EXPLOITING THE WILDWOOD: EVIDENCE FROM A MESOLITHIC ACTIVITY SITE AT FINGLESHAM, NEAR DEAL

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An important Mesolithic site was discovered during the spring of 1981 when foundation trenches for a new cow-shed were being excavated in a field of rough pasture adjoining the north-east side of Lower Farm at Finglesham, near Deal, NGR TR 3383 5379 (**Figs 1 and 2**). Workmen engaged in hand-digging the trenches (in Area J, see below) encountered a dense layer of struck flint and calcined flint at a depth of about 0.45m below ground level. Fortunately, one of the workers was also a member of Dover Archaeological Group and immediately recognised that traces of a hitherto unknown prehistoric site had been revealed. The writers were

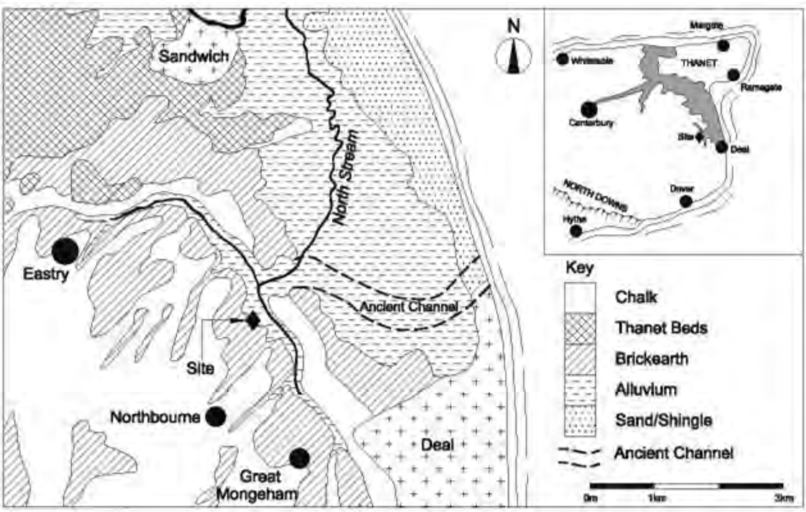

Fig. 1 Map of east Kent showing position of the site in relation to local geology.

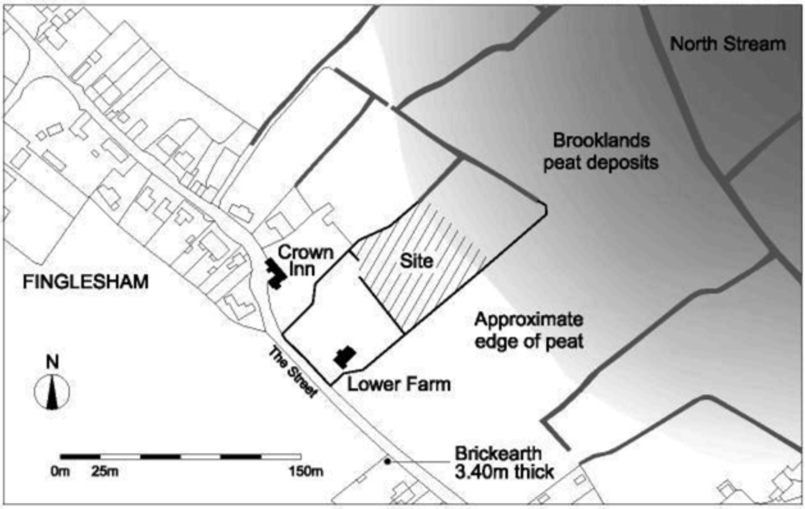

Fig. 2 Site location plan.

duly informed and subsequently the Group was able to conduct a limited programme of excavation and salvage recording, ahead of the construction of further agricultural buildings (Parfitt and Halliwell 1983).

The site lies within the historic parish of Northbourne and is located on head brickearth at the foot of the North Downs dip-slope, some 4km inland of the present-day coast-line. The ground here is low-lying and slopes gently down to marshland associated with the valley of the North Stream river system, which drains into the River Stour near Sandwich (Figs 1 and 2). Today, the site stands at an elevation of between 3.50 and 1.00m AOD but the area is likely to have been affected by mining subsidence, connected with the former Betteshanger Colliery nearby. Collapse of underground workings may have caused the surface of the land hereabouts to drop by as much as 0.60m (data provided by *National Coal Board*, 1984).

The British Geological Survey identifies two ages of head brickearth in east Kent (Shephard-Thorn 1988, 34). The younger of these occurs on the lower slopes of the North Downs and this is the deposit upon which the Finglesham site stands. The ground here is imperfectly drained due to its low elevation. The British Soil Survey classifies the soil which has formed over the brickearth in this area as belonging to the Hook series (Fordham and Green 1973, 59). Marshland peat occurs at the lower end of the field investigated and this was found to seal the brickearth and part of the prehistoric site (Fig. 2 and **Fig. 3**; see below).

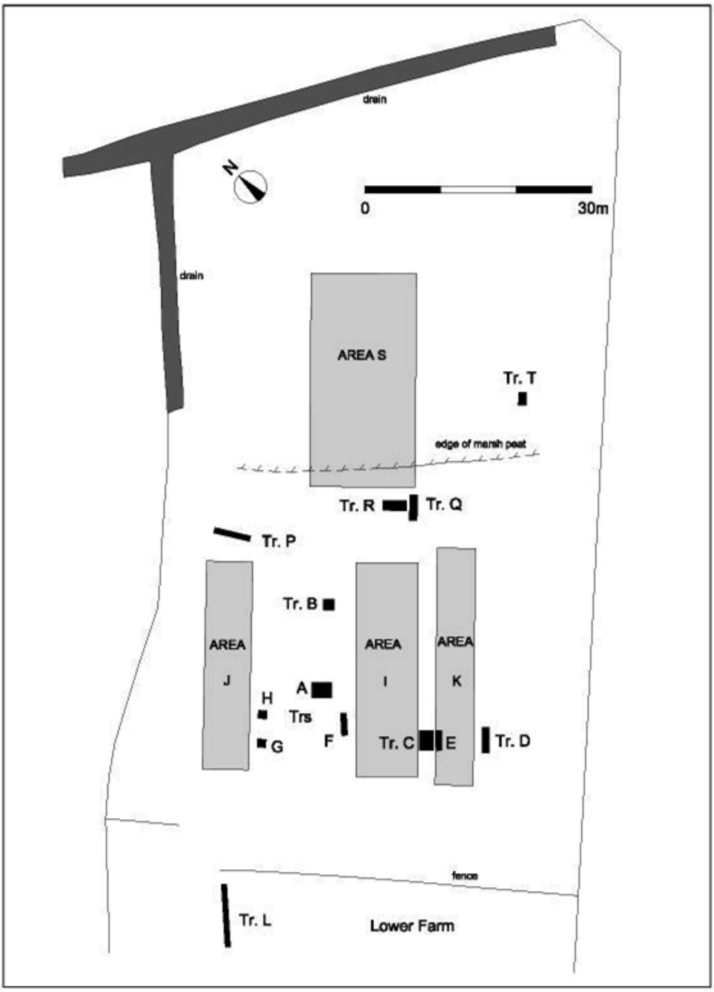

Fig. 3 Site plan showing location of Trenches and Areas examined.

Investigations conducted over a series of weekends and evenings between November 1981 and May 1983 revealed the presence of a fairly extensive scatter of prehistoric flint material contained within, or derived from, the upper levels of the natural brickearth. A total of almost 1,500 pieces of struck flint and more than 2,800 fragments of calcined (i.e. fire-cracked) flint were collected. No prehistoric pottery was found in association with the flint material anywhere and no animal bone or marine shell had survived. Subsequent examination has established that the flint assemblage recovered belongs to the Mesolithic period – a rare and important discovery in this part of east Kent. Interim notes were published soon after the discovery (Parfitt and Halliwell 1983; Parfitt 1983a; Parfitt 1983b). Mentions of the site have also appeared in five recent publications reviewing aspects of prehistoric Kent (Scott 2004, 9; LVRG 2006, 18, fig. 9; Moody 2008, 5, fig. 23; Healey 2008; Garwood 2011, 48) and in a general work concerned with prehistoric flintwork (Butler 2005, 118).

THE INVESTIGATIONS

Time and resources were not available for any major excavation on the site but it was possible to cut fifteen small trenches ahead of the construction of the various new farm buildings (Fig. 3). These were dug at intervals across the field and were aimed at establishing the basic sequence of deposits on the site and determining the geographical extent of the flint scatter. The trenches were lettered, Trenches A-H, L-R and T (Fig. 3); there was no Trench O. Only three failed to produce prehistoric flint material (Trenches B, M and N). Trenches M and N (not shown on Fig. 3) were found to lie beyond the surviving south-western limit of the flint scatter, whilst Trench B, well within the area, cut a large modern feature, possibly an old field boundary ditch.

In all, the trenches excavated within the area covered by the flint scatter amounted to about $33m^2$ and yielded over 870 pieces of struck flint and 2,700 calcined flint fragments. More flints were collected during subsequent ground-works for new buildings and, for the purpose of recording these, different portions of the field were designated Areas I, J, K and S (Fig. 3). These areas corresponded to the sites of three large new calf units (I, J & S) and a road bed (K). Around 320 struck flints were recovered from these areas and careful examination of the associated spoil dumps led to the recovery of over 200 more pieces.

General sequence of deposits

The excavated trenches revealed a fairly continuous and straightforward sequence of deposits across the site (Layers 1-4 and 8-11). These are described below in ascending order. The slightly irregular numbering system follows that used in the field and reflects the original identification of the individual deposits.

Layer 4: natural head brickearth, comprising a compact, stone-free orange silty clay devoid of archaeological finds. Its full thickness was not ascertained at Lower Farm, where a minimum figure of 0.80m was recorded but subsequent observations in 1998 of a new soakaway pit dug about 100m to the south of the site, at No. 2 Raven Cottages, revealed a total thickness of 3.40m of brickearth there, resting on weathered chalk (D.A.G. archives; Fig. 2).

Layers 3 and 9: undisturbed, compact cream-brown or orange-brown silty clay, resting on the main brickearth deposit (4). These layers represented the rainwater-leached and clay-depleted upper zone of the natural brickearth. They produced a combined total of about 370 pieces of struck flint and more than one thousand calcined flints. Reflecting the entirely natural formation processes involved, the junction between these deposits and the underlying brickearth was diffuse and undulating. As recorded, the layers were between 0.05 and 0.45m thick.

It would seem that the lithic material contained within these layers is derived from a prehistoric land surface which lay at a slightly higher level and that the individual flints reached their excavated positions through downward movement caused by earthworms, etc. It was apparent that the top of Layer 3 especially, had subsequently been disturbed (see below, Layer 2). Thermoluminescence dates were obtained for eight burnt flints recovered from Layer 9 in Trench R (see below).

Layer 2: disturbed cream-brown silty clay, over Layer 3 across the south-western part of the site. The layer was between 0.08 and 0.28m thick and represented the upper zone of Layer 3 partially disturbed by later ploughing. This probably occurred during medieval times on the evidence of occasional pottery finds. The layer produced almost 400 pieces of struck flint and over 1,200 calcined flints.

Layer 11: brown-black peat, up to 0.50m thick, confined to the lower, north-eastern end of the field, partially sealing Layer 9 (Fig. 3). It belongs to the adjacent North Stream (Brooklands) valley deposits and forms a continuation of the important Ham Fen peats (Rose 1950; Halliwell and Parfitt 1985; LVRG 2006, 14; Fig. 2). Probably of post-Roman date, the only finds recovered were four calcined flint fragments derived from the main site.

