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A GUN-FLINT INDUSTRY AT MARTINS CLUMP, OVER WALLOP, HAMPSHIRE

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ABSTRACT

Gun-flint knappers of the seventeenth century or later exploited the flints used in the construction of an Iron Age linear feature. Debris resulting from their activities were recovered during excavation of the feature, described and subjected to quantitative analysis.

INTRODUCTION

For some two hundred years until the development of the percussion lock in the 1840s, the flintlock was the standard firing mechanism for firearms (Blackmore 1961). A key component of this mechanism was a small piece of flint, the gun-flint, which was held in a spring-loaded cock. When the weapon was fired, the action of the flint being struck forcibly against a steel hammer produced a shower of sparks which ignited a charge of gunpowder and discharged the weapon. Whilst many fine examples of flintlock weapons have survived leading to a great deal of knowledge concerning their design and manufacture (Blackmore 1961), less is known of the industries that were responsible for the manufacture of gun-flints for these weapons.

Two main styles of gun-flint have been identified in Britain differing in both their mode of manufacture and the dates when they were produced (de Lotbiniere 1977; Torrence 1986). Prior to the late seventeen hundreds, gun-flints were manufactured by the *wedge* or *Old English* technique. In this method, a semi-circular flake blank was struck off a core that had itself been prepared on a flake. Suitable blanks were then trimmed into rectangular wedge-shaped gun-flints. About 1770, a more efficient process of gun-flint manufacture in the form of the *platform technique* took over as the principal method of manufacture. A series of parallel-sided blades were struck off a fluted core and subsequently knapped into sharp-edged rectangular gun-flints. The process was highly efficient with a good knapper being able to produce up to 3000 gun-flints in a day (Skertchly 1879).

Industries using the *platform technique* have been well documented and include contemporary descriptions of those industries that existed in the vicinity of Brandon in Suffolk at the turn of the century (Skertchly 1879; Clarke 1935; Knowles & Barnes 1937). In contrast, information relating to industries using the earlier *wedge technique* are reliant on deductions made from the characteristic debris that resulted from the manufacturing process (Chandler 1917; Clay 1925) since there are no contemporary descriptions of the industries available.

Debris from industries using the *wedge technique* have been found at a number of sites in Britain but in particular in Hampshire and Wiltshire in the vicinity of the city of Salisbury (de Lotbiniere 1977; Fowler 1989). In 1984, the rescue excavation of an Iron Age linear earthwork some 13 km north east of the city on the Range of the Chemical Defence Establishment revealed the presence of a large quantity of gun-flint debris. This find provided an opportunity to make a detailed study of the nature of the industry at this site.

THE SITE

The material under study was derived from a one-metre wide section through the scheduled linear earthwork (County No 454) at Martins Clump, Over Wallop, Hants (NGR SU

