Sussex Archaeological Collections **124** (1986), 9–23.

PREHISTORIC STONE IMPLEMENTS FROM SUSSEX AND THEIR PETROLOGICAL IDENTIFICATION

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This paper presents the results of continuing research on stone implements from Sussex, and discusses the nature, distribution and significance of these implements. A list of all known finds, together with their petrological identifications, where these have been established, and an illustrated catalogue of the implements are included on microfiche.

INTRODUCTION

Although the majority of prehistoric stone implements from Sussex are made from locally obtained flint, it has long been recognized that other rocks were utilized and that some of them were foreign to the area. These are often loosely spoken of as 'stone' implements by archaeologists to distinguish them from those made of flint or chert.

In order to try and identify the rocks concerned a slice, approximately 1 mm. thick, is cut from the implement using a very fine diamond-coated wire. The slice is ground until completely smooth and then stuck to a glass microscope slide. The other side is then ground down to produce an almost transparent section, which can be examined under the petrological microscope. The injury to the implement is then filled with plaster or wax and coloured so successfully that it is difficult to detect that anything has been removed.

By making comparisons between slices taken from many implements it has been possible to identify implements of the same rock type. So far some 25 petrological categories or 'Groups' have been distinguished and some further subdivided, and a series of group numbers allocated (Clough & Cummins 1979, 127).

In some instances it is possible to identify the actual factory or group of workshops which produced the implements (e.g. Group VI from Great Langdale, Westmorland), in other cases merely to recognize that certain implements have been manufactured from a common source material, to suggest a likely area of origin, and postulate that a factory site may well await discovery in that region (e.g. Group I from Cornwall, which may have come from a factory site now drowned by the sea).

There has been a national policy for the petrological examination of stone implements for over 45 years. Since 1952 this work has been co-ordinated through the Implement Petrology Committee of the Council for British Archaeology. Already one research report has been published (Clough & Cummins 1979) and another is in preparation. Included within this will be a consideration of stone implements from Sussex, as part of a wider study of implements from south-east England (Woodcock *& al.* forthcoming). Implements from Surrey have already been published (Field & Woolley 1983).

The present report affords an opportunity to discuss the nature and significance of the Sussex material in greater depth than is possible in a regional survey, and to allow the inclusion of the most recent results of current research. By its very nature such a study is a continuing process, and the authors will be pleased to hear of any new discoveries that are made.

The County list is reproduced in full (microfiche, pp. 11–24). The numbering of the implements has not been adjusted to take account of any erroneous material included by previous workers (for example, artefacts of flint or of ethnographic origin) since much of the list (Evans 1968a) and various other individual implements, together with their County numbers, have already been published. Where numbers have been given by the 'Sub-Committee of the South-Western Group of Museums on the Petrological Identification of Stone Implements', these are listed (Evens *& al.* 1962; Keiller *& al.* 1941; Stone & Wallis 1947; 1951).

Where the 'County Number' is qualified by an asterisk, additional information is given in the notes. Where the 'Petrological Group' column is qualified by an asterisk the petrological sections were made during the course of this study; where two appear the petrological sections were made previously but were not available for confirmation by the present authors. Where the 'County Number' is underlined, the implement is illustrated (microfiche, pp. 29–51). Not all the implements have been seen by the authors and some of the illustrations are, therefore, based on the records of other workers. For this reason there is some variability in the quality of the information shown. Although most of the implements are illustrated, lack of space has enforced some selectivity.

Wherever possible a four- or six-figure National Grid Reference is given. Each reference is qualified by the addition of a letter: G (General), E (Estimated), or A (Accurate). A 'General' reference is merely included to locate the place in general terms, and is thus only a guide to the area in which the find was made, and does not pretend to indicate the exact find-spot. These 'General' references are taken from the middle of the places concerned or any convenient feature (a road junction, a church, a station, the centre of the densest area of buildings), or sometimes a conveniently placed intersection of national grid lines may be used. An 'Estimated' reference is an attempt to locate the find-spot from information provided with the material or in a publication. 'Estimated' references are also used in certain other circumstances, for example when a place name has gone out of use and does not occur on the maps, but the locality referred to can be reasonably deduced. 'Accurate' references are given where an exact find-spot is known or published, or can be calculated from carefully recorded distances and compass bearings of sufficient detail.

A full set of record cards, augmenting the information given in the lists, has been deposited in the Sussex Archaeological Society's library at Barbican House, High Street, Lewes. Cards for East Sussex are held at the County Planning Department, Southover House, Southover Road, Lewes, East Sussex and for West Sussex at the County Planning Department, County Hall, Chichester, West Sussex.

Basic to the study has been the establishment of a uniform terminology for the archaeological material, for many of the implements have been described in a highly subjective manner by previous workers. Although the authors have attempted to describe each artefact objectively, it has not proved possible to locate and re-examine all those concerned, and some of the attributions have been made on the basis of drawings only. Thus some allowance must be made for possible errors, and in particular for some overlap between such groups as mace heads, pebble hammers and shafthole adzes. Notwithstanding these difficulties the following categories of implement have been distinguished:

Axes. This group includes all those implements which are obvious axes. It also includes implements which may possibly have been adzes, but whose slightly asymmetric form is more likely to have been determined by the shape of the source material itself.