Layers 8 and 10: two layers of brown silty clay, up to 0.30m in combined thickness, sealing Layer 11 (peat) and Layer 9 (cream-brown clay), at the north-east end of the field. They appeared to represent recent dumps deliberately spread over the lower part of the field in order to raise the level of the ground. It seems likely that these clays derive from the higher, south-western end of the field, perhaps in the area of Trenches B or M and N where no *in situ* flintwork was found. The two layers produced just over 100 struck flints and almost 300 calcined flints.

Layer 1: topsoil, 0.20-0.35m thick, consisting of dark brown clay loam with chalk specks. This layer occurred across the whole site, sealing Layers 2, 8, 9 and 10. It contained some post-medieval domestic rubbish, together with about 100 pieces of struck flint and 100 calcined flints derived from the prehistoric layers below. A much earlier flint, a Lower Palaeolithic handaxe of Acheulian type, was discovered within this deposit a short distance to the south-west of the Mesolithic site in 2001 (Parfitt and Halliwell 2009).

Layer 0: soil disturbed during the building work, yielding unstratified and unprovenanced flint material. About 475 struck flints were recovered in all and these include a small chip from a ground and polished flint axe of Neolithic date, together with a post-medieval gun flint.

Flint concentrations in Trench C, Layers 5 and 6

The bulk of the undisturbed flint material was fairly evenly distributed throughout the thickness of Layers 3 and 9 with few well defined concentrations. Occasional small clusters of flakes were, however, noted and in Trench C, towards the southern corner of the site (Fig. 3), two quite well defined areas of densely packed calcined flint, with some unburnt struck material, were discovered. These were resting in very slight depressions in the top of Layer 3, sealed by the disturbed Layer 2, which was here between 0.08 and 0.14m thick.

These flint concentrations were located on the north-western side of the excavated trench and were designated Layers 5 and 6, respectively. They were up to 0.09m thick. The most extensive was Layer 5, which covered an area oval in shape and measured 1.04m (SW-NE) by at least 0.72m (SE-NW). The north-western edge to the deposit was not contained within the trench but the same layer was visible in the face of a building terrace already cut a short distance to the north-west (Area I). This observation allowed the deposit to be traced for a total minimum distance of 1.20m (SE-NW). The smaller area, Layer 6, lay some 0.30m to the north-east of Layer 5 and measured just 0.38m (SW-NE) by a minimum of 0.21m (NW-SE). It was not visible in the terrace-cut to the north-west and must represent a very small outlier of the main Layer 5.

Layers 5 and 6 produced a combined total of 139 calcined flints and 35 struck flints, including a small but complete chipped adze (not illustrated), a single adze-sharpening flake (Parfitt and Halliwell 1983, fig. 1, 3) and seven cores (**Fig. 4**, 2 and 4; **Fig. 5**, 7). One of the cores from Layer 5 was found adjacent to two waste flakes that could be refitted onto it, clearly indicating that this was essentially undisturbed knapping debris. The top of Layer 3, some 0.90m to the south-east of Layer 5, produced part of another fine chipped adze (Parfitt and Halliwell 1983, fig. 1, 1).

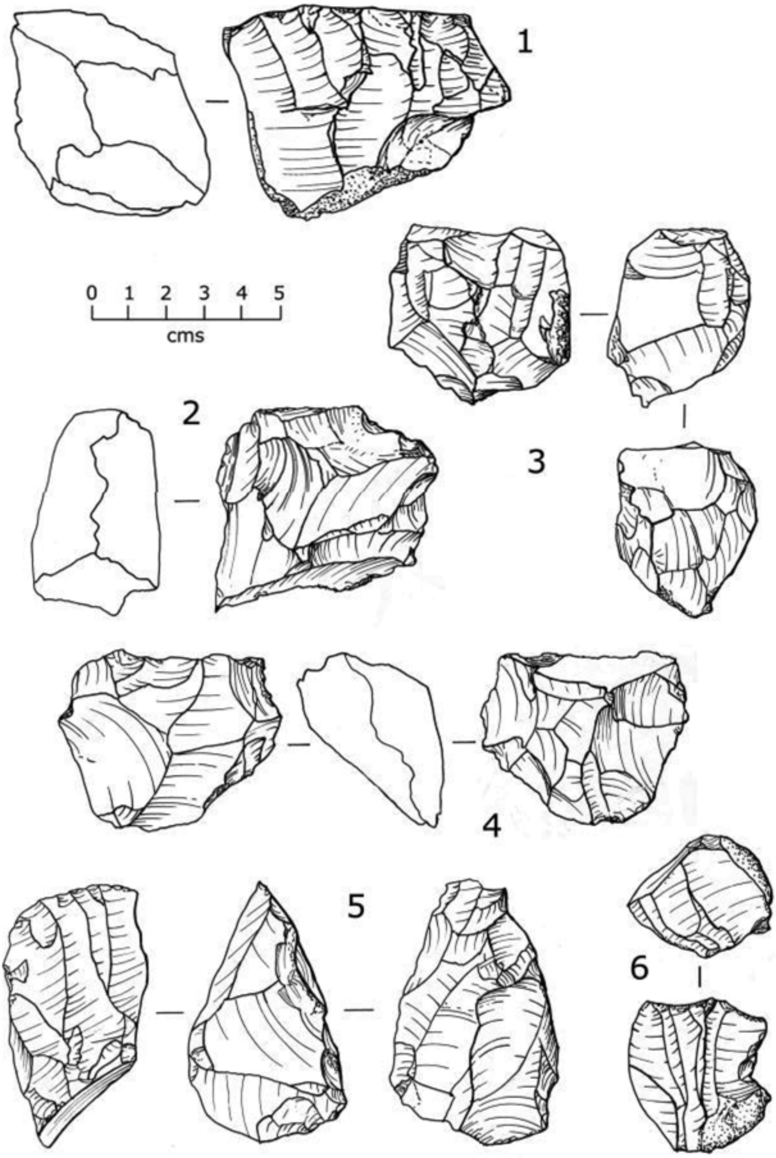

Fig. 4 Flint cores.
1 One platform flake core. Weight, 190g. Flint type 1(K/0); 2 Core. Weight, 100g. Flint type 3 (C/5); 3 Core. Weight, 99g. Flint type 2. Lightly burnt on one side (K/0); 4 Multi-platform flake core. Weight, 69g. Flint type uncertain (C/5) 5 Multi-platform flake and blade core. Weight, 115g. Flint type 2 (K/0); 6 Two-platform blade core. Weight, 56g. Flint type 2 (K/0)

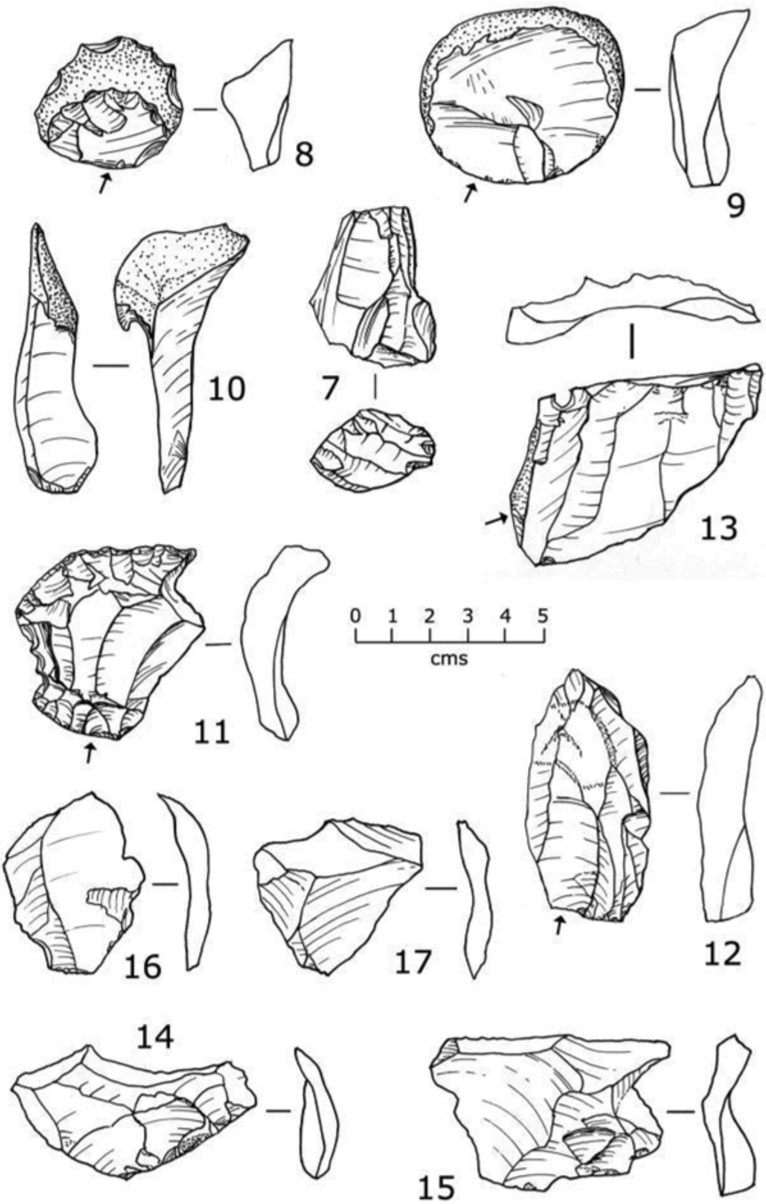

Fig. 5

The disturbed nature of the overlying soil (Layer 2, see above) strongly suggests that ploughing has destroyed the full extent of these localised flint concentrations. In fact, it seems highly likely that not only were the two surviving remnants originally connected but also that they were once thicker, probably originally contained within some sort of broad, shallow pit. If this is correct, what had been preserved must represent the very bottom of this feature, filled with discarded flint debris. An overall minimum size for such a pit of about 1.72 by 1.20m may be suggested from the two surviving deposits. It seems just possible that this inferred pit could represent the base of a hut-pit, but too little survived for this to be certain. No other associated features, such as post-holes, were located.

There remains a slight problem in fully understanding Layers 5 and 6. Since the surviving hollows occurred in the top of Layer 3, the stratification implies that these features are later than that layer. Yet the overall character of the lithic material they produced, including conjoins, indicates that they are contemporary with the main flint assemblage recovered from Layers 3 and 9. The probability is that the flints recovered from Layers 3 and 9 are actually derived from a now destroyed land-surface which lay at a slightly higher level (see above). Presumably, the inferred pit located in Trench C was originally cut in from the top of this same lost surface.

Several other shallow features were located cutting into the flint bearing layers (2, 3 and 9) from the base of the top-soil (Layer 1). These, however, produced sherds of medieval and post-medieval pottery (Layer 7) and were clearly of comparatively recent date.

General observations

The full extent of the flint spread at Lower Farm was not established, with its limit being defined only on the south-western, uphill, side. At the north-

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Fig. 5 (opposite) Bladelet core (7), platform preparation flakes (8-9), crested blade (10), *Flancs de nucleus* (11-13), adze preparation (14-15) and finishing flakes (16-17).

7 Bladelet core with two platforms at right angles to one another. Weight, 36g. Flint type 3 (C/5); 8 Platform preparation flake. Weight, 22g. Flint type 2 (K/0); 9 Platform preparation flake. Weight, 46g. Flint type 1 (K/0); 10 Core rejuvenation flake. Weight, 18g. Flint type 1 (F/2); 11 *Flanc de nucleus*. Weight, 30g. Flint type uncertain (0, unprovenanced); 12 *Flanc de nucleus*. Weight, 36g. Flint type uncertain (0, unprovenanced); 13 *Flanc de nucleus*. Weight, 28g. Flint type 3 C/2); 14 Adze preparation flake. Weight, 12g. Flint type 1 (C/2); 15 Adze preparation flake. Weight, 21g. Flint type uncertain (C/2); 16 Adze finishing flake. Weight, 10g. Flint type uncertain (C/2); 17 Adze finishing flake. Weight, 8g. Flint type uncertain (C/2)

east end of the field, the flint layer continued under the adjacent marshland peat deposits (Figs 2 and 3). The minimum recorded dimensions for the undisturbed scatter as represented by Layers 3 and 9, are about 75 (NE-SW) by 40m (NW-SE), indicating that the site covered at least 3,000m^2.