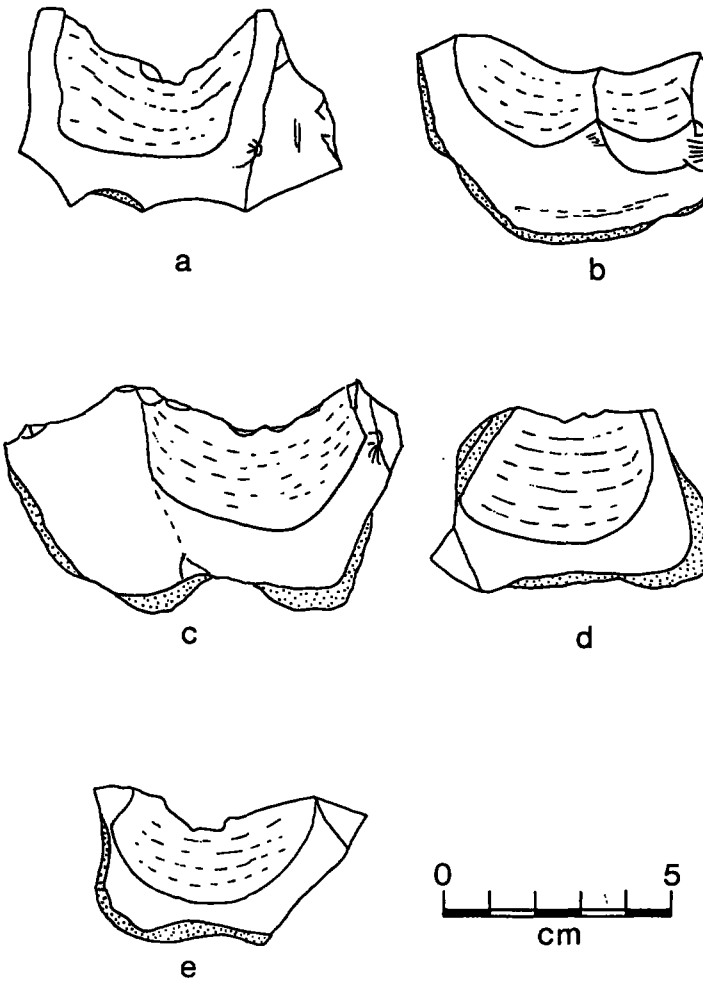

Fig 1. Five examples of gun-flint cores.

24993879). The rescue excavation by members of the Archaeology Section of the CDE Conservation Group revealed the earthwork to comprise of a V-shaped ditch together with a bank (Ride, forthcoming). The gun-flint knappers had quarried flint from the earthwork bank and the debitage from their knapping had been cast to both sides of the bank and onto its crest. The debris had subsequently been carried down into the thick humic layer which had accumulated over the ditch and was visible in section as a bright blue band of patinated material.

THE GUN-FLINT DEBRIS

Approximately 2000 pieces of gun-flint debris were recovered from the section with the vast majority being uncontexted when received for analysis. The flint had a light blue patina and was classified into four categories of material:

1. gun-flint cores;
2. discarded gun-flint blanks;
3. cortical flakes;
4. irregularly-shaped debitage.

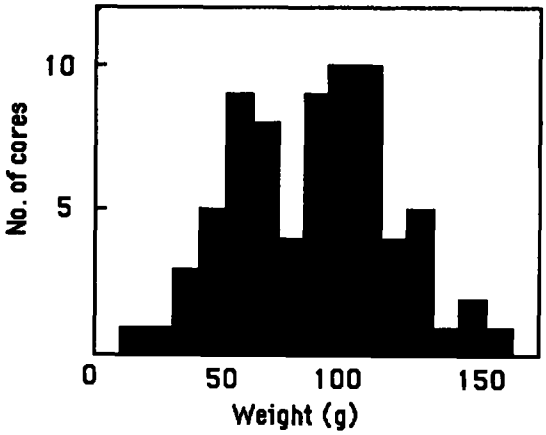

Fig 2. Histogram analysis of the core weights.

By far the major component of the debris by weight comprised of gun-flint cores (56%). Discarded gun-flint blanks, however, represented a minor component (4%). Cortical flakes, removed from the raw material to expose the inner flint comprised 14% of the debris and irregularly-shaped debitage, representing debris from the knapping of the raw material into cores, comprised a further 26% of the material by weight. For the purpose of characterising the debris, representative samples of 75 cores and 40 discarded gun-flint blanks have been studied in detail.

Five examples of cores are illustrated in Figure 1. The cores comprise of wedges of flint having in the majority of cases one cortical surface together with two adjoining exposed flint surfaces forming an average angle of 44.6 ±9.7 degrees. The nature of the cores as being *cores on flakes* was readily apparent from the cone of percussion present on one exposed surface of each core. The well defined nature of this cone suggests that a hard hammer had been used in their preparation (Ohnuma & Bergman 1982).

For the majority of cores (70 examples), a single flake had been removed from each core. In three cases, however, two flakes had been removed from each core and in a further two examples, three and four flakes respectively had been removed. For one of the latter cores, two small flakes had been removed from the opposite face to that from which a single large flint had been removed (see Fig 1b). Since the smaller flakes must have been removed before the removal of the larger flake, the latter gun-flint blank would have possessed a ridged butt (see below).

