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## THE TYPOLOGY AND AGE OF THE FORDWICH HANDAXES

A.M. ASHMORE

The purpose of this paper is to discuss the palaeolithic handaxes found at Fordwich, the majority of which are now in the collections of the British Museum.

### GEOLOGY OF THE SITE

The Fordwich gravel pit is 2 miles N.E. of Canterbury in Kent (N.G.R. TR 180588) at the top of a steep hill on the southern bank of the Great Stour, which here flows northwards in a chalk valley (Fig. 1). Unfortunately, the section at Fordwich itself has not recently been examined. The only published description is that of R.A. Smith (Smith, 1933) for an east—west section at High Pit, Fordwich (seen to 20 ft. in the west and to 7 ft. in the east). This may be summarised as follows:

- (f). Solifluction debris (trail)
- (e). Thin gravel
- (d). Current bedded sand
- (c). Main mass of gravel
- (b). Gravel interstratified with sand.  
Gravel base 130 ft. O.D. (rising to east).
- (a). Eocene beds (base near junction of Woolwich  
and Thanet beds)

A series of gravel terraces have been described in the Great Stour valley by various workers. Coleman (1952) described what may be up to 11 distinct groupings of extensive flat surfaces, which are ranged at intervals of approximately 50 ft. from about 400 ft. above sea level on the river Blean to those on the modern alluvial flood plain near sea level. These she believes to have been formed by the

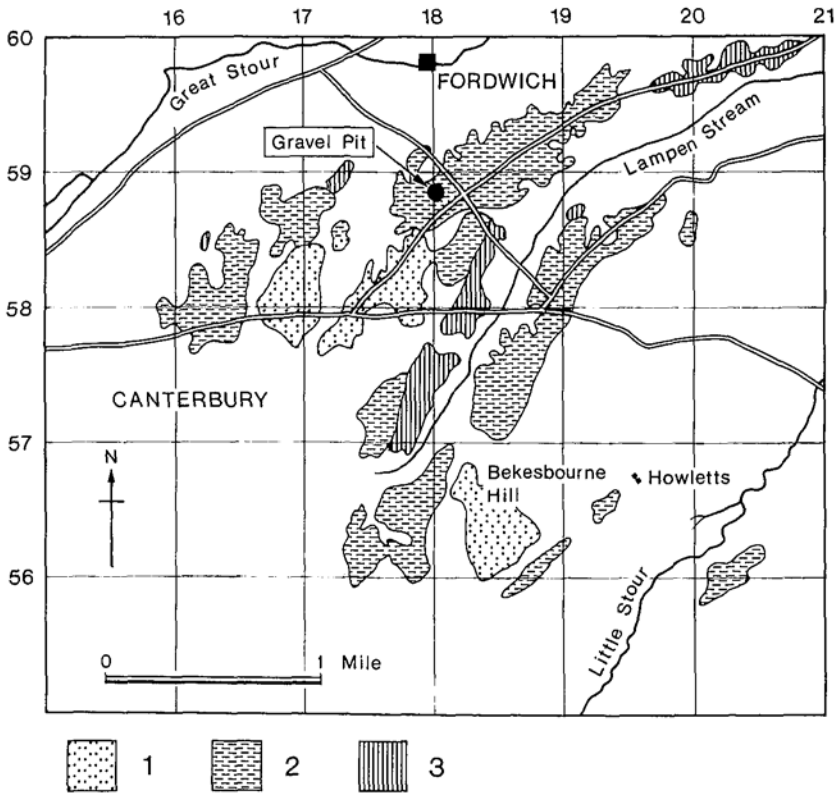


Fig. 1. Sketch Map to show the Distribution of the three Divisions of the Third Terrace between Canterbury and Littlebourne (after Smart *et al*, 1966).  
 1 = Upper Division 2 = Middle Division 3 = Lower Division

river during successive erosional cycles, initiated by falls in sea level. Each stage is supposed to have either continuous or residual riverine gravels or Stony alluvium associated with it, (Coleman 1952, 83).

In the Great Stour valley the gravels are divided into four principal groups, (Coleman 1952, 77). The normal riverine gravels occur below 150 ft. O.D., and vary in thickness between 4 and 8 ft., for example, at Homersham West pit, near the Fordwich site, which contains examples of both Lower and Middle Paleolithic industries. These are usually roughly bedded gravel with beds of sand and loam up to 1 ft. in thickness. A second group of similar but unstratified gravels occurs in small patches between 350 – 160 ft. O.D. and a third group, at between 205 – 265 ft. O.D. was formed by solifluction under periglacial conditions, rather than by river aggra-

dation, according to Coleman, who bases this statement on the work of Wooldridge (1925). Gravels of this group are very coarse in grade, and of considerable thickness. The absence of bedding, or in some instances the fact that such current bedding as there is runs transversely to the Stour valley ridge, is taken to suggest that they were not laid down as river terraces but were formed by tumultuous torrents and are periglacial in origin (Wooldridge 1925, 277). Coleman limits this group to the levels between 205 – 265 ft. O.D., but Wooldridge notes that similar gravels are found as low as 120 ft. O.D., and it may well be that we can include with them the deposits of the third terrace at Fordwich (base 130 ft. O.D.). A fourth group of apparently normal riverine terrace gravels is found at the top of the north Kent chalk plateau, so that the third terrace at Fordwich, which contains the site under discussion, is not necessarily the oldest of the Great Stour terraces, (cf. Roe 1968, 14) although it may be the highest river terrace in this part of the valley.

In the most recent Geological Memoir for the area (Smart, Bisson and Worssam 1966, 248) the third terrace, which includes the Fordwich gravels, is given a tripartite division, each group of terrace levels corresponding to a phase of deposition of the river, separated by marked terrace bluffs incised during the intervening period of down-cutting. The Fordwich gravels at N.G.R. TR 180588 are believed to belong to the middle division of the third terrace (Smart *et al.* 1966, 270). Holmes (1971) states that the intermediate head-gravels with fluvial deposits of his second stage in the Lower Stour valley in the Faversham area (Drift Map 273) are solifluxion deposits and are equivalent to the upper and middle third terraces of the Canterbury area (Drift Map 289) which includes the Fordwich site. Mr. Holmes is of the opinion that 'anything in the third terrace level (in the Faversham area) cannot be earlier than the last interglacial' (Holmes, pers. comm.).

It seems likely, that the Fordwich artefacts, if contemporary with their deposits, came from a solifluxion gravel fairly close in time to the formation or cutting of the Stour third terrace. Since the next lowest terrace in the Fordwich district, below 150 ft. O.D., which contains Lower and Middle Paleolithic implements, is likely to be of Ipswichian Interglacial age at the earliest, it seems most probable on the present evidence that the Fordwich gravels are glacial deposits and can be assigned to the previous, Wolstonian, glaciation. The implements in the gravels may perhaps derive from a hypothetical interstadial occupation. On present geological opinion this seems more likely than that they could be Hoxnian in age.

## RELATIONSHIP OF THE HANDAXES TO THE FORDWICH DEPOSITS

Previous studies of the handaxes found at Fordwich have stressed the 'primitive' character of the assemblage, and the likelihood that it could represent a particularly early stage in the development of these implements. Reginald (R.A.) Smith (1933) states that the leading handaxe type from Fordwich is pear-shaped, roughly worked, with a varying amount of cortex on and near the butt and a sharp point, from which run two zig-zag side edges and a pair of central ridges, which form a lozenge-shaped section (1933, 166). Two hundred and sixty seven of the specimens of this leading type that he studied were unrolled, and 21 rolled. Smith also describes some of the Fordwich handaxes (67 specimens) as ovates and pointed implements of St. Acheul type, and these he would regard as later in date. One in 14 of the 'peculiar' Fordwich handaxes is rolled, and about one in five of all the handaxes found is of St. Acheul type (1933, 169). He concludes that the flint types found at Fordwich are mixed and of different dates, though most specimens are *in situ*; and suggests that a succession exists at Fordwich, similar to that of the 'hundred foot terrace' at Swanscombe, where Clactonian flints are found in the lower gravels and St. Acheul handaxes in the middle gravels. The flints from Sturry pits nearby (e.g. Homersham West pit, where gravel base level is 70 ft. O.D.) are described by Smith as being later in date, since both St. Acheul and Le Moustier implements are present at this site, as well as a few derived 'Chelles' handaxes. Other pits in this district such as Vauxhall and St. Stephen's he described as having Le Moustier implements or more advanced types.

Thus the idea was early established in the literature that the Great Stour valley might have a sequence of flint industries at different levels comparable to that of the Lower Thames valley as seen at Swanscombe, with the implication that the Fordwich handaxes, at the beginning of the Great Stour sequence, might be as early as the earliest Swanscombe material.

Subsequent discussions of the collections are those of Howell (1966), Wymer (1968) and Roe (1968). Howell follows Smith and states that the approximately 350 bifaces 'are predominantly simply trimmed, thick sectioned, and of the somewhat elongated pear-shaped, (wide-based Lanceolate) form (so-called 'Fordwich type') with fewer pointed long Ovates, irregular pointed Ovates and several cortical-butted bifacial cleavers'. (Howell 1966, 148). Wymer (1968) remarks that the material from the site includes mainly pointed handaxes of his type D that show no trace of soft hammer technique, are larger than an arbitrary length of four inches (102

mm.) in section (i.e. their thickness is always more than a quarter of their length), and have wavy irregular cutting edges (Wymer 1968, Fig. 12, 13) 'Cortex or naturally fractured surfaces often remain on the butt or elsewhere .... It is the simplest form of handaxe.' (1968, 48). Wymer described Fordwich as an early Acheulean industry and tentatively assigns it to the Hoxnian interglacial.

Roe (1968, 61) attributes the Fordwich handaxes to Group V of his ovate dominant handaxe tradition with the handaxes from Farnham terrace A and the worn series from Warren Hill. The handaxes in this group have in common an extreme roughness of manufacture, a narrowness and irregularity in shape and a tendency to large size. Twisted tips are very rare on such handaxes. Where they do occur, they are thought to be due to incompetence on the part of the tool-maker rather than to intention, and the only truly twisted tip in this group, which comes from Fordwich, is regarded by Roe as a stray find — i.e. later than the main group under discussion. There is little tranchet finish to the Group V handaxes.

Roe has set out criteria for distinguishing *relatively closed finds* among the British handaxe assemblages, few of which were adequately excavated or recorded. He accepts the handaxes from Fordwich as falling into this category, on the grounds of association, wear and technique. There is a hint of horizontal localization of the flints in a letter (now in the Herne Bay Records Library) to R.A. Smith, from one of the collectors (quoted by Roe), which stated that the flints are found mainly on the extreme west position in the pit: 'The bulk of the implements are in fresh condition .... The handaxes are mostly quite unworn and none is more than slightly rolled or abraded' (Roe 1968, 14) 'Negative evidence.....unites the group; the Fordwich implements lack all refinement of technique (with the exception only of a couple of refined ovates, quite out of character, which are probably stray surface finds), they are shaped with deep biting scars, producing highly erratic cutting edges, while some are so crudely made as to be almost circular in cross-section, virtually lacking any proper cutting edge at all....' (1968, 14-15). The coarseness of his group V is thought by Roe to bear out its attribution to an early stage in the development of handaxe industries in Britain, 'which can be argued in each case (on geological grounds) without reference to the typology of the implements' (1968, 71).

