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An Earthwork Survey by The Royal Commission on the Historical Monuments of England

INDUSTRY AND ENCLOSURE IN THE NEOLITHIC

August 1994

ROYAL COMMISSION ON THE HISTORICAL MONUMENTS OF ENGLAND

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CONTENTS

LIST OF FIGURES

1. INTRODUCTION

In August 1994, the Royal Commission on the Historical Monuments of England carried out an earthwork survey of Harrow Hill (TQ 0814 1002), as part of the project to record Enclosure and Industry in the Neolithic Period. On the summit of the hill, an extensive area of Neolithic flint mining, which has been diminished by ploughing, and an overlying Early Iron Age enclosure were recorded. On the northern and eastern slopes of the hill, traces of later field systems and trackways were also surveyed. The site is protected as a Scheduled Ancient Monument (W SUSX 45); the flint mines and the Iron Age enclosure are recorded in the National Monuments Record as TQ 01 SE 23 and 17 respectively.

Harrow Hill is located on the northern edge of Angmering parish in the Arun district of West Sussex. The hill is an isolated chalk outcrop, only slightly connected to the main range of Downs to the south by a long, gradually sloping spur, and with extremely steep scarp slopes on the other three sides. The summit of the hill has a maximum height of 167m above OD, and is intervisible with other known Neolithic flint mines at Long Down, Blackpatch and Church Hill, Findon.

Until recent years, the hilltop had a sparse covering of juniper bushes; the strip of land to the east of the trackway on the eastern slope was more densely overgrown with scrub (Ordnance Survey 1:2500). This vegetation has now been removed to leave typical open downland pasture. The southern edge of the site has been affected by ploughing in the 1950's and possibly earlier.

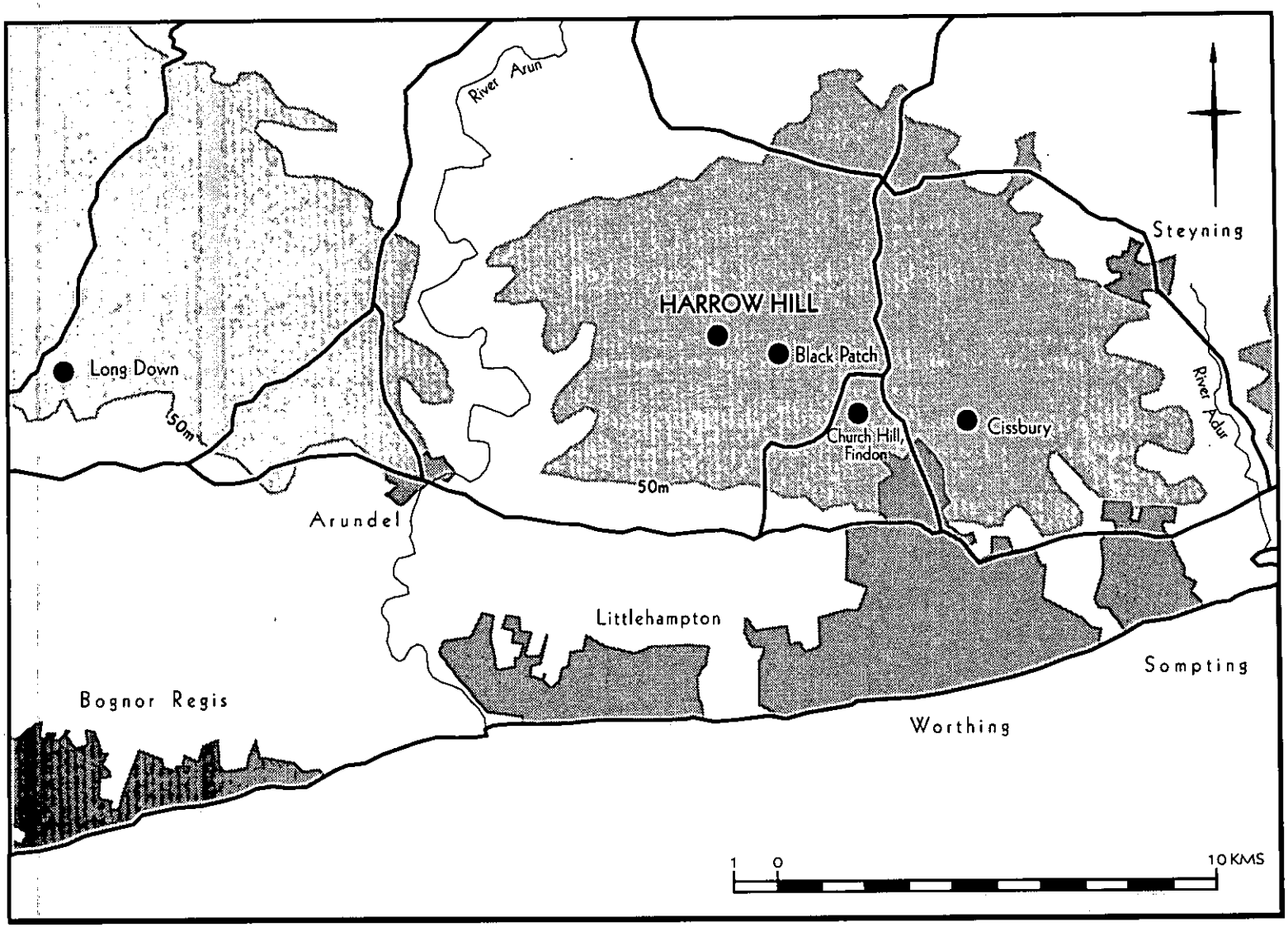

Figure 1 Location map showing Harrow Hill in relation to other local flint mines

2. ARCHAEOLOGICAL HISTORY

The Neolithic flint mines

The Ordnance Survey First and Second Editions (surveyed 1875-6 and revised 1897) do not portray the Harrow Hill flint mines. In c.1896 HC Collyer investigated at least eight shafts, one of which lay within the enclosure, and concluded from the nature of the backfill that this one at least had been a flint mine. However, layers of puddled clay in the others, some of which he only partially excavated, led him to suggest that they may have been reservoirs (Curwen and Curwen 1922, 31-2). A small Bronze Age collared urn was found somewhere in the area of the flint mines, probably in the later nineteenth century (Anon 1954).