Adzes. This group includes only those implements which appear to have been deliberately designed for this purpose.

Implements with shaftholes. Whenever possible these have been classified according to the system of Roe (1966; 1979) and are divided into

battle axes, axe hammers, mace heads, shafthole adzes and pebble hammers (often described elsewhere as pebble mace heads, hour-glass pebbles, etc.).

Other items. These include cupped pebbles, pestles, hones, rubbers, etc.

The petrological examination of the artefacts has posed its own set of problems. In the Fourth Report published by the South-Western Group (Evens & *al.* 1962) 22 axes from Sussex were identified. By 1968 this list had been extended to 140, largely as a result of the work of Miss K. J. Evans, then of Worthing Museum (Evans 1968a). Many of the thin sections utilized for the South-Western Group Report have been made available, whilst a number of others have been collected from other sources. These two groups of thin sections, together with the numerous sections made during the course of the present study, are all now housed at the British Museum (Natural History), where they may be consulted. A number of sections have also been loaned by the Institute of Geological Sciences.

Apart from identifications based on the sections referred to above, some petrographical names given in the County list are taken either from South-Western Group Reports, which are based on sections no longer available, or from other sources for which again the sections can no longer be traced. A few names are based solely on macroscopic examination, for example the group designated as 'quartzite/sandstone' which, though not sectioned, can undoubtedly be categorized in this way. These particular implements are discussed in more detail later. Rock names could not be given to a few of the implements either because they cannot now be traced, a common situation with those in private hands, or because permission for sectioning has been withheld.

A rather worrying feature that has become apparent during the course of this work is the lack of agreement amongst petrologists who have examined the same thin sections, as to the rock type. This is particularly noticeable with regard to the decisions as to whether or not a particular section is sufficiently similar to one of the Groups to be assigned to it. The opportunity to make such comparisons has arisen because of the large number of sections of south-eastern implements kindly made available by the South-Western Group, together with other sections reported on by a number of petrologists during the last 20 years or so. Generally speaking the present petrologist has required a closer match with 'type' sections, in order to assign a group number, than other petrologists.

This approach could, of course, be partly responsible for the relatively few grouped implements, though in fact careful analysis suggests that this would change the figures by one or two per cent at most. However, it must be appreciated that variation in interpretation does exist, and it is essential for the validity of the petrological survey as a whole that some system should be devised for monitoring identifications and for achieving as much uniformity as possible in the future.

GROUPED IMPLEMENTS

Group I

Nine implements (5, 9, 24, 77, 101, 106, 116, 168, and 195) have been assigned to this group, making it the most prolific group in the county. The almost complete absence of Group I implements from West Sussex, however, is not easy to explain.

All the implements from this group are axes, with the rounded butts and oval sections found on many Group I axes. They vary considerably in their proportions, and this probably reflects the shape and size of the raw material used, as much as any other factor. Whilst individual axes might be matched, one with another, there is little to suggest a distinctive product or the production of specialized tool types. Rather, there seems to be an optimum width for the cutting edge of an axe, above or below which the implement was probably not efficient for general use, whilst the length was of lesser importance. Fig. 4 illustrates the range of shapes found

