A Study of Selected British and European Flint Assemblages of Late Devensian and Early Flandrian Age.

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TABLE OF CONTENTS

CONTENTS ii
LIST OF FIGURES vi
LIST OF TABLES x
LIST OF PLATES x
ACKNOWLEDGEMENTS xi
ABSTRACT xiii

INTRODUCTION.
Introduction xiv
Notes to the Reader xx
A note on the presentation of radiocarbon dates. xxiv

CHAPTER 1: THE UPPER PALAEOLITHIC ASSEMBLAGE FROM HENGISTBURY HEAD.

Introduction 1
History of research 1
Site location 5
Geological background 7
Sedimentary context 7
The excavations 8
Excavation techniques 9
The artefact assemblage
Raw materials 10
Flint debitage 12
Retouched tools 14
Retouched tool debitage 29
Hammerstones 29
Artefacts with engraved cortex 30
Non-flint materials 30
Dating 33
Taphonomic considerations 34
Hengistbury Artefact Summary 36
Other open-air findspots in Southern Britain 38
British and European Upper Palaeolithic sites: the question of relationships 41

CHAPTER 2: THE LONG BLADE ASSEMBLAGES OF SOUTHERN BRITAIN.

Introduction 47
Background to Long Blade assemblages 48
Palaeolithic Long Blade technologies 49
Mesolithic assemblages with Long Blades 51
Post-Mesolithic Long Blade technologies 52
The Southern British Long Blade assemblages 56

Sites in the Kennet Valley, Berkshire
Avington VI
Introduction 56
Stratigraphy 60
The artefact assemblage
Raw material 62
Debitage 63
Retouched tools 65
Retouched tool waste 70
Bruised blades and flakes 70

Hammerstones 72
Dating the flint assemblage 72
Other sites in the Avington area 73

Crown Acres
Introduction and location 74
Stratigraphy 75
The artefact assemblage
Raw material 75
Debitage 76
Retouched tools 80
Bruised blades 84
Dating evidence 84

Sites in Kent
Springhead
Location 85
Stratigraphy 87
The artefact assemblage
Debitage 89
Retouched tools 91
Retouched tool debitage 94
Bruised blades and flakes 94
Sites in the Upper Thames area near Springhead 95

Riverdale, Canterbury
Introduction 97
Location 98
Stratigraphy 98
The artefact assemblage
Debitage 100
Bruised blades and flakes 101

East Anglian Long Blade sites 104
Devil's Wood Pit, Sproughton
Site location 104
Geology and Geomorphological Background 104
Detailed stratigraphy 106
Excavations 109
The artefact assemblage
Raw material 110
Debitage 111
Retouched tools 119
Bruised-edge blades and flakes 131
Retouched tool debitage 135
Hammerstones 139
Taphonomic considerations 141
Dating the flint assemblage 146
Finds in the Ipswich area 148

Wrabness
Location 152
The artefact assemblage 153
Retouched tools 154

Swaffham Prior
Introduction 155
Site location 156
Stratigraphy 156
The artefact assemblage
Raw material 158

Debitage 160
Retouched tools 162
Retouched tool debitage 168
Bruised blades and flakes 168
Hammerstones 169
Dating evidence 169

The King's site, Mildenhall
Introduction 169
The artefact assemblage
Raw material 170
Debitage 171
Retouched tools 172
Retouched tool debitage 175
Bruised blades and flakes 176
Dating evidence 177

Titchwell, Norfolk
Introduction 178
Location 178
The problem of stratigraphic context 179
The artefact assemblage
Raw material 180
Debitage 180
Retouched tools 183
Retouched tool waste 186
Bruised and edge-damaged artefacts 186

Summary and Discussion 187
Dating of Long Blade sites 188
Climatic change at the end of the Devensian 191
Technological features 195
Site function 202

CHAPTER 3: SELECTED EUROPEAN LONG BLADE ASSEMBLAGES.

Introduction 212
Bromme-type assemblages
Introduction 213
The artefact assemblages
Debitage 214
Retouched tools 218
Chronological framework 229
Bromme summary 232

Ahrensburgian Complex 234
Ahrensburgian Long Blade assemblages 235
The artefact assemblages
Ahrensburgian Long Blade debitage 237
Ahrensburgian debitage without Long Blades 239
Retouched tools 241
Retouched tool debitage 252
Bruised flakes and blades 253
Dating 254
Faunal remains 256
Ahrensburg summary 259

Long Blade assemblages in Northern France
Introduction 262
Belloy-sur-Somme 262

Stratigraphy 264
The artefact assemblage
Raw material 266
Debitage 266
Retouched tools 267
Retouched tool waste 270
Bruised flakes and blades 270
Hammerstones 271
Fauna and dating 271
Other finds in the Somme area 273

Discussion of European assemblages
Late Glacial and Early Postglacial climatic changes in Northwestern Europe 274
Similarities between British and NW European Long Blade assemblages
Bromme Complex 277
Ahrensburgian Complex 278
Belloy-type assemblages 281
Site function 282

CHAPTER 4: THE MESOLITHIC ASSEMBLAGE FROM HENGISTBURY HEAD.

Introduction 289
History of research 289
Site location 292
Geological background 294
Sedimentary context 295
The excavations 297
Excavation techniques 298
Raw material analysis 301
Flint debitage 306
Cores 309
The retouched tool assemblage 312
Retouched tool debitage 335
Post-mesolithic artefacts 341
Hammerstones 341
Non-flint artefacts 342
Dating 343
Taphonomic considerations 343
Selected comparisons between Hengistbury and other Southern British Mesolithic assemblages 356
Morphometric analysis of microliths 364
Sampling procedures 366
Results 366

CHAPTER 5: DISCUSSION AND CONCLUSIONS.
Discussion and conclusions 371

GAZETTEERS:
GUIDE TO USERS. 383
GAZETTEER 1: LONG BLADES. 386
GAZETTEER 2: BRUISED BLADES. 403
GAZETTEER 3: BLADE CORES. 408

BIBLIOGRAPHY. 419

LIST OF FIGURES

Fig. A	Butt types.	xxii
Fig. 1.1	The Location of Hengistbury.	3
Fig. 1.2	Hengistbury Upper Palaeolithic site location.	6
Fig. 1.3	Hengistbury Upper Palaeolithic site: Retouched tools.	17
Fig. 1.4	Hengistbury Upper Palaeolithic site: Retouched tools.	20
Fig. 1.5	Hengistbury Upper Palaeolithic site: Burins.	22
Fig. 1.6	Hengistbury Upper Palaeolithic site: Backed bladelets.	25
Fig. 1.7	Hengistbury Upper Palaeolithic Site: Tanged and shouldered points.	27
Fig. 2.1	The location of the nine major Long Blade assemblages, Southern Britain.	57
Fig. 2.2	The location of the Kennet Valley sites, Berkshire.	59
Fig. 2.3	Avington VI: Retouched tools.	67
Fig. 2.4	Avington VI: Bruised blades.	71
Fig. 2.5	Crown Acres: Refitting blades from two opposed platform core, and blade core with faceted platform.	77
Fig. 2.6	Crown Acres: Prismatic opposed platform blade core with refitting plunging blade.	79
Fig. 2.7	Crown Acres: Retouched tools.	81
Fig. 2.8	Crown Acres: Truncated blade and retouched pieces.	83
Fig. 2.9	The location of Springhead and other Lower Thames findspots.	86
Fig. 2.10	Sketch section across the Ebbsfleet River.	88
Fig. 2.11	Springhead, Lower Floor: Unretouched blade, burin and core.	90
Fig. 2.12	Springhead, Lower Floor: Microlith and retouched tools.	92
Fig. 2.13	Riverdale: Bruised blades.	102

Fig. 2.14	Distribution of Long Blade finds in the Gipping/Orwell Valley.	105
Fig. 2.15	Sproughton: Cores.	114
Fig. 2.16	Sproughton: Core abandoned in the early stages of reduction.	116
Fig. 2.17	Sproughton: Ventral surface features of blades.	118
Fig. 2.18	Sproughton: End-Scrapers.	121
Fig. 2.19	Sproughton: Burins.	124
Fig. 2.20	Sproughton: Tool distribution and refits.	127
Fig. 2.21	Sproughton: Retouched tools.	129
Fig. 2.22	Sproughton: Bruised flake.	132
Fig. 2.23	Sproughton: Blade core with refitting bruised artefacts.	134
Fig. 2.24	Sproughton: The two major flint concentrations and the artefact distributions.	136
Fig. 2.25	Sproughton: Experimental and archaeological hammerstones.	140
Fig. 2.26	Sproughton: Opposed platform blade core with refitting flakes and blades.	143
Fig. 2.27	Swaffham Prior: Site Location.	157
Fig. 2.28	Swaffham Prior: Horizontal and vertical distribution of artefacts.	159
Fig. 2.29	Swaffham Prior: Retouched tools.	163
Fig. 2.30	Swaffham Prior: Bruised blade and retouched tools.	166
Fig. 2.31	Titchwell: Unretouched blade, backed bladelet and cores.	181
Fig. 2.32	Titchwell: Retouched tools.	184
Fig. 2.33	Distribution of Southern British Long Blade findspots in relation to flint-bearing Upper Cretaceous Chalk.	206
Fig. 2.34	Distribution of Southern British Long Blade findspots.	207
Fig. 2.35	Distribution of Southern British Long Blade findspots in relation to major rivers.	209

Fig. 3.1	Distribution of Principal Bromme sites in Denmark.	215
Fig. 3.2	Bromme: End-scrapers.	221
Fig. 3.3	Bromme: Dihedral burins.	223
Fig. 3.4	Bromme: 'Bromme' tanged points.	226
Fig. 3.5	Distribution of Ahrensburgian Long Blade sites, North Germany.	236
Fig. 3.6	Stellmoor: Finds from the Ahrensburgian level and local surface finds.	246
Fig. 3.7	Distribution of Belloy-type long blade sites in the Somme valley, North France.	263
Fig. 3.8	Belloy-sur-Somme: Retouched tools and bruised blades.	268
Fig. 4.1	Hengistbury Head Mesolithic site location.	291
Fig. 4.2	Powell Mesolithic site: Vertical distribution of artefacts from three square metres.	300
Fig. 4.3	Powell Mesolithic site: Sandstone 'rubbers'.	302
Fig. 4.4	Powell Mesolithic site: Cores.	308
Fig. 4.5	Powell Mesolithic site: End-scrapers.	314
Fig. 4.6	Powell Mesolithic site: End-scrapers.	315
Fig. 4.7	Powell Mesolithic site: Distribution of end-scrapers.	317
Fig. 4.8	Powell Mesolithic site: Microdenticulates.	319
Fig. 4.9	Powell Mesolithic site: Distribution of microdenticulates.	323
Fig. 4.10	Powell Mesolithic site: Microliths.	325
Fig. 4.11	Powell Mesolithic site: Distribution of microliths.	328
Fig. 4.12	Powell Mesolithic site: Archaeological and experimental points with 'impact' fractures.	330
Fig. 4.13	Powell Mesolithic site: Retouched tools and Neolithic/Bronze Age artefacts.	334
Fig. 4.14	Powell Mesolithic site: Microliths and microburins.	338

Fig. 4.15	Powell Mesolithic site: Microliths with refits and other by-products of manufacture.	340
Fig. 4.16	Powell Mesolithic site: Vertical distribution of artefacts for two metre squares.	344
Fig. 4.17	Powell Mesolithic site: Horizontal distribution of refitted artefacts.	349
Fig. 4.18	Powell Mesolithic site: Model to show different stages in site formation.	353
Fig. 4.19	Distribution of Mesolithic sites in the Hengistbury area.	357
Fig. 4.20	Microlith A-type points: Winfrith Heath and Iwerne Minster.	360
Fig. 4.21	Length x Breadth measurement of microlith A-type points.	367

LIST OF TABLES

Table 1.1	Hengistbury Upper Palaeolithic type list of tools.	37
Table 2.1	Long Blades: Mean measurements and butt characteristics.	197
Table 2.2	Long Blades: Retouched tools and debitage.	201
Table 2.3	Long Blades: End-scrapers and burins.	203
Table 3.1	Bromme sites: Retouched tool counts.	219
Table 3.2	Bromme sites: Tanged point measurements.	228
Table 3.3	Bromme sites: Chronological data.	230
Table 3.4	Ahrensburgian and Zonhoven points: Mean measurements.	248
Table 3.5	Ahrensburgian Long Blade sites: Major retouched tool classes.	251
Table 4.1	Hengistbury Head Mesolithic type list of tools.	336
Table 4.2	Mean measurements of Mesolithic unretouched blade/lets.	370
Table 4.3	Mean measurements of A-type microliths.	369

LIST OF PLATES

Plate 1.1	Hengistbury Upper Palaeolithic Site: a. Refitted opposed platform blade core showing frontal crest; b. Plain and faceted butts from the same core.	15
Plate 1.2	Hengistbury Upper Palaeolithic Site: Core and refitting flake with engraved cortical surfaces.	31

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Abstract.

A Study of Selected British and European Flint Assemblages of Late Devensian and Early Flandrian Age.

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This dissertation is concerned with the analysis of selected blade assemblages from Late Devensian and Early Flandrian contexts in Southern Britain (c. 12,500 - 9,000 BP). The British sites studied are divided into three main groupings: Upper Palaeolithic, Long Blade, and Mesolithic, each of which contains material of a typologically and technologically distinct nature. Despite previous important studies in the British Upper Palaeolithic and Mesolithic, no major work until now has been undertaken on the third technology, that of the Long Blade sites, which seems to occupy a chronological position intermediate between the other two. The dissertation incorporates the first comprehensive description of material from Long Blade sites and contrasts it with the sets of artefacts from the other two groups. Comparative data from the Upper Palaeolithic and Mesolithic derive mainly from primary information recovered in two excavations directed by myself at Hengistbury Head between 1980-4.

The chapters consider the archaeological material in chronological order beginning in Chapter 1 with the Late Upper Palaeolithic assemblage from Hengistbury Head. Chapters 2 and 3 are devoted to the Long Blade assemblages from Britain and Northwestern Europe, whilst in the fourth chapter the Early Mesolithic material from Hengistbury and related sites in Southern Britain is considered. The fifth and last chapter is given over to discussion and final conclusions. Appended to the last chapter is a gazetteer of 159 specified Long Blade findspots in Southern Britain, the first time this material has ever been gathered together. Explanatory notes and a key are provided at the front of the Gazetteer.

In studying the artefacts I have laid particular emphasis on technology as well as typology, and in studying technology I have been particularly influenced by my own work on the experimental manufacture and use of implements. Given that my two excavated sites were very little disturbed, I have also been able to make major use of conjoining artefacts, not only as an aid to understanding the differing techniques of artefact manufacture, but also in interpreting the archaeology of the sites. Some use was also made of experimental taphonomy. These aspects of my work are referred to in the text, notably in Chapters 1 and 4.

Introduction.

In the sixty years since the publication of Dorothy Garrod's study of the British Upper Palaeolithic, the number of sites known or suspected to be of this period has increased more than five fold and has continued to expand even since the last major survey (Campbell 1977). Although much of the material derives from rockshelters or cave sites, attention has recently been drawn to the growing number of open-air locations where Upper Palaeolithic finds have been recorded (Jacobi 1980). These occur principally in the south east of the country, well away from the main outcrops of limestone with caves. If we consider just those British assemblages which various authors have referred to as Later Upper Palaeolithic (LUP), a recent estimate suggests that out of seventy-one mappable occurrences, thirty (42%) are from open-air sites (Jacobi ibid., 45).

To this total I now propose the addition of more than 60 findspots in Southern Britain, which I shall argue represent an advanced palaeolithic technology with long blades, probably a little later in date than those mentioned above. Even so, neither series has produced quantities of material remotely comparable with the estimated 10,000 findspots for the Mesolithic phases which succeed the Upper Palaeolithic in Britain (Jacobi 1975).

Many British 'findspots', whether Upper Palaeolithic, Mesolithic or the long blade, involve only single artefacts. Accordingly, my aim has been to select some of the richer site assemblages, to consider them from a technological point of view and suggest ways in which they may be related to one another. Implicit in this approach is the recognition of particular assemblage types in Southern Britain and to define their relationship with such groupings in NW Europe. In the case of sites which I myself have excavated I have also given particular attention to environmental and taphonomic considerations since these serve as an important basis for comparing sites which formed under different circumstances.

This thesis is therefore concerned with the analysis of blade

assemblages from Late Devensian and Early Flandrian contexts in Southern Britain, and a brief study of their relationships with contemporary material from North-Western Europe. The chosen flint industries cover a time span of some five thousand years, which corresponds to the last part of the Devensian glaciation and the very beginning of the postglacial (Flandrian) period in Britain.

The work began with, and arose principally out of, my study of two quite separate and contrasting flint assemblages, one of Upper Palaeolithic, the other of Mesolithic type. The material originated from adjacent sites excavated by me at Hengistbury Head, Dorset. As a result of the work carried out there, both of the assemblages are securely dated and quite certainly do not overlap chronologically. They comprise material which is typologically and technologically very distinct and in each case examples of a broadly related kind exist on the continental mainland. The Hengistbury Mesolithic site can also be linked to a number of flint assemblages of structurally similar type in Southern Britain and selected examples of these are reviewed in the text. Less easy to demonstrate, for a variety of reasons explained in due course, are likely parallels in lowland Britain for the Hengistbury Upper Palaeolithic assemblage. For the present, such similarities as there are seem to be restricted to isolated findspots identified by the presence of diagnostic tool-types.

In undertaking a wide search of museum and private collections for equivalents of the Hengistbury Upper Palaeolithic artefacts, my attention was drawn to the existence of a large body of unpublished flint material from numerous open-air locations in the south of the country. Interestingly, although clearly of pre-Neolithic type (see Chapter 2), the finds appeared to differ quite radically from those in the two Hengistbury collections. The new material typically consisted of numerous large blades (>12 cm), with a limited but fairly distinctive retouched tool component. For convenience I have simply used the term "long blade" to describe this material, whilst sites characterised by a high proportion of such finds are

referred to as "long blade sites". In contrast to the well-stratified material from Hengistbury, the long blades derive mainly from poorly documented contexts with little reliable stratigraphic information and hardly any absolute dates from the existing occurrences.

Despite the apparent shortcomings of the data, three relevant points soon emerged which were to have an important bearing on the problem involving the status of the long blade assemblages. First, details of the typology and basic technology of at least seven long blade assemblages were sufficiently similar to warrant identifying them, albeit tentatively, as a single broad assemblage type. Secondly, and most significantly, the retouched tools and debitage from the long blade locations displayed clear differences with the artefacts from the two Hengistbury assemblages. Finally, the flint tools from these sites, although not numerous, exhibited distinct parallels with certain well-dated assemblages in NW Europe which occurred on or near the Pleistocene/Holocene boundary. These points are further developed in the text and form the main basis of my argument for the existence of a separate "long-blade tradition" in S. Britain. Despite the absence of unequivocal local stratigraphic proof, I am satisfied, on the strength of the European evidence, that the bulk of this material will eventually be shown to date to the latest stages of the Devensian and probably continuing into the earliest phase of the Flandrian. Notwithstanding some possible temporal overlap with the latest Upper Palaeolithic (in N. Britain) and the earliest Mesolithic, it is further suggested that typologically and technologically the long blades occupy an intermediate position between the two types of assemblage as defined at Hengistbury, and thus merit an alternative description (e.g. 'Epi-Palaeolithic').

In presenting the case for the existence of an 'intermediate' industry based on long blades, I have relied heavily on typological and technological analyses to differentiate it from the two Hengistbury smaller blade groups. I have done so consciously and deliberately, while well aware

of potential criticism that this approach might side-step the issue of functional differences between contemporary flint assemblages and how these might affect the appearance of particular tool-kits. For example, might it not be possible that the long-blade sites simply represent functional variants of some otherwise homogeneous cultural grouping more usually represented by toolkits made on smaller blades? Thus, it could be argued that the long-blade locations merely represent special purpose sites, whilst a wider variety of tasks requiring a different set of flint equipment was employed at sites like those of Hengistbury.

Objections of this kind, however, simply do not tally with well-known precedents from elsewhere in NW Europe, where it can be shown that predictable and highly standardised approaches were regularly adopted in the production of late glacial and early postglacial blade industries. Of pivotal importance to these arguments are examples of blade debitage from late glacial Magdalenian sites in France and the Benelux countries. Here, despite gross differences in raw material morphology and usage e.g. long blades at Etiolles, Kanne and Orp, smaller blades at Pincevent, Verberie and Sweikhuisen, the basic technique of blade core preparation remains exactly the same from site to site, irrespective of raw material size. Thus it is perfectly possible to trace the Magdalenian origins of this material from distinct technical attributes of the waste products, rather than being misled by the blade size into supposing other affinities. By the same token, quite different techniques, owing little or nothing to the Magdalenian, can be seen in the debitage of terminal Pleistocene sites in the Somme basin, some of which compare quite closely to long blade examples in Southern Britain.

Clearly, this is of significance and suggests to me that the identification of technological and 'stylistic' traits in the debitage (e.g. methods of preforming cores, platform preparation, reduction strategies etc.) as well as the more normal typological ones, is of critical diagnostic value when comparing stone artefact assemblages. It is

especially useful when characterising material which does not include many retouched specimens and lacks non-lithic artefacts, as is the case for the majority of long blade occurrences. I believe that currently the study of the technology (as opposed to the typology) of flint artefacts is quite wrongly undervalued, and I shall be happy if my research for this thesis includes contributions which help to redress the balance. As for the matter of functional variation, it will require an entirely separate research operation involving many years spent on the microwear study of those assemblages which are in suitable condition, before definitive pronouncements can be made. I have not been able even to begin such an operation here.

It is for these reasons that much space has been devoted to documenting the techniques of core preparation and blank production in the long blade and Hengistbury assemblages. Stylistic traits of potential significance are those exhibited in the preparation of the cores and, in particular, of their striking platforms. The descriptions employed are those based on Bordes (1961) as adapted for describing blade assemblages by Tixier (1980); see 'Notes for the Reader'. I have also attempted to characterise where possible the types of hammers used, by reference to certain stigmata on the artefacts' ventral surface. This is mainly new information, which I regard as being of useful supplementary technological nature, to aid in the characterisation of each assemblage. In setting it out, I have been guided by my own experimental knapping experience and that of colleagues, as well as by study of the archaeological material.

The classification of retouched tools is based on the typology developed by D. de Sonneville-Bordes and J. Perrot (1954, 1955, 1956a & b). I have found it necessary to make various additions to the implements which appear in their type-list in the middle chapters (cf. Taute 1968; Commont 1907). For the final section on the Mesolithic, I have generally relied upon the terms devised by J.G.D. Clark (1934a). In my own view, typologies best serve as basic vocabularies for providing simple, first-level

descriptions of a tool assemblage. To this end certain tool categories (e.g. end-scrapers) have been greatly condensed from a multiplicity of possible sub-types into their simple, principal components: end-scrapers on blades versus those on flakes.

In order to lighten the burden on the reader and for greater ease of comparison, I have presented my data on a site by site basis. In doing so, I tried to keep in mind the needs of those who might wish to extract specific as well as general information from this thesis. I have chosen to arrange my three sets of sites in what I believe to be their chronological order, but this should not be seen as an attempt to beg the question of chronology. As for myself, I am sufficiently impressed by the cumulative dating evidence discussed later (while admitting its poor quality) from both Europe and Britain, to be convinced that the 'long blade' material does indeed lie between the Later Upper Palaeolithic and the Mesolithic, as the latter are represented at Hengistbury Head. I have also argued that their role is intermediate in a technological sense. While it is true the Hengistbury Head sites lie a mere 650 metres apart, that is essentially a coincidence. It is quite clear that they belong to different periods and different sets of environmental circumstances. I have therefore made them my opening and closing chapters. By allowing the three bodies of material studied, LUP, Long Blades and Mesolithic, to occupy essentially self contained sections of the thesis, I hope not to have clouded the issue for any colleagues who prefer to keep the chronological options open for the time being. There were many possible ways of presenting the results of my research, and this is the one I have chosen. Others might have proceeded differently.

All of the assemblages described come from open-air locations in Southern Britain. Two of them, the Upper Palaeolithic and Mesolithic sites at Hengistbury Head in Dorset, comprise material from excavations directed by myself over five successive seasons from 1980-1984. Four of the nine long blade assemblages examined come from excavations made since the 1950s,

(Avington VI, Berkshire; Swaffham Prior, Cambridgeshire; Sproughton and Mildenhall, Suffolk), whilst the rest derive from surface collections where the recovery techniques are known to have been at least reasonably good.

The geographical area covered in this study consists of most of lowland Britain, south of an imaginary boundary drawn from the Severn Estuary to the Wash. Geologically, this area is bounded along its northern edge by Cretaceous rocks, including the important flint bearing chalklands stretching from Wessex to East Anglia. In practical terms, the majority of sites dealt with here are closely related to this Cretaceous belt and relatively few open-air finds have yet been recovered outside this area, for example in the south-western counties of Somerset, Devon and Cornwall. Not included are the extensive chalk areas north of the Wash in Lincolnshire and South Yorkshire for which a number of Late Devensian and Early Flandrian findspots are known: only because of time constraints were these reluctantly omitted from the sample, but it is to be hoped that some other research worker will in due course make a comparable study of them, along with any other finds north of my boundary.

For much of the Late Devensian/Early Flandrian, including all of the period we are concerned with here, Britain was joined to the European mainland by a substantial landbridge stretching from N. France to S. Scandinavia (Clark 1975; Jelgersma 1961). To what degree changes in the British archaeological record were affected or precipitated by contacts of a European nature is discussed in this thesis for all but the Mesolithic material; such links during the Mesolithic have already been treated in some detail elsewhere (e.g. Jacobi 1976). Amongst the European assemblages discussed at some length are those of the Danish Bromme, the Ahrensburgian of Germany and the Low Countries, and selected N. French assemblages. British analogues for these industries are considered in most detail with respect to the Long Blade group, though a brief consideration is also given of the relationship between large tanged points of British type and those of a broadly contemporary nature in the Danish Bromme. Inevitably, the

constraints of time and money that affect all doctoral research students have prevented me from studying the continental material as fully as I would have wished.

In order to facilitate comparison between the different groups of sites, each flint assemblage has been set out in the following way:

1 - Site location.
2 - Stratigraphic/sedimentary context.
3 - Raw material.
4 - Flint debitage.
5 - Retouched tool assemblage.

Where additional information exists, in the case of excavated material, all relevant details of site excavation technique, taphonomic processes, and dating are supplied. These are anything but irrelevant; indeed, they are of the greatest importance, and in the case of Hengistbury I have given them special prominence because they help illustrate the level of information which can be obtained with the aid of modern excavation techniques and proper laboratory back-up. Without such information how is one ever to make any serious comparison with the surviving lithic assemblages from sites formed in different areas under locally differing circumstances? Indeed, how should one even compare the results obtained by different workers at the same individual site in research campaigns separated by a decade or two? Consideration of such factors also highlights some of the difficulties and shortcomings of the long blade data which may have arisen from circumstances prevailing at the time when the material was recovered.

To this extent, each chapter is designed to be self-contained and can be read without reference to the others, though I have sought to maintain a thread between them. At the end of every chapter the assemblages are summarized and discussed.

Notes to the Reader.

This section is not designed to be a comprehensive glossary, but merely a guide to more general usage of terms in this thesis. Various technical terms less frequently employed are defined elsewhere within the text.

Blade : 'a flake whose length is twice or more than twice its width' (Bordes 1961), sometimes with scars of previous parallel removals on its dorsal surface and with more or less parallel edges.

Bladelet: Defined as above, but less than 5 cm in overall length (following Tixier 1963). To make this distinction between blades and bladelets in S. British industries is perhaps somewhat arbitrary, since there is a large overlap between types. However, it is a useful method of describing artefacts in assemblages with a significant micro- or small blade component.

Blade/let : Abbreviation to mean 'blade or bladelet'.

Break refit : Fragments of a single broken artefact, re-joined together.

Butt End Features : Attributes visible on the ventral surface at the proximal end of an artefact.

Attribute 1 - Prominent point and cone of percussion, with pronounced conchoidal fracture marks visible on the cone: there are sometimes additional clear incipient cones on the butt. These features represent a 'hard hammer' flaking technique: cf

Knowles 1953; Newcomer 1975; Ohnuma & Bergman 1982).

Attribute 2 - Diffuse bulb with a 'lip' between the bulb and butt, and a general absence of a distinct cone of percussion. Indicative of a 'soft hammer' flaking mode, (cf Newcomer 1975; Ohnuma & Bergman 1982).

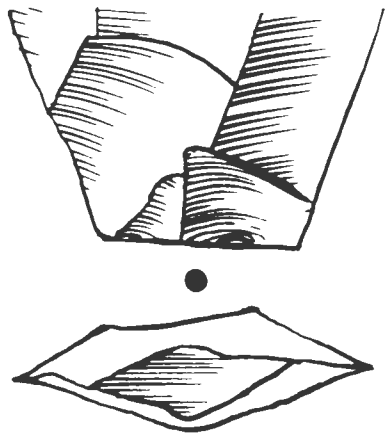
Attribute 3 - Unclassified/unidentifiable.

Attributes 4 & 5 - Broad, somewhat diffuse cone of percussion with (4) or without (5) a large bulbar scar. Pronounced radial fissures. Incipient cones sometimes visible on butt end. This has tentatively been identified with a 'soft stone hammer' flaking technique (see fig.2.17).

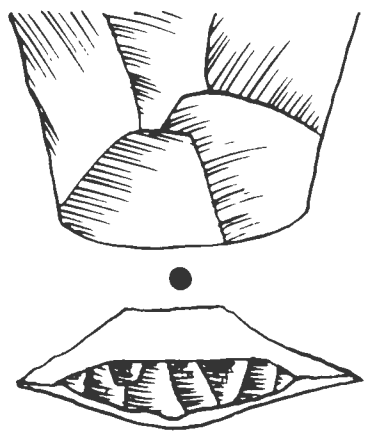
Butt Types : See Figure A. 1- plain; 2- dihedral; 3- faceted; 4- linear; 5- cortical; and 6- other.

Flake : A general term for a flint or other stone waste fragment detached by pressure or percussive force from a larger block. Use of this term assumes neither a particular shape, size or pre-determined function (cf. Tixier et al. 1980).

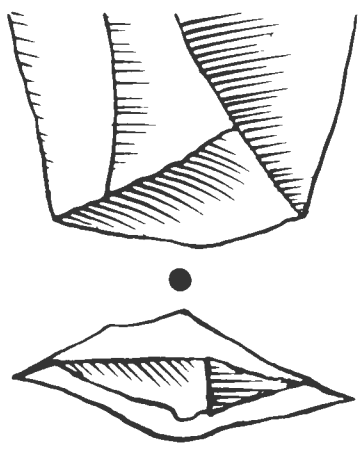
Flexion Break : When a flint is flexed or "bent" one surface is subjected to tensile stress, the other to compressive stress. The break is initiated at the surface under tensile stress. It can be caused in a number of ways e.g. by a percussive blow, rebound shock (from an anvil) or indirectly in a knapping accident where the break occurs some way from the initial point of impact.



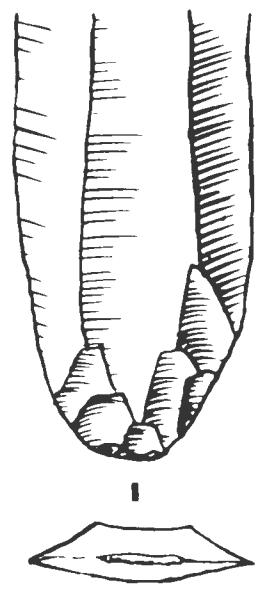
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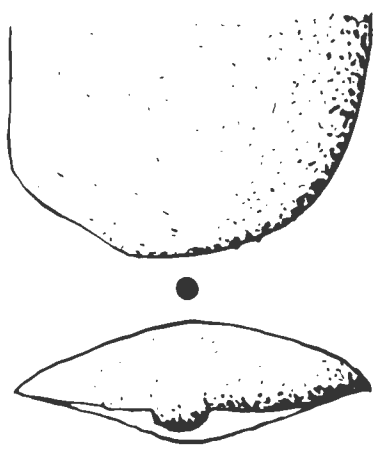
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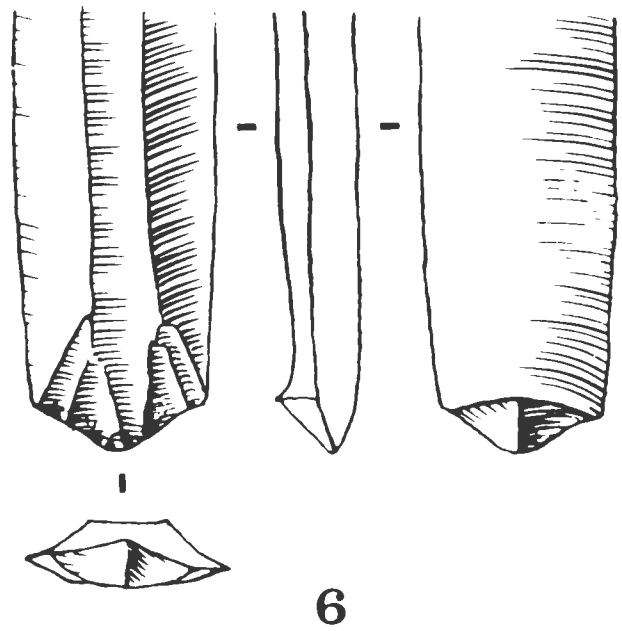
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4



5



6

Figure A Butt Types: 1. Plain; 2. Dihedral; 3. Faceted; 4. Linear; 5. Cortical; 6. Other, e.g. "en éperon".

Intentional Break : A deliberate percussion-induced fracture, which generally produces two substantial flake or blade fragments. The break surfaces are usually transverse to the long axis of the blank, and have no pronounced concavity. Such pieces may be used unmodified or as blanks on which to make other tools e.g. Burins (Bergman et al. 1983).

"languette" fracture : Accidental flexional break, producing a pronounced 'lip' or negative lip on the break edge (cf. Roche & Tixier 1982, fig. 1).

Platform abrasion : Preparation technique involving minor flaking on the core's front, at the intersection between the platform and the main flaking face, to remove overhangs left by previous blade and bladelet removals (Karlin & Newcomer 1982).

'Siret' (accident) : Although this artefact was originally described by L. Siret (1933) as a type of burin, F. Bordes (1961) observed this to be no more than a common flaking accident. As a flake is detached from the core it sometimes fractures down the main axis of percussion into two more or less equal portions. This type of accident most commonly occurs to flakes detached with a hard hammer (Tixier et al. 1980, fig. 45).

Spontaneous Retouch : Term created by M.H. Newcomer (1976) to describe the accidental removal of small chips in the fraction of a second when a flake is detached from the core. "The force which detached the flake pulls the proximal end of the flake away from the core, while the knapper's hand, foot or thigh acts as a pivot forcing the other end of the flake against the

core. This pressure is often strong enough to detach a row of tiny chips or "spontaneous retouch" (op cit., 62).

Technological refit : Two or more artefacts which can be fitted together by ventral to dorsal surface contact.

A note on the presentation of radiocarbon dates in this thesis

In general, dates are expressed in radiocarbon years before present (BP), relative to AD. 1950. These are presented together with the laboratory number and standard deviation. Unless originally published otherwise, the convention BP is used, as opposed bp. This is employed purely for convenience and does not imply the dates are in any sense 'calibrated'. All the dates are based on the Libby half-life for C14 of 5570 years (Gillespie et al. 1984).

Chapter 1.

The Upper Palaeolithic Assemblage from Hengistbury Head.

Introduction.

The Upper Palaeolithic open site assemblage from Hengistbury Head (Figure 1.1; Table 1.1) is so far the single largest example of its kind in Southern Britain. Its uniqueness is emphasised by the fact that many of the other so-called 'sites' are represented only by single findspots often from unknown or poorly documented contexts. Expressed in percentage terms, the assemblage from Hengistbury comprises more than 90% of all known or suspected artefacts of Later Upper Palaeolithic type from open-air locations in southern Britain. It is for this reason that I have sought to concentrate on describing the Hengistbury material in detail, making special reference to technological and typological characteristics which help distinguish it from the Late Devensian and Early Flandrian flint technologies to be described in the following chapters.

History of Research.

Large numbers of flint implements were collected from the south-eastern end of Hengistbury in the years leading up to the First World War. A local antiquarian Mr. H. Druitt employed men to collect for him and he accumulated thousands of flints in this way (Druitt MSS). Local tradition suggests that this coincided with major ploughing of the headland in anticipation of plans to build a 18-hole golf-course (A. White pers. comm.) However, no evidence of this kind can be found today either in soil profiles (e.g. sediment structures), or in contemporary archives and it is thought that, if ploughing did occur, it was

mainly restricted to the lower areas of the headland. Plans to turn Hengistbury into a golf-course eventually foundered in 1912 before the whole headland was sold a few years later to the Selfridge family (Cunliffe 1978).

Amongst the implements recovered by Druitt's men were artefacts recognised as being of palaeolithic type by Mr. J.B. Calkin, a Bournemouth teacher and distinguished amateur archaeologist. Working from Druitt's extensive field notes, Calkin was able to identify the major collecting areas on top of the headland and mounted limited excavation work in the 1950s (Mace 1959).

In 1957, Angela Mace, née Thomas, a young Cambridge archaeology graduate, carried out the first systematic investigation of the site. She had noted in Druitt's field diaries that the most productive finds areas were on "the north side of the footpath as the south side was not ploughed" (Mace, ibid., 235). Druitt may have been referring to localised clearance of vegetation since, as stated above, there is no direct evidence for widespread use of the plough on the headland. On the basis of trial trenching Mace was able to establish that the footpath referred to in the diary was the footpath which today runs along the cliff-edge. This was followed up by a short season of fieldwork in 1957, in which 85 square yards of the site were excavated. Efforts were concentrated along the narrow strip of land between the path and the cliff-edge. From her excavations she was able to conclude that this part of the headland consisted of "a small, undisturbed area which was occupied by a late Upper Palaeolithic people" (ibid. , 254). Shortly after the publication of her excellent report in 1959 Proceedings of the Prehistoric Society, Mace sadly gave up archaeology altogether

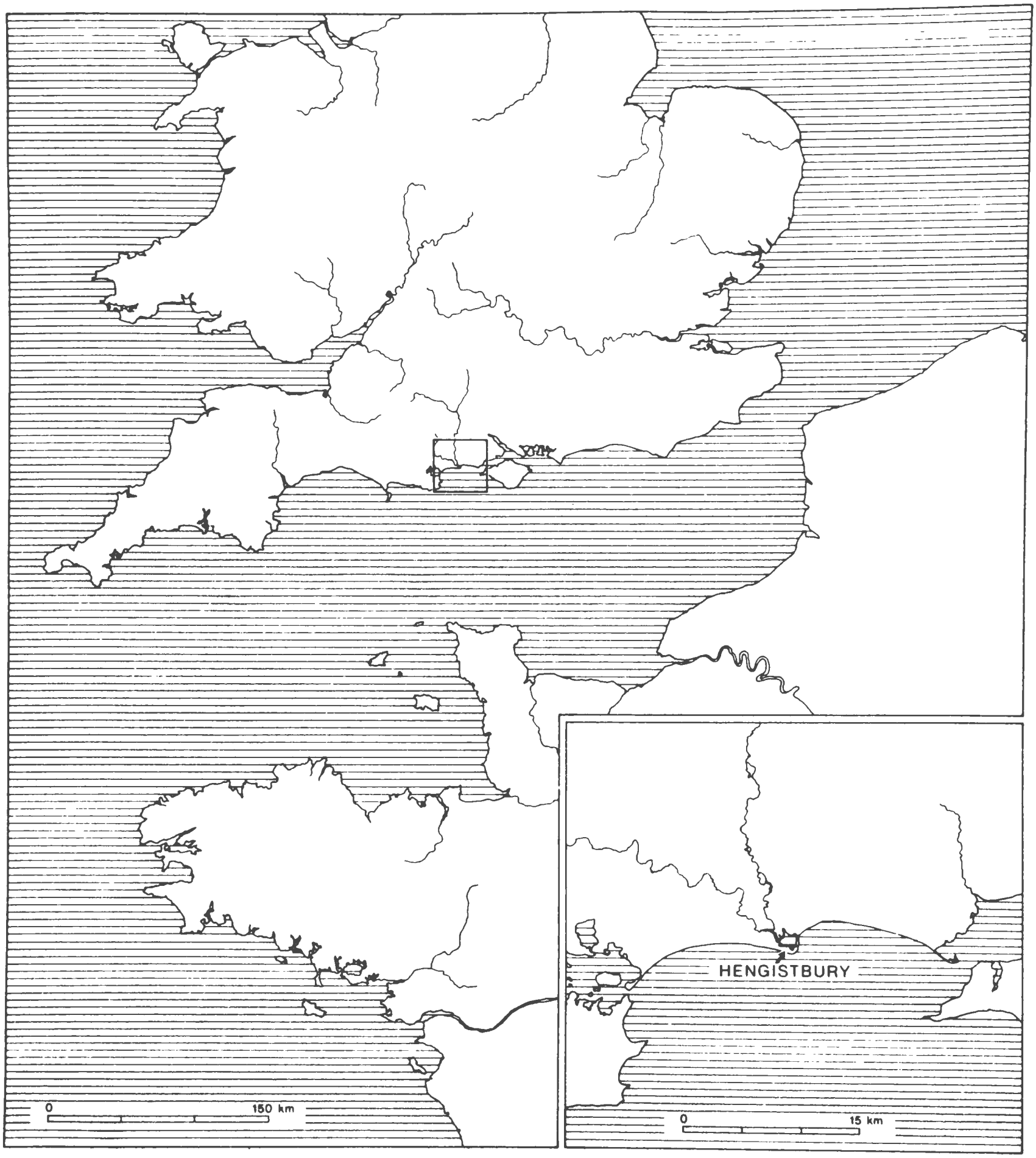


Figure 1.1 The Location of Hengistbury.

and ended what would otherwise certainly have been an outstanding career.

It was not until 1968 that the Hengistbury site again came to the attention of archaeologists. In that year John Campbell, then researching for his doctoral thesis at Oxford University, undertook a programme of re-investigating previously known Upper Palaeolithic sites in Britain (Campbell 1977, 35). On the advice of Mace (in litt.) his excavations also focussed on areas adjacent to the cliff-edge. In all, over 136 sq. metres were examined in work which spanned three field seasons between April-May and June-July 1968, and April 1969. In his report he claimed to have uncovered two discrete occupation levels, one Mesolithic, the other Upper Palaeolithic (Campbell, op. cit.). This was directly contrary to the findings of Mace. Although the claims were subsequently disproved by my own work (see below), at the time they were regarded as one of the few instances in Britain where Mesolithic and Upper Palaeolithic material occurred in a clear stratigraphic relationship at the same site. As we shall see, there is Mesolithic material at Hengistbury, but the site is some 650 metres away from the Upper Palaeolithic one (see Chapter 4, Figure 4.1).

There matters would have rested had not Bournemouth Corporation sponsored a feasibility study of archaeological sites on Hengistbury Head in the Spring of 1980 (Barton and Collcutt 1980). The report was occasioned by the continuing threat to the southern cliff-edge by cliff-falls and trampling damage. Both of these factors were actively destroying considerable areas of the Upper Palaeolithic site. Rescue excavations of the cliff-edge and adjacent areas were begun in 1981 by the writer and continued over four seasons until 1984.

The results of this work are presented below.

Site Location.

The Upper Palaeolithic site is located on the exposed south-eastern corner of the headland overlooking the English Channel (Figure 1.2). It lies near the base of a dry, shallow depression which runs out to the cliff-edge at 11 m O.D. The U-shaped depression, which is some 100-110 m across, appears to be the head of a stream valley. No permanent stream now exists, but it is noticeable when it rains that surface run-off drains down the centre of the depression, at its lowest point, a few metres to the east of the main Upper Palaeolithic area.

From its own elevated position the site affords excellent views over the English Channel, from Hurst Castle in the east to Durlston Head in the west, a surface area of approximately 800 sq km. The view from the highest point on the headland (Warren Hill) is even more spectacular and effectively doubles the area which can be surveyed. The sides of the shallow valley, which rise to about 4 m on either side of the depression, provide good protection from the prevailing south-westerly winds.

Throughout much of the Late Glacial, with sea-levels only rising slowly from a Devensian minimum of -110 m (Evans 1975), a dryland connection existed between the British peninsula and the continental mainland. It has been suggested that during this period Hengistbury overlooked an important 'Solent River' to the south (Reid 1898). This is likely to have been partially bounded on one side by a broken line of chalky upland which once linked the Isle of Wight to Purbeck (Melville & Freshney 1982). Thus, in contrast to its modern situation, the Upper Palaeolithic site was essentially an inland location and

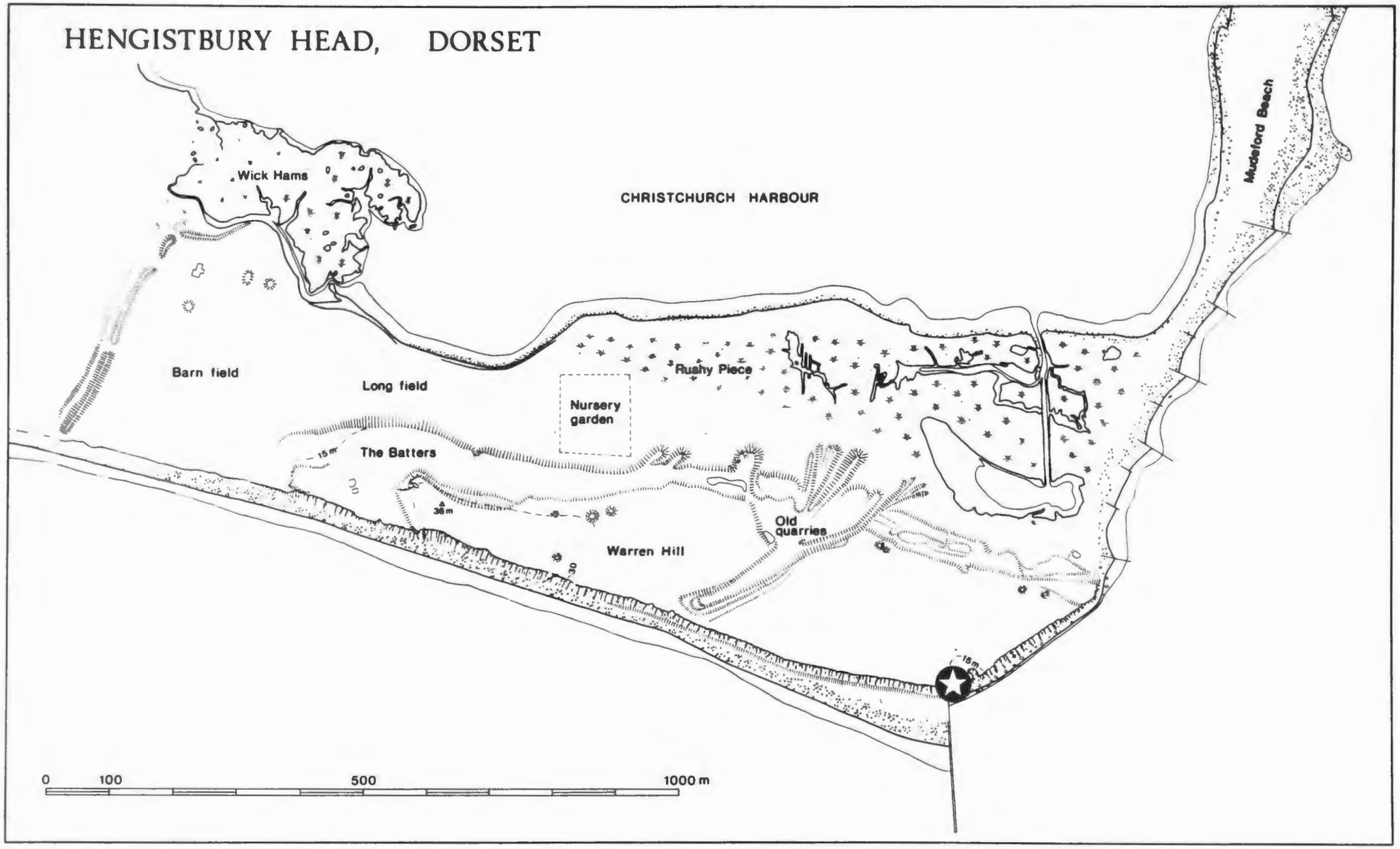


Figure 1.2 Hengistbury Head Upper Palaeolithic site location.

a useful point from which to monitor the dry Channel Plain.