In 1924-5, EE and EC Curwen carried out a surface survey which revealed traces of 161 shafts, one of which (21) they excavated fully. This had a maximum depth of 6.8m and a surface diameter ranging between 5.4m and 6.3m. Three seams had been worked: the topmost was slightly quarried on one side of the shaft opening, the second worked in two small galleries extending east and west and also in open cast workings to the north and the lowest seam in seven galleries radiating from the base of the shaft. Side chambers off the main galleries were exploited and two galleries communicated with adjacent shafts (13 and 14). The stratigraphy suggested that the main shaft had been deliberately back-filled in a single episode, soon after it had been mined. Among the artefacts found in the galleries were a range of worked flint tools and flakes, bone and antler mining implements, and several carved chalk blocks, interpreted by Curwen as possible tallies. Nests of flakes and 54 axe rough-outs were interpreted as temporary working sites. Analysis of the charcoal and snails suggested a lightly wooded and much damper environment. The flint mining was dated to the later Neolithic by the form of a flaked flint axe of Cissbury type; this evidence has subsequently been discredited. The shaft excavated by Curwen remains disturbed and the excavation spoil heap also survives at the northern limit of the site (see plan). An aerial photograph taken by Crawford shows the excavation in progress (NMR a).

A radiocarbon date of 2980 $\pm$ 150 bc (calibrated 3710 BC) has been obtained from an antler pick (BM-182) from a sealed deposit excavated by Curwen (Barker et al 1969, 285; Drewett (ed), 1978, 23-9) and a further six determinations range around 2900 bc. This early Neolithic date is similar to the other flint mines on the South Downs (Whittle 1977, 63).

In 1936, in the course of excavations on the Iron Age enclosure, Holleyman encountered four flint mining shafts, three of which he excavated (Holleyman 1937). Shaft I (Curwen's 138) was 3.0m deep and 1.7m in diameter with a single gallery. Shaft II (numbered 153A by Holleyman) lay beneath the Iron Age rampart; it was 3.5m deep and 2.0m in diameter with five radiating galleries, one of which connected with another shaft (138A), also overlain by the rampart. Shaft III (245) was 2.6m deep and 2.4m in diameter; there were numerous radiating and interconnecting galleries, only one of which was investigated. The shaft contained a remarkable total of thirty-three axes and rough-outs, though Holleyman does not make it clear whether these came from a single context. Part of Curwen's shaft 153 was exposed but not excavated. Several of Holleyman's other trenches must have encountered Neolithic spoil heaps associated with the shafts, but he made no record other than the average depth of the natural chalk. Holleyman suggested that there might be continuity into the Bronze Age and an association with the Neolithic and Bronze Age possible settlement at New Barn Down (Curwen 1935, 153-6, 162-4).

In 1971, the Ordnance Survey carried out an interpretive survey of the major elements of the site at 1:2500 scale (Ordnance Survey 1973), which did not add significantly to Curwen's plan.

Field walking has recovered fifteen flint axes from the area of the shafts and further axes and working areas on the southern side of Harrow Hill at TQ 082 099 (Anon 1971, 3; Ratcliffe-Densham 1972).

In 1982 and 1984, Sieveking excavated shaft 9 and its immediate environs in search of a flint working floor (Drewett 1988, 47-52; Holgate 1986), but this proved unsuccessful. In a second trench, Sieveking investigated the area between shafts 13 and 164, excavating shaft 13 and most of its galleries and revealing 12 smaller adjacent pits (Mortimore 1983).

In 1984, Holgate carried out field walking over the field to the south of the hilltop, where the edge of the site was being degraded by ploughing; this revealed a major working area some 50m in diameter (Holgate unpublished 1986). In 1986, a programme of test-pitting defined the limits of the working area and recovered a sample of flint cores, flakes and axe rough-outs, but no ceramic or scientifically datable material. The excavations also discovered a zone of 'open-cast' mining unlike the shafts, where seams of flint had been followed horizontally from the surface using shallow adits. Holgate also re-surveyed the rest of the site, improving on Curwen's plan by showing the major

areas of spoil dumping as well as the shafts (Holgate 1986). An analysis of the snails from Sieveking's excavations as well as Holgate's own suggested that the site was surrounded by woodland (Holgate 1991, 39).

In 1990, a limited geophysical survey responded well to the shafts visible on the surface and was also able to detect the possible presence of further buried shafts and linear anomalies, which were interpreted as galleries (Mortimer et al 1990).

The Iron Age enclosure

In 1936, Holleyman excavated a number of trenches around the rampart and within the interior of the enclosure which overlies the flint mines (Holleyman 1937). He demonstrated that there had been a substantial four-post gate structure at the western entrance but interpreted the evidence for a palisade as a possible earlier enclosure. A small quantity of well stratified Early Iron Age flint-gritted pottery was found, but on the whole there were very few artefacts, suggesting that the enclosure had not been permanently occupied. However, an abundance of cattle skulls and mandible fragments from the Iron Age contexts led Holleyman to speculate about the possible ritual nature of the site. Late Iron Age and Romano-British finds including a coin of Domitian were found in the upper silts of the ditch and in the topsoil of the interior. Holleyman's three main sections through the rampart are still clearly visible, but most of the smaller trenches in the interior are not.

The enclosure has been discussed in the context of the transition from Late Bronze Age to Early Iron Age pastoral regimes (Bradley 1971; Cunliffe 1974, 15-16; Bedwin 1984).

3. DESCRIPTION OF THE EARTHWORKS

For terms and letters in bold used in the text, see earthwork plan surveyed at 1 : 1000 scale; for the locations of excavation trenches and shaft numbers, see the accompanying interpretative overlay. All the earthworks on Harrow Hill are clearest on a series of oblique aerial photographs taken in 1977 (NMR b). All the remains suffered considerable superficial damage from vehicles, probably during World War Two, which is most obvious on a Cambridge University photograph of 1949 (NMR c). The hill was ploughed in the early 1950's, up to the edge of the main area of flint mines and the western side of the Iron Age enclosure, and the reservoir to the west of the enclosure was built at about this time (NMR d).