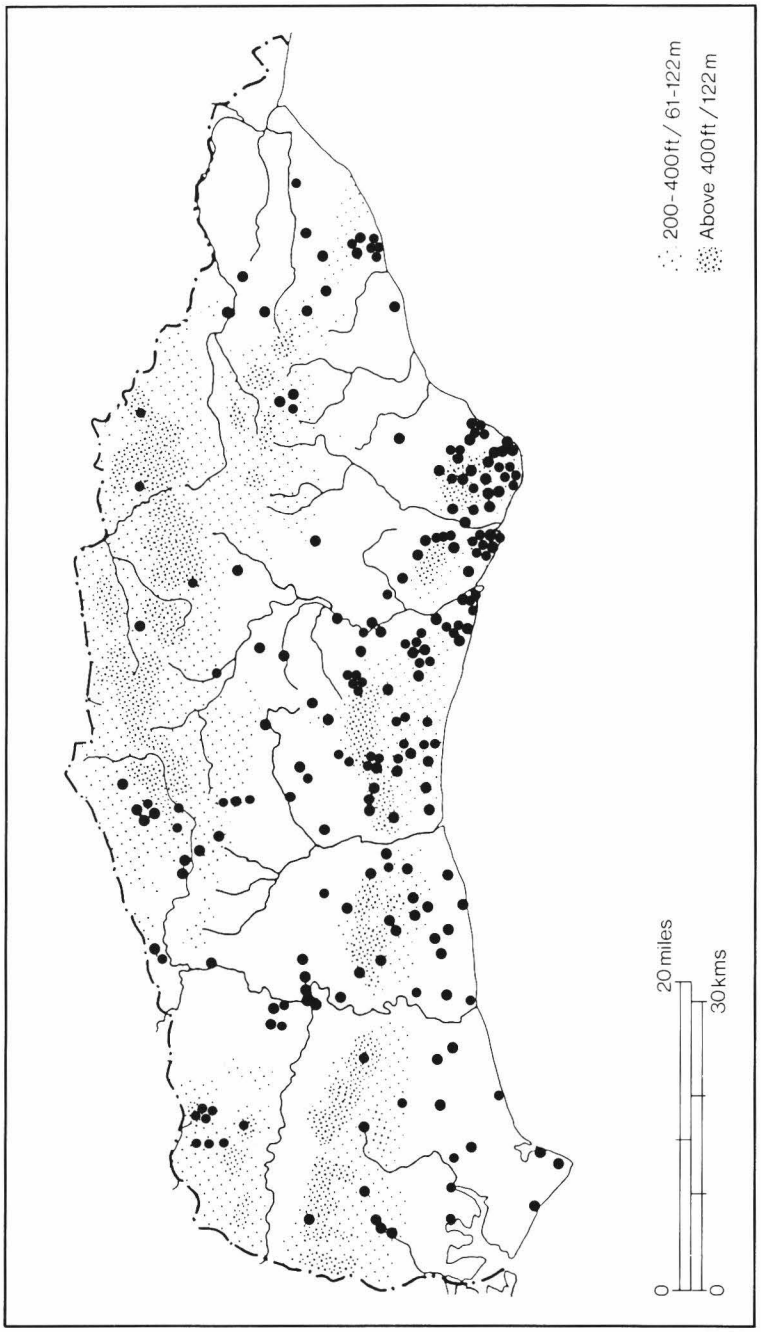

Fig. 1. Distribution map of finds of stone implements in Sussex.

amongst Sussex stone axes, and the grouped axes have been labelled to show the variability within individual groups.

Group II

The only representative of this group (11) was indentified by Stone & Wallis (1951) as belonging to Group IIa, and no further additions have been made. The implement is an axe fragment, which comes from the downs adjacent to the coast, and is of the same generalized form previously described.

Group III

The only implement assigned to Group III (10) is an axe from West Sussex, the attribution being made by Stone & Wallis (1951). This section was available for study together with a 'type' section (Cornwall 106: Stone & Wallis 1951, no. 677) and they illustrate some variability in petrological interpretation. Both sections are sufficiently different as to raise doubts as to whether the implement should have been assigned to Group III. Clearly the petrologist who originally erected the group and assigned this implement to it would have many examples to hand, and his interpretation must take precedence. However, there are numerous epidiorite bodies in the south-west of England, the rocks of which are presumably not dissimilar, so that it is difficult to gauge the significance of textural variants in terms of provenance.

Group IV

Only one implement (61), an axe, has been assigned to this group.

Group VI

This is the second most abundant group represented, with five Group VI implements (54, 133, 155, 158 and 179) and one near Group VI implement (48). This particular section has not been seen during the course of this study, the attribution being made by the Geological Museum in 1939. The implements are widely scattered and, as can be seen on the frequency distribution map of Cummins (1979, fig. 8), appear to have been traded down the central part of England, but hardly reached the extreme south-east or south-west corners.

With one exception, all the implements are axes, occurring in a wide variety of sizes and generally showing a high standard of finish. Three of the five axes have facets along their lateral edges, a feature commonly seen on axes of flint. The remaining implement (48) is a pestle. A number of similar pestles are known from Sussex and Curwen (1928a, 90–1) has argued that at least some are of Bronze Age date.

Group VII

This is the third most abundant group with five implements (57, 59, 79, 105, and 141) assigned to it. It is interesting that, as with the Group I implements, all the known examples come from East Sussex, of which four lie in reasonably close proximity to one another.

All the implements are axes, some with relatively broad cutting edges in relation to their length. On one example (59) the polishing has been concentrated in the area of the cutting edge, with much of the butt remaining in its original relatively crudely flaked state.

Group IX

Two implements (87 and 89) have been identified from this group, in spite of the considerable distance from the factory sites in County Antrim. Both implements are axes and noticeably small in size and rather crudely made. It is also interesting to note they were found within 5 km. of each other.

Group XIII

Three implements have been assigned to this group, and they are widely scattered in their distribution. One of the implements (6) is an axe, one (35) a battle axe, and other (178) a shafthole adze. The typology is so diverse that it is unlikely that the implements came from a single source.

