

## EXCAVATION OF A LINEAR EARTHWORK AND FLINT MINES AT MARTIN'S CLUMP, OVER WALLOP, HAMPSHIRE, 1984

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### ABSTRACT

*The Quarley High Linear bank and ditch was sectioned by hand at a point near to Martin's Clump Neolithic flint mines. Carbon 14 analysis of an ox bone found in the primary silt of the ditch suggests a date of  $245 \pm 155$ BC for its construction. The bank covered pottery from the Bronze Age and was used as a source of material by 18th-century gun flint knappers. It is concluded that the linear feature probably possessed a combined defensive and boundary marking role. An electricity cable trench nearby cut four Neolithic flint mine shafts which were recorded in plan and elevation. Tools and faunal remains were recovered. Carbon 14 analysis of an antler tine from a shaft yielded a date of  $3983 \pm 106$  BC, suggesting that the mines are early examples of their type.*

### INTRODUCTION

Prehistoric linear earthworks are features of the Wessex chalk downland. They form a complex system, much of which has yet to be adequately defined and whose function is still largely speculative. Firm dates for most of the features are undetermined. This report describes the excavation of a section across a linear bank and ditch known as the Quarley High Linear (Palmer 1984) in the parish of Over Wallop, Hampshire, close to the scheduled area of prehistoric flint mines at Martin's Clump reported by Stone (1933) and by Ride and James (1989). The excavation, on Ministry of Defence land, was named Martin's Ditch (MD). The work was performed in advance of the digging of a cable trench, by members of the Porton Down Conservation Group in the summer of 1984.

The linear feature runs from Thruxton Hill,

SSE to Quarley Hill for 2.7 km. After passing 70 m to the west of Quarley hill fort, it turns SSW to Boar Knoll, a distance of 2 km. At times, it is invisible as a surface feature. It then runs SSW for 2.9 km, through Martin's Clump, to a point NGR SU 2452 3776 where it disappears. A more recent cable trench (1988) showed it in section at NGR SU 2456 3761, a point which indicates a link with a visible section between NGR SU 2490 3641 and Lopcombe Corner. This link increases the feature's traceable length from 7.6 km to 9.8 km. Thereafter, aerial photographs show it linking with a possible hill fort in Ashley's Copse, close to Lopcombe Corner; palisade holes are visible on the photographs, located on the bank near the hill fort (Mark Corney, pers comm). A map of the area showing the excavated feature and other linears is given at Fig. 1.

The linear, and related ones, were discussed by Hawkes (1939) in his excavation report of Quarley Hill Fort. He sectioned it near the fort (Hawkes's Figure 3). Some related ditches were also sectioned. One of these was sectioned again by Arnold (1972). Linear features in Wiltshire have been excavated by Clay (1972), and others in Dorset by Pitt-Rivers (1898) and by Bowen *et al.* (1978). A useful large-scale map of linear features in the area around Danebury Hill Fort, which includes the Quarley High Linear, is given in Palmer (1984); it is based largely on the interpretation of aerial photographs. Further sections of linears cut by cable trenches on the Porton Down Ranges have been recorded by the author (unpublished) and by James (pers comm). Sections in the same area at Roche Court Down, Easton Down and Boscombe Down East have been published by Stone (1931; 1935; 1936). Bradley *et al.* (1994) report the work of the Wessex Linear Ditch pro-

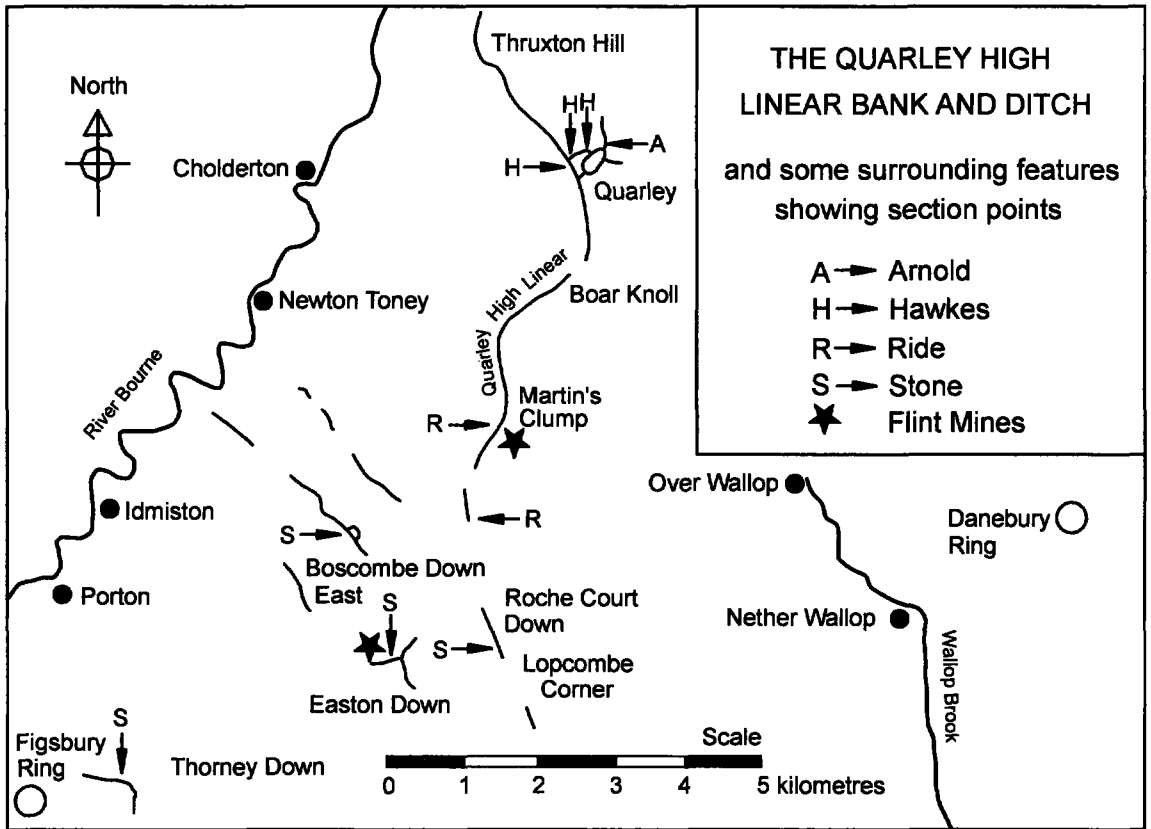


Fig. 1 Martin's Clump and the Quarley High Linear earthwork: location map

ject, which included nineteen sections of linears on the Salisbury Plain Training Area. The report describes a sequence of construction from the 8th to the 5th centuries BC. Although they are clearly integrated into the landscape of fields and pasture, Bradley warns against seeking a single reason for their construction and argues that supposed links between the features and the hypothetical functions of hill forts are inadequate in explaining the social organisation of the landscape.

Hawkes concluded that the features were ranch boundaries or cattle walks, an opinion heavily influenced by the ideas of Dr J F S Stone who is noted for his extensive excavations in the area, most of which were performed some thirty years before his death in 1957 (Stone 1958). These ideas were

fashionable at the time but require re-examination now. In particular, the possibility that some of the features were defensive in nature was not discussed earlier, despite their similarity in section to the 'ramparts' at Quarley and elsewhere whose appellation demonstrates that they were certainly regarded as defensive at the time they were reported.

A small group of flint mines lying some 400 m north of the scheduled area was discovered and mapped by D J Ride and S Ride in 1989. In 1996, as part of a national survey of flint mines, the area described here was mapped for the Royal Commission on Historical Monuments of England [RCHME] by Field, Brown and Ride (RCHME forthcoming). Many hitherto unrecorded

mines were located, extending up to and including those found in 1989. The plan, reproduced here as Fig. 2, shows 337 shafts, greatly increasing the importance of the Martin's Clump group as a

national resource. It is certain that the area contains many more mines than are currently identified. Fig. 2 also shows a length of the linear feature containing the excavation reported here.

## THE LINEAR FEATURE

### *Excavation*

A one-metre wide section was excavated by hand at right angles to the ditch at NGR SU 2500 3879. This section included a 0.5 m wide trench, cut below the bottom of the ditch, to carry an electricity cable. A profile of the section is shown at Fig. 3; it is similar to the profile of Hawkes's Ditch 1 and to that of Arnold's Ditch 3. Differences can be accounted for by the proximity at Martin's Clump of the prehistoric flint mines; for there, much of the industrial waste flint had been incorporated into the bank and used to revet it, with important consequences for the later history of the feature.

The ditch had been allowed to silt up naturally. Emptying the ditch showed that the primary silt layer had hardened, leading initially to the belief that the bottom of the ditch was flat. However, cutting the cable trench (deeper than the ditch) revealed that the bottom was rounded. The primary fill layer had sagged into the ditch, its lip on the bank side being thicker than the opposing one: a natural consequence of there being more material to generate silt on the bank side. The upper curve of the ditch opposite the bank showed marked frost damage caused by the increased radiative cooling of near horizontal surfaces on clear, calm nights in winter. As silting proceeded, flints fell from the bank, becoming cemented into the ditch by the silt so that, on excavation, a small 'wall' of flints rising for 300 mm or so from the bottom of the ditch was found. This feature is not obvious in the elevation shown at Fig. 3. It is taken as evidence that silting proceeded undisturbed over a long period. There was no indication that the ditch had been recut at any time.

The liberal use of flint in building the bank led to its systematic quarrying by itinerant gun flint knappers some 200 years ago; they manufactured gun flints of the Old English pattern (ie, using the wedge technique) which produced characteristic

waste cores. The technique was labour efficient but wasteful of raw material, and so was popular only where flint was abundant and of low quality. Over 2000 cores, waste flakes and other fragments of gun flint debitage were recovered from the section. Gun flints from this excavation have been analysed and reported on by Fowler (1992; see also Fowler 1989) and Clay (1925). Further evidence of gun flint knapping may be found throughout the area, with local concentrations at Easton Down (Stone 1931), where a second group of prehistoric flint mines occurs, at Figsbury Ring (Cunnington 1935) and many locations nearby, including the lee of an ancient hedgerow 2 km south of Martin's Clump where piles of flint, probably resulting from ancient field clearance, had been exploited.