Geological Background.

The sediments of the headland are treated in greater detail in Chapter 4. Like the Mesolithic site, to be described later, the Upper Palaeolithic site occurs in superficial windblown deposits (S. Collcutt pers. comm.). These deposits overlie Pleistocene terrace gravels which in turn are stratified above Tertiary sediments. The windblown sands are about a metre thick in the area of the Upper Palaeolithic site, which lies near the base of the dry stream valley depression.

Sedimentary Context.

The pedogenic aspects of the archaeological sediments have been studied by Dr. Richard McPhail of the Institute of Archaeology, London University. The following brief account is based largely upon his preliminary results, which will be published in full in the final site monograph (McPhail in prep.).

The Upper Palaeolithic artefacts are located in windblown sands which ultimately derive from parent material of the Bracklesham Beds Series. No stratification is apparent in the sands, but they are marked by the characteristic horizons of a gley-podzol. The finds are concentrated mainly in the lower Ea and Upper Bh horizons of the podzol.

Despite the fact that later mixing and Holocene soil development have obscured many of their features, the sands have not been visibly affected by mass movements or cryoturbation. Elsewhere on the headland there is good evidence that earlier soil fabrics associated with Zones I/II were deeply buried and thus survived the intense cold conditions of

Zone III. Likewise it seems the artefacts at the Upper Palaeolithic site were protected by a deep enough cover of sands to escape reworking in Zone III.

The artefacts are relatively concentrated with most of them occurring in a band 20-30 cm thick. Contrary to Campbell, we could find no evidence whatsoever of two discrete artefact levels in our excavations; as reported later, the evidence of conjoining flint artefacts in due course confirmed this view. The only recognisable differences noted was a slight trend towards an increase in the weight of the artefacts by depth.

The Excavations.

Actual fieldwork at the Upper Palaeolithic site extended over four seasons from 1981-84, with an average period of three weeks per year spent on site. Unlike the previous excavations of Mace and Campbell, sufficient funding was available to employ between 15-20 young professional volunteers and archaeology students, mainly drawn from British and overseas universities. The work, like that at the Mesolithic site described later, was sponsored by the Donald Baden-Powell Quaternary Research Centre, University of Oxford, and was carried out with the active cooperation of Bournemouth Corporation, who provided both funds and equipment. Other contributing funding bodies are listed in Chapter 4.

During the course of four seasons' work at the site, a total of some 96 sq m. were examined in detail. In addition, a major survey of the deposits in the eastern depression was undertaken in 1983. The results of the survey will not be formally published but are available for consultation purposes at Oxford. In the early seasons, most of the excavation work was concentrated in areas undergoing active damage either by

cliff-erosion or by down-cutting of the coastal footpath. In effect, this was generally confined to the narrow strip of land between the cliff and the coastal path, an area already partially examined by Mace and Campbell. It was only in the final season (1984), when fieldwork was directed north of the footpath, to explore the inland extent of the site, that areas not immediately under threat were investigated.

The original aims of the Project were threefold:

1) To rescue archaeological material in those areas near the cliff undergoing severest erosion.
2) To re-evaluate the previous interpretations of the site, which were at odds with one another.
3) To obtain suitable evidence for dating the site.

All of these aims were accomplished to a high measure of satisfaction. It is of particular importance to note that the parts of the site most seriously threatened by erosion were examined leaving substantial areas inland unexcavated for future research.

Excavation Techniques.

A three-dimensional recording scheme was used, with all artefacts >1 cm receiving individual X, Y and Z coordinates relative to each metre square. These details were entered on finds cards which accompanied each artefact in separate re-sealable plastic bags. For a fuller description of the techniques used see Chapter 4. Additional to the details recorded on the finds cards, the position of each artefact (>1 cm) was carefully plotted on millimetred graph paper. A different colour code was also used to distinguish burnt from unburnt material, as well as flint from non-flint artefacts. This provided a valuable extra cross-checking system for all

positional data and at the same time gave an immediate visual plot of the horizontal distribution of finds.

In the first season all sediments were systematically dry-screened using 3.17 mm (1/8 inch) wire mesh sieves; in all subsequent seasons finer 2 mm screen were employed. Where dry-sieving proved difficult, particularly in the clayier sediments towards the base of the profile, a wet-sieving method was used.

Close vertical control was maintained throughout the excavation by working in horizontal 'spits' of 2 cm and calibrating them against individual depth readings of the artefacts. All levelling was by means of an AGA 300 laser, powered by an ordinary 12 volt car battery. This free standing device with a rotating head emits a pencil beam of light which is visible over the whole area of the site. The light beam is set at a pre-arranged height (in this case 50 cm above the permanent datum) and readings taken by a single operator using a graduated ranging staff and sighting screen.

The Artefact Assemblage.

Raw Materials.

The flaked stone material consists entirely of flint, some of which is of a non-local kind. Other unflaked items which were presumably brought to the site include portions of a flat sandstone slab as well as 7 broken cobbles of a coarser grade sandstone. The cobbles come from the northern area of the excavation and all appear to be burnt (Huxtable pers. comm.). Also scattered in the archaeological horizon are fragments of red ochre.

The local flint on the headland is derived mainly from cryoturbated Pleistocene gravels and occurs in the form of small cobbles with surface chattering. Refitting of cores from

the site has shown that several were made on blocks weighing more than two kilograms. These are clearly distinguishable from the local flint by their size and well developed cortex. On the present evidence it would appear that at least two sources of raw material were exploited: 1) the local derived flint, and 2) the larger nodules which probably come directly from the chalk or deposits marginal to it. The closest source of the latter is a Cretaceous Chalk escarpment lying about 12 km south-east of the site on what is now the Isle of Wight.

A careful study of Dorset flint-types has so far failed to reveal the source of the exogenous flint (2). Macroscopically, this good quality flint does not compare with any that I have examined from chalk outcrops on the Isle of Wight, Purbeck or inland from Tarrant Rushton. A provenance further east, possibly from secondary surface deposits on the eastern edge of the Hampshire basin may be the most likely source (A. Gale pers. comm.). Microscopic analysis of the flint demonstrated no significant fossil content in the archaeological samples which might have helped localise the material (B. Tocher pers. comm.). Similarly, the flint from the modern Dorset outcrops also revealed an absence of microfossils.

Sandstones from the Upper Palaeolithic site are currently being analysed by Mr. R. Sanderson, of the Institute of Geological Sciences. From preliminary results it would seem they are all of a type which occurs locally in the Hampshire Basin. Dr. C. Salter of the Department of Metallurgy at Oxford University has studied the 'ochre' fragments. They are comparable to those from Tertiary deposits on the headland, and may relate more precisely to slightly richer iron-bearing types near the present transverse quarry approximately 300 m to the west of the site (Salter pers. comm.).

Flint Debitage.

The following account of the debitage and retouched tools is based on analyses which are still in the process of completion. Final results and full artefact totals will be presented in the detailed site monograph planned for 1987 (Barton in prep.). The debitage includes large numbers of flakes, blades and bladelets, as well as small chips. There are also well over 60 cores from the three excavations.

Blades and bladelets (for definition see 'Notes to the Reader') form a significantly high proportion of all blanks recovered from the site. Given the abundance of retouched tools made on blade/let supports this feature is certainly to be expected. The most numerous tool in the whole assemblage is the backed blade/let, and large scale production of these implements seems to be reflected in the close matching size of both the unretouched blanks and the backed elements. The mean length of blanks is 5.93$\pm$3.35 cm (n=105), whilst the backed pieces are on average 5.23$\pm$0.15 cm long (n=25).

Blade butts are generally plain. The small sample of blade/lets so far analysed (n=96) indicates that 72% are plain or punctiform (the latter comprising slightly over 5%), 16% faceted, with the rest made up of linear (7%), dihedral (4%) and cortical (1%) forms. Many of the plain butts are small and narrow (mean length= 0.72$\pm$0.423 cm; mean width = 0.26$\pm$0.192 cm), indicating that the percussive blow fell close to the edge of the core platform. Bulbs of percussion are broad, but generally diffuse and there is frequently a lip between the butt and ventral surface; these features suggest a soft hammer flaking mode (Newcomer 1975; Ohnuma & Bergman 1982). Recent experiments by the writer and Dr. C. Bergman, however, have shown that blanks such as these may not have been removed with

organic hammers (eg. antler or wood) but rather soft stone hammers. Although many of the blades show signs of platform abrasion this method of removing overhangs is generally absent on pieces with large faceted butts.

Cores from the assemblage are mostly of two opposed platform type. They range in size from much reduced forms 4.5 cm long to larger specimens of 10 cm and above. The mean dimensions of blade cores (from the Mace area only) shows an average length and breadth of 6.4±1.01 cm and 4.0±1.04 cm (n=26). It should be noted that most of the backed pieces were also recovered in the Mace area. Many of the cores display one major flaking face with the dorsal side either left fully or partially cortical (12), or with some flat flaking. Eight of the 26 cores show signs of cresting along the back or sides of the nodule. The core platforms generally display plain surfaces (19) with relatively few examples of faceting at one or both ends of the core.

From my extensive refitting of cores from all three excavations (some 26 examples have conjoining waste, sometimes several dozen items per core), it is possible to observe that the flaking method employed by the Upper Palaeolithic flintknappers followed a more or less consistent pattern. One or sometimes two edges of a nodule were crested before blades were detached from a single platform (Plate 1.1a). A second platform opposite the main one was frequently created later in the knapping sequence to correct accidents of debitage, caused by hinge fractures or flaws in the flint. In their final state of discard most of the cores display two opposed platforms. The raw material was usually prepared to produce a single core but in one case a nodule was broken up to produce two separate blade cores.

In general, the removal of the initial crested blade was followed by the detachment of larger blades, some with cortical surfaces. During debitage it was sometimes necessary to modify the platform angle; a correct flaking angle is essential to produce regular blades. The occasional, expedient use of platform faceting for this purpose is illustrated by the fact that blades with plain and faceted butts have been refitted to the same end of an opposed platform core (Plate 1.1b). When the knapper was unable to correct faults on the platform by faceting, a core tablet was removed; many core tablets have been refitted to blade cores from the site.

Retouched Tools.

All of the material presented here comes from the excavations of 1957 (Mace 1959), 1968-1969 (Campbell 1977) and the writer's own excavations of 1981-1985 (Barton & Bergman 1982, 1983, 1985; Bergman et al. 1983; Barton & Huxtable 1983). As stated above, the results are of an interim nature since work is still in progress. While most of the retouched tools have at this stage been accounted for, it is highly likely that some artefact classes (eg. backed blades and bladelets) will be augmented as the analysis of the data is completed.

The various tool types have been roughly grouped according to the type-list created by de Sonneville-Bordes and Perrot (1954; 1955; 1956 a & b.) for describing Upper Palaeolithic tools. Of 504 retouched tools recovered, the main classes consist of 123 end-scrapers, 66 burins and 230 backed blades and bladelets. For a full list of the tools see Table 1.1. All of the tools have been analysed and described by myself, except the burins, which were described by Dr. C. Bergman.

A



B



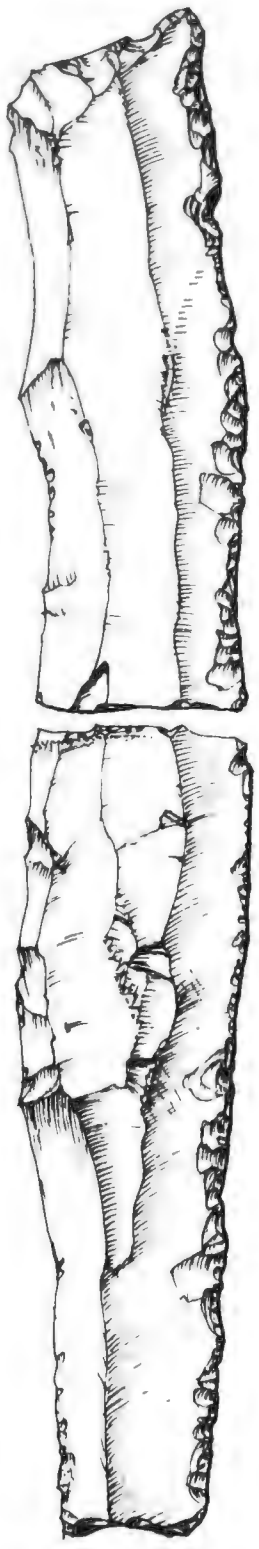
Plate 1.1 a. Refitted opposed platform blade core showing frontal crest, right; b. Plain and faceted butts from one end of the same core.

End-Scrapers. (Figure 1.3, 2-5).

Of the 123 scrapers from the site on Hengistbury Head, 72 are made on flakes and 29 on blades; the remaining 22 examples are on unidentifiable fragments. Fifteen tools are made on crested pieces or core tablets. There are nine scrapers made on retouched blanks and five of these exhibit retouch on both lateral edges. A single double end-scraper has been recorded from the excavated area while one other is known from the surface collection (Mace 1959: figure 10).

The scrapers are generally short, with a mean length of 4.43 cm and standard deviation of ±1.36 cm. The average width and thickness of these pieces is 2.88 cm and 0.91 cm, with standard deviations of 0.83 and 0.32 cm, respectively. A certain degree of consistency is involved in the selection of blanks used to make scrapers. Many of the flakes are partially cortical (68%) and curved in profile. Taken as a whole, the blanks selected for scraper manufacture seem to come from the beginning of the core reduction sequence. This view is supported in one case where three scrapers have been refitted to the same core, which was abandoned in an early stage of reduction. All of the scrapers have varying amounts of cortex and clearly represent the first removals from the core. One tool from this block has about 30% of its original surface area removed by retouch leaving an abrupt scraper edge. This tool was presumably sharpened and discarded as the edge angle became unsuitable for use.

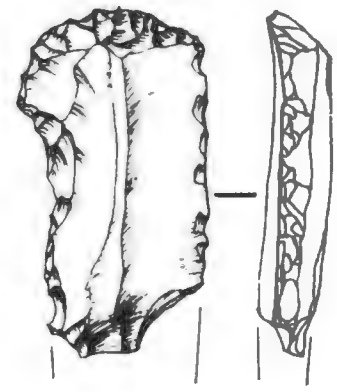
The scraper edge normally occurs at the distal end, but in 11% of the tools it is proximal. The type of retouch used to form the edge is almost always direct and in inclination is semi-abrupt (see Tixier et al. 1980: 89). On some tools the removals forming the edge have a lamellar (bladelet-like)



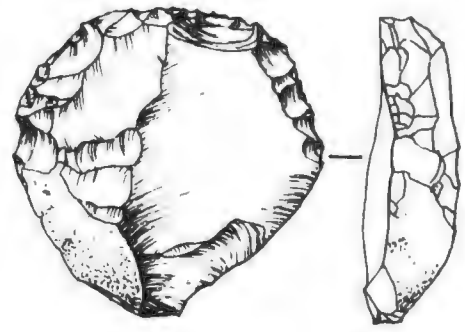
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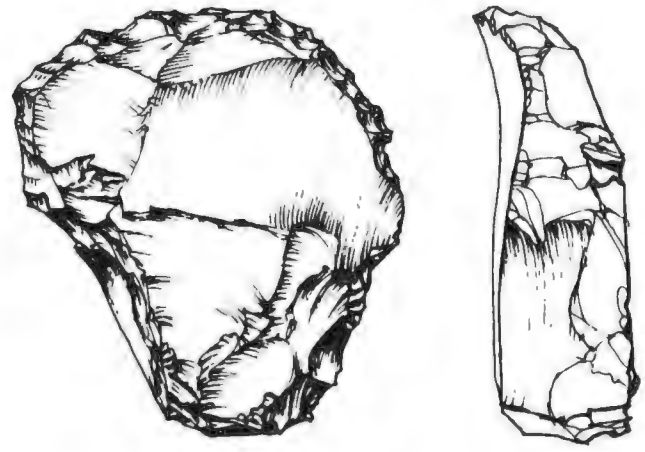
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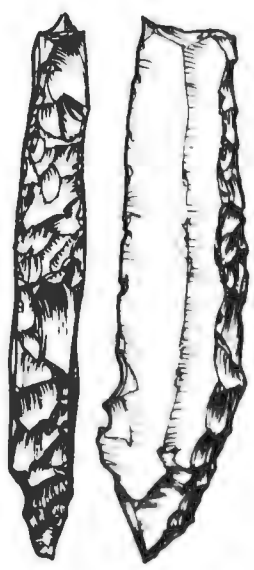
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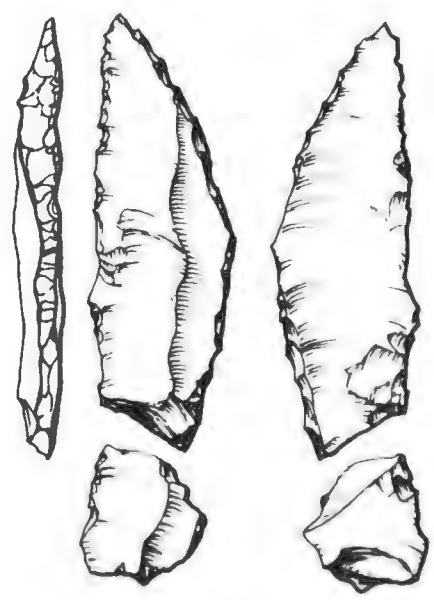
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Figure 1.3 1. Magdalenian blade with proximal truncation; 2-5. Flake end-scrapers (3.shouldered); 6. Backed bladelet with distal truncation; 7. Angle backed bladelet and refitting waste. Scale 1:1.

appearance with regular, parallel scars. This kind of retouch is consistent with the edge having been produced by pressure flaking. Large numbers of retouch "chips" (cf. Newcomer & Karlin in press), 10 mms or less in size, have been recovered from the site. In one instance it proved possible to refit a chip to the front of a scraper.

Most of the scrapers from the site are broken, with only 54 complete specimens recovered. The commonest breaks seen on the unburnt scrapers are due to flexion. These may have occurred as the tool was being made or re-sharpened (cf. Bergman et al. 1983).

Patination of the surfaces of the tools from Hengistbury has made most of them unsuitable for conventional microwear studies. Inspite of these difficulties it has been possible to undertake a functional analysis of some scrapers based on tool morphology as well as edge shape, retouch and damage (Unger-Hamilton in prep.). On the basis of macroscopic damage it is possible to make some initial comments about the function of at least one of the scrapers. The tool has a heavily rounded working edge like those reported from Andernach (Bosinski and Hahn 1972). The position of the polish shows that the scraper edge was heavily utilised; the degree of rounding is consistent with that produced by working stone (cf. Newcomer 1981). Several fragments of a flat sandstone block have been found at the site but their surfaces appear to be naturally modified (waterworn) rather than deliberately worked.

Composite Tools.

The only composite tool is made on a blade and combines a burin on truncation and an end-scraper (Mace 1959, fig.6).

Piercers/Becs. (Figure 1.4, 3 & 4).

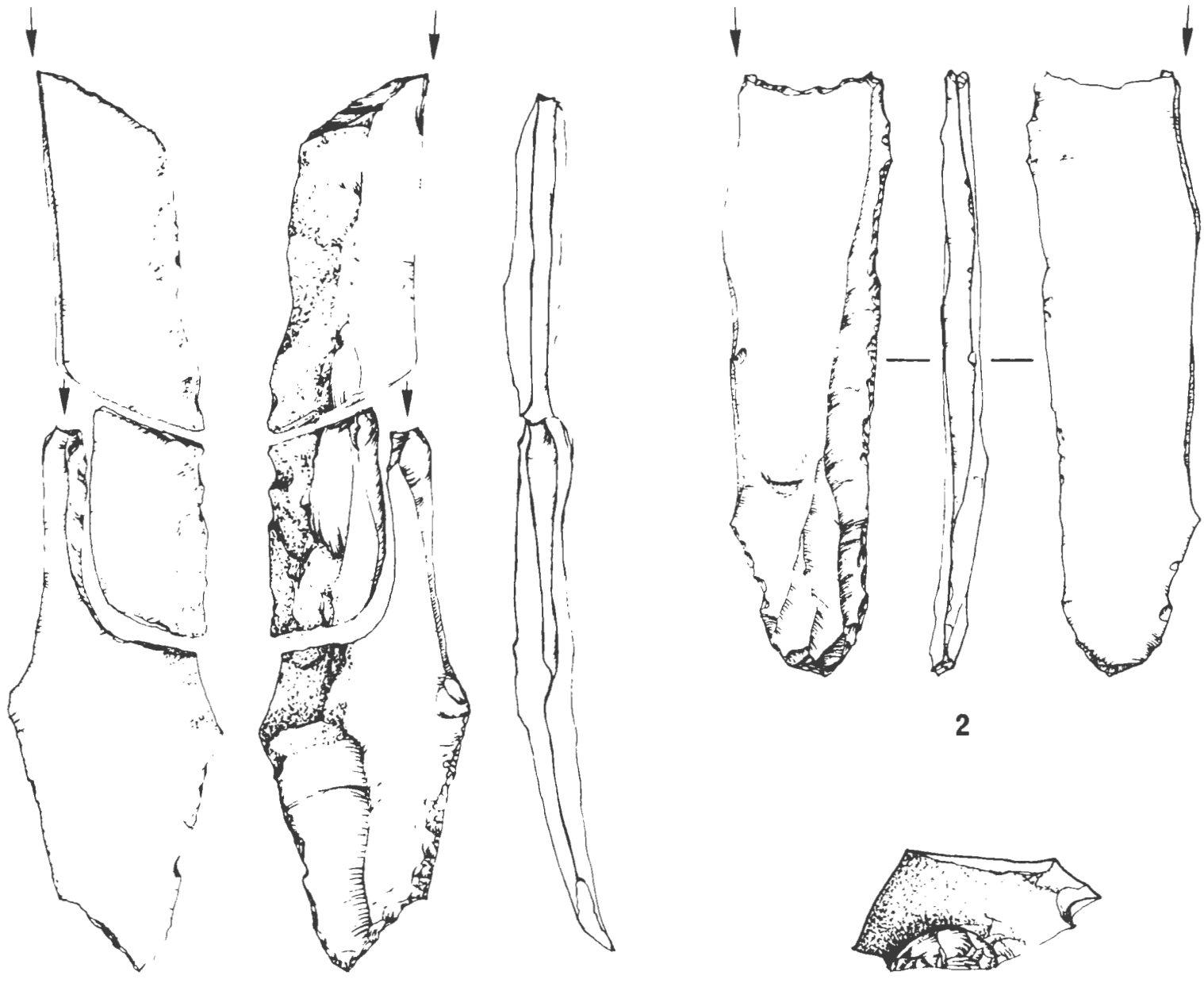
There are five examples of this type and the largest is made on a blade which measures 9.3 x 2.7 x 0.8 cm. One bec made on a broken blade has visible polish and rounding at its tip.

Burins. (Figure 1.4, 1 & 2; Figure 1.5).

There are 66 burins of which 33 are dihedral and 24 are on truncation. Nine of the burins were too badly broken or burned to be identified. The number of burins made on flakes (29) and blades (25) is roughly equal. The mean length and width of all of these pieces is 5.01 x 2.84 cm (standard deviations = 1.68 and 1.1 cm respectively). They tend to be rather thick with a mean of 1.08 cm and a standard deviation of 0.47. Over 50% of the burins display some cortex on their dorsal surfaces but in most of them the area concerned is minimal.

As stated above there are 33 dihedral burins which make up one half of the burin assemblage. The commonest version of this type is the burin on a break (accidental and intentional) with 13 examples (Figure 1.5). There are six dihedral assymetrical burins, four dihedral symmetrical burins and three burins on natural or unmodified surfaces. The five multiple dihedral burins have the following combinations: dihedral symmetrical/dihedral symmetrical, dihedral angle burin/burin on a break and burin on a break/burin on a break (Figure 1.5, 5). The latter group include two tools made on intentional breaks; one of these has two "tranchet" blows struck from the same distal break. Finally, there are two dihedral angle burins.

The truncation burins make up 36.4% of this tool class. The most common types are the burins on oblique and concave truncations with 12 and 8 examples, respectively. There is one



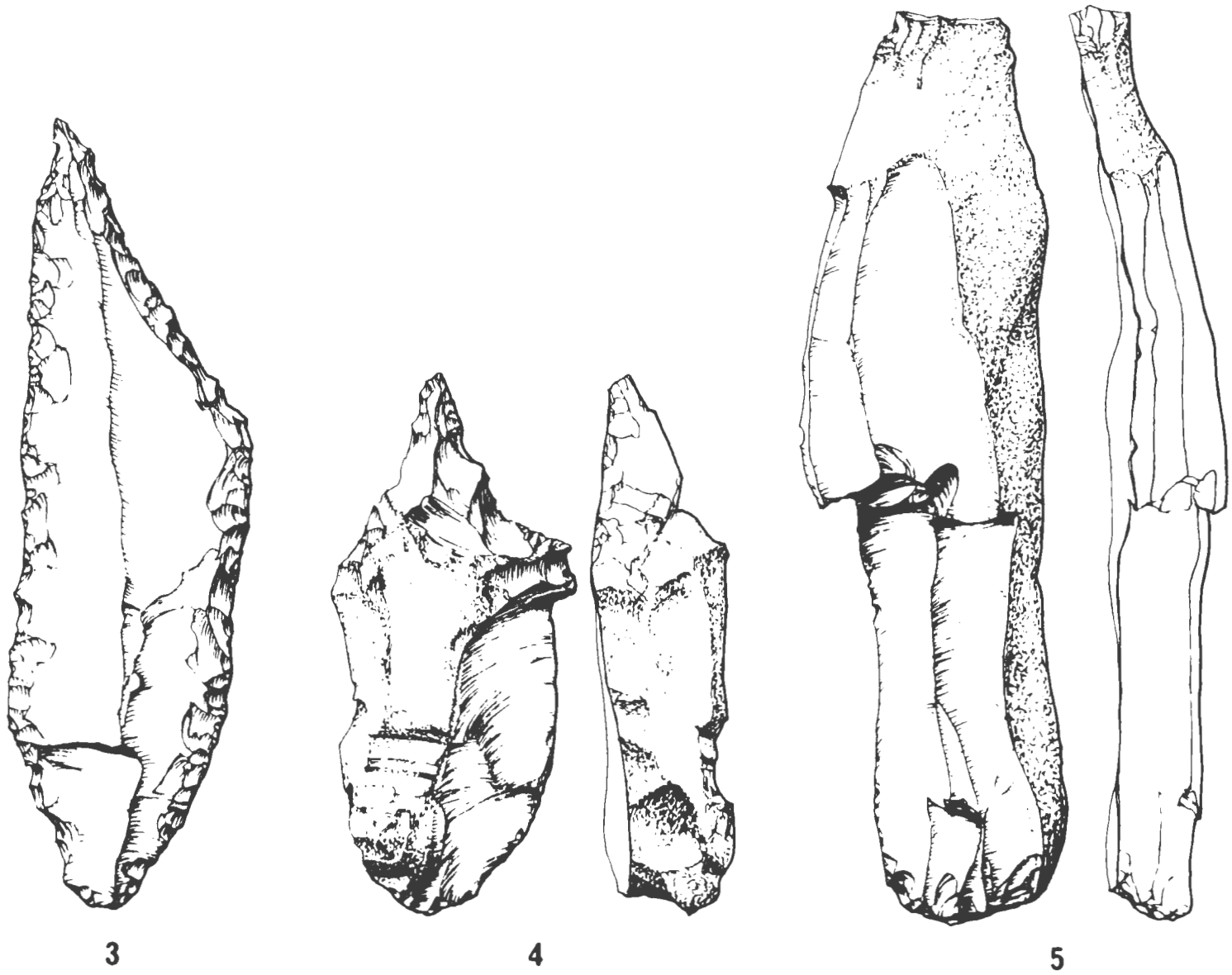


Figure 1.4 1. Refitted truncation burin to dihedral burin (on a break); 2. Truncation burin; 3. Piercer on retouched blade; 4. Bec; 5. Truncated blade. Scale 1:1.

burin on a convex truncation and one burin on abrupt lateral retouch. One of the two multiple truncation burins combines burins on oblique truncations while the other has straight truncations.

The burins from Hengistbury Head comprise relatively simple types with only two examples having more than three facets forming the burin edge. There is no tendency towards multifaceted burins. The burin edges have a mean width of 0.63 cm (standard deviation = 0.26) and are generally square in shape with 68.42% (for definition of burin edge shape see Ronen 1965 and Newcomer 1972: figure 9). These tools are more often made at the distal end (36) than the proximal end (19).

Refitting of burin spalls has provided interesting technological information. For example, some spalls were detached after preparing the lateral edge by retouch. Knapping experiments show that retouch helps to regularise an edge prior to the delivery of the burin blow. In one case a refitted spall was clearly retouched <u>after</u> being detached from a burin, to form a tool; another spall has been retouched into a drill bit. Some dihedral burins were made by first truncating one end of a blank and then removing a spall. The lateral facet created was then used to detach the truncated edge making the tool a dihedral burin. Finally, one intentionally broken flake fragment has two spalls refitted to the break surface; we have so far failed to locate the burin from which they came.

There is very little information relating to the function of the burins from the site. As stated above, most of the tools now appear unsuitable for microwear analysis, although, several burins have macroscopic damage which may provide clues as to their use. A common type of damage occurs on the burin facets of 13 tools. This takes the form of discontinuous

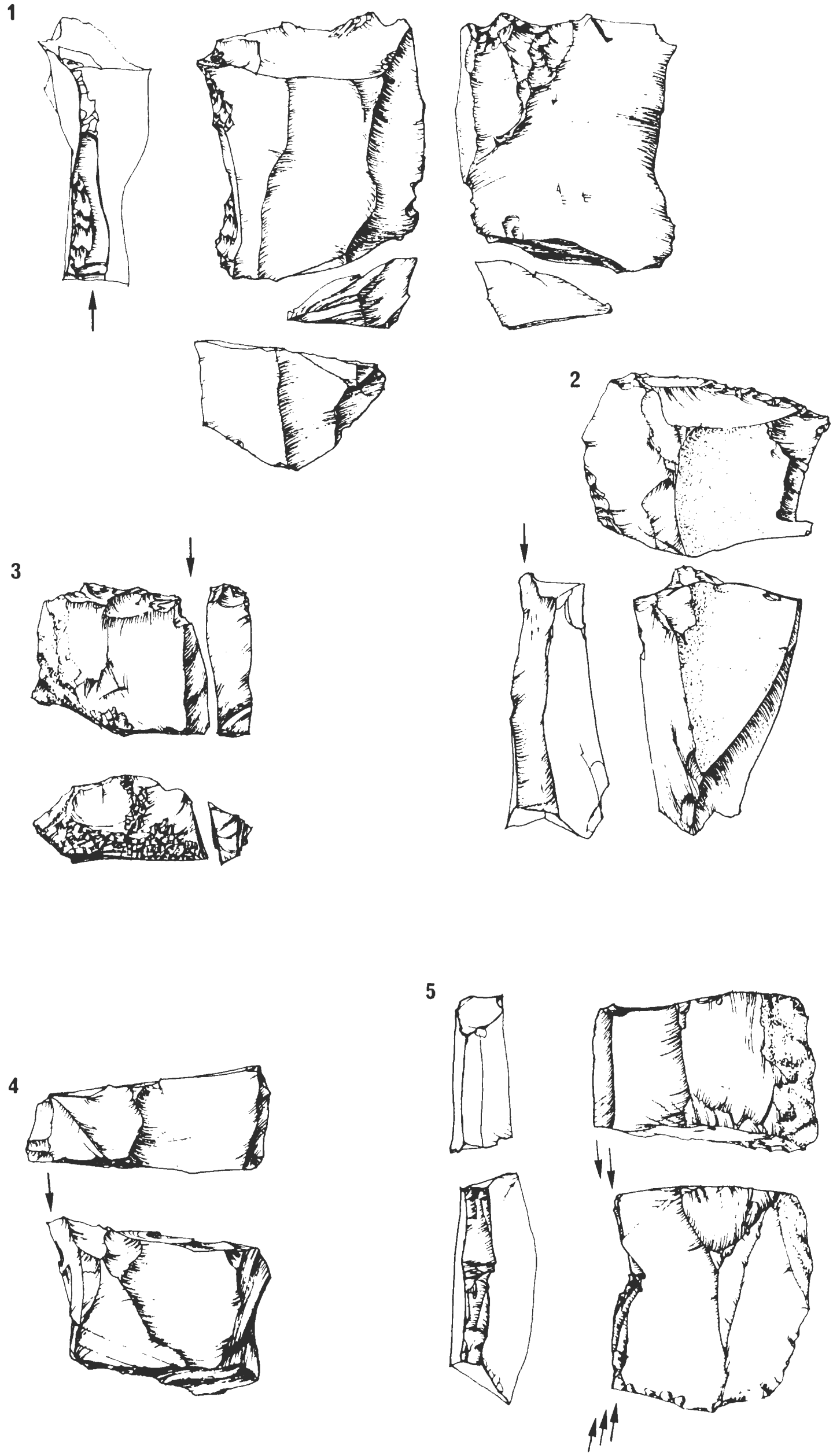


Figure 1.5 1-2. Dihedral burins on breaks; 3. Burin on truncation; 4. Dihedral burin on break; 5. Multiple dihedral burin on break. Scale 1:1.

retouch and edge-crushing (Figure 1.5, 1). If the damage is functional, rather than accidental, it indicates that the burin facet itself (and not the tip) provided the working edge of these particular tools. Burin facets have been used experimentally by the author for scraping and shaping the surfaces of bone or antler points and needles (see also Bordes 1965; Newcomer 1974; Bergman in press). A rarer form of damage is the visible rounding of the flint edge which occurs on only one facet of the burins concerned.

Truncations. (Figure 1.3, 1; Figure 1.4, 5).

Included in this group are four oblique truncations, three concave truncations and one double truncation (oblique/concave). One of the oblique truncations is burnt and broken and may actually be a fragment of a shouldered point. They are all made on blades or bladelets and the largest piece measures 15.1 x 2.2 x 0.6 cm. Five are truncated distally while one tool is a proximal concave truncation (Figure 1.3, 1). The latter example is made on a cortical blade and also has direct, stepped and scaled retouch along its left edge (cf. lame Magdalénienne du Morin; Sonneville-Bordes and Deffarge 1974).

Notches/Denticulates.

There are five denticulates and one notch of which four are made on flakes or flake fragments. One of the denticulates may be a purely accidental form, produced as the blank was deliberately broken into segments on an anvil (Bergman et al. 1983, fig. 5, 3). The notches on the sides are Clactonian (sensu Bordes 1961, 43) and occur on the dorsal surface of the piece.

Backed Blades & Bladelets. (Figure 1.3, 6-7; Figure 1.6).

Backed blades and bladelets make up the single largest group of retouched tools in the assemblage. They consist of 230 individual pieces, the large majority (90%) of which are broken. A typical backed piece from the site is made on a relatively straight blank with a rectilinear or slightly curved back, formed by direct and generally abrupt retouch.

These tools vary considerably in length, being between 1.9 and 7.8 cm long (mean = 5.23 cm). The blanks used are thin, with a mean of 0.36 cm and a standard deviation of 0.12 cm. They are generally straight in profile and, unlike other tools classes, cortex on the dorsal surface is rare.

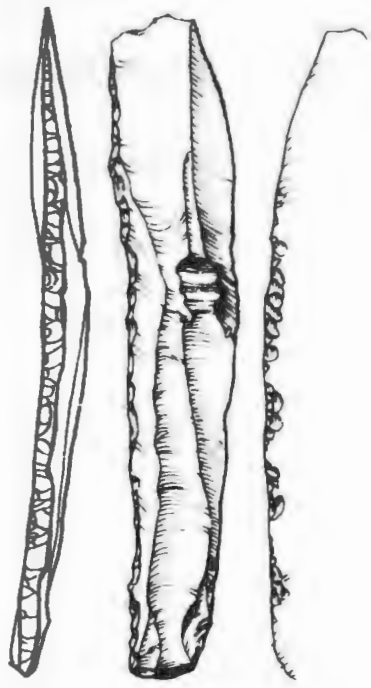
The retouch occurs on the right lateral edge in 110 cases, while 71 tools are retouched on the left edge. Sometimes a lateral edge has only partial retouch, which is probably due to the fact that the original blank needed little modification. There are nine double backed pieces with the retouch occurring on both edges. The use of an anvil to produce the retouch is rare, with only 14 tools having the characteristic bidirectional scars (e.g. Figure 1.3, 6). It is interesting to note that a common by-product of manufacturing backed tools on an anvil, the Krukowski microburin, is also rare.

Many of these tools have breaks due to torsion or flexion. One example (Figure 1.6, 5) has been fragmented into three pieces probably as a result of impact (Barton and Bergman 1982; Bergman and Newcomer 1983: figure 2). Other forms of functional damage include "retouch" opposite the backed edge (Figure 1.6, 2). Similar edge damage has been produced when replicas of these tools have been used by myself and C. Bergman as knives or projectiles.

Over 70% of the backed blades and bladelets are burned.



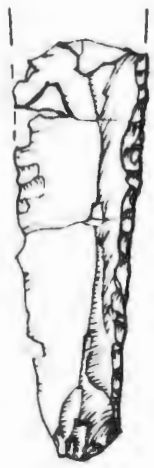
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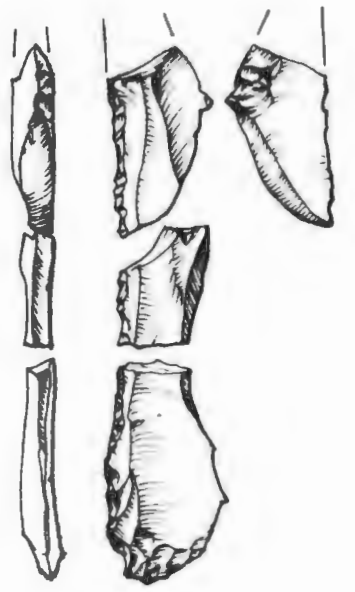
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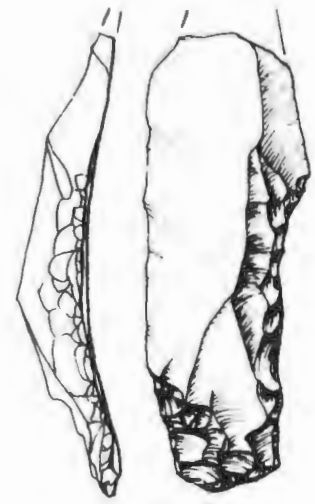
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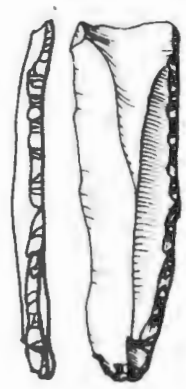
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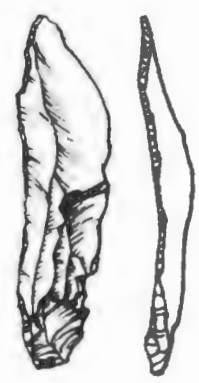
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Figure 1.6 1-5. Backed bladelets; 6. Shouldered blade; 7-8. Backed bladelets; 9. Retouched bladelet. Scale 1:1.

This high percentage may reflect the fact that they were associated with activities around a hearth possibly linked with the heating of plant resin adhesives to replace broken or worn tools in their hafts. Confirmation that backed bladelets were used in composite tools in the European Upper Palaeolithic is provided by a recent example from the French Magdalenian site of Pincevent (Leroi-Gourhan 1983). This showed a reindeer antler point with (backed) bladelets inserted in grooves and presumably held in place with resin. Like many of the other backed finds from the site, the pieces in the composite example were recovered next to a hearth.

Retouched Blades and Bladelets.

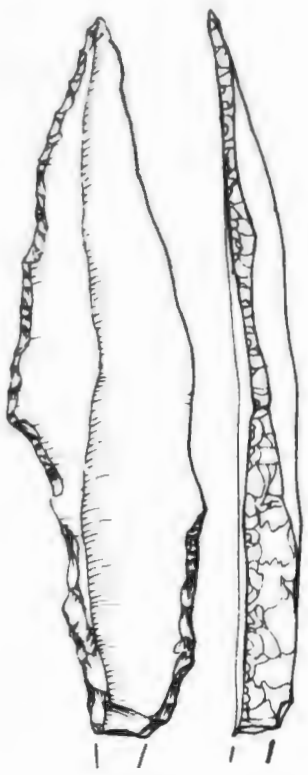
The retouched blades and bladelets differ from the above tools in that the retouch is usually fine and does not modify the edge in an important way (Figure 1.6, 9). Included here are 16 relatively complete tools and four small fragments. The retouch on two examples is distal and probably spontaneous (Newcomer 1976).

Shouldered Points. (Figure 1.7, 7-10).

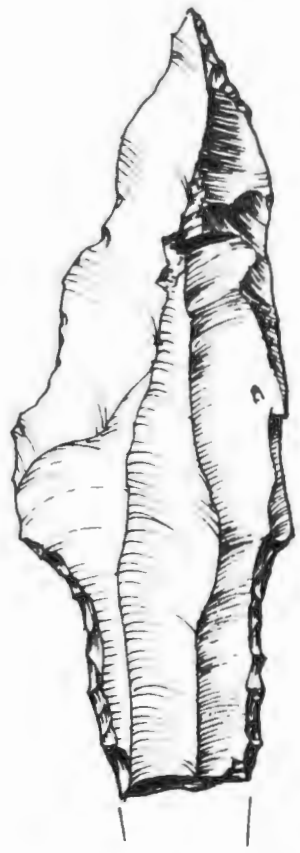
There are five shouldered points of Hamburgian type (Brézillon 1977: 331) from the site, including a surface find, as well as three fragments. They all have shoulders made by abrupt, direct retouch with distal oblique trunctions forming the tip. The mean measurements for the five complete specimens are 5.5 x 1.6 x 0.5 cm.

Tanged Points. (Figure 1.7, 1-6).

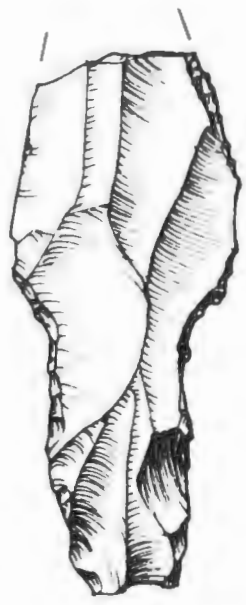
Only four pieces are complete enough to be described as tanged points. These have mean measurements of 6.03 x 2.3 x



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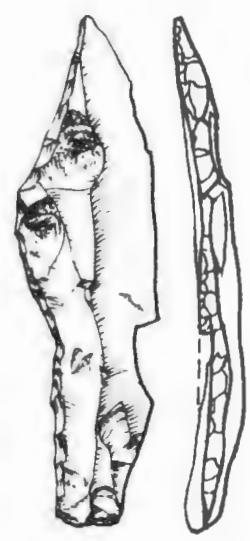
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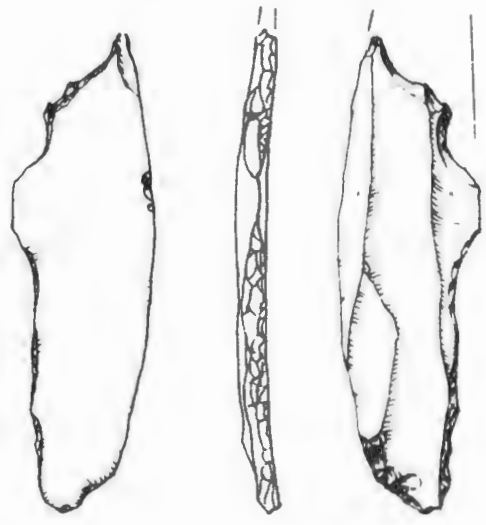
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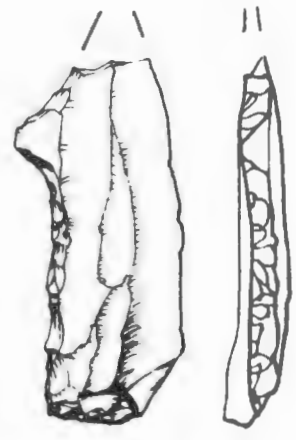
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Figure 1.7 1-6. Tanged points and fragments; 7-10. Shouldered points. Scale 1:1.

0.73 cm. Abrupt, direct retouch is used to form the tang, which in three examples is proximal. The tangs are not well-differentiated from the rest of the point and are broad relative to the overall width. Unlike some of the Teyjat and Bromme points (Brézillon 1977: 326), the tangs are long and occupy an important part of the tool. The points are generally straight in profile.

Also included in this category are 13 proximal fragments of tangs. These differ from the average backed blade in that they are wider and thicker; in some cases it is possible to see where the retouch ends in a double "shoulder". They may represent fragments of points that returned in their shafts to be removed and replaced (cf. Gramly 1982). My experiments with C. Bergman have shown that tanged points such as these sometimes break on impact at the intersection of the tang and the main body of the point (see also Madsen 1983; Fischer et al 1984). When sinew is used as the hafting agent the tang remains firmly bound in the shaft.

Microliths.

A small number of microliths have been recovered from the site including two scalene triangles and one miniscule backed bladelet. Although microliths can occur in Upper Palaeolithic tool kits (Rust 1943; Taute 1968) it is almost certain that these pieces are intrusive and are probably post-palaeolithic in date. Artefacts of this type, together with a few suspected Neolithic or Bronze Age artefacts, constitute the kind of low-level background 'noise' which is to expected in an area as intensively occupied as Hengistbury. They in no way indicate the presence of an entirely separate Mesolithic level as proposed by Campbell.

Miscellaneous.

This category comprises 17 pieces which are retouched but do not belong in any of the above categories. They are mainly fragments which have some retouch that is usually discontinuous and marginal. This kind of retouch may be due to use and not the deliberate modification of an edge. In a few cases it is probable that they represent broken tools which are now unrecognisable. There are two side-scrapers one of which is on a thick flake that had direct, semi-abrupt and abrupt retouch on both edges.