The weights of the 75 cores ranged from 26 to 151 g with an average of 87.4 ±35.9 g. Frequency analysis of the individual core weights showed a bimodal distribution indicating at least two populations of cores to be represented in the sample (Fig 2). When the cores were classified into two groups based on their weights (namely, 26–75 g and >75 g), it was found that the average angles formed between the two exposed flint surfaces were significantly different for the two groups of cores (41.7±9.3 and 47.3±9.2 degrees respectively, $t=2.8$, $p<0.01$).

Five examples of the discarded flake blanks found at the site are illustrated in Fig 3. The blanks comprised of semi-circular to rectangular shaped flakes having weights in the range 4.3 to 31.5 g and an average weight of 9.7±6.3 g. Metrical analysis of the flakes is shown in Fig 4. Length is taken as the maximum measurement along the axis of percussion and breadth as the maximum measurement at right angles to it. The lengths of the flakes varied between 16 and 69 mm and their breadths between 21 and 61 mm giving a mean breadth to length ratio of 1.6±0.3. The butts of the flakes had widths in the range of 5 to 21 mm.

The single blow to remove each blank had been struck at a slant to the striking platform and resulted in the flakes having percussion angles formed between the butt and the bulbar surface of between 96 and 139 degrees (mean 118.9 ±7.9 degrees). The majority of the flakes possessed a well defined cone of percussion again indicative of the use of a hard hammer. In the case of 33 of the blanks the butt was flat. However, seven of the blanks possessed a ridged butt resulting from the intersection of two flake scars as described above.

Five of the flakes showed evidence of retouch and in one case, illustrated in Fig 3a, two sides of the flake had been removed to give a more rectangular-shaped flake. The two re-

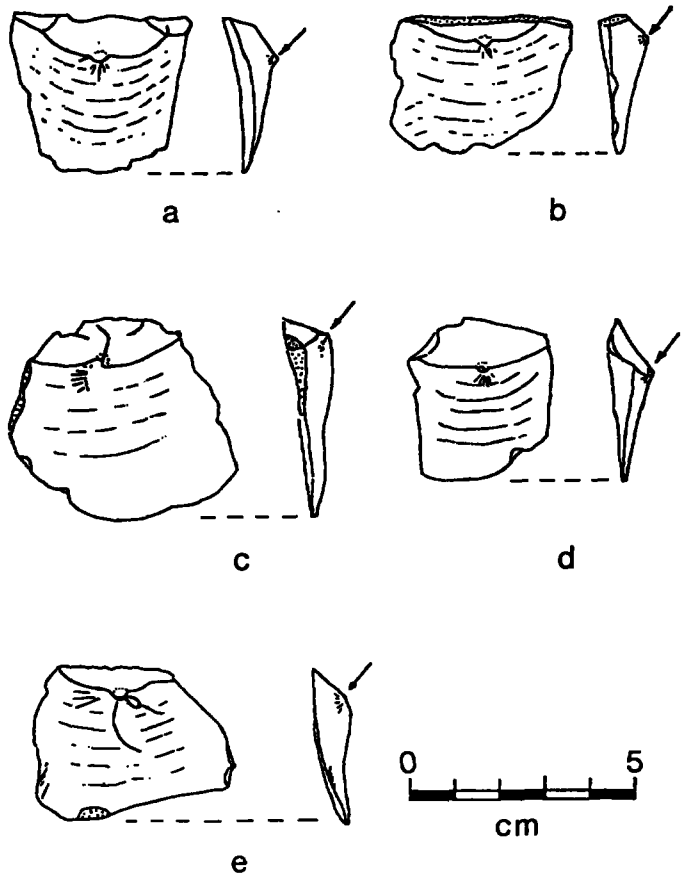

Fig 3. Five examples of discarded gun-flint blanks. The point of percussion is shown by an arrow.

touched edges possessed opposed cones of percussion on their dorsal and ventral surfaces suggesting that they had been broken on some form of anvil.