The debitage from knapping at Martin's Clump was cast to both sides of the bank and on its crest. It was carried by earthworms into the thick humic layer that had accumulated over the ditch area and was visible in section as a characteristic bright blue band of patinated cores. Some had fallen onto the far lip of the ditch where they could sink no farther. The partial levelling of the bank in this way, and its fortuitous production of a broad, elevated metallised surface, made it attractive as a highway. Two closely spaced, parallel sets of cart ruts were discovered atop the slumped and depleted bank, each about 1.45 m wide. A large, modern horseshoe (1.02 kg in weight and 170 mm across) was discovered in the overlying soil, confirming the origin of these tracks. It was dated to between 1930 and 1940 (Mr Stephen Belasco, a blacksmith, pers com).

The bank covered a layer of soil up to 200mm deep from which most of the Beaker sherds were recovered. The analysis of a sample from this layer was not received.

The excavation was continued as a cable trench by machine digging. The trenches skirted the scheduled area of flint mines but they were found

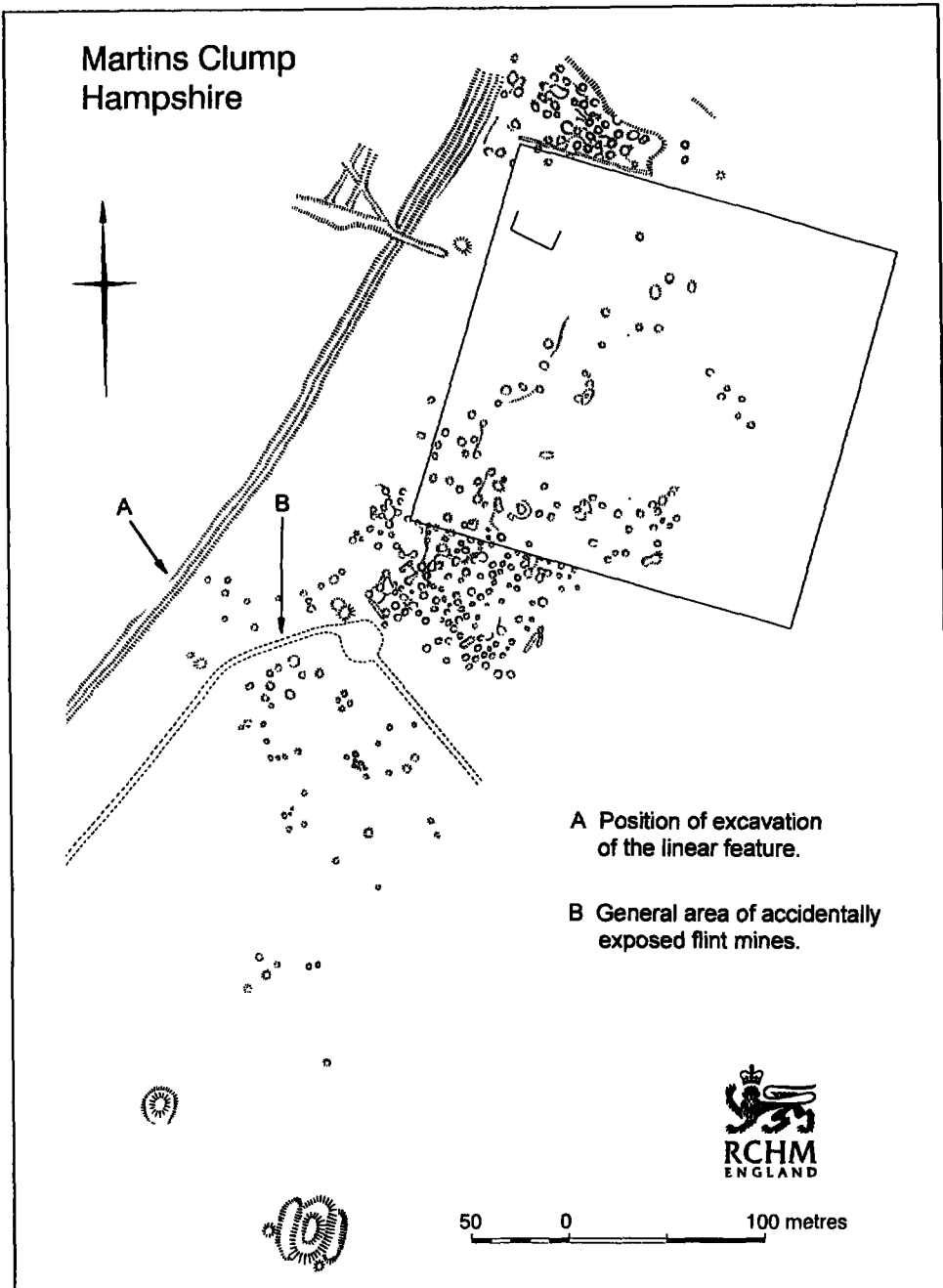
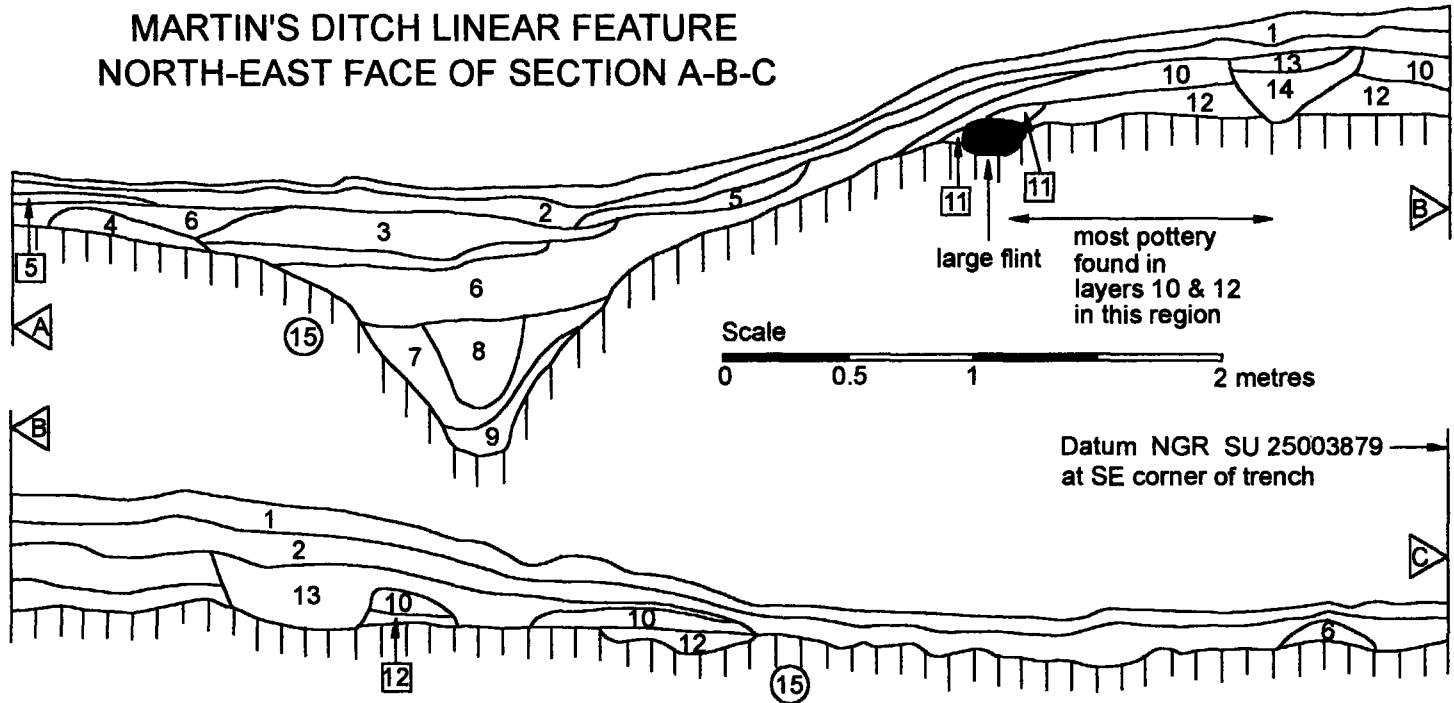


Fig. 2 Martin's Clump: flint mines and linear features in the vicinity of the excavations (drawing by RCHME, with permission)

# MARTIN'S DITCH LINEAR FEATURE NORTH-EAST FACE OF SECTION A-B-C



- 1. Turf layer.
- 2. Humic layer.
- 3. Brown loam with gun flints.
- 4. Gun flints and chalk.
- 5. Brown loam with small chalk particles and fragments of flint.

- 6. Light brown chalky loam with small chalk nodules.
- 7. Primary silt layer.
- 8. Many flints in primary silt.
- 9. Strongly consolidated primary silt.
- 10. Remains of chalk bank.

- 11. High concentration of flints.
- 12. Ancient soil with flints.
- 13. Gun flint debitage.
- 14. Light brown fill with chalk nodules.
- 15. Chalk bedrock.

Fig. 3 Quarley High Linear: section

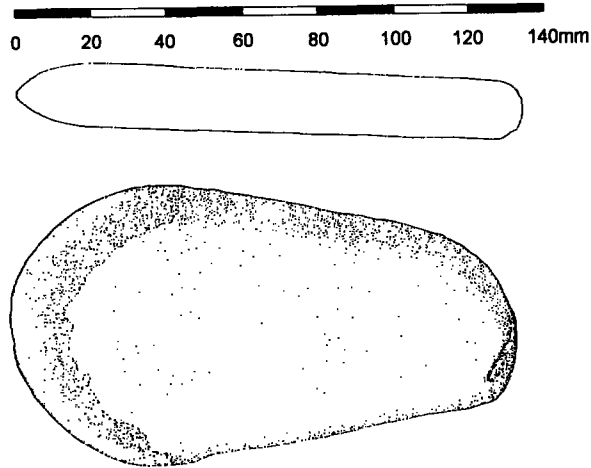


Fig. 4 Quarley High Linear: sandstone axe

to have cut through four small mine shafts which were not visible as surface features. A description of these shafts is given in this report.