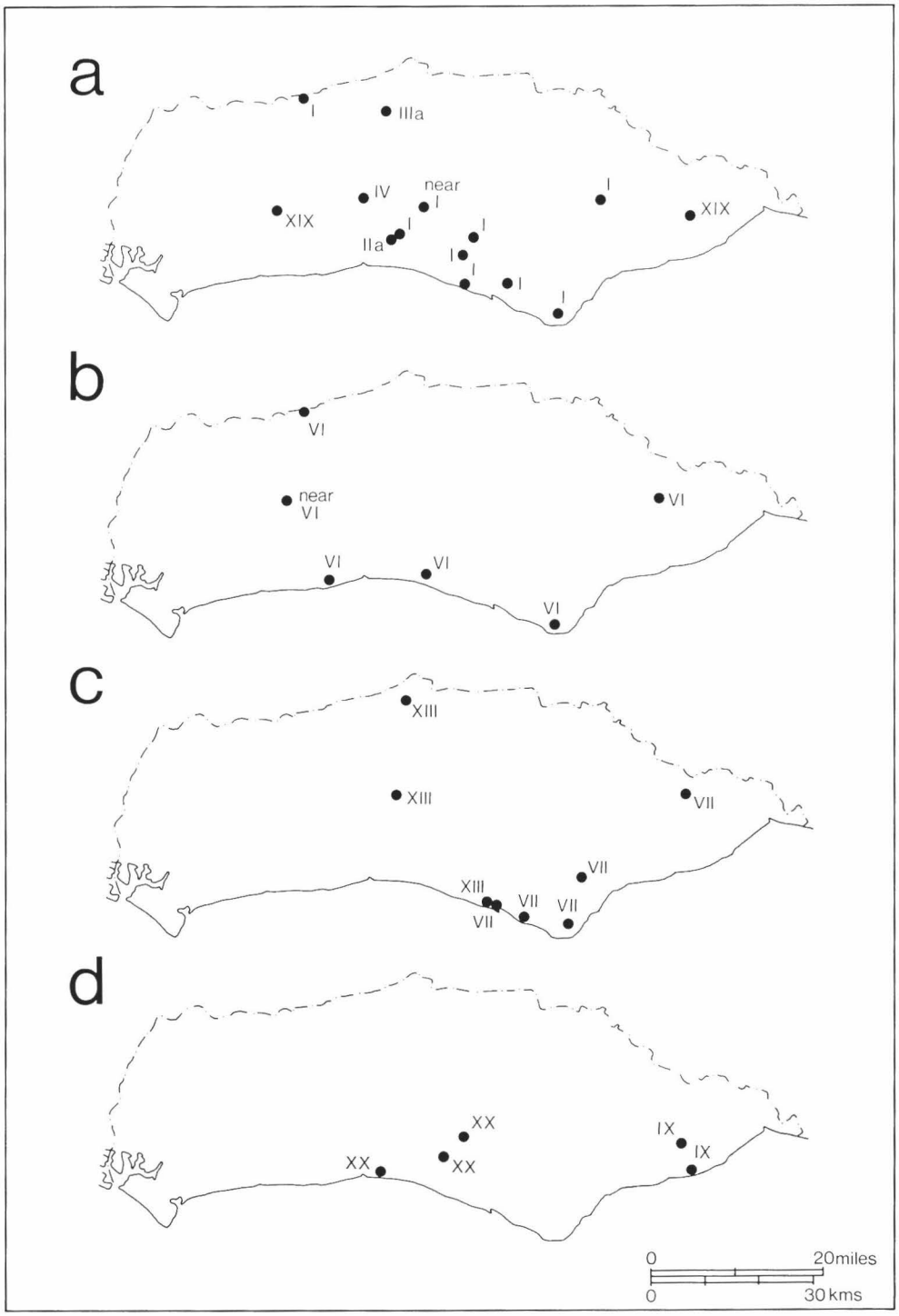

Fig. 2. Distribution of (a) Cornish Groups, (b) Lake District Groups, (c) Welsh Groups, and (d) other Groups in Sussex.

Group XIX

Two implements are known from this group. One (85) is an axe of elliptical section and somewhat asymmetric shape, the other (94) a shafthole adze.

Group XX

Four implements have been attributed to this group, and it is interesting to note that they have been found reasonably close to one another. Two of the implements (25 and 26) are axes, one (69) an adze, and the remaining implement (1) a pestle.

UNGROUPED IMPLEMENTS

Sedimentary Rocks

Details of rock types represented amongst the ungrouped implements are given in Table 2 (microfiche, pp. 3–4), and it is noteworthy that not only are ungrouped implements dominant in Sussex, but a large proportion are of sedimentary rocks, particularly quartzites and sandstones. Some difficulty has been found in assigning some sections to one or other of these categories. Quartzite is a term generally used by petrologists for a metamorphic quartz rock, but it may also be applied to a quartz sandstone in which grains are cemented by silica. Traditionally quartzite rocks were identified by breaking across, rather than around, the grains. Unmetamorphosed quartzites have sometimes been called orthoquartzites, but Pettijohn (1975, 230–1) says that recent literature indicates its gradual replacement by the term quartz arenite. In the present context the term quartzite has been used for those rocks composed of at least 98 per cent quartz (as estimated by eye, not determined by point counting). They grade continuously into rocks containing feldspar and a range of heavy minerals, particularly tourmaline, and all are considered to have originated in the south-east area, probably in the Lower Greensand, which would seem to be confirmed by the greater or lesser amounts of glauconite found in many of them.

