cal BC.

Unlike pit [23], pit [25] was not detected until after the ironpan had been removed and for this reason its stratigraphical position in relation to the occupation earth [6] remains unclear. Consequently there is no way of knowing whether it was earlier or contemporary with the roundhouse. Seen in horizontal section at the level of the natural clay, the pit was irregular in plan, with a diameter of between 56 cm and 45 cm. When fully excavated, it was found to be 24 cm deep, with a profile that was noticeably irregular and sides that were quite markedly undercut in the upper portion. At greater depth, however, it became almost circular in plan, with a diameter of *c*. 38 cm and a smooth, bowl-shaped profile. At the bottom of the pit, a conical heap of charcoal-rich soil mixed with a substantial quantity of stones, shattered and reddened by fire, rested directly on the natural clay. As the sides of the pit showed no traces of having been affected by heat, this burning had evidently not taken place *in situ*. Rather, the mound of burned material had been tipped into the pit and covered over by the caving in of the sides of the upper part. As with pit [23], a flat slab of sandstone, found close by in the overlying leached soil [2], may have been used to cover the mouth of the pit.

A few scraps of calcined bone, together weighing only 2.3 g, were recovered from the burned material at the base of pit [25] but again its origin, whether human or animal, could not be ascertained. Some 200 g of charcoal, including both small twigs and larger lumps, was

collected from this same deposit. A sample, identified as alder, was sent to Harwell for dating and gave a result of 2710±70 BP (HAR-8185). Calibrated at two standard deviations, this indicates a probable age in the range 1020–780 cal BC.

A substantial amount of carbonised plant material was also recovered from pit [25] by flotation and found to contain grain and chaff of emmer and spelt wheat, and six-row barley, together with one seed of cultivated flax and several fragmentary hazel nut shells. Amongst a range of weed seeds present were several species typical of arable land, such as corn spurrey, orache, fat hen, black bindweed, ribwort plantain and bromegrass. A single grain of spelt sent for accelerator dating gave a determination of 2750±70 BP (OxA-1765). This result is almost identical with that previously obtained on charcoal from the same deposit and, calibrated at the 95% probability level, is consistent with an age in the range 1060–790 cal BC.

After the ironpan had been removed from within the ring-bank, an irregularly-shaped depression [31], measuring 10–15 cm deep by 90 cm across, was detected in the underlying natural yellow clay, close to the centre of the roundhouse and at a stratigraphically lower level than the remains of the large fire. On further investigation, this feature was found to contain a mixture of burned sandstone pebbles and white ash and beneath it the surface of the clay had been reddened by heat. Though lacking any formal structure, there can be little doubt that this feature represents the remains of a domestic hearth belonging to the roundhouse.

The last feature to be described in Area A is a sub-rectangular pit [12] discovered just inside the ring-bank and a little to the N of the four-post setting of the porch. As soon became apparent, this feature was significantly earlier in date than the roundhouse and is here interpreted as a probable Early Bronze Age inhumation grave. When fully excavated, the pit measured 180 cm long by 74 cm wide at the level of the natural boulder clay and was cut into it to a depth of 0.25 m. The filling was extremely mixed, consisting of varied amounts of dark olive-green, yellow and brown clay together with a substantial amount of charcoal and numerous pieces of sandstone, some of which had been reddened by fire. Apart from a small amount of charcoal-rich earth that remained in place at the very bottom of the pit, the remainder of the fill represented material that had been dug out by the builders of the roundhouse and almost immediately put back. At the same time, two large slabs of sandstone, which had originally stood upright at opposite ends of the pit, were smashed and most of the broken fragments thrown back into the pit as it was being backfilled. At the northern end of the pit, the stub ends of two conjoining parts of one of these slabs were found embedded in the backfill (fig. 4). No longer vertical, the broken pieces were tilted over at a sharp angle towards the middle of the pit. A third piece of the same slab was found resting flat on the bottom of the pit. Four conjoining pieces of the matching southern slab were also recovered, one from the backfill of the pit, one from the leached soil [2] above it and two from the most northerly of the outer pair of post-holes belonging to the porch of the roundhouse [11/19], where they had been re-used as packing stones.

By reassembling the broken fragments, it was possible to show that the stone slabs had been of similar size, with measurements in the region of 81–88 cm laterally and 50–60 cm vertically. Both had been crudely worked into a lozenge shape, with their short sides bowed slightly outwards and the top and bottom edges more or less parallel. In each case the lower edge had also been thinned by flaking and two transverse, slot-like impressions in the clay at opposite ends of the pit exactly fitted the flaked edges, showing where the slabs had originally been set up on edge. As there were no corresponding slots down the long sides of the pit, there is no reason to suspect the presence of a fully stone-lined cist.

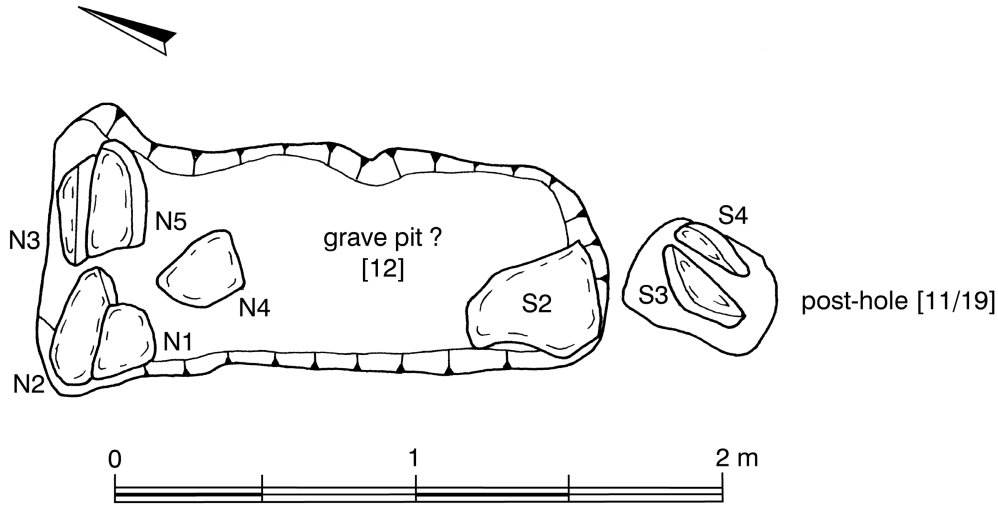

Fig. 4 Area A: Plan of the suspected grave [12] and adjacent post-hole [11/19] showing the broken pieces of the N and S grave slabs as found.

Because of the subsequent disturbance, it is difficult to be sure what the original purpose of the pit may have been but, as indicated above, there are good reasons to suppose that it was a grave. With the two end slabs in place, the internal dimensions of the pit would have been of the order of 150 cm long by 55 cm wide, sufficient for a contracted burial though not an extended one, unless perhaps that of a child. Although no finds were retrieved from the pit itself, it is not unlikely that the barbed and tanged flint arrowhead, recovered from the overlying occupation earth close by, had originally been deposited with a burial but was displaced when the pit was dug out. What must also remain uncertain is whether the builders of the roundhouse were aware of the existence of the grave when they chose this particular site or happened on it by chance only after construction had started. As the grave pit had been excavated to a depth of 45–50 cm below the estimated ground level, the two end slabs as reconstructed could not have projected more than 10–15 cm above the surface. So, unless it was covered by a cairn of stones or a mound of earth, for which no evidence was forthcoming, the existence of the grave might well not have been readily apparent. In any event, whether intentionally or by accident, there can be no doubt that the builders of the roundhouse dug out the pit and smashed the end slabs, re-using two of the broken pieces as packing stones in one of the post-holes of the porch belonging to the newly constructed building.

A considerable amount of charcoal was present in the backfill of the grave but, due to the evident risk of contamination with later material, was judged unsuitable for radiocarbon dating. At the bottom of the grave, some small pockets of the original grave fill remained apparently undisturbed [12a–c]. 900 g of wood charcoal was obtained from this deposit and identified as belonging to oak, alder, ash and birch. This may imply that burning played a significant role in the burial rite. If so, the seemingly aberrant date obtained from post-hole [21] of the roundhouse could be explained by some of this earlier material finding its way into the backfill of the post-hole as the building was being erected.

Reconstruction of the Roundhouse

As the ring-bank of stone and the inner ring of post-holes are perfectly concentric, and the opening through the ring-bank exactly coincides with the position of the porch and the exterior paving, there seems no good reason to doubt that the ring-bank and the post-holes belong to a single structure rather than, say, to two successive buildings occupying the same site.

Working on this assumption, the reconstruction proposed here envisages an inner circle of nine upright posts connected at the top by a series of horizontal timbers joined end to end to form a ring-beam. To this the rafters would be fixed at suitable intervals with their upper ends converging at the apex of the roof. The posts of the porch or entrance passageway would likewise be joined by horizontal timbers to form a rigid rectangular frame. As the experimental reconstruction of the Pimperne roundhouse at Butser has shown, this would have the effect of stabilising the building during the initial phase of construction (Reynolds 1993). Once the structure was complete, the downward thrust of the roof would confer rigidity, notwithstanding the shallow depth of the post-holes. While in theory it would be possible to envisage a situation in which the rafters rested directly on the crest of the rubble bank, such an arrangement would have a number of drawbacks. For example, by bringing the roof covering into direct contact with the rubble of the bank, the thatch and the timbers would be liable to rot at the point of contact with the stones. At the same time there would be a significant loss of useable space round the periphery of the building as the roof descends towards the ground. On the other hand, these and other disadvantages could be avoided if the ring-bank were instead seen as the foundation or plinth for a cob or turf wall, perhaps reinforced round its inside face by a protective wattle screen. The considerable weight of the roof would then be distributed between the inner ring of posts and the outer wall. At the same time, any tendency for the roof to spread outwards could be prevented by means of a wall plate consisting of horizontal timbers placed on top of the wall and fastened end to end so as to form a closed ring. The tendency for the outer revetment of the ring-bank to run in straight sections could then be explained by the need for such a wall plate formed by a series of timbers, each around 4 m long. The function of the wall plate would be to support the rafters, these being attached by means of notched and pegged joints with their butt ends carried out beyond the line of the outer wall to form low projecting eaves. As with any attempt to reconstruct a three dimensional building from a two dimensional ground plan, certain assumptions have to be made about the angle of the roof and the height of the outside wall. Taking 45° as the optimum angle for a thatched roof, and allowing 1.25 m as the minimum likely height of the outer wall (i.e. the stone plinth plus the turves or cob), the level of the ring beam carried by the inner ring of posts can be calculated at 4.3 m above ground level. This would give 7.9 m as the height of the apex of the roof inside the building. In the case of a thatched roof with a 30 cm covering of straw or heather, the weight of the thatch alone can be estimated at between 12 and 13.5 tons. With rafters each about 10.5 m long, the weight of timber contained in the roof cone could well add another 10 tons to that, giving 22 tons as the minimum likely weight of the roof. In this situation the outer wall would have played a vital role in taking some of the load off the ring-beam carried by the internal roof supports.

The proposed reconstruction would explain both the modest stature of the ring-bank and its lack of structure apart from the revetment of larger stones around the outer perimeter. At the same time, an outer wall composed of turf or cob on a rubble base would have several additional advantages beyond simply providing effective support for the roof:

- the potentially vulnerable base of the outer wall would be shielded by the eaves from erosion by the weather and further protected by the revetment of larger stones.
- the roof covering, presumed to be some kind of thatch, would be kept clear of the ground and thus protected from rot.
- the free-draining rubble of the ring-bank would keep the turf or cob wall dry thus helping to prevent decay in the wall plate resting on top of it.
- individual rafters could be more easily replaced or repaired if their butt ends projected out over the wall rather than resting on the crest of the rubble bank.