The Neolithic flint mines

Due to the irregularity in the original shafts and the fluid nature of the spoil distribution, stratigraphic relationships are often difficult to interpret with certainty. In addition, the degree to which the original backfill has subsided has not been clearly demonstrated by excavation, and it is possible that some of the surface relationships are deceptive; the interpretation below should be understood with these provisos.

In total, 245 certain or probable mine shafts were recorded, compared with the 161 and 164 identified by Curwen and Holgate respectively, although most of the additions are either slight, or their interpretation as shafts (as oposed to working floors or other platforms) is not certain. For clarity, Curwen's numbering sequence has been retained and extended for the RCHME survey (see gazetteer). Most shafts lie in a dense band along the eastern side of the hilltop, with occasional outliers elsewhere, such as 195. The site is fairly strictly bounded on the west by scarps which appear similar to slight lynchets and may in fact result from later ploughing. The northern and eastern sides are bounded by broad washes of spoil which spread down the natural slope. Exposures in animal burrows etc. on Harrow Hill and elsewhere (eg Cissbury) suggest that there were probably separate dumps for spoil and primary working debris but these can seldom be distinguished on the surface. There are two fairly distinct areas of mining, the first comprising large shafts of the type excavated by Curwen, Holleyman and Sieveking on the north and east sides of the hilltop, and secondly smaller pits or open cast mining of the type examined by Holgate to the south. There is little overlap between the two areas, but where a stratigraphic relationship can be discerned, the smaller shafts appear to be later.

The first area, comprising the largest and best preserved shafts, forms an arc lying outside the Iron Age enclosure to the north and east of the summit of the hill. The largest is shaft 18, with a maximum diameter of 19.5m and depth of 1.8m, which lies immediately outside the north-eastern corner of the Iron Age enclosure and is respected by the terminals of the ditch. The second area lies to the south of the hill top. These smaller shafts have diameters of *c*.6m and depths of *c*.0.3m. Several different mining techniques can be distinguished:

i) single shafts
ii) single shafts with access channels
iii) multiple contemporary shafts with a common spoil heap
iv) multiple shafts excavated sequentially.

i) Single shafts are generally sub-circular and appear to have been mined independently of the surrounding shafts, though it is likely that adjacent shafts were open at the same time and probable that some of the projecting galleries inter-connected. The resulting spoil heaps are usually located in the immediate vicinity, occupying all the available space between it and the adjacent shaft and creating mounds up to 1.2m high at the broadest points, with lower saddles between. In some cases (eg shafts 33, 39), small but well-defined shelves or steps up to 1.6m long and 0.8m wide are found at approximately the same level as the top of the original shaft.

ii) Single shafts with an adit-like access channel tend to occur towards the eastern edge of the site, where the steeper natural slope allows spoil to be disposed of conveniently down the hillside. The shafts themselves are again sub-circular, but are characterised by a spur of spoil pushed downhill, which has subsequently been turned into a channel up to 0.5m deep by dumping on either side. The lower edge of the shaft is consequently always very slight, so that the feature as a whole has a bulbous outline (eg shafts 53, 80), somewhat like an adit in appearance, although it is unclear to what extent the downhill side was deliberately quarried. In some cases the spur of spoil appears to overlie shafts lower down the hillside (eg shaft 85). Shafts which were not enlarged to this extent have only a smaller 'apron' of material downhill.

iii) Multiple contemporary shafts are more difficult to identify due to the high density of features; as indicated above, it is unclear whether the single shafts were really independent of the adjacent shafts. However, where the earthworks are more isolated, relationships are less ambiguous. Shafts 121, 122, 123, which are separted from the main band of large shafts, may be located around a single large spoil heap or primary working

area. Pairs of shafts are frequently found at Grimes Graves, but cannot be identified at Harrow Hill; this may, however, be a consequence of the stronger natural topography.

iv) Multiple shafts excavated sequentially, like the single shafts with an access channel, occur most clearly on the steeper natural slope towards the eastern side of the site. The mining process was essentially the same, except that on the completion of the initial shaft, another was dug uphill and the earlier one backfilled in a linear arrangement, so that the first shaft is preserved as a shallow depression or step up to 0.3m deep in the base of the access channel. The process may have been repeated several times until a sequence of up to four shafts was linked by a single adit-like channel, eg shafts 59, 60, 61, 62 (there are slight indications of more possible shafts in the base of the channel). This technique is found at Long Down, and also on Post-Medieval flint diggings such as those on Wolstonbury Hill (TQ 2480 1382).

In all four types of mining technique, comparitively level platforms adjacent to the shafts can sometimes be identified; these are interpreted as possible platforms or floors, associated either with the lifting or primary dressing of the flint. Some of the larger shafts, such as 15, appear to have two associated platforms. They are generally larger and less sharply defined than the small steps around some of the single shafts, mentioned above and vary considerably in form with areas of c.2-6m^2. In some cases, such as shaft 18, these seem to have remained in the same position while the spoil heaps grew around them; others, eg the area between shafts 43 and 49, appear to surmount mounds of spoil. A total of 33 probable or possible working areas were identified.

A number of entirely discrete and better-defined dumps of spoil were identified on top of shafts which were either only partly backfilled initially or back-filled and already subsided by the time of the later dumping (eg overlying shafts 31, 31 and 22). Alternatively, they may be spoil heaps from Curwen's excavation, though the contemporary aerial photograph does not suggest so.

The second area of mining, which lies to the south and west of the hilltop, is characterised by a complex distribution of smaller and shallower pits, often inter-connected sequentially as described above, but on a much more gentle natural slope (eg shafts 141, 142, 143, 144). Much of this area was ploughed in the 1950's and possibly earlier, and this has certainly contributed to the slightness of the remains. However, there is some evidence to suggest that the form of the surface remains reflects a real difference, particularly the dis-similarity with the remains of certain other shafts in the vicinity such as 95, 129, 130, which are larger and have more in common with the first area. The results of Holgate's excavations also suggests that a different type of mining

technique, involving adits, pits and 'open-cast', was employed in this area. More shafts than are now visible existed in the adjacent field to the south. The area within the enclosure is similar in appearance, with smaller and slighter shafts with a degraded appearance. This may indicate a phase of levelling through ploughing which predates the construction of the enclosure.