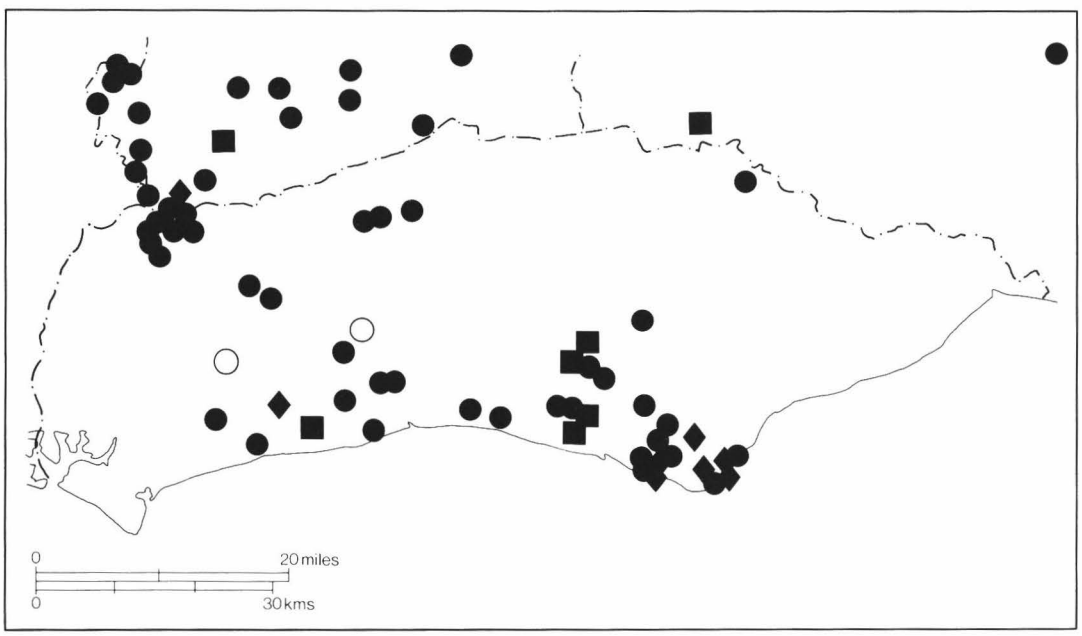

Fig. 3. Distribution of pebble hammers (solid circles), shafthole adzes (squares), and cupped pebbles (diamonds) made of quartzite/sandstone in Sussex. Two implements of uncertain attribution are represented by open circles.

Although two implements (46 and 151) have been identified as probably 'Carstone' (a hard ferruginous sandstone occurring as doggers and veins in the Folkestone Beds), many sandstones and quartzites have not been identified with particular horizons, although it is probable that many of them could be with careful work.

Perhaps the most characteristic feature of both Sussex and the south-eastern area implements generally is the abundance of pebble hammers, shafthole adzes, and cupped pebbles (some 38 per cent of all Sussex ungrouped implements examined), and nearly all manufactured from quartzite or sandstone. These implements seem not to have been made from rock quarried in particular places but rather from pebbles or small boulders, such as can be found at the present day scattered over many parts of the Chalk downland and the fringes of the Weald. This in fact accounts for the distinctive distribution pattern shown by these implements (Fig. 3), clustering as they do in just those areas where the raw material for their manufacture would have been most readily available. The distribution map also shows two particular concentrations of implements, one on the Tertiary deposits of the Weald, in south-west Surrey, east Hampshire and north-west Sussex, and the other on the Chalk downland of East Sussex, to the west of Eastbourne. Both are areas where both flint collectors and archaeologists have been particularly active, though not to such an extent as to bring into question the validity of these concentrations. Before we can explain them, however, it is necessary to look at the circumstances in which these implements have been found, for, whilst the majority are casual finds, some archaeological associations are known, as follows:

No.	*Type of implement*	*Circumstances of discovery*
70	Pebble hammer	Found in association with Mesolithic artefacts.
134	Shafthole adze	Found in association with a bronze hoard and gold ring.
189	Pebble hammer	Surface finds said to have been found amongst concentrations of Mesolithic flintwork.
190	Pebble hammer	
191	Pebble hammer	
192	Pebble hammer	
193	Pebble hammer	
194	Cupped pebble	