A further consequence of this suggested reconstruction is that the outer pair of porch posts would be the only ones exposed to the weather, all the others being contained within the building. The unusual size of the two outer post-holes of the porch, to which attention has already been drawn, could readily be accounted for by the need to repair or replace these posts at intervals during the occupation of the house. For, as the experimental reconstruction of the Pimperne roundhouse has again shown, the outer pair of door posts, even if made of oak, tend to rot where they enter the ground and may need replacing as often as once every seven to ten years (Reynolds 1993). Again, with the porch entrance on the same circumference as the outside wall, the whole porch structure could be absorbed into the cone of the roof resulting in a smooth, aerodynamic profile without the need for a projecting gable. Not only would this protect against wind damage but it would also solve the problem of rot forming in the valleys where a gabled porch meets the slope of a conical roof. Contrary to popular belief, it is only on the threshold of the doorway, under the heightened eaves over the door, that rainwater running off the roof is naturally likely to form a drip gully (Reynolds 1993). At Halls Hill, it was precisely the area in front of the porch door, where runoff from the roof would otherwise have formed muddy puddles, that was protected by the heaviest stone paving.

What has yet to be explained is the series of disconnected scoops [7] running mid-way between the ring-bank and the internal ring of roof supports. Certainly, on the model proposed above, it does not seem that this feature could represent either the bedding trench for a wattle lining to the outer wall of the roundhouse or, alternatively, a lightly built partition wall within it, since in the first case it is situated too far from the inner edge of the rubble and in the second too close to the internal ring of post-holes. The most likely explanation is that it represents differential wear to the floor of the house caused by the passage of feet or repeated sweeping out of domestic rubbish or animal bedding. In an attempt to test this second hypothesis, phosphate tests were carried out over the western half of the building in 1986. Unfortunately, however, the results were inconclusive, as phosphate values proved uniformly low due to the severity of the leaching process to which the soil had been subjected.

At this point, it should perhaps be emphasised that the series of disconnected scoops described above could by no means be described as a ditch. On the other hand, although the scoops were much shallower and less pronounced than the segments of the penannular-shaped 'ditch' belonging to House 6 at Douglasmuir (Kendrick 1995), they do bear more than a passing resemblance to some of the 'ring-ditches' belonging to other houses excavated elsewhere on the same site. This is a point to which we shall return at a later stage in this report.

At Halls Hill the interior scoops did not form a continuous circuit but instead comprised a series of more or less discrete segments, each 3 to 4 m in length. These were separated by 'causeways' of which the most evident was situated on the S side of the entrance. As depicted

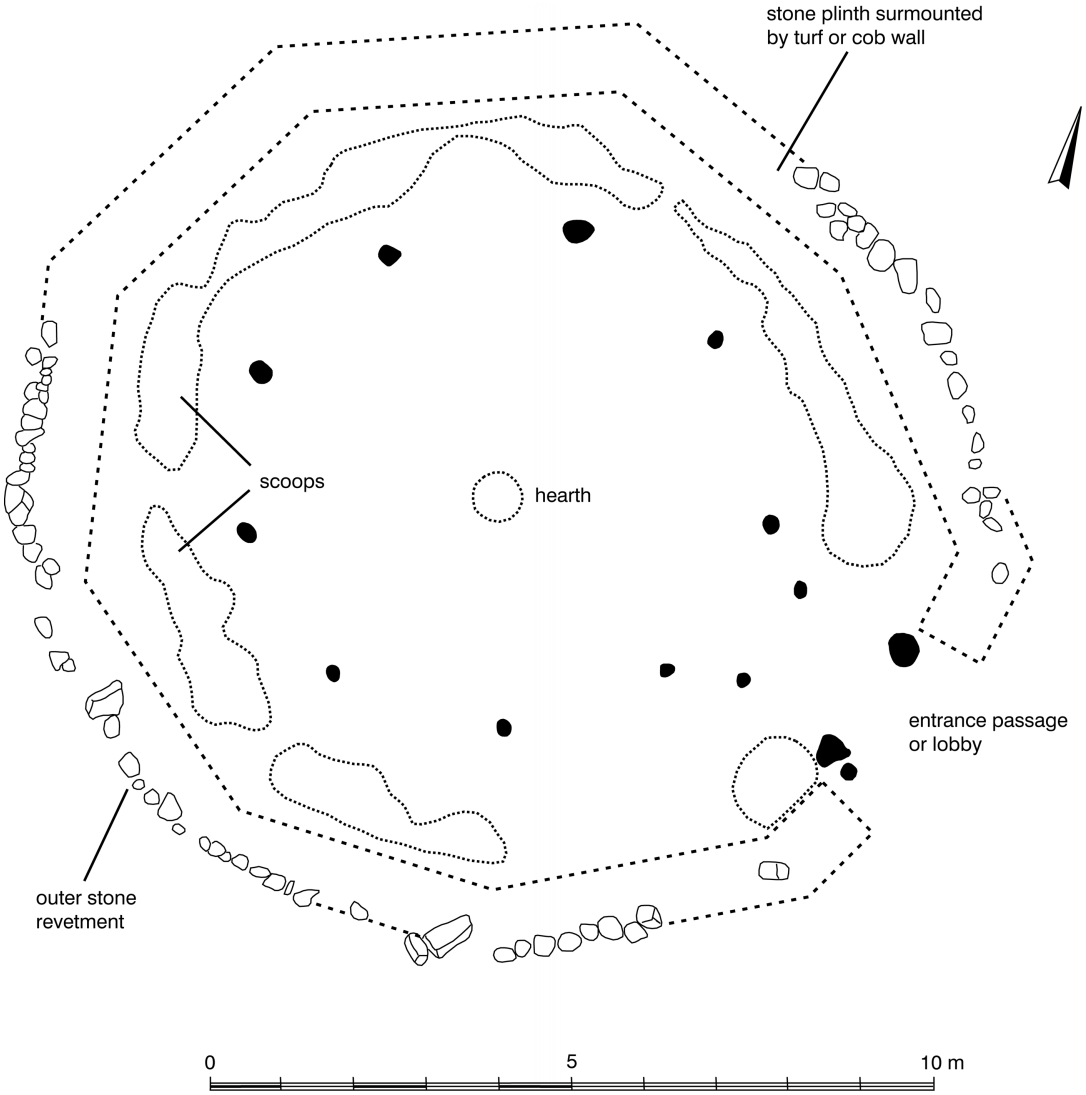

Fig. 5 Reconstructed plan of the roundhouse.

on the plan (fig. 3), the individual segments also tended to run parallel with the straight line sections of the ring-bank, as defined by the outer revetment, though the match between the two was not always very precise.

The interpretation of the scoops proposed here is that they reflect concentric zoning in the use of the floor space within the building, with the peripheral space between the wall and the ring of internal roof supports being functionally distinct from the central area around the hearth. The 'causeways' that divide the gully into segments might then reflect the placing of radial partitions around the periphery of the house, dividing this area into discrete sections, such as may have been used for storage or to accommodate items of furniture such as box

beds or cupboards. A greater degree of privacy could perhaps also have been obtained by hanging curtains from the ring-beam carried by the internal ring of posts, though of course there could be no archaeological evidence of this especially in the absence of any meaningful artefact scatters. Periodic cleaning out of bedding material, or sweeping of the empty space underneath raised sleeping platforms, or simple wear, might then be invoked to account for these scoops. Such an arrangement further implies that the peripheral region of the house was regarded as more or less personal space and different from the central part, focussed round the hearth, which might have been used for more communal purposes such as cooking, eating and the reception of guests. Unfortunately, the virtually complete absence of finds makes it impossible to test this hypothesis by analysing patterns of loss or discard within the building. Accordingly, one can only appeal to the fact that concentric and radial spatial patterning is already a widely recognised feature of Iron Age buildings, in contexts as far distant as the wheel houses of Northern Scotland or the timber-built roundhouses of Wessex, on which the Butser reconstruction was based. Closer to home, the question of differential use of space inside a roundhouse at South Shields, dated *c.* 400/200 BC, has been explored by analysing the distribution of organic remains and artefacts (Hodgson *et al* 2001).

Fig. 5 illustrates the main elements of the reconstructed plan of the building. The polygonal shape of the turf and stone wall has been arrived at by extrapolation from the surviving portions of the outer stone revetment of the ring-bank. As will be apparent, the angles between the straight sections fall on radii drawn outwards from the centre of the building through each of the nine post-holes that held the inner ring of timber uprights supporting the ring-beam. By ensuring that the sides of the two polygons remain strictly parallel, this arrangement assists in the secure fastening of the principal rafters and increases the overall stability of the building. Assuming that the outer wall was at least 1.0 m thick and 1.25 m high, and that the wall-plate ran close to the outer face of the wall, there would be sufficient headroom inside the building to allow a person to stand upright close against the wall without there being any need to lower the level of the floor around the periphery. In other words, there would be no necessity to provide scoops or a ring-ditch for this purpose.

Area B: The field

Trench B was set out to sample the interior of the field together with a section of its boundary where it ran closest to the roundhouse.

After removing a layer of superficial peaty turf, from 4 to 20 cm thick, the field perimeter was revealed as a linear dump of stone standing 1.5 to 2.0 m broad and up to 0.5 m high. None of the rubble showed any sign of purposeful arrangement, nor was there anything to indicate that it might represent the remains of a collapsed stone wall. Nor, in its present form, could the boundary have functioned as a stock-proof barrier unless it had been surmounted by some additional obstacle such as a hedge, a fence or a bank of soil or turves.

The area chosen for excavation took in one of several breaks in the field boundary that had been identified during the earthwork survey. Being the nearest to the roundhouse, it was thought this might perhaps represent a contemporary entrance into the field. However, the gap proved to be no more than 2.0 m wide and showed no signs consistent with its use as a formal gateway. There were, for example, no post-holes for a gate or any flanking stone uprights nor had the stone rubble been built up on either side to form a passageway capable of being blocked by a hurdle.

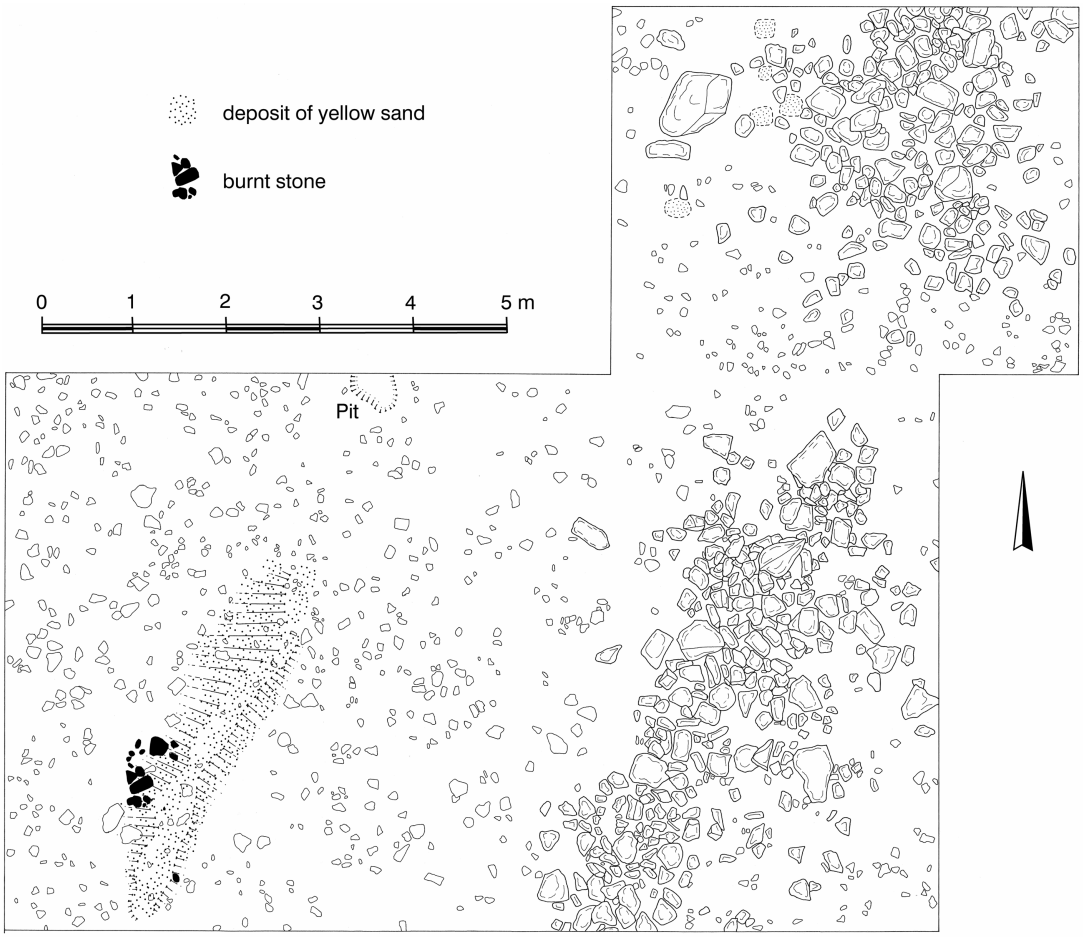

Fig. 6 Area B: The field.