#### *The Finds*

**Pottery:** Stone (1933) described the area as strewn with Beaker pottery sherds. No surface finds of pottery have been made recently, but many sherds and fragments of pottery were sealed on the prehistoric land surface by the construction of the bank, together with the remains of a fire and a boar's tooth 64 mm in length. A detailed report on the ceramics by Dr R M J Cleal is given in Appendix A.

**Stone:** Numerous (327) prehistoric worked flints, totalling 18.5 kg in weight, mostly flakes and cores, together with fragments of burnt flint, were recovered from the section, as was to be expected owing to the close proximity of the flint mine area. A metrical analysis of the flakes by Dr M J F Fowler is given in Appendix B. Apart from two crude scrapers, the only tool found was an ovoid sandstone axe, seemingly fashioned from a naturally shaped beach pebble. It was discovered as if driven into the ground, adjacent to the bank. Its working edge was pecked and ground, and it bears wear marks consistent with being set into a haft. It is illustrated at Fig. 4. Of this axe, Dr R W

Sanderson (British Museum, Department of Mineralogy) writes:

The material from which it is formed is a medium grained siliceous sandstone, probably protoquartzite. This is not one of the rock-types that was apparently quarried specifically for the production of implements. The stone is tough and difficult to work, and will not take a very good edge. This and the shape suggests that it is a 'one-off' implement derived from a pebble, and probably locally made with a minimum of effort.

The rock type is not distinctive enough to be certain of its source. The hardness suggests that it is from Palaeozoic strata, and assuming that the brown coloration is original, rather resembles stone from the Old Red Sandstone/Devonian or Upper Carboniferous strata of the borders or north Devon. The durability of this stone leads to it being found as erratic fragments throughout southern England, presumably having been transported initially by glacial or river activity.

Consistently with Dr Sanderson's comments, pebbles of a similar shape and composition can be found on the beaches near Dunster, north Somerset, for example.

**Bone:** Part of the limb bone of an ox was discovered 300 mm from the bottom of the ditch in the silt.

### Dating

The ox bone was submitted for C14 analysis yielding a date of  $2200 \pm 120\text{BP}$  (HAR-6810), giving a calibrated date of  $245 \pm 155\text{BC}$ . (Conversion of radiocarbon dates here have been performed using the computer calibration program, revision 2.0, from the University of Washington, Seattle, 1987 (Unsmoothed Suess).) This date is sequentially consistent with the abundance of the mollusc *Oxychylus draparnaudi* which occurred in all layers of the ditch and which was not present in England until the Late Bronze Age.

### Discussion – Linear ditch

The linears mentioned in the introduction fall readily into either of two classes: broad bottomed ditches, and narrow bottomed ones; the latter class, to which Martin's Clump belongs, is single banked.

Clay (1972) sectioned several linear earthworks and found a hard fill in the bottom of the ditches. He interpreted this as compaction caused by cattle walking. The ditch at Martin's Clump, apart from the compactness of its bottommost fill, is quite unlike the double banked ditches of Clay and was certainly unsuitable as a cattle walkway; its right angled junctions and narrow gutter are inconsistent with the requirements of such a feature.

The unfenced, precipitous linear would also have been dangerous to livestock if used to enclose cattle. No evidence for the existence of a former hedge on the bank, such as is suggested by Bowen *et al.* (1978), was discovered; the flinty composition of the bank was unsuitable for growing hedges, although the present accumulation of soil and the redistribution of the flints has encouraged scrub growth recently. Any evidence for a prehistoric hedge would have been destroyed by the activities of the recent gun flint knappers. The integrity of such a great length of hedge, only as effective as its weakest point, would have been difficult to maintain.

Martin's Clump would have lain, for part of the Iron Age, within the area dominated by Danebury Hill Fort, which is but 8 km distant and is a major horizon feature. Danebury is centrally located within the natural boundary features of the River Bourne to the west, the River Test and the Wallop Brook to the east, and by the Broughton Down scarps to the south. The Quarley High Linear follows the line of

the Bourne. It may thus be interpreted as a boundary, but its precise location, well back from the scarps of the ridges overlooking the Bourne valley, suggests that it possessed a defensive role, for it could not have been attacked by surprise; the attackers were denied using the dead ground of the valley for concealment. Its glacis slope and ankle-breaking bottom seem optimally designed to provide defenders on the earthwork with an effective force multiplier. Farmers or territorials could have kept a more numerous band of raiders at bay whilst military caste cavalry was summoned from Quarley (or possibly from the hill fort at Ashley's Copse) or from nearby garrison posts manned in times of tension; Boar Knoll and Martin's Clump would have provided such suitable vantage points. This interpretation demonstrates that if the feature is to be regarded as defensive, it is better understood as the remaining component of an integrated system of static and mobile military components rather than as an isolated earthwork.

Some support is given to this theory by the developmental sequence at Danebury described by Cunliffe (1995) who identifies a transition from his Stage 3 to Stage 4 around 300 BC. Cunliffe sees the former period as one in which Danebury became the focus of local power through its corn storing facilities and the exercise of ritual there. He lists the pressures that may have caused the social stresses which resulted in the raising of the general level of aggressiveness and an attack on Danebury. He suggests that the hill fort may have been temporarily abandoned, as Quarley was permanently so. He writes that a significant change took place about 300 BC; the defences were enlarged and a change occurred in the religious and social organisation. A major change in the ceramic tradition also happened at about that time. In Stage 3, then, it is possible to postulate an original reliance on an outlying defensive territorial boundary, with small forts at intervals, like Quarley, based on delaying obstacles and mobile reinforcement. The temporary abandonment of Danebury, or a change in military strategy to a more strongly fortified centre, as occurred in Stage 4, could account for the decay of the linear. The date of the ox bone in the silt of the ditch is consistent with Cunliffe's dating of the transition. Following Bradley *et al.* (1994), who hypothesise that after the Middle Iron Age, linears

no longer defined the boundaries associated with particular communities (which may, of course, be due to changes in traditional territorial boundaries), it can be conjectured that post c 300 BC,

the linear had no political or military use. Its function changed to a useful common back boundary for the new row of ranches running down to the River Bourne.

## THE FLINT MINES

### *Excavation*

The linear feature was excavated by hand from about a metre to the northwest of the ditch to about three metres beyond the visible edge of the bank to the southeast. The section showed that the boundaries of the monument had been captured. Then, a mechanical digger excavated the rest of the cable trench. The mechanised work was completed before the presence of the flint mines (FM) in the digger's trench was discovered. A plan of the excavation is given at Fig. 5. The trench continued down the hill, and worked flakes occurred in the spoil until it reached the southern limit of the present scheduled area, suggesting that the southernmost mines fall within that area. No additional hand excavation was conducted except for shallow probing in FM1 and FM2.

From the drawn elevations of the shafts (Figs 6–8) it can be seen that the trench firmly cut through four flint mine shafts and probably grazed the sides of two more. One of these latter shafts shows as an ovoid fill area in Fig. 8, probably indicating a barrel-shaped pit. FM4 had been much disturbed, probably by burrowing rodents; it was not recorded in elevation.

### *The Finds*

*Stone:* All the spoil from the trench, down to and including FM4 was sieved through a 100 mm mesh; worked flint was collected from the remainder of the spoil where it was visible. Numerous flint flakes (2921) and cores (16) were discovered, 610 flakes coming from a workshop floor discovered adjacent to FM1 (Fig. 5). The debitage here was contained within a layer of topsoil 200–250 mm thick. The spoil from FM1 yielded 1174 flakes, of a lower average weight than elsewhere, many of them very thin; of sixty flakes, recovered from the interior of FM1, fifty seven had no facets with cortex. It is likely, therefore, that the later,

more delicate phases of knapping were performed within the shelter of the shaft. Local concentrations were discovered near FM2 and FM4, but none near FM3. One burnt flake was found (Table 1).

A heavy, pointed tool 142 mm long, superficially resembling a hand axe, was recovered from the spoil of FM1 (Fig. 9). It was identified on purely morphological ground by British Museum staff as a Lower Palaeolithic tool. While it is superficially similar to iron-stained hand axes occurring in the Milford Hill gravels at Salisbury, its knapped facets are patinated white to exactly the same degree as the flakes with which it was found. Its edges are still sharp; it has not been transported by ice. From the spoil which adhered to it when discovered, it is clear that it was retrieved from a Neolithic mine. Stone (1933) 'turned over' a workshop floor at Martin's Clump and remarked that tools he found were of Palaeolithic form and: "As has been abundantly proved, these forms, which bear so decided a resemblance to those of the Drift, occur in all flint mining areas and show that the type survived, obviously for some special use." It is clear that the axe, a 'ficron', is of Neolithic origin, a conclusion concurred with by other specialists. It was probably intended for grubbing up roots, an essential activity in the Neolithic period when crop growing was expanding.

A crude, pointed tool (Fig. 10) 119 mm in length was recovered from the spoil of FM2. The flint contained a large flaw. Its workmanship suggests an apprentice piece.

Some delicate flakes were present in the lithic assemblage; one showed definite evidence of further working. This flake (Fig. 11) 46 mm long exhibited microdenticulation along one edge, 23 dentils per 10 mm of edge at one stretch. It was apparently discarded after breaking during manufacture. A very similar flake was discovered near FM4, but with less well defined microdenticulation.