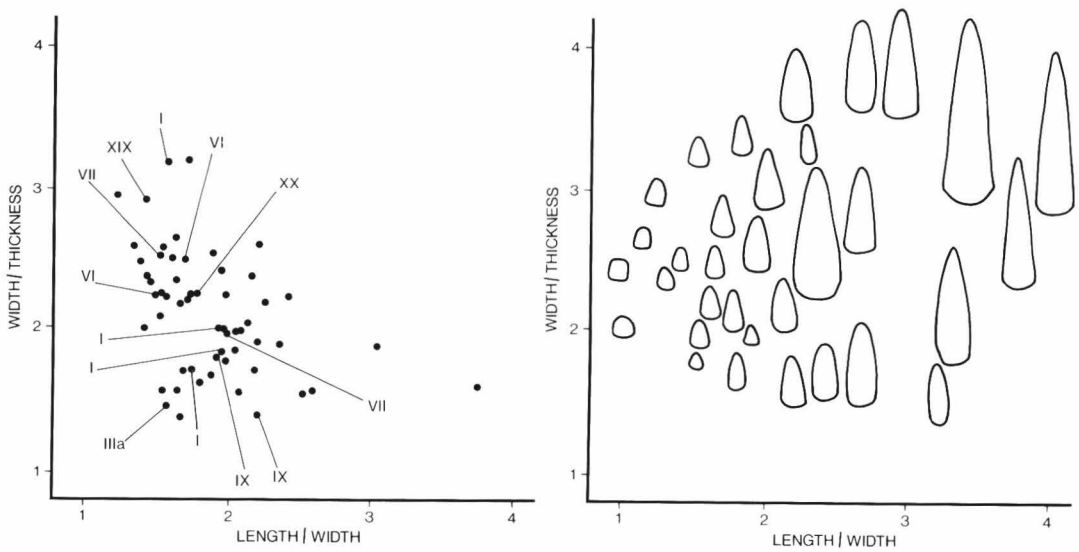

Fig. 4. Plot of width/thickness against length/width, to show the range of shapes of Sussex stone axes.

A surprisingly high proportion of these artefacts have been found either in direct or indirect association with Mesolithic material, and similar associations are known from other sites in this country, mostly but not exclusively in a Mesolithic context (Rankine 1949; Roe 1979). However, the majority of Mesolithic associations do seem to be in the south.

Certainly in the south-west Surrey, east Hampshire and north-west Sussex areas, Mesolithic sites are particularly numerous (Rankine 1956) and a corresponding concentration of pebble hammers might be expected. The situation in East Sussex is not very easy to explain for, with the exception of a number of sites in the Peacehaven (Calkin 1924) and Seaford areas (Clark 1932) associated with remnant Tertiary deposits, few Mesolithic sites have so far been discovered on the chalk downs themselves. On the other hand, the number of tranchet axes, surviving in museum collections, known to have come from this particular area is quite large (Wymer 1977). Most of the remaining implements of sandstone and quartzite are merely natural, or roughly shaped pieces (e.g. 8, 111, etc.), used for a variety of rubbing and sharpening purposes throughout the prehistoric, and no doubt more recent, periods.

Amongst those implements that are identifiable as prehistoric are axes (e.g. 98, 100, and 167) and battle axes (e.g. 151 and 196), at least some of which are likely to be of local manufacture.

Many of these implements cannot have made satisfactory working tools, and this lack of utility is also true of some of the implements of sandstone, mudstone and shale. Most probably these implements were made for ceremonial or 'show' purposes, for similar implements are known elsewhere in the British Neolithic, perhaps the best-known examples being the chalk axes from Stonehenge and Woodhenge.

Nine greywacke implements have been identified, implying a provenance in the west or north of Britain. It is possible that a few of these implements would have been placed in one or other of the greywacke groups (XV annd XIX) by other petrologists, but they do not match exactly the 'type' sections available to the authors. In some respects greywacke is an unsatisfactory rock type for a group because of the variability, particularly of grain size, through a greywacke unit, which may be such that rock specimens collected only a few metres, or even centimetres, apart may be texturally very different.

For the clear designation of a greywacke group the petrologist needs a set of slides representative of the textural range which was acceptable to the petrologist who first defined the group, and even then it may be debatable whether all of them have a single provenance. The fact that typologically the range of the implements themselves is very varied, including axes, pebble hammers, and a shafthole adze, would lend support to this view.

Igneous Rocks

Eight dolerite implements are known from Sussex, of which five are axes (23, 74, 75, 84 and 150), one a shafthole adze (103), and two battle axes (19 and 34). Although some may derive from the Whin Sill, provenances in the south-west and north-west of England, Wales, and Scotland are also likely. Of some interest are two axes (74 and 75) which were found together and undoubtedly originate from the same workshop, if not from the hands of the same maker. Both are characterized by the fact that the polishing extends only over the cutting edge and part of the butt, so that many of the original flake scars can be seen. These axes cannot, however, be matched precisely with any other of the dolerite axes from the south-east area.

Diorites, the second most abundant of the ungrouped igneous rocks, are very varied and include hornblende and pyroxene-bearing types usually containing quartz. The diorites grade towards gabbros and epidiorites on the one hand and granophyres and granites on the other. They do not appear to match the diorites of Charnwood Forest or the Malvern Hills and so prob-

ably derive from the south-west. All the eight implements assigned to this rock are typologically very different, representing a wide variety of forms.

There is one basalt implement known (90) and this contains olivine. The most likely source of this material is the Carboniferous basalts of the Midland Valley of Scotland. One lamprophyre is represented (38) which is a camptonite that undoubtedly derives from the sills in the Nuneaton area, the source of Group XIV (Shotton 1959). However, this particular rock is markedly finer grained than Group XIV and it is possible that Group XIV should be widened to include all camptonites of the Nuneaton area, or that they should be assigned subgroup numbers within XIV.