In the field interior, the superficial peat rested on a layer of leached sandy soil, 7 to 15 cm deep, that was identical to the soil already encountered in the excavation of the roundhouse (context [2], above). As before, a remarkably well developed horizon of ironpan was present at the base of this soil, at or near the point of contact with the underlying boulder clay. This, and the accompanying changes in colour and texture of the overlying soil layer brought about by leaching, meant there was no possibility of identifying a buried soil or a turf line had such been present, whether in the interior of the field or under the rubble of the perimeter bank.

As shown on the plan (fig. 6), there was a marked contrast in size between the stones left lying in the interior of the field compared with those that were incorporated into the surrounding bank. Thus, whereas the great majority of stones left behind in the field measured only 5 to 10 cm across, and the largest no more than 30 cm, most of those in the excavated section of the bank had dimensions of the order of 15 to 25 cm, with the addition of some larger boulders measuring as much as 60 cm across. The obvious inference is that the larger stones had been selectively picked off the field and dumped round the edge or added

to one of the nearby clearance cairns. In the absence of ard marks or other direct evidence for cultivation, whose identification would in any case almost certainly have been obviated by the ironpan, this is the best evidence we have that the field was used for the cultivation of crops.

In excavating the field interior, a slight linear bank or mound, composed of a mixture of dirty yellow sand and clay, came to light some 4.0 m inside the field boundary. On the downslope edge of this deposit lay a scatter of fire-reddened stones including one smoothed piece of unburned sandstone that may have been used as a hone (*v*. Finds). At the northern edge of the trench, an irregularly-shaped pit, up to 50 cm in diameter and 20 cm deep, projected from beneath the baulk. As this could not be fully investigated, its purpose remains obscure, though it did not appear to be a post-hole. Apart from the possible hone referred to above, the only other finds from Area B were three pieces of sandstone with smoothed surfaces, one of which was recovered from the field interior and the other two from the rubble of the perimeter bank (*v*. Finds).

Area C: The clearance cairn

This cutting was set out to examine one of the four small cairns situated in the interior of the field. Beneath a superficial covering of peat, the cairn material appeared as a loose dump of weathered stones, *c*. 4 m in diameter and standing to a maximum height of 60 cm. Except that most of the larger stones were concentrated towards the base, the cairn material showed no sign of deliberate arrangement. This being so, it can best be accounted for as a collection of field stones picked off the surrounding land in the course of cultivation, starting with the largest boulders and followed over a period of time by a covering of smaller stones as clearance progressed. In excavating the cairn, nothing was found to indicate that it had played any part in the disposal of the dead and finds were limited to a broken slab of sandstone with one partly smoothed surface retrieved from the body of the cairn, and a single chip of flint obtained from the leached soil close to its eastern edge (*v*. Finds).

What is perhaps most interesting is the discovery that the stones of the cairn had been heaped up around the trunk or stump of a tree some time before it rotted away. The position of the tree was initially suggested by a depression in the top of the cairn, apparently created by the slumping of the cairn material into a void left by the rotting of the wood, an interpretation that was later confirmed by the discovery of a tree-root hollow in the natural yellow clay underlying the stones at centre of the cairn. This took the form of an irregularly-shaped

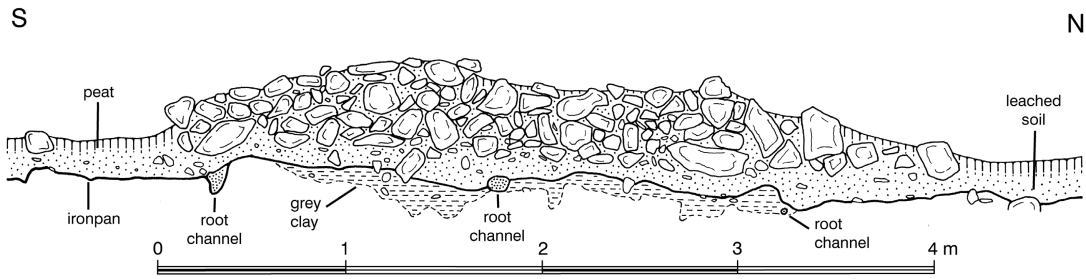

Fig. 7 Area C: Section through the clearance cairn.

pocket of light grey clay from which a series of root channels, filled with a dark brown silty loam, radiated outwards (fig. 7). A few small fragments of oak charcoal, weighing less than 5 g in total, were recovered from one of these root channels but the sample was judged too small for radiocarbon dating. In any case, as there was no sign of any burning having taken place *in situ*, there could be no suggestion that this charcoal belonged to the actual tree round which the cairn material had accumulated. Rather, it may represent material arising from a pre-cairn phase of landuse and one not necessarily connected either with the building of the cairn or the cultivation of the field.

SMALL FINDS

Pottery

Not illustrated. One undecorated wall sherd was recovered from the site. The fabric is fine-textured and a uniform buff-orange in colour and though it contains coarse grits up to 6 mm across these do not break the surface which is smooth to the touch. With a thickness of only 8 mm, it is considerably thinner than most, if not all, the domestic pottery recovered from the late Bronze Age unenclosed settlements at Green Knowe or Standrop Rigg, for example (Jobey 1980; 1983). Although heavily abraded the sherd more closely resembles early Bronze Age pottery and could even be a residual sherd of Beaker. Whether it was deliberately placed in the pit or became incorporated in the fill by accident is of course not known. Pit [23], Area A.

Flint

1. A barbed and tanged arrowhead of Sutton b type (Green 1980) in grey translucent flint (fig. 8.1). Found at the base of the leached soil [2] within the ring-bank, and only 1.2 m from the edge of the putative grave [12], Area A.

Seven other pieces of struck flint were recovered from the site, six from Area A and one from Area C. Most are of unpatinated translucent grey flint, though one piece of honey-coloured flint is also present. All are waste, except for two blades which have retouch or signs of wear consistent with their use as cutting or scraping tools.

Stone

2. Saddle quern (fig. 8.2). Two conjoining halves of the same quern made of local sandstone and worn thin by use. Broken in antiquity and the parts then re-used in contrasting ways. One half (8.2a) exhibits groups of secondary scratches running in parallel across the smoothed surface of the stone while the grinding surface of the matching half (8.2b) is scored by peck marks or abrasions inflicted by some form of percussion. 8.2b was recovered from the small, pit-like depression within the roundhouse [14] and 8.2a from an area of paving outside the ring-bank, Area A.

3–4. Rubbers and pounders. Two slightly larger than fist-sized cobbles of local sandstone which can be held comfortably with one hand. In both cases the surface of the stone has been worn into multiple facets by grinding. The example illustrated, which was found in the rubble of the ring-bank [3], also has secondary damage to one edge consistent with its use as a hammer stone (fig. 8.3). The other stone was an unstratified find, Area A.

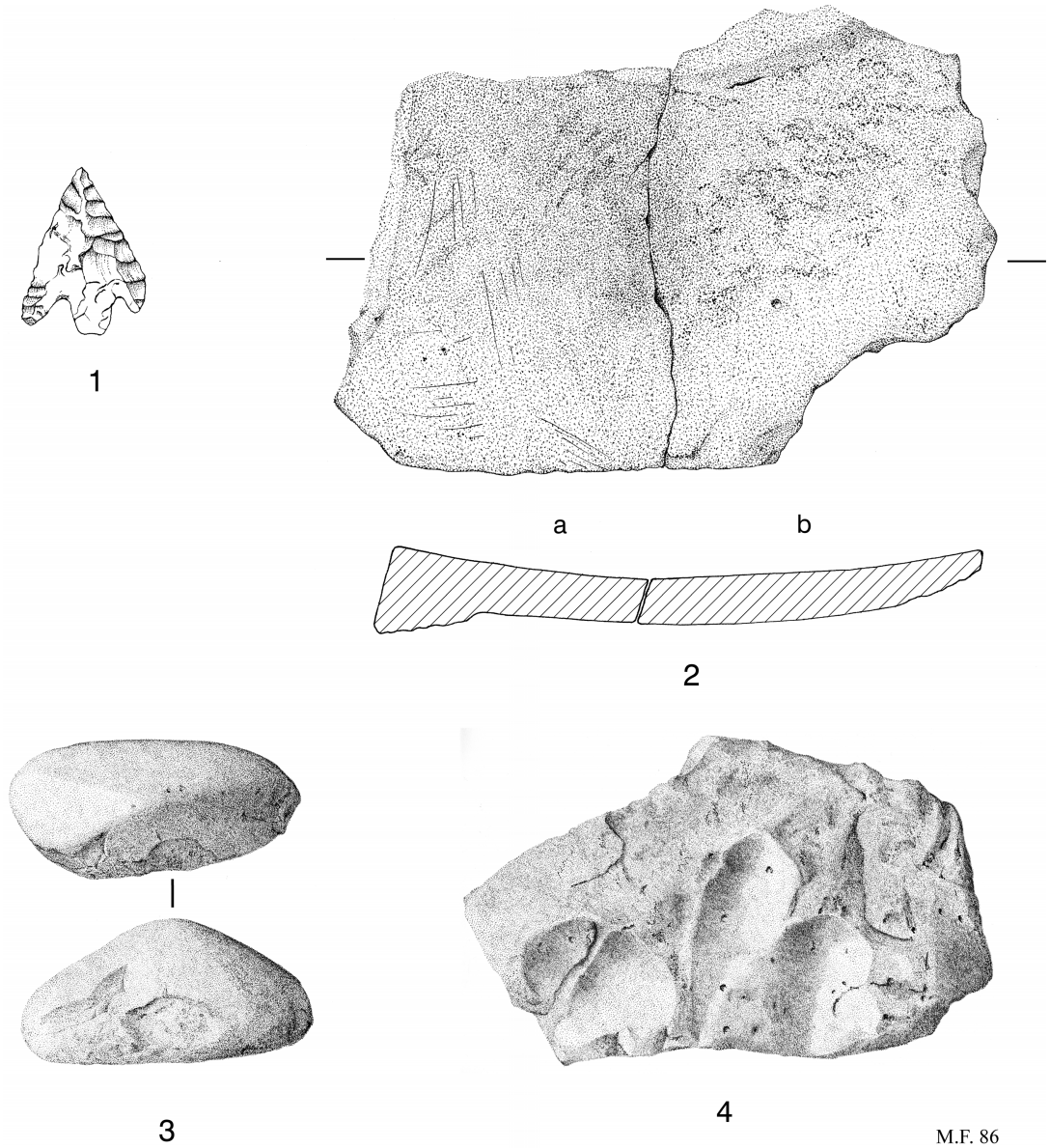

Fig. 8 1, Barbed and tanged arrowhead (1:1); 2, Saddle quern (1:4); 3, Rubber (1:4); 4, Facetted stone (1:4).