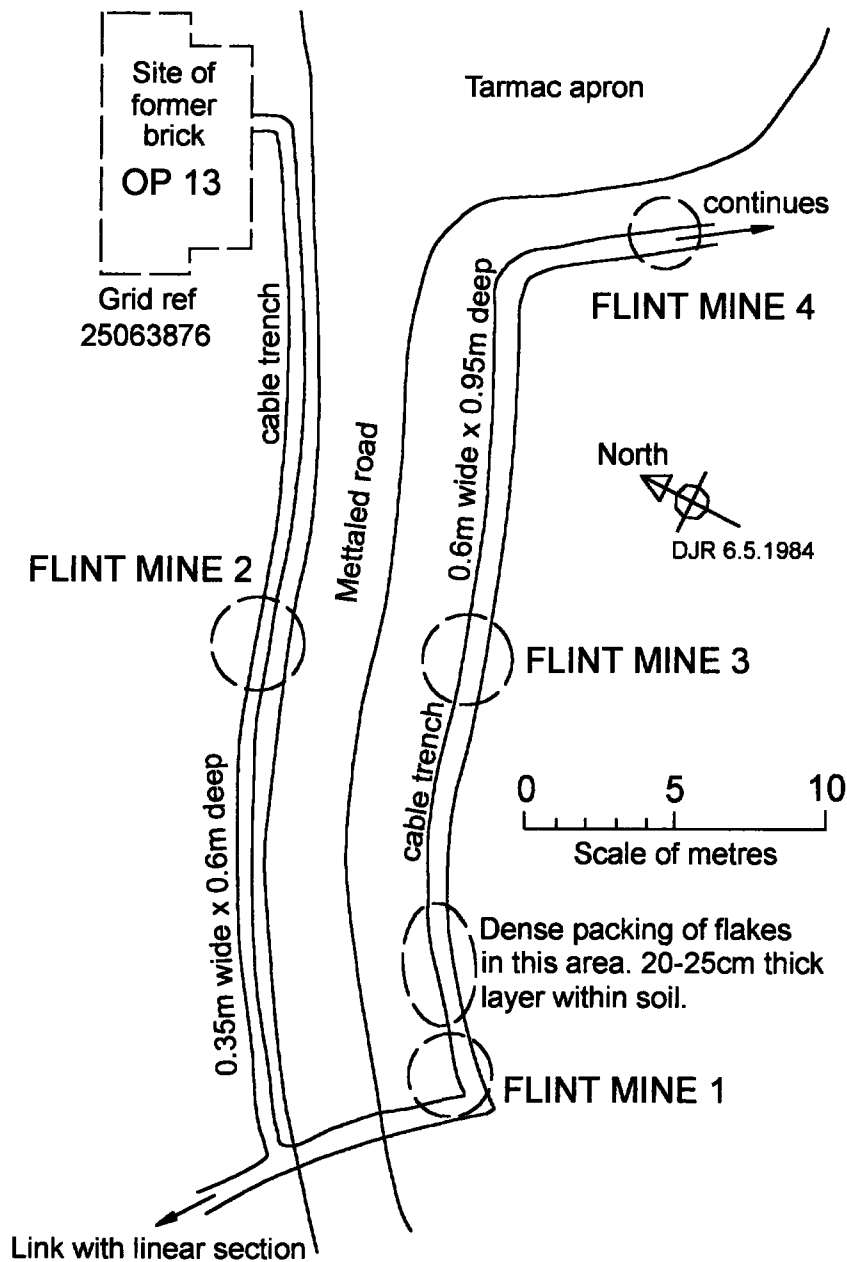


Fig. 5 Martin's Clump: location plan of flint mines investigated

MARTIN'S CLUMP, FLINT MINE 1

- VIEW A - SOUTHERN PROFILE
- VIEW B - NORTHERN PROFILE
- VIEW C - EASTERN PROFILE

Grid ref 25063875  
DJR 14.5.1984

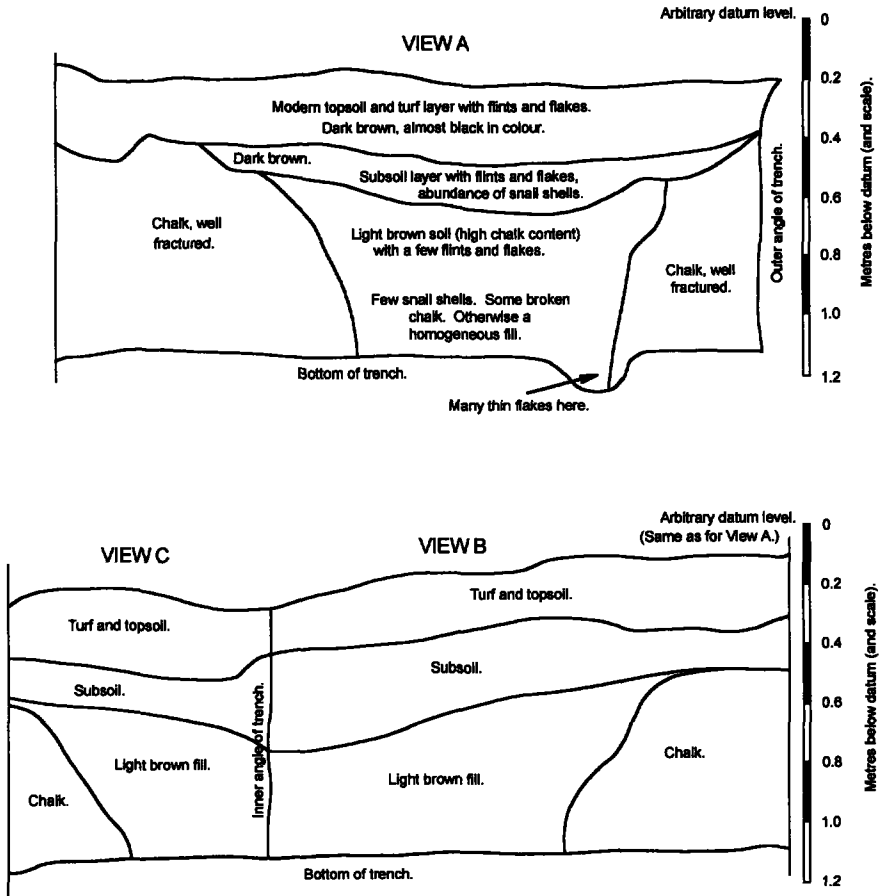
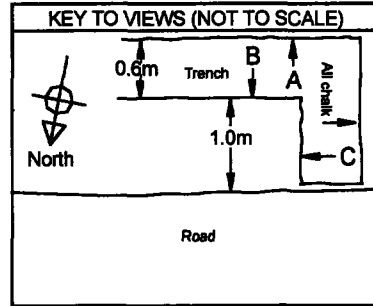


Fig. 6 Martin's Clump: flint mine 1, sections

MARTIN'S CLUMP, FLINT MINE 2

Grid ref 25063876

DJR 19.5.1984

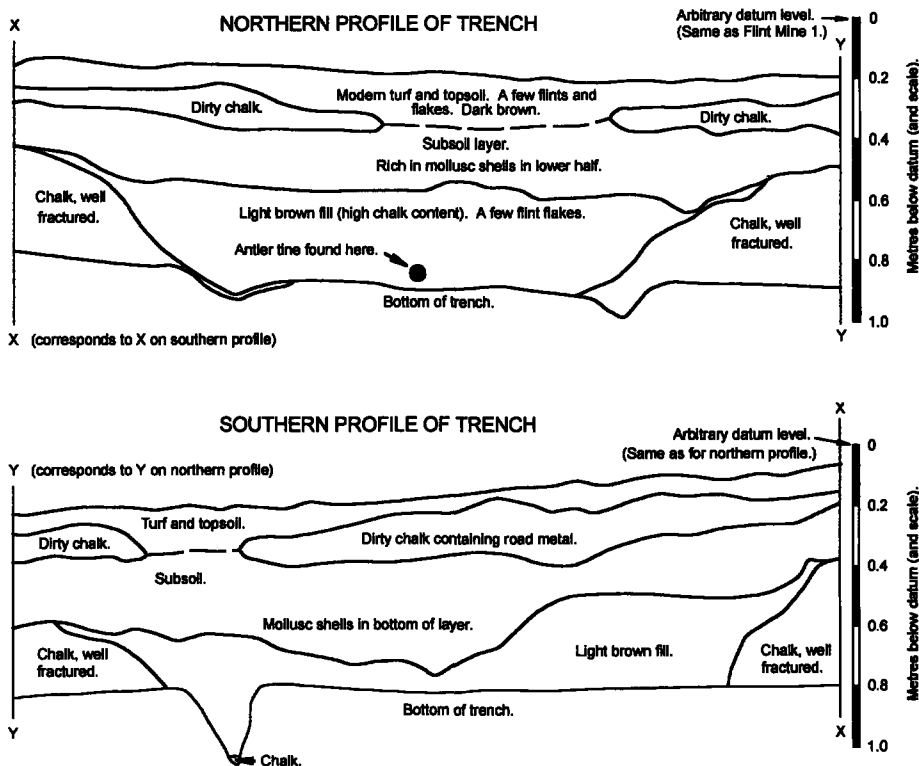


Fig. 7 Martin's Clump: flint mine 2, sections

Table 1 Numerical analysis of flakes, cores and burnt flint from the flint mines

	Flakes		Cores		Burnt
	Number	Weight (kg)	Number	Weight (kg)	Weight (kg)
FM1 1m depth	60	0.6	-	-	-
FM1 workshop floor	610	9.8	1	0.1	0.05
FM2 spoil	19	1.6	-	-	-
FM4 spoil	55	1.5	1	0.1	0.04
Rest of spoil	1003	24.6	4	2.7	0.22
Totals	2921	46.5	16	6.4	0.93