The distribution figures for the struck flint contained within Layers 2, 3 and 9 indicates an average density of about 24 struck flints per square metre. Carefully excavated sample areas, one metre square, showed an actual range of between 10 and 40 flints per square metre. Such a density of lithic material is clearly suggestive of an occupation or activity site. Excavations at a Mesolithic occupation site at Darenth in Kent yielded 64 flints per square metre (Philp 1984, 88), whilst work below the Chestnuts megalithic tomb at Addington, near Maidstone, produced densities of between about 20 and 40 Mesolithic flints per square yard (Alexander 1961, 5).

A large amount of fragmented calcined flint was also discovered within the main flint-bearing layers at Finglesham, in direct association with the struck material. None of this calcined flint was found with any sign of burning or charcoal, as might be expected with *in situ* hearth deposits and no clearly defined concentrations were found, except within the two hollows located in Trench C (see above, 5 and 6). Combining the figures for all the calcined flints recovered from Layers 2, 3 and 9 in the excavated trenches gives an overall total of 2,744 pieces, with much smaller amounts collected from the Area searches.

The average density for calcined flint within the excavated trenches is about 83 pieces per square metre, although site observations showed an actual range of between 7 and 97 pieces. This volume of calcined flint from a Mesolithic site is quite remarkable and may be contrasted with the generally small amounts of such material often reported from sites of this period. There were in addition, a few pieces of struck flint which had subsequently been burnt, most notably an adze (Fig. 7, 25) and an adze-sharpening flake (see **Table 1**, F 10).

Thermoluminescence dating

In the absence of any bone or charcoal for radiocarbon dating associated with the prehistoric flintwork, 25 thoroughly calcined flints, including an adze-sharpening flake, were taken from Layer 9 in Trenches Q and R with a view to thermoluminescence dating. These were submitted to the University of Oxford Thermoluminescence Dating Laboratory in 1986 (Ref. OX TL 257, Fs 1-5, 8-10) and eight samples from Trench R were selected for analysis. The results were initially reported in 1988 (Parfitt and Halliwell 1988, 80) and are repeated in Table 1.

The undisturbed top of Layer 9 in Trench R was between 0.47 and 0.59m below present ground level, whilst the layer itself was between 0.13 and 0.20m thick. Unfortunately, the large standard error at 68%

TABLE 1. TL DATES FOR CALCINED FLINTS FOUND IN LAYER 9, TRENCH 'R'

Lab. Ref. No. (OX TL 257)	D.A.G. Flint No. (SFF/R/9)	Depth below PGL (m)	Date BP	Date BC	Standard Error (68%)
F 8	21	0.47	5670	3680	560
F 1	30	0.56	5990	4000	540
F 2	26	0.56	6325	4335	695
F 3	9	0.49	6420	4430	580
F 5	39	0.55	6655	4665	665
F 4	52	0.61	6890	4900	620
F 10	54*	0.55	7580	5590	705
F 9	3	0.50	7590	5600	900

* ASF, adze-sharpening flake

probability does not provide very close dating for the sampled flints, the results obtained covering a broad period from the mid-seventh millennium BC through to the late fourth millennium BC. The earliest dated pieces are F 9 and F 10. Of these, F 10 was a characteristic Mesolithic adze-sharpening flake. The results obtained for the other flints are later, the most recent being F 8, dated 4240-3120 BC. The mean date of all the flints is 5260-4240 BC. The wide range overall could suggest that more than one phase of activity is represented at the site but either way, a broad later Mesolithic date for the assemblage seems to be confirmed, whilst raising the possibility that activity here extended almost into the Neolithic period (see below).

THE FINDS

The archive for the project includes a general site plan (Fig. 3), twenty-two measured sections, eleven recorded contexts, a selection of colour transparencies, and five boxes of finds. With the exception of a few medieval pot-sherds, all the finds are of flint. This material has been deposited in Dover Museum, together with a copy of the field records.

Calcined Flint (not illustrated) *by Geoff Halliwell*

A total of 2,864 calcined flint fragments (38.4kg) was recovered from stratified contexts across the site. The sample derives mainly from the excavated trenches (see above) and numerically amounts to almost two-thirds of the total flint recovered. Unprovenanced calcined material, disturbed during the building work, was generally not collected. The vast majority of the burnt flint is calcined throughout but a few pieces occur showing the first crystalline stages of only moderate heat exposure. The average size of the calcined fragments is 2 x 2 x 1cm but some exceed 8 x 5 x 5cm.

There is no clear indication of either the derivation or function of the calcined flints: none seemed to have been burnt *in situ*. Conventionally, such burnt material found on Mesolithic sites has been interpreted as being a product of food preparation and this is one likely explanation for the Finglesham flints. A few heavily calcined struck-flakes were also recovered and there was one burnt adze sharpening flake, which formed part of the thermoluminescence sample (Table 1, F 10). The partially calcined pieces include a broken adze found in Trench Q (Fig. 7, 25) and two more adze-sharpening flakes.

Struck Flint *by Chris Butler*

The flintwork assemblage recovered during the excavations totals 1,499 pieces, and is summarised in **Table 2**. An initial assessment of the flintwork was undertaken by Dr Andrew Woodcock in 1986, but not published. It was subsequently decided to re-assess the flintwork with the view to producing a report for publication, and to also take into account changes in our understanding of Mesolithic flint assemblages since the initial work was carried out.

This fresh analysis was undertaken by the author, and comprised an inspection of each worked flint by eye, or with the aid of a magnifying glass where necessary. The number of pieces of worked flint was counted and sorted by type, noting the technological attributes and extent of any retouch or use-wear. Further analysis was then undertaken on the debitage and each category of implement. Finally, a comparison of the assemblage with other Mesolithic assemblages from Kent and Sussex was carried out.

Raw material

The raw material is quite variable, both in quality and type, and seems to reflect the exploitation of a number of different sources. Four major types of flint were noted:

1. Mid to dark grey mottled flint, with a white to buff coloured cortex. This was the most common type within the assemblage, and comes from a Downland source.

2. Bullhead Flint. This distinctive flint has an orange band beneath a green coloured cortex, whilst the main body of the flint can vary from grey through to black, even within the same nodule. This type is

TABLE 2. THE FINGLESHAM FLINT ASSEMBLAGE

Type	No.	Type	No.
Hard hammer-struck flakes	487	One plat. blade cores	2
Soft hammer-struck flakes	227	Two plat. blade core	1
Adze-thinning flakes	44	Two plat. bladelet cores	2
Hard hammer-struck blades	12	Discoidal cores	4
Soft hammer-struck blades	53	End scrapers	8
Soft hammer-struck bladelets	14	Side scrapers	7
Flake/blade fragments	335	End & side scrapers	3
Blade fragments	20	Scraper/notched piece	1
Bladelet fragments	17	Piercers	6
Chips	25	Notched flakes	7
Shattered pieces	62	Knives	4
Chunks	8	Backed knives	5
Core rejuvenation flakes	7	Burins	2
Crested blades	5	Truncated blades	2
Flanc de nucleus	6	Utilised pieces	22
Core preparation flakes	2	Tranchet adze rough-outs	4
Core fragments	14	Tranchet adzes	7
Tested nodules	2	Tranchet adze sharpening flakes	33
One platform flake cores	10	Polished axe fragment (Neolithic)	1
Two platform flake cores	12	Core tool	1
Multi-platform flake cores	6	Hammerstones	7
Multi-plat. flake & blade cores	2	TOTAL	1,499

typical of flint derived from the 'Bullhead Bed' that overlies the chalk at the base of the Tertiary Thanet Beds in this region, and was the second most common type of flint in the assemblage.

3. Black coloured flint with variations in shade through to a dark grey, occasionally with grey flecking. This flint generally has a thin, smooth buff cortex, or sometimes a rough grey pebble cortex, suggesting that it probably comes from mixed local stream gravels.

4. Dark grey to black coloured flint with red-brown steaks or orange coloured surface iron stains, with buff coloured cortex. A few examples only, and could be a variety of Types 1 and 2.

All four types of flint can be found today on the surface of fields in the local area, and could probably have been collected from local sources in the past. The pieces of Type 3 that have a battered cortex were probably obtained from nearby beach or river gravels. The majority of the flint has minimal patination, although a slight ochreous staining is noticeable on some pieces.

The Debitage

The non-core debitage comprises 1,323 pieces (Table 2), making up 88% of the assemblage, whilst the 55 cores and core fragments make up a further 3.7%. The 33 adze-sharpening flakes are discussed in the tranchet adze section below, but if added to the debitage, it brings the total debitage to 94% of the overall assemblage.

The assemblage includes 255 blade and flake fragments, together with 62 shattered pieces. These make up 31.5% of the non-core debitage. Although some of these come from topsoil and disturbed contexts and have undoubtedly been broken by later activity, a significant proportion (26%) derived from the *in-situ* Layers 3 and 9 and must represent accidental breakage during manufacture or trampling after discard. A total of 29 fragments had been retouched. Only 28 pieces (<2%) in the assemblage are fire-fractured, the majority of these being fragments or flakes (see above).

Only 25 chips were recovered during the excavations, over half of which came from Layers 3 or 9. A chip is a small waste piece (less than 10mm in size, but having all the attributes of a flake) that is removed as a bi-product of flaking, preparation or retouching and is a good indicator for the presence of *in-situ* flint knapping. The small number of chips in the assemblage is likely to be as a result of the excavation circumstances rather than suggesting originally low numbers of this type.

Flakes and Blades

Flakes whose lengths were greater than twice their width, and had parallel lateral edges and dorsal ridges were classified as blades. All others were classified as flakes. The flakes and blades were divided into those that had been struck with a hard hammer, and those struck with a soft hammer. To decide which were soft hammer-struck, the following factors were considered: small butt, diffuse bulb of percussion and the presence of a lip between the butt and the bulb. In the event of uncertainty, the flake was classified as hard hammer-struck. As can be seen from **Table 3**, there were over twice as many hard hammer-struck flakes as there were soft hammer-struck, whilst for blades the opposite was true.

Flake scars on the dorsal sides of flakes show that both uni-directional and multi-directional flakes were removed. The multi-directional scars

TABLE 3. DETAILS OF FLAKES AND BLADES FROM FINGLESHAM

Type		No.	%
Hard hammer-struck flakes		487	37.4
Soft hammer-struck flakes		227	17.6
Adze-thinning flakes		44	3.4
Hard hammer-struck blades		12	1.0
Soft hammer-struck blades		53	4.0
Soft hammer-struck bladelets		14	1.2
Chips		25	1.9
Fragments and shattered pieces		434	33.5
	Total	1,296	100.0

may be associated with the production of tranchet adzes. A further 44 flakes were identified as being adze thinning flakes. These had a curved longitudinal profile with multi-directional flake scars on the dorsal side, and were normally very thin. The presence of both preparation and finishing flakes would indicate that both the primary and secondary working of tranchet adzes through rough-out to pre-form stages was taking place here. The preparation flakes were removed with a hard hammer, whilst the finishing flakes removed during this shaping process have the characteristics associated with soft hammer production.

A total of 23 hard hammer-struck and 12 soft hammer-struck flakes and blades had been retouched. The extent of the retouch varied from piece to piece, but they were normally retouched along part of one lateral edge. Some also appeared to have possible utilisation damage.