Retouched Tool Debitage.

The retouched tool waste includes fragments of backed pieces, some of which can be refitted to broken tools (Figure 1.3, 7). Amongst the debitage are also fractured tips of backed points, including a "Krukowski microburin" (cf. Chapter 4, Figure 4.15). Most of the pieces like these are the accidental by-products of backed tool manufacture.

Several tens of tiny retouch flakes have also been recovered. The curvature of profile displayed by many of them suggests they are mostly by-products of truncations or of scraper retouch. One unburnt retouch flake of this type has been refitted to a burnt end-scraper. From their relative positions, only a few metres apart, it suggests this tool was sharpened, used and discarded all in the same area of the site.

Hammerstones.

Amongst the few possible examples of hammerstones from the site is a flint cobble with a heavily battered surface. It weighs 125 gm. The fact that organic or even soft stone hammers have not survived may be explained by the acidity of soil

conditions.

Artefacts with Engraved Cortex. (Plate 1.2).

A core and refitting flake with engraved cortical surfaces, found in 1984, constitute the first possible evidence of a 'representational' kind from the Upper Palaeolithic site. The engravings consist of a series of shallow criss-cross lines cut into the exterior surface of the flint. Rejoining of the two pieces demonstrates that the markings must have been made prior to detaching the flake from the core and illustrates the antiquity of the workmanship. No other cores from the site display similar markings.

Irregular score marks or engravings on the cortical surfaces of artefacts have been recorded from a number of Upper Palaeolithic sites in N.W. Europe (Commont 1913; Verheyleweghen 1956; Salomonsson 1964; Brézillon 1977; Rigaud 1978). Some of the best comparisons with the Hengistbury pieces come from the Dutch Federmesser sites of De Baanen and Oostelbeers-Dennendijk (Arts in press).

Non-flint materials.

Apart from flint, other materials recovered from the site include several fragments of a flat sandstone slab, 7 broken cobbles of a coarser sandstone, and many red ochre fragments which are widely scattered within the archaeological horizon.

Several sections of the sandstone slab have been refitted to form a block 11.2 x 9.0 x 3.6 cm of what must have been originally a much larger lump. One surface of the stone is unusually flat, but may be waterworn rather than abraded through use. The individual fragments all derive from adjacent sq metres near the western end of the 1981-4 excavation close



Plate 1.2 Core and refitting flake with engraved cortical surfaces. Scale 7:5.

to the Mace area. Interestingly, Mace also records the presence of two lumps of quartzitic sandstone "lying a few feet apart from each other" (1959, 254). Like the more recent discoveries, these could be fitted back together into one fragment with a maximum length and thickness of 15.3 x 5 cm. Although the object has subsequently been lost it is very likely that it belongs to the same piece described above. The slab may have served as a grindstone, possibly for working ochre.

The scatter of broken sandstone cobbles all come from a restricted area in the northern part of the site. They refit to form two discrete blocks, one of which weighs more than 2 kg. These objects are undoubtedly manuports, since material of this size and type is not native to the headland. Despite the presence of a prominent flake scar on one fragment, there are no tell-tale peck marks or other signs of battering to indicate prolonged use as a hammer. Rather, the overall condition of the cobbles suggested they were thermally fractured. This has now been confirmed by the work of Mrs. J. Huxtable (RLAHA, Oxford University) which shows that at least one of the blocks was exposed to heat of about 500 degrees Celsius.

Although considerable numbers of red ochre fragments have been found at the site, only one displays artificial rounding and striated edges suggesting some form of intensive use, perhaps as a crayon. The ochre ranges in colour from a deep brown to a bright pink. Eleven pieces have been analysed by Dr. C. Salter of the Department of Metallurgy, Oxford University, including the item heavily abraded by use. These were compared with natural ironstone nodules from the Tertiary deposits of the Headland. From his initial results it would

appear the ochre is indeed derived from the local Tertiary ironstones. Moreover, the iron content in the archaeological samples is sufficiently high to distinguish it from geological material at the western end of Hengistbury, and indicates a likely provenance within a few hundred metres of the site. Judging from the magnetic properties of the archaeological ochre, some of the specimens would appear to have been heated. This may well represent deliberate efforts to produce a brighter colourant.

Dating.

Six burnt flint artefacts from the site have been dated by Thermoluminescence at R.L.A.H.A., Oxford University (Barton & Huxtable 1983). Individual ages BP are as follows:

a1 - 031 14,300 ± 2430
a3 - N30 10,800 ± 1900
a4 - J33 12,800 ± 1970
a11- R30 11,900 ± 1290
a12- I33 13,000 ± 1920

The average age of the site calculated on these figures is 12,500 ± 1150 (OXTL 707a). Methods for deriving the standard deviations are outlined in Chapter 4. The readings also take into account presumed moisture levels of the sediments (0.75±0.25 saturation for the whole burial period.). If the soil had been entirely saturated for the whole period then the flints would be older by about 2 per cent. Total dryness, on the other hand, would make the flints younger by some 10 per cent. In the writer's opinion the central date is slightly too high. A more reasonable estimate, based on typological and technological comparisons with other European assemblages, would place the Hengistbury site somewhere between five hundred to a thousand years later, in the Allerød Chronozone.

A limited number of C14 assays have been attempted both by

Campbell and the author. The more recently submitted samples consisted of compact fragments of charred wood recovered from the northern area of the 1984 excavations. Bulked organic material taken from the finds horizon was dated at Groningen for Campbell. Both sets of dates are expressed in radiocarbon years BP:

GrN-6221a	3,355 ± 85	Peaty sand extract
GrN-6221b	3,150 ± 335	Peaty sand
GrN-6220	2,765 ± 70	Organic sand extract

(Campbell 1977, Table 4).

OXA-398	8,590 ± 120	Charcoal
OXA-399	4,770 ± 180	Charcoal
OXA-411	7,690 ± 110	Charcoal
OXA-412	8,140 ± 120	Charcoal
OXA-413	7,190 ± 140	Humic extraction

(Gillespie et al. 1985).

Campbell attributed the 'recentness' of his first series to contaminating effects of humic acids in the podzol (Campbell 1977, 72). Thus in his opinion the dates indicated the latest period of podzolisation, rather than the age of the occupation itself. The wide variance between OXA-398, OXA-399 and the Campbell dates suggests several discrete burning episodes separated by long periods of time. Not all of these need be anthropogenic in origin (e.g. they might result from natural lightning strikes), but it is interesting to note that the earlier episodes correspond with well-documented examples of Later Mesolithic woodland interference elsewhere in Southern Britain (Scaife & McPhail 1983). A local presence of artefacts of Later Mesolithic type has been noted in Christchurch Harbour (Palmer 1977) and, as has already been mentioned above, several geometric microliths were recovered from the site itself.

Taphonomic Considerations.

Site formation processes and the vertical dispersal of artefacts at the Hengistbury site have been treated in detail

elsewhere (Barton & Bergman 1982). In that paper Campbell's original interpretation of the site (1977) was re-examined in the light of new excavation results. It will be recalled that he had suggested the existence of two separate cultural layers: one "Mesolithic", the other "Upper Palaeolithic". Mace on the other hand had maintained that only one major Upper Palaeolithic assemblage was present.

The opportunity to test the findings of the previous excavators was provided by re-excavating the site. From our new work it was possible to demonstrate the following:

1) The homogeneity of sand deposits, with no micro-stratigraphic features to suggest separate horizontal layers.
2) The integrity and uniformity of the lithic assemblage. This was also shown by extensive refitting of artefacts from the existing collections.

The artefacts were found to be dispersed throughout the profile over a depth of about 50 cm. Most of them were however concentrated in a band 20 cm thick near the top of the sediments. From an analysis of the overall weight/depth measurements of the flint, it was possible to show that the heaviest pieces tended to occur near the base of the profile with many of the lighter artefacts stranded further up. Based on these figures (Barton & Bergman, ibid., 243), a model was proposed to explain the relative positions of the artefacts. Accordingly, it was suggested that differential inertia and the weight of the artefacts themselves were the main factors in the downward sorting of finds. The occasional presence of some heavier pieces higher up the profile was explained by the fact that flints lying flat were 'buoyed up' by the sand and would only work their way down more slowly than pieces resting at an

angle.

Little detail has been forthcoming since 1982 to add to our original findings. Various practical experiments to monitor the movements of artefacts in sands are still in progress. Data gathered in subsequent years' work at the site has largely confirmed the pattern of the heavier pieces occurring deeper in the sediments. The original model remains substantially unchanged except that I would now add the effects of bioturbation to the list of factors responsible for vertical and horizontal artefact drift (cf. Chapter 4, 'Taphonomic Considerations.').

The horizontal distribution of artefacts is currently under study, and no final results can be presented here. From the analysis of four of the most complete refitting sequences it would appear that the average area covered by the artefact scatters is roughly 20-24 sq metres. This would accord well with the patterns displayed by archaeological knapping concentrations from other Upper Palaeolithic sites in sands such as Meer (Van Noten 1978) which are considered largely intact and unaffected by major post-depositional disturbances.

Hengistbury Artefact Summary.

A large number of retouched tools have been recovered from the Upper Palaeolithic site at Hengistbury Head (Table 1.1). Over 500 pieces have been reported on here and this figure will certainly be added to as analysis of the data continues. It is the largest single collection of retouched tools from any Upper Palaeolithic site in Britain. As can be seen from the above data the backed blades and bladelets represent the most common tools at the site making up 45.6% of the total of 504 tools discussed. There is little variation in this group with most

Tool Type	N	%
End-scrapers	123	24.40
Composite Tools	1	0.19
Piercers/Becs	5	0.99
Burins	66	13.09
Truncations	8	1.58
Notches/Denticulates	6	1.19
Backed Blade/lets	230	45.63
Retouched Blade/lets	20	3.96
Shouldered Points	8	1.58
Tanged Points	4	0.79
Broken Tangs	13	2.57
Microliths	3	0.59
Miscellaneous	17	3.37
Total:	504	99.93

Table 1.1 Hengistbury Upper Palaeolithic Type List of Tools.

having straight retouched backs: a few tools have straight truncations at one or other extremity. As we shall see in the following chapters, this dominance of straight backed types is a feature intrinsic to Hengistbury and not shared for example by the British long blade assemblages, which show little standardisation. Of the few backed pieces which do occur in the long blade toolkits no truncated forms have so far been recorded.

The rest of the Hengistbury tool assemblage is mainly composed of end-scrapers and burins which make up 24.4% and 13.1%, respectively. The remaining tool-types are poorly represented and, individually, seldom make up more than 2% of the total. There are no Cheddar points (large, elongated trapezes) in the assemblage while the Creswell points (backed and obliquely truncated blades) are rare. The scarcity of these tool types makes it difficult to see any obvious similarities with the assemblages reported from the cave sites in England (Campbell 1977). The occurrence of the shouldered and tanged points is particularly interesting, as the combination of these types is rarely seen in the late Palaeolithic of north-west Europe. However, these tools make up an insignificant percentage (2.4%) of the collection and their importance as "type fossils" should not be over-estimated. The next sections briefly consider the general context of the Hengistbury site, first locally and then further afield.

Other open-air findspots in Southern Britain.

At least 30 isolated findspots of Later Upper Palaeolithic artefacts (sensu Campbell 1977) are known from open-air locations in Britain (Jacobi 1980, 45). The majority of these

come from the southern part of the country where amongst the most diagnostic finds are shouldered points and large tanged points (Jacobi ibid., figs. 2.6 & 2.13). A striking feature so far, however, is the rarity with which these implement types occur together. Apart from Hengistbury, only Cranwich in Norfolk has produced possible examples of both shouldered and tanged material (Wymer 1971; Jacobi & Martingell 1980).

Individual examples of shouldered points found closest to Hengistbury are those from Rush Corner in Bournemouth (<10 km away) and Long Island, Portsmouth, Hampshire (Draper 1962; Campbell 1977). Elsewhere others have been recorded from Hampshire (Kingsley), Kent (Stonewall Park and Oare), Greater London (Wallington and Wandsworth), Essex (Shoeburyness) Suffolk (Oat Hill, Wangford) and Norfolk (Cranwich) (all apart from one are cited in Jacobi 1980, but also see Clark 1938). Despite the fact that they may display considerable variation in size, each of the pieces is typified by a distinctive shoulder produced by direct abrupt retouch. As far as I am aware, inversely retouched specimens similar to those from 'Hamburgian' sites in N. Germany (Schwabedissen 1954) and the Low Countries (Stapert 1981) have not been found at any of the existing British open-air locations. A few examples of this kind have however been identified from the Upper Palaeolithic site of Gough's Cave, Somerset (Campbell 1977). The collection is currently being studied by R. Jacobi and others.

The style of the Gough's pieces is quite distinct and as such may reflect the most clearly identifiable 'Hamburgian' elements so far documented in Britain. It should be added however that stylistically similar items (also with inverse retouch) have been recorded from the Final Magdalenian of the Paris Basin (Schmider 1979; 1982). These points are

considerably younger in age than the Gough's pieces (Burleigh et al. 1985).

Large tanged points similar to those from Hengistbury (Figure 1.7) have been identified from only a small number of locations in S. Britain. The most convincing specimens are three from Essex (Widford; Stone Point, Walton-on-the-Naze; one from near Manningtree) and from Sussex (Newhouse Farm, Buxted) (Jacobi 1981a; Woodcock 1978). Further examples which might be added here are from Ipswich (Bolton & Laughlin's Pit:Moir 1932; Jacobi 1975, fig. I.13). Jacobi (1980) also cites several others which I have not yet seen (e.g. the specimens from Oakhanger VII and Headley, both in Hampshire. Considered doubtful by Jacobi (1980) are examples from Cranwich, Norfolk (Wymer 1971) and Portland, Dorset (Portland Site 1 and Verne Ditch, Palmer 1970, 1971) which do not fulfill the same descriptive criteria as the other points. Deliberately omitted by myself are also the smaller tanged points from Risby Warren, Lincolnshire (Jacobi 1975, May 1976): the artefacts (which in any case lie outside my study area) are quite different in style from any recovered at Hengistbury. Typologically they are much closer to Ahrensburgian points (for definition of the latter see Chapter 3).

In terms of British material, Hengistbury so far stands on its own; as we have seen, many of the other so-called sites are no more than isolated findspots. No other open-air sites in southern Britain offer themselves as obvious parallels either in assemblage size or typological content. Indeed as has already been stated above the overwhelming majority of material derives from this one Dorset site. In seeking analogies with the British material we must therefore turn to the N.W. European record.

British & European Upper Palaeolithic Sites: the question of relationships.

Although there is a measure of agreement over the 'distinctiveness' of the Hengistbury assemblage, opinion is still largely divided as to which group or technocomplex of Upper Palaeolithic industries the Hengistbury material should be assigned.

Mace (1959) originally distinguished it from the British 'Creswellian' cave assemblages as defined by Garrod (1926) and instead sought parallels with North German sites, which had been broadly classified under the term 'Federmesser-gruppen' by Schwabedissen (1954). Collcutt (1979), following Campbell (1977), also noted important differences between the open-air assemblage and those of the cave sites. These included an absence of so-called 'Cheddar points' and the existence of implement types not found in the Creswellian (Collcutt, ibid., 787). Unlike Mace, Campbell preferred to link the British assemblage to those of the chronologically earlier N. German Hamburgian culture. Collcutt, on the other hand saw resemblances both with the German Federmesser industries and with Bromme material from Denmark. The non-Creswellian aspect of the assemblage has been signalled by Wymer (1977b), who suggested European parallels with the later Ahrensburgian industries of the Low Countries and N.W. Germany (Wymer 1982). Mellars alone has assigned the industry to "typical Creswellian" (1974, 276) and recognised closest continental affinities with the Bromme industry of Denmark (op. cit., 76).

On the continent, various authors have tried to fit Hengistbury into pre-existing or newly invented N.W. European technocomplexes. Whereas Taute (1968) classified the material as being of 'Spatmagdalénian-Charakter' (op. cit., 249),

relating it to N. German industries of Magdalenian type, others such as Otte place Hengistbury within a so-called 'Creswello-hambourgienne' group (1984, 173). The latter occupies a considerable period from Dryas II to the Younger Dryas, a period lasting perhaps several millennia. An extended chronology is likewise envisaged for the Creswellian by various East European prehistorians, who would identify Hengistbury with this broad grouping (Kozłowski & Kozłowski 1979, 88). Elsewhere, in N. France industries related to the Magdalenian with a large 'Federmesser' (i.e. backed blade) component (Fagnart 1984b, 297) have been compared with Hengistbury (Fagnart 1982), whilst similarities have also been drawn between the British assemblage and material from N. Brittany (Giot et al. 1977).

A certain amount of confusion has arisen in recent publications following Campbell's original interpretation of the Hengistbury finds, which he ascribed not to one but to four discrete sites (Campbell 1977). Thus, against a general background of Federmesser-type artefacts, Jacobi (1980, 77) was able to recognise a separate Bromme-type element in one of the main finds areas. This misunderstanding has been subsequently repeated by others (Otte 1984) and more particularly by Campbell himself who further distinguished a "middle" and "upper" Creswellian in different areas of the site (Campbell 1980). Fortunately, these ideas have now largely been abandoned by Campbell (in press) in favour of Mace's original proposition of a single homogeneous assemblage. Refitting work between the different areas by the present writer and his colleagues has also helped clarify the situation by demonstrating the contemporaneity of the various parts of the site (Barton & Bergman 1982).

Although reference has been made by some authors to the similarity of the British tanged points to Late Glacial Bromme types from S. Scandinavia (Wymer 1971; Jacobi 1980), the present writer is less convinced by such parallels. In the first place, the British points display technological differences from their Scandinavian equivalents, particularly with regard to percussion mode. The former generally occur on blanks made with the soft hammer, whilst the Danish examples examined (see Chapter 3) are more frequently detached using a hard hammer technique. In the second place, where associated material has been found with the British artefacts (e.g. Hengistbury, Walton-on-the-Naze; also Widford, though none of the pieces from there were inspected by myself), it is quite different in character from that produced in the Scandinavian industries (compare core techniques at Hengistbury with Bromme sites, this chapter and Chapter 3). The structure of the tool assemblages is also quite different. Lastly, it should be mentioned that large pedunculate points are also known from a variety of European Later Upper Palaeolithic contexts, including those of the French Magdalenian (Brézillon 1977) and the N.German Ahrensburgian (Taute 1968). Again the major reference collection for the British finds is the site of Hengistbury, the dating of which has been discussed above.

One of the major problems encountered in attempting to place Hengistbury within a N.W.European context is the current lack of standardisation in the existing terminology. For example 'Federmesser' (sensu Schwabedissen 1954), which was once the generic term used to describe Late Glacial backed bladelet industries of the N.W. European lowlands, is now treated as synonymous with one of its geographic sub-groupings the 'Tjongerian'. Nowadays, German and Dutch prehistorians use

the term Federmesser whilst the Belgians prefer Tjongerian (sensu Van Noten 1967) or the alternative, Creswello-Tjongerian (sensu Dewez 1979).

All of these industries share in common relatively important percentages of backed blade/lets, with end-scrapers, generally of the shorter type, outnumbering burins. The assemblages are mainly restricted to the Allerød Chronozone (Late Glacial Zone II) although, in Belgium a longer chronology may exist ranging from Zone I (Dewez in press) to Zone III or even later, if the highly suspect Pre-Boreal dates are to be believed (Van Noten 1978; Gob in press).

The Tjongerian is characterised by the presence of the curved backed bladelet or 'Tjonger point' (Bohmers 1960) but also includes straight backed blade/lets and Creswell points (backed and obliquely truncated pieces). A morphological continuum exists between these and shouldered points in certain assemblages (e.g. Danthine 1955-60). However, at none of the recently excavated Tjongerian sites (Vermeersch 1977; Van Noten 1978; Lauwers 1985) do large tanged pieces occur amongst the retouched tool inventories.

The 'Federmesser' industries, considered by Schwabedissen (1954) to be of Magdalenian character, are typified by the occurrence of pen-knife blades, other backed blades and points and by the absence of flint awls (ibid., 87). The Federmesser or 'pen-knife point' is clearly defined as a "messerchen mit bogenförmiger Randbearbeitung" i.e. a small convex backed knife (ibid., page 8 & Abb. 11, a-l). They are not necessarily "convex backed pieces with opposed basal oblique truncation" (pace Campbell 1977, 2). Typologically, the Federmesser is the equivalent of the Tjonger point.

According to Schwabedissen's original classification only

one of the three Federmesser sub-groups (Rissen) contained large tanged points. Neither the Wehlener nor the Tjonger groups included pieces of this kind. It was for this reason that Mace suggested comparisons with the German Rissen group for the Hengistbury assemblage (Mace 1959, 257). In particular she noted similarities with the site of Rissen Fundplatz 14, which lay stratified beneath an Ahrensburgian level and a band of organic mud dated to 11,930±290 (H18/11) and 11,500±280 BP (H21/18)(Schwabedissen 1957). Sites with similar finds occurred at Grande, Sprenge and Wüstrow. It is noteworthy that only one of these assemblages (Grande) yielded any evidence of shouldered points.

Further examples of N.W.European assemblages with large numbers of straight backed pieces are to be found in the Magdalenian Complex which stretches from the Paris Basin in the West (Leroi-Gourhan & Brézillon 1977; Schmider 1969) to Czechoslovakia in the East (Müller-Karpe 1966). Large tanged 'Teyjat' points also occasionally occur in the Magdalenian (Brézillon 1977). Superficially, Hengistbury would appear to have much in common with the Late Magdalenian tradition and particularly those assemblages with so-called 'Nordic' elements (Bordes 1979) e.g. shouldered pieces. Such combinations are documented from a number of sites in northern France (Schmider 1982; Allain 1974). An unfortunate source of contention arises over the fact that whilst examples in the Paris Basin are termed 'Magdalenian' (e.g. Marsangy, Cepoy), those of broadly equivalent type in Germany (Riek 1957; Taute 1963; Stodiek 1985), in Switzerland (Lüdin 1963; Bandi et al. 1954; Stodiek pers. comm.) and Czechoslovakia (Vencl 1979) are called 'Federmesser'. Although they are all broadly contemporary, some of the Paris Basin sites may be slightly later in date than

typical Magdalenian counterparts in the same area (Gillespie et al. 1985; Gowlett et al. 1986).

The absence of certain tool-types, such as burins de Lacam, becs and piercers, in the British assemblage make comparisons with more typical Magdalenian assemblages difficult. Absent too from Hengistbury is any sign of the 'en éperon' form of core platform preparation (see Introduction, 'Notes to the Reader' and Figure A) which is a distinctive hallmark of the Magdalenian debitage in the Paris Basin and elsewhere (Leroi-Gourhan & Brézillon 1972; Vermeersch 1981).

Further comparisons may be made with North French sites not classified as Magdalenian (Fagnart 1984a; Giot et al. 1977). Like the Southern British assemblages they can show a high proportion of backed pieces, including some shouldered points (e.g. Etouvie; Dreuil). Analogies for these have been sought in the Tjongerian (Fagnart 1982). Like their Belgian counterparts they also have low proportions of becs and piercers. The debitage is dominated by plain-butted blanks and is similar in type to that described from various Belgian sites (e.g. Vermeersch 1977; Van Noten 1978). However, not one of these assemblages contains as high a percentage of backed pieces as either Hengistbury or the Magdalenian assemblages.

Overall, none of the N. European material can be described as identical to the Hengistbury assemblage. Various traits are recognised in common with the Magdalenian and Tjongerian (Federmesser), although considerable differences exist too. For the present all that can safely be said is that typologically the Hengistbury tool assemblage appears to occupy a somewhat intermediate position between the above mentioned Complexes.

Chapter 2.

The Long Blade Assemblages of Southern Britain.

Introduction

In her brief but definitive account of the British Upper Palaeolithic, D.A.E. Garrod (1926) was able to describe in detail artefactual material from more than thirty cave and open-air sites in Britain. These she attempted to correlate with the existing classic French Upper Palaeolithic sequence of Aurignacian, Solutrean and Magdalenian. Amongst the British industries, however, were several which were deliberately left out of the general scheme and were also omitted from the chronological table of sites. For these she preferred to use the term "Transitional" or "Epi-Palaeolithic" (ibid., 185) since it was clear to her that they fitted in directly with neither the Upper Palaeolithic nor with succeeding industries of later Stone Age type.

Since 1926, our knowledge of the period as a whole has vastly improved. The availability of new radiometric techniques over the last thirty years has enabled us to place in the correct chronological order sequences of sites and industries with the result that quite different terms can now be applied to the majority of the sites once described as "Transitional". For example, the so-called 'Azilian' stations of Scotland and the 'Tardenoisian' of Southern Britain are today clearly recognisable local facies of widespread postglacial Mesolithic flint technologies. Notwithstanding modern analytical approaches however there still remain a number of assemblages which do not appear to fit into any of the existing schemes. Some of them are similar to those earlier described from East Anglia as containing small backed

pieces ("dos rabattu knives") and accompanied by long, narrow flakes (Garrod ibid., 186).

A considerable number of assemblages of this kind have now been recognised over a wider area of Southern England and in this chapter I have attempted to draw together some of the existing material which belongs to this category. Set out in the following section is a description of flint artefacts from nine major sites of this type which I have grouped under the term 'Long Blade assemblages'. The problems of dating sites of this kind are discussed and a broad comparison of the flaking methods used is presented. The nine sites do not, of course, constitute the sum total of British 'Long Blade' material. But, since the purpose here is to characterise these assemblages, so far as is possible, I have only concentrated on nine of the more complete collections in the research area. Each of these has provided enough artefacts coming from single provenances to be worth examining and classifying formally. For a fuller listing of all lesser known occurrences of long blade type finds that have become known to me, the reader is invited to consult the Gazetteers appended at the back of this thesis.

Background to Long Blade Assemblages

Clearly not all flint assemblages with long blades are epi-palaeolithic in type (sensu Garrod 1926), and it would be as well before embarking on any detailed description of site material to summarise assemblages from other periods in which long blades are known to occur and which might potentially be confused with the industries of Late Pleistocene and Early Holocene type. This summary is concerned entirely with Western Europe and is not intended to be complete or exhaustive: its

main purpose is to document the time range over which large blades of one sort or another were being made in this area. For purposes of clarity the definition I shall adopt here for long blades is the same as the one used by Taute (1968, 16): a long blade is one which measures 12 cm or more in maximum length and is wider than 2.5 cm.

Palaeolithic Long Blade Technologies

The origins of the earliest blade manufacturing industries in Northern Europe can be traced back into the Middle Palaeolithic (Heinzelin & Haesaerts 1983, Tuffreau 1984). In certain of them it appears the blade-making method is closely allied to the Levallois technique, but without involving centripetal preparatory flaking of the core (e.g. Nucleus Levallois à lame, Bordes 1961,72). The blades and laminar flakes produced in this way were often used as supports for tools such as convergent side scrapers and Mousterian points (Tuffreau ibid., 53).

In Britain a similar early blade manufacturing technique seems to be represented at the site of Crayford, in north Kent. The assemblage consists of large flakes and blades, some of them 18 cm in length, discovered close together on a former terrace of the River Cray (Spurrell 1880). The fauna recovered from the same horizon as the artefacts appears to be pre-Devensian (Spurrell ibid., J. Cook & A. Currant pers. comm.). Such was the undisturbed nature of the site that many of the flint artefacts could be fitted back together, and in some instances whole reduction sequences reconstructed. A reanalysis of the material currently being undertaken by Jill Cook (In press, and Oxford University D.Phil Thesis, In preparation) shows that the artefacts are all of a highly

uniform type. The blades, which are fairly long and thick have generally plain butts. They show little sign of platform abrasion and for the most part display features associated with a hard-hammer mode of percussion (cf. Newcomer 1975). Although opposed platform cores do exist, few crested pieces are present and cresting does not appear to have been widely used in repairing the main flaking faces. For these and other reasons it will become clear that they are quite unlike the bulk of material described in the following sections.

In contrast to more typical Middle Palaeolithic artefacts the Upper Palaeolithic assemblages in southern Britain are mainly characterised by well-made blades detached from opposed platform prismatic cores. The blades themselves are not remarkably long and in general are fairly thin (for a typical example see Hengistbury Head, Chapter 1). Blade supports of a somewhat different kind however occur at the Beedings site near Pulborough, Sussex. These were originally attributed to the Bronze Age (Curwen 1949) but are now thought to belong to the Early Upper Palaeolithic (Jacobi 1980). A re-analysis of the material by R. Jacobi shows the assemblage was based on fairly thick blades, some of which were transformed into unifacially flaked leaf points. The blades were detached from opposed platform cores; the butts sometimes being faceted. Despite superficial resemblances with the 'Long Blade' material to be described below, the Beedings blades are rather more regular in shape and unlike the other examples display very clear lipped butts (Jacobi, In press), indicative of an organic 'soft-hammer' mode of percussion (cf. Newcomer 1975).

Occasionally, very long blades occur in Upper Palaeolithic assemblages. Apart from well-known Perigordian examples in SW France (e.g. Corbiac, Rabier; Bordes 1966; 1968; 1970b) some

Magdalenian sites in the Paris basin have also produced extremely long blades. One example is the Magdalenian site of Etiolles, where artefacts of up to 30 cm are not uncommon (Brézillon 1977b). Like many other Magdalenian sites in the Paris Basin, the style of platform preparation leaves a distinctive butt ("en éperon" -see Introduction: Notes to the Reader; and Figure A.) which is rarely found in the long blades from Southern Britain. The same butt types also occur on the long blades from the Belgian Magdalenian sites at Kanne and Orp (Vermeersch 1981), and at Sweikhuizen in the Netherlands (Arts and Deeben 1983; 1984).

Notably different in style from the Magdalenian, are long blade assemblages from Southern Scandinavia (Brommian), Northern France (Belloy-type) and Northern Germany (Ahrensburgian). Since they share features in common with the British long blade sites to be dealt with in this chapter, they deserve extra space for discussion. The European sites in question will be treated separately and in some detail in the following chapter.

Mesolithic Assemblages with Long Blades.

The practice of manufacturing long blades is well documented from various mesolithic contexts in Northwestern Europe. Noteworthy amongst these are examples in the Danish Kongemose and particularly Ertebølle traditions (Bille-Henriksen 1976; Andersen 1973, 1978). The technique reaches its zenith in the Ertebølle phase which dates from the early part of the sixth millenium BP (Clark 1975, fig 51).

In the Danish assemblages the blades tend to be not much longer than 10 cm although examples of blades 12 cm and more have been recorded from sites such as Aggersund (Andersen

1978). The blades are well-made with straight parallel dorsal ridges; the butts are mainly punctiform. The cores can be pyramidal in shape with one main striking platform. This is often carefully faceted and forms an angle of approximately 90 degrees with the main flaking face.

The preponderance of longer blades in the Ertebølle assemblages is undoubtedly linked to the important presence of transverse arrowheads during this phase which were made on segmented blade blanks. The manufacture of long regular blades in this case appears to be a direct response to the particular tool requirement, and the changes in blade production which occur during the preceding Kongemose phase coincide with changes in arrowhead style.

None of the influences from the Danish later Mesolithic appear in Southern England where contemporary assemblages are characterised by a distinct bladelet debitage. The suggested occurrence of longer blades in Ireland at this time (Woodman 1985) might indicate a convergence of flaking techniques. However, any similarities with the Danish material are likely to be entirely fortuitous rather than culturally linked.

Post-Mesolithic Long Blade Technologies.

Some of the continental early Neolithic flint mines have produced examples of large blades. At the Belgian site of Spiennes for example, blades struck from sizable blade cores have been found with roughouts for flint axes. A date on charred wood from one of the mine shafts at Mesvin, a few km from Spiennes, clearly shows that flint was being mined in the area in the 6th millenium BP (Lefrancq & Hoisin 1965).

A similar situation has been recorded at Rijckholt in the Netherlands where 15-20 cm blades made from quarried flint are

associated with the by-products of axe manufacture (Louwe Kooijmans 1981). The Rijckholt sites appear to have been exploited from about the same period as the Belgian mines. No similar material of this date has yet been found in a British context, although there is some hint from the Lake District that long blades and axe roughouts in Group VI material (Langdale Tuff) belong to this same early Neolithic period (M. Edmonds pers. comm.). In contrast, the earliest British flint mines in Sussex which probably date to the mid-6th millenium BP (Burleigh 1976) are generally characterised by small flake waste from bifacially chipped implements.

Other nearly contemporary sites on the continent include the early Neolithic complexes of the Omalian (Rubané group) and Bliquy in Belgium. The latter contains flint blades up to 20 cm long, produced by a highly distinctive pressure technique (Cahen 1984, 21). So far nothing of this kind is known in Britain.

Such evidence as there is for larger flakes and blades in Britain comes mainly from late Neolithic and early Bronze Age flint workings. At Grimes Graves in Norfolk, for example, the flint scatters from the mouths of various mine shafts show that the flaking activities were geared towards producing bifacially worked forms ranging from axe roughouts to small discoidal knives (Saville 1981). Here blades appear to be largely incidental by-products, and there is little evidence for extensive blade manufacture as such. Artefacts from Grimes Graves examined in the Ashmolean Museum collection consist of thick blades with little platform abrasion. Occasionally, examples of faceting are present on the butts, but in most of the observed cases preparation of the platform was clearly not important. The blades are typically hard-hammer struck.

Although rare, examples of opposed platform blade cores from Grimes Graves suggest that the deliberate production of blades was sometimes carried out. Slight evidence for specialised blade manufacture during this period in Britain might be indicated by flint sickles made on blanks up to 10.5 cm long (Clark 1932b, Plate VIII).

Despite claims advanced for the existence of imported Grand Pressigny flint (Clark & Piggott 1933) or of long blades produced by a similar technique in native flint (Cowen 1966), convincing evidence of such occurrences in Southern Britain remains wholly elusive. It seems that direct knowledge of this specialised long blade manufacture did not penetrate across the channel during the late Neolithic or early Bronze Age. Blades produced from the typical "livre de beurre" core (see de Mortillet 1883,509) display a variety of butt types ranging from plain and dihedral to faceted forms (Bastien & Geslin 1968; Geslin et al. 1982). The blades themselves can be very long (>20 cm) and display extremely straight dorsal ridges. The regularity of features suggests that an intermediary punch was used in detaching them. Large caches of Grand Pressigny blades (Geslin et al. 1980) have been found in France which show they could be stored well-away from the original flaking floors.

Flint daggers from the continent either unifacially or bifacially flaked are often made on Grand Pressigny blades (cf. Pradel 1982). In some instances such flaking may even be subsequent to polishing the piece (Lanting & Van der Waals 1976, figs 1,7 & 10). Elsewhere in Europe long blade dagger finds on other types of flint have been recorded from late Neolithic and Chalcolithic contexts. For example the dagger in tomb number 40 in Los Millares, southern Spain is made on a

blade more than 15 cm long (Leisner & Leisner 1943), whilst similar long blades have been documented from Portugal (Leisner 1965). Further east, earlier Neolithic examples of dagger blades up to 18 cm in length have been recorded from 6th millenium BP context in Hungary (Bognár-Kutzián 1963,318). Refitted flakes from reconstructed dagger roughouts show that these tools were sometimes also made on flakes (Arnold 1981).

Despite the widespread occurrence of long blade flint daggers throughout Europe it would appear that the Beaker daggers of Southern Britain belong to a slightly different flaking tradition. Overall, they appear to be most like their German counterparts being made on large flakes with a relatively thin cross-section (Grimes 1932, 340). Of the few partially flaked daggers I have examined (e.g. Essex, Walton-on-the-Naze, specimen in Cambridge Archaeology and Ethnology Museum Accession number 51.903) all appear to be made on large relatively broad flakes with no suggestion of a long-blade manufacturing technique.

From the brief synopsis of material presented here it will be apparent that long blades can occur in a variety of assemblages ranging in date from the Middle Palaeolithic to the Bronze Age. At first glance this seems to make the task of distinguishing between them an extremely difficult one, and to a certain extent when dealing with individual finds this remains true. However as will become apparent in the next section the Late Devensian/Early Flandrian assemblages possess important technological features which clearly differentiate them from material of earlier or more recent date. Since the majority of these sites have not been published a description of the site location, stratigraphy (where possible), raw material and retouched tools will be incorporated together with

a detailed analysis of the long blade debitage.

The Southern British Long Blade Assemblages.

In view of the widespread but locally concentrated nature of Long Blade findspots in Southern Britain, I have arranged the nine major sites into three geographical groupings. They comprise the assemblages from Berkshire, those from Kent and the Lower Thames area and, finally, the East Anglian assemblages (Figure 2.1). Not all of these areas are contiguous or clearly interconnected; reference to the Gazetteer will show what their role is so far as the overall distribution of long blade occurences in Southern Britain is concerned. Here they will be considered separately in turn. The first area to be discussed contains the two sites of Avington VI and Crown Acres, both located in the valley of the River Kennet, the major Berkshire tributary of the Thames. The first is an excavated assemblage, the second derives from a surface collection. Alongside each site entry is the site number (see Gazetteer) and the national grid reference.

Sites in the Kennet Valley, Berkshire.

Avington VI (4) SU 377 672

Introduction.

The site is situated about half a kilometre west of Kintbury in Berkshire. It lies on the south side of the valley between the Kennet & Avon canal and the foot of a gently sloping chalk escarpment (Figure 2.2). The floodplain level at this point is approximately 89 m OD. Today the low water meadows are mainly used for rough grazing and form part of the



Figure 2.1 The Location of the nine major Long Blade assemblages, Southern Britain.

Key: A-Avington VI; C-Crown Acres; S-Sproughton; SH-Springhead; R-Riverdale; SW-Swarfham Prior; K-King's Site; T-Titchwell; W-Wrabness.

large Hungerford Park Estate.

The site was first discovered by the local archaeologist Mr. F.R. Froom during the course of building work on an Southern Electricity Board transformer station. Excavation of deep foundation trenches produced a patinated long blade assemblage which in places showed localised disturbance from later Mesolithic activity. Several other prehistoric sites (I - V) are known from the area, but none has so far yielded long blades. The finds from Avington VI were first reported in the 1970 Newbury District Field Club's Transactions (Froom 1970).

Subsequently, during the summers of 1978-9, trenches c.1 m deep were sunk immediately south of the perimeter fence of the electricity sub-station and excavations were carried out on an undisturbed portion of the long blade site. In all, over 30 square metres were examined which showed up two well-defined artefact concentrations with flakes so tightly packed in places that no sediment matrix was visible between them. The two clusters were each about 1.5 m in diameter and no more than three metres apart. Although no faunal remains were recovered with the flint assemblage, the discovery of a fragmentary piece of tooth enamel in one of the artefact clusters suggests these were probably once present.

The observations made in the following sections are based entirely on the examination of a small sample of finds from one of the main flint concentrations (centring on squares B-C/19-20). I am particularly grateful to Roy Froom for allowing me to study a representative sample of the industry in this way before his own definitive account of it is published.



Figure 2.2 The Location of the Kennet Valley sites, Berkshire.

Key: 3-Crown Acres
4-Avington VI
12-Wawcott XII
D-Donnington
S-Speen
W-Wawcott III
Land Above: 100m
130m
150m

Stratigraphy.

The deposits observed in the upper and middle levels of the main excavation section and earlier trial trenches revealed a remarkable degree of uniformity. The following composite schematic profile with average depth measurements was recorded at the time of the 1978-9 excavations. It relies on observations made both by the excavator (F.R.F.) and by D.T. Holyoak, then of the Department of Geography, Reading University (Holyoak 1980):

Profile.

0 - 20	cm	Modern soil.
20 - 80	cm	Brown silty loam, becoming increasingly stony from 40 cm with small flint pebbles. Some iron staining.
80 - 125	cm	Brown clayier loam with low silt content; relatively stone free.
125 - 160	cm	Grey loam, also with low silt content.
160 - 175	cm	Blackish loam with high organic content.
175 - 225	cm	Grey loam, becoming siltier; narrow band of organic material (c.196-198 cm).
>225	cm	Flint gravel.

The long blade horizon occurs at approximately 100 cm below the present surface and forms a relatively narrow band of finds about 10 cm thick. The flint is mostly heavily white patinated, but is otherwise in pristine condition. Archaeological material from above this level has also been recovered. From approximately 40 cm below the surface isolated flint finds similar to those of late Mesolithic type (cf. Froom 1976) are occasionally encountered. They are sometimes heavily rolled and abraded. A well-defined horizon of late Mesolithic artefacts also occurs at between 75-85 cm, with a microlith assemblage dominated by scalene triangles. Despite slight iron staining, most of the artefacts are in very fresh condition. The intervening 15 cm between this finds horizon and the long blade level is more or less archaeologically sterile, the only exception being one or two highly localised disturbances

believed to be the result of later Mesolithic digging activity. These however have not affected the underlying scatters to any great degree.

A pollen profile from the site was analysed by D.T. Holyoak. Although the pollen counts proved unacceptably low from the samples immediately adjacent to the long blade horizon (at 91 and 101 cm), Holyoak was able to suggest similarities with other better documented sequences in the Kennet valley (Thatcham Reed Bed sites and Avenell's cottages). At the latter sites layers with low pollen values are associated with deposits of late Zone III/early Zone IV age. Of particular significance, according to Holyoak, is the presence of Pinus and Betula, which also occur albeit sporadically near the long blade level at Avington VI. Molluscan evidence from the site was equally sparse, but amongst the few species represented from the long blade level were Vallonia exentrica and Helicella stala, both characteristic of open habitats (Holyoak 1980).

Highly relevant to interpreting the chronostratigraphic sequence at the site is the blackish loam with a high organic content which occurs between 160-175 cm, well below the level of the long blade horizon. Unlike the surrounding sediments the darker band exhibits considerably higher values of pollen with recorded counts of up to 1,000 pollen grains/ 0.6 ml sediment. The analysis by Holyoak shows important frequencies of Juniperus, with Cyperacea and Graminae being the dominant components in the assemblage. Amongst the sparse arboreal pollen, Betula occurs in low but significant frequencies with almost negligible amounts of Pinus (the presence of the latter might be adduced to long distance wind transport). Taken as a whole, the pollen from these levels is suggestive of

interstadial conditions such as prevailed in late Devensian Zone II (Holyoak ibid., 135).

Given the high representation of open turf and herb communities in the dark band (with juniper and birch also present) Holyoak suggests it was formed during a period roughly correlated with the second part of the Windermere interstadial between 11,800-11,000 BP (Allerød chronozone sensu Pennington 1977, 268). This would provide an important stratigraphic marker for dating the overlying long blade assemblage, at least in broad terms.

The Artefact Assemblage.

Raw Material.

The raw material used for flaking consists of large flint cobbles with a thick chalk cortex. The cobbles are cylindrical and slightly elongate in shape. They can reach a large size. One of the largest nodules recorded from scatter B-C/19-20 (a core roughout abandoned at an early stage) weighed 1.67 kg.

Judging by the fresh, unrolled appearance of the cortex the flint derives either directly from a chalk source, or superficial deposits marginal to it. Significantly, a few hundred metres from the site, land sloping gently up to the southwest reveals a surface exposure of Upper Cretaceous chalk bedrock. Further exposures occur to the north on the other side of the Kennet valley (British Geological Survey Ten Mile Map 1979).

Nodules picked up from the hillslopes today have a slightly pot-lidded or weathered appearance but otherwise are covered with a thick chalk cortex not unlike the examples from the site itself. It seems highly probable, therefore, that a nearby eroding hillslope or stream cutting would have provided

a more than adequate flint source for the Avington flint-knappers. Recent gravel digging about 1-1.2 km NE of the site has also exposed weathered chalk 3-4m below the surface which was observed to contain some excellent nodules (Froom pers. comm.). Indeed, the close availability of abundant flint of high quality may well have influenced the exact location of the site.

Debitage.

A full account of the site and finds is still awaited. The few observations made here will be largely restricted to scatter B-C/19-20. Amongst the artefacts recorded are blade cores, blade and bladelet debitage; the debitage also includes a high proportion of unretouched flakes, chips and minute fragments not more than a few mm in overall size. From photographs, it is clear that the material lay heaped together and there can be little doubt that the whole scatter is in situ. I myself have been able to refit several dozen pieces during the course of examining the artefacts. That this was a primary flaking area is also shown by the presence of crested blades, core tablets and various core rejuvenating flakes. An interesting feature of the material is the apparent total absence of burnt artefacts. This is a recurrent characteristic of the long blade assemblages and may well reflect an extremely brief occupation period. It is a subject to which I shall return in the concluding section of this chapter.

Of the nineteen cores examined from the scatter fifteen are prismatic blade cores (thirteen opposed platform; two are irregular two-platform cores). Of the remainder three are one-platform blade cores whilst one is a rough-out discarded in the early stages of reduction. The prismatic types range in size

from 3.5-17.9 cm. Most of them (12 out of 15) are larger than 8 cm, although the mean occurs at 12.1±3.1 cm. The three smaller cores which vary in size from 3.5-5.4 cm show narrower laminar removals (circa 0.5 - 1.5 cm in width) and are regarded as bladelet cores (for a full list of sizes see Gazetteer).

Amongst the one platform types is a core on a flake 8.8 cm in maximum dimension with narrow laminar removals. On the basis of narrow scar width this too might be considered a type of bladelet core. The prismatic cores as a group are characterised by two sorts of platform preparation. In seven examples the striking platforms are plain; whilst eight show signs of faceting. Three of the latter are faceted at one end but are plain at the other. Evidence of platform abrasion is a common feature on the cores, particularly those with plain platforms. Eight with plain platforms at one or both ends show this type of modification.

Preparation at the back of the cores is not particularly uniform. Five examples display a dorsal (bidirectional) crest; five have a cortical backing, whilst the rest have either a partially flaked or wholly flaked back to them. In these last cases the flaking is highly irregular and evidently not designed to produce a dorsal crest.

A sample of over 100 unbroken laminar pieces was measured from the main concentration. It included blades up to 20 cm long and bladelets as small as 2.1 cm in maximum length. Overall the artefacts displayed a mean length of 8.4±4.2 cm, a breadth of 2.6±1.3 cm and a mean thickness of 0.8±0.5 cm. As in many of the other sites examined no clear division could be seen between blades and bladelets, with one type naturally grading into the other.

The blades are typically narrow and straight in profile.

Few 'Siret' accidents (see Introduction, 'Notes to the Reader') were seen but several refitted breaks displayed "languette" features resulting from flexional snaps. A study of the butt types revealed that both faceted (47%) and plain or punctiform types (45%) are well represented in the sample (n=94). A smaller proportion of the blades have linear butts (6%), whilst only one example each was recorded of cortical and dihedral specimens. The low representation of cortical butts is hardly surprising, given the "worked- out" nature of many of the cores. The butt measurements of the plain types indicate fairly broad dimensions (mean breadth = 0.29$\pm$0.23 cm). Only very few of the plain types can be described as truly punctiform.

Amongst the proximal end features (see Introduction, 'Notes to the Reader') recognised on the bulbar surfaces, most (48%) showed a large bulbar scar on a diffuse bulb (attribute 4), 34% displayed a lipped butt and a diffuse bulb (attribute 2), whilst 17% had a broad cone of percussion with a diffuse bulb (attribute 5). Only one example revealed a well-defined point of percussion with conchoidal fracture marks on the bulb (attribute 1). On this evidence it would seem highly probable that the typical hard-hammer mode is absent in the manufacture of the Avington blades and bladelets.