5. Faceted stones. An irregularly-shaped chunk of local sandstone with concave facets consistent with its having been used to grind or sharpen an implement with a curved or hollow-ground blade (fig. 8.4). The stone has four or five oval facets, each slightly bigger than a large serving spoon and 6.5 to 8 mm deep. From the rubble of the ring-bank, Area A.

Not illustrated. A large slab of local sandstone with three concave facets on one face. Again these are oval in shape, the largest measuring 60 mm by 35 mm and up to 3.5 mm deep.

Found in the roundhouse interior at the interface between the leached soil [2] and the occupation earth [6], Area A.

6. Hone. A small plaque of sandstone with one smooth surface which appears to have been used as a hone. Recovered from a deposit of dirty yellow sand within the field, Area C.

7. Stones with smoothed surfaces. Thirteen pieces of sandstone with rubbed or smoothed surfaces were recovered from various contexts, including the interior of the roundhouse and the rubble of the ring-bank in Area A; the rubble of the bank enclosing the field and the field interior in Area B; and the rubble from the body of the clearance cairn in Area C. Although some of these stones are small enough to be held in the hand, others were slabs too large and heavy for this to have been either convenient or possible. In most cases the smoothing has resulted in a slightly dished surface, sometimes showing a faint gloss, though the majority of stones have slightly uneven or irregularly ridged surfaces. Some stones have also suffered secondary abrasion, resulting in a variety of pecks or scratches. Due to their fragmentary state, the purpose of these stones is not easy to ascertain though it is likely that some represent broken quernstones (cf. Dryburn Bridge (Dunwell 2007, 75f.); and Douglasmuir (Kendrick 1995, 58)). Not illustrated.

Radiocarbon Dates

Table 1 Radiocarbon dates in tabulated form.

Ten radiocarbon dates are available for contexts in Area A as set out in the following table. Six are conventional determinations on wood charcoal by the Harwell laboratory and four are accelerator dates obtained on cereal grains and chaff fragments by the Oxford Radiocarbon Accelerator Unit. Calibration is by means of the OxCal v 4.0.5 programme (Bronk Ramsey 2005; 2009) and date ranges are given at the 2σ confidence limit (see also fig. 9).

Laboratory number	Context	Sample	δ13C(‰)	Radiocarbon Age (BP)	Calibrated date range (95% confidence)
Area A					
HAR-4788	[8] – fire debris	charcoal	-27.7	2520±70	cal BC 820–400
HAR-4789	[8] – fire debris	charcoal	-27.6	2560±60	cal BC 830–410
HAR-4788/4789 combined result					cal BC 810–520
OxA-1766	[8] – fire debris	emmer grain	-26	2560±70	cal BC 840–410
HAR-4800	[10] – post-hole	charcoal	-27.5	2780±80	cal BC 1190–800
HAR-8184	[21] – post-hole	charcoal	-27	3130±60	cal BC 1520–1260
HAR-8185	[25] – pit	charcoal	-26.6	2710±70	cal BC 1020–780
OxA-1765	[25] – pit	spelt grain	-26	2750±70	cal BC 1060–790
HAR-8183	[23] – pit	charcoal	-27.2	2960±60	cal BC 1390–1000
OxA-1763	[23] – pit	spelt chaff	-26	2840±70	cal BC 1260–830
OxA-1764	[23] – pit	spelt grain	-26	2895±70	cal BC 1320–900

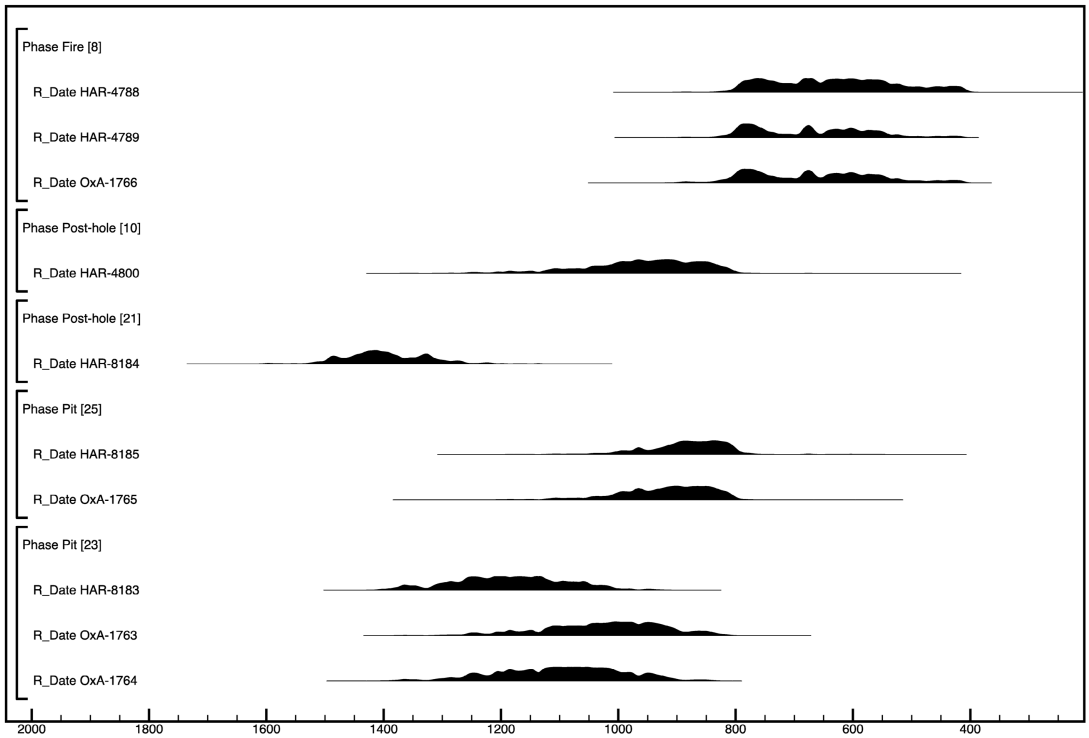

Fig. 9 Probability distributions of dates from Halls Hill. All have been calculated using the calibration curve of Reimer, *et al*. (2004) and the computer program OxCal v 4.0.5) (Bronk Ramsey 1995; 1998; 2001, 2009) (see also Table 1).

The Carbonised Plant Remains

Dr Marijke van der Veen

Introduction

Sediment samples were collected from ten post-holes belonging to the roundhouse contexts [16] to [21], [24], [26] to [28], as well as from two pits, contexts [23] and [25], and the residue of a large fire, context [8]. The samples were first air-dried, and then subjected to manual flotation using an 0.5 mm mesh sieve, in order to extract any carbonised plant remains from the sediments. The flots were dried and sorted under the microscope; and the seeds were identified using up to 50x magnification.

The samples collected during the 1981 season were rather small (only *c*. 2 litres of sediment in volume), with the exception of the sample from the residue of the fire context [8], which was *c*. 70 litres in volume. The results of these samples were briefly discussed in van der Veen 1985. The samples collected during the 1986 season were larger, producing an appreciable increase in the information available. The results of the archaeobotanical analysis of all samples are given in Tables 2 and 3, which also list the individual sample volumes.

Results

A total of 2964 seeds and other plant fragments were found in the samples. With the exception of the sample from the fire, context [8], all samples were dominated by fragments of cereal chaff. Only small quantities of cereal grains and weed seeds were found. The sample from the fire, however, consisted largely of cereal grains. In the Tables the results are grouped into four categories: cereals; chaff; other possible food plants; and weeds. They will be discussed here in that order.

Cereals

At least three different cereal species have been identified: emmer wheat, spelt wheat and barley. Three grains of oat (*Avena* sp.) were also found, but the absence of any floretbases makes it impossible to determine whether these grains belonged to the wild or cultivated species of oats.

Wheat grains are very difficult to identify on the basis of grain morphology alone. They have been divided into three groups: those which resemble emmer wheat, *Triticum cf. dicoccum*, i.e. grains with a curved and ridged dorsal side and tapered ends; those which resemble spelt wheat, *Triticum cf. spelta*, i.e. relatively flat grains with rather more rounded ends; and those which were too badly preserved to allow any reliable identification, i.e. *Triticum* sp. Of the identifiable wheat grains emmer is by far the most common species with 104 grains, against only 29 of spelt.

Only a small number of barley grains was found. They were generally badly preserved, often without their surface coat. Of those which were well enough preserved, seven grains showed the characteristic features of hulled barley, i.e. ridges on the dorsal surface and a slightly angular cross-section; four grains showed very faint ridges only; while two grains showed no ridges at all, but were rather smooth and rounded in cross-section. This suggests that both the hulled and the naked varieties of barley are present, although the small number of grains available makes the results rather unreliable. Both twisted and straight grains were found, indicating that we are dealing with six-row barley, *Hordeum vulgare*.

Chaff

A very large number of cereal chaff fragments was found in the samples (2202 fragments in total), and they corroborate the identifications of the grains as described above. The glume-bases of emmer and spelt wheat can be more easily separated than the grains themselves, and they confirm the dominance of emmer in the samples.

The identifications of the glumebases are based on two features, i.e. the venation pattern on the glumes, and the angle between the glume faces (I gratefully acknowledge the advice of Gordon Hillman on this matter). On emmer glumes both the primary and secondary keel are strongly developed, while the tertiary veins in between are only faintly visible. On spelt glumes the primary keel is prominent, but less strongly developed than on emmer. The tertiary veins, by contrast, are so prominent that they can barely be distinguished from the secondary keel. The angle between the glumefaces on either side of the primary keel of emmer is less than 90°, but greater than 90° in spelt. The angle on either side of the secondary keel is distinct, though obtuse, in emmer, while in spelt the angle is hardly present; here, the faces form a more or less smooth curve.

When these identification criteria were applied to the glumebases found in the samples, 1013 could be identified as belonging to emmer, *Triticum dicoccum*, and 45 as belonging to spelt, *Triticum spelta*. A further 113 glumebases resembled spelt, but were not well preserved and did not display all features. They have, therefore, been listed with the glumebases which were too badly preserved to be identified, i.e. glumebases *Triticum* sp. In a number of cases two glumebases were found still attached to one another, forming a spikeletbase, and occasionally the lower internode was also attached, forming a spikeletfork. They all resembled emmer spikelets (having a wide angle between the glumebases).

The rachis internodes all belonged to a brittle rachis wheat, although 14 out of 125 fragments found had not, in fact, been broken off at the normal point of abscission, but instead, had been torn off somewhere in the middle of the internode. They were no longer attached to a spikeletbase. They did not, however, resemble the internodes of a tough rachis wheat. These "tough rachises" of a brittle rachis wheat probably represent some unripe emmer (or spelt) ears, which during threshing did not break up in the normal way (Hillman, pers. comm.). The rachis internodes were generally too badly preserved to show traces of veins on the outer surface, and they have not been further identified.

A small number of barley internodes was found. Most of them were very fragmented, but two clearly belonged to the six-row variety, *Hordeum vulgare*. The awn fragments of *Avena sp*. (oat) could not be identified to either the cultivated or the wild variety.

Other possible food plants

Two of the species in this category, hazelnut, *Corylus avellana*, and raspberry/blackberry, *Rubus* sp. are fruits probably collected from the wild as a supplement to the diet of cultivated food plants. The numbers of hazelnuts in the tables refer to numbers of fragments only; the number of actual nuts is probably *c*. 10.