At Fordwich, Roe admits the case is not very strong: 'It seems clear that the terrace involved is the oldest in its own river valley sequence', (Roe 1968, 14: cf. p. 85, above.) Nevertheless, Roe would regard this group V as, 'the best attested, earliest handaxe industries of Britain, called by various authors in the past Chellean,

Abbevillian and Early Acheulian', (1968, 75), and would regard it as 'at least represented in Britain before the Mindel-Riss', i.e. the Hoxnian Interglacial period. (1968, 71; cf. *ibid.*, 1976, 88).

Using Roe's measurements and data, Graham (1970) has shown by canonical variate analysis that the ratio of thickness to breadth (TH/B) is the most significant one for discriminating between hand-axe groups. Interestingly, in view of Roe's results, he finds that 'site 18, Fordwich, immediately springs to attention as it is very highly distinct from all other sites'. (1970, 329). In his terms this implies that the industry is thicker and more roughly made than the assemblages from other handaxe sites.

It is clear that all the published literature has laid great emphasis on the crudeness of manufacture, irregularity, narrowness, and thickness of the Fordwich material, to the extent that it appears to be markedly distinct from other British Palaeolithic sites. The thick, crude 'pear-shaped' handaxe has been firmly established as the leading handaxe type at Fordwich. The freshness of the material also emerges as an important factor in determining whether it is *in situ* or not, and an early Hoxnian interglacial or even pre-Hoxnian age is generally suggested for the industry. It is the purpose of this paper to discuss how far these criteria are adequate to distinguishing Fordwich from other handaxe assemblages.

#### THE FORDWICH COLLECTIONS

All of the material known to have been found at Fordwich is from the private collections made by Dr. Ince, Dr. Willock and in particular Dr. Armstrong Bowes, while commercial digging was taking place on the site in the 1920s. Because of the manner in which it was acquired little or no stratigraphical information is available (cf. Roe 1968, 14), but it seems certain that all the implements came from the same pit (Smith, 1933, 165).

Willock and Ince gave their collections from Fordwich, which are small (only 28 handaxes altogether), to the British Museum where they are still kept. Bowes' collection was originally given to the Herne Bay Borough Council. A few of the handaxes were put on display in the Council Museum and the rest were kept stored in the basement of the Town Hall on the sea front. During the sea floods of the 1950s this basement was inundated. Many of the identifying labels were washed off the Fordwich implements; also the summary museum catalogue and a book of photographs of all the unbroken flint implements collected by Bowes, were both mislaid. After a sojourn in a small shed which collapsed, most of the Bowes collec-

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tion including the now unprovenanced material was offered as a gift by the Herne Bay Borough Council to the British Museum in 1962. In September 1971, the Museum catalogue and book of photographs were found at Herne Bay. Despite the fact that many of the photographs had been very badly damaged by the flood and most of them faded, it proved possible to make copies of all the photographs, from which 19 Fordwich handaxes were identified in the British Museum unprovenanced Bowes collection, and a single specimen from the same site was found in Herne Bay Museum. (The latter was identified by Mr. Gough, travelling Librarian at Herne Bay).

Altogether 223 Fordwich implements are still available for study. The collection includes picks and chopping tools, which are often aligned with handaxes, despite the fact that the former is trihedrally flaked and the latter is usually at best very rudimentarily flaked. Bordes assigns these forms to his non-classical handaxe category (1961, 69). At present, there are 34 implements at Herne Bay and 189 implements at the British Museum. There are also a further 14 handaxes recorded by Roe as coming from this site at the Museum of Anthropology and Ethnography in Cambridge, but unfortunately these have been mislaid since Roe studied them. The bulk of the material is thus in the British Museum.

### METHODS OF STUDY

The results of one analysis of the measurements of 193 handaxes from Fordwich have already been published by Roe (1968). In this work, Roe gave an objective system based on metrical statistical and to a certain extent technological analyses for studying British handaxe groups; working from the analysis of 38 British handaxe assemblages he produced a general, tentative 'scheme' for the British lower and middle Palaeolithic which would in all probability need to be modified by later, more detailed studies and new discoveries.

In Roe's system, study of the refinement, based on the ratio of thickness to breadth of each implement is auxiliary. The assemblages are sorted primarily on the grounds of shape, as defined by two dimensional ratios, into two major groups described respectively as pointed or ovate dominant in terms of the shape of the majority of the implements. Handaxe assemblages are compared with one another, in this system, mainly in terms of the average (with certain statistical controls) ratios of the length and breadth measurements for each assemblage, i.e. of the dominant two-dimensional shape of the industry. In the case of Fordwich, though this was later attributed by Roe to an ovate dominant handaxe group,



the published shape diagrams show that only 52 per cent of the 193 handaxes are regarded by Roe as ovate, 48 per cent being point dominant handaxes. This generalisation, then is not terribly meaningful. One therefore has to turn to the technological and typological aspects of the material for a clearer picture of the Fordwich assemblages and the information given in Roe's study, whilst being very specific, is not presented in such a way that it can be assessed by the reader. It therefore seemed useful to remeasure all the available handaxes (a slightly larger sample than that studied by Roe) and categorise them into discrete types, and then compare the two sets of results. This, incidentally, was exactly the kind of more detailed study which Roe hoped would result from his more general work (pers. comm.).

Details of the procedure adopted to analyse the collection are given in Appendix I and follow the system established by Bordes (1961, 3rd pt., 49; based on Bourgon, 1957). In order to show particular variations and characteristics of the Fordwich material however, it was necessary to introduce three new 'types': Proto-ovates, Proto-limandes (with oblique cutting edges) and R.A. Smith's (1933, 169) 'Parrot-beaked' handaxes. Bordes' system, like that of Roe, depends on measurements of a number of length, width and breadth ratios to describe the shape and refinement of a handaxe assemblage. As both systems of measurement purport to describe the shapes of handaxes objectively, it is of interest to compare the results of the analyses.

#### RESULTS OF ANALYSIS

The results of the analysis are summarised in Table 1; details of individual handaxes are given in the appendix (pp. -). It is notable that all the triangular, sub-triangular, cordiform, elongated cordiform, ovate and limande handaxes, plus two of the partial handaxes have an m/e (width/thickness) ratio that is greater than 2.35 and form a category of thin handaxes comprising 8.9 per cent (20 handaxes) of the Fordwich industry. The variety of patination among these is as marked as for thick handaxes (m/e is less than 2.35) and none of them can be arbitrarily separated as stray finds except perhaps one handaxe from Herne Bay Museum, which is completely unpatinated, fresh and has a marked elegant S twist, as noted by Roe (1968, 65). Five of the thin handaxes have been illustrated, although there are a diversity of types represented within this category (see Figs. 2-4: catalogue nos. 187, 111, 202, 75 and 174). The thick handaxes, which form a much larger category, may be divided according

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TABLE 1: TYPOLOGY OF THE FORDWICH INDUSTRY

Type	No.	%
<i>After Bordes</i>		
Lanceolates	22	9.8
Ficrons	30	13.5
Micoquian	11	4.9
Triangular	2	0.9
Sub-triangular	6	2.7
Cordiforms	1	0.4
Elongated cordiforms	2	0.9
Ovates	5	2.2
Amygdaloids	18	8.0
Limandes	2	0.9
Proto-Limandes	27	12.9
Bifacial cleavers	3	1.3
Lageniforms	20	8.9
Naviforms	2	0.9
Miscellaneous	8	3.5
Partial handaxes	5	2.2
Abbevillian	15	6.7
Picks	9	4.0
Backed handaxes	3	1.3
Chopping tools	9	4.0
<i>New 'Types'</i>		
Proto-ovates	2	0.9
Proto-limandes (with oblique, cutting edge)	8	3.5
'Parrot-beaked' handaxes	13	5.8
	223	100%

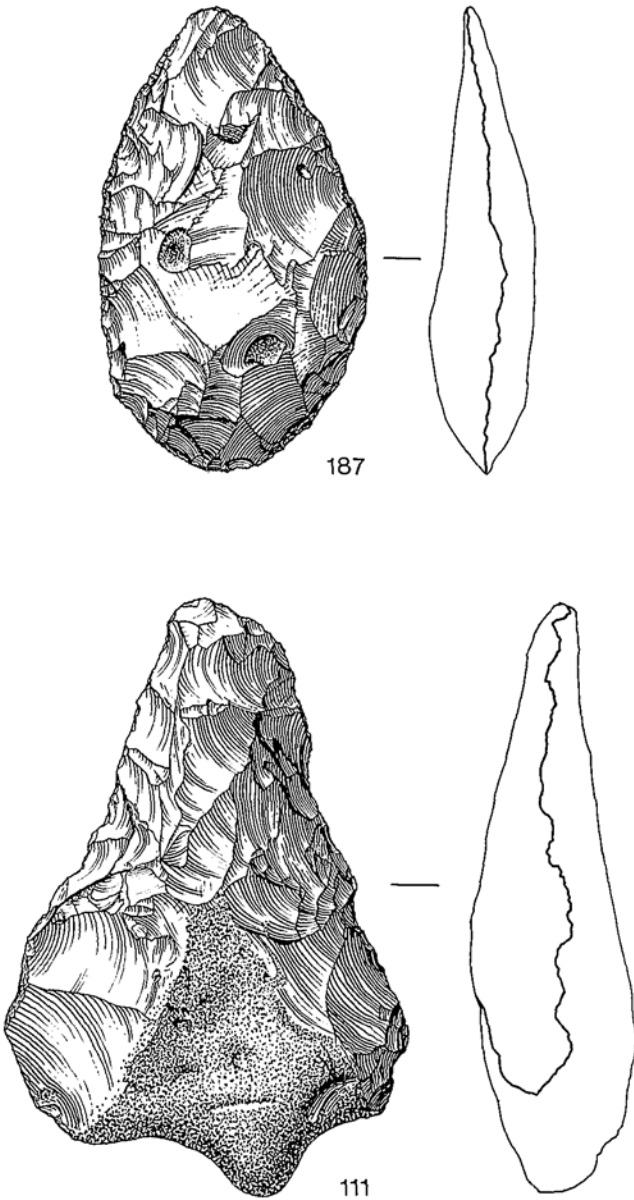


Fig. 2 . Fordwich Handaxes : thin Handaxes, cat. nos. 187 and 111 (Scale: ½)