Retouched Tools.

Amongst the implements recovered from the long blade horizon are end-scrapers, burins, backed bladelets and non-geometric microlith points. Included with the informal tool category are examples of bruised-edge blades and flakes. By-products of retouched tool manufacture (ie. microburins) seem to be totally absent.

End-Scrapers.

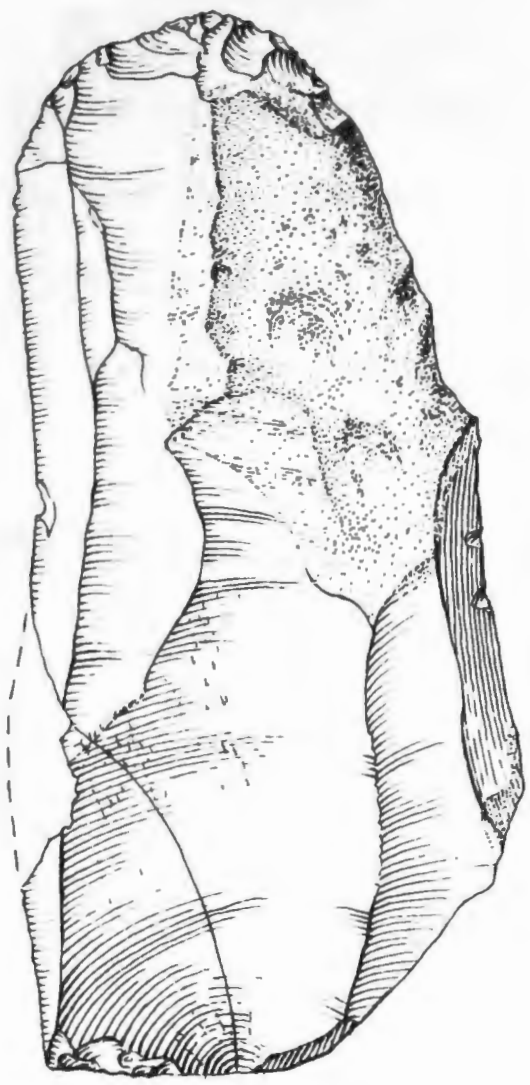
Four end-scrapers were examined from the long blade horizon. Like the other artefacts from the same level they are patinated white and in two instances carry the same pot-lidded cortex as seen on the local flint (Figure 2.3, 1). Only one scraper is made on a blade (Figure 2.3, 2), the rest being made on flake supports. The flakes are broken, but have mean width dimensions of 4.7±0.3 cm and mean thicknesses of 1.3±0.4 cm. The blade end-scraper is likewise broken but is made on a support 2.4 cm wide by 1.2 cm thick. It is slightly thicker than the average blade in the measured sample.

All of the scrapers are retouched at the distal end. They are characterised by semi-abrupt retouch, which in one example is slightly flat and invasive. None of the scrapers shows any sign of lateral retouch. One piece however displays some evidence of use. It is the blade end-scraper. Distinct wear traces are visible on one side of the ventral surface. The damage occurs in the form of invasive scalar retouch of a similar type to that seen on many of the bruised blades and flakes.

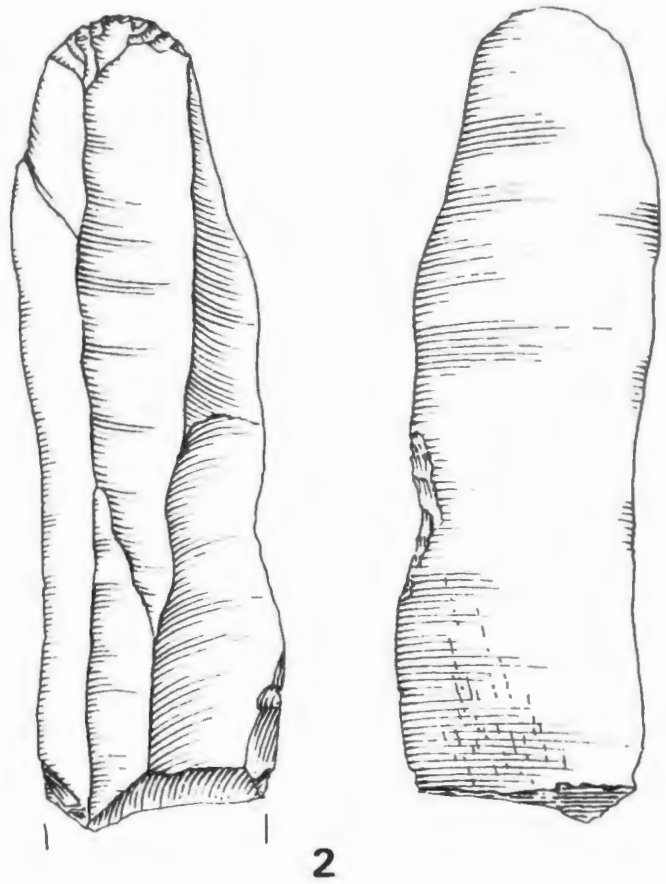
Burins.

A single burin was examined from the long blade level. It is a burin on a straight truncation (Figure 2.3, 5). The truncated extremity is made by semi-abrupt retouch and occurs at the distal end of a blade support 7.8 cm long. The butt end of the burin is faceted. Several spalls have been removed, the largest of which has left a facet measuring 0.55 cm across.

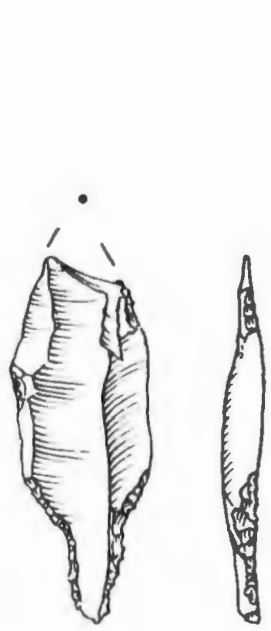
Of the few other burins recovered, one is a straight dihedral example over 13 cm long. Although it is typical of the kind of blade found at Avington it is brown stained unlike



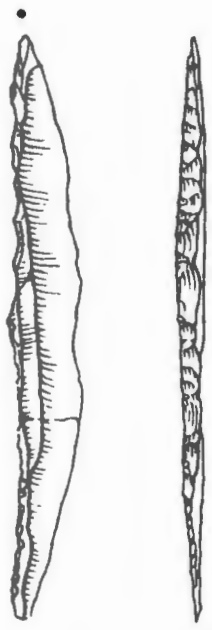
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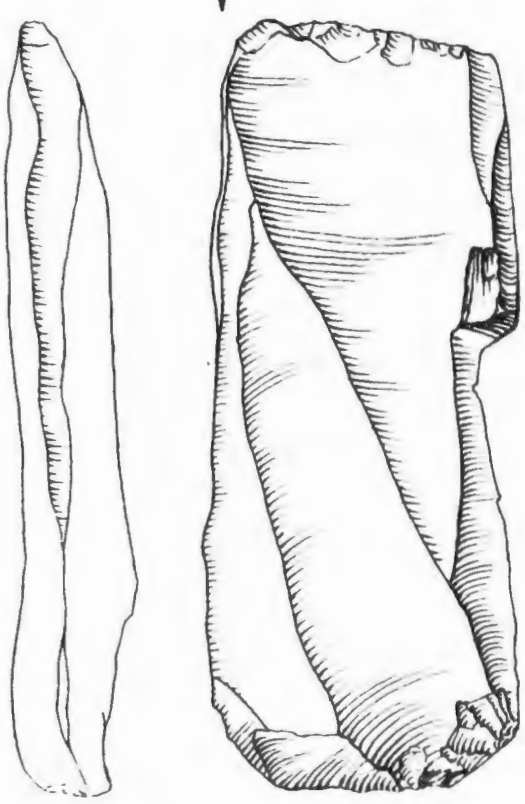
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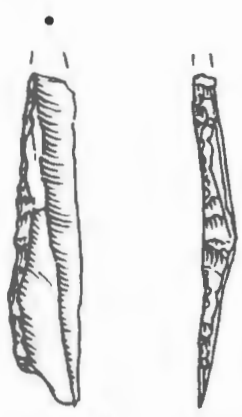
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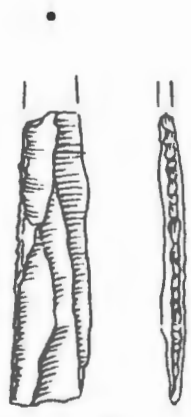
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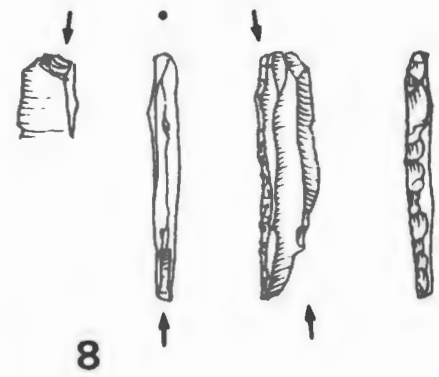
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6



7



8

Figure 2.3 Avington VI: Retouched Tools. 1-2. End-scrapers; 3. Tanged point; 4,6-8. Backed bladelets; 5. Burin on truncation. Scale 1:1.

the bulk of the material and does not derive from the long blade horizon itself (F.R. Froom pers. comm.). Given the known Mesolithic activity in the area, it is possible that this particular piece was moved during some later disturbance of the site.

Backed Bladelets.

Straight backed bladelets are a common component of the Avington assemblage. They are made on fairly narrow supports and retouched along one edge. The retouch often removes part of the proximal end of the blank although none of the pieces displays what could be described as a distinct truncation. In all of the nine examples examined the retouch occurs on the right hand side. None of the pieces shows any additional sign of retouch along the base.

Measurement of the nine pieces shows that although many are broken they are rarely less than 2.4 cm long (two examples only), whilst the longest measures 5.9 cm in length and is made up of two refitted sections from the same square metre (Figure 2.3, 4). None of the break surfaces examined however display obvious signs of intentional snapping or segmentation (cf. Bergman et al. 1983); it is likely the break was accidental.

A high degree of uniformity in the selection of blades is suggested by the mean measurement of the pieces. The thickness in particular shows very closely matching dimensions (mean = 0.24 +_0.06 cm), whilst the mean width of 0.66 +_0.22 cm is also in near agreement. The tools were evidently manufactured on small blade or bladelet supports. There is no suggestion that the microburin technique was used in their manufacture.

Any prospect of carrying out microscopic study of the points for wear traces is diminished by the highly patinated nature of the artefacts. In terms of visible traces however

none of the bladelets displays any sign of edge damage along the lateral edges. By contrast however one of the pieces from square B20 (Figure 2.3, 8) shows possible evidence of impact damage at both ends. This occurs in the form of a small burin facet at one tip and a large negative flake scar at the other. Both types of break have been noted on experimentally fired arrowheads (Barton & Bergman 1982).

Tanged Point.

One diminutive tanged point has been found in the long blade horizon (Figure 2.3, 3). It carries a proximal truncation and is typologically identical to tanged points of Ahrensburgian type (Rust 1943; Taute 1968).

Microliths.

Five patinated examples were examined from the long blade horizon. Their association with the main assemblage can hardly be doubted since one or two were covered by long blade finds. They comprise bladelets truncated by abrupt retouch nearly always at the proximal end and are synonymous with A-type microliths (Clark 1934a). Only one of the five examples was truncated at the distal end.

These artefacts are relatively broad (mean width = 0.97±0.22 cm) and thin (mean thickness = 0.25±0.08 cm). They appear to be made on bladelets and have mean lengths of 3.2±0.7 cm.

All the microliths are retouched on the left-hand side (pointed end uppermost) with the point slightly offset to the long axis of the piece. It is interesting to note that none of the tips shows any sign of a microburin facet. Judging from the absence of microburins in the examined area, it seems

unlikely that this technique was used to manufacture them. It should be noted, though, that the measurements of the microliths fall well within the mean dimensions of A-points from early Mesolithic sites in Southern England (see Chapter 4).

Retouched Tool Waste.

As has been noted already, no microburin waste was found associated with the scatter or elsewhere in the site. These are unlikely to have been overlooked since significant amounts of small debris measuring a few millimetres across were recovered.

Although a cursory inspection failed to reveal a single retouched flake (eg. end-scraper debitage) it seems highly likely that a more thorough search will bring such items to light. There is no reason at all to suppose that the tools were not manufactured on site.

Bruised Blades and Flakes.

'Bruising' or edge-damage on artefacts has been described elsewhere by Bordes (1967) as a form of accidental wear resulting from heavy utilization rather than deliberate retouch (see also Chapter 3, under 'Belloy-sur-Somme'). Frequent examples of bruised artefacts exist in the Avington assemblage. Many of them occur on broken blade and flake fragments, which may have been fractured in use. Five of the more complete specimens were measured. They occur on blades from 14 to 20 cm long. The edge-damage or utilization retouch is usually confined to one side (this is even true of the broken pieces), although bilaterally damaged pieces do sometimes occur (Figure 2.4).

The damage scars are invasive and scalariform, and can

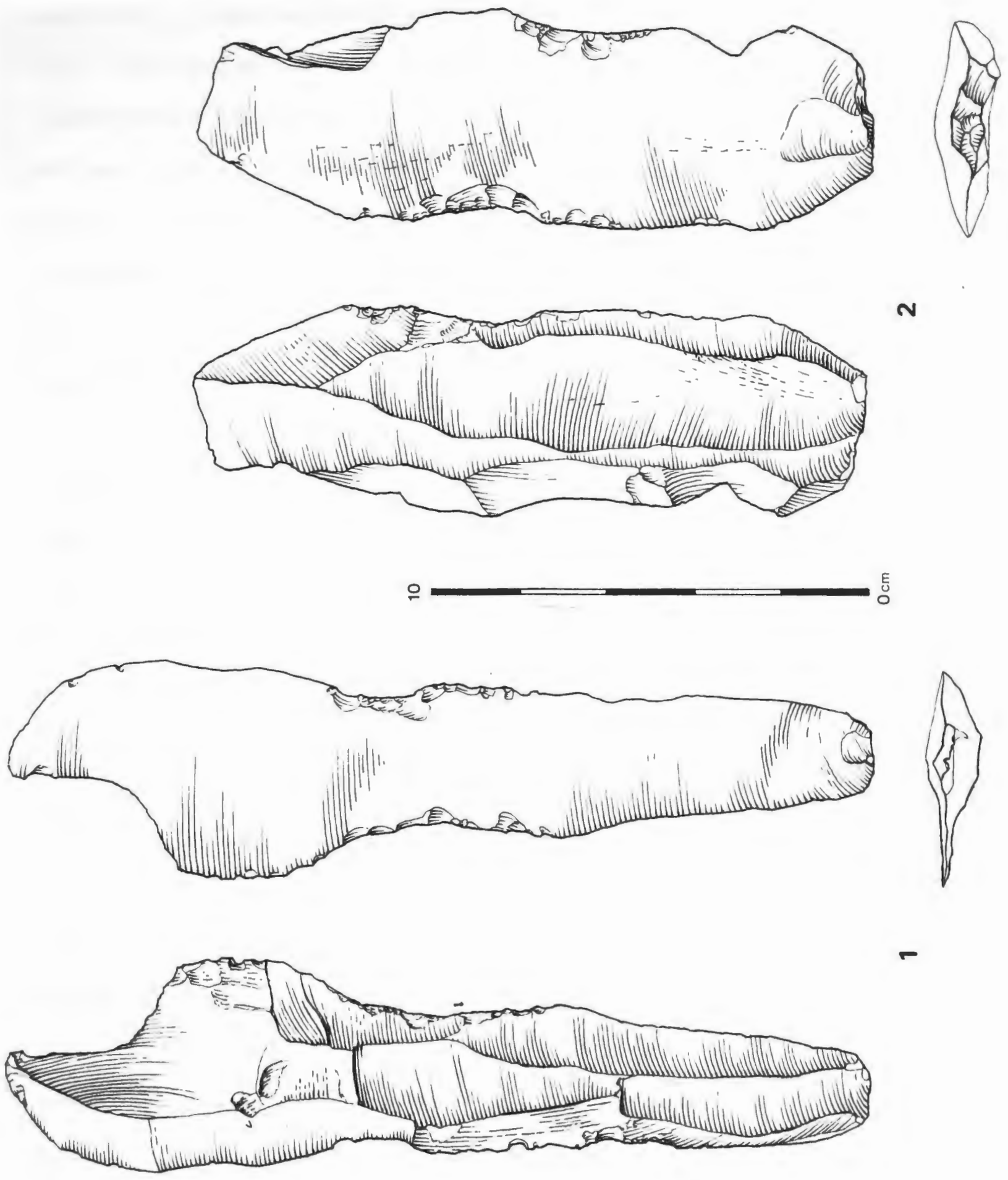


Figure 2.4 Avington VI: Bruised blades.

extend as much as half a centimetre or more onto the ventral surface. As in the examples from other long blade sites the use-wear is mostly confined to the ventral surface, indicating that the implement was held ventral face up at a relatively steep angle (Barton In Press). In some instances, the edges are so heavily damaged as to produce a crushed or bruised effect. This was noted particularly on one of the bilaterally damaged blades.

Hammerstones.

Two potential hammerstones were recognised from the assemblage. They are both of flint, are nearly spherical in shape and display heavily battered cortical surfaces. The larger of the two weighs 1.2 kg, the other is somewhat smaller and weighs 0.4 kg.

Dating the Flint Assemblage.

Taken as a whole the dating evidence for the long blade site remains unsatisfactory. If the low levels of pollen can be taken at face value and the molluscan remains are indeed indicative of the prevailing conditions at the time the site was occupied, then there would seem to be little objection to a late Zone III/early Zone IV date for the long blades. Whatever the case, the long blade horizon is certainly no earlier than Zone III in age, as the underlying Zone II soil horizon would appear to confirm. The absence of any burnt material would seem to rule out any immediate prospect of dating the assemblage. However, the preservation of a solitary fragment of dental enamel from within the long blade level is a positive sign that localised pockets of organic matter may well survive, so perhaps it is not unreasonable to hope for a radiocarbon

reading eventually.

Other Sites in the Avington Area.

Isolated examples of long blades are known from various other sites in the Kennet Valley upstream of Newbury (see Figure 2.2). At the predominantly Mesolithic site of Wawcott III, several fragments of patinated long blades (one with a faceted butt) were recovered from clays beneath the site (Froom 1976, fig 50). Not far from this location is the site of Wawcott XII, now completely destroyed by ploughing. It originally lay under some six inches of peat on shell marl or gravel deposits (Froom 1970). The site yielded opposed platform blade cores up to 25 cm in length and some large waste flakes as much as 15 cm in size. It is significant that the site lies close to the base of Irish Hill, a chalk escarpment, clearly a possible source of flint nodules. Very few retouched tools were recovered from the surface. Amongst those were included an obliquely truncated point (A-type) and a elongate trapeziform.

Some indication that further long blade finds were made in the area is supported by a brief reference in the Transactions of the Newbury District Field Club (Archaeological Notes: 1931, 69). This describes flint implements found on the ten foot terrace at Horsepool Field, Speen. Although these are now lost, the finds were described at the time by Reginald Smith as showing "Aurignac influence". This is a term that was sometimes used rather loosely at that period to describe long blade implements (cf. Garrod 1926, 160-1). Artefacts of a similar kind were also thought to have been found at Donnington north of Newbury (Archaeological Notes: ibid.). Clearly, this is an area of considerable potential for future discoveries, and with

luck such would include undisturbed sites associated with organic remains and good chronostatigraphic evidence. Meanwhile we may turn our attention to occurrences a little further down the Kennet Valley, east of Newbury.

Crown Acres. (3) SU 509 666

Introduction and Location.

This site is located about 2.5 km east of Newbury in Berkshire, on a low south facing terrace of the River Kennet (Figure 2.2). Extensive gravel quarrying by Amey Roadstone and other companies has now totally destroyed the site and today the location is a reservoir used for recreational purposes by local anglers. The finds themselves were made in one of the lower pastures of the River Kennet known as the Crown Acres field. Reploughing of the field in the 1960's led to the discovery of long blade artefacts by two brothers Messrs. R. and A. Sheridan of Newbury, keen local archaeologists. The only published account of the finds is a short paragraph which appeared in the Berkshire Archaeological Journal soon after the discoveries were made (Anon, 1963; see also Campbell 1977).

According to more recent information I was able to obtain from one of the finders (RS) the artefacts occurred as part of a diffuse flint scatter about 20 yds back from the edge of the five foot terrace abutting the River Kennet. Other scatters of material of an altogether different type and patina were found nearer the edge of the terrace. These were of a similar kind to the flint excavated at the Thatcham Mesolithic sites (cf. Wymer 1962), which lie less than 1 km to the west of Crown Acres field and occupy similar positions along the edge of the low terrace.

Stratigraphy.

The flint scatter came to light in the disturbed topsoil produced by ploughing. The soil was described to me by R. Sheridan as being generally dark and peaty but containing a mixture of gravel. A shallow section cut by the Sheridans near the findspots produced a profile less than a foot in depth. Below the topsoil was revealed a layer of peat overlying a cream-white sandy marl. In the section at the knife-sharp boundary between the peat and sand was recovered a blade typical of the Crown Acres assemblage (R. Sheridan pers. comm.). The artefact deserves some attention since it appears to be the only genuine *in situ* find from the site.

According to the observers, the blade lay flat; the side facing downmost was patinated white, whilst the upper surface had a stained or mottled appearance. The colouring on the upper surface was no doubt due in part to its being in contact with the overlying peat. The occurrence of the long blade at the peat/white sand interface and the heavily (white) patinated nature of the side in contact with the sand suggests that most of the patinated sample originates from *beneath* the peat. The ploughed land surface in the same field is known to have produced a mixture of material of Mesolithic and Bronze Age date (R. Sheridan pers. comm.). These pieces are generally peat-stained or unpatinated, and presumably do not derive from the same level as the long blades.

The Artefact Assemblage.

Raw Material.

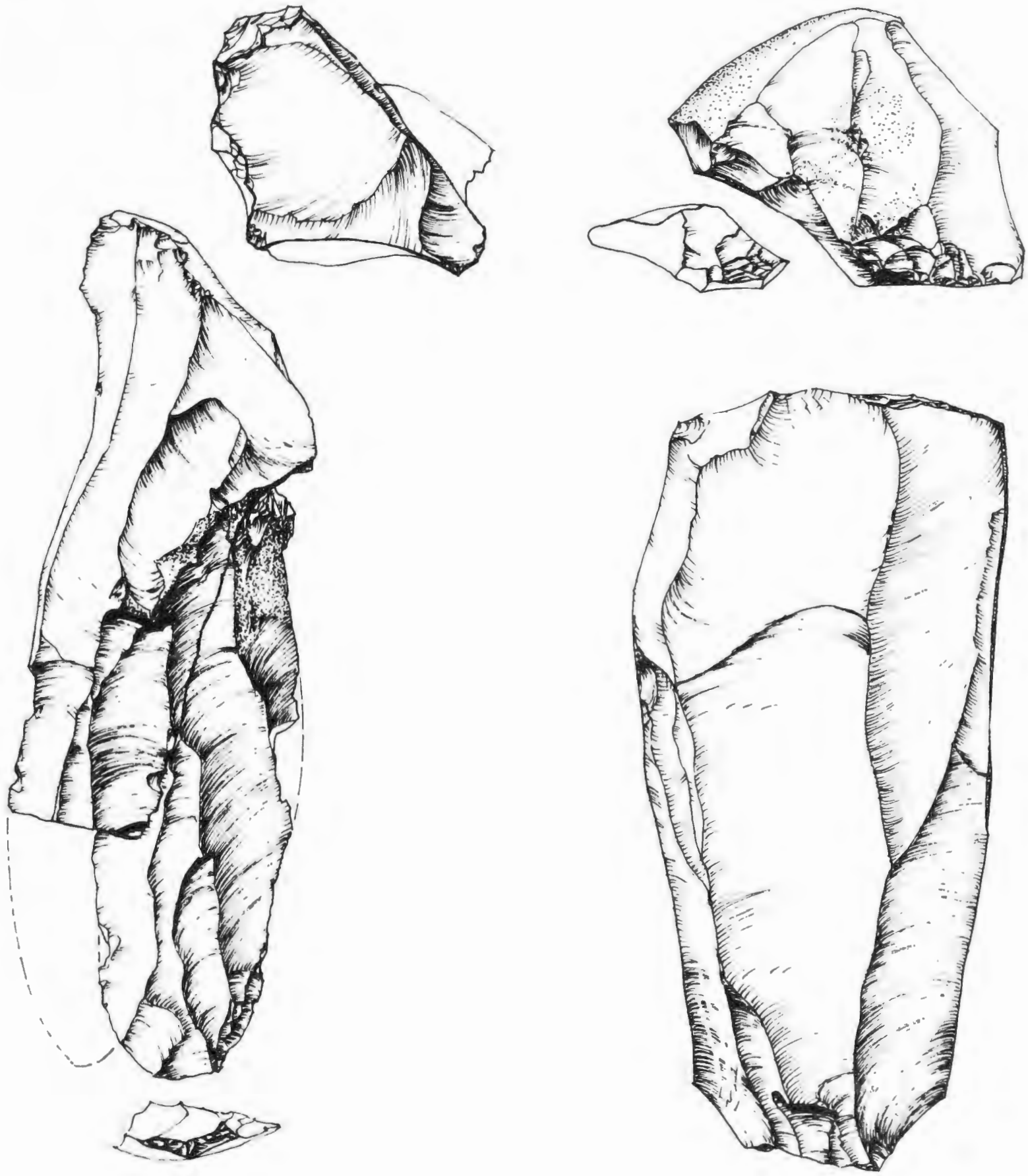
The raw material used for flaking is a high quality flint, characterised by a thin outer layer of cortex. It occurs in the form of cylindrical or sub-cylindrical nodules, which

appear slightly rolled. Recent breaks in the flint reveal a blue/black interior with a somewhat mottled appearance. The flint does contain some large crystalline inclusions, but is generally not badly flawed. It is fairly typical of the flint found locally in the Kennet valley, presumably deriving ultimately from the nearby Upper Cretaceous chalk but perhaps obtained by prehistoric man from superficial deposits along its margin.

Debitage.

A large proportion of the long blade material is white patinated. For the reasons stated above only artefacts displaying heavy patina on at least one side were selected for measurement. The same is true for the cores sampled. Amongst the patinated assemblage are eight prismatic blade cores, of which six are of opposed platform type. The remaining two have only one platform. The cores vary in size from 5.7 to 15.2 cm. One of the smaller examples has narrow laminar scars showing that numerous bladelets were detached from it.

Two typical cores are illustrated here. The first is an opposed platform core. At one end it has a series of small flake removals making up a faceted platform (Figure 2.5, 2); the other platform is plain. A blade with a faceted butt, which almost certainly belongs to the same core, is also figured. The intervening flake is unfortunately missing. The back of the core is unprepared, displaying a natural cortical surface. A second core is shown in figure 2.6 with a refitting plunging blade. The core was clearly of two opposed platform type at an earlier stage of reduction. In this example, neither of the platforms is faceted. Signs of platform abrasion are also visible at the uppermost end of the piece.



1

2

Figure 2.5 Crown Acres: 1. Refitting blades from two opposed platform core; 2. Blade core with faceted platform. Scale 1:1.

Like the first example this core shows a natural cortical backing; there is no evidence of dorsal cresting preparation. This is wholly characteristic of the Crown Acres cores: the dorsal side of all of them shows some degree of cortical covering. The majority (6) have plain striking platforms, and in all but one instance (the faceted example) display signs of platform abrasion.

Out of a sample of 62 blades measured, only 10 were complete enough to determine their total length. They range in size from 6.8 - 13.9 cm giving a mean average of 10.4 $\pm$ 2.6 cm. No bladelets occurred but this is almost certainly due to the manner in which they were collected and highlights one of the major problems of working with surface assemblages. Included amongst the broken blades (many showing modern breaks) were 27 artefacts which measured over 7 cm in length. The Crown Acres blades are all fairly broad (1.7 - 4.8 cm), with a mean of 2.9 $\pm$ 0.76 cm (n=62).

The majority of blade butts are plain or punctiform (66%) with 23% faceted and only one example each of a linear and a cortical butt, the others were unclassifiable (n=47). The butt end features themselves show a predominance of typical soft-hammer mode percussion marks (attribute 2) 17 blades have diffuse bulbs with lipped butts. Of the others represented seven show the features of attribute 4 and seven of attribute 5. No pronounced points of percussion or cones with conchoidal fracture marks (attribute 1) were recorded. Fifteen of the butt ends were unclassifiable.

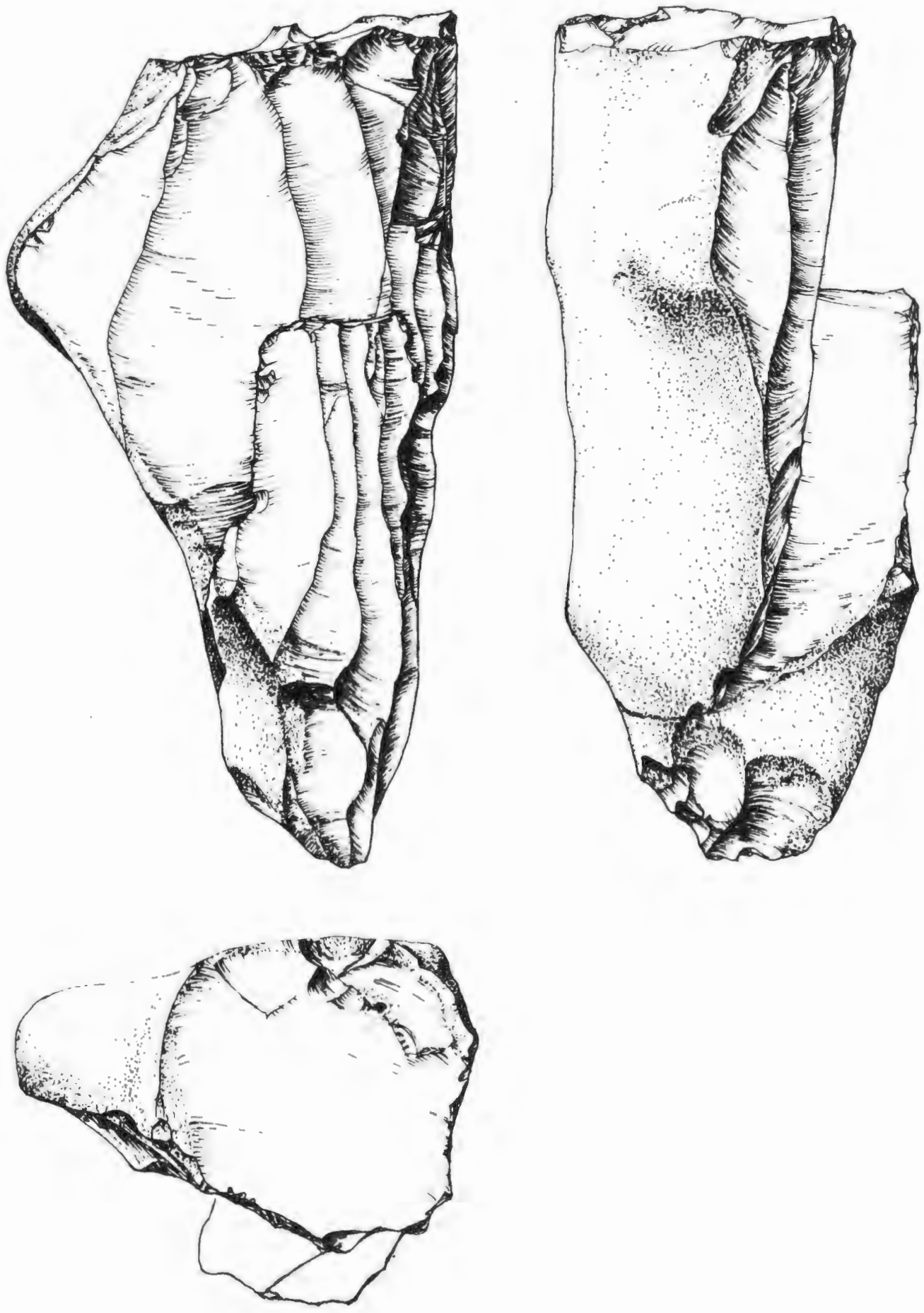


Figure 2.6 Crown Acres: Prismatic opposed platform blade core with refitting plunging blade. Scale 1:1.

Retouched Tools.

The retouched tool assemblage is restricted to five end-scrapers, one burin, two backed blades, two truncated blades and four other pieces of uncertain type.

End-Scrapers.

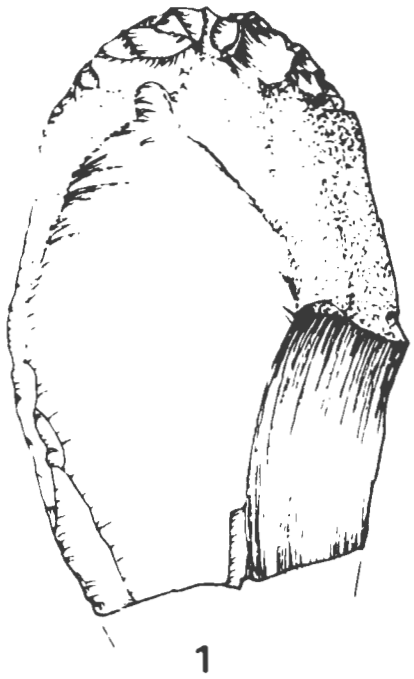
The end-scrapers are predominantly made on flake supports, only one of the five (a double end-scraper) appears to be made on a blade (Figure 2.7, 5). The dorsal scars on this piece also show that it was detached from an opposed platform core. The scrapers are all fairly broad (3.8±0.7 cm, n=4) and also display varying degrees of cortex on their dorsal surfaces (Figure 2.7). The supports tend to be relatively thick, occupying the upper end of the range of all measured pieces (1.2±0.4 cm, n=5).

All of the scrapers show some degree of breakage. Only one is due to modern plough damage, the rest are the result of flexional breaks which interestingly seem to be confined to the proximal end.

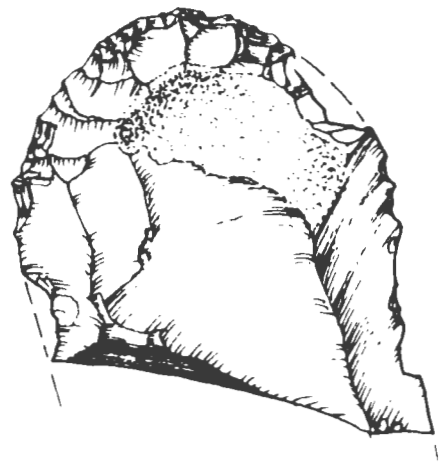
Two of the end-scrapers, including the double end-scraper show traces of burning, but this is highly unusual for the rest of the artefacts and tools in the assemblage. The scraper fronts are convex and semi-abruptly retouched generally forming fairly steep angles (greater than 60 degrees). All of the single end-scrapers are retouched at the distal end.

Burin.

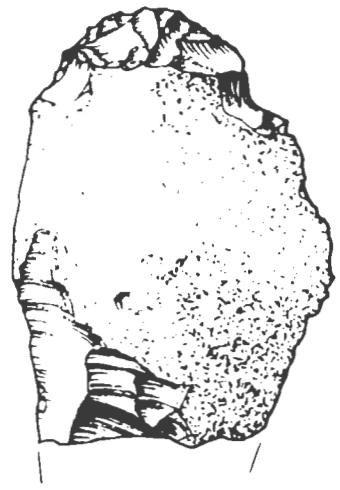
A single burin on an oblique truncation was collected from the Crown Acres field. It is made on the proximal end of a blade 2.2 cm wide and 0.5 cm thick, with a flexional break at the distal end (Figure 2.7, 6). The blade support derives from



1



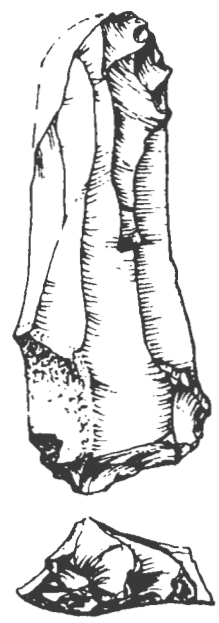
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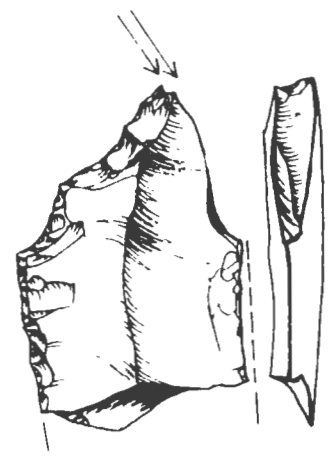
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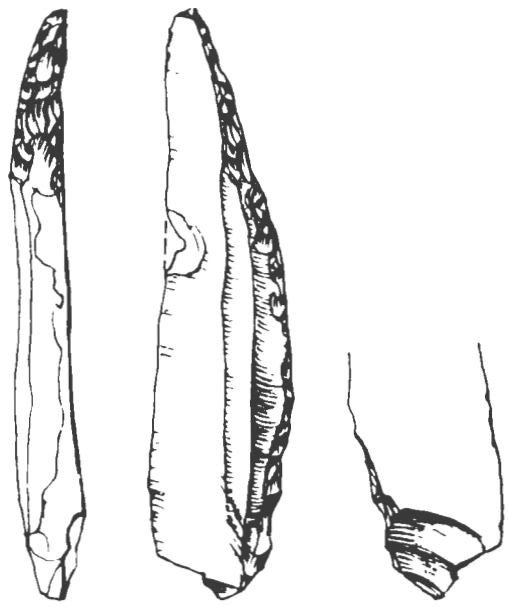
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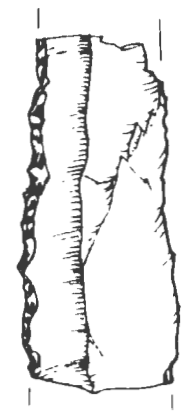
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6



8



9

Figure 2.7 Crown Acres: 1-4. End-scrapers; 5. Double end-scraper; 6. Burin on truncation; 8-9. Backed blade/lets. Scale 1:1.

a double-opposed platform core, and has additional retouch down one edge. The other edge is marked by recent damage. Two burin spalls were removed, the larger of the two left a facet 0.43 cm wide. A second truncated blade, slightly narrower and thinner was likewise retouched at the proximal end (Figure 2.8, 1). It too may have been intended as a burin support, but the side spalls were never detached.

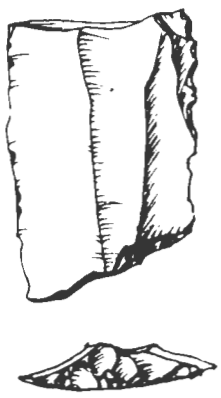
Backed Blades.

The two backed blades are perhaps the most striking pieces of the whole retouched tool assemblage. The first is a curved-backed piece with abrupt retouch running down its right-hand side (Figure 2.7, 8). It measures 5.9 cm long. The retouch is abrupt but at the thicker distal end is also bidirectional of the kind often produced when using an anvil rest. An ancient break exists at the proximal end with a similar break facet to that produced by accidental breakage during manufacture. The broken-off tip end of such a break is often known as a Krukowski microburin.

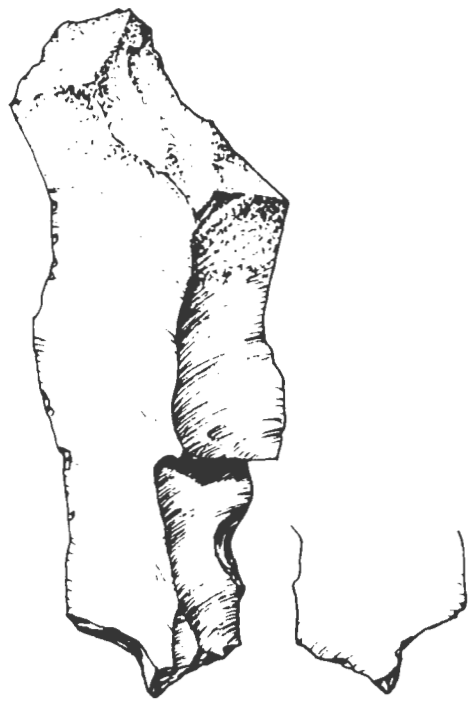
The second backed piece is a blade broken at both ends. It is evidently part of a longer blade measuring 1.5 cm across x 0.75 cm thick. The breaks are ancient and the piece probably broke during manufacture or use. Neither of the breaks shows signs of deliberate snapping (cf. Bergman et al. 1983). Continuous abrupt retouch marks the left edge of the piece (Figure 2.7, 9).

Truncations.

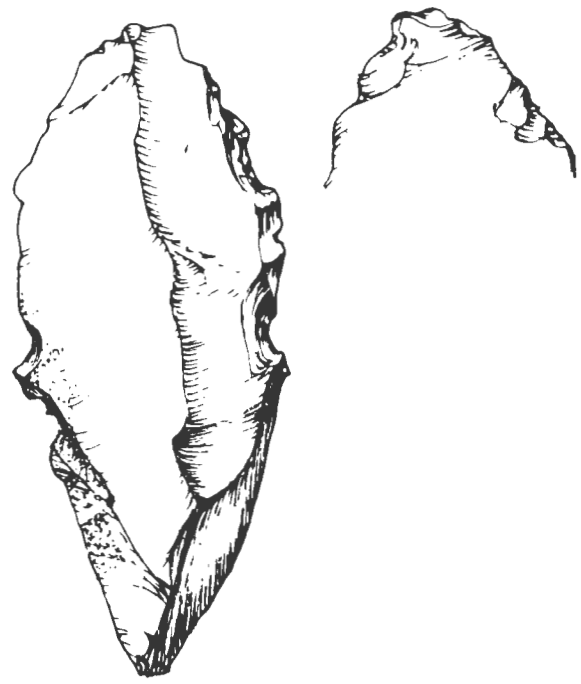
Two truncated blades were discovered each with a semi-oblique truncation at the proximal end. The first has already been mentioned above as being similar in morphology to the



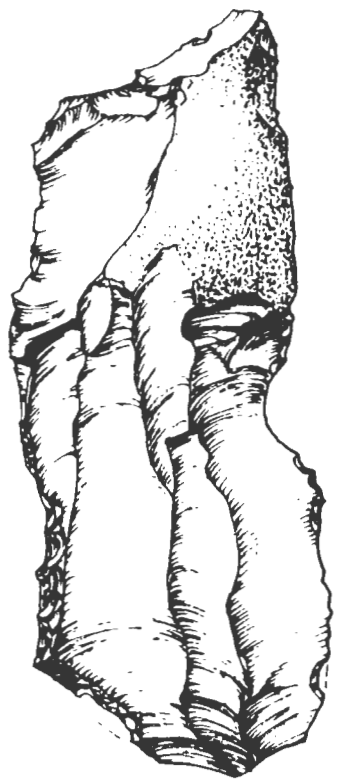
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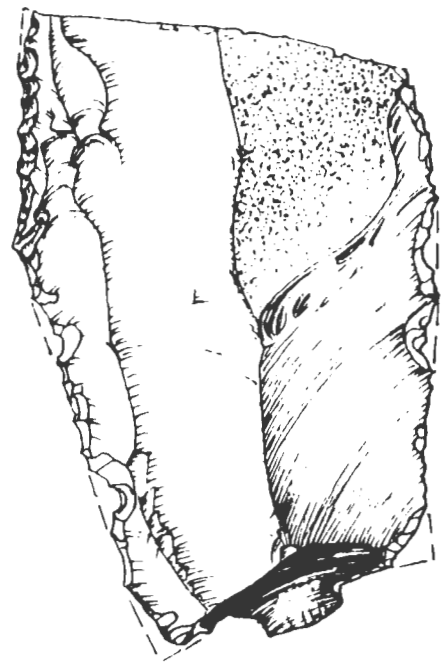
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4



5

Figure 2.8 Crown Acres: 1. Truncated blade; 2. Piercer (?); 3-5. Miscellaneous retouched pieces. Scale 1:1.

truncation burin. It is slightly smaller than the second example which measures 2.6 cm wide x 0.8 cm thick. In this second piece (Figure 2.8, 2) the proximal end carries an additional retouched notch to form a type of piercer. However it is difficult to tell whether this is the result of modern damage.

Miscellaneous Retouched Pieces.

Amongst the retouched pieces is one which is only partially patinated and may well be part of a later assemblage (Figure 2.8, 5). The other three include a thick white patinated flake with retouched notches (Figure 2.8, 3), a retouched piece from an opposed platform core (Figure 2.8, 4) and a broken retouched blade again from a core with opposed platforms.

Bruised blades.

Pieces with heavily invasive scalar retouch or bruising along the edges are noticeably absent in this assemblage. Only one blade showed slight marginal damage on the ventral surface but since the scars were of a different patina from the rest of the piece, the damage is likely to be recent in origin.

Dating evidence.

The Crown Acres assemblage derives from a surface collection. Although the material cannot be dated, the best indications are that it derives from within a cream white sandy-marl beneath peat. If this is the equivalent of the white algal marl at Thatcham, then there is every likelihood the deposit accumulated in the earliest part of Zone IV (Churchill 1962). It is significant to note that the first

Mesolithic occupations at Thatcham are dated to c.9,700 BP, coinciding with changes in surface run-off which produced marked colour differences in the marl deposits adjacent to the site (Churchill ibid., 367). Despite the absence of clear cut evidence it would seem to be at least a tenable working hypothesis that the Crown Acres assemblage pre-dates the Mesolithic ones at Thatcham.

This concludes the section on the Kennet valley sites, further details of which can be found in the Gazetteers at the back of the thesis. The second area under consideration is Kent, where two major long blade assemblages are so far known. They comprise the sites of Springhead on the south bank of the Thames, and Riverdale located on the north side of the River Stour just outside Canterbury. Both derive from collections made over fifty years ago which are today housed in the British Museum.

Sites in Kent.

Springhead. (43) TQ 618 737

Location.

The site is situated in the Ebbsfleet Valley, southwest of Northfleet on the right bank of the lower Thames (fig. 2.9). It owes its discovery to the late Major J.P.T. Burchell, a distinguished amateur archaeologist living in North Kent. He reported the presence of flint artefacts from two mesolithic floors, one above the other. The finds were made on the east bank of the river Ebbsfleet. The lower of the two floors contained a white patinated flint assemblage with many long blades. A preliminary note announcing the finds appeared not



Figure 2.9 The Location of Springhead and other Lower Thames findspots.

Figure 2.9 The Location of Springhead and other Lower Thames findspots.

Key: 40-Dartford, Long Reach; 41-Temple Farm; 43-Springhead;
48-Darenth, Green Street; 51-Erith, Long Reach; 52-Erith, Long Reach;
54-Foot's Cray; 66-North Cray; +-?Springhead;
W-Wansunt.