Perhaps the most important implement of igneous rock is the well known battle axe (32) from the Hove barrow burial in Sussex. This implement was found within an oak coffin (radiocarbon date 1239 b.c. ± 46), in association with an amber cup, a perforated whetstone (41) and an ogival dagger. This group is typical of the second phase of the Wessex culture. Permission to examine these implements petrologically has not yet been granted.

Metamorphic Rocks

Over half of the ungrouped metamorphic rocks are epidiorites (Table 2: microfiche, pp. 3–4), only the sandstone implements being more abundant. The epidiorites strongly enforce the conclusion apparent from the grouped implements, that the south-west was the predominant source of the rock used in south-east implements which are not of local origin. Many of the epidiorites are not too dissimilar to Groups I and II, though not sufficiently close for inclusion in them.

Of the 24 implements listed as epidiorites, 18 are axes, the majority of which show the same general characteristics of south-western axes described under Group I.

Among the schists are found chlorite schist (154) and hornblende (clinozoisite chorite schist) (17), while slates, phyllites, and other fine-grained sediments which have undergone some degree of metamorphism are represented by six implements of which two (148 and 152) are spotted slates. These grade into biotite-cordierite-andalusite hornfels of which (29) is an example. The relative abundance of spotted slates and biotite-cordierite hornfelses amongst implements of the south-west (Evens *& al.* 1962) and the occurrence of such rock types in the aureoles of the south-western granites such as Dartmoor and Lands End indicate again the likelihood of a south-west of England source. This is a further potential group of limited provenance.

How effective some of these implements would have been is debatable, since a forceful blow might be expected to cleave the rock along its planes of weakness. This is just what appears to have happened with one implement (177) which, although retaining the general shape of an axe, is undoubtedly much thinner than it was originally. No implements of jadetite, pyroxenite or nephrite have so far been found in Sussex.

THE ARCHAEOLOGICAL, GEOLOGICAL AND PETROLOGICAL IMPLICATIONS OF THE STUDY

Since there have already been several references to the distribution of a number of the implements considered in this study, it is necessary to discuss, in a more general way, the overall distribution pattern as shown in Fig. 1.

The distribution map (Fig. 1) shows all implements considered by this survey, and as such it is a continuing palimpsest of implement distributions, of implements which differ widely in typology and function, in their age, and in their point of origin. Thus, whilst in general terms the distribution map reflects the density of settlement in prehistoric times, it also reflects the degree of attention that has been paid to the various areas. For example, the concentration of implements in eastern Sussex, from the downland above Eastbourne, which contrasts mark-

edly with, say, the downs of western Sussex, is probably due, at least in part, to this factor. There is no reason to suspect that prehistoric settlement in the west of Sussex would be so dramatically less dense than in the east as the distribution map would seem to indicate. Also the marked difference between the numbers of artefacts from the South Downs and the Weald has undoubtedly been over-emphasized by the regional activities of archaeologists and collectors alike.

We also have to take account of topographical changes that have taken place since the implements were deposited. For example sea-level, relative to the land, has risen somewhat since Neolithic times, and whilst an accurate estimate is almost impossible to determine (Akeroyd 1972) since it probably varies around the coast, the rise has probably been of the order of three to six metres. Certainly the rise has been sufficient to inundate many areas which would have been above sea-level during the Neolithic.

The appearance of the Sussex coast would, therefore, have been significantly different then, with much of what is now marshland open to the sea, at least at high tide. Elsewhere, erosion has taken its toll, and the prehistoric coastline would have been some distance to the south of that of the present day.

Another factor, although perhaps not a major one, relates to the nature of the implements themselves, for they are, on the whole, recognizable as something unusual, and it is not unknown to find them built into later walls (e.g. 60, 110 and 137) or to discover them in later, prehistoric, Roman, or post-Roman contexts (e.g. 52, 53, 142 and 172). Are they merely relics of former prehistoric occupation on the site, or could they have been found elsewhere and preserved as something out of the ordinary?

Notwithstanding these reservations, it is possible to make a few useful observations. The implements are most numerous in those areas traditionally rich in prehistoric settlement sites, i.e. the chalk downland and other lighter soils. It is also noticeable just how many of the Wealden finds lie near to the rivers and streams which drain that area. This is a pattern which appears to match that of the flintworking sites, and seems to imply that Wealden resources were being exploited by prehistoric groups moving along these routeways.

Of all the implements in the study, those which have been attributed to a Cornish or a south-western source are by far the most numerous of the grouped implements represented (Table 1: microfiche, p. 2; Fig. 2a). This tendency is even more marked if those implements are included which, although ungrouped, are likely to have a south-western origin. To what degree this is due to the volume of production of the south-western manufacturers, or the relish with which these implements were acquired by the south-eastern population, is not clear. Certainly there is a noticeable eastward decline in implement numbers, as might be expected with an increase in the distance from the centres of production.