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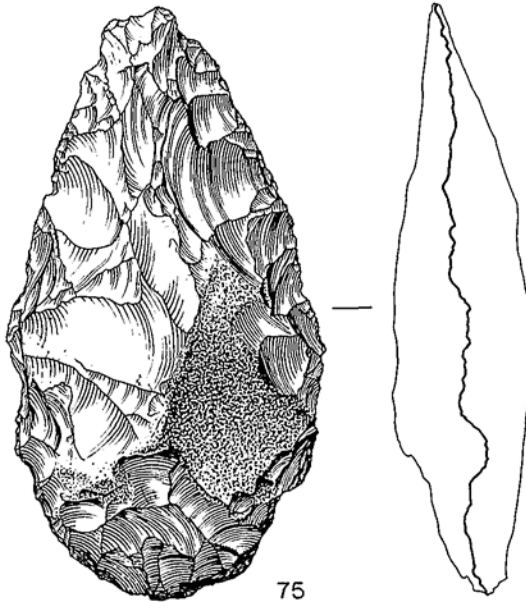
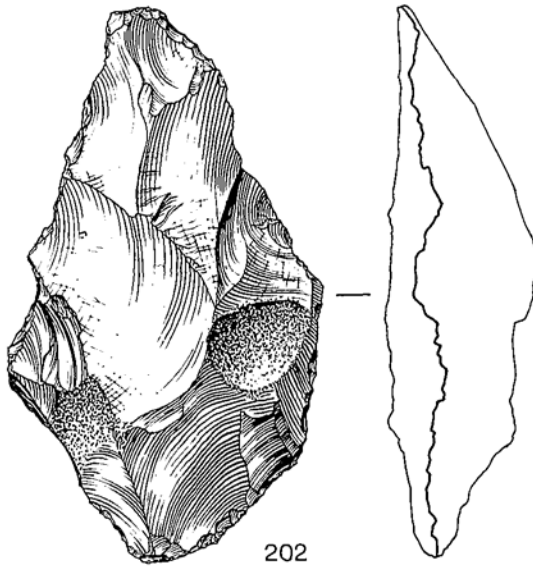


Fig. 3 . Fordwich Handaxes : thin Handaxes, cat. nos. 202 and 75. (Scale:  $\frac{1}{2}$ )

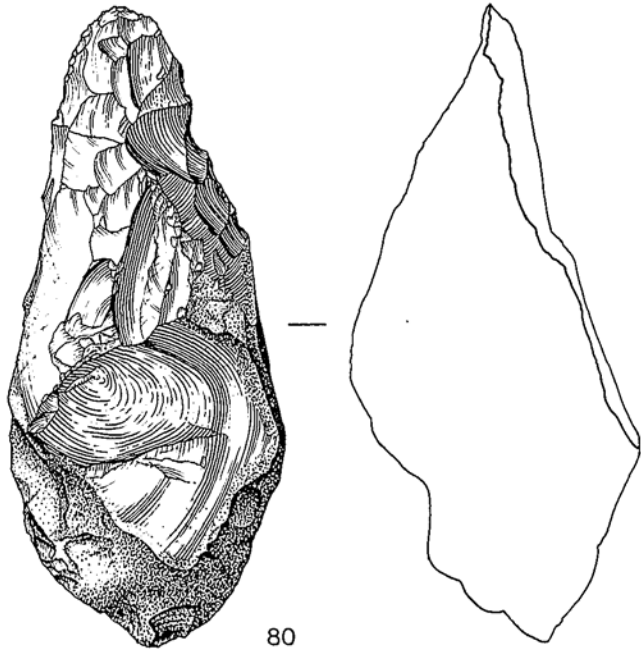
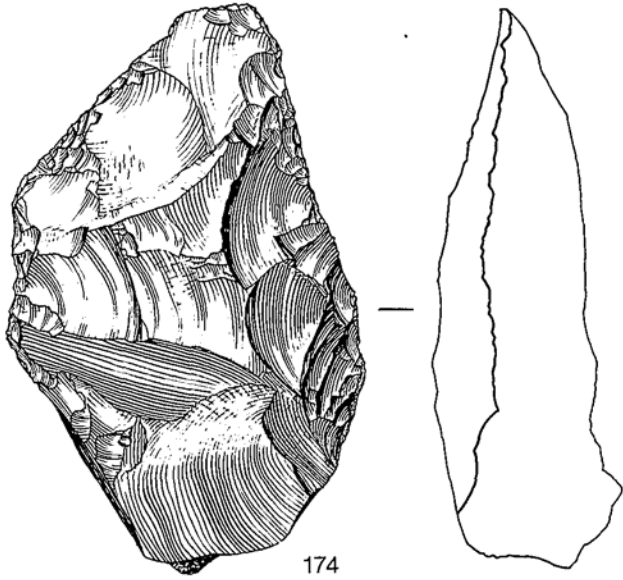


Fig. 4 . Fordwich Handaxes : thin Handaxe, cat. no. 174; Ficon, cat. no. 80. (Scale:  $\frac{1}{2}$ )

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to Bordes' classification into classical (Bordes 1961, 57) and non-classical (Bordes 1961, 67) handaxes. The most important types have been illustrated in Figs. 4-8.

Among the classical handaxes, the lanceolate, ficron and micoquian varieties have in common a thick, sometimes globular base, often covered with cortex, and a long pointed tip. Exceptionally the base is flat, especially when made from a flake. The lanceolate specimens have straight or slightly convex sides in plan and profile, the sides are usually straight or slightly sinuous. They are quite frequently worked. There are twenty-two from Fordwich (9.8 per cent). Quite frequently, fairly large patches of cortex remain, although this in no way detracts from the generally fair working of the pincers.

It is only the degree of working which separate the ficron from the lanceolate and Micoquian handaxes. The ficron shape may be typical of either of the two latter types; the difference lies in the edges, which are markedly sinuous in profile, and in the fairly crude flaking. It is also more common for the base of a ficron to be irregular in shape and covered with large patches of cortex. There are thirty ficrons (13.5 per cent) from Fordwich (Fig. 4, catalogue number 80). About a third of the ficrons are Micoquian ficrons, that is to say they have very curved concave sides in plan.

Micoquian handaxes are distinguished by their very markedly curved concave sides; they have very thick bases, which are often globular and in a few instances flattened, and are finely worked, particularly at the tip. There are eleven at Fordwich (4.9 per cent) (Fig. 5, cat. nos. 167 and 217).

The amygdaloid handaxes are essentially thick, elongated cordiforms with a thickness/width ratio ( $m/e$ ) less than 2.35 and an elongation ratio ( $L/m$ ) greater than 1.5. If the elongation ratio ( $L/m$ ) is less than 1.5, the handaxe is called a short amygdaloid. About half of the Fordwich amygdaloids have small patches of cortex remaining, but this is not unusual and does not detract from the generally fine working. The specimen illustrated here (Fig. 6; cat. no. 161) which has clearly been carefully flaked by soft hammer working, is by no means the most finely worked of the Fordwich amygdaloids; several amygdaloids from this site are more carefully worked, with all their cortex removed. There are altogether eighteen examples of this type at Fordwich (8 per cent).

The proto-limandes are ovates whose width/thickness ratio is less than 2.35 and whose index of elongation is more than 1.6. As in the case of the amygdaloids, they are in general quite finely worked, probably finished with soft hammer working, and frequently have very insignificant amounts of cortex remaining. There are twenty-

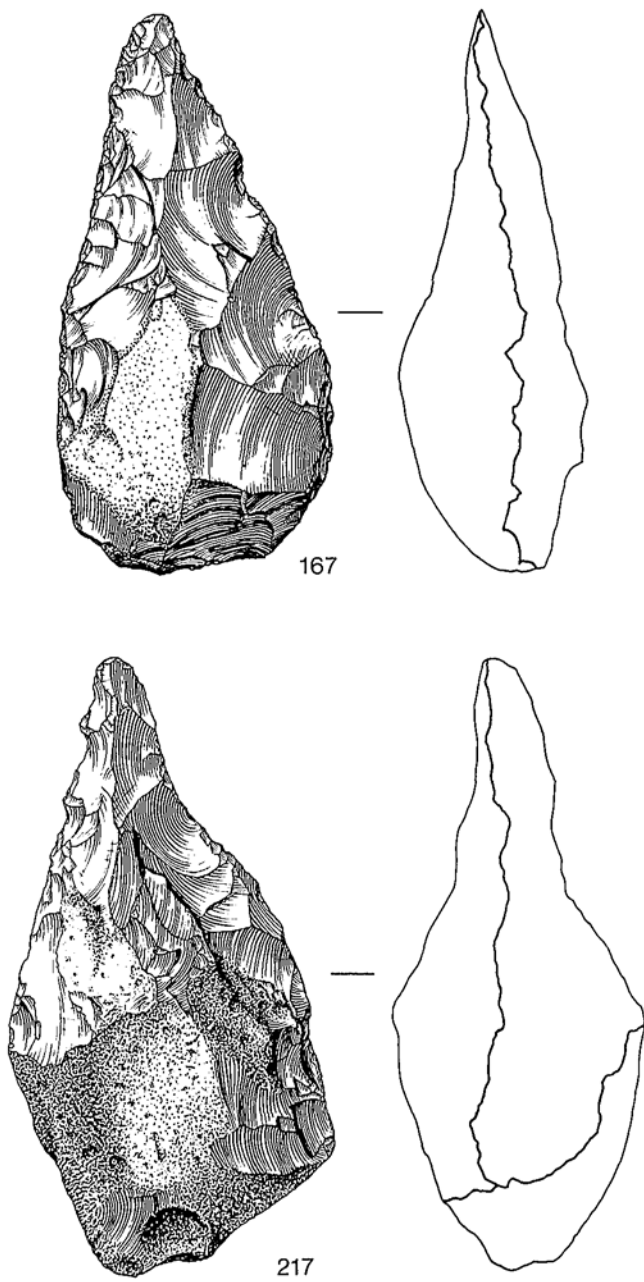


Fig. 5 Fordwich Handaxes : Micoquian, cat. nos. 167 and 217. (Scale: 1/2)

seven specimens forming a significant 12.9 per cent.

Another well-defined type which is, however, only poorly represented at Fordwich is the cleaver. There are three from Fordwich — thick, bifacially flaked implements, with a characteristic cutting edge which is more or less transverse to the base.

A numerically important category is formed by the twenty 'lageniformes' (Fig. 6, cat. no. 78). As in the case of naviformes, this name does not translate easily, and so has been retained, although with some misgivings. They were first named by Mille. Alimen after the *Lagena* (the Latin word for flagon) bottle. These handaxes fall in the broad lanceolate category, but are easily distinguished by their elongated tips with sub-parallel sides, continued by a neck, also with sub-parallel sides which end in a more or less thick base.