MARTIN'S CLUMP, FLINT MINE 3

Grid ref 25063875

DJR 17.5.1984

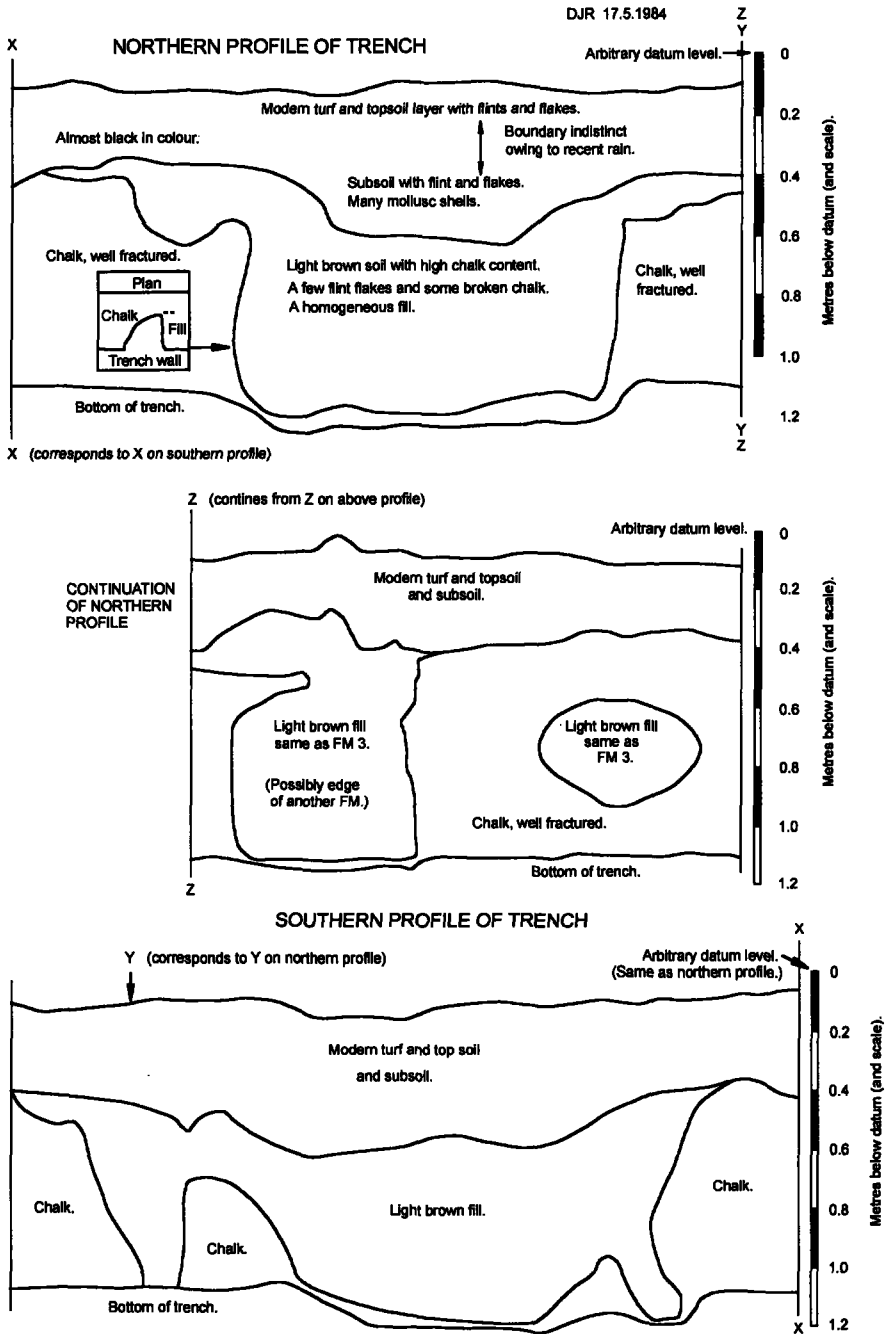


Fig. 8 Martin's Clump: flint mine 3, sections

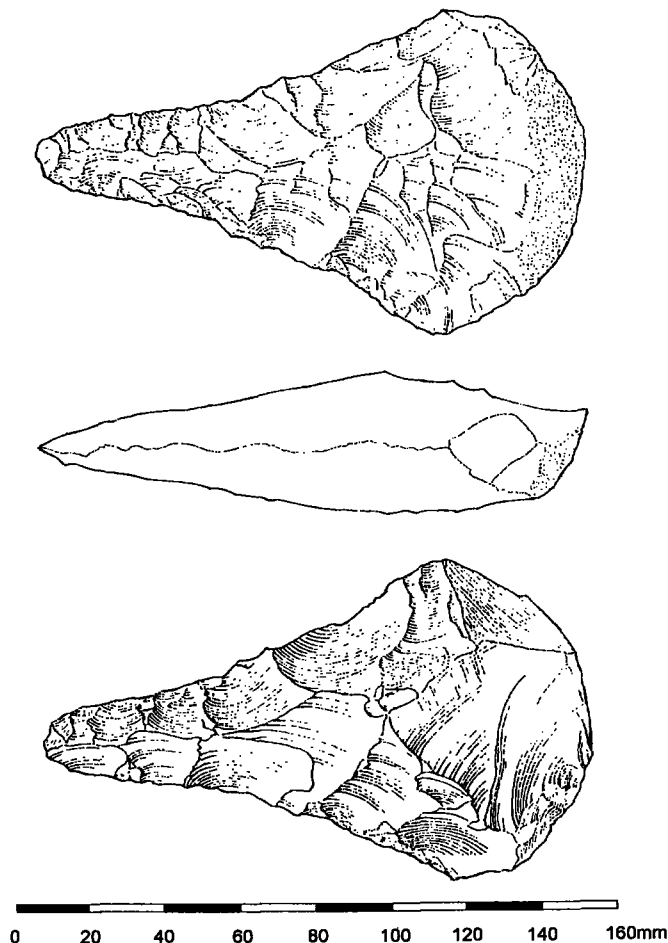


Fig. 9 Martin's Clump: ficron hand axe

One large, crudely knapped flint with an apparently worn tip is thought to be a wedge for use during flint mining operations.

*Pottery:* The only ceramic discovered was a single Beaker shard in the spoil of FM1 (sherd P3 in Appendix A). It probably came from the base of the humic layer.

*Bone and antler:* From the spoil of FM1 there were recovered 25 g of a sheep or goat tibia, 120 mm in length with gnaw marks consistent with chewing by a dog; part of a probable cow femur, 47 mm long; and an antler tine (a brow, bez or trez tine

from a red deer) 150 mm long and 60 g in weight, showing wear on the tip. Another, similar, antler tine was recovered from the wall of the trench through FM2 (Fig. 7). It was very fragile and broke into fragments weighing 38 g. A cow limb bone 153 mm long and 35 mm proximally across its shank was recovered from the spoil of FM2. Also in this spoil was a fragment of bone weighing 11 g and 61 mm long displaying an oblique cut 14 mm long as if caused by butchery with a knife.

*Mollusca:* Samples of soil were taken from FM1, one kilogram each from the subsoil and from 800 mm below the surface, and screened for molluscan

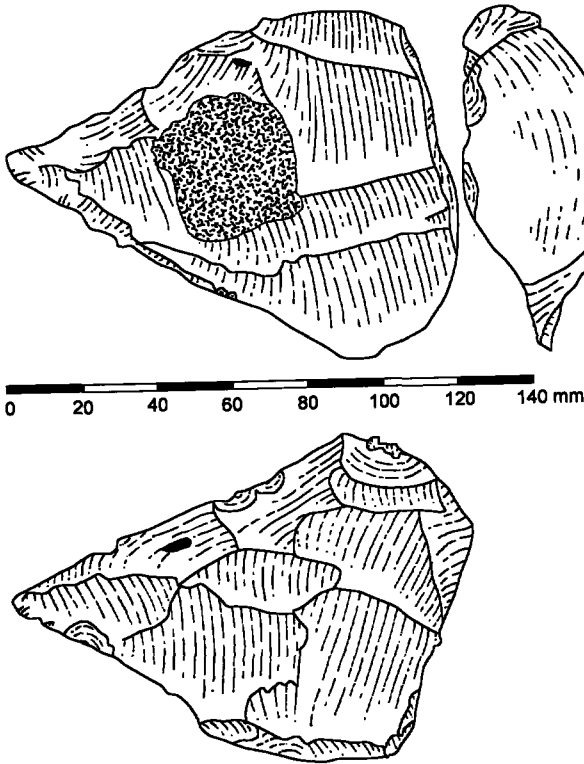


Fig. 10 Martin's Clump: crude flint tool

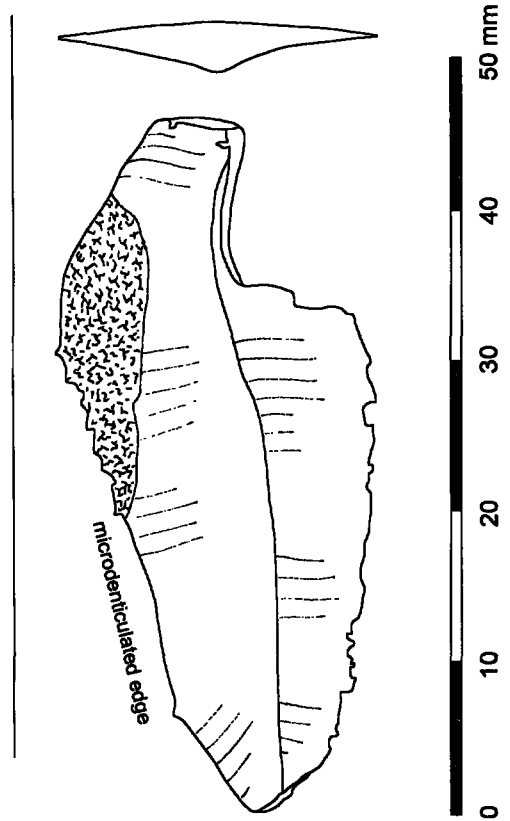


Fig. 11 Martin's Clump: microdenticulated flake

shells (Table 2). An analysis of these data is inconclusive, because *P. elegans* is a burrowing species, found in practically every ancient context on Salisbury Plain. It favours Mediterranean climates and its shell is very durable, so its presence could indicate either a short, warm spell or a longer, cooler period of accumulation. The presence of *V. pusilla* indicates a well drained environment, such as is expected on high chalk downland.