From the negative bulbar surface impressions present on the 75 cores, the characteristics of 83 flakes that had been removed from the cores could be deduced. These flakes were termed *deduced flakes* and correspond to a mixture of those flakes that were discarded as unsuitable for further trimming into gun-flints, the discarded blanks, and those that were used to make gun-flints and hence are not represented in the debris found at the site.

The *deduced flakes* were of a similar shape to the discarded blanks described above. Metrical analysis is shown in Fig 5. Comparison of the dimensions of the *deduced flakes* with those of the discarded blanks showed that whilst the mean lengths were not significantly different, the *deduced flakes* were significantly broader and had narrower butts than the discarded blanks. Thus those deduced flakes that were used for trimming into gun-flints would appear to have been broader and thinner than those that were discarded as being unsuitable for gun-flint manufacture.

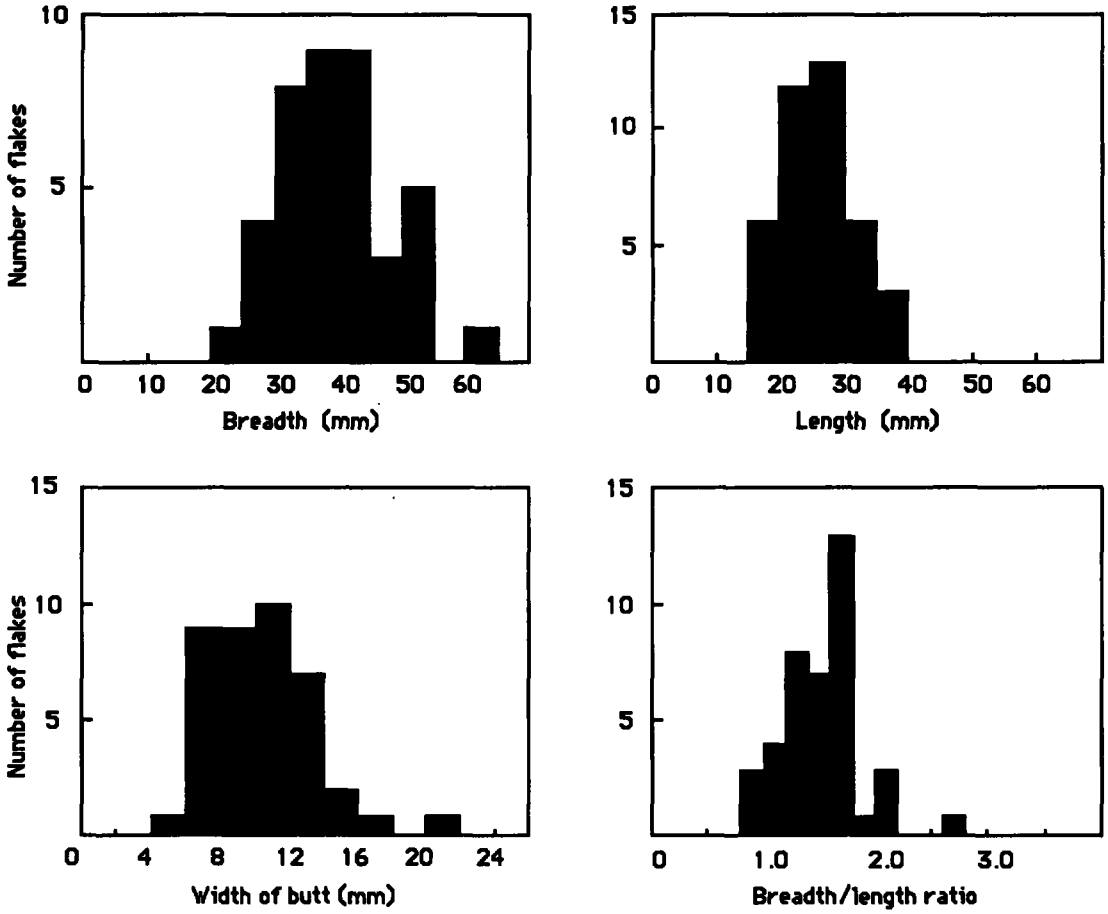

Fig 4. Metrical analysis of the 40 discarded gun-flint blanks. Mean values for the three dimensions and the ratio shown in the histograms were as follows: breadth 38.5 ±8.8 mm; length 25.8 ±5.7 mm; width of butt 9.8 ±3.1 mm; width/length ratio 1.5 ±0.35.