There are two rather distinctive thick elongated handaxes from Fordwich; they are distinguished by the fact that they are pointed at both ends, in the form of a ship's hull — hence the French type name, naviforme. Although there are only two thick naviformes, the specimens are sufficiently clear to warrant being put in a separate type category.

The five partial handaxes from Fordwich are very variable in shape and characterised as their name suggests, by partial retouch on one face; the other face is usually either a thermal fracture surface or else is covered with cortex. There are three backed handaxes, also of variable shape, which have one edge blunted by retouch, or else is backed by cortex along at least three-quarters of the length.

The non-classical handaxes are also well represented at Fordwich. There are fifteen Abbevillian handaxes, distinguished by hard hammer working, not necessarily on an anvil; they are crude, thick implements with very sinuous edges, a quadrangular or trihedral section at the base and deep, biting flake scars (Fig. 7, cat. no. 43). The shape is completely variable. Very frequently extensive cortex has been left, often on the base.

Nine picks are known from Fordwich (4 per cent); they are characterised by the fact that they are worked from three different directions at the tip. They have markedly triangular sections at the tip (except in one case where the section is quadrangular) and quadrangular ones at the base (Fig. 7., cat. no. 176).

The nine chopping tools are considered here along with the handaxes, contrary to Bordes, who places them in his main typology (1961, 48). They are defined by the removal of one or two, generally crude, flakes from each side of the tip. The base of these tools is usually covered with cortex. They are often thought of as proto-handaxes but are known to occur in quite late contexts. It is, of



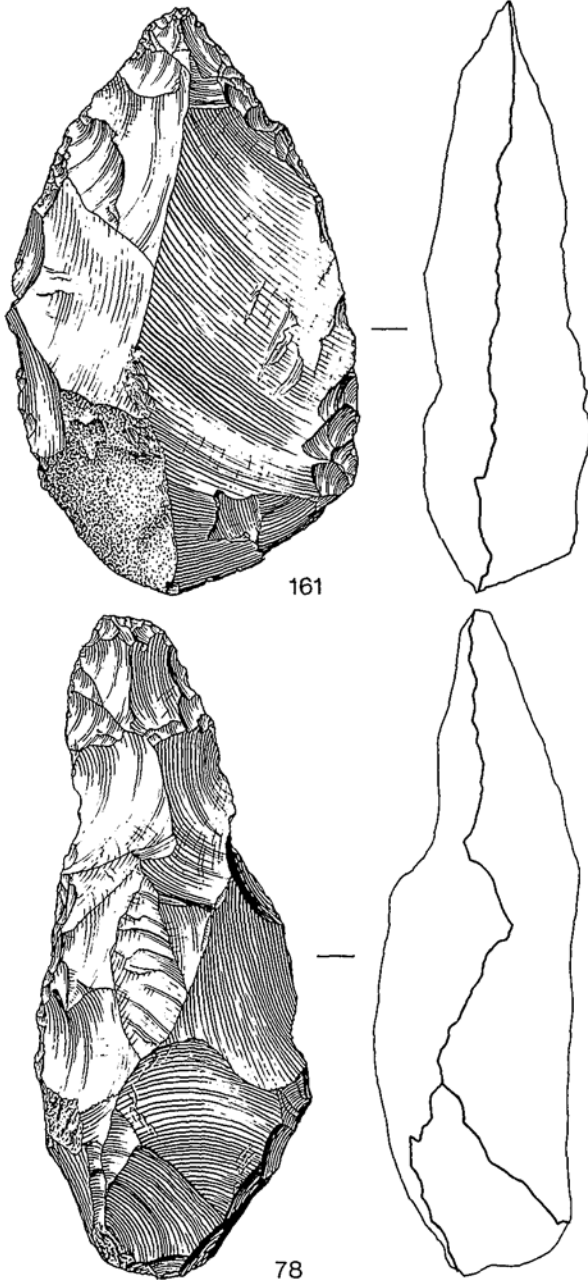


Fig. 6 . Fordwich Handaxes : Amygdaloid, cat. no.161 ; Lageniform, cat. no. 78.  
(Scale:  $\frac{1}{2}$ )

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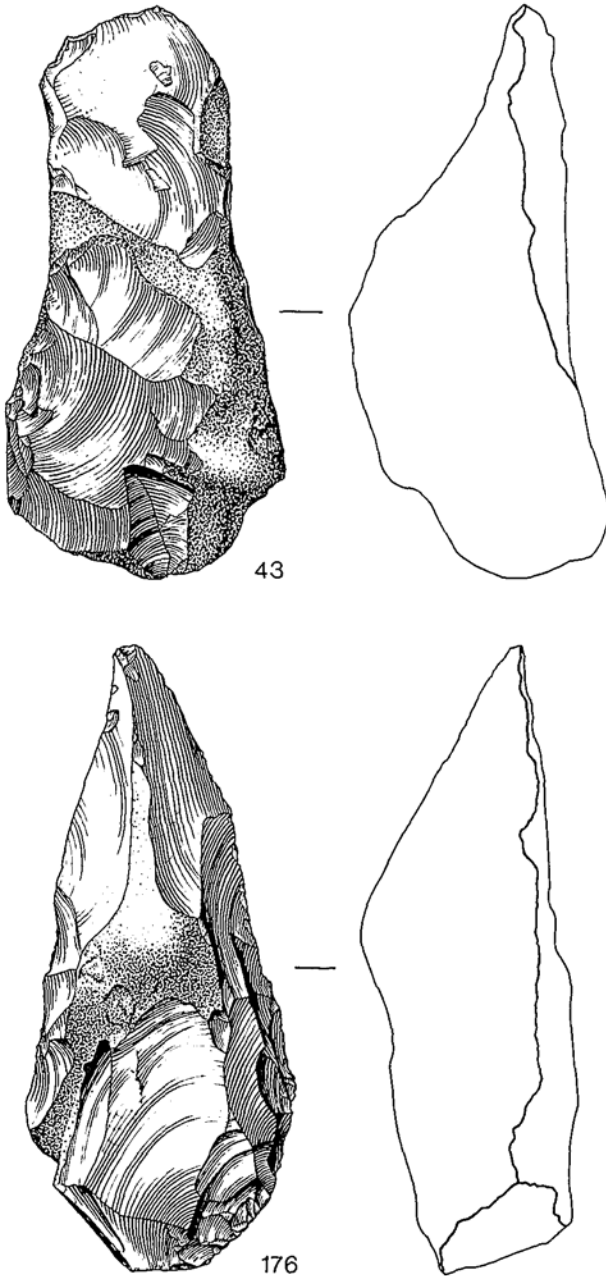


Fig. 7 . Fordwich Handaxes: Abbevillian, cat. no. 43; Pick, cat. no. 176. (Scale: 1/2).

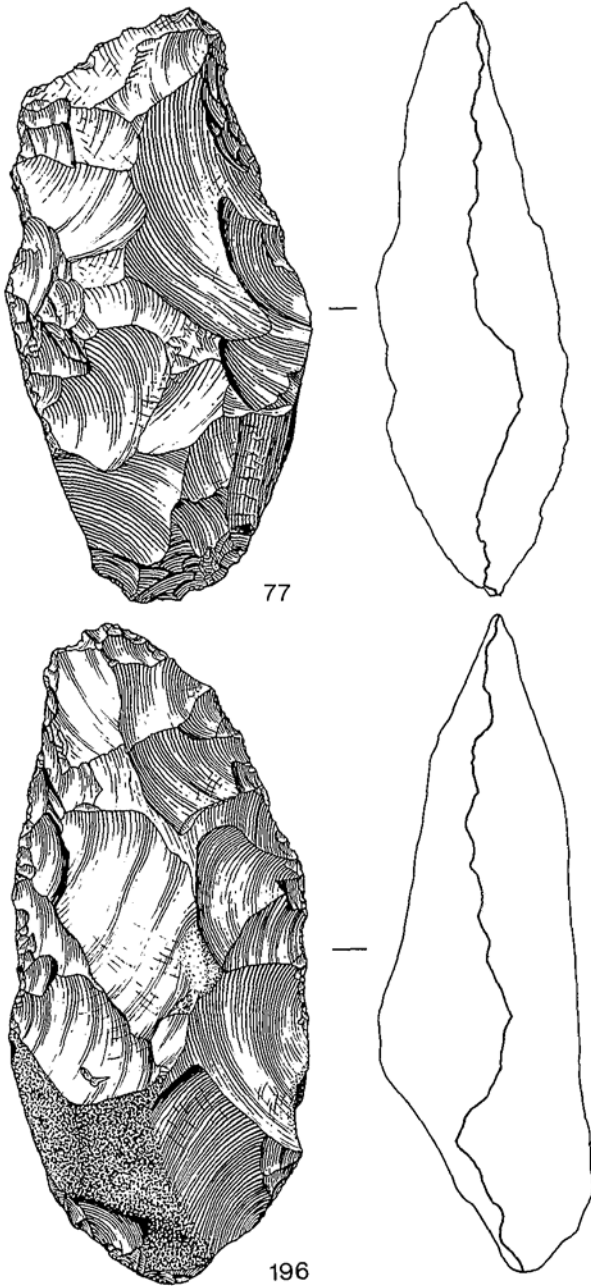


Fig. 8 . Fordwich Handaxes : Proto-limande with oblique cutting Edge, cat. no. 77 ;  
'Parrot-beaked' Handaxe, cat. no. 196. (Scale:  $\frac{1}{2}$ )

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course, frequently difficult to distinguish chopping tools from cores where a few flakes have been removed from one end only, but signs of utilisation on the tip edge may provide one clue towards the recognition of a chopping tool.

About 10 per cent of the Fordwich material could readily be defined, but could not be categorised under Bordes' types, either because a suitable type did not exist or because the French type would have been too generalised for the Fordwich specimens, and some of their more distinctive features would thus have been obscured. Three new types were therefore distinguished. The first type is the proto-ovate, which is merely a thick ovate. There are only two from Fordwich. The second type is the proto-limande (Fig. 8, cat. no. 77) with an oblique cutting edge, which is made either by a transverse blow or more frequently by retouch. This feature may be deliberate, but it is equally possible that it is due to clumsy workmanship, and that a part of the tip was removed during the manufacture of the handaxe by a poorly directed blow. There are eight specimens from Fordwich (3.5 per cent). This type falls between although this in no way detracts from the generally fine working of limandes with a transverse cutting edge (Bordes 1961, pl. 84, no. 8), and cleavers with an oblique cutting edge. The third type is the parrot-beaked handaxe, to which Smith drew attention in his article (Smith 1933, 169) (Fig. 8, cat. no. 196). These are handaxes which are intermediate between amygdaloids and proto-limandes, and under Bordes' definitions would fall into either one or other of these two types, depending on the height of the maximum width from the base. However, it is well worth isolating these handaxes as a type, since they have in common a marked 'parrot beaked' tip — there is one very curved, and one fairly straight edge at the tip. There are thirteen specimens of this sort from Fordwich (5.8 per cent).