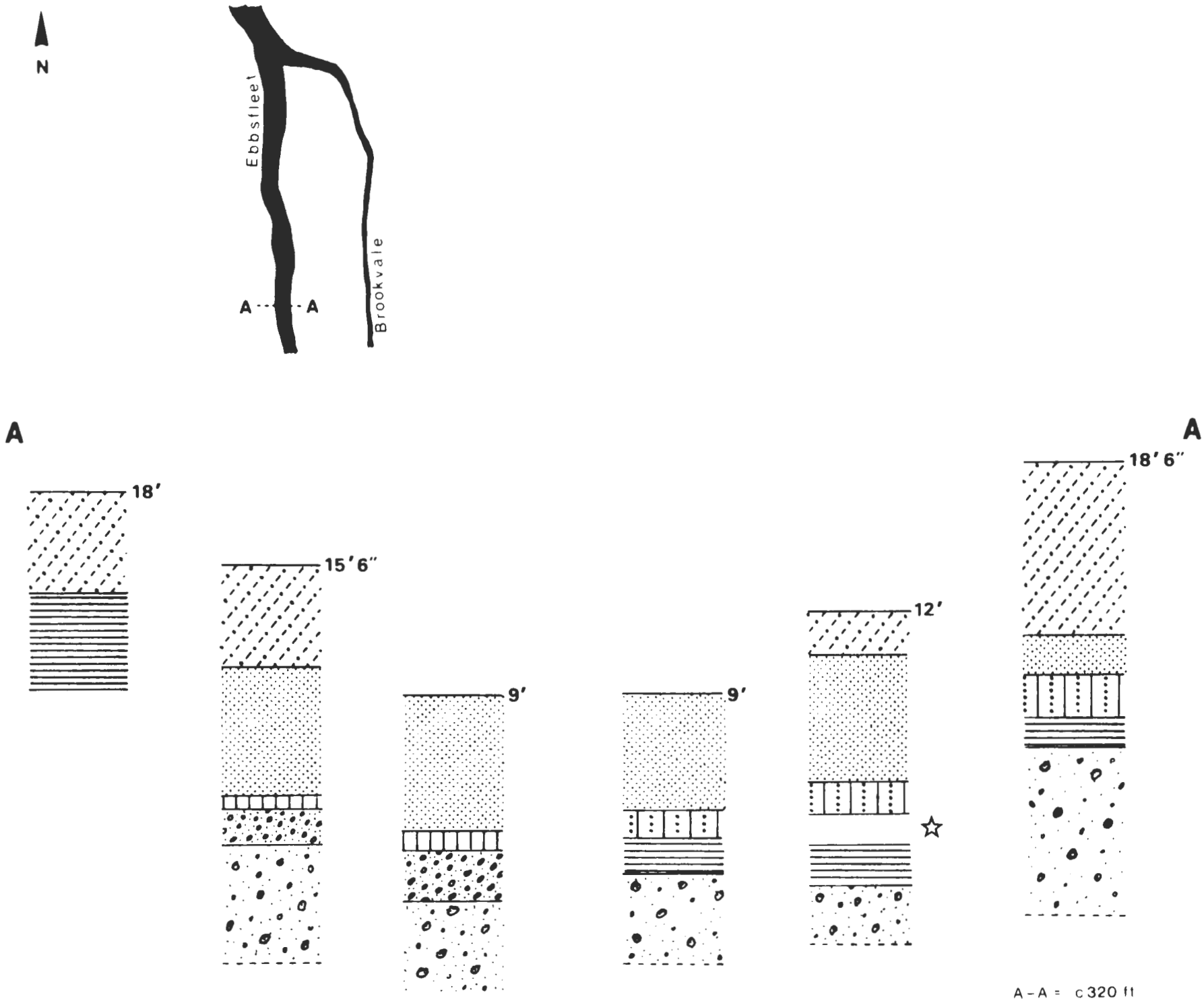
Land Above:
50 ft.
100 ft.
250 ft.
0 2km

long after the discoveries were made (Burchell 1938). The original provenance of the site remains uncertain. In 1960 a concerted effort was made to relocate the site with the help of Major Burchell himself. However, excavations in the area north of the Springhead nursery gardens failed to locate the long blade horizon (Sieveking 1960). Judging from sketched sections and maps housed in the British Museum, the original site may in fact lie a little further north. The annotated section shows the levels containing the long blades a few hundred metres from where the Brookvale stream joins the main Ebbsfleet channel (Figure 2.10). It might be worth another attempt to rediscover this interesting site, should an opportunity arise.

Stratigraphy.

From the records stored in the British Museum and the published finds report, it is possible to gain some idea of the archaeological deposits. A sketch map in the British Museum shows both "floors" lying in a stoneless calcareous silt above a layer of clay and beneath a considerable thickness of alluvium and hill-wash. According to the published report the overlying alluvial deposits were six feet deep (Burchell ibid., 397). At the very top of the sketch section is given a height of 12' O.D. From these figures it is possible to gauge that the artefact "floors" lie at approximately 4-6 feet O.D., that is no more than 1.75 metres above present sea-level (Figure 2.10).

Little additional data concerning the sediments appears in the report except that the silts with the artefacts also contained mollusc shells of both land and fresh water types (Burchell ibid.). This is tantalising hint, of more significance today than in the late 1930's, that important



Key:

Hillwash;

Alluvium;

Grey Sand;

Fine Gravel;

Coarse Ferruginous Gravel;

Sandy Silt with Small Stones;

Loam of Ebbsfleet Channel Stage;

'Mesolithic' Floors.

Figure 2.10 Sketch section across the Ebbsfleet River.

environmental and dating evidence may have been associated with the artefacts.

The Artefact Assemblage.

Debitage.

The majority of blades from the "lower floor" site are broken. Of more than 105 artefacts seen by me in the three main collections (see Gazetteer for museums), under a quarter consisted of fully complete blades or bladelets. Amongst the core types represented, blade cores are well in evidence with eleven classifiable examples. The blade core class consists of eight prismatic cores with two opposed platforms (Figure 2.11, 3), and single examples each of a broken opposed platform core and a one platform pyramidal core. The prismatic blade cores range in size from 6-14 cm with a mean length of 8.7±2.8 cm.

The breadth of cores varies slightly with the mean occuring at 5.0±1.4 cm. As is typical of many of the cores in the long blade assemblages, the majority have substantial areas of cortex preserved on the dorsal side. In no case for example was cresting recorded on the back of a core. Most of the blade cores have plain platforms although faceting is noticeably shown in three examples. Commonly present is platform abrasion, which is associated with all the non-faceted platforms.

Only 21 blades were complete enough to be measured. They consist of artefacts ranging from 3.3-19.3 cm in maximum length with a mean measurement of 10.6±3.1 cm. The blades are of average thickness (mean = 1.2±0.5 cm) and are moderately broad (mean = 3.1±1.1 cm).

From the orientation of dorsal scars it is possible to see that over half of the blades come from opposed platform blade

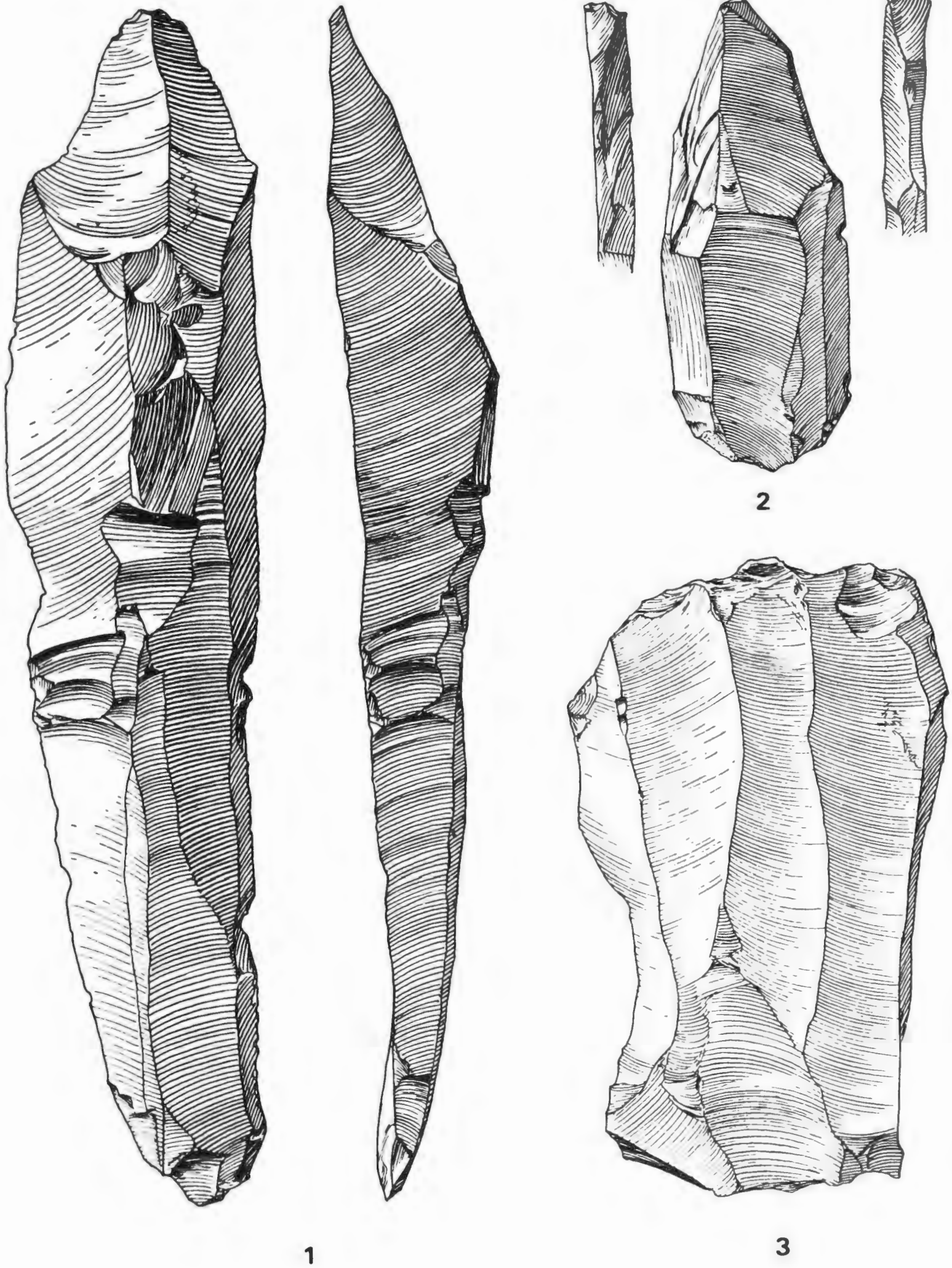


Figure 2.11 Springhead, Lower Floor: 1. Unretouched blade; 2. Dihedral burin; 3. Prismatic, two opposed platform core; (after Burchell). Scale c. 1:1.

cores (e.g. Figure 2.11, 1). Examination of the proximal ends of 41 blades and bladelets showed a mixture of butt types represented. Predominant amongst these are plain butt types (56%), followed by a fairly high proportion of faceted examples (33%). Punctiform examples are rare amongst the plain butted forms. Most of the plain butts are large; the majority also display abrasion of the edge.

The butt end characteristics revealed an important number of pieces with attribute 4 (39%) and 5 (22%), with fewer typical soft antler hammer examples (attribute 2 = 11%) or hard stone hammer attributes (attribute 1 = 6%). This high representation of attributes 4 and 5 is typically associated with many of the southern British long blade assemblages (Table 2.1). For a fuller discussion of hammer types see the final sections of this chapter.

Retouched Tools.

The total number of retouched artefacts recovered from the "lower floor" is thirteen. These consist of five end-scrapers, seven burins and one microlith point.

End-Scrapers.

There are five end-scrapers from the site, of which one is a double end-scraper. All of these tools are made on blade or blade-like supports. They vary in length from 6.8 to 8.8 cm, although two examples including the longest are broken. Apart from the double end-scraper, two of the tools are retouched at the proximal end (Figure 2.12, 2-3). The breadths of the supports vary only slightly and occupies a narrow range between 0.27-0.38 cm; the thicknesses likewise vary little between 0.09-1.3 cm in size.

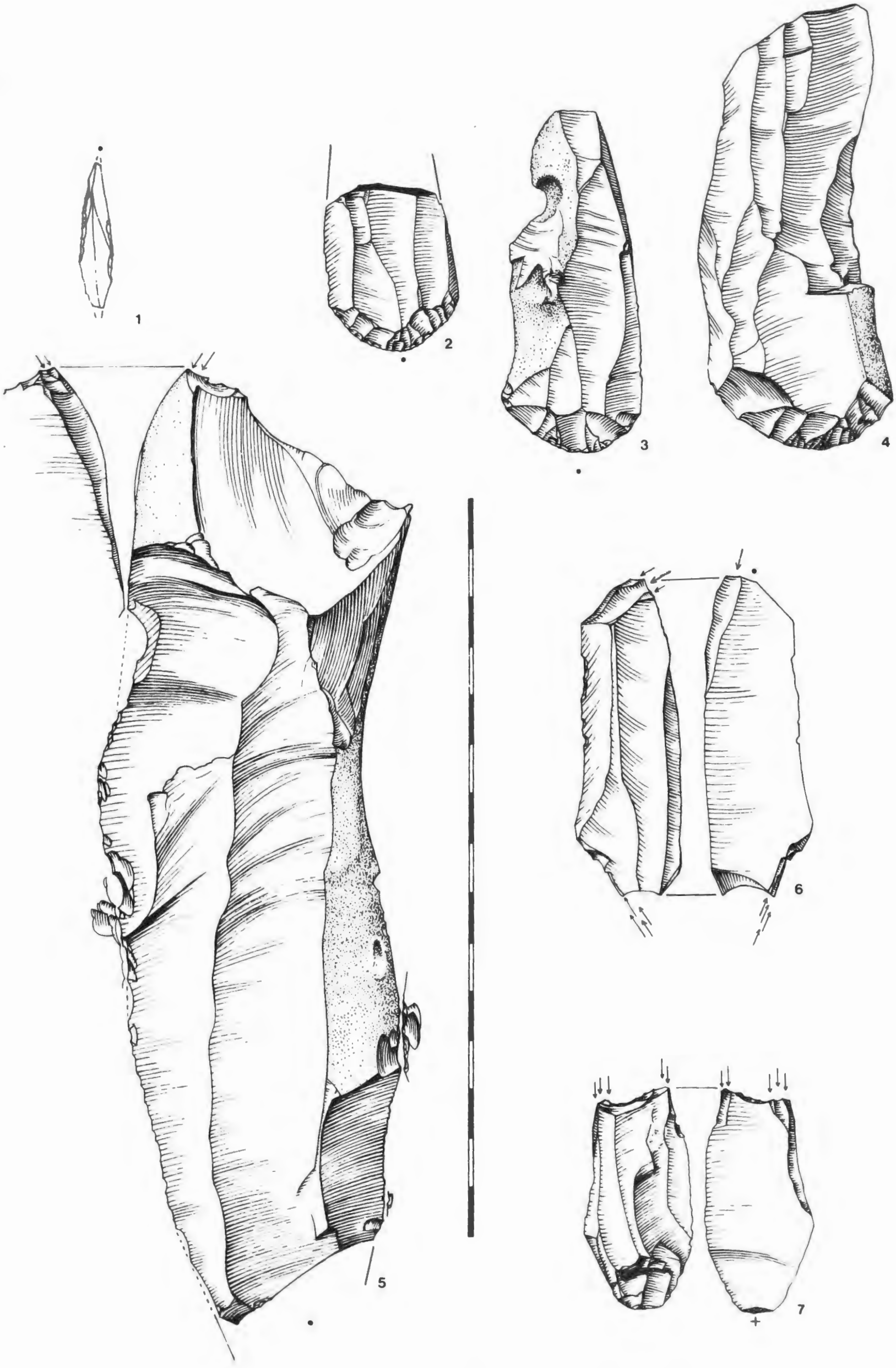


Figure 2.12 Springhead, Lower Floor: 1. Microlith, A-type; 2-4. End-scrapers; 5. Truncation burin; 6. Multiple mixed dihedral burin; 7. Multiple burin on a concave truncation; (after R. Jacobi 1982).

The end-scrapers are highly uniform in type, the only slight differences being related to particular morphological charateristics of the supports. For example three of the end-scrapers carry cortex on their dorsal surface, two do not. Similarly three out of five can be demonstrated to come from opposed platform cores by the arrangement of their dorsal scars: All of the scrapers show moderately low scraper front angles, none is steeper than 80 degrees. Only one of the scrapers has a complete butt; it is faceted.

A notable absence on the end-scrapers is the occurrence of lateral retouched edges, whilst a second feature is that no macroscopic edge-damage may be seen on any of the pieces.

Burins.

Of the seven burins from Springhead, five are dihedral burins and the remaining two are truncation burins. The dihedral examples consist of three straight dihedral types (Figure 2.11, 2), one on a natural surface and one a multiple mixed type. Of the truncation burins, one is a double type on a concave truncation; the other is somewhat atypical and is on a large blade (Figure 2.12, 5 & 7).

The dihedral burins as well as the rest are made on blade supports typical of the blades from the site. They range in length from 4.4 - 10.0 cm, although one truncation burin is made on an exceptionally long blade 19.2 cm in length (Figure 2.12, 5). All the preserved butts on the burin supports (4) are plain. The burin supports are generally not very thick, mainly being under 1 cm (mean thickness = 0.08$\pm$0.01 cm). The burin spall facets are all correspondingly narrow the one exception being the very large truncation burin which has a facet 2.7 cm thick. Besides the last example, the overall

breadth of the burin supports is much the same (mean = 2.8±0.5 cm).

The large truncation burin is somewhat unusual in appearance. The truncation itself is formed by one or two small flake removals at the distal end of a large blade. These served as a platform for the detachment of several side spalls (Figure 2.12, 5). No other convincing burins of this type have so far been recorded in the other long blade collections that I have seen. Apart from this one example, signs of macroscopic use-wear are otherwise absent on the Springhead burins. The large burin shows some traces of use-retouch (cf. bruising) on the lateral edges. Two of the burins show opposed dorsal scars, whilst all the preserved butts (4) on the supports are plain.

Microlith.

A single microlith point exists in the collection (Figure 2.12, 1). It is an obliquely truncated form, with additional semi-abrupt retouch across the base. The piece measures 2.8 x 0.6 x 0.3 cm and is more or less intact apart from its distal tip which is missing.

Retouched Tool Debitage.

No microburins or retouched tool debitage were recorded at the site.

Bruised blades and flakes.

Four clear examples of bruised artefacts have been discovered in the assemblage. Two occur on crested pieces, one 17.2 cm long. In three examples the damage scars occur on both edges. All of the specimens show most damage on their ventral

surfaces in the form of scalar stepped use retouch.

Sites in the Upper Thames Area near Springhead.

Numerous long blade finds, often but not always isolated occurrences, have been reported from the North Cray gravel pits. Many of the finds were made in the early part of this century during massive gravel exploitation in the Upper Thames area. Apart from long blade material the area is also well known for the discovery of middle Palaeolithic artefacts, including the assemblages of Levallois cores and debitage from Crayford and Ebbsfleet. Considerable quantities of Neolithic and Bronze age material occur here too and it is no mere coincidence that the area has a rich and plentiful supply of good quality flint.

A most successful visitor to the North Cray gravel pits during the early part of this century (c.1905-6) was Mr. A.B. Vansittart. The majority of his discoveries apparently derive from a single pit on the east side of the River Cray (Chandler 1915). The flints, which were evidently often uncovered in situ, included pieces which he himself was able to reassemble. These were said to come from a point "between the gravel and alluvium" or from the junction itself (Chandler ibid., 80,91). The finds from his collection are now dispersed (see Gazetteer) but I was able to examine a number of pieces in the British Museum and the Geological Museum, London.

The artefacts include long blades up to 22 cm in length and opposed platform blade cores. The finds are generally only lightly patinated and grey in colour, although several show a bright lustre on their surfaces. The blades are made on thick supports 0.8-2.8 cm in size and are relatively broad, ranging in width from 3.5-4.8 cm, n= c.25). An examination of butt

types showed that faceted butts are well represented, whilst plain butted examples are noticeably common also. The proximal ends typically have diffuse bulbs and a broad cone of percussion; the bulbs are sometimes characterised by a large bulbar scar.

Several of the blades displayed breaks associated with common manufacturing accidents: "languette" fractures at the proximal end reveal a large negative lip on the ventral surface (cf. Roche and Tixier 1982, fig 2). This is a type of flexional break which can frequently occur as the blade comes away from the core. Two opposed platform blade cores of prismatic type have been recognised. The cores are respectively 24.5 cm and 14.7 cm long. In cross-section they are D-shaped or nearly triangular in form. Signs of cresting are clearly visible on the sides of the main flaking face. The backs of the cores do not show the more typical cortex covering for long blade cores, but have numerous flake scars.

The only retouched tool so far identified was a dihedral burin (Geological Museum accession no. 9440) made on a large blade 16.3 x 4.4 x 1.3 cm. One of the edges shows a fine marginal retouch of the kind frequently used to facilitate the detachment of a burin spall. There are no additional signs of modification. The blade support comes from an opposed platform core.

Five bruised artefacts with heavy edge damage were identified in the collections, one of which showed damage scars along both lateral margins. Four of the five artefacts were made on long blades (greater than 13-22.5 cm). Only one was recorded on a flake 9.6 x 4.8 x 2.6 cm in size. The damage scars were characteristically stepped or scalar in appearance and markedly invasive. As in those examined from other long

blade assemblages (e.g. Sproughton, Avington VI, Canterbury), most of the use-retouch occurs on the ventral surface.

A similar collection of material from North Cray belonged to Mr. J. Davis of Dartford Heath. Although I could not locate this collection it was examined by the French archaeologist Mr. Victor Commont (see Chandler op cit. 97-98). Commont observed that amongst the large unpatinated blades was one with battered edges like those of Belloy-sur-Somme. He was undoubtedly writing about a bruised blade.

Slightly further upstream near Foots Cray on the west side of the river was recovered a 12 cm long blade core (see Gazetteer under London). It is an opposed platform blade core with a cortex backing. Like the North Cray example it shows a crest down the side of the core. Significantly the find was made near the valley bottom at the junction between alluvial deposits and coarse flint gravels (Chandler 1915, 80-84).

Riverdale, Canterbury. (36) TR 155 590

Introduction.

The long blade material from Riverdale, near Canterbury is made all the more remarkable by the fact that as long ago as 1948, it was recognised that the blades could be fitted back together to form two almost complete reduction sequences. This considerable achievement was largely the work of Mr. E.M.M. Alexander of the British Museum, whose painstaking efforts would have gone unrecorded but for the existence of correspondence in the museum detailing his work. The artefacts, mostly blade debitage, owe their discovery to Captain R.G. Grace a private collector who monitored the Canterbury pits in the years leading up to World War II. The earliest correspondence I was able to trace suggests the finds

were made in 1938-9, although the exact details are probably contained in letters which went astray during the war.

Location.

The site apparently lay on the north side of the River Stour in a now disused and flooded gravel quarry outside Canterbury. According to correspondence kept in the British Museum the site was situated "rather nearer Canterbury than Sturry" (letter 21.10.1948). A sketch map also exists showing the gravel pit between Broad Oak Road and the River Stour, with the site itself pin-pointed to within a few tens of feet of two giant "electricity" pylons located in the middle of the pit. Few other details exist, but the place-name Riverdale survives in the name of Riverdale Road on the bank of the river immediately opposite. The discoveries were made in the course of gravel extraction. Whilst work was still in progress, Captain Grace noticed flakes and blades eroding out of a freshly exposed section just above the water table (letter dated 5.10.48). At the time he was also able to recollect that there had been no sign of a hearth and that the finds were packed tightly together "so close within and on top of each other that many would have got crushed had the machine touched them" (letter dated 22.9.48). His observations not only suggest the finds were in situ, but that they must have been covered or protected in some way fairly soon after the prehistoric site was abandoned.

Stratigraphy.

Such sparse details as exist are shown in a sketch map drawn more than ten years after the original finds were made. The map contained in the British Museum letters-file shows a

"clayish soil" (undoubtedly a loam or secondary colluvial loess) lying about two feet below the surface. Within this deposit which was about 3 feet 6 inches thick were found the long blades. The loam itself was shown to overlie gravels 14 feet thick. At the bottom of the gravels in a sandier deposit was found a large core and the fragments of a mammoth tusk. A tortoise core which might fit this description was reportedly found fifty yards from the long blade site. Details of this discovery were published in a short paper in the Antiquaries Journal (Anon, 1939).

A small (10 gm) sample of the sediments accompanying the artefacts in the British Museum collection was briefly examined for me by Dr. S.N. Collcutt at Oxford in 1985. He reported that,

> "The material is a silt, with additional colloid and sand components. Some quartz sand grains show the matt surfaces usually associated with aeolian transport, but others appear to have suffered marine modification. There are a few sedimentary aggregates (pellets) consisting of silt cores with crusts of colloids enriched in iron compounds. These observations would be consistent with a secondary loessic deposit containing elements reworked from the local Tertiary sands (e.g. Thanet Beds). A low-energy process, such as sheetwash, would have been sufficient to emplace this sediment. The coherent sample shows no bedding structures, a fact which is not surprising given the clear signs of bioturbation (roots, root moulds and minor rhizoconcretions are quite common). The sediment is mottled (light reds and greys); iron (hydr)oxides are evident and there are traces, but only traces, of carbonates. The sample probably came from the weakly gleyed zone just above the water table in an area of relatively restricted drainage (e.g. a valley bottom). Nevertheless, the source deposit is probably too acid and too aerated to allow the preservation of bone. A 1.5mm long flake of lepispheric chert was observed in the sample; this might be an archaeological object, but it should be noted that the local Tertiaries contain flint gravel reworked from the underlying Chalk."
> (S.N.C. 23.9.85).

This report confirms the essentially silty nature of the deposit and suggests a likely mechanism (sheetwash) for the rapid inundation of the site. It further indicates that the

chances of locating preserved faunal remains with the flint are relatively slight, unless fully waterlogged deposits can be found.

The Artefact Assemblage.

Debitage.

Most of the artefacts examined derive from three major refitting sequences consisting of about 100 long blades and flakes. A single core and one plunging core fragment were also recovered but surprisingly, since they undoubtedly come from the same scatter, no artefacts can be fitted back on to them.

The complete core is an opposed platform blade core of prismatic type. It comprises a very large block of flint measuring some 25 cm long and 9 cm wide. It weighs 15.95 kg. As is typical of many of the long blade cores, the dorsal side is unprepared, leaving its back entirely cortex covered. Signs of heavy abrasion are visible along the edges of one plain striking platform, whilst the other end has little abrasion but displays a faceted surface. A thick blade which plunged and removed the opposite platform, is the only other example of core debitage. It derives from an opposed platform prismatic core which must have been at least 24 cm long by 8.5 cm wide. Like the unbroken version it also displays platform abrasion, but slight faceting is visible on the opposite (butt) end of the blade.

A majority of the blades are long and fairly thick. They range in size from 5-24 cm, giving a mean length measurement of 13.0$\pm$4.9 cm. The robust nature of the blades is amply illustrated by the mean width (4.0$\pm$1.0 cm) and thickness (1.3$\pm$0.5 cm) measurements for the 57 complete specimens. This places the Canterbury blades firmly at the upper end of the

long blade scale of measurements (Table 2.1). However it should be born in mind that this is no doubt due in part to an under-representation in the collection of smaller blade and flake elements likely to be associated with a pile of long blade debitage.

The butt types of the long blades fall into two important groups. Whereas 40% of the sample (n=73) is characterised by plain butt types, 32% have faceted butts. The rest are made up of either cortical (8%) or linear (5%) types, with dihedral examples notably absent. Few of the plain butts are punctiform, they mostly consist of larger examples.

Butt end features are fairly evenly split between attribute 2 (20%) and 4 (19%). Fourteen percent of the pieces show evidence of attribute one, whilst 48% of the pieces could not be classified. It should be noted that the sample was analysed in early 1983 before attribute five was included in the list of descriptive traits. A slightly different collation of the data might be expected if the study were undertaken today, with many fewer pieces relegated to the unclassifiable category.

Bruised Blades & Flakes.

These are the only "retouched" artefacts known from the site (Figure 2.13). They consist of sixteen heavily edge-damaged pieces, nine of which belong to the same refitting sequence. Fourteen are on blades; only one is made on a flake. The blades vary considerably in length from 12-21 cm, and half of them are broken. Two of the bruised blades occur on crested pieces. All the supports are generally broad (mean = 4.5±0.7 cm) and relatively thick (mean = 1.50.4 cm). The flake itself is slightly broader and thicker than the others measuring 9.2

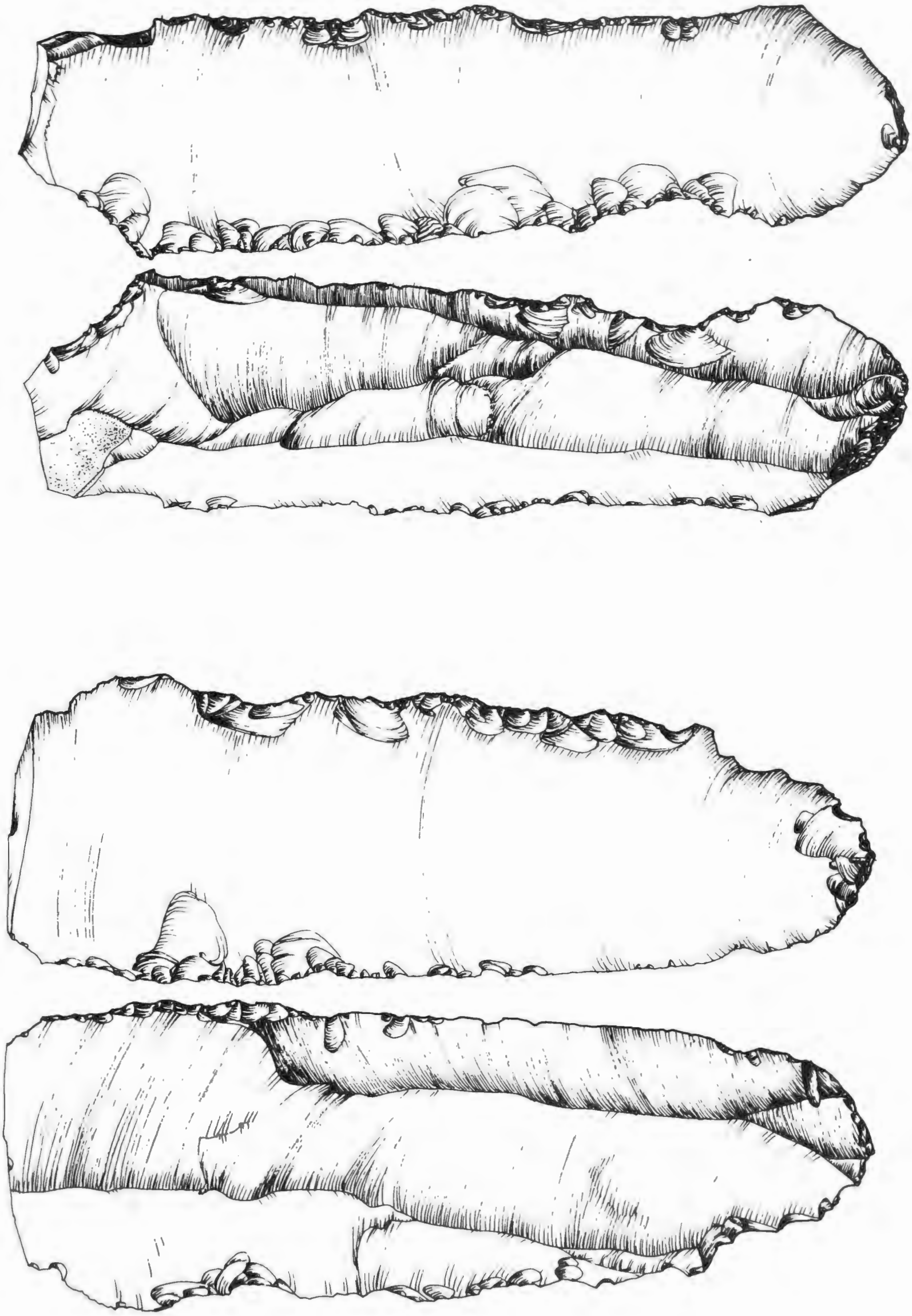


Figure 2.13 Riverdale: Bruised blades. Scale 1:1.

cm x 6.6 x 1.8 cm in maximum dimension.

Heavy damage in the form of invasive scalar retouch can be seen on the majority of these pieces. In eight examples the use-retouch is confined to one edge, whilst the rest display damage along both edges. For the most part the damage occurs on the ventral surface. Only on two was substantial retouch recorded on the dorsal surface. In addition to the scalar retouch the edges themselves are often heavily worn or rounded and have a noticeably bruised appearance. Although it is often difficult to judge edge-angle on such pieces it is clear that blades with thick, relatively steep edges were being specially selected for use. The precise function of these artefacts is unclear but this type of damage can easily result from chopping some such hard material as bone or antler (cf. Barton In Press).

As has been stated no retouched tools are known from the assemblage. Some technological burin facets occur on the blades (e.g. Figure 2.13, right) but these are almost certainly the result of accidents during debitage and therefore presumably served no intentional function.

From this brief synopsis of the four major long blade assemblages so far considered, two in Berkshire and two it Kent, it is evident that a considerable measure of similarity exists between them. Particularly noticeable is a close resemblance in the core preparation techniques involving platform faceting as well as the manufacture of blades by means of a soft-stone percussive technique (attributes 4 and 5). For the Kennet and Thames Valley sites there is also a striking similarity in the toolkits suggesting exploitation of a single social territory extending from the Thames Estuary to the

Wessex interior. This is hardly surprising given the possibilities for communication up and down the main major river and its tributaries.

East Anglian Long Blade Sites.

The third geographical grouping of long blade assemblages comprises those belonging to East Anglia. For the purposes of this study the area encompasses the four counties of Essex, Suffolk, Cambridgeshire and Norfolk. The assemblages are arranged in the following order: Sproughton (Suffolk), Wrabness (Essex), Swaffham Prior (Cambridgeshire), the King's Site, Mildenhall (Suffolk) and Titchwell (Norfolk).

Devil's Wood Pit, Sproughton. (133) TM 134 443

Site Location.

The site lies in the now flooded gravel quarry known as the Devil's Wood Pit, near Sproughton in Suffolk. It is located on a major meander of the river Gipping (figure 2.14), 2 km upstream from Ipswich, where it today becomes a tidal river (Orwell) and estuary. The site is on the north side of the river in the floodplain, which here has a surface elevation of approximately 5 m O.D. Across the river to the SW is an area of steeply sloping ground overlooking the site, which rises to 24 km above the valley floor.

Geology and Geomorphological Background.

Rock types in the area consist of chalky clay till (Perrin et al. 1973), Pleistocene sands and gravels, Tertiary sands and clays, and Cretaceous chalk on the valley sides and valley

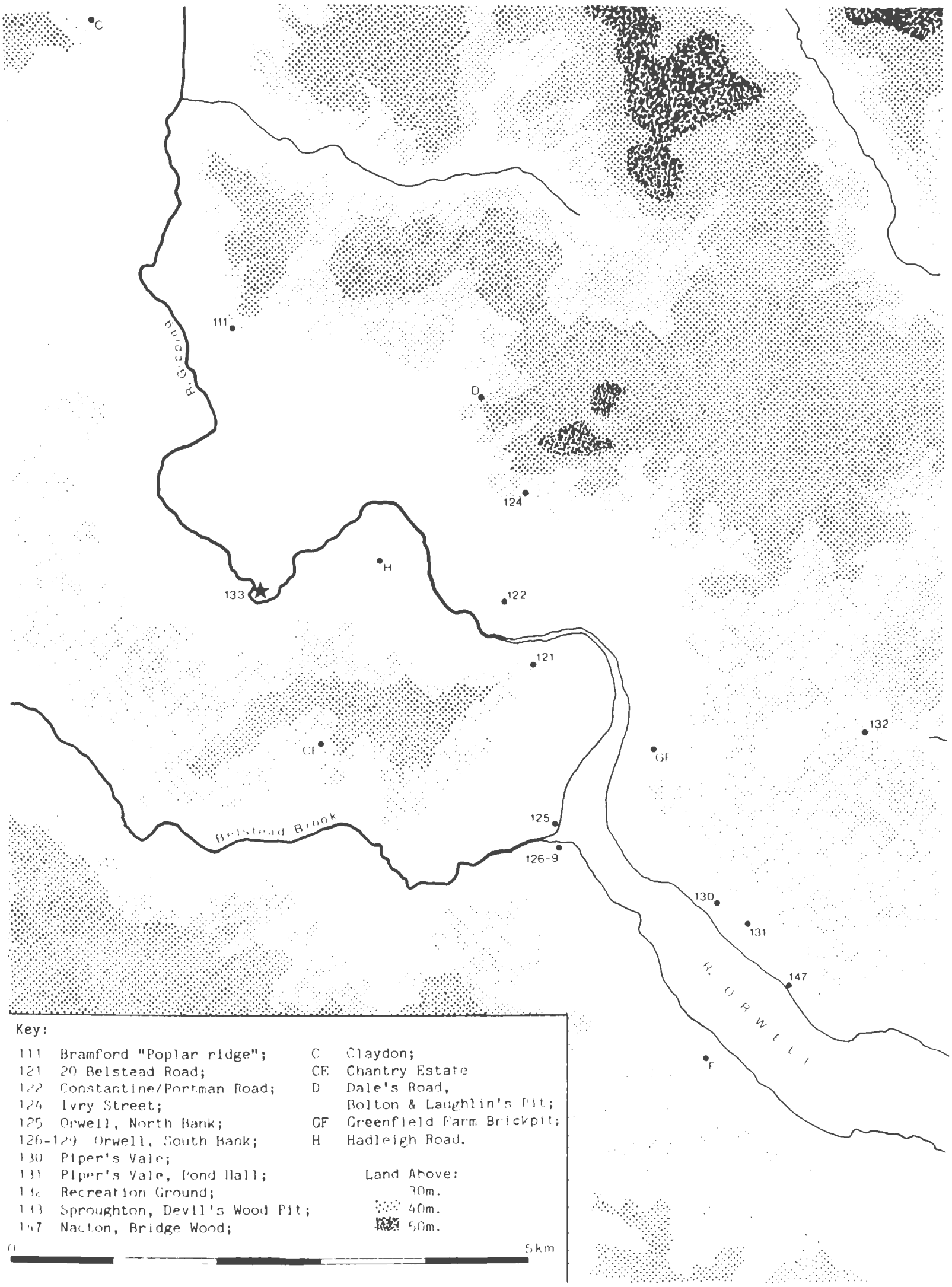


Figure 2.14 Distribution of Long Blade finds in the Gipping/Orwell Valley.

bottom (Boswell 1927; Rose and Allen 1977). The sediments associated with the archaeological discoveries fill the upper part of the well-known Gipping buried channel (Rose 1976) which originated as a sub-glacial tunnel valley during the Anglian glaciation (Woodland 1970). Here as elsewhere along the Gipping, the buried channel is cut into the chalk (Rose, ibid.) which in places rises to within 2 m of the surface (Wymer 1976, 2). The site is located well beyond the known limit of the Devensian ice sheets and in the period concerned is located away from the direct influence of sea-level change (Emery 1969; Devoy 1977).

Detailed Stratigraphy.

The buried Gipping channel at Sproughton is filled with unconsolidated sediments made up of two main series (Rose et al. 1980, fig 12.2).

(1) The first consists of basal deposits of head and fine chalk mud containing unabraded nodular flints. These are overlain by lacustrine sediments (calcareous silts) which include plant macrofossils such as willow (Salix sp.) and the fruits of dwarf birch (Betula nana). Remains of Juncus bullrush (Schoenoplectus lacustrus) and beaked sedge (Carex rostra) indicate a small lake or pond fringed with reed swamp. Radiocarbon dates from a single willow branch (HAR 260 11,940 ± 180 bp) and a fresh stick (Birm 750 11,740 ± 190 bp) near the base of the silts, suggest sedimentation took place in the later part of the Windermere interstadial (or within zone II in the traditional sense). A richly differentiated insect fauna was recovered from both the lower and upper parts of the

silts indicating a move from average July temperatures of 15° C. to slightly cooler summers and more continental conditions near the top. The evidence from the lacustrine sediments suggests a backwater swamp set back from a relatively stable but gently aggrading river channel; conditions which may have persisted for some 500 years until the mid-12th millenium bp (Rose et al., ibid., 165).

(2) The upper series consists of sands and gravels which fill discontinuous channels and gullies cut into the underlying lacustrine sediments. According to the coleoptera assemblage from near the base of one of these channels, the sands and gravels began depositing about 11,000 bp, during the Dryas III. This implies a period of intense erosion of 300-700 years in which the channels and gullies (some as deep as 9 m) were formed. Two radiocarbon dates from the base of the gravels suggest infilling began at an earlier period (HAR 261 11,640 ± 500 bp; HAR 262 11,370 ± 210 bp). However, the twigs and leaves which provided the dates do not seem compatible with the type of insect faunas recovered from the same levels and look as though they may be derived from the earlier lacustrine sediments. The insect faunas with Amara alpina, Helophorus glacialis, Olophrum boreale, and Hippodamia arctica are predominantly arctic/alpine in character and on the whole suggest the bulk of the gravels were laid down during the cold Youngest Dryas interstadial, pollen zone III (Rose et al., ibid., 170).

Two uniserial barbed points, one of bone the other of antler, were found within the upper part of the same sands and gravels in the Devil's Wood pit (Wymer et al. 1975).

Their unabraded appearance, fragile state, and association with non-durable chalk clasts show they could not have travelled far from where they were originally discarded (Rose 1976, 12). Both have now been dated using the Oxford Accelerator. The age of the bone point is 10,910 ± 150 BP (OXA-517); whilst the antler point had a date of 10,700 ± 160 BP (OXA-518). The bone point had been assumed on stratigraphic and typological grounds to be earlier than the antler point. Although the new dates appear superficially to provide confirmation, there is in fact a considerable overlap between the dates at one sigma. Archaeologically speaking, the points may well be contemporary.

Differences in bedding cross-structures between the top and bottom half of the sands and gravels deposits indicate successive stages of deposition, first by meandering, and later by braided streams. Birch twigs recovered near the top of the upper levels at 1.0 m O.D. gave a 14C date of 9,880 ± 120 bp (HAR-259), suggesting the channel was infilled soon after this time (Rose 1976, 12).

The Sproughton long blade assemblage was discovered near the top of the sands and gravels close to the junction with overlying peat deposits. Its position on a shallow riffle-bar suggests the final stages of sedimentation by a shallow braided river complex (Rose 1976, 12), immediately after the latest infilling of the channel. Also visible near the top of the sands and gravels, but above the long blade horizon, is a buried palaeosol. The position of the long blades beneath the soil indicates that human activity preceded the soil

development (Rose et al. 1980, 170). The buried soil is described by Wymer as "a brown mull humus A horizon grading into a C horizon of clean, yellow river sand" (1976, 3) The patinated long blade assemblage occurs at the base of the A horizon as well as in the underlying horizon. Other largely unpatinated artefacts, including Neolithic types (a leaf arrowhead and pottery sherds) have been found within the A horizon but do not penetrate much further down. Pollen analysis by Richard Hubbard, formerly of the Institute of Archaeology, London University established that the soil could be of Atlantic age (Wymer ibid., 3). Nevertheless the high mobility of pollen grains in mineral deposits is a fact to be noted and the possibility that the pollen assemblage was derived from the overlying peat cannot be entirely discounted (Rose pers. comm.).

Sealing the sands and gravels are deposits of peat and gyttja which form the present floodplain of the Gipping. They make up a series of low energy fluvial and floodplain deposits, coinciding with backswamp conditions and frequent submerging of the floodplain (Rose et al. 1980, 171). It would appear that by Atlantic pollen zone VII the area was periodically inundated by river flooding, giving rise to the peat and gyttja sediments. However, little is known about the hiatus, if any, between the final deposition of the sands and gravels and the formation of the peat deposits.

Excavations.

The site was discovered by Mr. Fosdyke, a local amateur archaeologist, who had been monitoring commercial gravel extraction activities in the Devil's Wood Pit. Shortly after the long blade finds had come to light, rescue excavations were

mounted by J.J. Wymer on behalf of Ipswich Museum over a two-week period in the winter of 1972. In all, over 97 square metres were examined in an undisturbed area of the site, whilst a surface collection was made of the surrounding quarry spoil. Despite modern damage to the site, enough detail remained to show the existence of two major flaking concentrations (Figure 2.24) only metres apart, with many artefacts evidently conjoinable. Over a hundred finds per square metre were recovered in the richest parts of the site. Despite the finding of two uniserial barbed points in another area of the quarry, no organic remains were found with the flint scatters. A preliminary report on the site was published by the excavator (Wymer 1976).

The Artefact Assemblage.

Raw Material.

The artefacts from the long blade horizon are nearly all of flint. Quartzite cobbles recovered from the same assemblage appear to have been used as hammerstones, rather than as cores or core tools (see below).

The flint came from large nodules, some blocks weighing up to 4.3 kgs, when refitted. Superficially the flint can be divided into two types, one with a thick chalky cortex, the other with a thin green dimpled exterior. However, a differential weathering of the exposed cortical surfaces could mean that such differences are more apparent than real, and have no significance.

The flint artefacts are mostly a deeply patinated cream colour, although modern breaks generally reveal a grey/black mottled interior. This distinctive appearance has also been noted in other less patinated long blade assemblages in the

Orwell area (most notably at Ivry Street, Ipswich, see pages 149-151). The green coated flint nodules from Sproughton, including those with a thin orange inner "rind" attributed to the "Bullhead" beds by Wymer (1976, 1), presumably derive from the Tertiary Reading Beds which overlie Upper Cretaceous chalk in the Ipswich area (Rose et al. 1978, fig 1).

Both the flint and the quartzite were probably obtained locally; the flint either from slope deposits containing fresh nodular flints (Rose et al. 1980, 162) or direct from the chalk which in places rises to within 2 m of the surface (Wymer 1976, 2). Few modern exposures exist, but from a chalk pit at Claydon (grid reference TM 136 498) I have been able to obtain sizable flint nodules like those from Sproughton for my flaking experiments. They include flint with a thick green dimpled cortex revealing a grey/black mottled interior, as well as specimens with the characteristic orange inner "rind" noted earlier. These are virtually identical to specimens from the archaeological site. Gravels overlying the chalk at Claydon yielded cobbles of quartzite large enough to use in the flaking experiments (see below). It is likely that many such sections would have been open to exploitation during the time that the Sproughton site was in use. For example, an earlier river meander cutting into the base of higher ground south of the site would have produced a very likely source of raw material (see Rose et al. 1980, especially fig. 12.1) lying less than 200 m from the excavated site.

Debitage.

The first most noticeable feature of the flint assemblage is the very large size of the blade debitage. Long blades, some up to 22 cm in length are typical of the artefacts

recovered. The blades are all relatively thick and were detached from prismatic blade cores of opposed platform type. The cores occur in the same area of the site as the blades and suggest that considerable prehistoric flaking activity took place. This fact is further emphasised by the presence of several quartzite hammerstones and by the large number of refitted artefacts.