Where a stratigraphic relationship can be distinguished, the smaller shafts appear to cut into the spoil heaps associated with the larger ones (eg shafts 131, 211). Small shafts within the area of larger mines also appear to be later, and are possibly outliers of the second area (eg between shafts 19 and 31, and in the south-western side of shaft 64).

On the surface, mining activity is only visible inside the eastern half of the Iron Age enclosure and no shafts were encountered by either of Holleyman's trenches in the western half.

The Iron Age enclosure

The enclosure is sub-rectangular, 0.4ha in area, with dimensions of 70m west to east by 60m transversely. It is located slightly to the west of the summit of the hill, with the main gateway facing west.

The south-western corner is acute, the north-western and north-eastern corners are almost rectangular and the south-eastern corner much more blunt, approximately mirroring the more convex northern side. The western side is straight, with a 2.8m wide gateway located centrally. Holleyman's excavation of the gateway has distorted both the opening in the rampart and the causeway across the ditch. The internal bank of the rampart ranges from 4.0m to 6.0m wide, and from 0.3m to 0.6m high, and is best preserved on the northern and eastern sides. The external ditch ranges from 2.5m to 4.5m wide, and from 0.2m to 0.5m deep. It is shallowest on the western side, and in places its profile is irregular due to the underlying Neolithic features (eg shafts 149, 177). A slight counter-scarp bank 0.2m high and 4.5m wide on average was recorded on all four sides, but is intermittent on the southern side. It reaches a maximum height of 0.4m on the western side.

In the north-eastern corner, a diminution in the rampart bank between two enlarged terminals (portrayed on Curwen's plan as a straightforward 'gateway') coincides with a break in the ditch, which respects the edges of shaft 18. Holleyman also interpreted this as a possible minor entrance, though he did not excavate.

The uneven backfill of Holleyman's three main trenches through the rampart remains

visible, but only the largest of his excavations in the interior can now be identified.

The Neolithic mines and spoil heaps in the interior of the enclosure have only been partially levelled, and it is uncertain whether any of this was carried out during the lifetime of the enclosure; the surface evidence supports Holleyman's conclusion that there was little intensive activity on the site during the Iron Age.

Miscellaneous features

Two phases of **lynchets** were noted around the northern slopes of Harrow Hill, mostly lying outside the survey area. The earlier phase, interpreted as 'celtic fields', comprises at least four lynchets up to 0.8m high, extending obliquely up the steep north-eastern side of the hill and across its northern side (**a** on plan). In the later phase, these were incorporated into a new system of lynchets up to 1.8m high, extending along the contours (**b** on plan). Three lynchets on the north-western side of the hill are part of the same field system, which was associated originally with Romano-British settlement and field systems at the northern and southern feet of the hill (Ratcliffe-Densham 1972). On the north-eastern side of the hill, a possible gateway has been created at the junction of lynchets **a** and **b**, possibly indicating their later re-use as enclosure boundaries. Their use may have continued into the Medieval period, since a Medieval hut platform at TQ 083 105 also appears to be associated with the lynchets.

On the south side of the hill, a very slight **bank** running west to east is probably the fore-runner of the present fence-line and, with a regular lynchet along the south-eastern side of the hill, marks the limit of modern ploughing. Traces of a similar parallel bank on the eastern side of the hill probably represent a contemporary boundary.

A terraced **trackway** follows the contour around the eastern side of the hill for approximately 1km. This was in use in the nineteenth century (Ordnance Survey First Edition, surveyed 1884-5; Ordnance Survey Second Edition, surveyed 1895) and remains in occasional use. It appears to cut the probable Romano-British / Medieval field system. The slope to the east was covered in scrub woodland until recent years and is consequently heavily disturbed by animals and the removal of the vegetation.

4. INTERPRETATION AND DISCUSSION

The Neolithic flint mines

It seems likely that there are two fairly distinct phases of mining on Harrow Hill. The 'open-cast' and shallow pit mining technique encountered by Holgate on the southern fringe of the main area seems to correspond to the later phase of mining identified by the RCHME survey. The radio-carbon date of 3710 BC suggests that the earlier phase of deep shafts is Early Neolithic, contemporary with other flint mines on the South Downs (Whittle 1977, 63), but since Holgate's excavations produced no ceramic or organic material, the date of the possible later phase remains uncertain (Holgate 1986). Radio-carbon dates from other Sussex mines suggest that each site may have been exploited over a period of 200 to 400 years, but it is possible that the later phase, in particular those shafts which cut into earlier spoil heaps, represents late Neolithic or even Bronze Age re-use of the mining site (Gardiner 1990, 120-1). The character of the flint used in Late Neolithic and Early Bronze Age assemblages indicates that flint from shallower sources was being used (Gardiner 1990, 131-2). Flint found in the backfill of the open-cast areas was not diagnostic and may in any case have been residual.

Harrow Hill has a wide variety of mining techniques, some of which are parallelled elsewhere. At Cissbury, the shafts seem to be generally much larger and deeper and to be dug as individual single shafts, which, as a type, represent the majority of the earlier phase at Harrow Hill. It is possible that the well-defined level shelves or steps lying at approximately the original ground level indicate the positions of wooden frames or platforms for lifting the flint and spoil. A number of the single shafts with access channels and almost all of the muliple sequential shafts seem to show a progression from the shallower seams up the side of the hill to where deeper shafts were required, a technique which has also been noted at Long Down and Grimes Graves. This may indicate that mining operations were more organised and controlled than the dense complex of shafts at first suggests. Only a few examples of spoil being dumped on the top of a backfilled shaft can be identified, and much spoil seems to have been confined to the small spaces of unmined ground on the surface between the shafts. This seems illogical unless a number of adjoining shafts were being worked concurrently or some indication of the location of earlier shafts needed to be preserved in order to prevent fruitless re-mining. The number of interconnecting galleries encountered by Holleyman, and also found at Grimes Graves, seems to indicate that the former was the case

The large number of possible primary working floors, the evidence for the differential disposal of different types of waste (ie chalk spoil and flint debris), also noted at Cissbury, and the large number of flakes, cores and roughed out tools visible on the surface and found during excavations suggest that some initial processing at least was carried out on site. The range of working debris indicates that, as at other Sussex sites, axes were not the only product (Gardiner 1990, 121), and it may be that spatial variation in the processing areas reflects differences in the types of tools being manufactured. The negative results of Sieveking's search for a working floor adjacent to the shafts may suggest that only a bare minimum of processing was carried out adjacent to the shaft, or simply that there was no standard working procedure. It is possible that some or even all of the platforms interpreted as primary working areas may be simple level stances to facilitate access to the shafts. Holgate's discovery of a much larger working area to the south of the hilltop, including axe thinning flakes and a possible polissoir fragment, suggests that much was carried out away from the mines to be worked and then presumably removed as roughed-out or almost finished axes, as at the other Sussex mines (Gardiner 1990, 121). At present, there is insufficient evidence to tell whether or not these different production sequences were contemporary.