DISCUSSION

The industry

The light-blue flint debitage derived from the site at Martins Clump corresponds to debris derived from an industry manufacturing gun-flints by the *wedge technique* (de Lotbiniere 1977). Similar flint debris has been reported nearby at Easton Down (Stone 1931) and Roche Court Down (Stone & Tildesley 1932), although at both sites the debris was not described in any detail. Further afield, gun-flint debris from industries using the *wedge technique* have been reported at a number of sites in the vicinity of Salisbury including Figsbury Rings (Cunnington 1925), Laverstock Down (Kendall 1925) and Broadchalke (Clay 1925). Thus it would appear that the environs of Salisbury were an important area for gun-flint manufacture using this technique.

As was noted by Clay (1925) for the industry at Knighton Wood, Broadchalke, the majority of discarded flake blanks found at Martins Clump represent wasters that were unsuitable for retouch into gun-flints. From the compari-

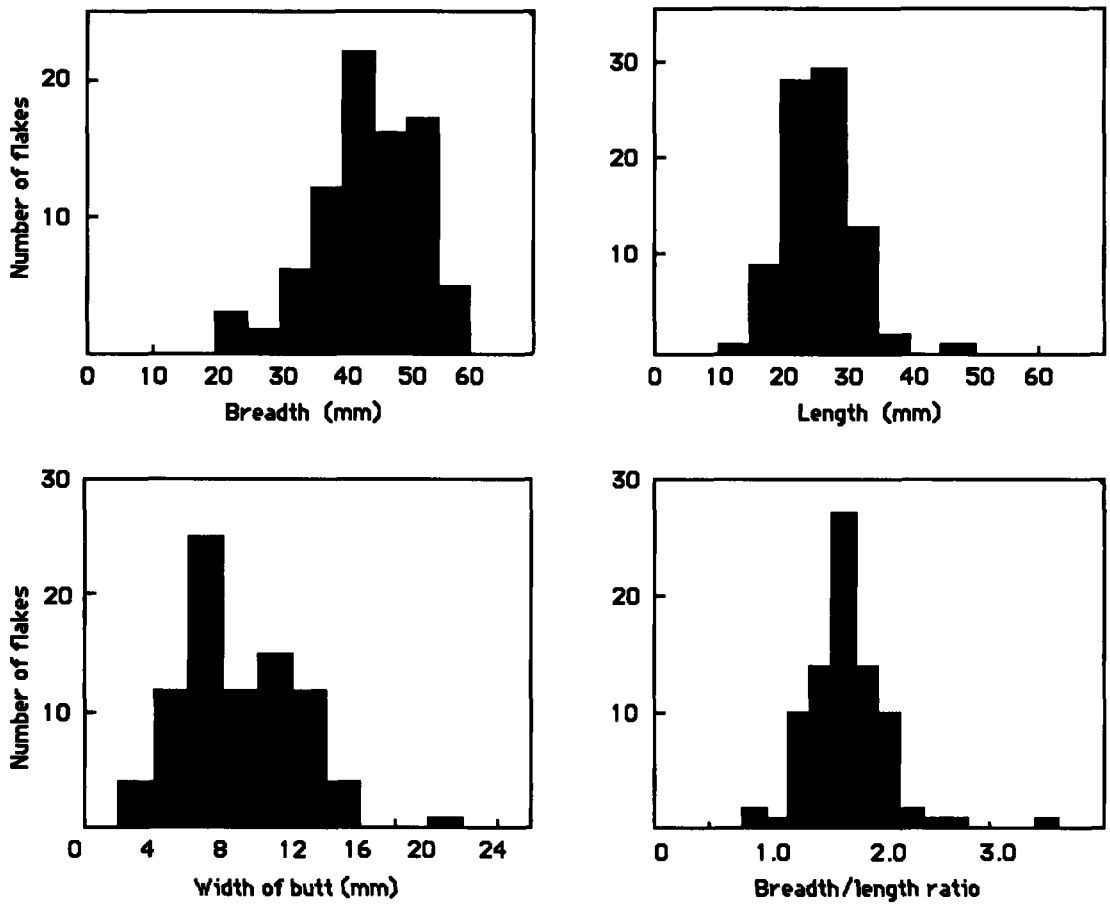

Fig 5. Material analysis of flakes deduced to have been removed from the 75 gun-flint cores (83 flakes). Mean values for the three dimensions and the ratio shown in the histograms were as follows: breadth 42.9 ±7.9 mm; length 25.3 ±5.4 mm; width of butt 8.1 ±3.0 mm; breadth/length ratio 1.7 ±0.38. Comparison of the dimensions of the *deduced flakes* with the discarded gun-flint blanks showed that whilst the mean lengths were not significantly different, the *deduced flakes* were significantly broader ($t=2.81$, $p<0.01$) and had narrower butts ($t=2.89$, $p<0.005$) than the discarded blanks.

son of the dimensions of flakes deduced to have been removed from the cores with those discarded blanks found at the site, it would appear that those blanks that were considered suitable for further trimming into gun-flints were slightly broader and had narrower butts than those that were considered to be unsuitable.

The single discarded blank found at the site bearing opposed cones of percussion on the dorsal and ventral surfaces of the retouched edges suggests that an anvil may have been used in the process of trimming blanks into gun-flints. This is in contrast to the industry described by Clay (1925) where a single gun-flint is illustrated that appears to have been retouched by a pressure flaking technique. As regards other tools that were used by the knappers at Martins Clump, apart from the apparent use of hard hammers nothing more is known.

The finding at the site of two size ranges of gun-flint cores with differences in the average angles formed between the exposed flint sur-