Two seeds of *Linum* (flax) were found. They both possessed the characteristically beaked shape and one of the seeds showed the distinct cellular surface of the flax. They were rather small (3.33 × 1.81 mm and 3.15 × – mm), but, allowing for a reduction in size due to carbonisation, they do fall into the lower size range of the cultivated flax, *Linum ussitatissimum*. The fresh seeds of *Linum bienne* Mill are only *c*. 3 mm in length, and have a less clearly defined beak. *Linum bienne* occurs to-day in dry grassland, especially near the sea, from the Isle of Man, Lancashire and Yorkshire southwards, and is commonest in the south-west (Clapham *et al* 1962). Halls Hill lies outside the present day range for *Linum bienne*, and this, combined with the size of the carbonised seeds and their beaked appearance, makes it most likely that we are dealing here with the cultivated species, *Linum ussitatissimum*.

Weeds

The species in this category can be divided into a number of different groups. First of all there are the ruderals, species that thrive on waste places and around habitation sites, where nitrogen levels in the soil are high. These species, such as *Chenopodium album* (fat hen), *Atriplex* (orache), *Stellaria media* (chickweed), *Polygonum lapathifolium* (pale persicaria), *Polygonum persicaria* (red shank), and *Rumex* spp. (docks), occur with almost monotonous regularity in all carbonised seed assemblages from settlement sites. Then there are the true arable weeds, such as *Polygonum convolvulus* (black bindweed), *Spergula arvensis* (corn spurrey), and *Stachys arvensis* (field woundwort), and the species which are often found as arable weeds, such as

Chenopodium album (fat hen), *Atriplex* (orache), *Bromus* (bromegrass), *Plantago major* (great plantain), *Rumex acetosella* (sheep's sorrel), *Rumex* spp. (docks), Graminaea (grasses), and Leguminosae (small seeded legumes). The plantains, *Planatago lanceolata* (ribwort plantain), *Planatago major* (great plantain), and *Plantago media* (hoary plantain) are common roadside and meadow plants, but the first two occur so frequently in carbonised seed assemblages that they may well have behaved like arable weeds in the past. *Veronica scutellata* (marsh speedwell), *Ajuga reptans* (bugle), and *Lycopus europaeus* (gipsy-wort) indicate the presence of some fairly damp conditions. *Veronica* and *Ajuga* are usually found in damp meadows, while *Lycopus* grows on the banks of rivers and ditches. The sedges, *Carex* spp., also prefer rather damp ground.

Most of the species found are rather indifferent to the pH levels of the soil, but *Spergula arvensis, Rumex acetosella, Veronica scutellata, Stachys arvensis*, and *Carex* spp. generally prefer rather acid soils.

Carbonised Plant Remains: Discussion

Both the cereal grain and the cereal chaff indicate that emmer wheat, *Triticum dicoccum*, is the dominant crop plant at Halls Hill. Both spelt wheat, *Triticum spelta*, and barley, *Hordeum vulgare*, occur in rather small quantities only. The only other crop plant found is flax, *Linum ussitatissimum*.

Emmer wheat is the principal wheat species during early British prehistory, only to be replaced by spelt wheat sometime during the first millennium BC. The exact timing for the change from emmer to spelt in Britain has not yet been firmly established, but there are likely to have been regional differences. The evidence from southern Britain suggests that the first half of the first millennium BC was a period of agricultural innovation, witnessing the introduction of many new crop plants (Helbeck 1952; Jones 1981). By *c.* 500 BC the new introductions, such as spelt wheat, seem firmly established at the expense of the previously cultivated species, such as emmer (Jones 1981). Until recently it was assumed that in northern Britain emmer remained the principal wheat during the Iron Age (Jones 1981), but evidence from a number of late Iron Age settlement sites, such as Coxhoe, Co. Durham, Thorpe Thewles, in Cleveland, and Stanwick, North Yorkshire, has indicated that by the late Iron Age at least spelt wheat had replaced emmer wheat as the commonest wheat in these northern counties (Van der Veen and Haselgrove 1983; Van der Veen 1992). The date of the introduction of spelt wheat in northern Britain is still unknown, due to the lack of carbonised seed assemblages from early Iron Age or Bronze Age sites. Halls Hill is the first late Bronze Age site in the region from which botanical remains have been analysed, and the presence of spelt wheat at Halls Hill as a minor component of the assemblage is of great importance, as it provides the earliest record for the region. This also shows the great value of collecting large numbers of samples of sufficient size from each settlement site, as the small assemblage collected during the 1981 season had not produced any conclusive evidence for spelt.

The evidence from the barley grains is unreliable considering the very low number of identifiable grains, but it would appear that both naked and hulled barley are present. The late Bronze Age in Britain is, in fact, the period during which naked barley was replaced by hulled barley.

The flax seeds are the first to be found in northern Britain, but examples of Bronze Age date are known from other parts of the country (Helbaek 1952). The plant could have been grown either for its oily protein-rich linseeds, or for its stem fibres.

Table 2 Carbonised seeds from post-holes of the roundhouse, contexts [16] to [28]

Context	16	17	18	19	20	21	24	26	27	28	Total
Volume in litres	±2	±2	10	±2	±2	11	8	12	10	12	±71
Cereals											
Triticum cf. dicoccum (emmer wheat)	.	.	1	.	.	2	.	1	.	.	4
Triticum cf. spelta (spelt wheat)	.	.	.	.	.	.	.	.	.	.	.
Triticum sp. (wheat)	.	.	2	1	.	.	.	.	.	.	3
Hordeum vulgare (six-row barley)	.	1	2	.	.	1	.	.	.	.	4
Avena sp. (oat)	1	.	.	.	.	.	.	.	.	.	1
Cerealia sp.	.	.	.	.	.	2	1	2	.	3	8
Chaff											
glumebases Triticum dicoccum	1	.	91	.	.	21	9	81	54	27	284
glumebases Triticum spelta	.	.	4	.	.	.	1	.	.	.	5
glumebases Triticum sp.	.	.	44	.	.	9	4	23	20	11	111
internodes of a brittle rachis wheat	.	.	4	.	.	.	.	4	11	1	20
tough internodes of a brittle rachis wheat	.	.	2	.	.	.	.	.	2	.	4
rachis internodes Hordeum sp.	.	.	7	1	.	4	1	1	2	1	17
awn fragments Avena sp.	.	.	.	.	.	.	.	.	2	.	2
Other possible food plants											
Linum cf. ussitatissimum (flax)	.	.	1	.	.	.	.	.	.	.	1
Rubus sp. (raspberry/blackberry)	.	.	.	.	.	.	.	.	1	.	1
Corylus avellana (hazelnut), shell fragm.	.	.	1	.	.	.	4	2	1	2	10
Weeds											
Ranunculus, Subgenus Ranunculus (buttercup)	.	.	.	.	.	.	.	.	1	.	1
Brassica sp. (wild cabbage or mustard)	.	.	.	.	.	.	.	1	.	.	1
Stellaria media (L) Vill (chickweed)	.	.	.	.	.	1	.	.	1	.	2
Spergula arvensis L. (corn spurrey)	.	.	.	.	.	.	.	.	.	.	.
Atriplex sp (orache)	.	.	3	.	.	.	.	.	.	.	3
Chenopodium album L. (fat hen)	1	.	2	.	.	.	.	2	2	.	7
Chenopodium sp.	.	.	1	.	.	.	.	.	.	.	1
Leguminosae indet. (small leguminous weeds)	.	.	.	.	.	.	1	.	1	2	
Polygonum lapathifolium L. (pale persicaria)	.	.	1	.	.	.	2	1	4		
Polygonum persicaria L. (red shank)	.	.	1	.	.	.	.	.	1		
Polygonum lap/pers	.	.	.	.	.	.	.	.	.	.	.
Polygonum convolvulus L. (black bindweed)	.	.	.	.	.	.	.	.	.	.	.
Rumex acetosella L. (sheep's sorrel)	.	.	.	.	.	.	.	.	1	.	1
Rumex spp. (docks)	.	.	.	.	.	.	.	.	.	.	.
Veronica cf. scutellata L. (marsh speedwell)	.	.	.	.	.	.	.	.	.	.	.
Ajuga reptans L. (bugle)	.	.	.	.	.	.	.	.	.	1	1
Stachys arvensis (L) L. (field woundwort)	.	.	.	.	.	.	.	.	.	.	.
Lycopus europaeus L. (gipsy-wort)	.	.	.	.	.	.	.	.	3	.	3

Table 2 Carbonised seeds from post-holes of the roundhouse, contexts [16] to [28] (continued)

Context	16	17	18	19	20	21	24	26	27	28	Total
Volume in litres	±2	±2	10	±2	±2	11	8	12	10	12	±71
Plantago media L. (hoary plantain)	.	.	.	.	.	.	.	.	.	.	.
Plantago major L. (great plantain)	.	.	.	.	.	.	.	.	.	.	.
Plantago lanceolata L. (ribwort plantain)	.	.	.	.	.	.	.	.	.	.	.
Bromus sp. (bromegrass)	.	.	.	.	.	.	.	.	.	.	.
cf. Sieglingia decumbens (heath grass)	.	.	.	.	.	1	.	.	.	.	1
small grasses	.	.	.	.	.	1	.	1	7	.	9
Gramineae indet. (grasses)	.	.	.	.	.	.	2	.	.	.	2
rhizome Gramineae indet.	.	.	.	.	1	.	.	.	.	.	1
Carex spp. (sedges)	.	.	.	.	2	.	.	1	.	.	3
indet.	.	.	1	2	.	2	1	.	2	1	9
Total	3	1	168	4	3	44	25	120	111	48	527
Density of seeds per litre	1.5	0.5	16.8	2	1.5	4	3.1	10	11.1	4	7.4

Table 3 Carbonised plant remains from two pits, contexts [23] & [25], and the residue of a fire, context [8]

Context	23a	23b	23c	23d	23e	23f	23g	25l *	25u *	8	Total
Volume in litres	10	10	10	10	10	10	4	17	17	70	168
Cereals											
Triticum cf. dicoccum (emmer wheat)	7	4	2	5	4	1	.	23	36	18	100
Triticum cf. spelta (spelt wheat)	.	.	1	.	1	1	.	6	18	2	29
Triticum sp. (wheat)	.	6	4	2	1	1	.	16	57	33	120
Hordeum vulgare (six-row barley)	4	6	.	5	2	1	1	4	5	6	34
Avena sp. (oat)	.	.	.	1	.	.	.	.	.	1	2
Cerealia sp.	5	7	5	7	10	3	2	36	63	29	167
Chaff											
glumebases Triticum dicoccum	86	38	70	98	58	90	12	133	157	5	747
glumebases Triticum spelta	4	3	7	10	3	5	.	3	5	.	40
glumebases Triticum sp.	99	49	54	133	80	95	22	117	176	.	825
internodes of a brittle rachis wheat	9	5	8	21	8	7	5	18	24	.	105
tough internodes of a brittle rachis wheat	.	.	2	2	3	1	.	.	.	2	10
rachis internodes Hordeum sp.	6	.	2	3	4	6	.	4	2	.	27
awn fragments Avena sp.	1	.	1	1	1	1	.	.	.	5	
Other possible food plants											
Linum cf. ussitatissimum (flax)	.	.	.	.	.	.	.	1	.	.	1
Rubus sp. (raspberry/blackberry)	.	.	.	.	.	.	1	.	.	1	2
Corylus avellana (hazelnut), shell fragm.	5	5	.	9	8	.	1	2	1	.	31

Table 3 Carbonised plant remains from two pits, contexts [23] & [25], and the residue of a fire, context [8] (continued)