Analysis of a sample of flakes and blades

A sample of 100 complete flakes and blades were analysed in more detail (**Table 4**). The pieces were selected at random from Layers 3, 5, 6 and 9, all of which were undisturbed. Each piece was measured, and various attributes recorded, the results of which are discussed below, and compared with other sites at which similar measurement and analysis have been undertaken (**Table 5**). The sample included a slightly higher proportion of blades than is in the overall assemblage, but given the small numbers involved this should not have affected the results.

Twenty-two per cent of the sample had evidence of platform abrasion consistent with the preparation of the platform. The blades and bladelets had the highest proportion (36%) of platform abrasion, whilst 20% of the soft hammer-struck flakes and 21% of the hard hammer-struck flakes had prepared platforms.

TABLE 4. SUMMARY OF SAMPLE OF FLAKES, BLADES AND BLADELETS

		Flakes		Blades/ bladelets		Total
		No.	%	No.	%	
		87	*87*	13	*13*	100
Hard hammer-struck		57	*65*	2	*15*	59
Soft hammer-struck		30	*35*	11	*85*	41
Platform preparation	Hard hammer	12	*21*			12
	Soft hammer	6	*20*	4	*36*	10
Hinged termination	Hard hammer	17	*30*			17
	Soft hammer	11	*37*	1	*9*	12
Cortex (none present)	Hard hammer	24	*42*	1	*50*	25
	Soft hammer	12	*40*	6	*54*	18
Dorsal scars (multi-directional	Hard hammer	21	*37*			21
	Soft hammer	8	*27*	2	*18*	10

A total of 29% of the sample had hinge terminations. Most of these were on flakes, with 30% of the hard hammer-struck flakes, and 37% of the soft hammer-struck flakes having hinges, whilst only 9% of the blades and bladelets terminated in hinges.

Some 43% of the flakes and blades/bladelets in the sample had no cortex remaining on the dorsal side, with only 9% having between 75% and 100% of the dorsal side covered with cortex. Fifty-four per cent of the blades and bladelets had no cortex, whilst 40% of soft hammer-struck flakes and 42% of the hard hammer-struck flakes had no cortex remaining.

Over 64% of the sample had unidirectional dorsal scars. Multi-directional scars were most common on hard hammer-struck flakes (37%) and, together with those on the soft hammer-struck flakes, the scars tended to originate from a lateral edge rather than the opposing end. This patterning of dorsal flake scars would be consistent with the removal of flakes during the roughing out and finishing of tranchet adzes.

When looking at the comparison between the three assemblages shown in Table 5 it is clear that the two assemblages that are associated with microliths (Streat Lane, Sussex and Hengistbury Head, Dorset) have a much higher proportion of blades and bladelets than there is at Finglesham. Additionally, the proportion of the debitage that has evidence of platform preparation is significantly higher at these two sites. Cortex was present on more pieces at Finglesham than at the other two sites whilst it also had a much higher proportion of pieces with multi-directional dorsal scars. A split between hard hammer and soft hammer-struck pieces was

TABLE 5. COMPARISON OF FINGLESHAM DEBITAGE WITH OTHER SELECTED ASSEMBLAGES

Site		Finglesham, Kent					Streat Lane, Sussex					Hengistbury Head, Dorset				
		Flakes		Blades/ bladelets		Total	Flakes		Blades/ bladelets		Total	Flakes		Blades/ bladelets		Total
		No.	%	No.	%		No.	%	No.	%		No.	%	No.	%	
Number		87	*87*	13	*13*	100	69	*69*	31	*31*	100	2,651	*66*	1,346	*34*	3,997
Hard hammer-struck		57	*65*	2	*15*	59	16	*23*			16	n/a		n/a		n/a
Soft hammer-struck		30	*35*	11	*85*	41	53	*77*	31	*100*	84					
Platform preparation	Hard hammer	12	*21*			12	5	*31*			5	626	*23.6*	1,047	*77.8*	1,673
	Soft hammer	6	*20*	4	*36*	10	24	*45*	22	*71*	46					
Hinged termination	Hard hammer	17	*30*			17	4	*25*			4	n/a		n/a		n/a
	Soft hammer	11	*37*	1	*9*	12	17	*32*	3	*10*	20					
Cortex (none present)	Hard hammer	24	*42*	1	*50*	25	5	*31*			5	1,325	*50*	1,018	*75.6*	2,343
	Soft hammer	12	*40*	6	*54*	18	24	*45*	18	*58*	42					
Dorsal scars (multi-directional	Hard hammer	21	*37*			21	4	*25*			4	276	*36.1*	226	*34.1*	502
	Soft hammer	8	*27*	2	*18*	10	12	*22*	7	*22*	19					

Note: although Hengistbury Head is an Early Mesolithic site (Barton 1992), it is one of only a small number of Mesolithic sites that have been statistically analysed, and is included here for comparative purposes.

not available for Hengistbury Head, but the comparison with the Streat Lane sample shows that the latter site has a much higher proportion of soft hammer-struck pieces. The comparison of debitage with hinge terminations shows that these two sites have a very similar profile.

To summarise; there are significant differences in the attributes of the debitage when comparing a site which has predominantly microliths with a site that has predominantly tranchet adzes. These differences are not necessarily unexpected, but serve to define the shape of such assemblages. It is crucial that future excavated assemblages are analysed in the same manner, so that similar comparisons can be made and the volume of data available is increased.

Each piece in the Finglesham sample was also measured for length/breadth analysis, following the method outlined by Saville (1980), the results of which are summarised in **Table 6**. Each piece in the sample was measured using the following method:

Length: *the maximum dimension at right angles to the striking platform* (after Alexander *et. al*. 1960).

Breadth: *the maximum dimensions at right angles to length*.

Thickness: *maximum thickness of piece from ventral to dorsal face*.

TABLE 6. LENGTH/BREADTH ANALYSIS OF THE FLINTWORK SAMPLE

Part A: Summary of mean length, breadth and thickness measurements (mm)

	Flakes	Blades/ bladelets	Total
Length	37.72	59.62	40.57
Breadth	32.92	22.38	31.55
Thickness	8.89	8.38	8.82

Part B: Analysis of length/breadth (L/B) index

	L/B Index	No.	%
Broad	>0.5	1	
	0.6-1.0	31	32
Medium	1.1-1.5	40	
	1.6-2.0	14	54
Narrow	2.1-2.5	7	
	2.6>	7	14
Total		100	100

The results of this exercise have produced some interesting results. Normally, the expectation would be for a trend towards long and narrow flakes and blades/bladelets during the Mesolithic period. However, at Finglesham there is a heavy bias towards Medium and Broad pieces, with 54% of the sample falling into the Medium category, and 32% being Broad. The small proportion falling into the Narrow category is due to the few blades and bladelets in the assemblage, and the high proportion of flakes.

The overall size of the flakes and blades in the Finglesham assemblage is significantly greater than in other Mesolithic assemblages (**Table 7**). This is not necessarily due to the size of the local raw material, as this tends to be of fairly small dimensions, but is more likely as a result of the type of implement being produced at the site.

TABLE 7. COMPARISON OF THE MEAN LENGTH, BREADTH AND THICKNESS MEASUREMENTS OF THE DEBITAGE (MM)

Site	Finglesham	Streat Lane	Hengistbury Head	Perry Woods
		Flakes		
Length	37.72	33.09	23.36	n/a
Breadth	32.92	23.61	18.87	n/a
Thickness	8.89	7.61	5.24	n/a
		Blades/bladelets		
Length	59.62	44.74	30.57	n/a
Breadth	22.38	14.84	11.30	n/a
Thickness	8.38	5.29	3.60	n/a
		Total		
Length	40.57	36.70	n/a	31.20
Breadth	31.55	20.89	n/a	23.48
Thickness	8.82	6.89	n/a	n/a

Note: Perry Woods data derived from published information.

The large numbers of tranchet adzes and complete lack of microliths found at Finglesham would mean that there would be a heavy bias in the resulting debitage towards larger flakes, and an absence of bladelets. A comparison with other sites shows that the mean dimensions of the debitage are significantly smaller at those sites where microliths are the predominant implement type. At some of those microlith-producing sites this may be as a result of smaller raw material size but certainly at Streat Lane the raw material size is comparable, if not larger, than that at Finglesham.

The results of this analysis should provide future researchers with a model that can be used to help determine Mesolithic site functionality from the debitage, and would perhaps be useful where there are few implements recovered in an assemblage.

Bladelets

Only 14 complete bladelets were found along with a further 17 fragments, and together these make up only some 2% of the debitage. Even if the blades are added to this total, together they only make up 7% of the debitage. The majority of the bladelets have evidence for platform preparation, and few have any cortex present on the dorsal side. Two bladelet fragments have small retouched notches on one lateral edge, whilst a third has some retouch forming a possible piercer.

The Cores

A total of 39 cores were recovered during the excavations, together with 14 core fragments and two tested nodules (Table 2). The cores were classified according to Clark's typology (1960) but modified to differentiate between flake, blade and bladelet cores (**Table 8**). Flake cores are the most common type, making up 82% of the cores found in the assemblage (Fig. 4, 1-4). There is little uniformity in the shape of the flake cores, with the two-platform cores having a variety of platform

TABLE 8. DETAILS OF THE FINGLESHAM CORES

Clark's Typology		Flake cores	Flake & Blade cores	Blade cores	Bladelet cores	Total
A(ii)	Single platform; flakes removed part way round	10	-	2	-	12
B(i)	Two opposing platforms	3	-	-	1	4
B(ii)	Two platforms at an oblique angle	5	-	-	-	5
B(iii)	Two platforms at right angles	4	-	1	1	6
C	Three or more platforms	6	2	-	-	8
E	Discoidal cores	4	-	-	-	4
Total		32	2	3	2	39

angles. Most platforms are at oblique angles or at right angles to one another, with only three flake cores having opposing platforms. The single-platform flake cores are all worked part of the way round the platform, with one example only having two removals from it before it was discarded. Six flake cores have three or more platforms, which are at very irregular angles to one another. The platforms on these six cores appear to have been created by the removal of a rejuvenation flake, rather than simply using any suitable surface of the core as a new platform. All the flake cores have been abandoned before they were fully worked-out, and most have a vestige of cortex remaining. None of the flake cores has any evidence for the preparation of the platforms. One flake core has been re-used as a hammerstone.

One multi-platform flake core from Layer C/5 has two conjoining flakes. The core itself has four separate platforms, but only a few flakes appear to have been removed from each platform. Flaking seems to have continued from a different platform after the conjoining flakes had been removed. The core then appears to have been abandoned, probably due to the poor quality of the raw material.

The four discoidal cores, on the other hand, are well worked-out and have little or no cortex remaining. These discoidal cores give the appearance of being a further development of the multi-platform core, rather than being a specific type of core prepared for the removal of 'levallois' type flakes as happened in the Neolithic period. Flaking of a multi-platform core has continued until there are two parallel faces, at which point the flaking is then only carried out from one platform, removing flakes from the opposing face until no further flakes can be removed because of the acute angle, at which point it has been abandoned. None of the discoidal cores shows any evidence of preparation of the platform. Although other types of flake core were abandoned at earlier stages, the presence of these discoidal cores demonstrates that some effort was being made to fully exploit the flint raw material.

Two multi-platform flake and blade cores were also found. These cores were initially worked by flaking, with the final removals from one platform being blades (Fig. 4, 5). It is possible that these may have originally been tranchet adze rough-outs, which broke during manufacture, and were then re-used as blade cores. One of these cores has one of the flake platforms prepared by abrasion. The three blade cores comprise two single-platform and a single two-platform types. These cores are smaller and tend to have been more thoroughly worked than the flake cores, although still retaining a little cortex. The two-platform blade core has its platforms at right angles to one another, and both have been prepared by abrasion of the platform edge (Fig. 4, 6). One of the remaining blade cores was re-used as a hammerstone, whilst the third was fire-fractured.