Holleyman's suggestion that two pits containing Late Neolithic material excavated by Curwen on New Barn Down in 1933 (Curwen 1934) might represent a settlement associated with the mining operations seems over-optimistic. However, these pits remain the closest known Neolithic features, and have been compared to examples on the unenclosed settlement excavated at Bishopstone (Drewett ed. 1978, 23-9). Holgate has argued that the absence of mining on flint sources closer to known settlements may indicate that axe production was a specialist industry (Holgate 1991, 42).

The Iron Age enclosure

The location of the Iron Age enclosure just off the summit of the hill is probably partly determined by the position and density of the Neolithic mine shafts. The form of the earthwork has been compared with enclosures at Thundersbarrow (TQ 229083) and Hollingbury (TQ 322078) in Sussex (Holleyman 1937; Bradley 1971) and a number of rectilinear enclosures of similar size of probable Bronze Age date in Wessex (Cunliffe 1974, 15-16 and Figure 2.4).

Holleyman's observation that the condition of the interior of the enclosure, taken with the paucity of finds from his excavations, suggests that there was no permanent Iron Age settlement is confirmed by the RCHME survey (Holleyman 1937, 250; Cunliffe 1974, 14). Although the remains of the Neolithic shafts and spoil heaps are very slight, the remains are not consistent with deliberate levelling of the site for occupation. The

degraded area and the very slight scarp which defines its western edge appear to extend beyond the enclosure, suggesting that the levelling took place before its construction, possibly by Bronze Age ploughing or by the deliberate spreading of chalk debris from the flint mines, as recorded by Holgate (Holgate 1986).

Although Holleyman stated that the palisade lay below the rampart, he also observed that the preservation of a burnt layer beneath the bank implied that the burning must have immediately preceded the construction of the rampart. His section drawing shows that the burnt layer is cut by the palisade post-holes, suggesting that the upper part of the post-holes may have been missed and that the palisade may have been contemporary with the rampart, as has been assumed by most later interpretations (*contra* Drewett et al. 1988, 47-52). The transition from palisaded enclosure to earthwork, for which the evidence is doubtful, and the general similarity of the earthwork to Bronze Age enclosures, has been taken to reflect the continuity of a Late Bronze Age pastoral economy into the Early Iron Age (Bradley 1971; Cunliffe 1974, 174; Bedwin 1984, 47-8). However, the palisade seems not to have been extensive or intended as a corral, since the post-holes on the northern side were irregular and discontinuous and none at all were discovered at the south-eastern corner. The evidence may indicate a palisade facade, such as that found at Winnall Down. Cunliffe discusses the abundance of cattle bones in terms of stock-rearing and meat processing, but allows that Holleyman's speculation about the ritual nature of the site remains convincing (Cunliffe 1974, 174).

The partial break in the north-eastern corner of the enclosure seems extremely unlikely to be a minor gateway as suggested by the excavator and others (Holleyman 1937, 233; Cunliffe 1974, 174). Firstly, although there are pronounced terminals on either side of the break, the rampart bank continues as a much slighter feature. Secondly, the proximity of the largest shaft (18) to the apparent causeway across the ditch makes access virtually impossible. The fact that the ditch terminals respect the edges of shaft 18 without actually incorporating it implies that the break in the rampart is also original, but suggests that there may have been more than functional concerns involved. In the context of the apparently ritual nature of the site, it is possible that the largest Neolithic shaft may have played some symbolic role. Ritual importance may have been attached to the mine in the Bronze Age, since cremations were found in the upper fill of shafts at Church Hill and Cissbury and possibly account for the collared urn at Harrow Hill (Anon 1954).

5. SURVEY AND RESEARCH METHODS

The survey was carried out by Alastair Oswald, Jane Kenney, Paul Struth and Paul Pattison of the RCHME. Control points, hard detail, and earthwork profiles were surveyed using a Wild TC1610 Electronic Theodolite with integral EDM. Data was captured on a Wild GRM 10 Rec Module and plotted via computer on a Calcomp 3024 plotter. The details of the earthwork plan were supplied at 1:1000 scale with Fibron tapes using normal graphical methods. The archaeological background was partly researched by Kate Fernie and the report as a whole was researched and written by Alastair Oswald and edited by Peter Topping. The plans were re-drawn for publication by Trevor Pearson. The site archive has been deposited in the National Monuments Record, Kemble Drive, Swindon SN2 2GZ (reference TQ 01 SE 23).

6. BIBLIOGRAPHY

Anon 1954 Sussex Archaeological Collections 92, 1ii

Anon 1971 Minutes of the 95th Meeting of the Sussex Archaeological Research Committee (CBA Group 11B), 3

Barker H, Burleigh R & Meeks N 1969 'British Museum Natural Radiocarbon Measurements VI' in Radiocarbon 11.2, 278-294

Bedwin O 1984 'Aspects of the Iron Age in Sussex' in Cunliffe BW & Miles D (eds) Aspects of the Iron Age in Central Southern Britain Oxford University Committee for Archaeology Monograph 2

Bradley R 1971 'Stock raising and the Origins of the Hillfort' in The Antiquaries Journal 51, 8-29

Cunliffe BW 1974 Iron Age Communities in Britain: an Account of England and Scotland and Wales from the Seventh Century BC until the Roman Conquest Routledge & Kegan Paul

Curwen EC 1934 'A Late Bronze Age Farm and a Neolithic Pit-Dwelling on New Barn Down, Clapham nr. Worthing' in Sussex Archaeological Collections 75, 137-70

Curwen E & EC Curwen 1922 'Notes on the Archaeology of Burpham and the Neighbouring Downs'in Sussex Archaeological Collections 63, 1-53