Context	23A	23B	23C	23D	23E	23F	23G	25L *	25U *	8	Total
Volume in litres	10	10	10	10	10	10	4	17	17	70	168
Weeds											
Ranunculus, Subgenus Ranunculus (buttercup)	1	.	.	.	2	.	.	.	.	.	3
Brassica sp. (wild cabbage or mustard)	.	.	.	.	.	.	.	.	.	.	.
Stellaria media (L.) Vill (chickweed)	.	.	1	.	1	.	.	.	.	.	2
Spergula arvensis L. (corn spurrey)	.	.	.	.	.	.	.	.	1	.	1
Atriplex sp (orache)1	2	.	2	1	2	.	.	1	.	9	
Chenopodium album L. (fat hen)	.	5	2	5	2	4	.	2	.	.	20
Chenopodium sp.	.	.	.	.	.	1	.	.	.	.	1
Leguminosae indet. (small leguminous weeds)	.	.	2	2	.	.	.	.	.	.	4
Polygonum lapathifolium L. (pale persicaria)	1	1	.	1	2	1	.	1	.	.	7
Polygonum persicaria L. (red shank)	.	2	.	1	3	1	2	1	.	.	10
Polygonum lap/pers	.	1	.	3	1	1	.	.	1	.	7
Polygonum convolvulus L. (black bindweed)	.	.	.	1	.	.	.	.	.	.	1
Rumex acetosella L. (sheep's sorrel)	.	.	.	.	.	.	.	.	.	.	.
Rumex spp. (docks)	.	1	.	1	.	.	.	.	.	2	4
Veronica cf. scutellata L. (marsh speedwell)	.	.	3	4	3	2	.	.	.	.	12
Ajuga reptans L. (bugle)	.	1	.	.	1	.	.	.	.	.	2
Stachys arvensis (L) L. (field woundwort)	.	.	.	1	.	.	.	.	.	.	1
Lycopus europaeus L. (gipsy-wort)	.	.	.	.	.	.	.	.	.	.	.
Plantago media L. (hoary plantain)	.	.	.	.	.	.	.	.	.	1	1
Plantago major L. (great plantain)	.	.	.	1	2	.	.	.	.	.	3
Plantago lanceolata L. (ribwort plantain)	.	.	1	.	.	.	.	1	.	.	2
Bromus sp. (bromegrass)	1	.	.	2	2	.	.	.	1	.	6
cf. Sieglingia decumbens (heath grass)	.	.	.	.	.	.	.	.	.	.	.
small grasses	4	7	.	3	7	2	1	5	6	.	35
Gramineae indet. (grasses)	1	1	.	5	.	1	2	2	1	.	13
rhizome Gramineae indet.	.	.	.	.	.	.	.	.	.	.	.
Carex spp. (sedges)	4	.	1	4	5	2	1	2	2	.	21
indet.	5	2	1	5	7	3	.	2	2	.	27
Total	244	146	167	338	222	232	50	379	559	100	2437
Density of seeds per litre	24.4	14.6	16.7	33.8	22.2	23.2	25	22.3	32.9	1.4	14.5

KEY: * = only 25% of sample sorted, numbers represent seeds in subsample only.

23A, B, C, etc. = subsamples of context 23

25L and 25U = lower & upper fill of context 25

The very large numbers of chaff fragments, particularly in the samples from the pits, contexts [23] and [25], and the post-holes, contexts [16] to [21], [24], and [26] to [28], combined with the low numbers of weeds and grains, suggest that this material was in a semi-cleaned state with the grain still in the spikelets. In damp climates grain of the glumewheats was often stored in the spikelet, after which all processing tended to take place in a piecemeal way throughout the year, as and when clean grain was required (Hillman 1981). The large numbers of glumebases and the rachis internodes and weed seeds represent the waste material thrown away after the final cleaning of the grain prior to food preparation. Interestingly, the sample from the residue of the fire, context [8], was the only sample to consist of almost pure grain.

While it is not possible to determine with certainty precisely where the crop plants were grown, the absence of culmbases and culmnodes of cereal straw, and the very low numbers of cereal grains (especially in the samples from the post-holes) suggest that crops were not cleaned in the roundhouse itself. Nevertheless, arable agriculture was certainly practised in the vicinity of the site, as cereal pollen has been found in a number of pollen diagrams for the region. At Steng Moss (*c.* 7 km NE of Halls Hill), for example, small-scale clearance phases are recorded in the Bronze Age, with cereal pollen present at levels dated to 1065±45 bc and 636±45 bc. From 578±35 bc onwards a period of limited, but continuous, forest clearance has been recorded (Davies and Turner 1979).

In conclusion, the carbonised plant assemblage recovered from Halls Hill has provided the first information regarding arable agriculture in northern England during the late Bronze Age, and has produced the earliest records of spelt and flax for the region. The enormous importance of large-scale sampling and flotation on these sites has been demonstrated by the greatly improved quantity and quality of the evidence provided by the total assemblage, as compared with the 1981 assemblage only.

Carbonised Plant Remains: Acknowledgements

The archaeobotanical analysis was financed by the former Ancient Monuments Laboratory of the Historic Buildings and Monuments Commission for England (now English Heritage). I am very grateful to Gordon Hillman for giving me his detailed descriptions of the identification criteria for chaff fragments of the glumewheats.

Note: Dr van der Veen's report was submitted in February 1987 as Ancient Monuments Laboratory Report 48/87 and has been reproduced here without significant alteration.

Wood Charcoal

The identification of wood species was undertaken by Mrs Anne Miles and results are set out in Table 4.

Bone

Two samples of burned or cremated bone were recovered, one from pit [23] (36.8 gm) and the other from pit [25] (2.3 g). In both cases the material was reduced to very small fragments. The samples were submitted to English Heritage's Ancient Monuments Laboratory where they were examined by Janet Henderson and Beverley Meddens. Unfortunately it proved impossible to determine if the bone was of human or animal origin.

Table 4 Wood charcoal

Charcoal identifications (numbers of fragments)									
Context	Context no.	Sample weight (gm)	Oak (*Quercus* sp.)	Alder (*Alnus* sp.)	Ash (*Fraxinus* sp.)	Birch (*Betula* sp.)	Beech (*Fagus* sp.)	Poplar or willow (*Populus* or *Salix*)	Hazel (*Corylus* sp.)
Area A									
Leached soil	2	750	20						
Leached soil + dark soil band	2 + 7	150	15	8?	3				
Scoops	7	10	3	1		5			
Scoops + grave (?) pit	7+ 12	520	19	19 + 9 ?	9	3			
Grave (?) pit	12 a–c	900	173	36 + 2 ?	5	9			
Debris from fire	8	>90*		32		6			
Surface of natural clay beneath ring-bank	n/a	80	100						
gully	13	30	7?						
pit	14	20	9	2					
post-hole	9	10	5	6					
post-hole	15	90	17	2					
post-hole	16	>40	23	6 + 2?					
post-hole	17	20	4	7?		1			
post-hole	18	>60	25	17	5				
post-hole	19	>40	38	7					
post-hole	20	>20	19	7					
post-hole	21	70							x
post-hole	24	10	3	1		5			
post-hole	26	30	61	23		11	1		
post-hole	27	15	105	2		7			
post-hole	28	10	24	11		6			
pit	23	50		8		4	2	2	
pit	25	150		x					
Area C									
Tree root hollow beneath cairn	n/a	<5	11						

* A further 1010 gm of charcoal were obtained from context [8] and sent to Harwell for radiocarbon dating. The residue left over after dating consisted mostly of alder with smaller amounts of oak, hazel and birch.

Soil Phosphate

In 1986, soil samples were taken at intervals, 0.5 m apart, across the W half of the roundhouse interior, in trench A; and from under and around the clearance cairn in the E half of trench C. In trench A, the main object was to see if there was any pattern to the distribution of phosphate inside the roundhouse consistent with differential use of the interior space. In trench C, it was hoped to detect any evidence of manuring that might have taken place in the field.

In the event, levels of phosphate proved uniformly low, with typical values in the range 2–18 mg per 100 g of soil, and no significant patterning was detected in either of the areas sampled. This negative result is most likely the result of phosphate having been transported down the soil profile by leaching.

A full report on his analysis was prepared by Dr David Gurney of the Norfolk Archaeology Unit and has been deposited with the excavation archive.

GENERAL SUMMARY AND DISCUSSION

The earliest activity documented by the excavations at Halls Hill was almost certainly of a funerary rather than domestic nature and is represented by what has been interpreted as an inhumation grave of Early Bronze Age date. Although the grave had been dug into, and almost completely emptied, by the builders of the later roundhouse, it was possible to show that it took the form of a shallow sub-rectangular pit in which two transverse slabs of sandstone had stood upright at opposite ends. As there was no indication that the grave had ever been covered by a mound of earth or stones, it could well be that the builders of the roundhouse came across it by accident in the course of preparing the site though the alternative possibility, that they used a cairn as a convenient source of stone for the ring-bank, cannot be ruled out. In the absence of any grave goods or traces of bone in the grave itself the form of burial remains uncertain. On the other hand, a barbed and tanged flint arrowhead recovered from the house interior may well have accompanied a burial and been displaced when it was dug out. Certainly arrowheads of this type are well documented as grave goods with inhumations of Beaker date, as examples from Kirkhaugh and Wards Hill will serve to illustrate (Tait 1965, nos 31 and 33). While Early Bronze Age cists are ubiquitous in the North, the only close parallel for a grave containing two facing stone slabs or markers is Pit B at the Milfield North henge (Harding 1981, Plate 5a & fig. 19). In that instance two smaller slabs of stone had been placed on edge at either end of an elongated pit which, like the putative grave at Halls Hill, may also have held a Beaker burial. However, at Milfield North the pit was more than 1.35 m deep so there can be no question of the stone slabs having projected above the surface as they may possibly have done at Halls Hill.

Following this putative Early Bronze Age burial, the excavations produced no conclusive evidence of activity on the site until the digging of two pits, [23] and [25], in the late second or very early first millennium BC. On the other hand, as mentioned at the beginning of this report, it could well be that the nearby cairnfields represent land clearance for agriculture at a significantly earlier date. In this connection, a pollen sequence obtained from Brownchesters Farm, 4 km NNW of Halls Hill (fig. 10), may not be without relevance as it shows cereal cultivation was being practised in Redesdale as early as the fourth millennium BC (Young 2004, 164). Although no settlements of this early date have yet been recognised hereabouts, their absence could well be more apparent than real and could be explained if buildings were