Two bladelet cores were also recovered, one with two opposing platforms, and the other with two platforms at right angles to one another (Fig. 5, 7). Both have prepared platforms, and although being fairly well worked-out, they each retain a little cortex.

Core rejuvenation pieces and the knapping process

The raw material used at Finglesham during the Mesolithic period was available as nodules in the immediate vicinity of the site. It is certain that some care was being taken to select suitable nodules for flaking. The presence of two 'tested' nodules with single flake removals from a cortical surface indicates that if a nodule was deemed to be unsuitable there was no hesitation in discarding it. The discarding of partly reduced cores that could have been further reduced demonstrates that there was little concern about curating the flint.

There are other indicators from amongst the debitage that demonstrate that care was being taken during the knapping process. Two initial platform preparation flakes were found in the excavations (Fig. 5, 8 and 9). They had been removed with a hard hammer by striking the cortical side of the nodule at a right angle at the point where a platform was required. This removed the end of the nodule and at the same time created a striking platform from which flaking could begin.

The five crested blades that were found were all large examples, and had obviously been removed from large nodules during the earlier stages of core reduction. Having created a platform, the front of the core was bifacially flaked to create a 'crested' ridge. The crested ridge was then removed with a carefully placed blow on the platform. As the shock wave from the blow tended to follow the ridge created, it guided the removal of the 'crested blade', which then created a pair of parallel ridges running the length of the core face. These ridges then guided the direction of subsequent removals thus creating a series of long thin blades. These pieces do seem out of place considering the comparatively small number of blades in the assemblage, so perhaps they were not exclusively used for the preparation of blade cores.

Once flaking had commenced, numerous problems could be encountered either because of the raw material quality, or due to mistakes on the part of the knapper. To correct those mistakes and allow knapping to continue, corrective action could be taken in the form of a core rejuvenation flake. Seven core rejuvenation flakes were found during the excavations, and appear to have been removed to solve both types of problem. One example was used to correct a previous error. A blade removal had hinged leaving a negative hinge scar and associated cortical projection at the base of the core face. The knapper had resolved this problem by removing the next blade with a much harder blow, probably with a hard hammer, and placed a little further back into the platform. The resulting blade plunged, removing the previous error, together with the cortical projection (Fig. 5, 10). This resolved the problem, and would have allowed flaking to continue.

Another form of rejuvenation flake is the *flanc de nucleus*, and six of these were found. These were flakes that removed all or part of the flaking face of the core, thus allowing flaking to recommence from the same platform. They can be struck from either the same platform, but with the blow set back from the edge, or at a right angle to the flaking face. Sometimes similar pieces can be removed by accidentally striking the core platform too far back from its edge, but all of the pieces identified at Finglesham appear to have been intentional, as they correct flaking problems.

One example had been used on a core where the angle between two platforms was such that flaking was no longer possible from either platform. Continued flaking had been attempted, but a series of small short, hinged flakes were the only result. A large flake was therefore struck from one of the platforms with a soft hammer, and had removed the flaking faces of both platforms, and in doing so had created a new platform to allow flaking to continue (Fig. 5, 11). A second example was used to remove a cherty flaw on the flaking face (Fig. 5, 12), whilst the third example illustrated was struck at a right angle to the flaking face that had undercut the platform edge. This removed the platform edge and the overhanging part of the flaking face, and would have allowed flaking to continue from the original platform (Fig. 5, 13).

The one piece that is absent from the assemblage is the core tablet. This distinctive piece is associated with rejuvenating bladelet and blade cores by removing an exhausted platform. Given the lack of bladelets and bladelet cores in the assemblage (see above), it is probably not surprising that this distinctive form is not present.

The initial impression given by the cores and other debitage is that little care was taken in the knapping process at Finglesham. However, the presence of these rejuvenation pieces in the assemblage demonstrates that care and some skill were being used at all stages of the process from selection of the flint nodule through core reduction.

Implements

A total of 88 flint implements were recovered during the excavations, of which 13 were tranchet adzes or other core tools, seven were hammerstones, and the remaining 68 were various forms of flake and blade implements. In addition there were 33 tranchet adze-sharpening flakes.

Tranchet adzes: it is clear that the manufacture and repair of tranchet adzes was one of the major aspects of this site's function (see below).

A total of seven tranchet adzes (complete and fragments), four broken rough-outs, and 33 tranchet adze-sharpening flakes were found, together with at least 44 other adze-thinning flakes (Table 2).

A tranchet adze was manufactured from a larger nodule of flint than was required for most of the other implements. Having selected a suitable nodule of raw material, initial flaking was carried out with a hard hammer, probably removing flakes from one face of the nodule first, and then removing flakes from the opposite face (Ashton 1988). This would have removed most of the cortex from the nodule, and shaped the nodule into the approximate outline of the adze; this is called a rough-out. Four fragments of broken tranchet adze rough-outs were found, of which two appear to have been subsequently re-used as cores. The preparation flakes from this initial flaking have the expected broad butts and pronounced bulb of percussion resulting from the use of a hard hammer. On the dorsal side of the preparation flakes, the negative scars would be multi-directional, reflecting the removal of flakes from that surface from both edges of the nodule, or may sometimes retain some cortex. Examples of these flakes were found in the assemblage (e.g. Fig. 5, 14 and 15).

The next stage of manufacture was to shape the rough-out, and to prepare the surface of the adze near to the blade for the removal of the final sharpening flake. The finishing flakes removed during this shaping process have some of the characteristics associated with soft hammer production: thin profiles, and narrow butts, and are longitudinally curved. They also have the diffuse bulb and small lip of typical soft hammer-struck flakes. Although Ashton (1988) suggested that tranchet adze finishing flakes were removed with a hard hammer, it is clear from the Finglesham examples that soft hammers were also used for this stage of the process. Numerous examples of these soft hammer-struck finishing flakes were also found in the assemblage (e.g. Fig. 5, 16 and 17).

Once the overall shape of the adze had been achieved, the final tranchet-sharpening flake, that gives the adze its name, could be removed. The sharpening flake was struck from the lateral edge of the adze, near the tip or point, which removed a transverse flake across the blade of the adze and by doing so produces a sharp cutting edge. Occasionally, one or two small additional flakes have then been removed to tidy up the cutting edge of the adze. The tranchet adze-sharpening flake is a distinctive piece: having been removed with a hard hammer, a prominent bulb and butt are normally present, together with the relict edge of the pre-form adze blade on one edge. The adze-sharpening flake was not only produced during the manufacture of tranchet adzes, as any breaks or blunting to the cutting edge whilst in use could be simply repaired by the removal of a further sharpening flake.

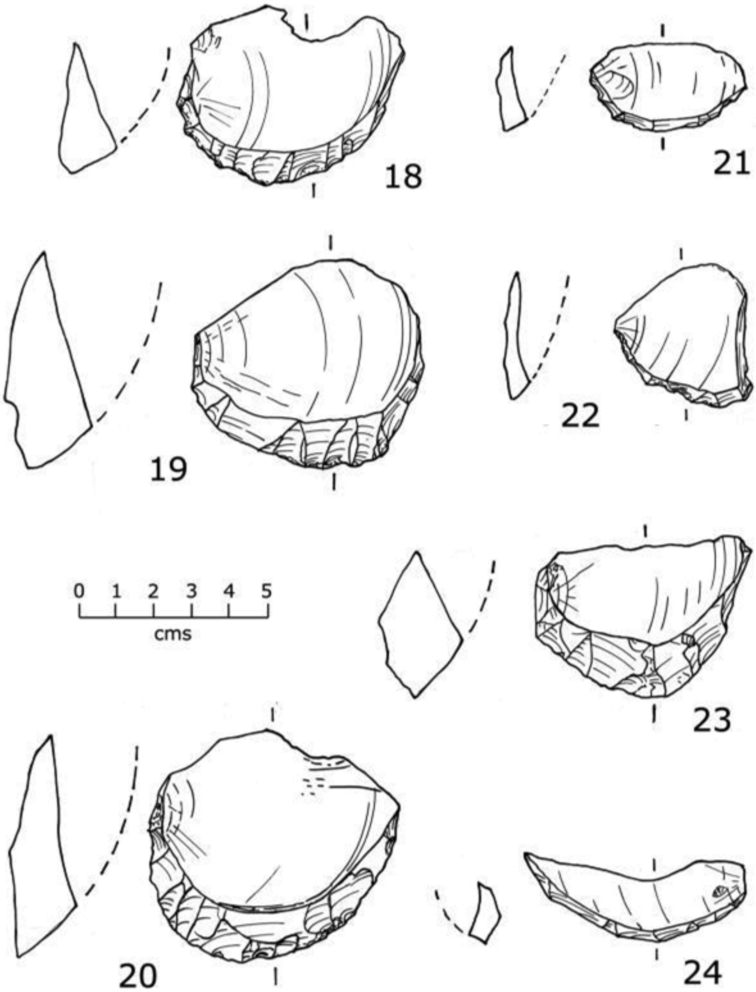

Fig. 6 Adze-sharpening flakes.
18 Large adze-sharpening flake. Weight, 40g. Flint type 2 (A/2); 19 Large adze-sharpening flake. Weight, 63.0g. Flint type 2 (E/2); 20 Large adze-sharpening flake. Weight, 63.3g. Flint type uncertain (K/0); 21 Small adze-sharpening flake. Weight, 6.0g. Flint type uncertain (J/1); 22 Small adze-sharpening flake. Weight, 7.3g. Flint type 2 (D/2); 23 Adze-sharpening flake. Weight, 46g. Flint type 2 (A/1); 24 Adze-sharpening flake. Weight, 7.4g. Flint type 2 (A/2)

A total of 33 adze-sharpening flakes were recovered during the excavations. Despite attempts by a number of different people at refitting these flakes onto the surviving adzes, none could be matched. However, from a close study of the flint types used, it is clear that a number of the adze-sharpening flakes could have come from these surviving adzes, although at an earlier stage of their life. Other adze-sharpening flakes have clearly come from adzes that were not discovered at the site. The adze-sharpening flakes range in size (width of adze) between 21 and 67mm, having a mean adze width of 48.6mm. Interestingly, the mean width of the surviving adzes is 48.5mm. Twenty-six (79%) of the sharpening flakes had been removed from the right lateral edge of the adze, whilst the remaining seven were removed from the left lateral edge. Three sharpening flakes were fire-fractured (including F 10 in the TL sample; Table 1). Seven examples of adze-sharpening flakes have been illustrated (**Fig. 6**, 18-24; see also Parfitt and Halliwell 1983, fig. 1, 3).

Tranchet adzes are frequently found in a range of sizes varying from in excess of 300mm to less than 70mm, and were almost certainly carefully curated. The complete Finglesham examples range from 81 to 185mm and three examples have been illustrated (**Fig.** 7, 25-27; see also Parfitt and Halliwell 1983, fig. 1, 1). Tranchet adzes would have been hafted, probably into a wooden handle or antler sleeve, as evidenced by examples from Denmark, although no British examples of handles have yet been found. The abrasion on the butt end edges of tranchet adzes, where the flint would have rubbed against the handle, and damage or breaks to the cutting edges of discarded adzes, gives some indication of their use. There is some evidence for the re-working of the butt ends of broken adzes at Finglesham, with two examples being re-shaped for hafting. One adze from layer Q/**9** has been fire-fractured (see above, Fig. 7, 25).

One of the tranchet adze fragments may well have been intended or utilised as a 'wedge' (Fig. 7, 28). An area of battering and abrasion on its upper flat surface suggests that it had been frequently struck with a hammer. A wedge would have been a useful woodworking tool, perhaps being used for splitting logs into smaller segments or planks.