Finally, there are eight miscellaneous handaxes which do not readily fit into any category.

### *Abrasion*

A separate study was made of the condition of the Fordwich industry. It was found that a five-fold division of abrasion could be adopted: 0 fresh, 1 a little worn, 2 and 3 markedly worn, and 4 heavily worn. Classified in this way, only 4 of the handaxes could be regarded as fresh; 53 were a little worn; 151 quite markedly worn and 15 very heavily worn. Only a quarter of the handaxes at the most may be considered fresh, in the sense that Roe uses this term, whilst the author would call these fresh — slightly worn. The

majority of axes show definite traces of rolling. This is worth emphasis as the supposed freshness of the collection has been used as evidence supporting the identification of a chronologically contemporary handaxe assemblage at Fordwich. There seems to be no obvious correlation between flint types and the degree of abrasion by natural agencies.

All, except approximately 3 per cent, of the Fordwich handaxes have a certain amount of patination or surface staining. There is no obvious association of a particular kind of patination with a particular type of handaxe.

## DISCUSSION

As a conclusion to the last section, it is worthwhile noting that there are major discrepancies between the more generally accepted opinions concerning the condition, age and content of the Fordwich industry and those expressed in the present article.

### (a) *Typology*

The crudeness of manufacture, irregularity and narrowness and fresh condition of the Fordwich handaxes have always been emphasized in the literature and the 'typical pear shaped' handaxe is usually said to be the leading 'type'. The industry is usually tentatively placed in the Hoxnian Interglacial chronologically. However, the term 'pearshaped handaxe' seems to include several different types when the handaxes are defined according to Bordes' system. These types would include Bordes' lanceolate, ficron, Micoquian, lageniforme and some of his Abbevillian handaxes and possibly picks as well, if their trihedral workmanship has not been recognised — altogether, approximately 45 per cent of the total number of implements from Fordwich. If one removes all these handaxes, which I have tried to show can be classified under distinct types, then the 'pear shaped' handaxe does not appear to be the dominant 'type'. Nevertheless, the types mentioned above are all elongated handaxes and so the narrowness of the implements which emerged from Roe's analysis seems so far to hold true.

However, it is well worth pointing out that there are also distinct types such as the proto-limandes, amygdaloids, proto-limandes with an oblique cutting edge, 'parrot beaked' handaxes, naviformes and proto-ovates, which are well flaked, often finished with a soft hammer technique and which certainly cannot be thought of as crude in manufacture, narrow or 'pear shaped', though they are unrefined in the sense in which Bordes uses the term.

Among the broader handaxes that one might assign to an ovate as

opposed to a pointed handaxe tradition, are also many that appear more evolved if their thickness/width ratio is taken into account; those here assigned to our category of thin handaxes (pp. 90). There is thus more than a hint that the handaxe assemblage contains types of advanced appearance.

The freshness of the handaxes seems to have been exaggerated in previous publications. Undoubtedly, a large part of the industry has been moved some distance and the possibility that the Fordwich 'industry' contains a mixture of handaxes from different sites cannot be excluded. Willcock's letter (p. 87) does provide a hint of horizontal localisation. The kinematic wave action (Isaac, 1970) could explain this localisation; the presence of handaxes in the same part of a pit does not necessarily mean they come from the same site or are contemporary.

### (b) *Chronology*

The date of the Fordwich material is still very much in the balance, but recent geological field-work has indicated that it is likely to be later than the Hoxnian. Sites which are of late date but have implements which may be thought of as typologically 'early', e.g. chopping tools, are by no means unknown. Four examples of industries which have a mixture of 'archaic' and 'evolved' features will suffice.

*Cantalouette* in the Dordogne Valley (Guichard, 1965). The industry at this site is 'solifluée pratiquement en place' (Guichard 1965, 422) and has a peculiar mixture of classical Acheulian (Guichard, 1965 – Figs. 7, 9, 17, 19, 20, 26, 30) and atypical pieces (Guichard, 1965 – Figs. 12, 13, 16). Unfortunately, it is not well dated, but Bordes (1966, 49) says of the industry 'The handaxes are rather crude as a general rule, which would seem to point to a rather old Acheulean, but some of them are of very good features, and a site must be dated by its most evolved features'. It is assumed to be a Late Acheulean industry.

*Pech de l'Aze* — Here 'the bifaces are in general poorly formed, slightly sinuous, often nucleiform, or Abbevillian, (and though dated to) Riss I et II . . . it is certain that, if found out of context without fauna or stratigraphy, the Acheulean of Pech de l'Aze would be considered to be 'ancient' . . . ' (Bordes 1971, 14).

*Combe Grenal* — The Acheulean here is dated to Riss III and also has clumsy-looking and thick handaxes (Bordes, 1971, 21) and though dated fairly late presents a more archaic picture than that of the classical Acheulian.

*Lonetal* — (Wetzel and Bosinski, 1969) also has several crude handaxes (Pl. 3, 1, Pl. 12, 3, Pl. 21, 2 etc.) but has been dated by faunal, pollen and sediment analyses to the end of the Riss glaciation and the Riss-Wurm interglacial.

Specific comparisons with British material have not been attempted here, since similar analyses have not been done on the material from sites such as Farnham Terrace A and Warren Hill, Worn Series, which were isolated by Roe as being similar in general to that from Fordwich.

In conclusion, then, I have tried to show that while there are many crudely worked rough handaxes from Fordwich, there are also several well-made, regular, more 'evolved' distinct types. If a site is to be dated on its more evolved features, these facts, when taken into consideration with recent data published on the geological position of the site, suggest that the handaxes from Fordwich are probably later than has hitherto been suggested and the industry is possibly Wolstonian in date.

### References

- Bordes, F. 1961. *Typologie du Paléolithique ancien et moyen*. Publication de l'Institut de l'Université de Bordeaux, Mémoire no. 1. (1st Edn).
- Bordes, F. 1964. The Use and Interpretation of Elementary Statistics in the Palaeolithic of France. Typescript circulated at the Research Seminar in Archaeology and related subjects. London May 30th, 1964.
- Bordes, F. 1966. 'Acheulean Cultures in S.W. France' in *Studies in Pre-History, Robert Bruce Foote Memorial Volume*. (Eds.) Sen & Ghosh, Calcutta.
- Bordes, F. 1971. 'Observations sur l'Acheuléen des Grottes en Dordogne'; *Munibe XXIII-I*, 5.
- Bourgon, M. 1957. 'Les Industries mousteriennes et pre-mousteriennes du Périgord', *Archives de l'Institut de Paléontologie humaine, Mémoire 27*. Paris, Masson.
- Brezillon, M.N. 1968. *La Dénomination des Objets de Pierre taillée; Matériaux pour un Vocabulaire de Préhistoriens de Langue française*. Paris, Centre Nationale de la Recherche Scientifique (*Gallia Préhistoire*, Supplement 4).
- Coleman, Alice, 1952. 'Some Aspects of the Development of the Lower Stour, Kent', *Proceedings of the Geologists Association*, lxiii (1952), 63.
- Dewey, H. & Smith, R.A. 'Flints from the Sturry Gravels, Kent', *Archaeologia*, lxxiv (1925), 117.

THE TYPOLOGY AND AGE OF THE FORDWICH HANDAXES

- Dewey, H.S.W., Wooldridge, H.W., Cones & Brown, E.E.S. 1925. 'The Geology of the Canterbury District'; *Proceedings of the Geologists Association*, xxvi (1925), 275.
- Graham, I.M. 1970. 'Discrimination of British Lower and Middle Palaeolithic Handaxe Groups using canonical Variates', *World Archaeology*, i (1970), 321.
- Guichard, Jaen 1965. 'Un Facies original de l'Acheuléen: Cantalouette', *L'Anthropologie (Paris)* lxxix (1965), 413.
- Holmes, S.C.A. 1971. 'The geological Mapper and the Employment of his Results, as illustrated in some Areas of southern England', *Proceedings of the Geologists Association*, lxxxii (1971), 161.
- Howell, F.C. 1966. 'Observations on the earlier Phases of the European lower Palaeolithic', *American Anthropologist*, lxxviii (1966), 88.
- Isaac, Glynn Ll. 1970. 'Studies of early Culture in east Africa' *World Archaeology*, i (1970), 1.
- Malvesin-Fabre, G. 1947. 'Un Indice numérique pour la Discrimination des bifaces abbévilliens et acheuléens', *Société Linnéenne de Bordeaux*.
- Roe, D.A. 1964. 'The British Lower and Middle Palaeolithic. Some Problems, Methods of Study and preliminary Results', *PPS*, xxx (1964), 245.
- Roe, D.A. 1968. 'British Lower and Middle Palaeolithic Handaxe Groups', *PPS*, xxxiv (1968), 1.
- Roe, D.A. 1976. 'The earliest Industries in Britain', in (Ed.) K. Valoch, *Les premières Industries de l'Europe*, Colloque VIII UISPP Congrès, Nice; 76-89.
- Smart, J.G.O., Bisson, G., Worsam, B.C. 1966. *The Geology of the Country around Canterbury and Folkestone (combined memoir in explanation of 1 Geological sheets 289, 305 and 306, New Series)*. H.M.S.O.
- Smith, R.A. 1931. *The Sturge Collection of Flints. Britain*. British Museum.
- Smith, R.A. 1933. 'Implements from high Level Gravels near Canterbury', *Proceedings of the Prehistoric Society of East Anglia*, vii (1933), 165.
- Tixier, J. 1958-9. 'Industries lithiques d'Ain Fritissa', *Bulletin d'Archéologie marocaine*, iii (1958-9), 107.
- Wetzel, R., Bosinski, G. 1969. *Die Bocksteinschmeide im Lonetal (Markung, Rammingen, Kreis, Ulm)*, 2 vols. Stuttgart, 1969.
- Wooldridge, H.W., in Dewey et al., *Proceedings of the Geologists Association*, 36.
- Wymer, J. 1968. *Lower Palaeolithic Archaeology in Britain as represented by the Thames Valley*, London, 1968.



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APPENDIX

Typology & Measurement of Handaxes

The typology and measurement of handaxes used is that established by Bordes (1961). Types may be defined as an assemblage of features on a flint implement that recur in different implements often enough to be considered significant; if they are limited to a single culture they are considered significant even if they occur only on a small percentage of the total number of implements (Bordes 1964, rephrased). Handaxes are defined by Bordes (1961, 49) as tools of various types, usually worked on flint nodules, but also on large flint, quartzite or other stone flakes. The characteristic which they have in common is to be worked on their faces by complete or at least invasive retouch, except in the case of partial handaxes and chopping tools which are ranged with them by analogy.