**Dating:** The antler from FM2 was submitted for C14 analysis yielding a date of  $5150 \pm 70$  BP (BM-3083); this gives a calibrated date of  $3983 \pm 106$  BC.

#### Discussion – Flint mines

Any discussion of these recently exposed flint mines inevitably entails a comparison with the

Easton Down flint mines 3 km to the SSW (Stone 1931) and with the Watsons' carefully excavated (but inadequately published) mine at Martin's Clump (Ride & James 1989). The exposed mines on the ridge are very much shallower than all these other examples, being only about a metre or so deep compared to 3.5 m for the Watsons' excavated mine lower down the slope at Martin's Clump. Differential weathering of the chalk at varying altitudes since the Neolithic period may be discounted as producing this difference. An explanation might be that the layer of mined flint nodules dips faster than the contours of the ground; the difference may be accounted for by differential weathering of an anticline over geological timescales. This reasoning would account for the southern limit of the mines; at that point the layer was too deep for economic or practical min-

Table 2 Molluscan remains from wall of Flint Mine 1, individuals in 1kg samples

	Subsoil 800mm below surface	
<i>Pomatius elegans</i>	165	38
<i>Cochlicopa lubrica</i>	8	-
<i>Vertigo pusilla</i>	242	-
<i>Clausilia bidentata</i>	6	1
<i>Cecilioides acicula</i>	4	-
<i>Helicigona lapicida</i>	1	-
<i>Cepa nemoralis</i>	5	1
<i>Discus rotundatus</i>	5	6
<i>Vitrea crystallina</i>	2	-
<i>Oxychylus alliaris</i>	3	-
<i>Aegopinella nitidula</i>	4	-
<i>Oxychylus draparnaudi</i>	1	-
<i>Oxychylus cellarius</i>	-	2

ing to be conducted although the slope continues for another two hundred metres or so. Differing mine depths may also be the result of separate, discontinuous layers of flint. However, the chalk encountered at the bottom of the cable trench through the shafts may be the result of partial infill with spoil from a neighbouring mine. There were very few workable flint nodules in the spoil from the cable trench, nor were any visible in section in otherwise undisturbed sections of the trench, sug-

gesting that the trench had not reached the workable seam. The correct interpretation can only be discovered by controlled excavation.

There were too few tools recovered in 1984 to make a comparison with Easton Down, but they may be aggregated with those recovered by Stone and those located from the Watsons' excavation. The Martin's Clump assemblage is then not significantly different from that of Easton Down: core tools with some flake tools. Imperfect, discarded tools are more likely to be discovered in a manufacturing context although there is no reason to suppose that their distribution is unrepresentative of the complete toolkit. The tools recovered in 1984 were rejects, although serviceable tools were recovered by the Watsons and at Easton Down.

The mean date of 3983 BC provided by the C14 assay of the antler from Martin's Clump is some six hundred years earlier than that for Easton Down, where an antler pick gave a C14 date of 4480 ± 150 BP (BM-190), around 3370 BC; however, only single dates exist for both sites. The earliest radiocarbon date for a flint mine is given by an antler from Church Hill, Findon, on the South Downs: 5340 ± 150 BP (BM-181), around 4230 BC; other radiocarbon dates from Findon are later than that from the Martin's Clump mines, which are thus clearly among the earliest known groups of shafts. Whether Martin's Clump and Easton Down are manifestations of a continuous tradition of mining in the area or separate bursts of local industrial activity cannot be determined on the evidence available. There is now a strong case for further, planned excavation to examine in greater detail and with more confidence the differences between the Martin's Clump and Easton Down complexes.

## APPENDIX A

### PREHISTORIC POTTERY FROM THE LINEAR DITCH EXCAVATION

By R M J CLEAL

#### Introduction

A total of 63 sherds weighing 193 g were recovered during the excavation. All the classifiable sherds are Beaker, and at least eleven vessels are

represented. The assemblage is treated as a whole, as there is no indication from the stratigraphy or from the ceramics that there is no more than one episode of occupation represented.

*Fabric*

The sherds were all examined using a hand lens with  $\times 10$  magnification. Descriptions of the individual fabrics are given in Table 3, and totals by inclusion type are given in Table 4. Three inclusion types, flint, sand and grog, dominate the assemblage. Flint occurs in half the sherds (50% by count, 64% by weight), grog in about a third (28% by count, 45% by weight), and sand in almost all. Of these three inclusion types grog is certainly added by the potter, the flint probably added, while the sand may be added or naturally occurring in the clay. Iron oxide fragments, which occur sparsely in fabric FeS:l and rarely in GS:l, occur naturally in clays, and the small calcareous inclusions, which may be limestone or, possibly, chalk, may also be natural or added. All the fabrics, with the possible exception of CaFS:l, could have been produced locally.

*Form*

Very little can be determined of the form of the Martin's Ditch vessels, as all are fragmentary and represented by only a few sherds each (Fig. 12). Both fine, thin-walled vessels (P1–P6), and coarse, thicker, vessels are represented (P9, P11–P13). No sharp carinations are present, and the form of P6 at least suggests a gentle, sinuous profile. Open, flaring rims appear to be the preferred form, the only exception being P1, with an upright or slightly inturned rim, which suggests a convex neck.

*Decoration*

A limited repertoire of decorative motifs is represented, comprising zones of parallel multiple horizontal lines and zones of lattice (Clarke 1970 Basic European, Motif Group 1, Motifs numbers 1 and 4), and filled triangles (Clarke *op cit* Southern British Motif Group 4, Motif number 29), which are almost certainly pendant in all cases; they are certainly pendant above the base P5.

*Illustrated Sherd Catalogue*

Information on each vessel is given in the following order: sherd type and decoration/fabric/

condition/colour, in the order exterior surface, core, interior surface.

- P1** One decorated rim and one decorated body sherd of a beaker with rectangular-tooth-comb impressions (tooth size approximately  $1 \times 1.5$  mm). The rim angle is not certain and the rim diameter is indeterminable. GS: 1 worn, brown/black/brown
- P2** One small Beaker rim sherd with rectangular-tooth-comb impressions (tooth size  $2 \times 1$  mm). S: worn, orange/black/orange
- P3** One Beaker rim sherd with irregular, shallow ?grooves. CaFS: 1 very worn; the internal surface is almost entirely missing, and the condition of the exterior is so poor that the type of decoration is uncertain. Pale brown exterior
- P4** One Beaker rim sherd. There are some faint surface features, which may be the remains of fingernail impressions, but they are very worn and may be simply accidental surface features. S: 1 worn, pale orange/-/pale orange
- P5** One decorated base-angle sherd and three plain body sherds probably belonging to one Beaker. The basal sherd is decorated with filled triangles or lozenges, executed in rectangular-tooth-comb. This is almost certainly the same vessel as P1. GS: 1 very worn, brown/black/brown
- P6** One large Beaker body sherd with a zone of lattice bounded by multiple horizontal lines; the decoration is in 'square'-tooth comb (although many of the teeth are in fact parallelograms; tooth size approximately  $1 \times 1$  mm). FS: 2 worn, red-brown/black/orange-brown
- P7** One Beaker body sherd decorated with very deeply impressed comb (the teeth are indistinct). FeS: 1 worn, orange/black/orange
- P8** One Beaker body sherd decorated with lattice and a filled triangle or lozenge, executed in comb impressions. S: 1 worn, orange/dark grey/orange
- P9** One Beaker body sherd with parallel lines of rectangular-tooth-comb impression. FGS: 2 very worn, orange/ bi-coloured core – as surface colours black
- P10** One Beaker body sherd with triangle or lozenge motifs executed in rectangular-tooth-comb. S: 1 worn, orange-brown/-/orange-brown
- P11** One Beaker body sherd with non-plastic fingernail impressions. FGS: 2 worn, pale orange/-/
- P12** One Beaker body sherd with paired fingernail impressions and a low applied or worked-up condition. FGS: 3 worn, orange/black/black



*Table 3 Fabric Catalogue*

Fabrics were identified using a  $\times 10$  magnification hand lens. Fabric codes comprise an abbreviation for inclusion type(s) present in the fabric, followed by a figure to distinguish fabrics with the same inclusion or combination of inclusions. The following terms are used consistently in the fabric descriptions:

hard – not scratched easily by the fingernail

soft – scratched easily by the fingernail

coarse (of fabric) – breaks are uneven and hackly

fine – breaks smoother than the above, although in prehistoric fabrics a completely smooth fracture almost never occurs.

Frequency of inclusions is described as sparse, moderate or dense. By comparison with charts used by geologists to estimate percentage of inclusions in rocks, these terms may be approximately equated to  $<5\%$  (of total surface area), 6–10%, and  $>15\%$ . Size, given in millimetres, except for sand grains, for which the following terms are used:

Coarse (of sand grains) – individual grains seen easily at  $\times 10$  magnification.

Fine (of sand grains) – individual grains not easily seen at  $\times 10$  magnification.

Ten fabrics can be distinguished, most of which are represented by only a few sherds:

- S:1** Hard, fine fabric with sparse fine sand. Sherds are generally thin-walled ( $<5\text{mm}$ ).
- FeS:1** Hard, fine fabric with sparse rounded to sub-angular fragments of iron oxide, which appear as both small ( $<1\text{mm}$ ) rounded grains and larger ( $<3\text{mm}$ ) sub-angular fragments. Also sparse sand, some of which is coarse.
- FS:1** Soft, coarse fabric with sparse flint fragments of various sizes ( $<7\text{mm}$ , most  $<3\text{mm}$ ) and sparse sand.
- FS:2** Hard, fine fabric with sparse small flint ( $<1\text{mm}$ ) and sparse fine sand.
- GS:1** Hard fabric with dense small grog (C4mm, most C2mm) and sparse fine and coarse sand. Iron oxide fragments are also present as rare inclusions.
- CaFS:1** Hard but very brittle fabric with sparse small grey inclusions ( $<2\text{mm}$ ), sparse small flint ( $<2\text{mm}$ ), and sparse fine sand. The grey inclusions are calcareous and are almost certainly limestone.
- FGS:1** Hard coarse fabric with sparse flint ( $<3\text{mm}$ ), dense grog (crushed potsherd) (sub-angular fragments  $<3\text{mm}$ ), and sparse fine sand.
- FGS:2** Hard coarse fabric with sparse small flint ( $<2\text{mm}$ ), sparse to moderate grog ( $<2\text{mm}$ ) and moderate coarse sand.
- FGS:3** Hard, coarse fabric with moderate small flint ( $<2\text{mm}$ ), sparse grog ( $<2\text{mm}$ ), and sparse fine to coarse sand (most fine).