Fig. 7 (opposite) Tranchet adzes.
25 Large tranchet adze. Length, 185mm. Weight, 384g. Flint type 2. Burnt and found broken into three (Q/9).; 26 Tranchet adze. Length, 125mm. Weight, 176g. Flint type uncertain (0, unprovenanced); 27 Tranchet adze. Length, 93mm. Weight, 148g. Flint type 2 (K/0); 28 Tranchet adze fragment probably utilised as a 'wedge'. Length, 76mm. Weight, 231g. Flint type 3 (J/1)

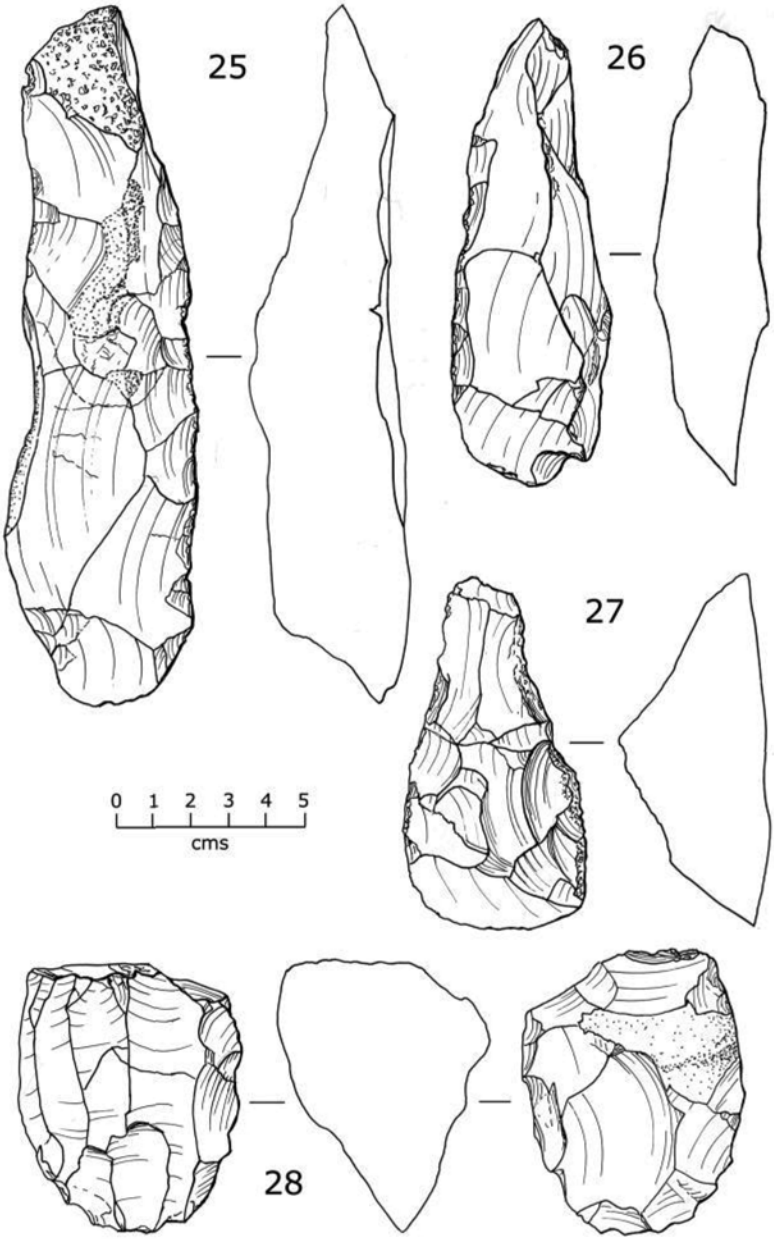

Fig. 7

Utilised and retouched pieces: a total of 22 pieces were identified as having been utilised, and comprise the largest category of implements. There are possibly many other blades and flakes which may also have been utilised, but it was not possible to determine whether the damage and wear was through use or accidental damage.

The majority of the utilised pieces are blades, long flakes or fragments, which have a straight, or occasionally slightly concave, lateral edge that has been utilised. The utilised edge displays wear and abrasion, in a regular pattern along the edge. The wear is frequently in the form of a continuous series of small flakes that have been removed along the edge. The opposite lateral edge is normally either a steep original natural edge, or has cortex remaining. In either case this would have made the piece easy to hold. A number of examples have been illustrated (**Fig. 8**, 29-32)

When Dr Woodcock originally looked at the assemblage, he had the opportunity to examine a sample of the utilised pieces under a stereomicroscope. This showed that 'in almost all cases the wear resulted from the piece having been used with a scraping motion against some hard surface. This had removed a succession of microscopic flakes along the edge with little noticeable abrasion to the flake facets themselves' (Woodcock 1986).

In addition to the utilised pieces, there were 23 hard hammer-struck and 12 soft hammer-struck flakes and blades that had been retouched. The retouch was normally along part of one lateral edge, and occasionally along parts of both. The retouch was also frequently accompanied by possible use-damage on the same or opposite lateral edge.

A small number of blade 'segments', comprising the central section of a blade missing both the distal and proximal ends, were noted amongst the blade fragments. A few of these segments appear to have been utilised, and have been included above. It is possible that the remaining segments were not specific implements and were simply a

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Fig. 8 (opposite) Utilised blades and flakes (29-32), and scrapers (33-40). 29 Utilised blade. Weight, 5g. Flint type 2 (E/2); 30 Utilised blade. Weight, 12g. Flint type 2 (C/2); 31 Utilised blade. Weight, 14g. Flint type 2 (Q/9); 32 Utilised flake. Weight, 16g. Flint type 2 (Q/9); 33 Scraper made on a thick flake. Weight, 22g. Flint type 3 (K/0); 34 Scraper made on a thick flake. Weight, 23g. Flint type 1 (J/1); 35 Scraper with semi-abrupt retouched. Weight, 18g. Flint type 2 (C/3); 36 Scraper with semi-abrupt retouched. Weight, 76g. Flint type 2 (I/3); 37 Nosed-end scraper. Weight, 24g. Flint type 2 (C/3); 38 Scraper with semi-abrupt retouch along part of one edge. Weight, 25g. Flint type 3 (J/0); 39 Scraper with semi-abrupt retouch along part of one edge. Weight, 11g. Flint type 1(0, unprovenanced); 40 Scraper with semi-abrupt retouch. Weight, 17g. Flint type 1 (Q/9)

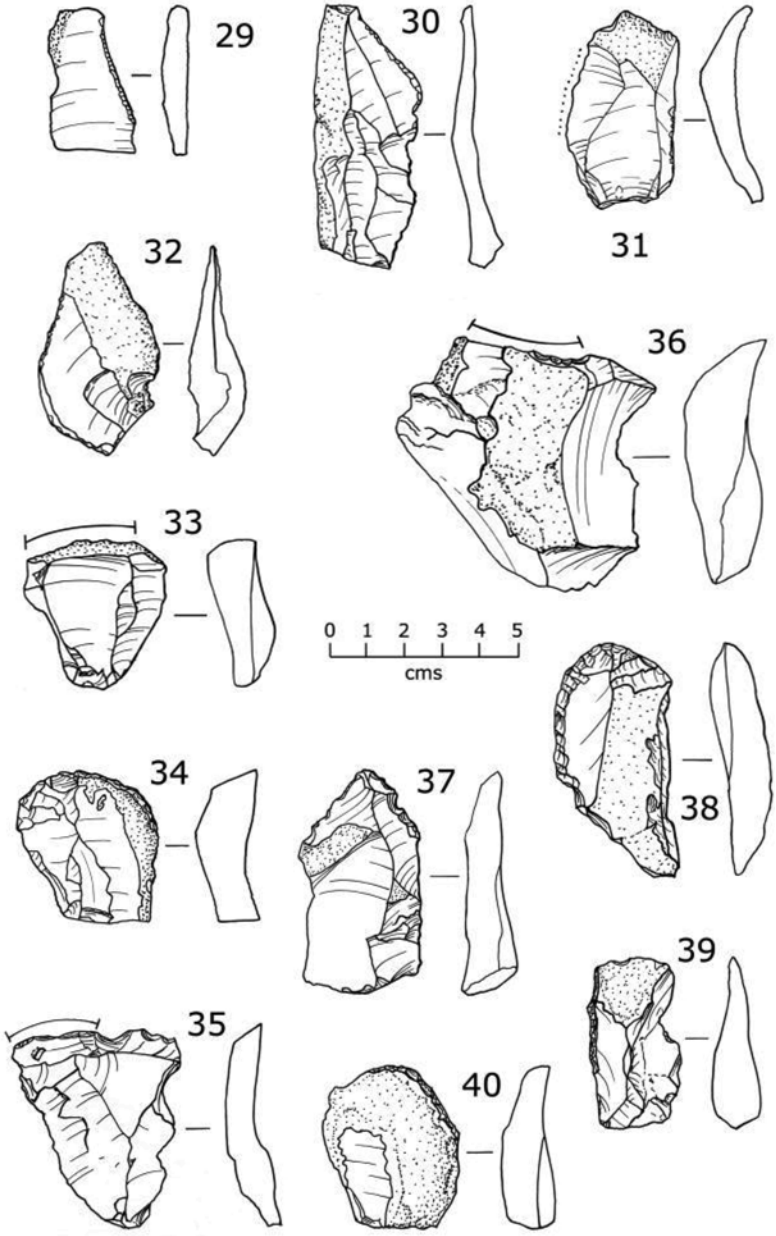

Fig. 8

bi-product or waste material. However, they could have been intended for use hafted in composite cutting tools.

Scrapers: the 19 scrapers were the second most numerous type of implement and could be divided into four sub-types (Table 2). The eight end scrapers can be divided into three different groups. Firstly, a group made on the distal end of thick hard hammer-struck flakes or flake fragments (Fig. 8, 33 and 34). They have a convex distal end modified with abrupt or semi-abrupt retouch, which sometimes extends a little way along one of the lateral edges. A remnant of cortex was usually present on the dorsal side. Their size was quite consistent, with mean dimensions of 39mm long, 36mm wide and 14mm thick. The second group are made on any size or shape of flake, with either part or all of the distal end semi-abruptly retouched to form a straight or slightly convex scraping edge (Fig. 8, 35 and 36). These more expedient types of end scraper can be on either hard or soft hammer-struck flakes, which may or may not retain some cortex. The final type is represented by a single example of a nosed-end scraper, which had been manufactured on a longer flake that was retouched to form a narrow rounded scraping edge at the distal end (Fig. 8, 37). There were no end scrapers made on blades, thumbnail scrapers or double-end scrapers in the assemblage.

The seven side scrapers are all very different in size and shape. Three are manufactured on long flakes with semi-abrupt retouch along part of one lateral edge to form the scraping edge (Fig. 8, 38 and 39). The remaining four side scrapers are on shorter flakes with semi-abrupt retouch along part or all of one lateral edge (e.g. Fig. 8, 40). These pieces tend to have no additional retouch, and the opposite edge is either a steep original flake edge or is cortical.