The distribution of these implements does not lend support to the idea that local erratic pebbles (e.g. the Selsey erratics) formed the source material for a number of them (Briggs 1976). Only in the case of (92), a shafthole adze, broken and perforated from one side only, does this seems likely. All the other broken implements of rock of non-local origin appear to have fractured subsequent to, rather than during, manufacture.

It is difficult to make meaningful comments about the distribution of the remaining grouped implements in the county (Fig. 2b-d) in view of the small numbers represented.

Table 3 (microfiche, p. 5) gives the proportions of implements from the south-east which can be assigned to the established petrological groups and, for comparison, the same data for four other areas. In this respect the south-east and south-west areas are similar in having relatively low proportions, i.e. 25 per cent and 34 per cent of implements assignable to groups, while in contrast Lincolnshire, Nottinghamshire and Rutland with 72 per cent, and Yorkshire and

East Anglia, both with 55 per cent, are high, the first of these remarkably so. It is not clear why there should be this difference between the south and north and midlands of England. For the south-east it is perhaps logical in so far as this area is the farthest from the known factory sites, which are located in the west and north of the country. But this argument would not apply to the south-west.

The south-east and south-west of England differ from the more northerly parts in being dominated, amongst the grouped implements, by those having a provenance in the south-west, i.e. Groups I–IV, while Group VI is usually the dominant group for the midlands and north. This is clearly illustrated by Table 3 (microfiche, p. 5). It is interesting to note that in terms of the relative proportions of Groups I–IV and VI, East Anglia occupies an intermediate position. A similar conclusion was reached by a study of the typology of jadeite implements (Bishop *& al.* 1977), a fact which may have some significance, although it is appreciated that jadeite axes have a continental provenance, and thus represent an international rather than a national trade.

The variation amongst the south-eastern counties of the proportion of grouped implements is also interesting (Table 4: microfiche, p. 5), with Kent and Surrey having 25 per cent, Hampshire 38 per cent and Sussex the remarkably low figure of 17 per cent. The increase in Hampshire, the westernmost county, might be explained as reflecting the shorter distance to the source areas, and certainly Hampshire has a significantly higher proportion of implements belonging to Groups I–IV and VI than the other south-eastern counties. The very low figure for Sussex, attributable essentially to the relative paucity of Group I implements, is difficult to explain, but two possibilities occur to us. Firstly, amongst ungrouped implements epidiorites are very abundant in Sussex (24 implements), and Group I, and indeed Groups II–IV, are also epidiorites. On the whole, therefore, Sussex is just as well represented by this rock type as the other counties, and it is simply that the particular type of epidiorite designated as Group I does not occur widely in Sussex. Perhaps Neolithic man in Sussex preferred a slightly different brand of such tools.

A second possible explanation for the low proportion of grouped implements is the use of local materials for implement manufacture and the fact that all types of implement are being considered together, rather than one type at a time (e.g. axes). In the statistics for the ungrouped implements (Table 2: microfiche, pp. 3–4), the sandstones and quartzites as a whole constitute 40 per cent of all the ungrouped implements and 30 per cent of the total number of implements identified petrologically in the south-east. However, in Sussex alone this group comprises 51 per cent of the ungrouped implements and 42 per cent of all implements, so providing a very good reason for the very low proportion of grouped implements found in the county. The group designated as quartzite/sandstone in the table includes those implements which have not been sectioned and therefore not differentiated petrologically.

It has already been pointed out that the implements of quartzite and sandstone are principally pebble hammers, shafthole adzes, and cupped pebbles. However, this ability to equate typological form with the material for manufacture is restricted to these few classes of implement, and contrasts markedly, for instance, with the situation amongst axes and battle axes.

It is also interesting to note how many of the stone axes come from the chalk downs in those areas where there are flint mines and the large-scale production of flint axes. This fact poses a number of interesting questions. For example, although stone axes may well have been superior to those of flint for a number of tasks, does the fact that flint axes would have been relatively freely available imply a certain prestige, or religious or social significance, to the ownership of a stone implement? What do we mean by trade, a term often used quite ambiguously by archaeologists, and how was it conducted? To what extent is the true picture distorted by

ignoring the export of flint axes from production centres in the south-east? Was there a significant exchange of axes between communities? Unfortunately the answers to these and other questions must remain unknown, for the evidence we have at the present is too fragmentary and inconclusive. Archaeological associations are few and implements in a primary dateable context rare. The more important of the associations have already been mentioned, whilst the remainder are included as notes to the lists. Those sites which appear potentially capable of producing substantial information lie outside the county, for it is from sites with a range of well preserved archaeological material that future advances will be made.

Contents of Microfiche

Acknowledgements

We are grateful to the many museum curators and private individuals (unfortunately too numerous to name individually), who let us examine the stone implements under their care. Mr. R. V. Davis and Dr. I. F. Smith generously made available numerous thin sections, originally made for the South-Western Group, and Mr. R. Sanderson kindly looked out all the Institute of Geological Science's sections.

The present authors have only been involved in the project for a few years and are, therefore, very conscious of the contribution made by others in the past. Particular mention must be made of Miss K. J. Evans, whose published summary (Evans 1968a) has remained the principal source of information until this time.

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