faces, raises the possibility that at least two knappers may have been active at the site. In this respect, it is of interest that a description of a nearby gun-flint industry at King Manor, Clarendon (Wyatt 1870), relates that a number of journeymen worked together on a day to day basis moving from one source of raw material to another. Such an itinerant mode of working would readily account for the large number of gun-flint manufacturing sites to be found on the Hampshire/Wiltshire border in the vicinity of Salisbury (Fowler 1989).

In contrast to the itinerant mode of working at Martins Clump, the well known industry at Brandon in Suffolk that manufactured gun-flints by the *platform technique* was more organised. Raw material was transported from flint mines to the gun-flint knappers who had their workshops located in the town (de Lotbiniere 1977; Torrence 1986). It is possible to account for the differences between the two industries by considering the quality of the raw material that was used by the knappers. At Brandon, the *floor-stone* flint that was used as the raw material was of very high quality and thus it was feasible to transport the high grade material to the knappers' workshops where they could use the more efficient *platform technique* to manufacture gun-flints with the minimum of waste. In contrast, at Martins Clump the poor quality of the raw material would preclude the use of the *platform technique* since high quality flint was a necessary prerequisite for this technique (Skertchly 1879) and hence the knappers had to use the *wedge technique* for which a lower quality raw material could be used. The use of this latter technique would probably have made the transportation of low grade raw material to workshops in the surrounding villages uneconomic. Hence, the knappers would have been forced to work at the source of their raw material and would have moved from one location to the next as suitable raw material was used up.

Dating

The *wedge technique* is generally believed to have been superseded by the *platform technique* around 1770–1790 (White 1975; de Lotbiniere 1977). A probable date for the industry at Martins Clump would therefore lie between the invention of the flintlock in the 1650s, (Blackmore 1961) and the late 1700s. Indeed, John Aubrey in his *Natural History of Wiltshire* compiled between 1656 and 1691 relates that gun-flints were manufactured at Steeple Langton some 20 km West of the site (Aubrey 1847). However, it is possibile that the manufacture of gun-flints at Martins Clump may have continued beyond the late 1700s in response to local demands for small quantities of gun-flints or as part-time work providing 'extra income' for the knappers.

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