There were three side-and-end scrapers in the assemblage. One is manufactured on a blade-like flake, and has a semi-abruptly retouched convex distal end, with the retouch also extending down the shoulder of the flake (**Fig. 9**, 41). The second is manufactured on a short thick

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Fig. 9 (opposite) Scrapers (41-44), knives (45-48) and notched flakes (49-51). 41 Side-and-end scraper. Weight, 36g. Flint type 1 (P/2); 42 Side-and-end scraper. Weight, 37g. Flint type 1 (J/1); 43 Side-and-end scraper formed from a broken adze fragment. Weight, 54g. Flint type uncertain (0, unprovenanced); 44 Combination scraper and notched tool. Weight, 10g. Flint type 1 (I/0); 45 Backed knife. Weight, 7g. Flint type 3 (C/3); 46 Backed knife. Weight, 7g. Flint type 2 (K/0); 47 Backed knife. Weight, 14g. Flint type 2 (D/1); 48 Knife. Weight, 13g. Flint type 2 (0, unprovenanced); 49 Notched flake. Weight, 5g. Flint type 1 (0, unprovenanced); 50 Notched flake. Weight, 16g. Flint type 1 (J/1); 51 Notched flake. Weight, 13g. Flint type 2 (F/2)

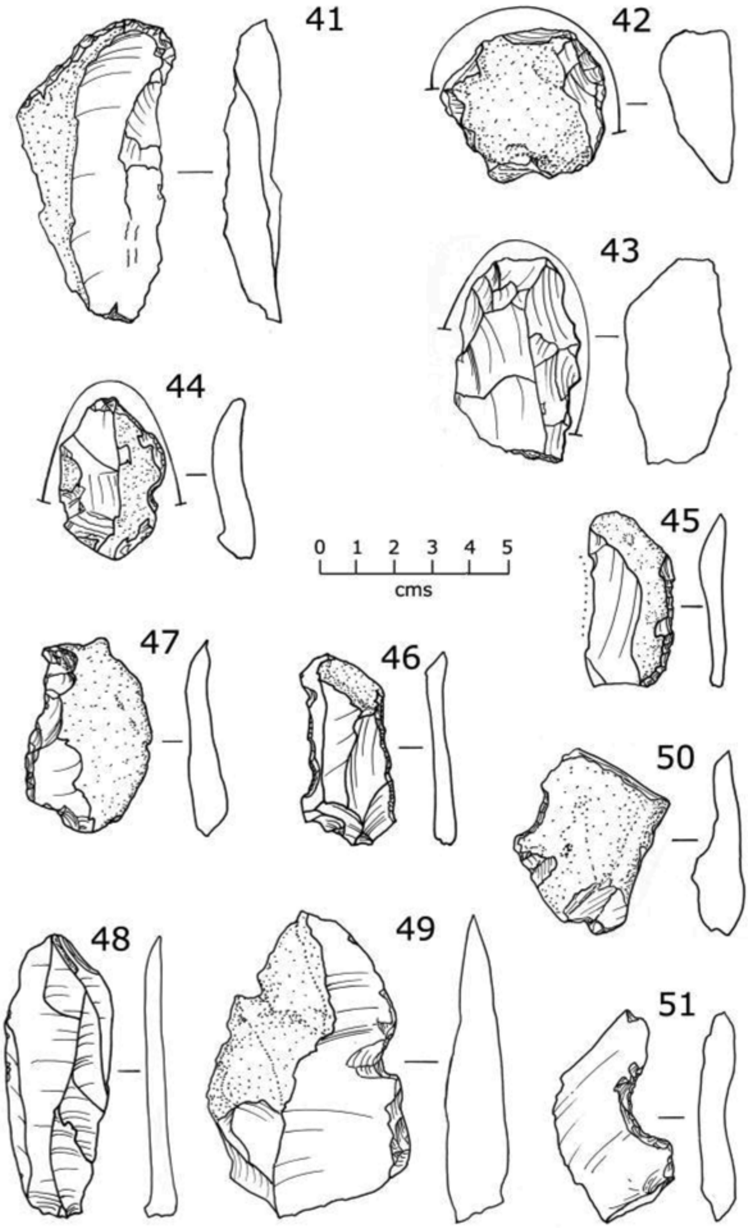

Fig. 9

flake, which has been abruptly retouched to form a convex distal end. The retouch extends semi-abruptly along one lateral edge, again forming a convex shape (Fig. 9, 42). The third side-and-end scraper has been formed on a broken fragment of a tranchet adze. Abrupt retouch has been used to shape one end into a convex scraping edge, whilst further abrupt retouch has modified one edge of the piece (Fig. 9, 43).

There is also one hard hammer-struck flake that has been modified with semi-abrupt retouch at the distal end and partly along one lateral edge, presumably for scraping, whilst on the same lateral edge there is a small retouched notch. This has been classified as a combination tool (Fig. 9, 44).

Knives: the nine knives can be divided into two groups. There are five backed knives that have been manufactured on blades or long flakes (Fig. 9, 45 and 46). They have one lateral edge that has either been left unmodified, or is modified by semi-abrupt or invasive retouch. This would have been the cutting edge. The opposite lateral edge of the blade is blunted by abrupt retouch to make it more comfortable to hold, or to facilitate its hafting into a handle. Alternatively, the opposite cortical edge has been left unmodified for the same reason (Fig. 9, 47). The remaining four knives are long flakes or blades that have both lateral edges unmodified. One lateral edge is straight and shallow, and its naturally sharp edge would have been ideal for cutting and frequently exhibits some damage and abrasion from use. The opposite edge, which is normally thicker and sometimes slightly convex, was left unmodified and could have been used for holding or hafting (Fig. 9, 48).

Notched flakes: the excavations produced six notched flakes and one notched fragment. All the flakes are hard hammer-struck, and have a single notch on one lateral edge. The notches have been created by abrupt or semi-abrupt retouch, which has removed small flakes creating a short curved incision into the edge of the flake. On six of the pieces the notches range between 9mm and 13mm in size and have been made by (direct) removals struck from the ventral side (Fig. 9, 49 and 50). Most of these pieces have a remnant of cortex on the dorsal side. The remaining flake has a larger deeper notch, 21mm across, with the removals (inverse) having been struck from the dorsal side (Fig. 9, 51).

Piercers: five of the six piercers are made on flakes, with the sixth made on a long blade. Each piece has the piercer at the distal end, with abrupt retouch on the two lateral edges converging to form the point, thus creating a triangular cross-section. There is no consistent form of piercer in the assemblage, each blank being a different shape and size (**Fig. 10**, 52-55). Occasionally, there is additional retouch on one or both lateral edges. No awls were present.

Burins: two burins were found in the excavations. The first is a 'dihedral'

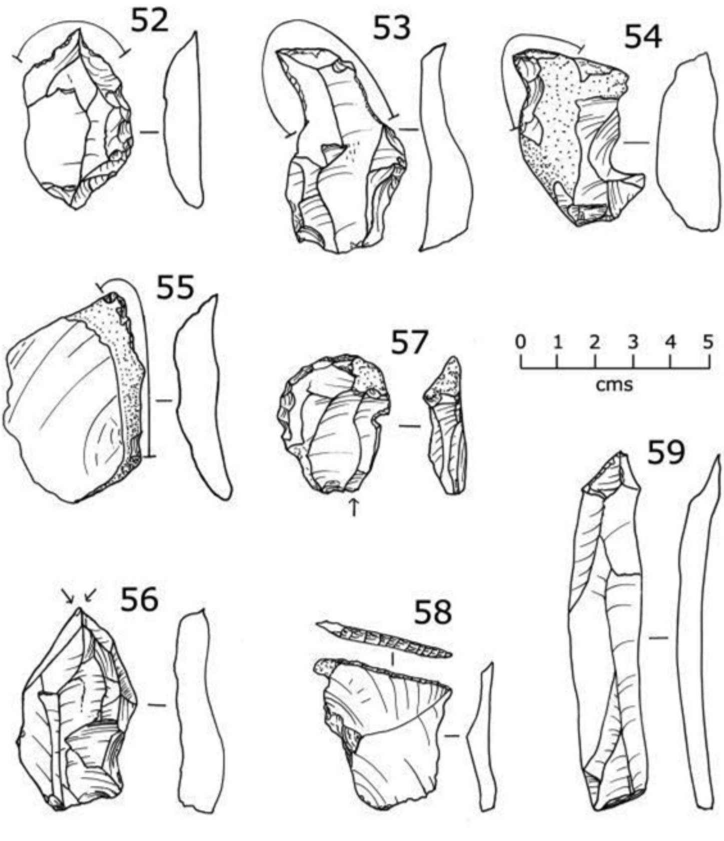

Fig. 10 Piercers (52-55), burins (56-57) and truncated blades (58-59).
52 Piercer. Weight, 15g. Flint type uncertain (J/1); 53 Piercer. Weight, 19g. Flint type uncertain (K/0); 54 Piercer. Weight, 22g. Flint type 2 (Q/8); 55 Piercer. Weight, 21g. Flint type 1 (K/0); 56 Burin. Weight, 18g. Flint type uncertain (0, unprovenanced); 57 Burin. Weight, 10g. Flint type 1 (C/2); 58 Truncated blade. Weight, 7g. Flint type 2 (A/2); 59 Truncated blade. Weight, 11g. Flint type uncertain (J/2)

burin, where a spall has been removed from a previous un-retouched burin facet at the distal end of a hard hammer-struck flake (Fig. 10, 56). The second example is a 'busked' burin, and has a burin spall that was removed from the original platform terminating in a previously retouched notch on the side of the flake (Fig. 10, 57).

Truncated blades: the two truncated blades each have a line of continuous regular abrupt retouch obliquely truncating the distal end of the piece (Fig. 10, 58 and 59). The retouch is direct, and neither piece has any other retouch.

Other implements: an unstratified fragment from a polished Neolithic axe was recovered during the excavations. Given the similarity between Later Mesolithic and Early Neolithic debitage, and the early date for some of the Sussex flint mines, this cannot necessarily be discarded as intrusive. However, there were no other diagnostically Early Neolithic pieces found in the assemblage.

An unidentified fragment of a core implement was found. It is oval in section, with one face having multiple flake scars across its entire surface. The other face has a number of longitudinal flake scars. This could be a fragment from a tranchet adze, or possibly comes from a pick.

Six flint hammerstones, together with a fragment from a seventh, were also found during the excavations. Each has one or more parts of its surface heavily abraded and battered. Most also have a number of flake removals. Occasionally, these pre-date the abrasion and were probably a result of shaping the nodule prior to its use as a hammerstone. Other flake scars were as a result of flakes becoming detached during its use. In addition to the hammerstones, two of the cores had also been used as hammerstones once they had been abandoned as cores.

DISCUSSION *by Chris Butler, Keith Parfitt and Geoff Halliwell*

The site at Finglesham has yielded a sizeable assemblage of flintwork that provides an all too rare insight into the Mesolithic of east Kent (*cf.* Ashbee 2005, 77-86). This material joins other Mesolithic finds from the brickearths at the foot of the North Downs between Walmer and Ash. Quarrying around Deal and Walmer has produced Mesolithic picks, axes, adzes and adze-sharpening flakes, besides much Neolithic flintwork (Dunning 1966, 21, fig. 9), whilst excavations at Ringlemere Farm, near Ash, have recovered further significant material (Butler 2003; Butler 2006; Frances Healey *pers. comm.*). Although a reasonable quantity of local Mesolithic flintwork is now available, the evidence is presently quite consistent in suggesting that characteristic microliths were not being extensively produced in this area. Just a single specimen is known between Finglesham and Deal, from Sholden (Parfitt 2009, 106).

A broader review of Mesolithic finds from eastern Kent (i.e. east of a line drawn between Whitstable and Hythe) shows microliths to be scarce across the entire region (Wymer 1977, 143-161). The expected range of cores, blades, flakes and flake tools, tranchet adzes, adze-sharpening flakes and picks is present, but very few sites have produced microliths. A couple come from around Swalecliffe on the north coast, but there is only one site on Thanet, at Stone Bay, Broadstairs (Moody 2008, 60). A few more microliths are known from the high Downs around St Radigund's Abbey, Hougham, and at Elham. Recent excavations at Lyminge in the Elham Valley have located a major new site producing microliths, but the assemblage awaits full analysis (Thomas and Knox 2013, 4-5). Investigations near Saltwood, on the Greensand plateau above Hythe, have revealed a pit containing eight Early Mesolithic 'Horsham' points (Garwood 2011, 42-3).