The measurements for the Fordwich handaxes are given in the tables that follow. Abbreviations from Bordes (1961) handaxe measurements and ratios are presented at the head of the columns in the tables. The final column contains the abbreviations for the

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handaxe types as listed below:

### 1. *Abbreviations: Handaxe Types*

H : Lanceolates	O : Lageniformes
J : Ficrons	R : Naviforms
N : Micoquian	M : Miscellaneous
Th : Thin handaxes <sup>1</sup>	G : Partial handaxes
F1) : Amygdaloids	A : Abbevillian Handaxes
F2)	B : Picks
K : Proto-Limandes	
D : Bifacial Cleavers	Q : Backed Handaxes
E : Chopping Tools	KT : Proto-Limandes (with an oblique cutting edge)
P : Proto-ovates	F1-K2)
	K2 : Parrot-beaked handaxe

<sup>1</sup> Comprised of all triangular, sub-triangular, cordiform, elongated cordiform, ovate and limande handaxes plus two partial bifaces all with an m/e ratio that is greater than 2.35.

### 2. *Abbreviations: Handaxe Ratios*

L	: length of handaxe along its axis from tip to base
m	: maximum width of handaxe
n	: width halfway up the handaxe
a	: distance from point maximum width to the base
e	: maximum thickness of handaxe

Various combinations of these measurements are used which express the shape and degree of refinement of the handaxes:

L/a	: position of maximum width in relation to the length
n/m x 100	: expresses the roundness of the sides (This approximately equals Roe's B1/B2).
m/e	: expressed the thickness of the handaxe relative to its width
	If $m/e < 2.35$ the handaxe is thick
	If $m/e > 2.35$ the handaxe is thin
L/m	: gives the elongation of the handaxe
	Elongated cordiforms $L/m > 1.5$
	Limandes are ovates with $L/m > 1.6$
	Elongated triangulars are triangular handaxes with $L/m > 1.5$

Thick handaxes ( $m/e < 2.35$ ) are subdivided by the use of objective measurements and subjective assessment, (which is nevertheless severely limited as each type is clearly defined and distinct from other types). This is because some aspects of handaxes are not easily reduced to mathematical terms, e.g., degree of refinement of the edges or the roughness of working which distinguishes ficrons from lanceolates or Micoquian handaxes.

CATALOGUE OF HANDAXES FROM FORDWICH

\*Thin Handaxes

CAT. No.	L	m	n	a	e	L/a	n/m × 100	m/e	L/m	Condition	Type	PROVENANCE Herne Bay Museum
1	8.5	4.9	4.5	2.0	4.2	2.83	91.8	1.17	1.73	1	F1	(No requisition numbers)
2	10.3	5.2	4.2	2.7	4.1	3.8	80.8	1.27	1.98	2	J	(No requisition numbers)
3	12.0	6.1	5.5	5.0	4.0	2.4	90.2	1.53	1.97	1	K	(No requisition numbers)
4	7.8	5.7	4.9	2.3	2.3	3.4	86.0	0.27	2.48	1	F2	(No requisition numbers)
5	10.6	5.6	4.0	3.2	4.0	3.3	71.4	1.40	1.89	1	J	(No requisition numbers)
6	13.3	5.6	5.1	5.0	2.9	2.7	90.3	1.95	2.35	1	F1	(No requisition numbers)
7	10.2	7.0	5.9	3.0	2.1	3.4	84.3	1.46	3.33	1	F1	(No requisition numbers)
8	10.8	8.0	7.1	3.1	2.5	3.5	88.7	1.35	3.20	0	F1	(No requisition numbers)
9	9.8	6.6	5.8	4.0	3.0	2.4	87.9	2.20	1.48	2	F2	(No requisition numbers)
10	10.2	6.7	6.0	2.4	2.7	4.2	89.5	*2.48	1.52	1	Th	(No requisition numbers)
11	16.1	8.4	7.3	6.9	4.9	2.3	86.9	1.71	1.92	3	K	(No requisition numbers)
12	21.4	8.9	6.9	7.0	7.3	3.1	77.5	1.22	2.40	3	O	(No requisition numbers)
13	22.8	9.55	9.1	9.0	5.2	2.5	95.3	1.84	2.39	1	K	(No requisition numbers)
14	17.4	8.7	7.9	5.0	5.5	3.5	90.8	1.58	2.00	4	H	(No requisition numbers)
15	18.4	7.4	6.3	5.5	6.9	3.3	85.1	1.07	2.49	2	A	(No requisition numbers)
16	16.5	8.2	7.3	6.2	6.8	2.7	89.0	1.21	2.01	1	A	(No requisition numbers)
17	18.8	8.4	8.4	8.0	6.0	2.3	100	1.40	2.24	2	K	(No requisition numbers)
18	22.2	10.2	10.2	10.8	6.0	2.1	98.0	1.71	2.17	3	K	(No requisition numbers)
19	16.3	9.5	9.3	5.5	3.9	3.0	97.9	* 2.44	1.72	1	Th	(No requisition numbers)
20	15.7	6.0	5.8	7.0	7.4	2.2	96.7	0.81	2.62	2	J	(No requisition numbers)
21	13.0	7.3	5.5	2.0	6.1	6.5	75.3	1.20	1.78	3	H	(No requisition numbers)
22	14.1	6.3	5.9	5.9	4.8	2.4	93.6	1.31	2.24	2	H	(No requisition numbers)

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23	17.7	7.2	7.2	7.2	7.7	5.1	2.3	100	1.41	2.46	2	N	(No requisition numbers)
24	13.0	6.0	4.1	3.8	2.5	3.4	68.3	*2.40	2.17	1	Th	(No requisition numbers)	
25	8.7	6.5	5.9	2.6	2.7	3.3	90.8	*2.41	1.34	2	Th	(No requisition numbers)	
26	13.5	8.5	8.5	6.7	4.0	2.0	100	2.13	1.59	1	P	(No requisition numbers)	
27	11.3	8.0	7.5	5.0	2.7	2.3	93.7	*2.96	1.41	1	Th	(No requisition numbers)	
28	12.1	6.2	5.8	4.0	4.0	3.0	93.5	1.55	1.95	1	E	(No requisition numbers)	
29	17.7	7.0	5.3	3.0	5.7	5.9	75.7	1.23	2.53	1	H	(No requisition numbers)	
30	13.1	6.7	6.3	5.7	4.4	2.3	94.0	1.52	1.96	1	K	(No requisition numbers)	
31	11.4	5.0	4.5	3.7	4.8	3.1	90.0	1.04	2.28	1	J	(No requisition numbers)	
32	9.7	8.2	7.6	4.0	3.2	2.4	92.7	*2.56	1.18	1	Th	(No requisition numbers)	
33	14.2	8.3	8.0	8.2	3.0	1.7	96.4	*2.77	1.71	1	Th	(No requisition numbers)	
34	11.5	6.6	5.9	4.0	3.1	2.9	89.4	2.13	1.74	1	F1	(No requisition numbers)	
British Museum													
35	16.7	9.2	9.2	8.0	5.5	2.1	100	1.67	1.82	3	K	P 1972, 9-1, 108	
36	16.0	7.4	5.0	4.6	4.6	3.5	67.6	1.61	2.16	1	0	P 1972, 9-1, 117	
37	19.9	10.1	7.3	5.4	4.1	3.7	72.3	*2.46	1.97	2	Th	P 1972, 9-1, 109	
38	16.8	8.2	7.2	5.2	6.3	3.3	87.8	1.30	2.05	2	J	P 1972, 9-1, 103	
39	15.3	7.6	6.8	4.8	5.1	3.2	89.5	1.49	2.04	3	N	P 1972, 9-1, 119	
40	14.2	9.0	9.0	5.0	5.5	2.8	100	1.64	1.58	2	A	P 1972, 9-1, 107	
41	14.5	7.6	7.6	4.3	4.6	3.4	100	1.65	1.91	2	F1	P 1972, 9-1, 98	
42	15.3	8.4	7.3	6.7	5.3	2.3	86.9	1.58	1.82	2	KT	P 1972, 9-1, 110	
43	14.8	7.2	4.6	2.8	5.3	5.3	63.9	1.36	2.06	2	A	P 1972, 9-1, 101	
44	13.9	6.3	5.9	2.8	6.1	5.0	93.6	1.03	2.21	2	A	P 1972, 9-1, 106	
45	16.1	7.8	7.8	8.0	7.7	2.0	100	1.01	2.06	4	A	P 1972, 9-1, 112	
46	15.0	7.7	6.6	6.6	7.2	2.3	85.7	1.07	1.95	2	A	P 1972, 9-1, 104	
47	14.0	6.8	6.1	3.8	5.2	3.7	89.7	1.31	2.06	3	A	P 1972, 9-1, 97	
48	14.1	8.5	8.2	7.8	6.8	1.9	96.5	1.25	1.78	3	KT	P 1972, 9-1, 99	

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49	13.3	7.6	7.5	7.3	6.0	1.8	98.7	1.27	1.75	2	K	P 1972, 9-1, 38
50	15.5	8.0	6.5	4.0	5.9	3.9	81.2	1.36	1.94	2	J	P 1972, 9-1, 46
51	16.7	11.3	9.2	5.7	6.6	2.9	81.4	1.71	1.48	2	E	P 1972, 9-1, 77
52	20.0	8.8	7.6	5.8	6.1	3.4	86.4	1.44	2.27	1	0	P 1972, 9-1, 93
53	15.7	7.6	7.0	3.5	5.2	4.5	92.1	1.46	2.07	3	Q	P 1972, 9-1, 8
54	17.3	8.9	8.6	7.8	5.6	2.2	96.6	1.59	1.94	3	B	P 1972, 9-1, 94
55	15.1	8.0	7.8	6.0	4.3	2.5	97.5	1.86	1.89	3	K	P 1972, 9-1, 74
56	23.0	10.2	8.6	6.7	5.0	3.4	94.3	2.04	2.25	2	h	P 1972, 9-1, 85
57	16.8	8.3	7.5	7.4	5.9	2.3	90.4	1.41	2.02	2	M	P 1972, 9-1, 70
58	14.2	7.5	6.1	5.0	5.8	2.8	81.3	1.29	1.89	3		P 1972, 9-1, 34
59	15.1	8.6	8.3	6.0	5.3	2.5	96.5	1.62	1.76	1	K2	P 1972, 9-1, 57
60	14.4	8.2	8.0	6.1	4.8	2.4	97.6	1.71	1.76	2	M	P 1972, 9-1, 62
61	16.0	6.4	6.3	5.3	4.5	3.0	98.4	1.42	2.50	1	0	P 1972, 9-1, 20
62	17.2	6.4	5.4	7.5	6.8	2.3	94.4	0.94	2.69	2	B	P 1972, 9-1, 75
63	19.5	7.5	6.5	7.5	4.2	2.6	86.7	1.79	2.60	2	B	P 1972, 9-1, 42
64	14.6	7.6	7.0	5.0	5.2	2.9	92.1	1.46	1.92	3	J	P 1972, 9-1, 45
65	16.0	8.1	7.4	5.5	4.0	2.9	91.4	2.03	1.98	1	F1	P 1972, 9-1, 69
66	17.2	9.6	8.5	5.7	6.5	3.0	88.5	1.48	1.79	2	J	P 1972, 9-1, 79
67	18.1	8.2	5.2	4.5	6.4	4.0	63.4	1.28	2.21	4	J	P 1972, 9-1, 51
68	21.0	9.2	8.0	6.8	6.4	3.1	87.0	1.44	2.28	2	0	P 1972, 9-1, 76
69	11.6	5.3	5.2	2.5	3.8	4.6	98.1	1.39	2.19	3	J	P 1972, 9-1, 47
70	13.0	6.3	6.1	7.4	3.8	1.8	96.8	1.66	2.06	3	K	P 1972, 9-1, 92
71	19.0	10.1	10.0	8.8	4.8	2.2	100	2.10	1.88	2	K	P 1972, 9-1, 24
72	16.8	9.7	8.5	6.1	6.7	2.7	87.6	1.45	1.73	2	J	P 1972, 9-1, 31
73	9.2	5.7	5.7	4.6	3.3	2.0	100	1.73	1.61	2	A	Missing
74	7.6	5.7	4.3	1.2	1.9	6.3	75.4	*3.00	1.33	2	Th	Missing
75	15.2	8.1	7.3	6.2	3.5	2.4	90.1	2.31	1.88	1	K	P 1972, 9-1, 18