Three hundred and sixty eight blades and blade fragments were recovered from the excavated area which also included 3277 flakes. John Wymer, the excavator of the site, distinguished a scattering of unpatinated flint artefacts amongst the dominantly white patinated material. My recent examination of the assemblage revealed 267 such artefacts all either only slightly or wholly unpatinated (<7.5% of the debitage) and this largely confirms Wymer's earlier observations. For the most part they consist of hard-hammer struck flakes detached from small flint nodules and look quite unlike the rest of the assemblage. On the other hand, the unpatinated sample also includes a number of bladelets which are not easily distinguishable from similar artefacts in the patinated assemblage.

The main patinated assemblage is composed of 30 cores complete enough to be classified (pace Wymer 1976). The majority, 17 (56.6%), are prismatic blade cores with two opposed platforms (they include two bladelet cores). Three others have one platform and are pyramidal in shape; the rest are prismatic two platform (orthogonal) (1), irregular and multiplatform types (3). There are six flake cores, three of which are made on flakes.

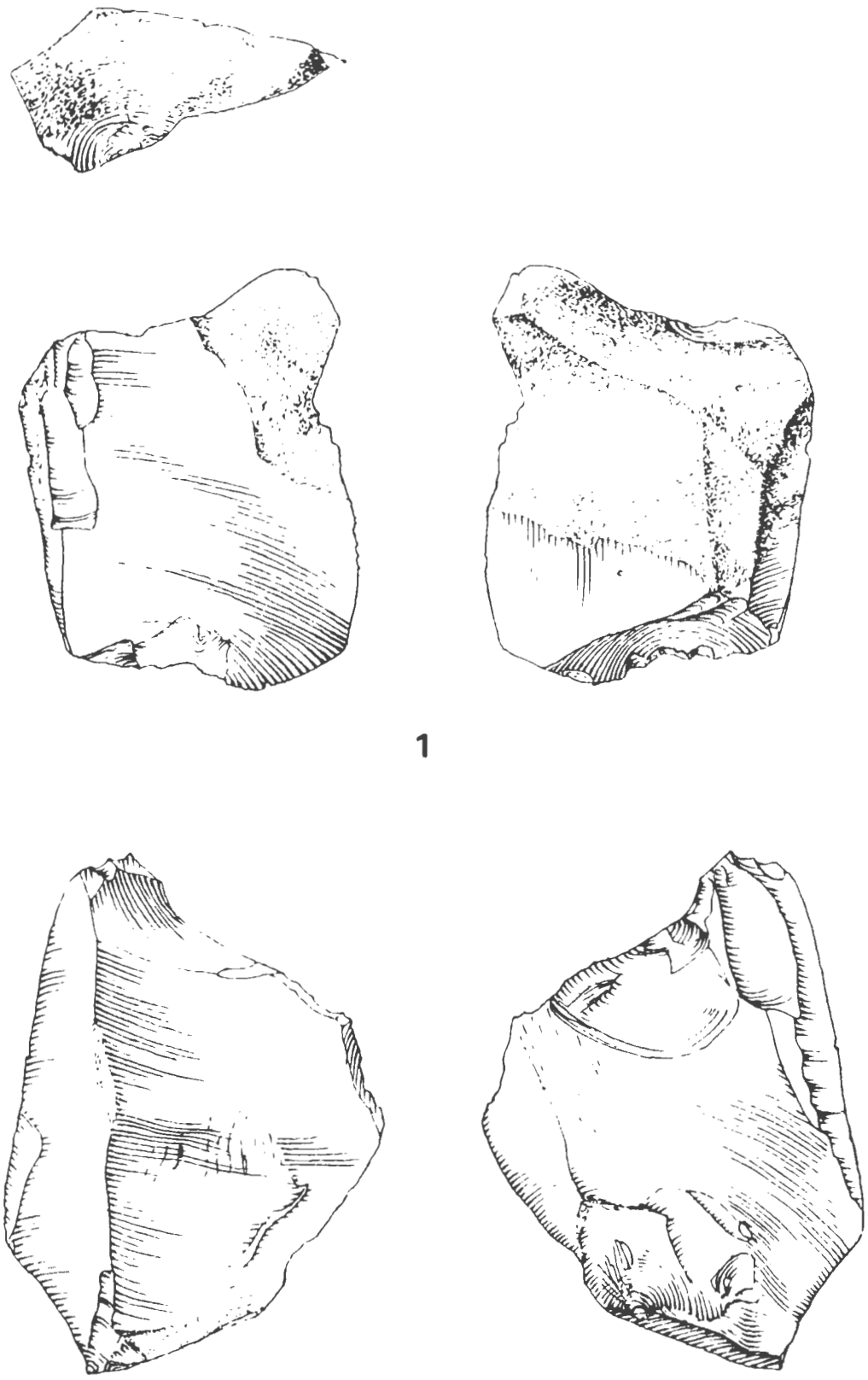
Not included in the core counts are several broken core fragments and two flaked pieces difficult to classify. These

latter examples could be considered with equal justification as being either cores on flakes or special types of burin (Figure 2.15, 1 & 2). They were made by retouching a large notch at the end of a flake which then served as a striking platform for the removal of small flakes or side spalls. If they were cores, it is surprising that only two or three flake removals have been made from each. On the other hand, it is equally difficult to see them as burins, at least in a conventional sense. One of them has several laminar facets on the ventral surface (Figure 2.15, 1) and presents no immediately obvious burin edge or tip. Since both artefacts were clearly made in the same way it seems reasonable to classify them together. A very similar method of making burins has been described elsewhere (Newcomer 1971). However, in this case since there is no clear burin-edge on either of the pieces they should probably be regarded as atypical cores. Microwear analysis, a potential solution to the problem, could not be used in view of the heavily patinated nature of many of the artefacts.

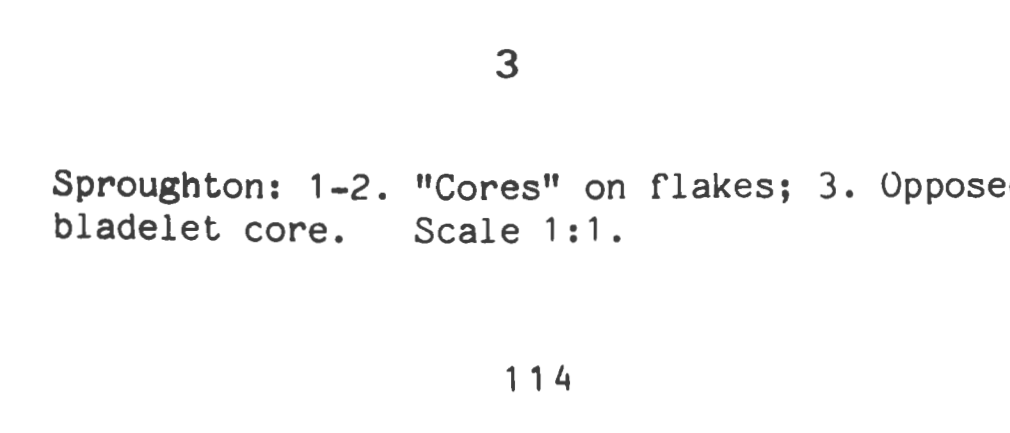
Amongst the prismatic cores are two which can be described as bladelet cores (Figure 2.15, 3). They are each less than 4.5 cm long and marked by narrow laminar removals. Two other bladelet cores exist, they are both 4 cm long and are multiplatform in type.

Most of the blade cores are of large size. Fourteen measure more than 11 cm in length with the longest being 28 cm in its maximum dimension. The mean length for 15 prismatic blade cores (excluding 2 bladelet cores) is 17.09 cm with a standard deviation of $\pm$5.63 cm. The mean breadth is 7.36 $\pm$ 1.74 cm.

Amongst the seventeen prismatic opposed platform cores only five show signs of a dorsal crest. In two cases the crest



1



2

3

Figure 2.15 Sproughton: 1-2. "Cores" on flakes; 3. Opposed platform bladelet core. Scale 1:1.

had been bidirectionally prepared. A more normal feature was for the back (dorsal side) of the core to be left totally unmodified or slightly modified with a few broad flake scars. Nine examples have natural or cortical areas still remaining on some part of the back of the core, whilst the rest (3) have had their cortex entirely removed by flaking. The three pyramidal blade cores which exist in much reduced form (refitting has shown that at an earlier stage they were opposed platform prismatic cores), have all-round flaked surfaces; only one displays an area of cortex from its former stage.

The cores from Sproughton are generally made on long cylindrical nodules, which were occasionally abandoned at an early stage probably because of some major flaw in the flint (Figure 2.16). Preparation usually involved the removal of one or both ends of the nodule and production of a frontal (bidirectionally flaked) crest. Dorsal cresting, as we have seen, was relatively uncommon. The only other noticeable preparation was the frequent abrading of the core edge which generally succeeded each blade removal. Signs of such platform abrasion are visible on twenty (69%) of the blade cores and an equal high percentage of the plain-butted blades. Wholesale rejuvenation of the platforms was undertaken from time to time by the removal of a core tablet. Six of the blade cores have such refitting tablets. Small scale modification by faceting the platforms does not appear to have been frequently used: only one core shows a faceted striking platform. Given the immediate availability of flint near the site this seemingly "wasteful approach" to the raw material is hardly surprising.

Blades in the assemblage are characteristically large, with the majority having a length of between 6-13 cm. Only a small proportion are less than 5 cm, these have been termed

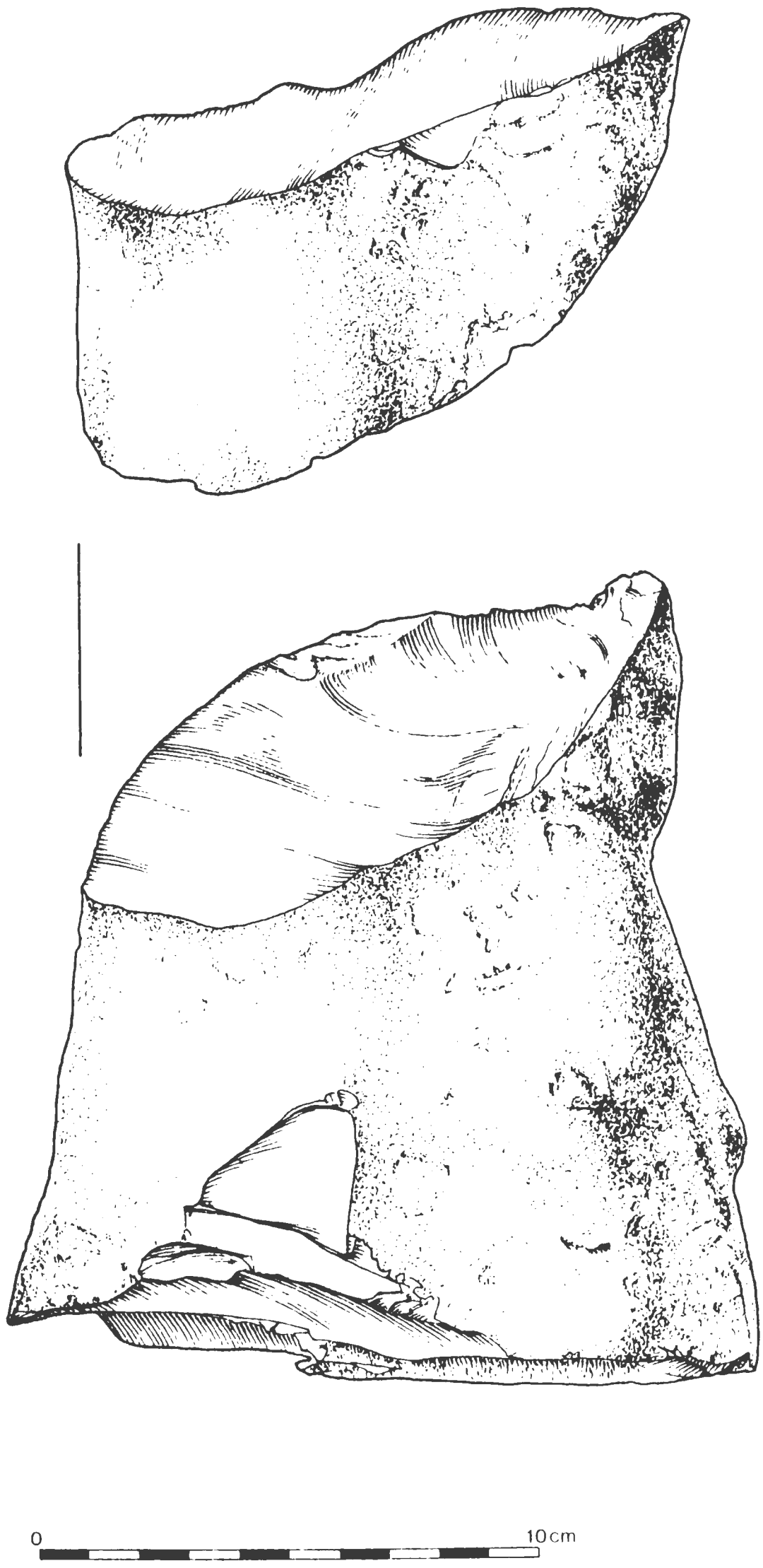


Figure 2.16 Sproughton: core abandoned in the early stages of reduction.

bladelets for the sake of convenience. A sample of patinated blades was measured from a selection of 39 squares across the site. Of the 106 complete blades in the measured sample, 11 were less than 5.9 cm, 60 were between 6-12.9 cm, while the rest (35) fell into the 13-22 cm length category. In statistical terms, the mean length for blades is 11.5 cm, with a standard deviation of 4.5 cm (n=101). The mean breadth is 3.7±1.4 cm, and the mean thickness is 1.2±0.53 cm.

Butt features of the Sproughton blades show a high degree of uniformity: sixty five (60.2%) display plain or punctiform butts; butt dimensions are generally large (mean breadth = 0.53 ± 0.40). Seventeen blades (15.7%) have linear butts; three (2.7%) dihedral butts; and only two (1.8%) faceted butts; with the others either broken or unclassifiable (21.4%). As was also shown with the cores, faceting is not a common feature of the Sproughton assemblage. Attributes of the ventral surface of the proximal end were slightly more variable, but showed a relatively high percentage of hard-hammer struck pieces. A marked point of percussion with a prominent cone (attribute 1) was recognised in twenty six (29.8%) of the blades with complete butts (n=87). Highly characteristic soft-hammer features, i.e. diffuse butts, lipped butt, (attribute 2) were present on only five (5.7%) of the blades. More difficult to evaluate are blades with a broad though relatively flat bulb of percussion, often in combination with pronounced radial fissures and a large negative bulbar scar (attributes 4 and 5, e.g. Figure 2.17). Well-defined incipient cones may also be present on the butt itself. These features were noted on fifty six (63.4%) of the blades. It is not immediately clear to which category of hammer-mode they belong but for a discussion of the broad range of hammer types which produced "soft-hammer"

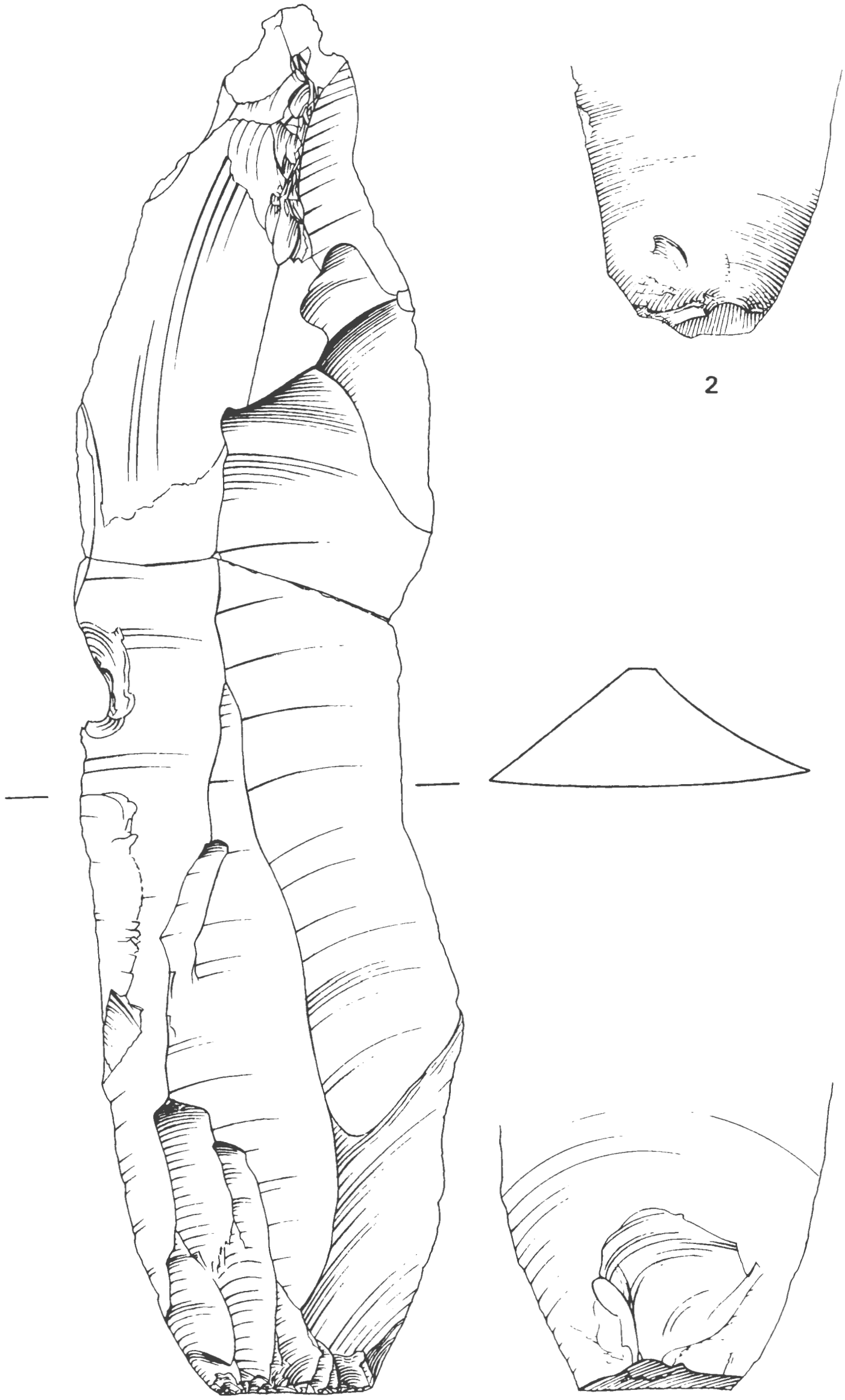


Figure 2.17 Sproughton: Ventral surface features of blades. 1. Attribute 4; 2. Attribute 5.

features see below.

With regard to the proximal end features and butt attributes it is interesting to note that no preferential clustering of types appears in any of the major blade groups. Simply stated, this suggests a uniformity of flaking technique (and doubtless hammer type) which extends from the smallest bladelets to some of the largest blades in the assemblage.

The predominance of plain butted types in the measured blade classes renders any detailed examination of the relationship between butt type and proximal end features largely superfluous. Overall, the association of a plain or punctiform butt and a generally diffuse bulb is the commonest combination (37.5%), plain butted types combined with pronounced points of percussion occur in 17.3% of all measured examples (n=98). Of the few dihedral butts, two out of the three are found with diffuse bulbs and large negative bulbar scars, whilst the same proximal attributes were noted for the two blades with faceted butts.

Retouched Tools.

The retouched tools from Sproughton number 26 classifiable implements, plus 26 miscellaneous retouched pieces and 8 bruised flakes and blades which may be considered as a posteriori tools (Bordes 1967). The 26 formal tools consist of 6 end-scrapers, 9 burins and 4 truncations. In addition there are 3 retouched bladelets and 4 microliths in the collection.

Only one of the tools is burnt (a burin on a break); most of them are patinated. Two of the microliths are minute geometric forms which are only slightly patinated and may well be intrusive. Even if these items are included in the

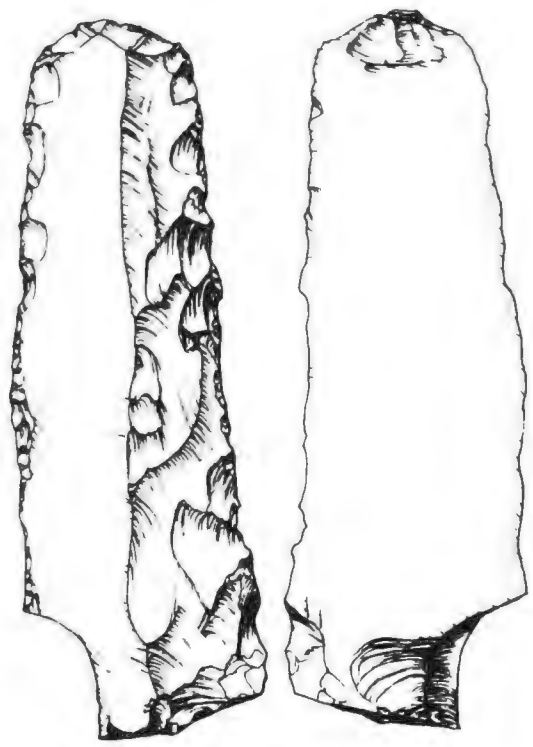
classified types, the retouched tools make up less than 0.7% of the total flint assemblage.

End-scrapers.

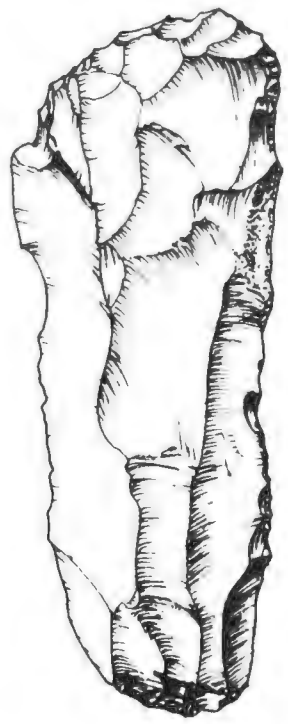
All but one of the six end-scrapers are made on blade supports. The supports are fairly thick and are slightly curved in profile. They show a mean length of 7.44 ± 1.78 cm; breadth of 3.34 ± 0.73 cm and thickness of 1.00 ± 0.25 cm. Two of the supports are broken. Most of the scrapers are distal examples, only one being retouched at the proximal end. The scraper fronts are all convex in shape and relatively steeply angled (70-80 degrees). The working edge of the scrapers is produced by semi-abrupt direct retouch. There are no double end-scrapers.

The sides of the scraper supports all show some signs of retouch, which is usually present along both lateral edges. The retouch is direct, fine or semi-abrupt and confined to the immediate edge margins although on two of the tools the retouch is more invasive (Figure 2.18, 1 & 3). In four examples the retouch is continuous; whilst two are only partially retouched. The irregularity of retouch on the latter examples is suggestive more of a "use retouch" than a modification for handling or hafting. One or two deep flake scars are also present along the edges (Figure 2.18, 4). Heavy patination of the pieces precludes the possibility of studying the microwear traces for the present. No visible edge-rounding is present on any of the Sproughton scrapers, either along the lateral margins or along the scraper front.

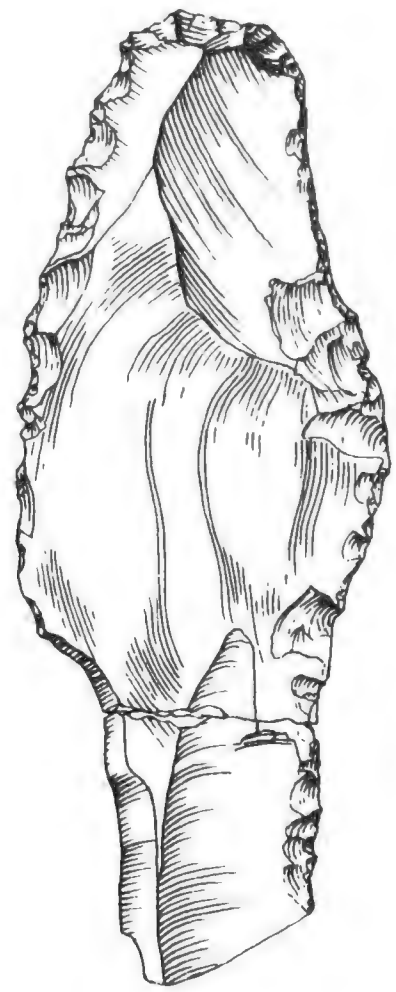
The ends of three scrapers dispay clear signs of utilisation on their ventral surfaces (Figure 2.18, 1,5 & 6). This occurs in the form of deeply invasive scalar damage. In



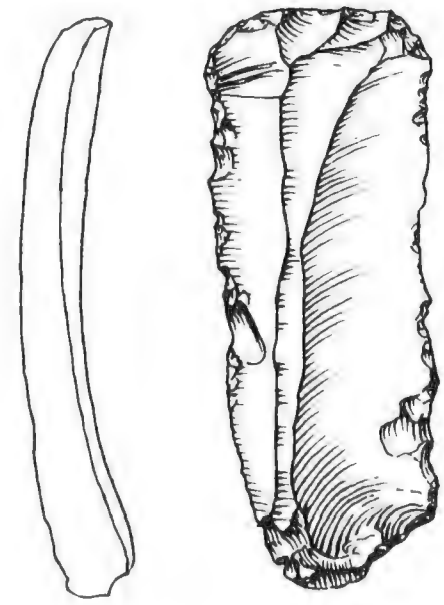
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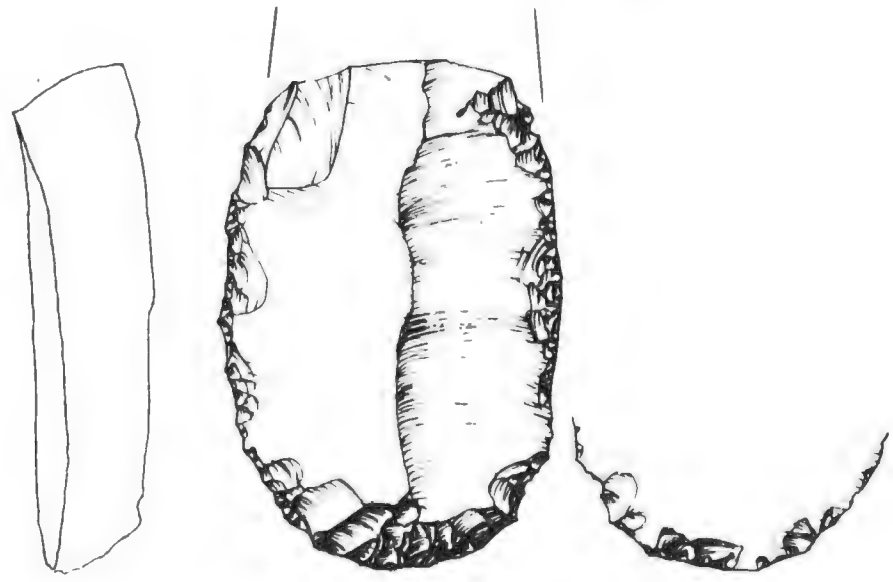
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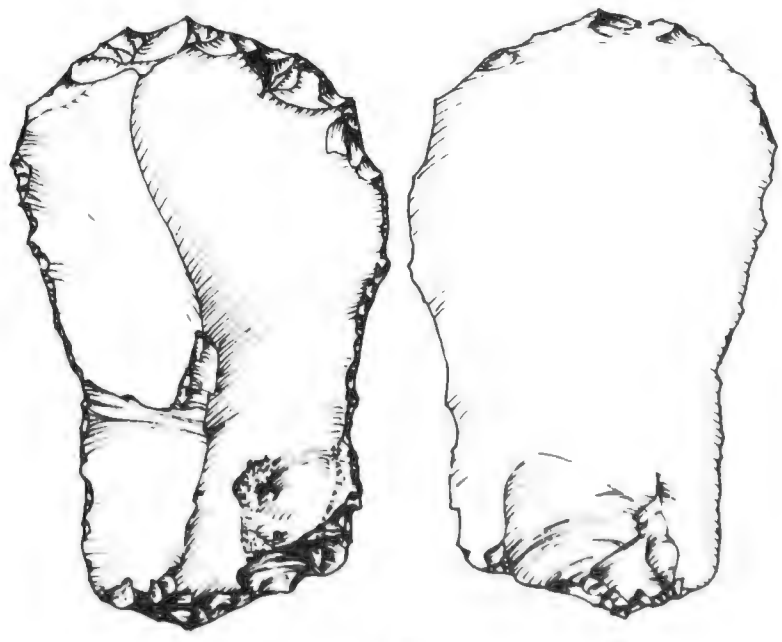
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Figure 2.18 Sproughton: End-Scrapers. 1-6. distal (5. proximal).

two examples the damage is present on the under-surface of the scraper edge, whilst in the other it is located ventrally, but at the proximal end. It is noteworthy that similar examples of edge-damage have been described on Magdalenian end-scrapers by Rigaud (1977:29-36) and reproduced in bone scraping experiments elsewhere (Broadbent & Knutson 1975). In the light of these and other experimental results (Barton In Press) it seems highly likely that the Sproughton scrapers underwent heavy use on a hard material, probably bone or antler.

Despite the fact that there are no genuine composite tools in the collection, one of the scrapers displays a 0.80 cm broad side facet at its proximal end (Figure 2.18, 3). Like several burins from the site the facet terminates in a hinge fracture. However, without the proximal end of the support it is impossible to be certain whether this is the result of an intentional spall removal or the remains of a much earlier flake scar. No spalls fitting this description have been found in the collection.

Burins.

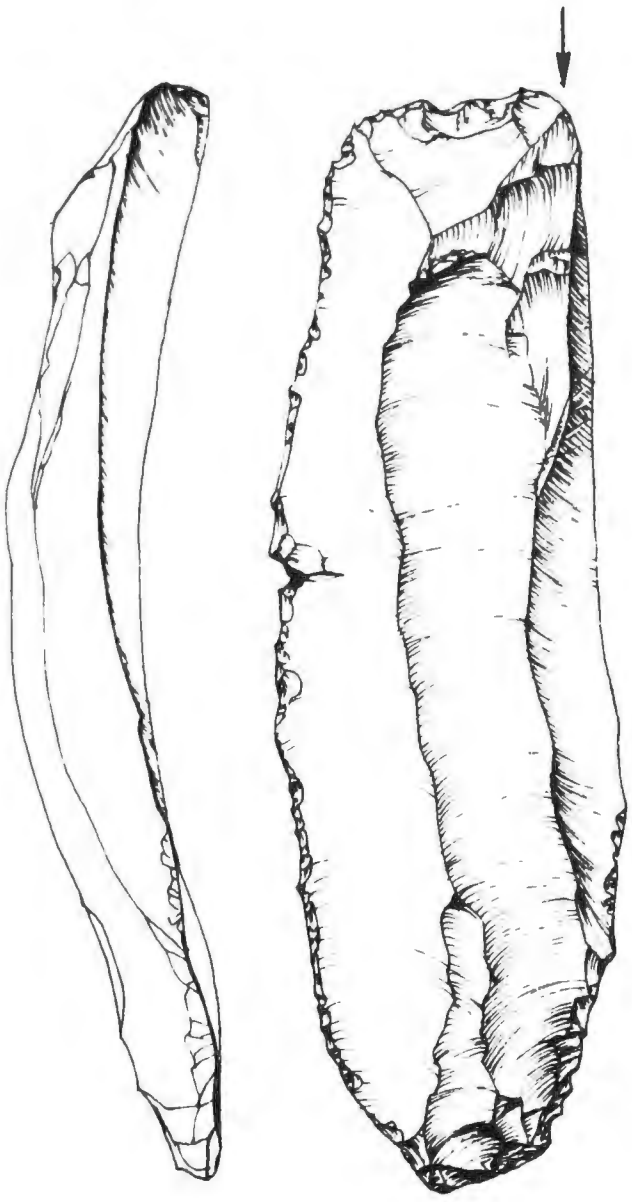
The nine burins consist of five dihedral burins, two truncation burins and two burins of indeterminate type. Most of the burins are characterised by few facets but they are all fairly thick ranging from 0.57-0.84 cm in size. Only two have facets with maximum widths of less than 0.36 cm. Apart from one simple angle burin, three are on breaks, whilst the other is on a natural surface. The two truncation burins include one on a straight truncation, and a transverse example on a prepared edge. Broken burin spalls have been refitted to three burins: a burin on a break, a burin on a natural surface (Figure 2.19, 3), and the transverse burin on a lateral

preparation (Figure 2.19, 5).

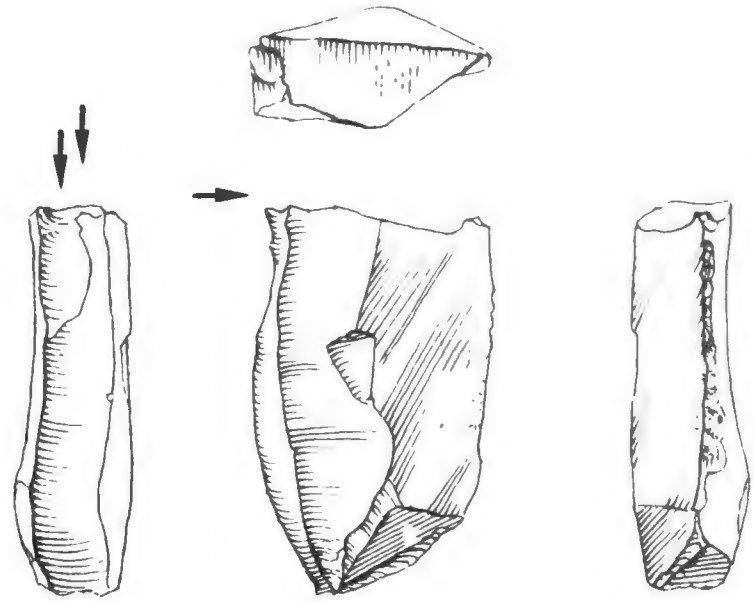
None of the three burins on breaks displays any of the "contact features" typical of intentionally fractured blades (cf. Bergman et al. 1983). The general absence of blades or blade segments with these features suggests that intentional breakage was not an important technique in the Sproughton industry. Two break burins occur on the distal ends of blades, the break surfaces serving as striking platforms for the removal of side spalls. The burin facets of each terminate in hinge fractures. It is likely that both were made on supports accidently broken during blade manufacture.

One of the truncation burins displays some technical features of interest. It was made on a blade which was prepared by inversely retouching one of the edges before the burin blows were delivered transversely to the long axis of the piece (cf. Corbiac burins, Bordes 1970, fig 4). Similar inverse retouch along one edge has been noted of one of the burins on a break.

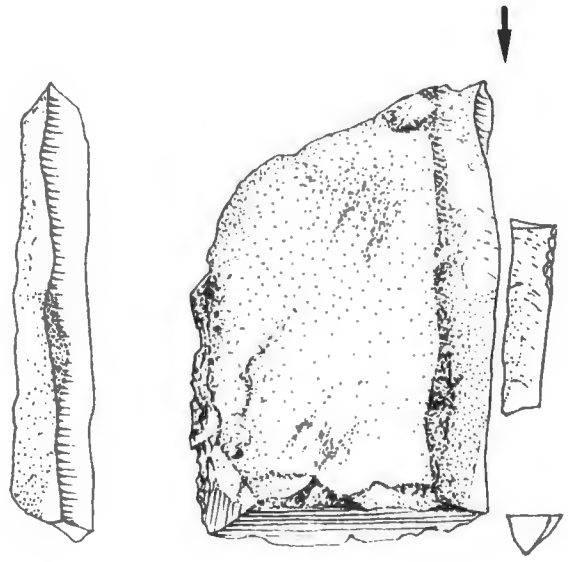
Like many of the other burins, the burin on a natural surface occurs on a broken support (only two burins occur on nearly complete pieces). Here a hinging distal termination served as the platform for detaching a single side spall. Part of the burin spall was found and refitting shows that the burin was evidently first prepared using fine direct retouch along one of the lateral edges (Figure 2.19, 3). In its present state, it is not possible to tell whether the support was broken before or after the removal of the burin spall. Slight signs of retouch occur on the edge opposite the burin facet near the break, which suggests the possibility of a composite or multiple tool type. A somewhat unusual feature of this burin is its largely cortical surface. Cortex is not commonly



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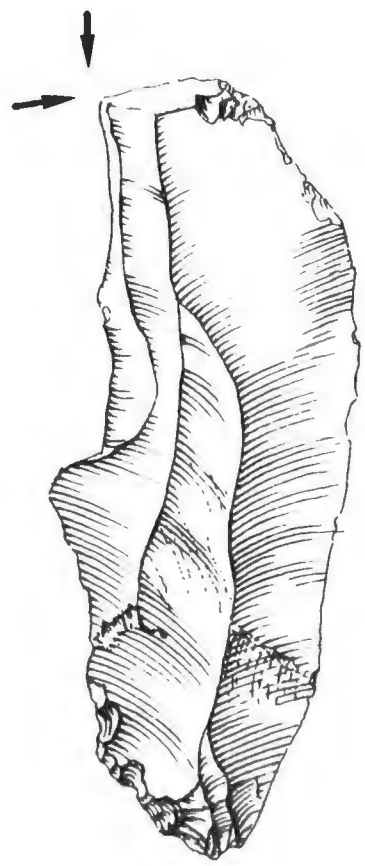


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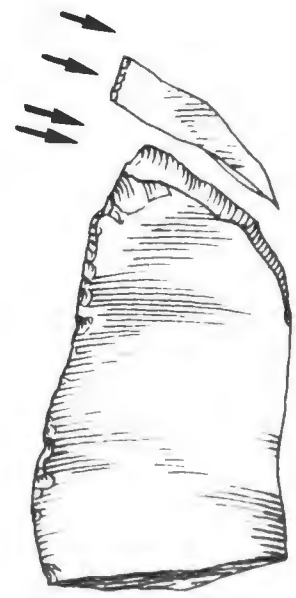


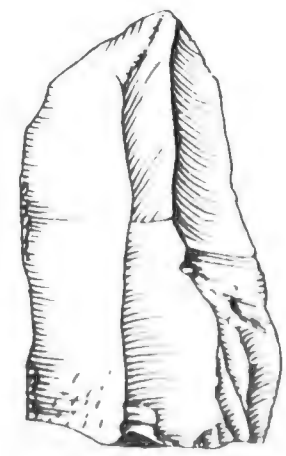
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Figure 2.19 Sprougnton: 1. Burin on a straight truncation; 2. Dihedral angle burin; 3. Dihedral burin on a natural surface; 4. Dihedral angle burin; 5. Transverse burin on a retouched lateral edge. Scale 1:1.

found on the Sproughton burins or scrapers (only one other burin has cortex present on its dorsal side).

The largest burin in the assemblage is one made on a straight truncation (Figure 2.19, 1). It measures 11.01 x 3.5 x 1.32 cm. The truncation was produced by direct semi-abrupt retouch at the distal end of a slightly curved blade. Additional continuous direct fine retouch occurs along both edges of the support. The burin spall, which must have had a thick and triangular section and retained signs of the truncation as well as a finely retouched edge, has not been found. The burin facet itself is over 7 cm long; it does not end in a hinge termination.

Some of the burins evidently underwent considerable modification. For example, the transverse burin (Figure 2.19, 5) shows at least four spalls were removed from its distal end before it was finally discarded. Only one of the four has been recovered and refitted.

Evidence of edge-damage resulting from use is seldom present on these Sproughton burins. None of the burin facets, for instance, is marked by characteristic traces of secondary use retouch (cf. the burins from Hengistbury). Only a single dihedral burin from the site displays a heavy scalar retouch which might be attributed to use (Figure 2.19, 4). It is noteworthy that in this example the damage occurs not on a burin facet, but on the ventral surface of the broken distal end. Damage of a similar kind has already been noted on some of the scrapers from the site.

The two unclassified burins are made on distal blade segments. In one, several burin facets originate from a break surface which also shows the remains of retouch on the opposite corner of the break surface. If the retouch is deliberate and

not a result of spontaneous breakage, then this specimen should probably be classed with the truncation burins. One other potential burin exists which can be fitted to a prismatic blade core (Figure 2.26). It occurs on a natural hinge fracture which appears to be modified by inverse retouch. However, since the retouch could arguably be the result of some post-depositional damage, and the burin facet accidental, it has been excluded from the burin category.

The distribution of refitting burin spalls to burins will be dealt with in a later section ('Taphonomic Considerations'). For the present it is sufficient to state that unlike other broken pieces, no burin was found in the same square as its refitting spall. Furthermore, most of the burins are confined to the north-west part of the site (N-Q, 1-4). One of the three burins found well outside this area (K7) evidently also saw some use in the north-western sector judging from the location of the refitting burin spall (Figure 2.20).

Truncations.

Three truncated blades and one truncated bladelet have been identified. Two of the blades have been modified at the proximal end, one blade and bladelet at the distal end. The truncations are all made by direct abrupt retouch. In some respects the distal blade example resembles a bec with the end abruptly retouched on two sides into a thick point which is offset to the main axis of the piece (Figure 2.21, 2). One of the proximal truncations also shows additional signs of retouch near the oblique truncation to form an asymmetrical pointed tip (Figure 2.21, 3). The second proximally truncated blade has a straight truncation with retouch extending around one corner onto the lateral edge (possibly "use-retouch"). This tool is

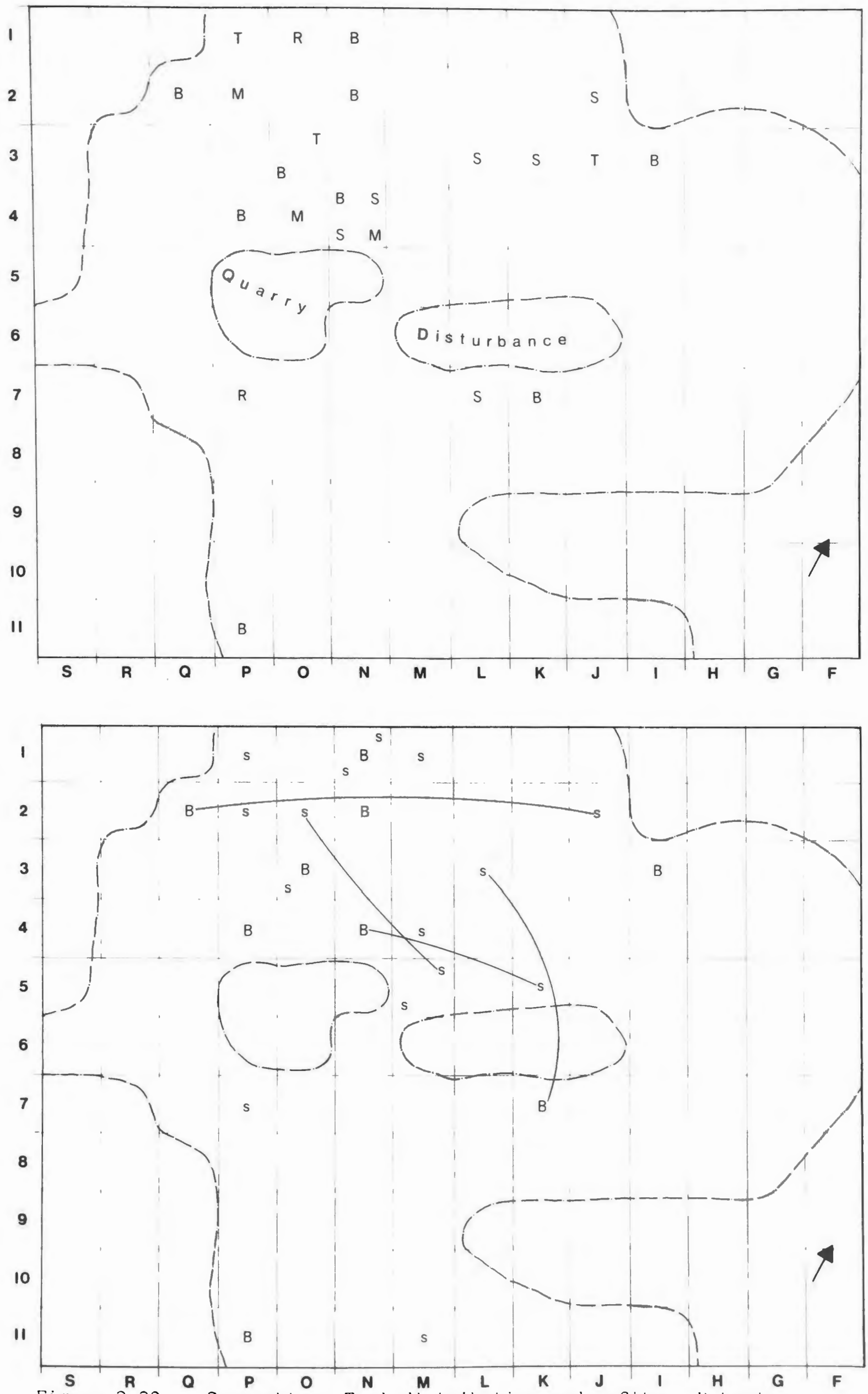


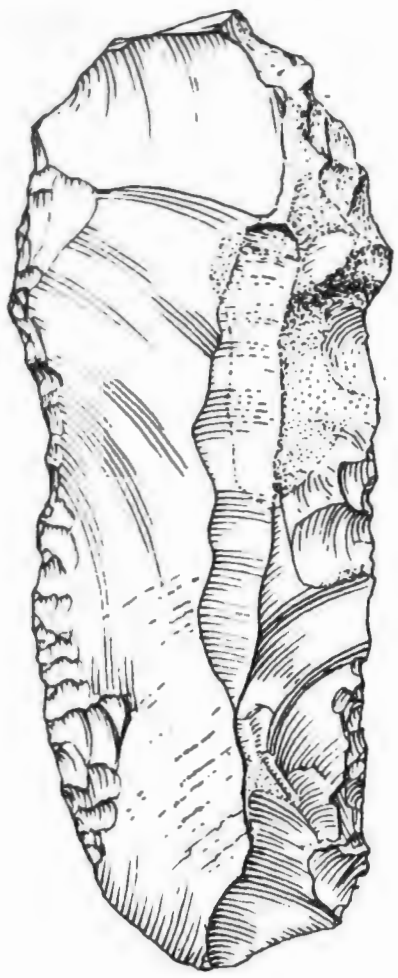
Figure 2.20 Sproughton: Tool distribution and refits. B-burins; S-scrapers; M-microliths; T-truncations; R-Retouched bladelets; s-burin spalls.

made on a plunging crested blade support. The plunging distal end itself shows a chamfered-like edge which might have been produced by detaching a transverse burin spall, but it is impossible to be certain and the bevelled edge equally could have resulted from a much earlier removal. The truncated bladelet is virtually unpatinated and possesses a straight truncation.