With no more than the odd microlith, a number of isolated axe and adze finds, and currently just one recorded concentration of Mesolithic implements on a clay-capped chalk ridge at Westcliffe, near St Margaret's (producing at least twenty-five axes, adzes and picks; Parfitt and Halliwell 2010), there appears to be a general lack of Mesolithic sites on the Chalk Downs of eastern Kent (*cf.* Garwood 2011, 50-1). This general paucity of material contrasts sharply with the situation in west Kent and Surrey and on the South Downs of Sussex, where Clay-with-Flint and other drift deposits over the chalk frequently produce concentrations of Mesolithic flintwork (Woodcock 1975; Butler 2001; Butler and Holgate 2002).

The lack of microliths at Finglesham is interesting and could be viewed as part of an apparently more widespread phenomenon identifiable in this part of Kent during the Mesolithic. However, it might equally be argued that their absence is directly related to the task-specific nature of the Finglesham site. Although there are a small number of bladelet cores and bladelets, there is no clear evidence for the production of microliths at Finglesham. The lack of micro-burins and microliths is unlikely to be due to the circumstances of recovery as other small pieces were very carefully collected. Thus, the absence of microliths at Finglesham appears to be a real feature of the industry. Even if they had been missed, the proportion of bladelet cores and bladelets would be much higher at a site where microliths were being made. At Finglesham, blades and bladelets make up only 7% of the flakes, blades and bladelets. At Hengistbury Head (Dorset) they comprise 41.5%, and at Streat Lane (Sussex) 23%, with both the latter sites having microliths. The only hint of microlith manufacture at Finglesham is the presence of two bladelets with a small notch retouched on one lateral edge, a form which is normally associated with the micro-burin technique for making microliths.

Comparison with some other Mesolithic implement assemblages was undertaken to determine whether there were any further trends that could be determined amongst the implements present at Finglesham (**Table 9**). Where microliths occur in an assemblage they generally seem to make up between 40% and 60% of the implements, and are normally accompanied by micro-burins, bladelet cores and bladelets. A range of other flake implements are usually associated with a microlith assemblage, of which truncated pieces and scrapers are the most common, whilst serrated pieces, burins and piercers are also present. Other pieces, such as knives and notched pieces are not very common. Utilised pieces can make up a significant proportion but are frequently not recorded amongst the implements. The proportion of tranchet adzes and picks in microlith assemblages is frequently non-existent or small, but they can make up to 9% of the implements on some sites. At Finglesham, tranchet adzes make up 12.5% of the implements, accompanied by numerous adze-sharpening flakes. The utilised pieces and scrapers are the most common flake implements in the assemblage. Knives, notched pieces and piercers are also present in some numbers but burins, truncated pieces and serrated pieces are either rare or absent.

The absence of microliths is particularly unhelpful when attempting to

TABLE 9. COMPARISON OF IMPLEMENT TYPES WITH SOME OTHER KENT ASSEMBLAGES

Implement Type	Finglesham		Perry Wood (Site 1)		Addington (Sandpit)		Stonewall shelter B	
	No.	%	No.	%	No.	%	No.	%
Microliths	0	*0.0*	21	*46.6*	46	*41.8*	95	*60.5*
Scrapers	19	*21.6*	11	*24.4*	10	*9.1*	12	*7.6*
Burins	2	*2.2*	3	*6.6*	4	*3.6*	9	*5.7*
Truncated pieces	2	*2.2*	0	*0.0*	10	*9.1*	20	*12.7*
Piercers/awls	6	*6.8*	2	*4.4*	6	*5.5*	2	*1.3*
Serrated pieces/ denticulates	0	*0.0*	1	*2.2*	7	*6.4*	7	*4.5*
Notched pieces	7	*8.0*	0	*0.0*	3	*2.7*	1	*0.6*
Knives	9	*10.2*	0	*0.0*	2	*1.8*	0	*0.0*
Utilised pieces	22	*25.0*	42	*n/a*	10	*9.1*	7	*n/a*
Adzes	11	*12.5*	3	*6.6*	10	*9.1*	1	*0.6*
Picks	0	*0.0*	0	*0.0*	2	*1.8*	1	*0.6*
Total	78	*100.0*	83	*100.0*	110	*100.0*	155	*100.0*
Micro-burins	0		14		17		36	
Adze sharpening flakes	33		13		12		1	

Note. Addington and Stonewall data obtained from Jacobi 1982.

more precisely date the Finglesham assemblage on typological grounds, for these are the only Mesolithic implements with a reasonably well understood sequence of chronological development. To some extent the thermoluminescence results help compensate and provide a useful set of chronometric dates. These indicate that the site was in use during the later Mesolithic period, with a hint that it could perhaps be as late as the Mesolithic–Neolithic transition (Table 1). On the strength of the broad range of the thermoluminescence dates, it has previously been suggested that the site may have been visited repeatedly over several centuries (Healey 2008, 7) but the general impression gained by the writers is that the flint assemblage belongs to a single episode of specific activity that was not long-lived.

Function of the Finglesham site

The types and proportions of implements found on Mesolithic sites are frequently used to assist in defining their function. Three different categories have been identified; firstly, short-term hunting camps; secondly, longer-stay base camps; and thirdly, task-specific sites (Butler 2005, 114-6). At short-term camps tasks would have revolved around the maintenance and repair of hunting equipment, and finds of bladelet cores, broken and complete bladelets and micro-burins, together with broken and discarded microliths, may be expected. Other implements connected with the maintenance of hunting equipment and initial food processing would include scrapers, burins and a selection of expedient flake and blade tools. Unlike the Finglesham assemblage, heavy tranchet adzes or picks would not be expected in any numbers, nor a wide range or quantity of flake and blade tools.

Longer occupied base camps would have seen a wider range of activities and consequently have a broader range of tool types. Excavations on a few sites such as Broomhill, Hants. (O'Malley 1978; O'Malley and Jacobi 1978); Howick, Northumberland (Waddington *et al*. 2003) and recently Sefton, Merseyside (*The Guardian*, 19.11.12) have now produced evidence for quite substantial timber dwellings, incorporating earth-fast uprights and slightly sunken internal floors. Construction of such structures would have required the use of a range of heavy woodworking and digging tools, like tranchet adzes and picks. The woodworking tools recovered from Finglesham could thus relate to the felling and shaping of timbers for the erection of such a Mesolithic dwelling. Potentially of special significance in this context is the flint-filled hollow located in Trench C, which could represent the damaged remnants of the sunken floor of just such a building. Day-to-day activities undertaken at regular habitation sites led to the production of a wide range of flake and blade tools and much debitage, often scattered over a broad area. The smaller flake tools recovered from Finglesham might be viewed as the products of associated domestic activity and cooking may have produced the large numbers of calcined flints found. Overall, however, the range and quantity of tool-types present here does not closely match a typical base camp assemblage.

If not a base camp, could Finglesham represent a flint procurement site? Certainly, there is much evidence for the working of cores and manufacture of implements, especially tranchet adzes. The high number of adze-sharpening flakes and the finished or discarded adzes could suggest this, but the number of discarded pre-forms and rough-outs is low. If tranchet adzes were being made here in large numbers more discarded pre-forms and rough-outs would be expected. There would be few finished adzes as these would have been taken away for use elsewhere. The final key point, however, is that the brickearth upon which the site is located contains very little natural flint.

On the South Downs, tranchet adzes were being manufactured at a flint procurement site located on Clay-with-Flints at Pyecombe (Butler 2001). Relatively large numbers of rough-outs (12) and pre-forms (8) occurred, with only a few finished adzes (4) and few adze-sharpening flakes. Also, there were large numbers of other core tools (picks, etc.), flake implements and microliths, together with many bladelet and blade cores. The site was thus classified as a flint procurement site with a hunting and gathering component. As Finglesham is adjacent to Downland flint sources but not directly on them, and lacks the large quantities of rough-outs and pre-forms, it seems unlikely that the site was only concerned with the procurement of flint, although this might be one aspect of its function. A comparison of different Mesolithic sites has shown that adzes were regularly discarded at sites with access to flint of sufficiently high grade to allow their replacement (Jacobi 1982). At sites further away from the raw material source, an adze that would otherwise have been discarded was used as a core instead, and thus would appear as such in the archaeological record. At Finglesham, there is evidence for the re-use of rough-outs and broken adzes as cores, so this could explain the lack of rough-outs and pre-forms at the site.

The Finglesham assemblage, however, seems more connected with the actual use of tranchet-adzes in cutting and shaping timber. This implies that it relates to activity at a task-specific site where the manufacture and extensive use of heavy tools, along with the production of calcined flint in some quantity but only a limited number of other implements, was required. An alternative explanation for such a specific assemblage thus needs consideration.

One activity that could perhaps have created the Finglesham assemblage is the construction of a dug-out canoe or log-boat. Such a project would have required the constant re-sharpening of adzes, as they would be quickly broken or blunted. The presence of a wedge (Fig. 7, 28) would also readily fit with such wood-working activity. Some of the other flint implements recovered could be associated with the manufacture of additional elements of a boat or its associated equipment, or may have been needed to maintain the boat building tools. Scrapers, piercers, burins and various cutting tools would all be required in small numbers for this or many other woodworking activities. Micro-wear analysis by Andrew Woodcock of utilized flakes has shown that many had been used in a scraping motion against some hard surface, perhaps wood. The rest of the assemblage could then be viewed as the bi-product of this main activity, with a limited selection of domestic tools produced at a temporary camp occupied during the construction period.

The precise location of any log-boat construction site would be dependent on two key factors: the availability of suitable trees and the distance of these from navigable water (McGrail 1978, 30). Given the extensive wildwood believed to have covered much of Kent during the Mesolithic period (Garwood 2011, 42), the relatively close proximity of Finglesham to the North Stream and the east Kent coast would appear more significant. Nevertheless, there have been major changes in local coastal morphology since the Mesolithic. The original channel of the North Stream lay well to the south-east of its modern course (Fig. 1; Long *et al* 1992, 61, figs 1 and 7; Long 1992, 189, fig. 3; LVRG 2006, 9, fig. 3) and is now deeply buried below later alluvium. Sea-levels during the Mesolithic period were much lower than today but were rising fast (Champion 2007, 70). This rise led to inundation of the lower reaches of the North Stream and more widespread flooding of land around the River Stour between Sandwich and Reculver, so creating the Wantsum Channel and separating Thanet from mainland Kent. A water-craft made at Finglesham, close to the banks of the North Stream and the then expanding Wantsum channel, would surely have been a valuable asset to local Mesolithic folk exploiting the sheltered coastal wetlands of north-eastern Kent. Coincidentally, the actual remains of a log-boat were discovered one metre down in marshland near Sandwich during 1936; unfortunately, its date is unknown (Cook 1937).

A few Mesolithic log-boats are known from north-west Europe, including one from Noyen-sur-Seine in the Paris Basin of France, dated 7180-6550 BC. This vessel represents a river craft constructed from a pine trunk. It was originally about 5m long and preserved evidence of how it had been shaped. Much had been hollowed out using fire, whilst cut marks made by tranchet-adzes were visible in its base (Mordant and Mordant 1992, 61). The use of fire in constructing this craft is of interest and raises the possibility that the large amounts of burnt flint recovered from Finglesham might also be related to boat building. Experiments have demonstrated how hot water placed in an oak dug-out can be used to soften the timber sufficiently to allow it to be manipulated into a more useful shape (Gifford 1993). One method to heat water would be through the use of hot flints and this remains an attractive interpretation for the 38kg of calcined flint recovered from Finglesham.

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