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76	17.1	7.5	7.3	10.0	5.7	1.7	97.3	1.32	2.28	2	J	P 1972, 9-1, 78
77	15.3	7.9	7.9	7.8	4.5	2.0	100	1.76	1.94	3	KT	P 1972, 9-1, 60
78	17.2	7.2	6.1	4.5	5.1	3.8	84.7	1.41	2.39	3	0	P 1972, 9-1, 13
79	18.2	8.2	8.6	6.6	6.0	2.8	93.5	1.53	1.98	2	0	P 1972, 9-1, 7
80	16.5	7.4	7.2	7.0	6.1	2.4	97.3	1.21	2.23	2	J	P 1972, 9-1, 50
81	10.0	8.0	7.0	3.0	2.7	3.3	87.5	*2.96	1.25	3	Th	P 1972, 9-1, 54
82	11.0	6.3	5.5	4.0	3.0	2.7	87.3	2.10	1.75	2	0	P 1972, 9-1, 35
83	11.8	8.2	8.0	8.3	5.1	1.8	97.6	1.61	1.80	3	E	P 1972, 9-1, 22
84	11.0	8.0	6.3	4.3	5.8	3.7	78.7	1.38	2.00	2	M	P 1972, 9-1, 59
85	18.7	10.0	9.8	8.5	5.8	2.2	98.0	1.72	1.87	2	H	P 1972, 9-1, 88
86	15.7	6.0	5.5	3.3	4.6	4.8	91.7	1.30	2.62	3	0	P 1972, 9-1, 52
87	15.7	7.6	6.6	5.5	5.5	2.8	86.8	1.38	2.07	1	H	P 1972, 9-1, 21
88	13.0	7.0	6.0	4.5	4.5	2.9	85.7	1.56	1.86	2	J	P 1972, 9-1, 33
89	10.2	10.0	7.7	3.0	3.9	2.6	77.0	*2.56	1.02	2	Th	P 1972, 9-1, 10
90	17.5	8.0	7.8	8.5	4.1	2.1	97.5	1.95	2.19	2	KT	P 1972, 9-1, 40
91	10.7	6.0	3.5	2.5	4.5	4.3	58.3	1.33	1.78	2	N	P 1972, 9-1, 83
92	12.2	7.2	7.2	6.7	5.8	1.8	100	1.24	1.69	3	A	P 1972, 9-1, 80
93	14.5	7.4	7.2	6.0	4.5	2.4	97.3	1.64	1.96	1	KT	P 1972, 9-1, 72
94	16.5	8.6	7.9	6.2	4.6	2.7	91.9	1.87	1.92	2	J	Missing
95	19.0	9.9	9.0	8.2	6.6	2.3	90.9	1.50	1.92	2	0	P 1972, 9-1, 1
96	10.4	5.1	4.4	5.0	3.1	2.08	86.3	1.65	2.04	2	H	P 1972, 9-1, 17
97	17.4	8.8	8.3	6.8	5.1	2.56	94.3	1.73	1.98	3	H	P 1972, 9-1, 67
98	18.0	7.8	7.8	9.0	6.4	2.0	100	1.22	2.31	2	0	P 1972, 9-1, 6
99	14.9	8.6	7.9	5.3	4.9	2.8	91.9	1.76	1.73	2	F1-K2	P 1972, 9-1, 23
100	12.1	6.6	5.2	4.6	3.8	2.6	78.8	1.74	1.84	2	Q	P 1972, 9-1, 9
101	10.0	6.8	6.8	5.3	2.9	1.9	100	2.34	1.47	2	P	P 1972, 9-1, 65
102	12.4	7.1	5.5	3.5	4.0	3.5	77.5	1.78	1.75	2	J	P 1972, 9-1, 37
103	14.1	7.5	7.1	6.0	3.7	2.3	94.7	2.03	1.88	2	KT	P 1972, 9-1, 73

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104	13.0	6.8	6.6	4.0	4.3	3.2	97.1	1.58	1.91	1	Q	P 1972, 9-1, 68
105	13.2	6.1	5.2	4.7	3.8	2.8	85.2	1.61	2.16	2	H	P 1972, 9-1, 26
106	12.9	7.0	6.1	5.4	3.7	2.4	87.1	1.89	1.84	2	0	P 1972, 9-1, 19
107	11.1	6.6	6.6	5.5	5.1	2.0	100	1.29	1.68	3	E	P 1972, 9-1, 102
108	17.1	7.5	6.7	6.2	6.3	2.8	89.3	1.19	2.28	2	0	P 1972, 9-1, 11
109	10.2	6.5	6.3	4.0	2.2	2.5	96.9	*2.95	1.57	2	Th	P 1972, 9-1, 5
110	16.0	9.0	7.2	5.5	4.9	2.9	80.0	1.84	1.78	2	J	P 1972, 9-1, 30
111	15.4	10.8	7.0	3.8	4.2	4.0	64.8	*2.57	1.43	3	Th	P 1972, 9-1, 2
112	10.5	7.6	5.9	1.4	4.4	7.5	77.6	1.73	1.38	3	H	P 1972, 9-1, 53
113	15.5	8.4	7.7	5.8	4.9	2.7	91.7	1.71	1.85	2	M	P 1972, 9-1, 55
114	13.0	5.7	5.3	2.7	5.0	4.8	93.0	1.14	2.28	4	B	P 1972, 9-1, 41
115	9.8	7.0	5.6	3.0	3.8	3.3	80.0	1.84	1.40	2	H	P 1972, 9-1, 48
116	14.4	7.8	5.9	4.2	4.8	3.4	75.6	1.62	1.85	2	H	P 1972, 9-1, 29
117	9.2	5.0	4.8	3.8	5.6	2.4	96.0	0.89	1.84	4	E	P 1972, 9-1, 58
118	15.0	7.8	7.6	4.8	5.9	3.1	97.4	1.32	1.92	3	M	P 1972, 9-1, 66
119	13.6	8.6	7.3	3.2	4.8	4.2	94.9	1.79	1.58	1	E	P 1972, 9-1, 81
120	13.6	7.5	7.1	4.8	4.4	2.8	94.7	1.70	1.81	3	Fl	P 1972, 9-1, 71
121	1.5	5.8	4.7	4.0	4.3	2.9	81.0	1.35	1.98	4	N	P 1972, 9-1, 114
122	16.2	8.1	8.1	6.0	4.5	2.70	100	1.80	2.00	2	K	P 1972, 9-1, 27
123	13.2	8.3	8.2	7.5	3.5	1.8	98.8	*2.37	1.59	2	Th	P 1972, 9-1, 4
124	13.1	7.1	6.8	6.0	5.1	2.2	95.8	1.39	1.85	4	K	P 1972, 9-1, 25
125	13.3	6.1	5.5	4.8	5.8	2.8	90.2	1.05	2.18	4	J	P 1972, 9-1, 39
126	14.0	7.2	6.6	6.5	4.5	2.1	91.7	1.60	1.94	2	K2	P 1972, 9-1, 44
127	13.4	6.6	6.3	5.8	5.9	2.3	95.4	1.12	2.03	2	J	P 1972, 9-1, 105
128	13.4	8.8	7.6	2.8	3.7	4.8	86.4	*2.38	1.52	2	Th	P 1972, 9-1, 3
129	12.8	7.6	7.3	4.8	6.7	2.7	96.0	1.13	1.68	3	E	P 1972, 9-1, 83
130	6.8	5.6	5.6	3.4	2.4	2.0	100	2.33	1.40	2	K	P 1972, 9-1, 15
131	12.8	6.5	5.8	3.8	5.2	3.4	89.2	1.25	1.97	1	0	P 1972, 9-1, 36