1926 'Harrow Hill Flint-mine Excavation 1924-5' in Sussex Archaeological Collections 68, 103-138

Drewett PL 1980 Sussex Archaeological Collections 118, 23-30

Drewett PL (ed) 1978 'Archaeology in Sussex to AD 1500' BA Research Report 29, 23-29

Drewett P, Rudling D & Gardiner M 1988 A Regional History of England: The South-east to AD 1000, Longman, London

Gardiner J 1990 'Flint Procurement and Neolithic Axe Production on the South Downs: a Re-assessment' in Oxford Journal of Archaeology 9.2, 119-140

Holgate R 1986 'Recent Work at Harrow Hill, West Sussex' unpublished report deposited at Worthing museum

1991 Prehistoric Flint Mines Shire, Princes Risborough

Holleyman G 1937 'Harrow Hill Excavations 1936' in Sussex Archaeological Collections 78, 230-51

Mortimore RN 1983 'Harrow Hill Prehistoric Flint Mines' Fourth International Flint Symposium; Excursion Guide

Mortimore RN et al 1990 'Geophysical Surveys over Solution pipes and Neolithic Flint Mines in the chalk of the South Downs, Sussex, England' in Le Silex de sa Genese: a l'Outil Cahiers du Quarternair No 17, Actes du V Colloque International sur le Silex, 95-102

NMR (a) OGS Crawford aerial photograph NMR ref: TQ 0810/3 c.1925

(b) NLAP aerial photograph NMR ref: TQ 0810/16, frames 455-7 04-MAR-77

(c) CUCAP aerial photograph DZ 042 19-JUL-49 NMR ref: TQ 0810

(d) RAF aerial photograph 541/504, frame 4137 20-APR-50

Ordnance Survey 1876 First Edition 25-inch sheets 50.12, 50.16, surveyed 1874-5

1897 Second Edition 25-inch sheets 50.16, revised 1895-6

1973 1:2500 sheets TQ 0709, 0809, 0710, 0810, surveyed 1972-3

Ratcliffe-Densham HBA 1972 'Finds from Harrow Hill, Patching' in Sussex Archaeological Collections 110, 127

Whittle AWR 1977 'The Earlier Neolithic of Southern England and its Continental Background' BAR International Series 35

SHAFT NUMBER	MAXIMUM DIAMETER (METRES)	MAXIMUM DEPTH (METRES)	ADDITIONAL INFORMATION AND ASSOCIATED FEATURES
1	6.2	0.2	Possible working floor
2	6.1	0.2	
3	4.3	0.2	Possibly not a shaft - ? working area for shafts 4 and 5
4	5.7	0.5	Possibly contemporary with 5. Possible working area (3)
5	6.5	0.5	Possibly contemporary with 4. Possible working area (3)
6	5.9	0.3	Possible working floor
7	6.8	0.3	
8	8.3	0.6	Linear relationship with 173
9	5.8	0.5	Excavated by Sieveking
10	6.2	0.3	
11	10.1	0.4	
12	4.2	0.3	Excavated by Sieveking
13	8.0	0.6	Excavated by Sieveking. Overlain by mound of spoil
14	11.0	1.0	
15	13.6	1.4	Two working areas
16	11.7	1.2	
17	7.9	0.3	
18	19.5	1.8	Two possible later test pits
19	10.2	1.0	

SHAFT NUMBER	MAXIMUM DIAMETER (METRES)	MAXIMUM DEPTH (METRES)	ADDITIONAL INFORMATION AND ASSOCIATED FEATURES
20	9.0	1.3	Linear relationship with 28 and 175
21	12.2	0.9	Excavated by Curwen
22	7.0	0.2	Partially overlain by spoil from shaft 175 and a discrete mound of spoil
23	5.4	0.3	
24	5.5	0.6	Possible working area
25	6.0	0.5	
26	7.2	0.3	
27	6.2	0.3	
28	5.6	0.4	Linear relationship with 20 and 175
29	5.5	0.8	
30	6.1	0.8	
31	11.0	0.8	Overlain by a mound of spoil 0.8m high
32	10.5	0.8	
33	16.0	1.3	Two working areas. Two possible later test-pits
34	11.8	0.7	
35	10.0	0.4	Working area
36	5.3	0.3	
37	6.0	0.3	
38	6.9	0.4	

SHAFT NUMBER	MAXIMUM DIAMETER (METRES)	MAXIMUM DEPTH (METRES)	ADDITIONAL INFORMATION AND ASSOCIATED FEATURES
39	6.9	0.5	Working area
40	8.6	0.6	Possibly contemporary with 41
41	7.4	0.5	Possibly contemporary with 40. Wworking area
42	14.9	1.1	Overlies 51
43	10.8	0.7	
44	5.8	0.4	Two working areas. Linear relationship with 45
45	7.0	0.5	Linear relationship with 44
46	7.2	0.3	
47	4.2	0.4	Possible later test-pit, cuts 188
48	9.1	0.6	Three working areas
49	10.5	0.6	Possible working area
50	7.0	0.4	
51	9.0	0.5	Possible working area. Overlain by 42
52	5.6	0.2	Possibly not a shaft - ?working area for 53
53	15.0	0.6	Possibly two shafts in a linear relationship. Possible working area (176)
54	4.5	0.2	
55	4.8	0.2	
56	4.2	0.3	
57	3.7	0.2	

SHAFT NUMBER	MAXIMUM DIAMETER (METRES)	MAXIMUM DEPTH (METRES)	ADDITIONAL INFORMATION AND ASSOCIATED FEATURES
58	5.6	0.4	
59	8.0	0.7	Cut by later test pit
60	6.8	0.3	Linear relationship with 61 and 62
61	5.8	0.2	Linear relationship with 60 and 62
62	15.2	1.1	Linear relationshipwith 60 and 61
63	8.3	0.9	Overlies 69
64	8.1	0.7	Cut by later test pit
65	5.0	0.5	
66	5.7	0.3	
67	6.0	0.4	
68	6.2	0.3	
68a	8.1	0.6	
69	6.5	0.5	Overlain by 63
70	13.3	1.0	Working area
71	14.0	1.9	Working area
72	14.3	1.4	
73	10.7	1.3	Working area. Cut by later test-pit
74	10.2	0.5	Working area. Linear relationship with 234
75	11.9	1.1	
76	6.9	0.5	Working area