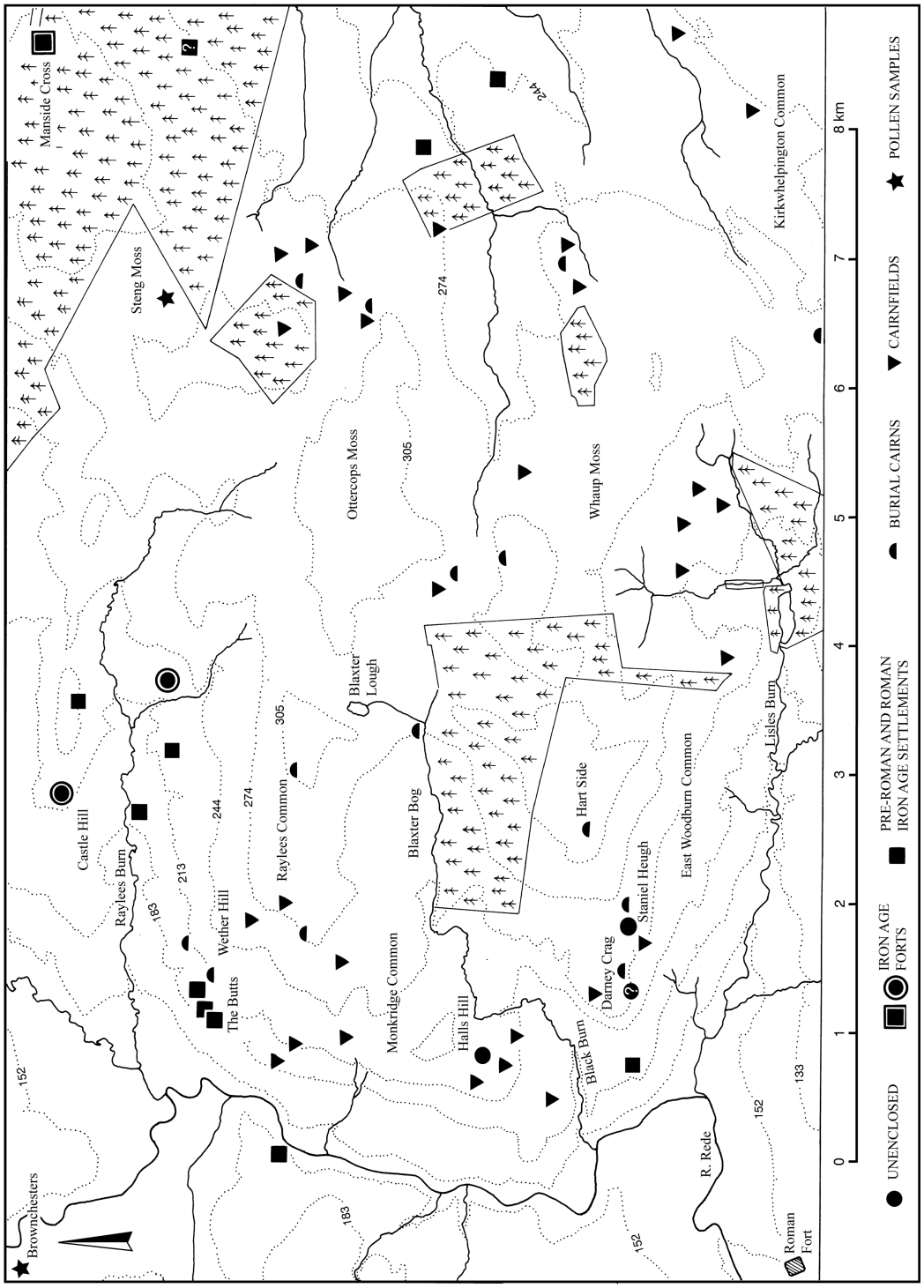

Fig. 10 Distribution of prehistoric sites in the environs of Halls Hill.

exclusively timber-built and of post-in-hole construction. In that event their recognition could be no more than a matter of chance, most probably in the context of excavations on other types of site.

As previously noted, the stratigraphic relationship between pit [23] and the roundhouse is ambiguous. For while the pit cannot be later than the roundhouse, it could have been dug either at a relatively early stage in the life of the building, before the interior scoops had begun to form or, alternatively, it could predate the building by as much as two or three centuries, on the available radiocarbon dates. The relationship between pit [25] and the roundhouse is similarly unclear. However, as the radiocarbon dates for the two pits show a significant degree of overlap in the range 900 to 1100 cal BC and as their contents are also remarkably alike in character, it is difficult to resist the idea that they are not only of broadly similar date but also functionally related. While it has not been possible to determine exactly what their purpose was, some form of ritual or funerary deposit seems probable. Whatever the truth may be, the grain samples from pits [23] and [25] are the first to be recovered from a late Bronze Age context in the north-east of England and as such they are especially welcome. Emmer and spelt wheat and six-row barley were present in both pits and though it cannot be conclusively demonstrated that these crops were actually grown on the site there seems no good reason why this should not have been the case. Certainly there is pollen of both wheat and barley in the early first millennium levels of a pollen diagram obtained from Steng Moss which lies only a short distance to the NE of Halls Hill (fig. 10; Davies and Turner 1979).

If, as has been suggested, the radiocarbon date obtained for post-hole [10] is more closely related to the construction of the roundhouse than the date for post-hole [21], it follows that the building probably started life somewhere between 1000 and 800 cal BC. What is certain, however, is that the house cannot have been standing at the time of the large fire which very probably marks the end of occupation on the site. Three radiocarbon determinations on charcoal debris from this fire [8] place the burning somewhere in the period 800 to 500 cal BC. Unfortunately, because of a plateau in the calibration curve over this same period, the date of the fire cannot be established with any greater precision. While it is tempting to link the burning with the disposal of unwanted timbers left over from the dismantling of the roundhouse, possibly as part of an abandonment rite, this can be no more than a speculative hypothesis, especially as it was not finally possible to tell if the building had been deliberately taken down or left to decay naturally. While the calibrated dates for the fire might conceivably allow the roundhouse to have remained in use as late as 500 BC, they do not provide a basis for estimating the duration of its use for which an estimate of a century or more might not seem unreasonable, given adequate repair and maintenance. If the large fire [8] is taken to mark its final demise, the lifespan of the roundhouse might be expected to fall somewhere in the period *c.* 1000 to 500 BC. Alternatively, if one or both of pits [23] and [25] are seen as contemporary with the building, its initial construction could be put back as early as 1200 cal BC though in that event it might be necessary to see the final burning as an unrelated event that took place after, and possibly long after, the building had been abandoned. Either way, the presence of substantial quantities of carbonised grain, chaff and weed seeds in pits [23] and [25] and the post-holes of the house, and grain alone in the debris of the burning [8], might argue for agriculture, and presumably therefore a settled human presence, on the site itself or somewhere in the immediate vicinity continuously or at intervals from the late second into the early first millennium.

According to the reconstruction offered above, the roundhouse at Halls Hill was a large and sophisticated structure, well adapted to withstand any extremes of weather caused by the climatic deterioration which set in during the latter part of the second millennium BC. As experimental reconstructions have shown, a lifespan of at least a century could readily be envisaged for building of this type provided that periodic repairs and maintenance were carried out. The enlarged outer pair of post-holes belonging to the porch indicates that these particular posts were replaced at least once and possibly several times. As it is here that visible signs of replacement are most commonly encountered in the excavation of prehistoric timber roundhouses, this may be taken as a positive sign of longevity. Nor need the extreme scarcity of finds in the interior conflict with the idea of a relatively long lifespan for the building if, as suggested, it was cleaned out on a regular basis.

Compared with the total number of extant sites, only a small number of ring-banks has yet been excavated but already it is clear that a variety of structures are represented and that not all need be roofed buildings. At Standrop Rigg and Houseledge, for example, buildings of more than one type seem to be indicated by ring-banks of outwardly similar form. Thus, at Standrop Rigg the encircling rubble banks were seen as clearance material thrown up around the footings of timber buildings which are believed to have had lightly built outer walls supported on stakes (Jobey 1983). By contrast, at Houseledge, site AB, a ring-bank is provisionally interpreted as having supported vertical posts that were inserted into the rubble and may have formed an integral part of the house wall. However, the situation here is complicated by the fact that two, or possibly even three, different buildings succeeded one another on the same site, as represented by one or more circles of post-holes and a ring-groove in addition to the ring-bank. Pending final publication, the phasing of these different structural elements remains unclear. As the excavator frankly acknowledges, "it is not yet certain how these ring-banks functioned" (Burgess 1984, 145–6; fig. 8.3).

A closer parallel for the Halls Hill roundhouse is offered by the ring-bank excavated at Bracken Rigg, in County Durham (Coggins and Fairless 1984). Although in this instance the ring-bank was described as the "wall" of the building, like Halls Hill it was of dump construction but with retaining kerbs of larger stones round both the inside and outside edges. While the excavators envisaged the rafters as having rested directly on the crest of the rubble, the possibility that the ring-bank was surmounted by a turf or cob wall has much to recommend it. In this connection it is also interesting to note that a line of 'burning' is shown on the plan, hard up against the inner edge of the rubble on the N side of the house. Though not explained in the report, this could perhaps indicate that a turf or cob wall standing on top of the ring-bank had been lined on the inside with hurdles or a framework of wattle. As at Halls Hill, the ring-bank was not concentric with the inner ring of post-holes being pushed slightly outwards on the south-facing side of the building so as to accommodate an entrance passage within the thickness of the wall. A single date of 3180±60 BP (HAR-2414), obtained on charcoal from one of the post-holes of the house suggests a *tempus post quem* for this building of *c*. 1610–1310 cal BC.

Looking further afield, it is instructive to compare the roundhouse at Halls Hill with two groups of ring-ditch houses, at Dryburn Bridge in East Lothian and Douglasmuir in Angus (Kendrick 1995; Dunwell 2007). Unlike Halls Hill, both of these latter sites are in lowland situations with soil profiles that have been more or less severely truncated by ploughing. The structural evidence for each individual building is therefore limited and consists of one or more sets of post-holes, representing roof supports and porch structures, together with the

accompanying ring-ditch. Although no direct evidence for the walls of these buildings was forthcoming, turf is believed to have been used as the main building material. However, as neither the line nor the thickness of the walls could be established with certainty, it remains unclear whether the houses were provided with entrance porches that projected out beyond the eaves or, alternatively, with internal passageways that were wholly contained within the roof cone of the building, as was certainly the case at Halls Hill.

At Douglasmuir and Dryburn Bridge not all the ring-ditches were either continuous or especially deep-cut, though some allowance has also to be made for the effects of plough truncation. Allowing for some variation in form, most commentators see these features as integral to the design of the buildings and several different interpretations have been advanced to explain them. They have, for example, been seen as providing storage space for crops or to increase the available headroom inside the building. At Halls Hill, on the other hand, the series of shallow and disconnected scoops appears to be a secondary feature of the building created over a period of time, perhaps by repeated sweeping or cleaning out. This being so the scooped hollows at Halls Hill may have more in common with ostensibly similar features found inside roundhouses at Braidwood and High Knowes which are likewise thought to be the result of the cleaning out of domestic rubbish or the stalling of animals (Reynolds 1982). For the time being this is a problem which remains unsolved. Meanwhile, as Dunwell points out, the term 'ring-ditch' may embrace a variety of functions and not all need have been created in the same way (Dunwell 2007, 104).

Bearing these caveats in mind, it may nevertheless worth drawing attention to one particular feature of the ring-ditch houses at Douglasmuir and Dryburn Bridge which they share with the Halls Hill roundhouse, namely a tendency towards a polygonal plan. Thus, for example, house 6 at Douglasmuir was singled out by the excavator as being '*noticeably polygonal*' (Kendrick 1995, 52) and indeed the same is true of all five other houses on this site, though to a less well marked degree. Similarly, at Dryburn Bridge ring-ditch houses with polygonal plans are again in evidence, especially in the case of house 7 (Dunwell 2007, 52), though attention was not drawn to this in the published report. By extension of the argument put forward to account for the polygonal plan of the ring-bank at Halls Hill, this phenomenon could perhaps be explained if the houses at Dryburn Bridge and Douglasmuir likewise possessed wall-plates made up of straight lengths of timber placed on top of an outer wall of turf.

At both Douglasmuir and Dryburn Bridge, the fillings of the ring-ditches contained varying quantities of stone. While some of this material took the form of paving that was evidently later than the backfilling of the ditches, most of the stone in the primary fills consisted of unsorted rubble. Although the significance of this rubble has not been explained, it could perhaps be seen as having originally formed a plinth for the turf wall comparable to the ring-bank that was present at Halls Hill. If so, the stone may have been pushed into the ditch at a later stage when the wall was demolished, either as part of a major refurbishment or a complete re-building of the house.