**P13** One Beaker base-angle sherd. There are some faint marks around the exterior of the base angle, but these are almost certainly the result of the forming process rather than decoration. FGS: 1 worn, orange-/pale grey

very worn comb-decorated beaker, may also belong to two other vessels. The assemblage is therefore a small one, and the material very fragmentary, but it does include both fine and coarse vessels.

*Discussion*

Of the sherds illustrated, P1–P4, P6–P7, and P11–P13 probably represent separate vessels, on the grounds of fabric and rim form. Seven other unillustrated sherds, comprising one very small plain rim sherd, and six body sherds from a

The only vessel for which it is possible to suggest a form and stylistic attribution is that represented by F1 and F5. Although the rim angle is difficult to determine the sherd does show a slight inward inclination, which is uncharacteristic of early Beakers, but is displayed by later vessels, particularly those of Lanting and van der Waals Steps 5–7 (1972, Fig. 1). The pendant triangle

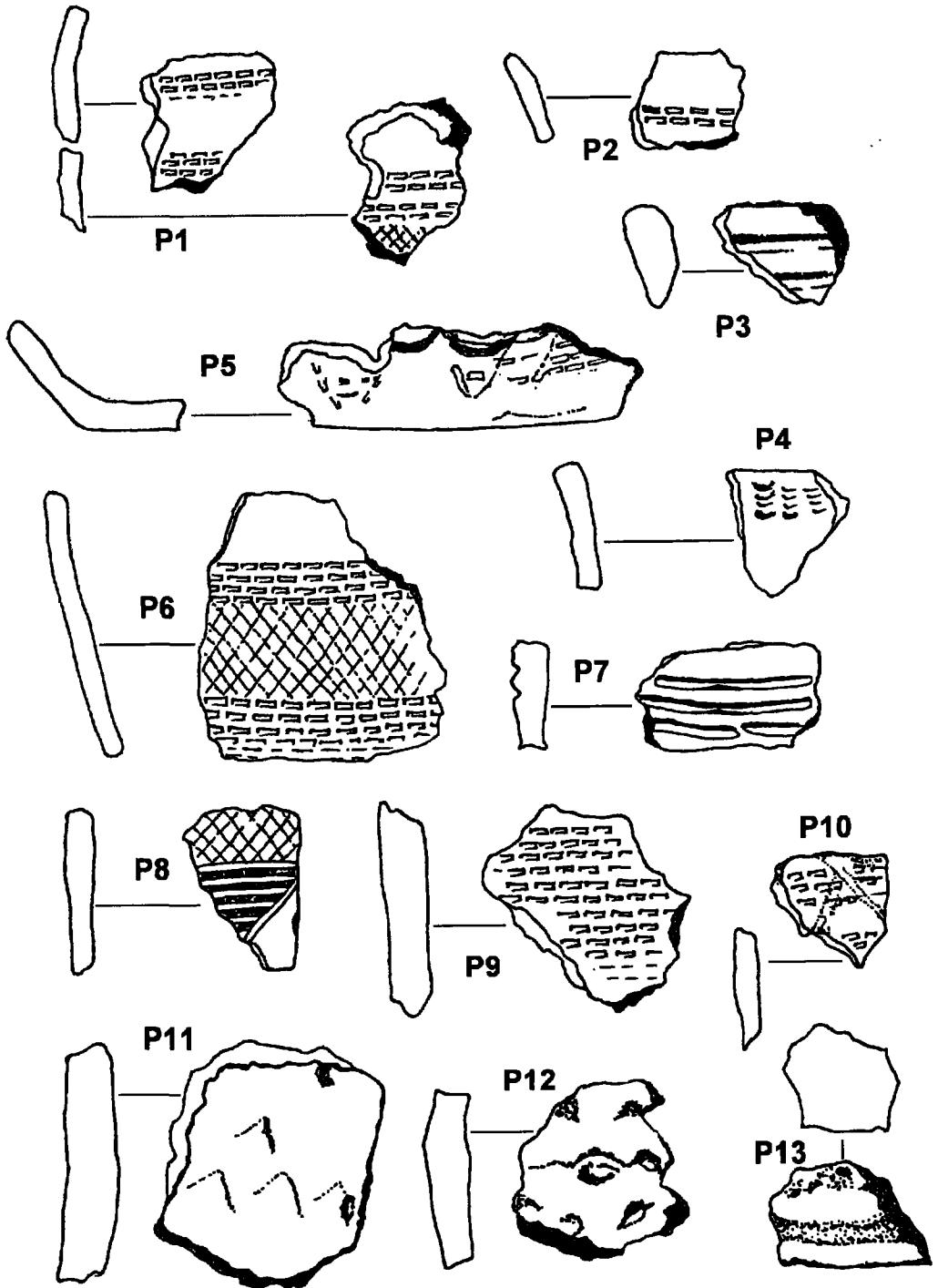


Fig. 12 Quarley High Linear; prehistoric pottery (scale 1:1)

Table 4 Fabric and decoration

Decoration	Fabric						
	CaFS	FGS	FS	FeS	GS	S	U
Rectangular	-	1/9g	1/11g	1/4g	423g	4/7g	-
Comb		(P9)	(P6)	(P7)	(1) (P1,P5)	(1) (P2,P10)	
Indeterminate Comb	-	-	-	-	-	1/3g (P8)	-
Non-Plastic Fingernail	-	1/17g (P11)	1/2g	-	-	-	-
Fingernail & ?Cordon	-	1/7g (P12)	-	-	-	-	-
Indeterminate (worn)	1/2g (1) (P3)	-	7/26g	-	-	- (P4)	-
Plain	-	7/26g (P13)	10/24g	-	3/4g	15/27g (P4)	2/1g
Totals	1/2g	10/59g	19/63g	1/4g	7/27g	20/37g	2/1g
% count	1.7	16.7	31.7	1.7	11.7	33.3	3.3
% weight	1.0	30.6	32.6	2.1	14.0	19.2	0.5

Sherd counts and weight (grammes) are given for each combination of fabric and decoration type. Entries are given in the order: count / weight. (no. of rims\*) / (illustration number)

\* Also included in count

motif immediately above the base is a common one, and occurs as early as Lanting and van der Waals Step 3, on vessels of Clarke's Wessex/Middle Rhine (W/MR) group (Clarke 1970). Although the angle of lie of the rim P1 is uncertain, it cannot be out-turned, only the degree to which it may be in-turned being in doubt. This, and the fact that the curvature of the profile beneath the rim strongly suggests a convex neck, indicate that the vessel cannot belong to Clarke's W/MR or European (E) groups, to which it might otherwise have been assigned on the grounds of its restrained decora-

tion. Two alternatives seem possible: that the vessel belongs to Clarke's Southern tradition, in which convex necks occur, or to his Northern tradition (N1/D-N4), in which they predominate (Clarke 1970, 40-41). Although the Northern tradition is not well represented in Wiltshire, it is noted by Clarke at West Kennet Avenue, Avebury; Beckampton; Winterbourne Monkton, and Shrewton (Clarke 1970, 539, 541) and the restricted decorative repertoire of P1/P5 would not be out of place in that tradition, while in contrast, vessels of the Southern tradition gener-

ally display more complex decorative motifs (Clarke *ibid*). Even if P1 itself is considered acceptable as a Southern tradition vessel, in a Southern assemblage of the size of that from Martin's Ditch a few sherds would be expected of vessels with more complex decoration than is in fact displayed by any of those in the group. An attribution to the Northern tradition does little in fact to aid the dating of the assemblage, as although the Southern tradition all belongs to Case's Late Style, the Northern tradition is split between the Middle and Late Styles (Case 1977, 72).

Because of the doubt as to the date of the assemblage, it is impossible to be certain of the local context in which it was formed and used. Both Middle and Late Style Beakers occur as grave goods

in the area (Clarke 1970, 500-505; Case 1977, 72, for conversion of Clarke groups to Styles), but there is little from occupation sites. Two pits at Boscombe Down East, found during the excavation of the Middle Bronze Age enclosure (Stone 1936), and the settlement site at Easton Down (Stone 1932) appear to be the only published parallels. At the former Gibson notes possibly Late Style Beaker (Gibson *op cit* 112), and at the latter Late Style vessels mainly of Steps 5 and 6 (Gibson *op cit*, 147). Gibson comments, however, that there appeared to have been more material found than he was able to locate, and Clarke notes the presence of W/MR and Northern/Middle Rhine (N/MR) Beaker at Easton Down (Clarke 1970, 505), thus indicating a Middle Style Beaker presence.

## APPENDIX B

### METRICAL ANALYSIS OF THE PREHISTORIC FLINTS FROM THE LINEAR DITCH EXCAVATION

By MARTIN J F FOWLER

#### *Introduction*

Some 2300 flints were recovered from the excavation. The majority of the material, approximately 90% by number, comprised of blue-patinated debris from a 17th/18th century industry manufacturing gun-flints for flintlock firearms. The analysis of a representative sample of this material is reported elsewhere (Fowler 1990). The remaining material, 327 pieces, comprised of white-patinated worked flint together with fragments of burnt flint.