SHAFT NUMBER	MAXIMUM DIAMETER (METRES)	MAXIMUM DEPTH (METRES)	ADDITIONAL INFORMATION AND ASSOCIATED FEATURES
77	10.1	0.4	Possible working area
78	9.6	0.8	
79	10.0	0.8	Working area
80	9.5	0.6	Possibly two shafts in a linear arrangement
81	8.2	0.4	
82	8.0	0.5	
83	7.0	0.4	
84	8.0	0.4	
85	7.9	0.7	Associated spoil heap overlies 87
86	8.8	0.6	Linear relationship with 230
87	6.5	0.3	Overlain by 85
88	6.1	0.5	Associated spoil heap overlies possible working area downhill
89	6.5	0.5	Linear relationship with 230
90	6.2	0.1	
91	6.0	0.1	
92	-	-	Recorded by Curwen, now ploughed out
93	4.9	0.1	Very slight levelled by ploughing
94	-	-	Recorded by Curwen, now ploughed out - spoil heap only survives
95	9.8	0.5	
96	6.5	0.2	

SHAFT NUMBER	MAXIMUM DIAMETER (METRES)	MAXIMUM DEPTH (METRES)	ADDITIONAL INFORMATION AND ASSOCIATED FEATURES
97	9.0	0.3	
98	6.5	0.3	Linear relationship with 228 or possible working area (228)
99	5.0	0.2	
100	3.0	0.1	Very slight, levelled by ploughing
101	3.0	0.1	
102	2.7	0.1	
103	-	-	Recorded by Curwen, now ploughed out
104	3.5	0.1	Very slight, levelled by ploughing
105	3.5	0.1	
106	2.8	0.1	
107	4.0	0.1	
108	3.3	0.1	
109	4.5	0.1	
110	3.9	0.1	
111	5.0	0.1	
112	-	-	Recorded by Curwen, now ploughed out
113	6.1	0.1	
114	3.9	0.1	
115	4.7	0.1	
116	4.4	0.1	

SHAFT NUMBER	MAXIMUM DIAMETER (METRES)	MAXIMUM DEPTH METRES	ADDITIONAL INFORMATION AND ASSOCIATED FEATURES
117	4.6	0.1	
118	2.9	0.1	
119	3.0	0.1	
120	4.9	0.11	
121	7.9	0.3	Central spoil heap
122	7.2	0.3	Central spoil heap
123	5.6	0.3	Central spoil heap
124	8.7	0.3	
125	5.5	0.2	
126	5.7	0.2	
127	3.9	0.1	
128	4.2	0.2	
129	8.2	0.4	
130	8.2	0.4	
131	5.0	0.2	
132	4.4	0.1	
133	4.2	0.2	
134	4.8	0.2	
135	3.2	0.2	
136	2.9	0.2	

SHAFT NUMBER	MAXIMUM DIAMETER (METRES)	MAXIMUM DEPTH (METRES)	ADDITIONAL INFORMATION AND ASSOCIATED FEATURES
137	4.3	0.3	
138	-	-	Holleyman's 'Shaft 1' now buried under excavation backfill
138a	-	-	Shaft overlain by IA rampart, noted during Holleyman's excavation of 153a
139	4.2	0.1	
140	6.8	0.2	
141	4.0	0.1	Very slight, defined by spoil heaps
142	4.2	0.1	Linear relationship with 143 and 144
143	5.0	0.1	Linear relationship with 142 and 144
144	6.0	0.4	Linear relationship with 142 and 143
145	7.1	0.3	
146	3.4		
147	7.2	0.3	
148	4.2	0.1	
149	5.0	0.3	Cut by IA enclosure ditch
150	2.7	0.1	
151	6.2	0.1	
152	4.1	0.1	
153	7.0	0.1	Holleyman's 'Shaft IV'; now partly covered by excavation backfill
153a	-	-	Holleyman's 'Shaft II', overlain by the IA rempart
154	7.9	0.1	

SHAFT NUMBER	MAXIMUM DIAMETER (METRES)	MAXIMUM DEPTH (METRES)	ADDITIONAL INFORMATION AND ASSOCIATED FEATURES
155	7.2	0.1	Overlain by IA enclosure rampart
156	5.5	0.1	
157	6.9	0.1	
158	4.0	0.1	
159	6.9	0.1	
160	5.7	0.1	
161	5.2	0.2	
162	5.5	0.3	Working area
163	5.0	0.2	Working area
164	8.0	0.4	Excavated by Sieveking
165	6.9	0.2	
166	5.0	0.2	
167	6.3	0.1	
168	5.6	0.1	
169	5.5	0.2	
170	6.0	0.1	Possibly not a shaft - ? spoil heaps
171	4.8	0.2	Possible working area
172	4.9	0.3	Possible collapse into a gallery
173	3.9	0.2	Linear relationship with 8
174	5.1	0.4	Overlain by mound of spoil

SHAFT NUMBER	MAXIMUM DIAMETER (METRES)	MAXIMUM DEPTH (METRES)	ADDITIONAL INFORMATION AND ASSOCIATED FEATURES
175	6.7	0.3	Linear relationship with 20 and 28. Spoil heap overlies 22
176	5.0	0.2	Possibly not a shaft - ? working area for 53
177	5.5	0.2	Cut by IA enclosure ditch
178	5.0	0.2	Possible working area
179	5.9	0.2	Possibly not a shaft - ? working area for 53
180	5.0	0.1	
181	6.3	0.1	
182	3.9	0.1	
183	5.6	0.1	
184	7.1	0.1	
185	6.0	0.1	Overlain by IA enclosure rampart
186	6.1	0.1	
187	5.0	0.1	Overlain by IA enclosure rampart
188	8.0	0.3	Cut by 47
189	7.3	0.1	Very slight - possibly not a shaft
190	4.0	0.1	
191	3.2	0.3	
192	7.1	0.3	
193	7.9	0.2	
194	6.0	0.2	