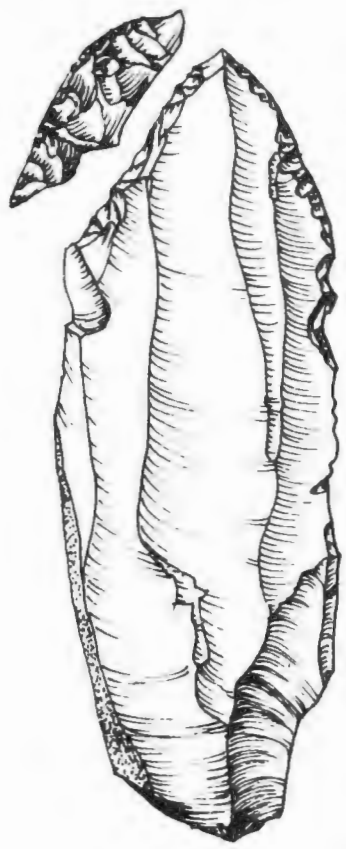
Retouched Bladelets.

There are seven retouched bladelets in the assemblage, excluding the truncated example described above. Two of them are partially retouched, one obliquely at the distal end, the other down one straight edge. A third is broken near the proximal end, but also displays an oblique distal truncation (Figure 2.21, 8).

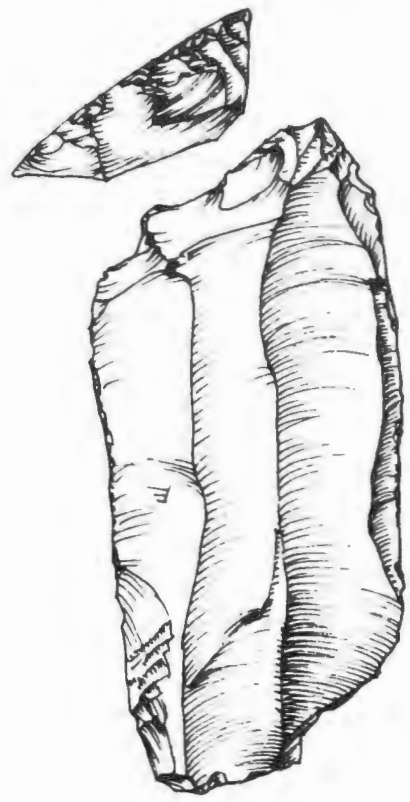
Of these retouched pieces, the first (Figure 2.21, 7) is typologically identical to a "Zonhoven point" (sensu Taute 1968) or a "B-point" (sensu Arts & Deeben 1981, for definitions see the section on the Ahrensburgian in Chapter 3.). It is a bladelet obliquely retouched at the distal end by abrupt direct retouch. It is only slightly patinated. The piece measures 2.70 x 1.20 x 0.41 cm. The second piece is a bladelet modified by abrupt direct retouch on the left edge; it is broken at the distal end (Figure 2.21, 9). The artefact measures 1.4 cm across, is 0.31 cm thick and unbroken must have been over 3 cm long. Unlike the first bladelet it is white patinated. However, both this and the previous piece display platform abrasion at the proximal end and are in most respects very similar. The third bladelet has a slightly concave edge produced by abrupt direct retouch to form an oblique truncation at the distal end. It measures 1.00 cm at its broadest point



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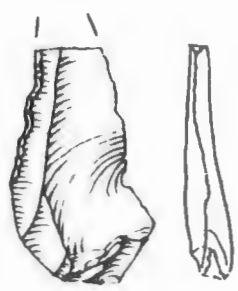
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Figure 2.21 Sproughton: 1. Retouched blade with 'tranchet' flake removal; 2-3. Truncations; 4. Microburin; 5-6. Retouch Flakes; 7-9. Retouched bladelets; 10. Rhombic microlith. Scale 1:1.

and is 0.21 cm thick. Like the second example it is heavily patinated.

Microliths.

The four microliths from the site consist of two minute geometric forms less than 2 cm long, plus two rather larger microlith forms also geometric in shape (Figure 2.21, 10). Wymer (1976) has suggested that the two smaller microliths may be intrusive from a later period.

The microliths divide into two size groups. The larger pieces are both rhombic forms, truncated at both ends. They are the equivalent of German 'Vierecken'. Each has a tip missing but enough of the originals remain to show that they would both have been slightly longer than 2 cm. Their widths are 0.70 cm and 0.61 cm respectively, whilst individual thicknesses measure 0.25 cm and 0.21 cm. The retouch in each instance is abrupt to semi-abrupt. Both artefacts are patinated. The two smaller forms are represented by a tiny scalene triangle 1.40 x 0.27 x 0.08 cm. The other is a bilaterally retouched piece broken at one end which measures 1.1 x 0.29 x 0.16 cm, it may well be a broken scalene type. Both artefacts are only slightly patinated.

Miscellaneous Retouched Pieces.

This consists of all those pieces which cannot be fitted under any of the previous categories. It includes principally broken or incomplete artefacts. Twenty six retouched elements can be recognised of which 14 are on blades; 11 are on flakes, and the remaining 2 on unclassifiable fragments.

One of the retouched blades is a very distinct piece, it shows continuous semi-abrupt retouch along one edge and

discontinuous scalar retouch along the other. The distal end shows the negative scar of a single tranchet flake removal (Figure 2.21, 1). Refitting the missing tranchet flake would no doubt help establish whether this was once a scraper or some allied form, but despite the presence of numerous retouch flakes (infra) it has not so far been possible to do so. Fifteen of the pieces are characterised by retouched notches either single or continuous along the artefact edge. In eleven cases the notches are clearly truncated by a break and could well be the spontaneous effects of fracture (Bergman et al. 1983). However, in all but three examples there are additional areas of retouch present. The majority of notches are made with abrupt direct retouch, with only two showing inverse retouch.

Amongst the remaining miscellaneous forms are four blades and three flakes with lateral retouch. One other blade fragment shows distal retouch whilst a proximally modified piece and another broken fragment with several spall-like removals make up the rest of this type. Two of the end-retouched pieces might be the remains of broken scrapers. But without the refitting sections it would be unwise to push this speculation too far. Included with the retouched pieces are three broken specimens which can be refitted to retouched counterparts; the fits all come from immediately adjacent metre squares.

Bruised-Edge Blades and Flakes.

Amongst the large blades and flakes from Sproughton are six which show signs of heavy damage along one or both lateral edges (Figure 2.22). Three occur on blades and three are on flakes. Two other pieces, a core tablet and the distal end of



Figure 2.22 Sproughton: Bruised flake. Scale 1:1.

a plunging blade (Figure 2.23), with similar damage bring the total number of these artefacts to eight.

Artefacts of this type (éclat et lame machuré s) have been described by F. Bordes (1967) as a posteriori tools, ie. not deliberately modified implements but identified by heavy use-wear. The retouch or more accurately "use-retouch" is generally heavily invasive and scalariform. On the Sproughton pieces some of the damage scars extend as much as 1.2 cm back from the edge, onto the ventral surface. In many instances the edges still retain a sharpness and would be fully functional. For other more heavily used pieces the edges are crushed or rounded giving them a bruised and massively battered appearance.

The bruised edge pieces are generally on thick supports with a steeply angled edge. In all but one of the Sproughton examples most of the damage scars occur on the ventral surface. Experiments have shown that brisk chopping of materials such as bone and antler can produce identical damage to the bruised edge pieces (Barton In Press). It is noteworthy also that when the trial pieces were held ventral side up at an angle of 45 degrees, almost all of the damage scars occurred on the ventral surface. A more even distribution of scars on both ventral and dorsal surfaces is invariably produced by a sideways chopping motion (ie. at a ninety degree angle).

Refitting has shown that three bruised edge pieces belong to the same blade core and indicate the tools were probably made and used in the same area of the site (Figure 2.24, see especially square G5).

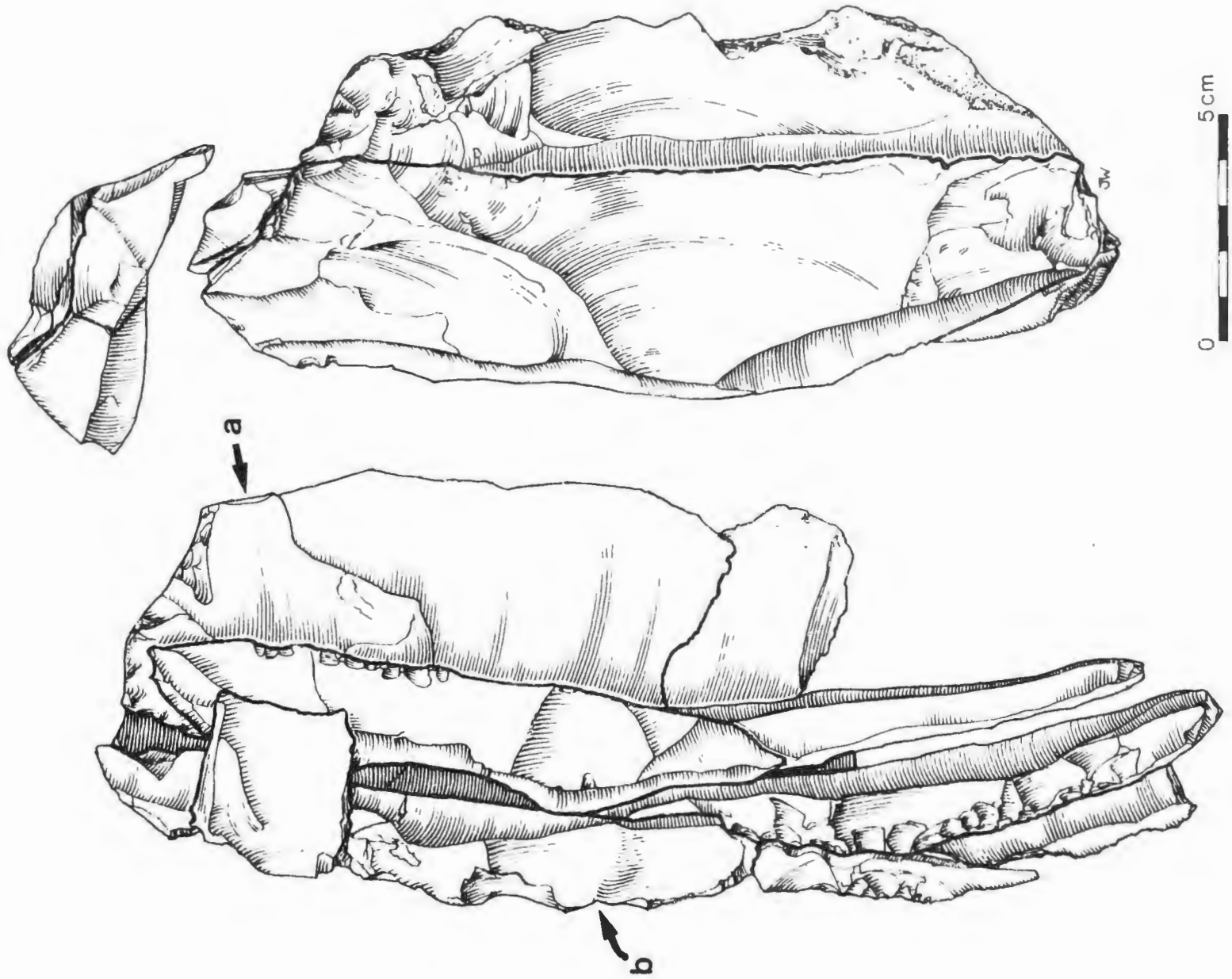


Figure 2.23 Sproughton: Blade core with refitting bruised artefacts. a. distal end of a plunging blade; b. flake.

Retouched Tool Debitage.

Burin Spalls.

Burin spalls are not always an easy category of tool debitage to classify. This is especially true of the Sproughton assemblage where an absence in uniformity of burin type gives rise to a multiplicity of burin spall forms. For example, refitting has shown that some burin spalls were retouched (inversely or directly) whilst in other instances no retouch was used at all.

Identification of spalls is also made more difficult by the presence of cores on flakes. Artefacts refitting to these pieces sometimes give the appearance of burin spalls. A further problem arises with certain types of "siret burins". Here the burin facet is produced accidentally, usually by the blade breaking in half down the main central axis. In some instances this produces a convincing triangular section "burin spall" which is nonetheless an accident of debitage and not a true burin waste product. A useful method of differentiating these accidents from most other burin spall types is by the presence at the proximal end of part of the original bulb and bulbar surface.

When all these factors are taken into consideration, a count of the Sproughton burin spalls produces a minimum total of fifteen, including five refitted examples. Twelve less diagnostic pieces might also fall within the same category, but equally could belong to the other group of fortuitous examples mentioned above.

Two of the three remounted spalls show retouch (one inverse) along the edge, which was clearly administered before the burin blow was made. This type of modification is quite common and provides a useful way of regularising the edge prior

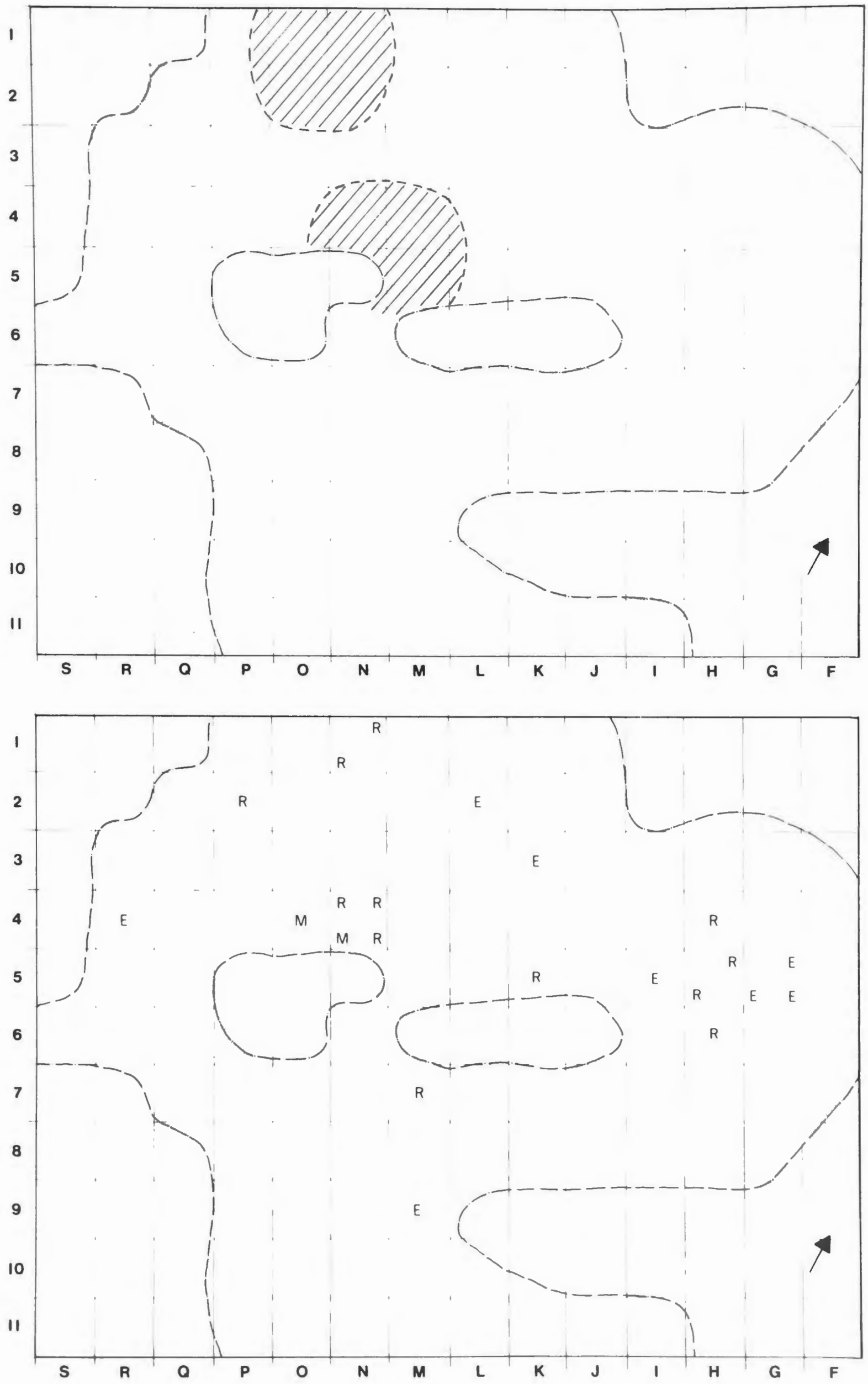


Figure 2.24 Sproughton: Top, the two major flint concentrations (after Wymer 1976). Below, artefact distributions: E-Bruised pieces; M-Microburins; R-Retouch flakes.

to detaching the burin spall (e.g. Figure 2.19, 1 & 3). Signs of similar retouch occur on a further two matching fragments and four loose spalls.

Most of the spalls are broken (one distally, five proximally and five with breaks at both ends). The five complete specimens consist of three curved spalls produced by a transverse (side) blow across the main axis of the piece. One of them can be refitted to a transverse burin on a prepared edge (Figure 2.19, 5). The other two most probably derive from either transverse burins or dihedral burins. Two of the dihedral burins from the site have been prepared by a transverse blow. One other broken "transverse" spall brings the total in this category to four.

Amongst the complete spalls is one with semi-abrupt retouch at the proximal end which resembles that found on burins on truncations. There is one example of this type of burin at the site, but the spall does not fit. One other spall displays what appears to be a faceted butt, this too might have originated from a truncation burin.

The rest of the spalls are largely undiagnostic. The two which can be fitted together are plunging spalls that come from a burin evidently of large size. One of the spalls shows the remains of both lateral and distal retouch with a prominent hinging facet on the retouched edge. The facet itself also displays signs of possible use-retouch. The second refitting spall is a broken distal fragment, but is complete enough to show retouch on the distal end.

Retouch Flakes.

At least eleven retouch flakes exist (Figure 2.21, 5-6), two of which are on entirely cortical pieces. Judging from

their size, and steeply curving profile, the majority must have been removed from fairly thick supports (up to 1.5 cm), Since this is generally thicker than most of the existing scraper supports it is quite likely that they originate either from truncated pieces or form those in the miscellaneous retouched category. Several of the latter display large flake scars. However, in the writer's opinion the most likely explanation is that they derive from the core/burin class of artefact (Figure 2.15) which are prepared on a large notch. They are certainly not typical axe-thinning flakes. Unfortunately, none of the flakes can be refitted to this or any other class of artefact. Three of the flakes are only slightly patinated but are identical in all other respects to their patinated counterparts. The distribution of these and other artefacts is shown in Figure 2.24.

Microburins.

Two microburins were recovered, each with its notch on the right-hand side. One is substantially larger than the other. It measures 1.81 x 1.59 x 0.50 cm (Figure 2.21, 4). On the dorsal side the proximal end is marked by platform abrasion, whilst the ventral surface shows a slight bulbar swelling, with well defined conchoidal fracture marks. It has a linear platform. The second microburin from an adjacent square, is much smaller. It is 1.19 x 0.78 x 0.31 cm. It has a plain platform with platform abrasion. The ventral surface shows a diffuse bulb with a lipped butt. Patination varies between the two pieces. The larger microburin is white patinated; whilst the smaller version is only slightly marked in this way.

Hammerstones.

Three quartzite hammerstones were recovered from the excavation area. They consist of two large cobbles weighing 2.80 kg and 1.74 kg respectively, and a smaller stone weighing 0.16 kg. The stones are all sub-spherical and slightly elongate in shape (Figure 2.25).

Each of the larger cobbles shows extensive signs of battering at either ends. In the two larger specimens this is accompanied by large flake scar removals at one extremity. Such scars were doubtless produced accidentally during the course of flint flaking. During my own experiments I have frequently noticed that flakes of a similar kind are detached from stone hammers as the more vulnerable edges of the percussor come into contact with the flint (Figure 2.25, left). Due to the surface texture of the smallest (0.16 kg) stone it is not possible to be as certain about batter marks. Deep signs of pitting however, do seem to be present towards one end of the piece.

Heavier hammers of a similar weight to the Sproughton examples are particularly useful to the modern flint knapper during the early stages of core preparation (Mason 1978; Forest 1983). Many of these early stages are represented at Sproughton either in the form of cortical flakes or irregular lumps resulting from "quartering" larger nodules.

Several points may be made about the hammerstones and their distribution over the site. First, the smallest and the largest specimens were both found close together (squares F7 & H6) and in apparent association with a scatter (F5 and F6) of waste pieces from three blade cores which I have partially refitted.

The smaller cobble is approximately 6.5 cm long and 4.7 cm wide; its friable surface gives the stone a slightly weathered

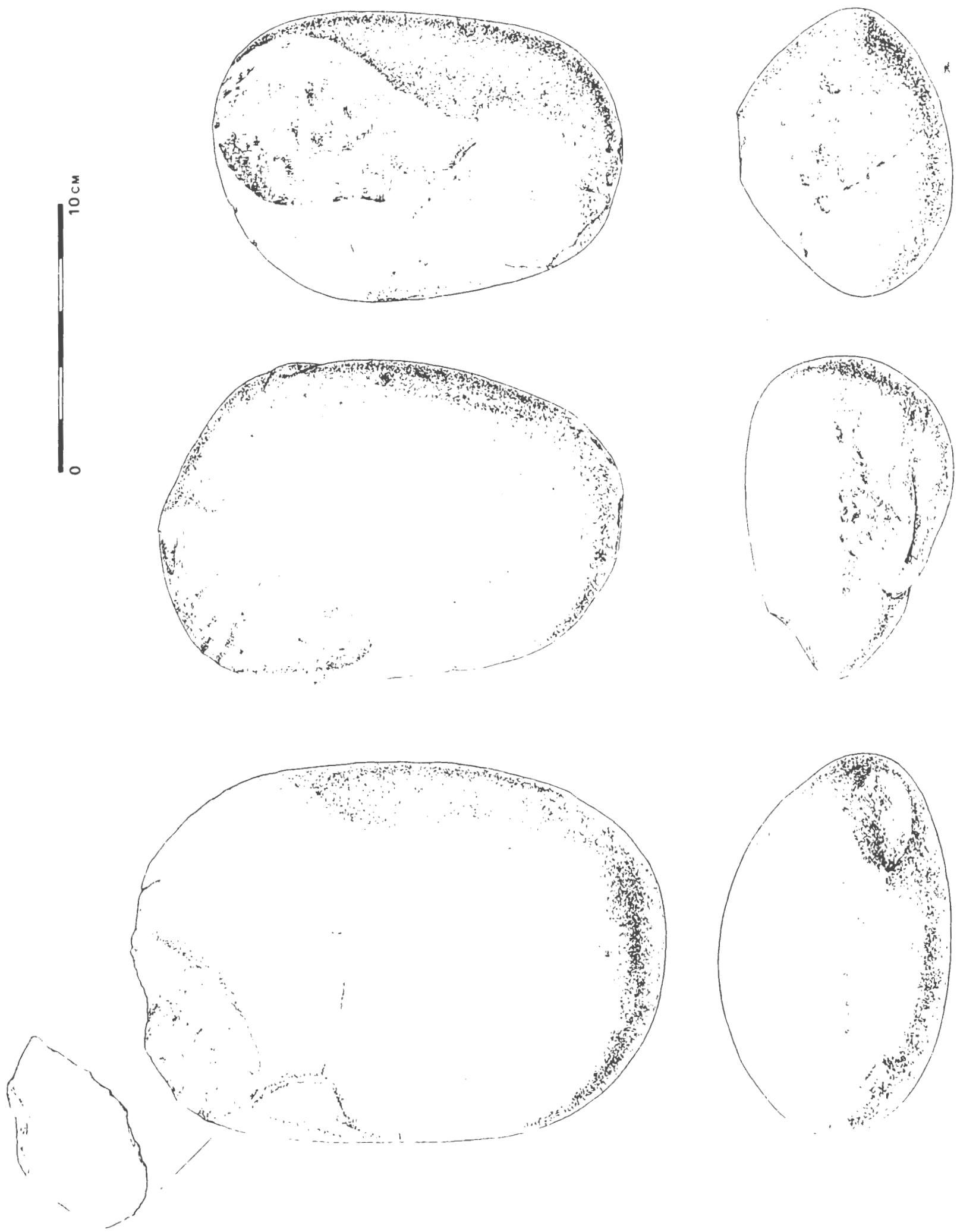


Figure 2.25 Sproughton: Hammerstones. Left, experimental; Centre & Right, archaeological.

look and, as has been mentioned, one of the rounded edges shows considerable pitting. Although its present surface texture may have been affected by processes subsequent to its deposition, this stone has a slightly more porous and softer 'feel' than the other quartzites from the site. In my experience, small cobbles of this kind make inefficient hammer-stones for quartering purposes. Rather it seems much more likely that if such a stone were employed as a hammer it would have been used for detaching flakes and blades, during the later stages of reduction. In this respect, it is worth re-emphasising here that a significant proportion of the blades sampled (as well as the refits from squares F5 & F6) display neither the stigmata characteristic of a hard-hammer mode (attribute 1) nor those of soft antler equivalents (attribute 2). A possible explanation for the high percentage of atypical types (attributes 4 and 5) may be linked with the use of light-weight hammerstones or soft stone percussors. Conjectures of this kind have been made by no less an authority on stone flaking than the late Donald Crabtree (1967). My own experimental results have shown that softer stones do indeed produce features resembling those found on the Sproughton flakes and blades (Barton In Press).

Two additional quartzite cobbles weighing respectively 0.85 kg and 0.54 kg were found outside the excavation area. They too show signs of heavy battering and flake scars at their extremities.

Taphonomic Considerations.

The deposits at the site are made up of sands sealed beneath a layer of marsh clay (Wymer 1976, 3). Wymer recognised four stratigraphic units within the excavated area which he numbered in order 1-4 from top to base. The units

varied in thickness but the exposed sections were nowhere much more than a metre deep (Wymer ibid., 11). Other accounts suggest that the archaeological "layer" was 1' 6" deep (Owles 1972, 288).

My own analysis showed that most of the artefacts come from stratigraphic units 2 and 3, suggesting a relatively narrow vertical spread of finds. A sample of 183 artefacts, taken from 21 squares, revealed that 40% came from level 2, 48% from level 3, with the remaining 12% from level 4. None apparently was recorded from level 1. A similar pattern is reflected in the distribution of refitting artefacts, which again shows a greater proportion in units 2 and 3, with the slightly higher number being in the lower unit. Excluding the major core refits for the moment, 39% (mainly) break refits are from within unit 3, 21% from within unit 2, and 18% between units 2 and 3 (n=66). This produces a combined total for units 2 and 3 of 78% of the refitted finds. The rest are divided between those in unit 4 (10%), between units 3 and 4 (8%), and only 4% of pieces linking units 2 and 4.

Two substantial refitting sequences have produced data sufficient for comparative purposes. The first consists of a blade core with 34 remounting flakes and blades (Figure 2.26). It shows a majority of pieces (25) in unit 3: Three are in unit 2, four in unit 4, with no depth data recorded on two of the finds. The second similar series of fits consists of 20 flakes and blades; the core itself is missing. Eleven of the artefacts are in unit 3, six in unit 2, whilst one is in unit 4. Again, data is missing on two of the finds.

Overall, the depth data would suggest to me that there is no obvious integrity separating the individual units of the channel-edge deposits. Given the nature of the sediments which

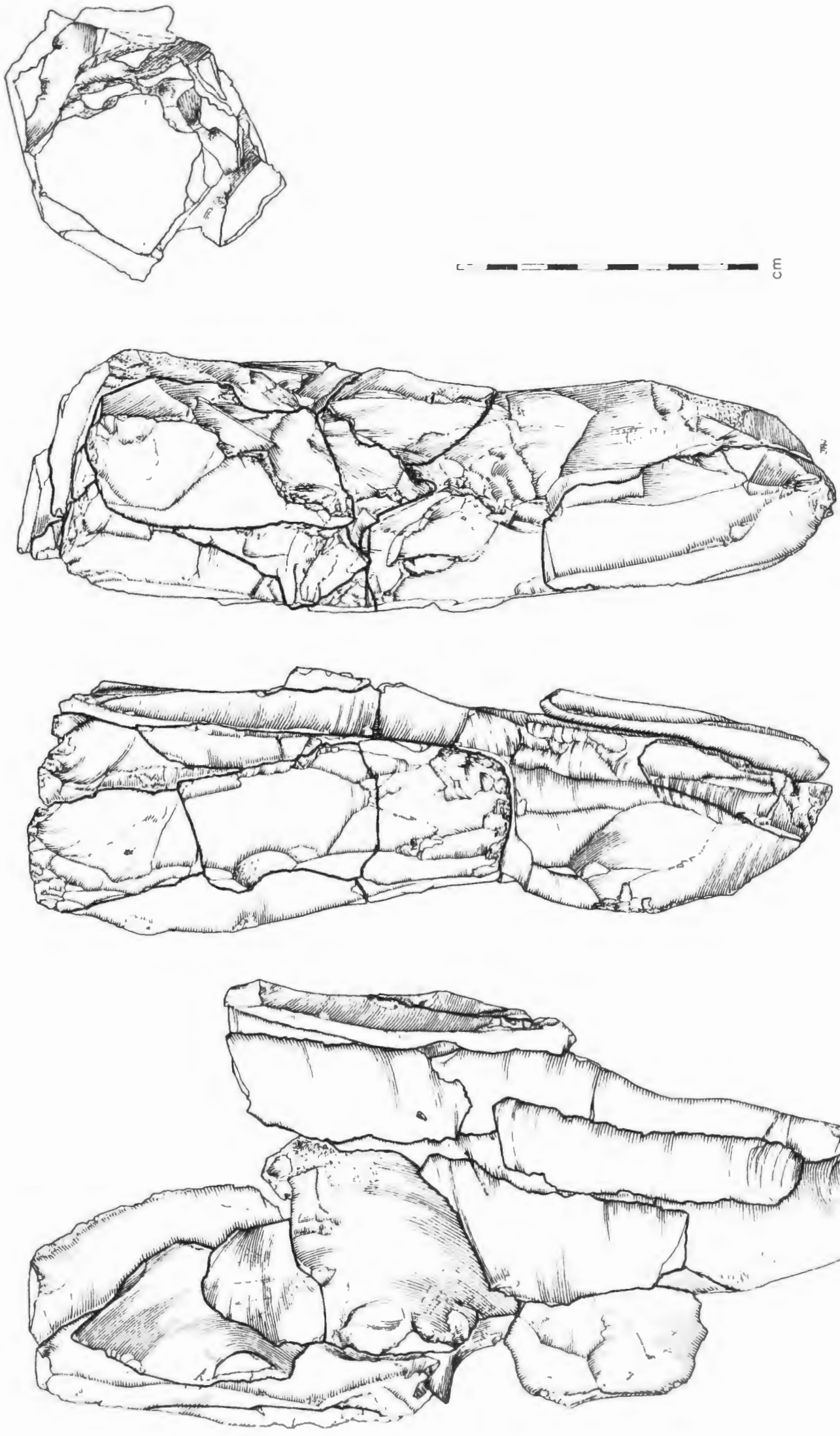


Figure 2.26 Sproughton: Opposed platform prismatic core with refitting flakes and blades.

consist of unconsolidated sands this is not greatly surprising. Despite the slightly higher proportion of finds in unit 3, there is nothing to suggest the possibility of discrete cultural horizons within the sampled area. On the contrary, the range of refitting artefacts between units 2 and 3 would rather suggest a slight blurring of one major artefact horizon produced by some vertical dispersal mechanism. Precisely what this mechanism may have been remains for the moment unclear. Certainly there is nothing to suggest clear weight differentiation between the different units. A non-parametric statistical test (Mann-Whitney U-Test) to see whether there was any significant difference between the weight distribution of a selection of artefacts in units 2 and 3, proved inconclusive.

Inspite of some differences in the vertical spread of artefacts, a similar dispersal pattern is not reflected in the horizontal distribution of flint. For instance, there is no indication that finds larger than a few centimetres have moved very far from where they were originally discarded. Out of 217 either technological or break refits (see Introduction 'Notes to the Reader'), only 8 come from non-adjacent squares. Three are joined breaks, the others are all technological fits. It should be noted that three out of the five technological refits are burin spalls which can be fitted back on to burins. Since they represent actual phases in the manufacture (and use) of the burins, they ought to be regarded separately from the other unretouched refitting waste. In this instance, the linking of spalls to their parent burins seems to indicate a traversing of activity across the northern area and not confined to just one part of the site (Figure 2.20).

The fact that artefacts have remained otherwise unmoved and not greatly affected by any later massive horizontal

disturbance is amply demonstrated by the core refits. Of the artefacts which can be rejoined to a parent core, not one comes from more than a metre square away from the abandoned core itself. In one interesting example, a whole "nest" of flakes and blades was refitted, but the core itself was missing. It is possible that further refitting will eventually produce the missing core from another part of the site. However, the fact remains that the core was apparently removed from this area of the site.

Some of the highest densities of artefacts occur around square N2 in the northern part of the site (Figure 2.24). Here the artefact totals are heavily augmented by the addition of a large number of smaller flakes and chips up to a centimetre in size. These are otherwise generally lacking from elsewhere in the site. Given that this is not the result of some aberrant recovery bias, it seems no mere coincidence that the concentration of artefacts centres on one of two shallow depressions c.20 cm deep. The excavator believed these to be pits, but there is no unequivocal evidence to indicate the presence of hearths or other artificial structures. Whatever the explanation for such features, whether deliberately scooped-out hollows (as Wymer believes) or purely natural phenomena (e.g. the result of fluvial action or tree-fall) it is difficult to escape the impression that they serve as artificial accumulation zones for smaller flaking debris. Such a trap might be expected to come into operation if the area became flooded or was periodically inundated when the river broke its banks. Unfortunately, orientation data on artefacts necessary for testing such an hypothesis was not recorded during the excavation.

The question of patinated artefacts poses an interesting

problem. Not all of the flint artefacts from the site are fully white patinated; some are only slightly affected by a bluish surface patina, whilst others are altogether unpatinated. It has been suggested by John Wymer that the wholly unpatinated sample represents a secondary Neolithic component not in any way associated with the long blades assemblage. In my opinion this explanation is made even more likely by the total absence of refits between patinated and unpatinated pieces, and this despite the refitting of many artefacts between the different levels. Less well defined, however, is the difference between the slightly patinated and wholly white patinated samples. The faintly patinated material includes a small microburin and the two minute geometric microliths which Wymer states are "most unlikely to belong with the long blade industry" (Wymer 1976, 9). Whilst this may be supportable on typological grounds, it is not justifiable on grounds of patination alone. Many of the faintly patinated artefacts can in fact be refitted to white patinated specimens. This amply demonstrates the problems associated with using surface patina as a criterion for determining the relative age of artefacts.

Dating the Flint Assemblage.

Two distinct flint industries perhaps separated by a considerable interval of time occur at Sproughton. The younger is defined by small hard-hammer struck flakes from water-worn cobbles with a thin brown cortex. It is almost wholly unpatinated and derives from within the A-horizon of a palaeosol. These artefacts are almost certainly Neolithic in age and have not been considered in any more detail here. The second assemblage found in much greater concentration across

the site is characterised by long flakes and blades. It includes a distinctive toolkit made up of end-scrapers, burins, backed pieces and microlithic material, with heavily bruised long blades. The artefacts are heavily white patinated and mainly come from the base of the palaeosol.

Inspite of the various radiocarbon readings mentioned above, there are no accurate age determinations available for the Sproughton long blade assemblage itself. The site lies in sands on the edge of a shallow braided river in the final phase of sedimentation, and channel infilling. The dating of these final phases is not known exactly. Based on a radiocarbon date obtained on fresh willow twigs near the very top of the sediments, the final channel infilling seems likely to have occurred not long after 9,888 $\pm$ 120 bp, in the early part of Flandrian pollen zone IV. Such a dating is not contradicted by the age of the barbed points, both of which were found in the channel infill deposits. The fact that they are extremely fresh-looking means that they must have been locally derived. Taken as a whole, the C14 dates provide a useful, but not entirely satisfactory terminus ante quem for the long blade assemblage. Of probable relevance here is the discovery of similar long blades and a large prismatic core from the nearby Hadleigh Road Pit (Figure 2.14 and Wymer 1976). These are heavily rolled and stained, and appear to derive from the gravel infillings of the same channel deposits mentioned above.

Far less certain is the upper age limit of the sands in which the Sproughton site lies. Stratigraphically the finds occur at the base of a buried soil which may be of Atlantic (Zone VII) age. However, since there is no suggestion whatsoever that the artefacts are related to these pedogenetic events, the only feature of consequence is that the whole site

lies buried under peat and gyttja deposits which may be as much as 7,500 years old.

Geological evidence suggests that the sands containing the artefacts were laid down at a time when major changes in river regime were taking place and the Gipping developed a relatively stable channel, building up its edge and sides with fine organic and inorganic detritus (Rose et al., 1980). This sort of activity is typical of a river with small discharge variation, in a well-vegetated environment (Knox 1972). Just such a set of conditions were characteristic of lowland Britain during the early temperate zone of the Flandrian with the development of forest cover and deep soils. On circumstantial grounds therefore, there seems to be relatively good evidence for placing Sproughton in the early temperate zone of the Flandrian, as early as, but no earlier than the beginning of zone IV.

Finds in the Ipswich Area.

Finds of long blade material have been widely reported from the Gipping Valley and its estuarine continuation below Ipswich, where it becomes the River Orwell (Figure 2.14). Many of the finds have no exact provenance and are referred simply to the Gipping or the Orwell. The rich distribution of material along such a major watercourse is not especially surprising given the major gravel extraction which has taken place there. Harder to explain, however, is the surprising dearth of finds from the major interfluves, which includes large housing development areas (around Ipswich) and rich agricultural land, where one would expect finds to be made if the material existed. A particularly striking feature is the paucity of sites above the 30 metre contour and this is

unlikely to be due to accidents of land use alone, since both building work and extensive arable farming have taken place above this level as well. Many of the findspots are apparently located close to the valley bottom at much the same level as Sproughton (5m OD). A similar situation has been recorded for the site of Wrabness in the adjacent river valley of the Stour (see following section).

North of Ipswich, long blades have been reported from as far upstream as Barham (Owles and Smedley 1966) and Claydon (Moir 1930, 203), 7 km north of Ipswich. At Mason's Pit, Claydon, for example, a long blade find was described as coming from "loamy sands" resting on chalk. Sandy deposits of a similar nature are known from valley floor situations further downstream and are recorded at the Sproughton site itself (Wymer 1976). Moving on towards Ipswich, numerous discoveries of long blades have been made during construction work in the main town. Amongst others, examples have been documented from Bramford Road, Belstead Road, Portman Road/Constantine Road, Hadleigh Road, Chantry Estate and the Recreation Ground (see Gazetteers of sites under Ipswich). Several of them appear to derive from deposits either immediately below peat or in sands above floodplain gravels (Moir 1930). Again, these situations are at least analogous to those recorded at Sproughton, even if actual dating evidence may be lacking.

One exception to these valley bottom locations is the site at Ivry Street on the north side of the river in Ipswich. The original findspot occurs at about 36 m above sea-level and dutifully close to the present Museum, where the collection is housed today. It was discovered during the excavation of a vehicle inspection pit prior to the First World War (Moir 1914). From the account given it appears that the flints came

from a particularly fine sandy deposit about 2-3 feet below the present surface. They consist of 20-25 long blades and flakes, the largest of which is 13.7 x 5.1 x 1.1 cm. The artefacts are typically broad and thick (mean breadth = 4.5±1.3 cm; mean thickness = 1.4±0.4 cm, n=16), and look very similar to the Sproughton examples. The finds include no retouched tools but evidence of tool use is found in the existence of one bruised blade. A striking feature of the industry and one which suggests it was more or less *in situ* is its fresh appearance. Indeed it was sufficiently obvious to be commented upon by Moir, who described the flint as "quite unrolled, and no cones of percussion or scratches are to be seen on their surfaces" (Moir *ibid.*, 478). Several of the flakes were refittable.

A possible difference between the Ivry Street assemblage and the Sproughton finds is the relatively high number of faceted butts on the artefacts (10, n=19). Otherwise the bulbar surface attributes (with a dominance of types 4 and 5) and large size of butts are virtually identical to the Sproughton pieces and suggest a very similar flaking mode. The assemblage includes four blade cores, three of which are opposed platform prismatic types. One is a core on a blade fragment. In view of the number of flakes and blades with faceted butts it is not surprising that signs of faceting are also visible on the striking platforms of three of the four cores. The cores themselves range in size from 9.3-14.4 cm long and reveal a thin, slightly green dimpled cortex very similar in kind to the raw material from Sproughton.

Although no formal retouched tools were recovered the assemblage includes one bruised blade. It is broken at the proximal end but measures >12 x 4.9 x 1.9cm and is altogether

characteristic of the other blades in the group. Most of the damage occurs along one edge of the ventral surface; the opposite edge has a steep natural cortical backing which is undamaged.

Finally, it should be remarked that the upper part of the soil profile at Ivry Street also contained faunal remains of sheep, ox and deer (identified by BMNH) with a small amount of pottery. Whilst there is no doubt that the site consists of a mixture of material of clearly different ages, there is equally no reason to suppose that the large blade material is not all contemporary. Indeed several of the flakes in Ipswich Museum can be refitted. As has been shown elsewhere (Barton and Bergman 1982), artefacts are highly susceptible to vertical displacement in fine sandy sediments.

Amongst other noteworthy sites in Ipswich is that of the Bolton and Laughlin's Brickpit in Dale's Road (Moir 1932). Here, the finds which were located under several feet of loamy sand include a mixture of mesolithic and later types, but also a few long blade fragments and retouched tools of kinds which are sometimes found in assemblages of long blade character. They comprise a few straight-backed bladelets (2-3cm long), with several larger singly and bilaterally backed elements. They are, however, quite different in type from the retouched bladelets which were found at Sproughton.

To the south of Ipswich, on the outskirts of the town, are a number of locations which have yielded long blade artefacts. Perhaps best known amongst them are those around the mouth of the Belstead Brook, a small tributary on the south side of the Orwell. Here, Lt. K.R.U. Todd collected a large number of flint artefacts including long blades some measuring up to 13.7cm in length (Todd 1933). Amongst the finds which he

suspected of being Magdalenian, was a bruised blade (see Gazetteer).

Rather surprisingly in view of their river edge location, was the extremely fresh condition of the Belstead Brook finds. Their unrolled appearance suggested they were not fluvially transported but derived from very close to where they were found. However, since the finds occurred below the high water mark, it was not possible for Todd to establish their true stratigraphic context. At the same time, it is interesting to note that both Moir (1930, 212) and Todd himself (unpublished manuscript; British Museum, Franks House) maintained that the long blades came from within alluvial mud and in places below peaty deposits. It need hardly be stressed that a similar situation occurs at Sproughton where the finds lie sealed beneath peat which has been shown to be of likely Atlantic age (Wymer 1976). An earlier pollen analysis of the peats found near the junction of the Belstead Brook and the Orwell broadly confirmed a similar Atlantic age (H. and E. Godwin in Todd unpublished, and Todd 1933).

Wrabness. (28) TM 175 323

Location.

Amongst the Hazzeldine Warren collection in the British Museum is a group of long blade artefacts from the foreshore of Wrabness on the south side of the river Stour. According to notebooks deposited in the British Museum (Warren Emergency Catalogue) the site is situated 0.3 miles NNE of Wrabness Hall on the sandy river shore. Here in September 1926 Hazzeldine Warren discovered a number of long blade artefacts washed out on the surface of the sandy beach (Wrabness a). A little

further away (© Wrabness a) he observed a patch of red burnt earth 5-6 feet in diameter with many "long flake-knives", one axe and a few cores. Interestingly several of the artefacts can be refitted between the two locations. However unlike several of the artefacts in the burnt patch none of the long blade finds appears to be burnt. Warren himself was able to observe that pieces of the "ordinary" type seemed to be stratified a little higher than the others indicating that the long blade finds were not in direct association with the burnt patch.

The Artefact Assemblage.

The artefacts consist of blades and flakes, some as long as 20cm in maximum dimension. Amongst the collection are also five blade cores. Considering the artefacts were found in shore-edge deposits, the flint is surprisingly fresh and unrolled in appearance. Further confirmation that the material has not been extensively disturbed is provided by a small core tablet and a number of flakes which I have been able to fit back onto several of the blade cores. The flint itself is characterised by a green dimpled cortex, and sometimes displays a thin "orange-rind" just beneath the outer cortex. This kind of flint is quite typical of the Upper Cretaceous flint which occurs widely in the area. Many examples of such flint have been noted from archaeological deposits in the neighbouring Gipping/Orwell valley.

The five blade cores are all of double-opposed prismatic type. They range in size from 9.5cm to the smallest at 5.7cm long. The dorsal side (back) of the core displays some major field of cortex on three of them, whilst the other two show flat flake scars (but are not crested). Unidirectional cresting

along the side of the core is present in three cases. The striking platforms are mostly plain, although signs of faceting are visible on two examples. Platform abrasion is frequently present. An unusual feature and one rarely seen in any of the other long blade assemblages is the heavily rubbed appearance of one of the core crests. It seems likely that the edge of the core itself was used as a tool.

Of the thirty-four blades complete enough to be measured, only six fell within the bladelet (<5cm) category. The mean length is 8.3+3.6cm;the mean breadth 2.4+0.9cm and the mean thickness 0.75+0.3cm. Most of the blades have fairly large butts which are plain (0.27±0.15 cm), a significantly high proportion have faceted butts (26%), with only a few examples each of linear or cortical proximal ends. There are no dihedral types (Table 2.1). The butt end features indicate a high percentage of soft hammer struck blades. In addition to type 2, attributes 4 and 5 are also well-represented (Table 2.1).

Retouched Tools.

Only four retouched tools exist in the Wrabness collection. They all come from the "Ø Wrabness a" site (associated with the patch of burnt clay). They comprise two burins, one double end-scraper and a microlith. The burins are dihedral types. One is made on a bidirectionally crested blade and is 8.9 cm long. On both burins the burin facets occur at the distal end, the proximal end in neither of the burin supports is preserved. One of the burins is slightly offset (asymmetrical dihedral burin) and shows that the first spall was removed by a transverse blow. However, no preparatory retouch is visible on the opposite edge. The maximum burin

facet width in both burins is respectively 0.5 and 0.3 cm.

The double-end scraper is made on a thick support which measures 4.1x3.1x1.1cm. The dorsal arêtes are straight and regular and indicate the original support was a blade. The single microlith recovered is a fairly broad A-type (obliquely truncated point). It is complete and measures 3.04x1.04x0.28cm. The oblique retouch at the proximal end is abrupt, direct and displays a microburin facet.

As the preceding pages will have indicated, the area including and surrounding the Gipping/Orwell and Stour Valleys has produced some of the richest concentrations of long blade sites in Southern Britain. Elsewhere in East Anglia other important collections of long blade material are known and it is to these that we now turn.

Swaffham Prior. (19) TL 557 650

Introduction.

Long blade finds number amongst the many hundreds of artefacts recovered from the fields around Adventurer's Ground Farm and Ivy Farm in Swaffham Prior Fen. They consist mainly of artefacts picked up from the surface by collectors such as Mr. J.W. Clarke, owner of Ivy Farm. Two small-scale excavations have also been carried out at Swaffham Prior, once in the 1950's by J.G.D. Clark and E. Higgs, and again in 1984 by A David. The various collections are housed today either in Cambridge (Cambridge Archaeology and Ethnology Museum), in Swaffham itself at Ivy Farm (J.W. Clarke collection) or remain in other private hands (J.D.G. Clark collection). The following account draws extensively upon unpublished material

generously made available to me by Andrew David, who is currently re-investigating the site and its material.