Five radiocarbon dates are available for the settlement at Douglasmuir and eight for houses 2 and 9 at Dryburn Bridge. After calibration, all fall within the range 800 to 380 cal BC, at the 95% confidence limit. Given the structural similarity of the ring-ditch houses at these two sites and their resemblance to the Halls Hill roundhouse, it is difficult to resist the conclusion that all three settlements are of broadly the same date. This impression is further reinforced by their artefact assemblages all of which are characterised by a predominance of broken

saddle querns, coupled with an almost complete lack of domestic pottery. Again, the fact that the radiocarbon dates for the settlements at Douglasmuir and Dryburn Bridge are statistically indistinguishable from the three dates obtained from the fire debris at Halls Hill adds some support to the view that this burning may indeed have been synchronous with the abandonment of the roundhouse, as has been tentatively suggested. Whatever the truth may be, the flattening of the calibration curve over this same period makes precise determination of construction dates for any of the houses at these three settlements impossible at present. The best we can say is that the ring-ditch houses Douglasmuir and Dryburn Bridge were most probably built no earlier than 800 BC or occupied later than 400 BC. On this reading of the evidence, the Halls Hill roundhouse is probably rather earlier, possibly by as much as two to four centuries.

The excavations at Halls Hill are especially valuable for the light they shed on the contemporary agricultural economy. Even after twenty years, the grain samples are the largest yet recovered from any domestic site of the early first millennium BC in the north-east of England. On the other hand, due to the prevailing acid soil conditions there was a virtually complete absence of bone and consequently no inferences can be drawn about the stock rearing side of the economy. While it is prudent to assume a mixed economy, it is not possible to say where the balance lay between stock farming and arable.

In her report on the carbonised plant remains, Dr van der Veen emphasises the essentially conservative nature of the arable regime at Halls Hill where emmer wheat was the dominant crop throughout and spelt wheat and six-row barley remained relatively unimportant. Be that as it may, the spelt grains obtained from pits [23] and [25], dated between 1320 and 790 cal BC, are the earliest specimens yet recorded from any site in the north of England. Yet, by contrast with the South, where spelt wheat had already supplanted emmer by the late Bronze Age, the crop growing regime at Halls Hill appears somewhat backward. The same may also be true in relation to the cultivation of flax. For, whereas two seeds of what was apparently the cultivated variety of this crop were recovered from the site, one from pit [25] and the other from post-hole [18], the cultivation of flax at Halls Hill was evidently of very minor importance compared with, say, Reading Business Park where it was being grown on an almost industrial scale in the late Bronze Age (Moore and Jennings 1992).

The broken saddle-quern recovered from the roundhouse, together with further possible quernstone fragments found in a variety of other contexts, indicate that grain was being processed on the site. This is likewise attested both by the high proportion of chaff relative to grain and by the low percentage of weed seeds in samples obtained from pits [23] and [25] and the post-holes of the roundhouse, leading van der Veen to conclude that crops were probably stored in spikelets in a semi-cleaned state and further processed only when required. By contrast, the large grain sample from the fire debris [8] consisted almost entirely of pure grain showing that it had been fully cleaned before it was burned. If the fire is seen as a ritual act marking the abandonment of the house, the deliberate burning of grain may very possibly have had symbolic significance, perhaps as an offering of some kind.

Considering the arable regime at Halls Hill in its wider, regional context, van der Veen has suggested that arable farming north of the Tyne was carried out on a small scale, subsistence level throughout the prehistoric period and into the Roman Iron Age (Van der Veen 1992). While the small size of the field at Halls Hill is consistent with this view, it might also lead one to question whether the annual yield of straw would be sufficient to thatch a building the size of the excavated roundhouse. For this reason, heather thatch may seem a more likely option.

In addition to Halls Hill, two other certain or probable unenclosed settlements are on record in this part of Redesdale — one at Staniel Heugh, where a single roundhouse is accompanied by forty-odd clearance cairns (fig. 1, 3 and Gates 1983, fig. 12a); and the other on the summit plateau of Darney Crag (fig. 1, 2 and Gates and Ainsworth 1981) where an extensive system of embanked field plots and scattered cairns covers an area of c. 6ha. Although in this second instance there are no recognisable house stances, their absence can readily be explained in terms of recent stone robbing. As shown on fig. 10, all three sites occupy broadly similar positions in the landscape, being situated within easy reach of the Rede or one of its tributary streams and on the fringe of a substantial tract of high moorland which extends eastwards for several kilometres as far as the edge of Harwood Forest and the outlying reaches of Kirkwhelpington Common. Rising to altitudes of 300 m and above, most of this terrain is former common land given over to rough grazing or heather moor with excellent potential for the survival of earthwork remains. Indeed, it was for this reason that fieldwalking was carried out over the whole of this territory in the late 1970s when further large scale afforestation and, even opencast coal mining, were in prospect. In the course of this fieldwork a dozen or so previously unrecognised burial cairns came to light together with more than twenty cairnfields, the largest containing upwards of fifty individual cairns (fig. 10).

Although cairnfields do not lend themselves to close dating on the basis of visual examination alone (Yates 1984), the periodic occurrence of Early Bronze Age burial monuments amongst the clearance heaps encourages the view that some at least could belong to the earlier part of the second millennium BC. If at the same time houses of ring-bank construction are taken as *potentially* indicative of later second or early first millennium settlement, as has been proved to be the case not only at Halls Hill but also at Standrop Rigg and Bracken Rigg, the more restricted distribution of these settlements on the margins of high ground might be taken to imply a retreat from the moorland interior during the later part of the second millennium. The precise combination of factors which may have brought this about has yet to be ascertained but worsening weather conditions and soil degradation brought about by a reduction in tree cover are both likely to have played a part.

While the validity of this scenario as a possible model remains to be tested, it is worth noting that a movement away from the upland interior and towards the margins of high ground has already been seen as having taken place in parts of northern England and the Borders in the later first millennium BC, as evidenced by the contrasting distribution of unenclosed settlements on the one hand and palisades and hillforts on the other (Jobey 1983; 1985). So far as the hinterland of Halls Hill is concerned, the absence of any settlements attributable to the *later* first millennium from the high moorlands is itself a strong indication that habitation in this area, and therefore presumably cultivation, had already ceased by the middle Iron Age if not before. At Halls Hill itself, the formation of a well developed horizon of ironpan some time after the abandonment of the roundhouse could well provide a clue to the mechanism underlying this putative shift in the settlement pattern, not least because the resulting poor drainage would almost certainly have put an end to the worthwhile cultivation of crops once it was fully developed.

The pollen diagram from Steng Moss, referred to above, again has a direct bearing on the interpretation of this chain of events as it documents a series of small scale, possibly temporary, woodland clearances which commence around the beginning of the second millennium BC and continue at intervals into the early part of the first millennium. These are followed, at around 578±35 BC (uncal), by 'a period of limited but continuous forest clearance' lasting

throughout the remainder of the first millennium, until 20±60 BC (uncal) (Davies and Turner 1979). Although the occurrence of cereal pollen in pollen diagrams is more than usually a matter of chance, at Steng Moss pollen of both barley (*Hordeum* sp) and wheat (*Triticum* sp) was recorded in levels corresponding to the maxima of two of these early clearance episodes, respectively dated to 1065±45 BC (uncal) and 636±45 BC (uncal). Statistically, these dates are close to the calibrated dates obtained for the carbonised plant assemblages from pit [23] and the final burning [8] at Halls Hill, in which grains of both wheat and barley were also present. On the other hand, the absence of cereal pollen from earlier clearance horizons in the Steng Moss pollen diagram would not of itself rule out the possibility that arable farming was being practised in the catchment area of the bog at a significantly earlier period than has been documented at Halls Hill. Certainly, *large-scale* woodland clearance had already commenced on the valley floor in Redesdale by *c*. 2300 cal BC, as indicated by the pollen diagram from Brownchesters Farm (Young 2004). Since cereal cultivation was introduced into the valley at least as early as the fourth millennium BC, as we have already seen, the scatter of cairnfields and burial monuments in the hinterland of Halls Hill might be seen as reflecting an extension of arable farming onto higher ground by the late third or early second millennium, if not earlier. If so, this would provide a plausible context for the putative Early Bronze Age burial at Halls Hill and for some of the larger burial cairns and cairnfields on the moorlands to the E (fig. 10).

While the early stages in the colonisation of this hinterland by farming communities have yet to be elucidated, the same is also true of the postulated withdrawal of settlement from the interior, here speculatively dated to the late second or early first millennium BC. At Steng Moss, the 'period of limited but continuous forest clearance', commencing somewhere in the period 800 to 530 cal BC, was followed after what may have been only a very short interval of time by the 'beginning of a comparatively long and extensive period of forest clearance' lasting until at least 50 cal BC (Davies and Turner 1979). According to this interpretation, the scale and pace of woodland clearance seems actually to have *increased* in the second half of the first millennium BC, which is to say some time after the withdrawal of permanent settlement from the upland interior to the moorland edge. If this was indeed the case, and if arable farming was no longer viable for the reasons alluded to above, then an expansion of stock farming from settlements located on the moorland fringe would seem the most likely underlying cause.

Without begging the question of whether the demise of the Halls Hill roundhouse took place closer to 1000 or 500 BC, the existence of three hillforts and ten enclosed settlements of stone-built round houses around the moorland edge in this same general area demonstrates the *potential* for a sizeable population hereabouts during the pre-Roman and Roman Iron Age, though this need not of course imply continuity of occupation at any one site. At the same time, the fact that none of these hillforts is accompanied by an organised field system, or any other detectable evidence of cultivation, is consistent with the pollen evidence and points to pastoralism as the dominant activity in the uplands hereabouts during the middle Iron Age. Towards the end of the first millennium BC, however, the ceiling of viable cultivation seems once again to have risen to altitudes of 250 m and above, at least in those areas where soils had not suffered irreversible degradation. The evidence for this is the widespread occurrence of organised field systems in association with enclosed, stone-built settlements, not only in Redesdale but also in many other parts of the Northumberland uplands except on the Fell Sandstones where cultivation appears to have ceased altogether by the end of the second

millennium BC or soon after. In the vicinity of Halls Hill, three extant stone-built settlements at The Butts are integrated into an elaborate system of rectilinear fields and trackways occupying an area of some 20 ha (fig. 10). The occurrence of lynchets in some fields but not others may indicate a mixed agricultural regime in which arable was combined with pasture or meadow land (Gates 1982).

Following the abandonment of the roundhouse, there is no archaeological evidence for any kind of activity at Halls Hill until the enclosure of Monkridge Common in the mid-18th century. The episode of rig ploughing that ensued was evidently a very short-lived, and possibly unsuccessful, experiment perhaps inspired by a fashion for 'improvement' that was popular with landowners in the middle decades of the eighteenth century. On the nearby Wallington Estate, for example, where large tracts of hill land were rig ploughed in the 1730s and '40s, cultivation in most cases seems to have lasted for only a short period and the main aim may well have to improve pasture rather than to increase the area of arable (Gates 2002). At Halls Hill, the 1839 Tithe Award (NRO DT/ 164/M, part 5) makes no mention of any arable on the "Hallshill Common Land", so we can be confident that any cultivation that may have taken place had ceased by this date.

Notwithstanding the length of time that has elapsed since they were completed, the excavations at Halls Hill have much to offer that is new. The crop samples, for example, are not only the first to be recovered from a domestic site of the late Bronze or early Iron Age in the north of England but have also produced the earliest record of spelt in the region. The structure of the timber roundhouse is likewise of considerable interest, particularly as the nature of the load bearing wall can be inferred with a greater degree of confidence than is usually possible on sites that have been levelled by ploughing. The suggestion of a wall-plate composed of straight timbers placed on top of the turf wall is a solution which might usefully be considered at other sites where buildings with polygonal plans are similarly in evidence, as for example at Dryburn Bridge and Douglasmuir. At Halls Hill, the survival of the ring-bank and the paved approach to the doorway allows the four-post structure at the entrance to the building to be recognised as an internal passageway or lobby wholly contained within the cone of the roof rather than a projecting porch. Should a similar interpretation eventually be found applicable at other, plough-damaged, sites where timber roundhouses are represented solely by arrangements of post-holes with little or no archaeological evidence to show the position of the outer walls, it would have important consequences for our understanding of both the structure and appearance of these architecturally sophisticated buildings.

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