SHAFT NUMBER	MAXIMUM DIAMETER (METRES)	MAXIMUM DEPTH (METRES)	ADDITIONAL INFORMATION AND ASSOCIATED FEATURES
195	5.7	0.1	
196	4.0	0.1	Appears to cut the post-medieval field boundary - possibly animal burrowing
197	5.3	0.1	
198	4.1	0.1	
199	5.8	0.1	
200	3.6	0.1	
201	4.7	0.1	
202	4.2	0.1	
203	3.8	0.1	
204	4.9	0.1	
205	6.6	0.1	Overlain by a discrete mound of spoil
206	6.5	0.1	
207	5.8	0.1	
208	7.5	0.1	Cut by IA enclosure ditch
209	3.3	0.1	
210	6.0	0.2	Cut by IA enclosure ditch
211	4.0	0.1	
212	3.1	0.1	
213	4.0	0.1	
214	5.8	0.1	

SHAFT NUMBER	MAXIMUM DIAMETER (METRES)	MAXIMUM DEPTH (METRES)	ADDITIONAL INFORMATION AND ASSOCIATED FEATURES
215	4.6	0.1	
216	4.9	0.1	
217	6.2	0.2	Possible working area
218	5.8	0.2	
219	4.9	0.2	
220	5.0	0.1	
221	5.0	0.1	
222	5.8	0.1	
223	6.5	0.3	
224	5.2	0.2	
225	7.0	0.1	
226	4.2	0.2	
227	3.1	0.2	
228	5.4	0.2	Possibly not a shaft - ? working area for 98 or linear relationship with 98
229	4.0	0.1	
230	6.0	0.2	Recorded by Holgate
231	8.1	0.3	Recorded by Holgate
232	6.2	0.2	
233	4.0	0.2	
234	6.5	0.1	Linear relationship with 74

SHAFT NUMBER	MAXIMUM DIAMETER (METRES)	MAXIMUM DEPTH (METRES)	ADDITIONAL INFORMATION AND ASSOCIATED FEATURES
235	5.5	0.1	Linear relationship with 238
236	6.6	0.2	
237	7.0	0.2	
238	4.2	0.1	Linear relationship with 235
239	5.0	0.3	Linear relationship with 89
240	5.6	0.2	
241	8.0	0.3	
242	3.1	0.2	
243	4.2	0.1	
244	4.7	0.3	
245	3.0	0.1	Holleyman's 'Shaft III' partly obscured by backfill
246	7.0	0.2	Linear relationship with 86, overlain by spoil

Figure 2. RCHME earthwork plan, surveyed at 1 : 1000

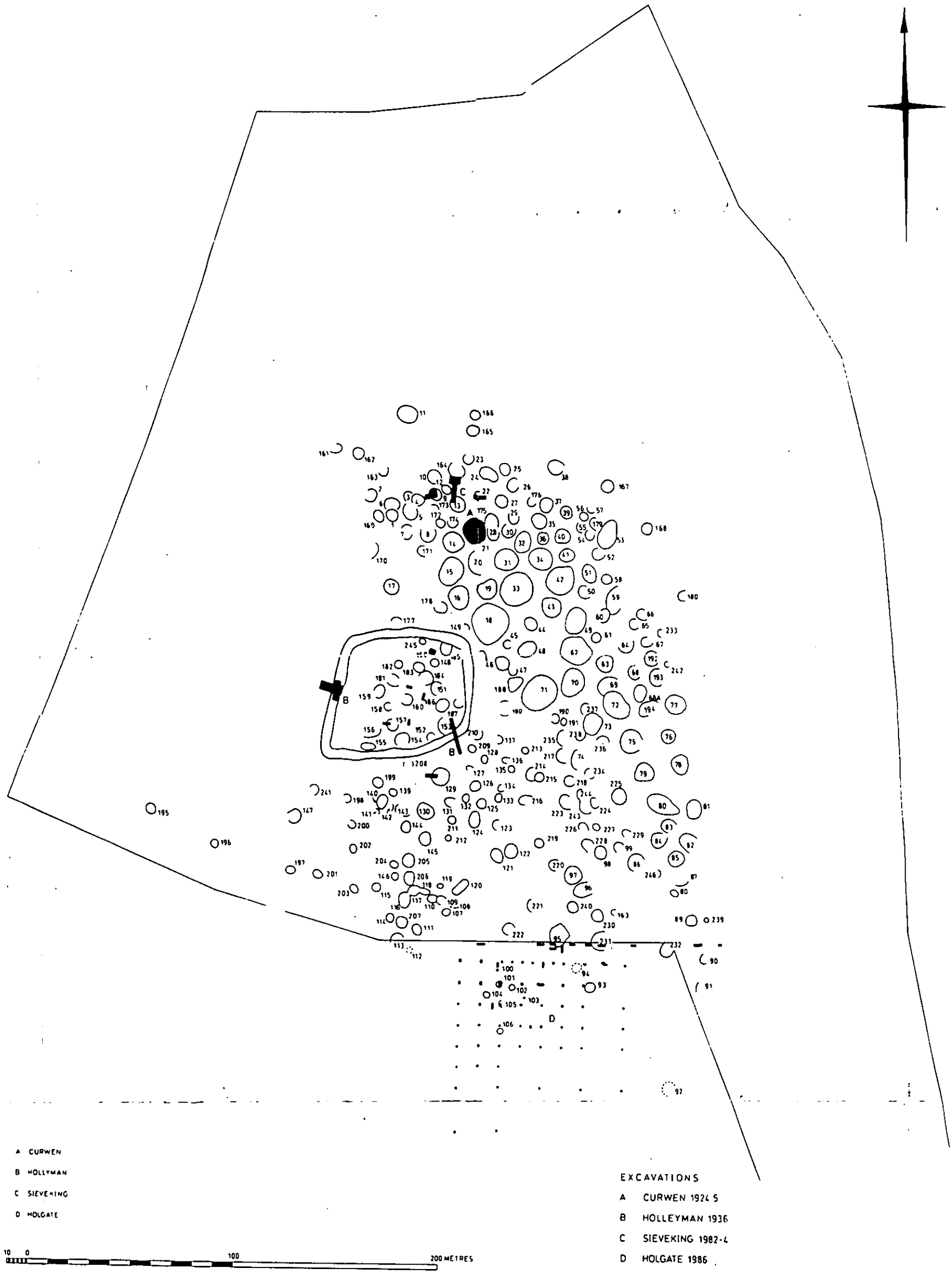

Figure 3. Interpretative overlay, showing excavation trenches


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