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132	13.8	7.4	6.4	4.5	3.8	3.1	84.5	1.95	1.86	1	H	P 1972, 9-1, 12
133	13.1	6.9	6.2	7.0	5.0	1.9	89.9	1.38	1.90	3	E	P, 1972, 9-1, 96
134	12.1	7.2	5.9	2.6	3.8	4.6	81.9	1.89	1.68	2	N	P 1972, 9-1, 95
135	14.2	5.6	4.4	4.8	4.9	3.0	78.6	1.14	2.54	2	B	P 1972, 9-1, 91
136	13.2	6.6	6.4	4.8	5.5	2.7	97.0	1.20	2.00	1	K	P 1972, 9-1, 56
137	13.9	7.1	6.4	4.4	3.1	3.2	90.1	2.29	1.96	1	F1	P 1972, 9-1, 14
138	13.7	6.5	6.3	5.5	3.4	2.5	96.9	1.91	2.11	1	K	P 1972, 9-1, 61
139	13.5	6.9	6.5	3.6	4.3	3.7	94.2	1.59	1.96	1	F1	P 1972, 9-1, 28
140	15.6	7.5	7.2	9.3	5.1	1.7	96.0	1.48	2.07	2	G	P 1972, 9-1, 82
141	11.6	6.0	4.8	3.4	5.4	3.4	80.0	1.1	1.93	2	N	P 1972, 9-1, 90
142	14.5	8.3	8.2	5.3	5.4	2.7	98.9	1.54	1.75	3	K2	P 1972, 9-1, 64
143	15.7	6.8	6.8	7.8	5.9	2.0	100	1.15	2.31	2	J	P 1972, 9-1, 32
144	13.2	7.9	7.8	6.8	5.2	1.9	98.7	1.52	1.67	3	D	P 1972, 9-1, 43
145	15.2	7.9	7.7	5.1	5.5	3.0	94.5	1.44	1.92	3	D	P 1972, 9-1, 85
146	16.2	7.1	6.6	7.6	5.3	2.2	93.7	1.84	1.71	3	K2	P 1972, 9-1, 63
147	10.1	5.9	3.3	3.0	3.2	3.4	90.7	1.59	1.83	4	F1	P 1972, 9-1, 16
148	11.0	5.6	5.3	5.2	3.6	2.1	94.1	1.56	1.96	2	H	P 1972, 9-1, 49
149	15.2	6.6	5.6	3.0	6.0	5.1	84.8	1.10	2.30	3	A	1931, 10-12, 5
150	21.0	8.2	6.0	6.0	6.0	3.5	73.2	1.40	2.60	2	0	1931, 10-12, 2
151	18.0	7.4	7.1	7.5	6.6	2.4	95.9	1.12	2.43	2	A	1931, 10-12, 3
152	16.7	7.5	6.0	4.5	6.6	3.7	80.0	1.14	2.23	2	H	1931, 10-12, 4
153	16.8	7.7	5.6	7.0	7.0	2.4	72.7	1.10	2.18	3	0	1931, 10-12, 1
154	15.3	8.1	7.9	9.0	5.7	1.7	97.5	1.42	1.89	2	A	1931, 10-12, 6
155	11.9	7.2	6.4	2.0	3.8	5.9	88.9	1.89	1.65	2	0	1931, 10-12, 9
156	11.3	8.0	7.4	4.0	4.8	2.8	92.5	1.67	1.41	2	M	1931, 10-12, 13
157	11.8	6.7	6.5	5.3	4.1	2.2	97.0	1.63	1.76	1	K	1931, 10-12, 14
158	14.8	7.7	6.1	3.3	6.1	4.9	79.2	1.26	1.92	2	J	1931, 10-12, 8

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159	9.8	6.0	5.5	3.5	3.0	2.8	91.7	2.00	1.63	1	F1	1931, 10-12, 10
160	13.0	6.8	6.8	6.4	3.4	2.0	100	2.00	1.91	1	KT	1931, 10-12, 7
161	15.1	8.8	6.6	6.2	4.0	2.4	75.0	2.20	1.72	0	F1	1931, 10-12, 12
162	15.0	7.1	6.4	4.9	4.3	3.1	90.1	1.65	2.11	1	J	1931, 10-12, 15
163	9.1	5.7	5.4	3.8	2.5	2.4	94.7	2.28	1.60	3	G	P 1972, 9-1, 138
164	16.5	7.0	7.0	5.2	4.9	3.1	100	1.43	2.36	1	F1-K2	P 1972, 9-1, 130
165	14.6	7.7	7.3	6.0	4.6	2.4	94.8	1.67	1.90	1	K	1931, 10-12, 16
166	11.8	6.6	5.8	4.0	3.3	2.9	87.9	2.00	1.79	1	F1	P 1972, 9-1, 137
167	14.1	7.0	6.0	3.7	4.0	3.8	85.7	1.75	2.01	2	N	1931, 10-12, 17
168	14.4	6.5	6.4	6.1	4.7	2.4	98.5	1.38	2.22	1	K2	P 1972, 9-1, 127
169	16.6	7.8	7.1	3.5	5.3	4.7	91.0	1.47	2.13	2	0	P 1972, 9-1, 125
170	16.6	8.0	5.6	2.0	6.3	8.3	70.0	1.27	2.08	3	B	P 1972, 9-1, 136
171	13.5	7.5	6.3	4.7	5.3	2.4	84.0	1.42	1.80	2	J	P 1972, 9-1, 126
172	12.3	6.5	5.5	3.3	5.8	3.7	84.6	1.12	1.89	2	N	P 1972, 9-1, 131
173	15.4	7.7	7.4	6.2	4.5	2.5	96.1	1.71	2.00	2	KT	P 1972, 9-1, 135
174	14.8	9.2	6.9	6.1	3.7	2.4	96.7	*2.49	1.61	2	Th	P 1972, 9-1, 128
175	13.5	8.1	7.3	5.5	4.5	2.4	90.1	1.78	1.67	2	A	P 1972, 9-1, 146
176	16.3	6.9	5.2	4.4	4.9	3.7	75.4	1.41	2.36	2	B	P 1972, 9-1, 155
177	18.2	9.8	6.6	4.0	5.2	4.5	67.3	1.88	1.86	1	H	P 1972, 9-1, 164
178	17.2	7.2	6.6	4.5	7.1	3.8	91.7	1.01	2.39	1	0	P 1972, 9-1, 150
179	17.7	7.5	7.1	8.3	6.2	2.1	94.7	1.36	1.21	2	J	P 1972, 9-1, 170
180	13.1	6.4	3.6	5.0	4.2	2.6	56.2	2.05	1.52	4	A	P 1972, 9-1, 168
181	11.5	8.5	7.1	3.2	3.3	3.6	83.5	*2.58	1.35	2	Th	P 1972, 9-1, 143
182	10.3	5.0	4.7	4.8	4.9	2.1	94.0	1.02	2.06	2	N	P 1972, 9-1, 142
183	11.8	7.8	7.0	4.2	2.9	2.8	89.7	*2.69	1.51	3	Th	P 1972, 9-1, 151
184	12.2	6.8	5.0	1.5	5.3	8.1	73.5	1.28	1.79	1	J	P 1972, 9-1, 141
185	14.1	7.1	6.2	4.7	4.3	3.0	87.3	1.65	1.99	2	F1-K2	P 1972, 9-1, 158

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186	9.6	6.8	6.3	4.0	2.9	2.4	92.6	2.34	1.41	1	K	P 1972, 9-1, 144
187	12.0	6.9	6.9	5.9	2.5	2.0	100	*2.76	1.74	3	Th	P 1972, 9-1, 140
188	13.1	6.5	5.4	3.5	2.8	3.7	83.1	2.32	2.02	2	H	P 1972, 9-1, 162
189	17.8	9.4	8.2	5.2	5.8	3.4	87.2	1.62	1.89	3	N	P 1972, 9-1, 173
190	13.6	7.3	5.2	3.2	6.3	4.2	71.2	1.16	1.86	3	B	P 1972, 9-1, 166
191	14.2	6.9	6.9	7.2	4.1	2.0	100	1.68	2.06	2	G	P 1972, 9-1, 167
192	19.5	6.0	5.9	7.0	5.6	2.8	98.3	1.07	3.25	3	B	P 1972, 9-1, 174
193	15.9	7.5	7.1	5.7	3.3	4.4	94.7	2.27	2.12	0	F1	P 1972, 9-1, 139
194	16.7	7.4	6.8	3.8	5.0	2.2	91.9	1.48	2.26	0	H	P 1972, 9-1, 165
195	13.4	7.0	7.0	6.2	4.5	3.0	100	1.56	1.91	2	K	P 1972, 9-1, 148
196	17.0	7.7	7.5	5.7	4.7	2.6	97.4	1.64	2.21	2	F1-K2	P 1972, 9-1, 169
197	15.1	8.5	8.0	5.9	4.2	2.0	94.1	2.02	1.78	1	K2	P 1972, 9-1, 147
198	14.1	7.3	7.2	7.0	4.2	2.0	98.6	1.74	1.93	4	K	P 1972, 9-1, 153
199	15.8	8.2	7.6	7.0	6.1	2.3	92.7	1.34	1.93	2	H	1923, 11-8, 6
200	10.0	6.2	5.7	4.6	2.2	2.9	91.9	2.14	1.61	1	K	1925, 6-16, 3
201	17.2	8.5	8.1	7.3	4.1	2.4	95.3	2.07	2.02	3	K	1923, 4-12, 1
202	14.1	7.8	7.3	5.3	3.2	2.7	93.6	*2.44	1.81	3	Th	1925, 6-16, 1
203	12.5	6.8	5.7	4.6	4.5	2.7	83.8	1.51	1.84	3	H	1923, 4-12, 2
204	16.8	8.6	8.5	7.5	4.6	2.2	98.8	1.87	1.95	4	R	1923, 11-8, 7
205	16.3	8.3	8.3	8.0	6.6	2.0	100	1.26	1.96	2	K	P 1972, 9-1, 124
206	11.7	6.5	6.4	4.5	5.8	2.6	98.7	1.12	1.80	2	J	P 1972, 9-1, 152
207	13.7	7.8	7.0	4.0	3.7	3.4	89.7	2.11	1.76	1	D	P 1972, 9-1, 154
208	15.2	7.0	6.9	5.8	5.6	2.6	98.6	1.25	2.17	4	R	P 1972, 9-1, 149
209	5.8	4.1	4.0	4.1	2.0	1.4	97.6	2.05	1.41	4	M	P 1972, 9-1, 172
210	10.4	5.0	4.6	2.5	2.7	4.2	92.0	1.85	2.08	2	H	P 1972, 9-1, 161
211	11.2	7.4	6.3	3.0	3.3	2.7	85.1	1.95	1.51	2	0	P 1972, 9-1, 145
212	17.5	7.5	6.9	6.0	5.6	2.9	92.0	1.34	2.33	1	J	P 1972, 9-1, 159
213	14.8	7.8	7.8	7.4	5.0	2.0	100	1.56	1.90	3	K2	P 1972, 9-1, 163

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214	15.7	7.8	6.5	5.1	3.8	3.1	83.3	2.05	2.01	1	F2	P 1972, 9-1, 118
215	12.8	6.8	6.7	6.2	6.4	2.1	98.5	1.06	1.88	2	E	P 1972, 9-1, 116
216	14.1	7.2	7.1	6.6	5.5	2.1	98.6	1.31	1.96	2	J	P 1972, 9-1, 100
217	16.0	7.8	6.8	6.2	6.0	2.6	87.2	1.30	2.05	3	N	P 1972, 9-1, 111
218	13.7	7.4	7.0	5.4	5.2	2.5	94.6	1.42	1.85	2	K	P 1972, 9-1, 115
219	14.4	7.4	6.7	5.6	5.2	2.6	90.5	1.95	1.42	4	F2-K2	P 1972, 9-1, 129
220	14.2	7.0	5.6	5.0	6.2	2.8	80.0	1.13	2.03	2	J	P 1972, 9-1, 133
221	13.0	7.2	7.1	4.5	3.3	2.9	98.6	2.19	1.81	3	F1-K2	P 1972, 9-1, 113
222	15.1	8.0	7.9	8.3	4.3	1.8	98.7	1.86	1.89	2	M	P 1972, 9-1, 98
223	12.8	7.0	7.0	6.3	4.4	2.0	100	1.59	1.83	2	K	P 1972, 9-1, 89