#### *Analysis*

The composition of the prehistoric assemblage is shown in Table 5. Flakes constituted the major component of the assemblage (61%); tools formed only a minor proportion and were mostly scrapers in the form of modified flakes. The remainder consisted of a small number of cores and pieces of unworked burnt flint together with irregular 'chunks' of flint that had been modified but which were otherwise unclassifiable.

Of the 199 flakes, 37 were primary (wholly

cortical); 114 were secondary (partially cortical); and 48 were tertiary (non-cortical). The ratio of secondary to tertiary flakes was 2.4:1.

Measurements of length, breadth and breadth:length ratio were made, where possible, on a sample of 141 from the secondary and tertiary flakes. Length is taken as the maximum measurement along the axis of percussion and breadth as the maximum measurement at right angles to it.

Metrical analyses of the flake sample (Fig. 13) indicate that lengths between 31 mm and 60 mm and breadths between 21 mm and 50 mm were most frequent. The dominant breadth:length ratio categories were 0.41 to 1.0 (3:5 to 5:5). Blades, in which the breadth:length ratio did not exceed 0.41 (2:5) (Farley 1979), comprised 6.3% of the sample whereas squat flakes in which the breadth was equal to or exceeded the length comprised 22% of the sample.

#### *Discussion*

Although this assemblage is rather small, the trend was clearly for large secondary flakes with a tendency for them to be long rather than broad. The

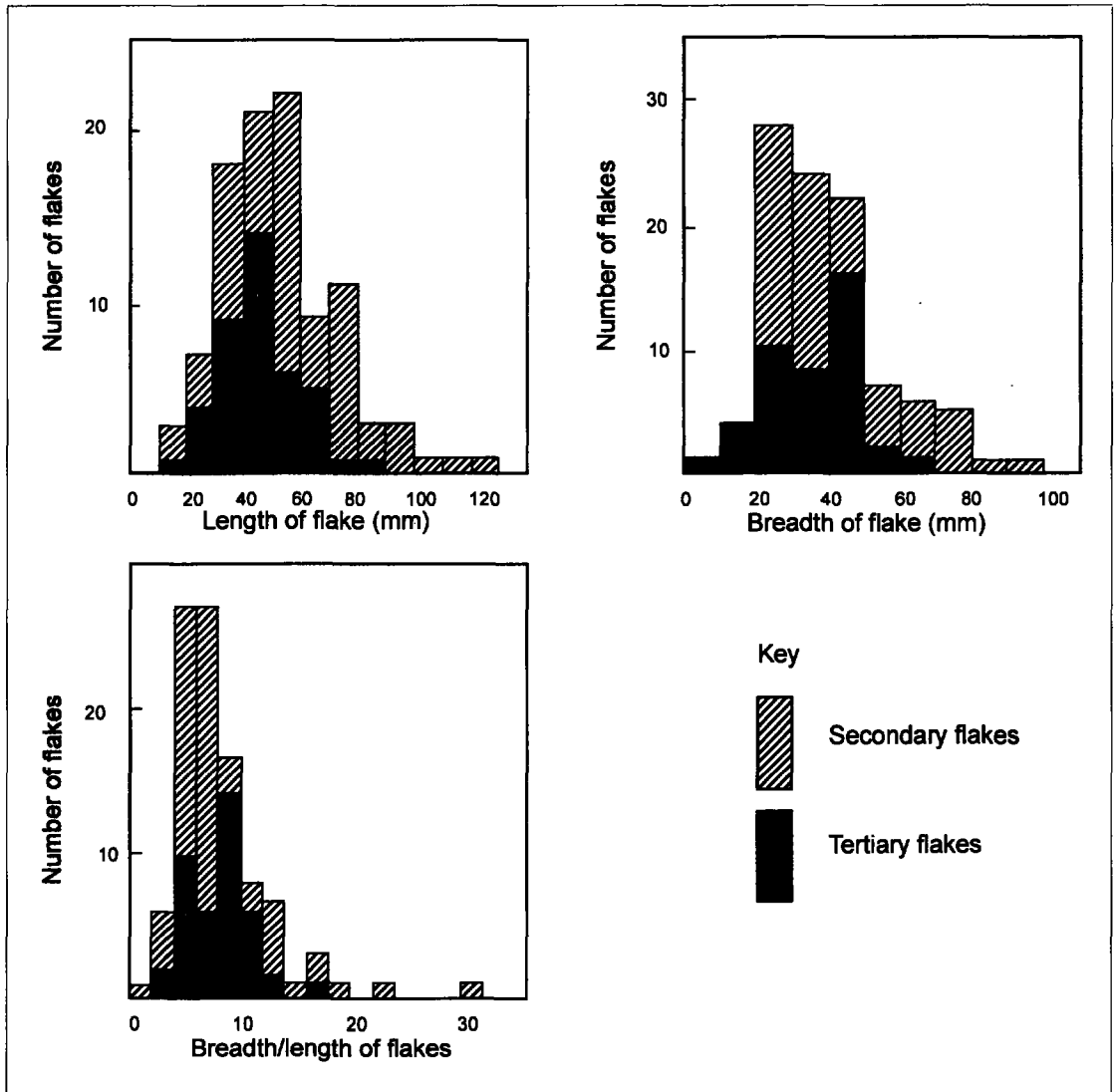


Fig. 13 Quarley High Linear: metrical analysis of 100 secondary and 41 tertiary flint flakes. Mean values for the two dimensions and the ratio shown in the histogram were as follows: secondary flakes, breadth  $38.5 \pm 15.9$  mm, length  $52.1 \pm 20.8$  mm, breadth:length ratio  $0.78 \pm 0.45$ ; tertiary flakes, breadth  $35.0 \pm 12.3$  mm, length  $44.4 \pm 14.1$  mm, breadth:length ratio  $0.78 \pm 0.31$

high proportion of tertiary flakes suggests that the industry was well developed and probably of Neolithic origin. Since flakes from earlier Neolithic industries incline to be more blade-like than those from later industries which tend to be squatter (Smith 1965; Farley 1979); the finding of a trend towards longer flakes at Martin's Clump suggests

that the worked flint is of earlier rather than later Neolithic in origin. Such a date would be consistent with the material deriving from a workshop floor associated with the immediately adjacent Neolithic flint mines (Stone 1933; Ride & James 1989) and which was incorporated into the linear earthwork feature when it was constructed much later.

Table 5 Composition of the prehistoric flint assemblage from the linear feature

	Number	Percent
Cores	10	3
Flakes	199	61
'Chunks'	97	30
Tools	7	2
Burnt, unworked	14	4
Totals	327	100

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The then Director of the Chemical Defence Establishment, Dr Graham Pearson, gave permission for the excavation and provided encouragement. This report is published with the consent of the Defence Evaluation and Research Agency.

#### REFERENCES

- Arnold, C J 1972 The excavation of a prehistoric ranch boundary at Quarley Hill, Hampshire *Proc Hampshire Field Club Archaeol Soc* 29 37-40.
- Bowen, H C, Evans, J G, & Race, E 1978 An investigation of the Wessex linear ditch system *British Archaeological Report* 48 149-153.
- Bradley, R, Entwistle, R, & Raymond, F 1994 *Prehistoric Land Divisions on Salisbury Plain* (English Heritage Archaeol Rep 2), London: English Heritage.
- Case, H J 1977 The Beaker culture in Britain and Ireland, in Mercer, R (ed.), *Beakers in Britain and Europe* (BAR S26), Oxford, 71-84.
- Clarke, D L 1970 *Beaker pottery of Great Britain and Ireland*, Cambridge.
- Clay, R C C 1925 A gun-flint factory site in South Wilts *Antiq* 75 423-426.
- 1972 Some prehistoric ways *Antiquity* 1 54-65.
- Cunliffe, B 1995 *Danebury, an Iron Age Hillfort in Hampshire* (CBA Res Rep 102), York: Council for British Archaeology.
- Cunnington, M E 1925 Figsbury Rings: an account of excavations in 1924 *Wiltshire Archaeol Natur Hist Mag* 43 48-58.
- Farley, M 1979 Flint flake dimensions in the British Neolithic *Proc Prehist Soc* 45 322-323.
- Fowler, M J F 1989 Hampshire gun-flint industries *Hampshire Field Club Newsletters, New series* 12 24-26.
- 1992 A gun-flint industry at Martin's Clump, Over Wallop, Hants *Proc Hampshire Field Club Archaeol Soc* 48 135-142.
- Hawkes, C F C 1939 The excavations at Quarley Hill 1930 *Proc Hampshire Field Club Archaeol Soc* 14 136-194.
- Lanting, J N & van der Waals, J D 1972 British Beakers as seen from the Continent *Helinium* 12 20-46.
- Palmer, R 1984 *Danebury, an Iron Age hillfort in Hampshire*, London: Royal Commission on Historical Monuments (England).
- RCHME forthcoming *The Flint Mines of England*, Royal Commission on Historical Monuments of England.
- Pitt-Rivers, A 1898 *Cranbourne Chase IV*, Private publication.
- Ride, D J, & James, D J 1989 An account of an excavation of a prehistoric flint mine at Martins Clump, Over Wallop, Hampshire *Proc Hampshire Field Club Archaeol Soc* 45 213-219.

- Smith, I F 1965 *Windmill Hill and Avebury*, Oxford.
- Stone, J F S 1931 Easton Down, Winterslow, S. Wilts, flint mine excavations, 1930 *Wiltshire Archaeol Natur Hist Mag* 45 350-365.
- 1932 A settlement site of the Beaker period at Easton Down, Winterslow, Wiltshire *Wiltshire Archaeol Natur Hist Mag* 45 366-372.
- 1933 A flint mine at Martins Clump, Over Wallop *Proc Hampshire Field Club Archaeol Soc* 12 177-180.
- 1935 Excavations at Easton Down, Winterslow, 1933-4 *Wiltshire Archaeol Natur Hist Mag* 47 68-80.
- 1936 An enclosure on Boscombe Down East *Wiltshire Archaeol Natur Hist Mag* 47 466-489.
- 1958 *Wessex before the Celts*, London: Thames and Hudson.

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