Site Location.

The site is on the northeastern side of Whiteway Drove, a minor road leading to the village of Swaffham Prior, Cambridgeshire. Today the area is intensively farmed and forms part of the rich tract of drained fenland which fans out on the north-east side of Cambridge.

Recent work by Andrew David has shown that the scatter of flint material covers an area of some two hectares (figure 2.27), but is mainly concentrated in three separate locations each containing significant quantities of long blade material.

Amongst the finds so far recovered are large numbers of end-scrapers, burins and heavily bruised flakes and blades. The artefacts include microliths, which may be contemporary with the long blades, but also examples of leaf-points and unifacially-flaked items which are Neolithic or Bronze Age in origin and without doubt post-date the long blade assemblage.

Stratigraphy.

Recent farming practices and deep ploughing of the fields have undoubtedly been major contributing factors in disturbance to the site(s). This has now probably removed any stratigraphic divisions which may once have existed in the archaeological deposits. The following profile was recorded during the 1984 excavations: it shows a relatively shallow dark ploughsoil between 30-40 cm thick which gives way to a mottled ferruginous marl beneath. The surface of the marl is uneven and marked by polygonal cracks which contain modern plant roots (A. David pers. comm., figure 2.28).

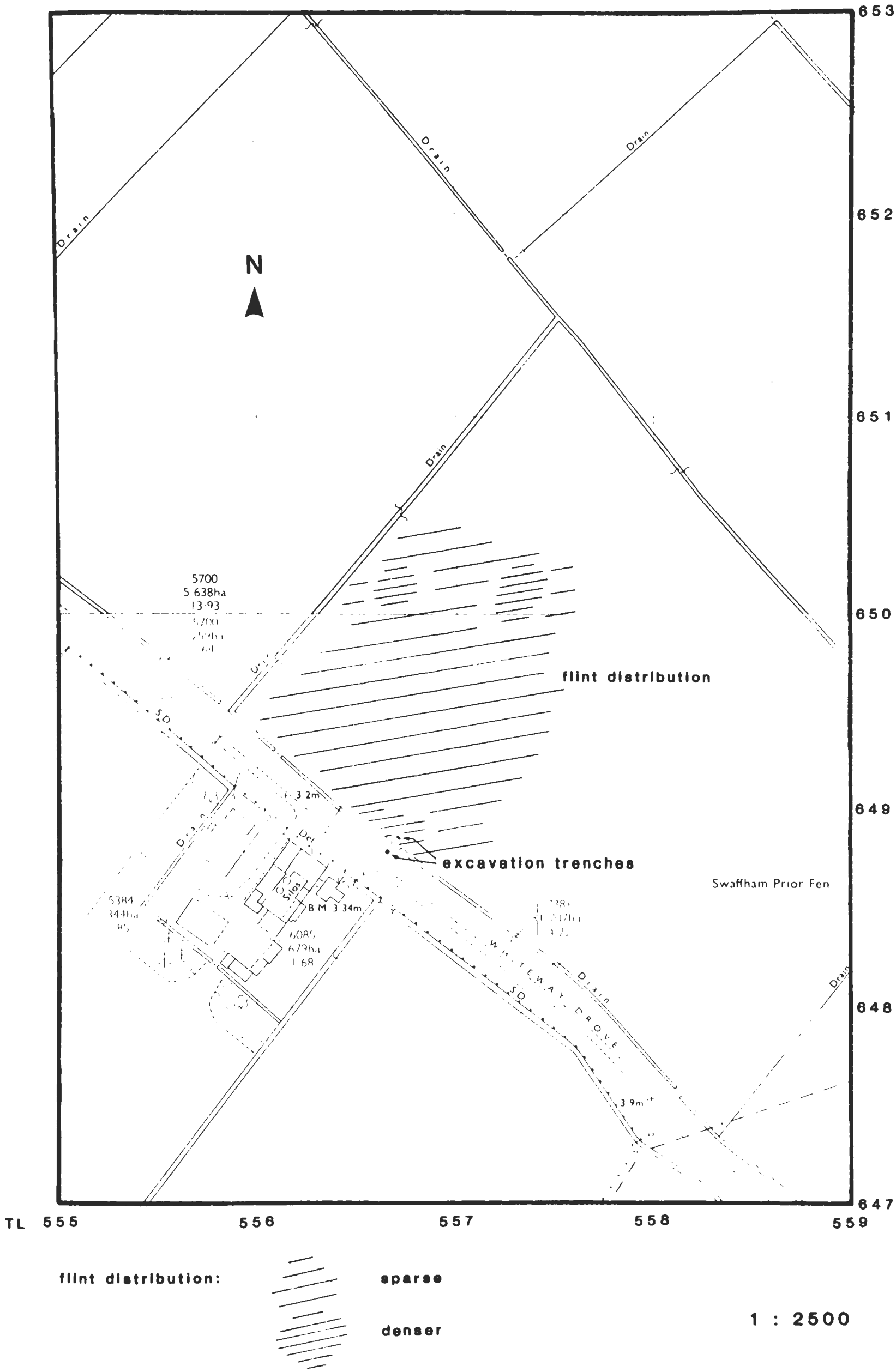


Figure 2.27 Swaffham Prior: Site Location (by courtesy of A. David).

Careful recording of the horizontal and vertical coordinates of finds during the recent excavations shows a band of flints some 10-15 cm thick with the majority lying near the junction of the topsoil and the underlying marl (figure 2.28). Much the same stratigraphy is evident from a photograph of the first excavations (in Cambridge Archaeology & Ethnology Museum) and, there is every reason to suppose that most of the long blades derive from the top of the marl.

It may well be of significance to the original position of the long blade horizon that most if not all are patinated. In particular they are marked by the same mottled brown iron staining as seen in the marl deposit. Despite disturbance from ploughing, both David and I have been able to refit patinated pieces recovered from the surface (e.g. figure 2.30, 2).

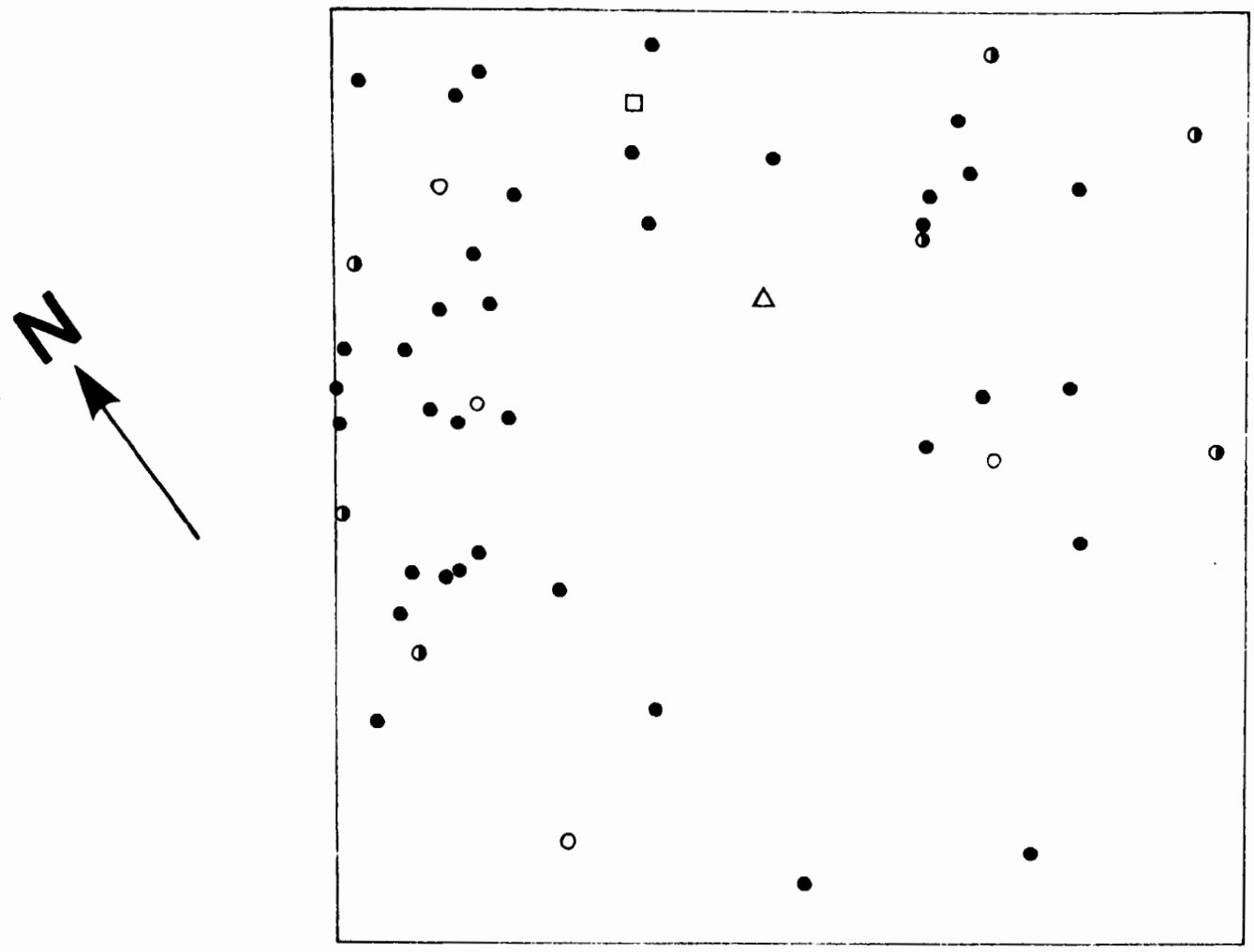
The Artefact Assemblage.

Raw Material.

The flaking material used is a high-grade black homogeneous flint. It is not possible to tell whether this derives directly from the chalk or from some secondary source, since few of the cores or other artefacts show large patches of cortex. There is nothing, however, to suggest that the material does not originate from a highly localised source.

Local names with the word "chalk" in them (e.g. Chalk Farm) suggest that this rock is nowhere far from the surface. Chalky outcrops with good quality flint are also found at Bottisham which lies within a few kilometres of the site.

One end-scraper typical of the long blade finds is made of a coarse brown flint, which has a somewhat similar texture to that of a Greensand chert. Outcrops of this material are also known to occur locally within a few kilometres of the site.



△ end-scraper

□ ceramic

● stained and patinated flint

◑ patinated flint

○ other flint

Figure 2.28 Swaffham Prior: Horizontal and vertical distribution of artefacts (by courtesy of A. David).

Debitage.

The artefacts examined by myself come from three major collections: those at Cambridge, the J.W. Clarke Collection, and the collection with A. David. Of more than 700 artefacts examined, most showed the cream and tan patina typical of the long blade finds. Many of these were incomplete revealing either recent or ancient (patinated) break surfaces. Included in the finds are over 50 cores.

Amongst the flints, waste blades and bladelets are well represented, although flakes form a numerous category. The most characteristic cores are in the blade/bladelet class. Over 36 cores were examined of which 26 could be classified, the rest being either too fragmentary to type or else clear examples of later (post-mesolithic) technologies. Nineteen cores were of prismatic type, 16 of which had two opposed platforms (Figure 2.29, 14). The remainder had either two platforms (orthogonal) (1), or only one platform (2). Amongst these prismatic cores were two under 5 cm in length and are considered bladelet cores. Various others showed narrow bladelet removal scars but were otherwise larger than the typical bladelet examples. Only one of the prismatic cores was made on a flake. The rest of the classified types were divided between blade cores of pyramidal form (2); multiplatform blade cores (1), and multiplatform flake cores (4). Again, one pyramidal blade core was made on a large flake.

Most of the cores are fairly small as compared to other examples from long blade sites. Normally speaking, the Swaffham cores range in size from just over 4 cm to 9 cm. Only one large 25 cm long blade core has been recovered from the site itself, but because of its somewhat unusual appearance (possessing extremely straight and regular blade scars) doubts

have been expressed about its authenticity (Jacobi pers. comm.). Many of the cores exhibit large areas of cortex on the dorsal side; dorsal cresting is correspondingly rare with only two examples seen. Cresting along the side of the core is equally uncommon, although numerous crested pieces show that this form of preparation was used on the front of the Swaffham cores. Amongst the prismatic cores, platform abrasion is frequently present but faceting of the platform was also noted on at least five examples including one of the bladelet cores.

A noteworthy feature observed on one of the cores was a pronounced rounding on the apex of a crested ridge. The same effect has been recognised on a core from Wrabness in Essex (see above). Such a feature can only have been produced by heavy rubbing and is evidence that cores themselves were sometimes used as tools, even if only casually.

The majority of the blades from the site are broken, a feature which is hardly surprising given the fact that the field has been intensively cultivated over many years. Sixty eight complete blades and bladelets were measured. They range in size from 2.0-19.2 cm giving a mean length of 7.2$\pm$ 3.8 cm. Most of the blades and many of the bladelets appear to be slightly curved in profile, relatively few (c. 20%) can be described as straight. The bladelets are all fairly broad.

A sample of 176 blades and bladelets (complete and broken proximal fragments) were examined for butt characteristics. Plain and punctiform types clearly predominated (63.6%), with a relatively high proportion of faceted examples (26.1%). Few linear butts were represented (6.3%), and those with dihedral or cortical features were all but absent. A subsidiary feature noted was the presence of platform abrasion on 73% of all plain butted examples. The platforms were evidently very carefully

prepared with some of the butts showing particularly heavy modification by rubbing or abrading.

Part of the sample was studied for butt-end characteristics. Out of 71 specimens, the highest values occurred in the attribute 4 (38%) and 5 (18%) classes, with relatively few fulfilling the more recognisable characteristics of the soft antler hammer (attribute 2 = 11%) or of a hard stone percussor (attribute 1 = 7%). Over half of the eighteen unclassified examples bore a closer resemblance to attribute 5 than to features in any of the other categories. Not surprisingly the most common combination of butt types and butt end features were in categories 1 and 4, i.e. a plain butt with the ventral surface showing a diffuse unlipped bulb and large negative bulbar scar. The sizes of the plain butts were all relatively large but time did not allow this variable to be measured.

Retouched Tools.

Apart from the unretouched waste, the finds consist of some 160 retouched tools. These are dominated by end-scrapers (c. 126), with smaller numbers of burins (26), several backed or microlithic elements (3), and typical examples of bruised flakes and blades (18). Microburin waste and burin spalls number amongst the retouched tool debitage.

End-Scrapers. (Figures 2.29 & 2.30).

These are the most numerous component in the whole tool assemblage. Of the 112 scrapers examined, blade end-scrapers (59) slightly outnumber those made on flakes (41), whilst double end-scrapers are also fairly common (12). Other examples (mainly flake end-scrapers) were rejected on the

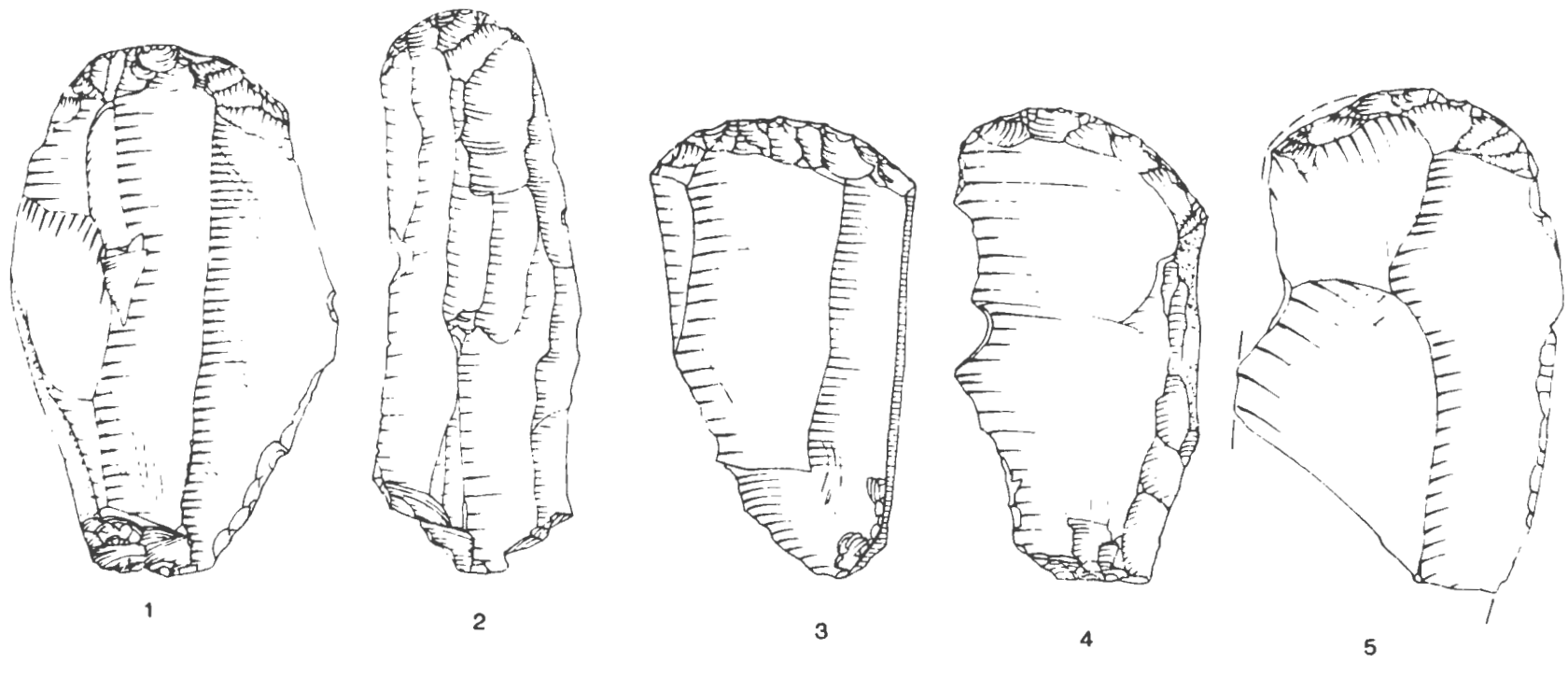


Figure 2.29 Swaffham Prior: 1-5. End-scrapers; 6-7. Microliths; 8. End-scraper?; 9. Composite scraper/dihedral burin on a break; 10. Multiple burin; 11-12. Truncation burins (12. on an inverse truncation); 13. Bruised flake; 14. Small opposed platform blade core; (by courtesy of A. David).

grounds of either patina or retouch type identifying them as being most likely of post-Mesolithic age.

The blade end-scrapers are generally of a uniform type. Judging from their average width and thickness they must have been made on relatively long supports, typical of the mean size of blade from the site. Curved and straight profiles appear to be equally represented and no particular attention appears to have been given to the shape of the blade blanks selected. It is noticeable however that the end-scraper supports are generally devoid of all cortex. This is to be expected particularly of blades from the later stages in the core reduction sequence. Another noteworthy feature is the presence of blades with the scraper front at the proximal end. Thirteen such examples have been identified in the assemblage. Three blade-end scrapers are made on laterally retouched supports.

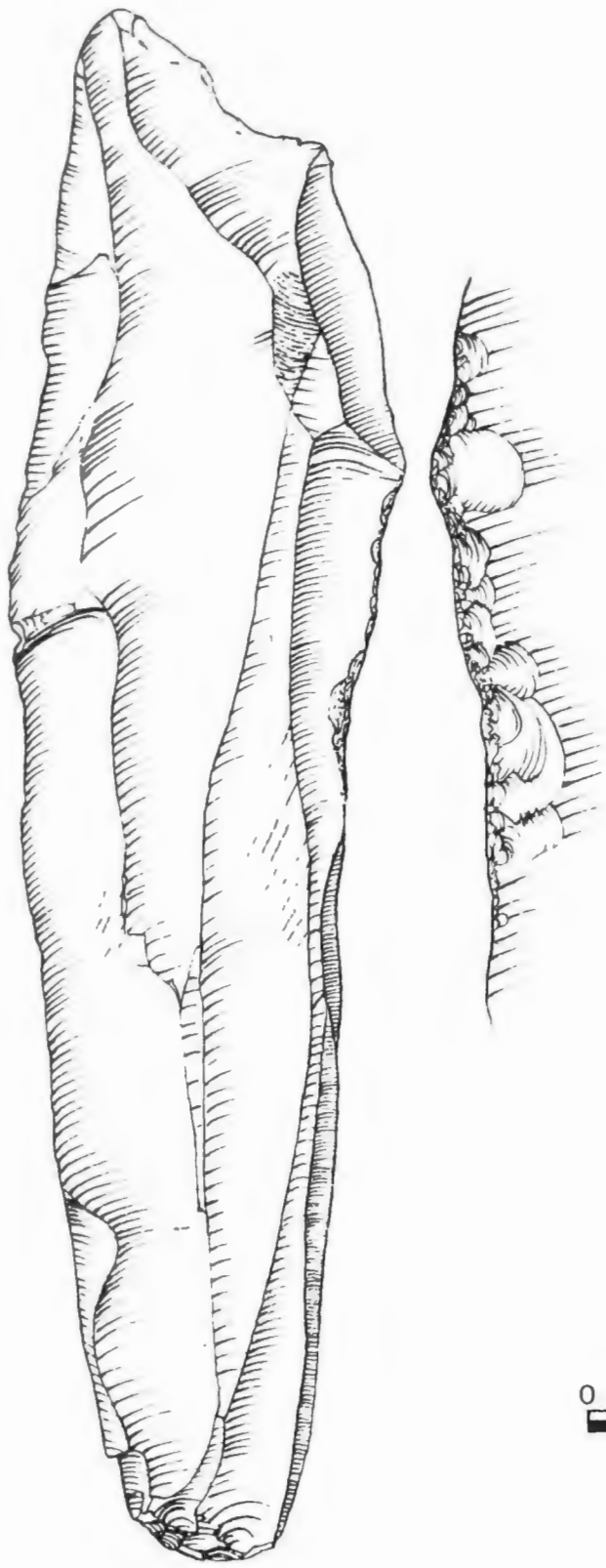
A similarly low proportion of tools on flakes displays lateral retouch (3), whilst only two flake end-scrapers are retouched at the proximal end. As with the other types, the double end-scrapers generally occur on fairly thick pieces. Overall, this gives the Swaffham scrapers a robust appearance which is enhanced by the steep retouch angle on the working edge. Perhaps surprising, in view of their thickness and robustness, is the fact that few display any sign of macroscopic edge-damage. Most of the scrapers looked remarkably fresh and unabraded, and although no microwear studies are at present contemplated this might provide a worthwhile future project for an appropriately qualified specialist. Scalar use-retouch of the type seen on the Sproughton specimens seems to be entirely lacking, but modern damage is displayed on a number of the artefacts.

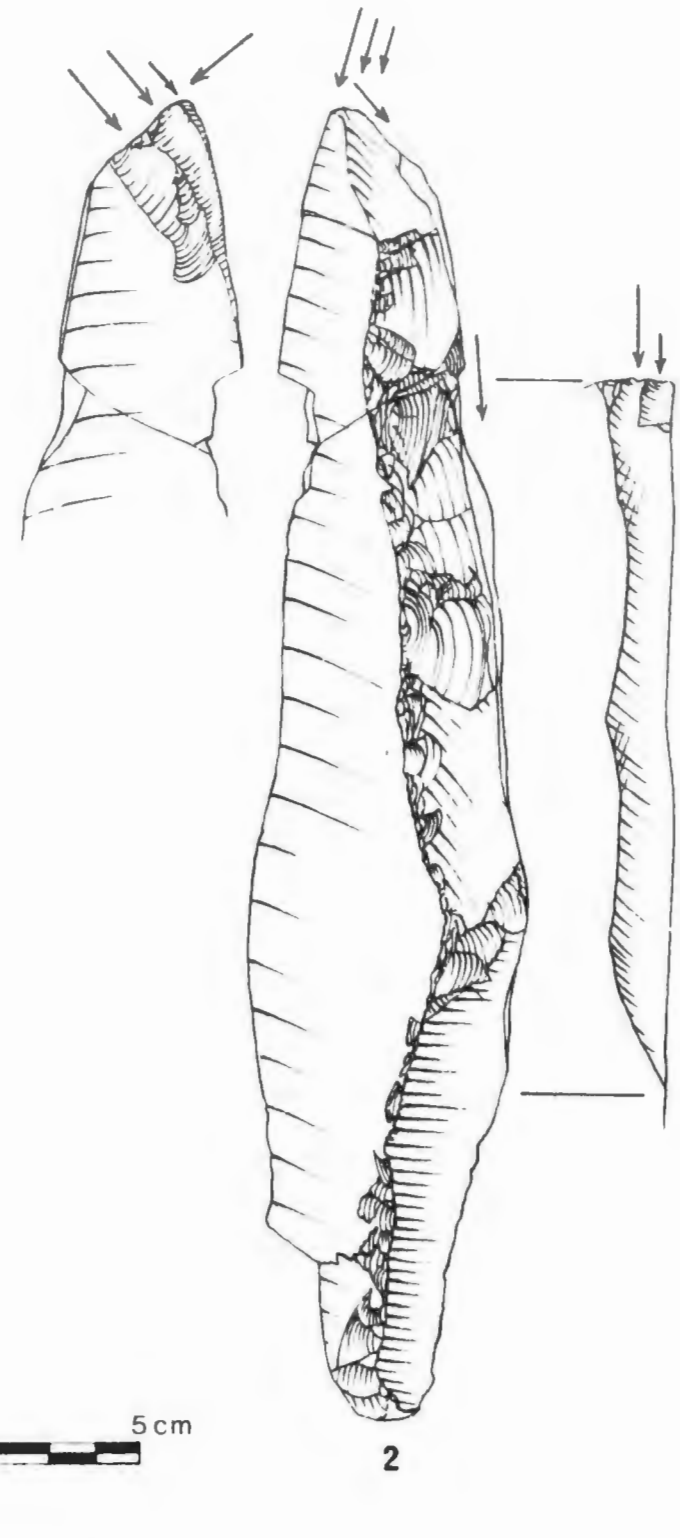
Burins. (figures 2.29 & 2.30).

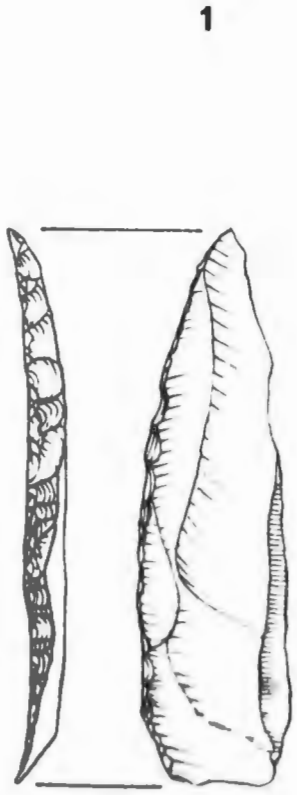
Burins of several different types are represented. The most common examples are dihedral burins (11), five of which are burins on breaks. There are eight truncation burins. In one instance refitting has shown two stages of burin manufacture in which a dihedral burin was fractured and later transformed into a burin on a break. However, it is impossible to tell from the break surface itself whether the second stage was initiated accidentally or by deliberate fracture to prepare a suitable platform (Figure 2.30, 2).

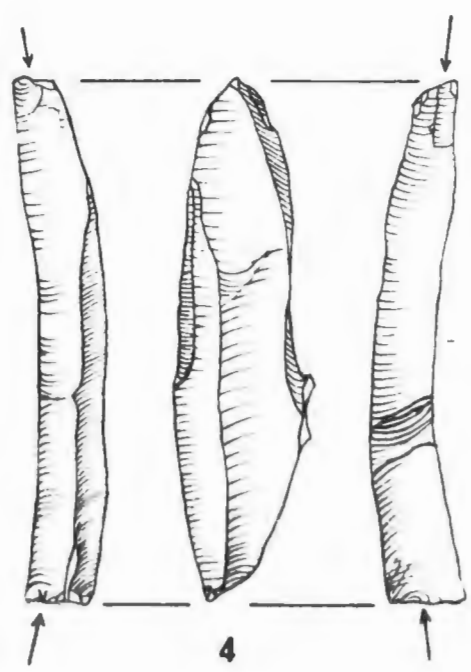
The other burins consist of three on natural surfaces; two multiple; one transverse and one of indeterminate type. Although only one transverse type was recognised, it is interesting to note that some of the dihedral burins were clearly prepared by the removal of a transverse spall before detaching a later side spall. This particular feature of preparing dihedral burins of asymmetrical type has been noted above in several other long blade assemblages (e.g. Wrabness, Sproughton). A somewhat unusual feature noted on one of the burins is that the truncation has been made by inverse retouch (Figure 2.29, 12). Examples such as this are rarely present in long blade tool assemblages.

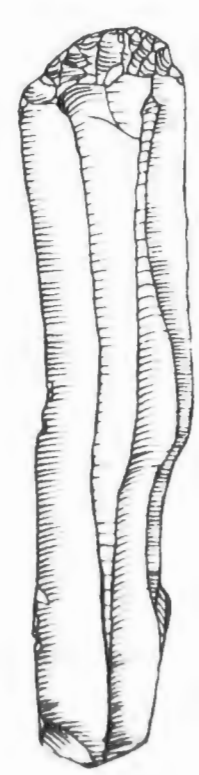
Most of the 26 burins examined appear to have been made on fairly thick supports (>0.8 cm). Burin facets are correspondingly broad and make a robust edge to the tool. Not all of the burins are made on carefully prepared blades. In some cases no particular attention seems to have been paid to the type of support used. They can occur on crested pieces as well as on partially cortical flakes. This is a feature typical of many of the long blade assemblages. Very few of the burins showed any sign of macroscopic damage which could be











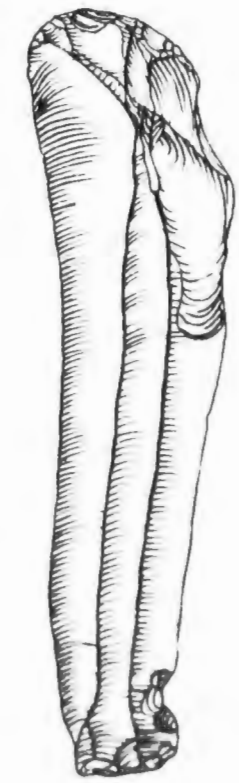


Figure 2.30 Swaffham Prior: 1. Bruised blades; 2. Refitted dihedral burin on a crested blade showing two stages of manufacture; 3. Curve backed blade; 4. Multiple dihedral burin; 5-6. Blade end-scrapers; (by courtesy of A. David).

attributed to use.

Composite Tools.

Five composite types were identified in the assemblage. They include four scraper-burins and one combined bec-burin. The burins on the ends of the blade-scrapers are of various types: Two truncation burins; and two dihedral burins are represented of which one is on a break (Figure 2.29, 9).

Retouched Blades.

Two backed blades are known from the assemblage. The first is a curve-backed blade 6.1 cm long made on a fairly broad support 1.75 cm wide (Figure 2.30, 3). The bulb has been removed by abrupt continuous retouch on the right hand side. Near the tip the retouch is bidirectional and is typical of the kind produced on an anvil.

The second blade is over 5 cm long but anciently broken at both ends. In this instance the abrupt retouch forms a straighter edge and is continuous down the left side of the piece. It too was made on a broad support approximately 1.77 cm wide.

One distally truncated blade was noted in the collection at Cambridge. Several others probably exist (Jacobi pers comm). The retouch on this example formed a concave edge, but the blade support was clearly too thin to have been prepared as a burin. In any case only one burin on a concave truncation exists in any of the collections examined.

Microliths.

Several microliths have been found, but only one carries the typical brown staining associated with the majority of the

long blades. This example is a bitruncated and slightly elongate trapeziform type (Figure 2.29, 7). Although broken at one end, it must once have been over 2 cm long. Like the other bladelets from the site it is relatively broad (0.7 cm).

Retouched Tool Debitage.

Microburin Waste.

A microburin and a microburin miss-hit are the sum total of finds of this type. Both are proximal examples with the notch on the right hand side. A striking feature of the microburin is its large size (3.0 x 1.2 x 0.3 cm) suggesting that the original support may have been a blade greater than 5 cm long. The resulting retouched artefact would also have been relatively broad.

Burin Spalls.

Several broken fragments of flint with triangular cross-sections were found and are probably derived burin waste. Two complete examples of plunging spalls from what must have been multiple mixed burins have been recovered.

Bruised Blades & Flakes.

Eighteen artefacts with heavy edge-damage were examined. The majority occured on flakes or broken blade fragments of various sizes. Two were recorded on blades over 17 cm long (Figure 2.30, 1). In both instances as with the majority of others, most of the damage was confined to the ventral side of one edge. Both of the longer blades showed extensive stepped and scalar damage on the ventral side with some of the more invasive flake scars measuring up to 2 cm. The affected edges are generally thick and steeply angled and quite typical of

those seen in many other long blade assemblages.

Hammerstones.

One hammerstone weighing 1.55 kgs was recorded from the assemblage. It is of a fine grained sandstone (A. David pers comm).

Dating evidence.

Regrettably, there is no dating evidence yet available for this assemblage. Several large pieces of burnt flint have been recovered and these are being submitted for Thermoluminescence dating at the British Museum.

Overall, the Swaffnam assemblage broadly resembles the long blade material from Berkshire, Kent and elsewhere in East Anglia. The only major difference lies in the relatively high percentages of retouched tools which imply rather more intensive site activity than at any of the other locations. This is a theme to which I will return in the last section of this present chapter.

The last two sites in this East Anglian section both contain important numbers of long blades, but for various reasons are considered marginally different from the rest of the long blade sites.

The King's Site, Mildenhall. (143) TL 704 794

Introduction.

The Mildenhall area of Suffolk has been a prolific source of prehistoric artefacts of all types including long blade material. The artefacts from the King's site now stored in the Cambridge Archaeology and Ethnology Museum are said to have

been excavated by the late E. Higgs, and were presumably unearthed during the 1950's when he was actively working on other sites in East Anglia such as Swaffham Prior. The name of the site itself is synonymous with those of Beck Row and Wilde Street which have both yielded large surface collections. Colonel T.C. Kelly of the US Airforce was also known to have excavated there in 1963 (Wymer 1977a, 261), but no report of the work was ever published. Further documentation of site finds and notebooks also exist at Cambridge, but, regrettably these were not available to me at the time the collection was examined in 1985.

The following brief working account is included here for the sake of completeness in the review of East Anglian sites with long blades. The collections are today divided between a number of museums. Only the material in the Cambridge museum was used in the attribute analysis undertaken below. The artefacts examined all had reference numbers and come from excavated contexts.

The Artefact Assemblage.

Raw Material.

The flaked material at the site is almost entirely of flint. Judging from the exterior surfaces of some of the cores the raw material seems to derive mainly from small rounded flint cobbles. The cortex is thin and weathered and does not appear to have come directly from the chalk. In some cases the cortex is also marked by dimpling of a similar kind seen on the Sproughton examples. Overall the flint has a patinated appearance.

Debitage.

The flint assemblage is distinctly laminar in appearance, with a tendency towards smaller blades and bladelets. Despite a number of bigger blades the sizes are on the whole shorter than those of many other long blade sites. The assemblage also contains at least 36 cores.

A typical sample of 100 complete blades was measured from the site. Although lengths generally varied from 2.2-14.4 cm, a few longer blades up to 21 cm were also recovered with the rest of the assemblage. The mean length of blades sampled was 6.3 cm$\pm$2.8 which although slightly lower than measurements from other sites overlaps at one sigma. Not surprisingly the mean widths and thicknesses of the blades are also marginally smaller (Table 2.1) but again show a slight overlap in size at one standard deviation with other sites of long blade type.

The blades are generally a little curved in profile. Their butts are almost exclusively plain or punctiform (86%). The size of the butt is generally small (mean breadth = 0.20$\pm$0.12 cm). A distinctive feature of the blades is the extremely careful preparation of the butt end by very marked abrasion almost to the extent of grinding the platform edge.

The butt end features show a relatively high proportion of pieces with lipped butts and diffuse bulbs (attribute 2 = 28%). A majority of blades however (36%) display unlipped butts with diffuse cones and large bulbar scars (attribute 4). Blades with this attribute are no larger in size than those with attribute 2, so it is unlikely to be a simple feature of butt size. Amongst 28% of the blades which could not be classified are many which display a diffuse bulb with conchoidal fracture marks visible on the bulb itself. These somewhat unusual features (combining butt end features 1 and 2) would seem to

indicate a very dense but flexible hammer type.

A selection of 20 cores was examined. This represents a relatively high proportion of the total number of cores (36) found at the site (see Wymer 1977a, 261). They consist of 17 cores of blade or bladelet type plus three globular or irregular examples. Of the 17 blade/let cores the majority are opposed platform prismatic (9) or opposed platform irregular types (4). The rest consist of two platform irregular (2), one platform prismatic (1) and one platform pyramidal (1) examples. Five of the cores can be described as bladelet cores. These have narrow laminar removals and are less than 5 cm long. Particularly interesting is one example made on a flake, which was modified at both ends to provide striking platforms. One of the platforms shows flake removals reminiscent of those seen on the platforms of two small cores from Sproughton (Figure 2.15, 1-2).

The blade cores are all of small size the longest being no more than 8.2 cm. None shows any sign of platform faceting (unless the bladelet core on a flake is included). Of the nine opposed platform prismatic types four display some area of cortex on the dorsal side, two show unidirectional cresting , whilst the three others are flaked all over. All of the cores (excluding the irregular forms) have some sign of abrasion along the platform edge. This is usually of the well developed kind noted on so many of the blade butts.

Retouched Tools.

End-Scrapers.

The forty or so scrapers from the site include more examples of flake end-scrapers than blade end-scrapers. In both categories proximally retouched supports occur. There are

also a few examples of double end-scrapers.

Only a small number of scrapers was examined in detail. Amongst them were at least five blade end-scrapers which showed additional lateral retouch (two with bilaterally retouched edges). This is a feature which is known to occur on the scrapers from various other long blade sites (e.g. Sproughton, Swaffham Prior).

Burins.

Twenty burins were identified in the Cambridge collection. The dihedral class consists of burins on breaks (5); burins on a natural surfaces (5); angle burins (4) and transverse burins (2). Only three truncation burins were classified. These were a transverse burin on a prepared edge, a burin on an oblique truncation and a multiple type. Two additional pieces which correspond technologically to burins were rejected on grounds of their being proximal end examples and in this instance quite indistinguishable from accidental "siret" types (See Introduction: 'Notes to the Reader').

Although the burins are consistently on supports greater in length than in width many of them clearly have been made on flakes. Amongst those on blades are two transverse burins made on thick crested supports. Overall, the forms suggest a certain degree of expediency in the choice of tool support, with no apparent preference shown towards selecting blade blanks. The burin supports are generally quite broad (mean = 3.8$\pm$1.2 cm, n=17) and thick (mean = 1.3$\pm$0.4 cm, n=19). Six of the classified examples also show important areas of cortex on their dorsal surface.

Burins on breaks are the most important type encountered. They can occur on flexional snaps with slight lips or straight,

right angled breaks which are quite likely to be intentional. In many instances it is impossible to tell because of the nature of the break surface and subsequent spall removal. The transverse or side break however appears not to have been used in the manufacture of these particular examples.

The transverse burins include one example made on a retouched edge. An identical technique for producing these burins has been observed at Sproughton. In addition it has been noted that on several of the angle burins from the King's site one of the two facets is made up of a transverse type removal. It seems highly likely therefore that the transverse and angle burins are in this assemblage closely allied types.

The widths of burin facets vary considerably between individual tools. However, given the overall thickness of the supports it is no surprise that the facets themselves are correspondingly broad. They range in size from 0.5-1.9 cm with the mean at 0.8±0.3 cm. In terms of macroscopic traces very little damage was noticed on the burin facets or tips formed by the intersection of facets. The overall condition of the burins suggests that it would be worthwhile to attempt microwear analyses on selected pieces.

Composite Tools.

A single burin/scraper type has been identified. It is a proximal end-scraper with a burin on truncation at the distal end. The truncation is straight and formed by inverse semi-abrupt retouch.

Retouched Bladelets.

Only one true retouched bladelet was recognised amongst the predominantly microlithic retouched forms. It is a

bladelet approximately 3 cm long with fine marginal retouch running up the left-hand side of the piece. In many respects it resembles one of the retouched bladelets from Sproughton (Figure 2.21, 9).

Microliths.

Seventeen microliths have been found in the assemblage, of which I was able to examine fourteen. They consist of seven examples with an oblique truncation (A-types), three laterally backed forms with basal retouch and one broad equilateral triangle, the rest (3) were too broken to be classified.

The A-types are all made on fairly broad bladelets with a mean measurement of 0.80±0.09 cm. The retouch is abrupt to semi-abrupt, direct and in four examples located on the left-hand side. A noticeable feature on the other classifiable backed forms is the presence of inverse basal retouch. These types are all fairly narrow (0.65±0.03 cm) but this is to be expected given the full extent of the abrupt retouch along one edge. The retouched bases are straight, and not curved like the more typical examples of Horsham points (Clark 1934). The triangular microlith also shows inverse abrupt retouch along one of its two retouched sides. It measures 0.92 cm across and is relatively broad.

Retouched Tool Debitage.

Burin Spalls.

Amongst the forty-three burin spalls seen in the Cambridge collection only very few could be recognised as coming from burins of a particular type. Of these, three were clearly transverse removals from either a transverse or dihedral burin, whilst one showed the remains of a truncation at the proximal

end. I was also able to refit several specimens back to their parent tools. The rest either had plain platforms (11) or were too broken to be certain of identification (28). Some of the spalls displayed signs of deliberate lateral retouch, the remains of which could also be seen on several of the burins. None however showed any scalar retouch or macroscopic edge-damage associated with utilisation.

Microburins.

Of the thirteen microburins reported from the site (Jacobi in Wymer 1977a, 261), I saw eleven in all. They were divided between seven proximal microburins with notches on the right-hand side, two distal microburins and two miss-hits. Most of the pieces were in the same fresh condition as the rest of the assemblage; only one of the items was burnt. Several of the proximal microburins were quite large (>3 cm long) and all of them appeared to be made on broad bladelets, the mean measurements for the seven proximal examples was 1.24±0.28 cm.

Bruised Blades & Flakes.

Eleven artefacts displayed heavy edge-damage of the sort described as bruising. Five of them occurred on large blades (one with cresting). In two cases these showed heavy scalar damage along both edges. One large flake similar in size to the Sproughton artefacts also displayed signs of damage running down both edges. As in the Sproughton example (and indeed most of those from the southern English long blade assemblages) the scalar retouch occurs almost exclusively along the ventral side of the artefacts.

Five smaller artefacts also showed signs of damage similar to that described above. In most cases the damage was confined

to the thicker or more steeply angled edges of the flakes. Again most of the use-retouch occurred on the ventral side.

Dating Evidence.

No information on the dating of the assemblage is currently available. From an analysis of the retouched tools there would seem to be more than a passing resemblance to Mesolithic toolkits, particularly with regard to the microlith types and the high number of microburins in the collection. The unretouched waste also exhibits certain Mesolithic traits, especially in the technique of blade/let manufacture. The great majority of blanks examined have small plain/punctiform butts with clear signs of platform abrasion. The marked absence of platform faceting is a feature already remarked upon in the Sproughton assemblage and perhaps it is here that the closest affinities to the Mildenhall site lie, so far as the assemblages I have described are concerned. It should be noted, however, that the microlithic equipment from both of the sites appears to be strikingly different.

In all, the King's site seems to display the characteristic features of late Devensian/early Flandrian 'long blade' technology somewhat less convincingly than the other assemblages so far reviewed. The indications are that it may well belong to a Mesolithic facies hitherto unrecognised, at least in its long blade form, in Southern Britain. There remains only the occurrence at Titchwell in southern Norfolk to be considered.

Titchwell, Norfolk. (104) TF 756 450

Introduction.

Beach finds, presumed from their condition to be eroded from local offshore exposures, make up the ninth and final long blade assemblage dealt with here. The flint assemblage is currently being prepared for publication by J. Wymer at the Norfolk Archaeological Unit, and I am indebted to him for making the material available for study. In view of the pending final report, the account of the assemblage given here will necessarily be of a summary nature.

Location.

The area concerned occupies a 2-3 km stretch of shoreline on the North Norfolk coast, more or less between the village boundaries of Titchwell and Thornham. Here the tidal flats are composed of sand and shingle deposits which form a gently sloping shelf extending several kilometres out into the North Sea. At the back of the beach are low lines of sand dunes which today are much reduced in extent as a result of massive erosion.

Most of the flint artefacts were picked up on the gravelly beach at mean high tide level, between the sea and the salt marsh now mainly transformed into a bird reserve. They were also found along gravel strandlines which occur in the inter-tidal zone half-way up the beach. The finds were made principally by two experienced flint collectors, Mr. G. Drown and Mr. T. Sharman, who have walked the beach over many years and continue to do so in their spare time. Material in the intertidal zone has also been collected by the writer and Mr. J. Wymer. Some of the most recent discoveries were made in the summer of 1985.

The problem of stratigraphic context

Although none of the artefacts have so far been found *in situ*, there is every suggestion they derive from an extremely local source. The artefacts are for the most part black stained, and apart from nicked edges are in remarkably fresh condition. Surfaces exposed by the breaks reveal a yellowish-grey patina beneath the stained exterior. This does not, however, appear to represent the original colour of the flint, which is black or grey.

The most likely cause of the black staining on the flint is the direct association with organic-rich peat deposits. A number of such occurrences are documented in the area including those of the well-known 'Submerged forest bed' lying a short distance off the coast (Reid 1913). That the latter is probably no earlier than Atlantic (Zone VII) in age is supported by pollen evidence and the discovery of a Neolithic polished stone axe fragment embedded in a submerged tree trunk (Rainbird Clark 1971, 20). On the other hand, it has been claimed elsewhere that peats of three different ages exist on the North Norfolk coast, the oldest of which belongs to an early stage of the postglacial (Jeffries 1976). If verified, this may well turn out to be the peat with which the Titchwell long blades were associated.

The suggestion that the artefacts originate from an offshore source is consistent with known tidal and sea-current patterns along this part of the coast (Clayton 1977). Although it cannot yet be ascertained whether the source is closely adjacent to the beach, it is noticeable that some of the artefacts are encrusted with barnacle, sea matt and sea worm. The implication is that they must have been exposed long enough in shallow water for these organisms to become attached to the

flint surfaces. Efforts to locate the original provenance of the finds by mapping out the artefacts according to degrees of edge-damage have so far been unsuccessful. From their overall condition there is no reason to suppose anything other than a local source.

The Artefact Assemblage.

Raw Material.

The artefacts recovered are all made of flint which appears to be local to the area. Even today large nodules of natural flint derived from the underlying Cretaceous chalk (Figure 2.33) are occasionally washed up on the shore (G. Drown pers. comm.). The flint used seems to be of the same high-quality fine-grained raw material available throughout much of East Anglia. The only visible flaws in the Titchwell examples are caused by major frost fractures. Fragments with larger thermally broken surfaces were occasionally used as blade cores (Figure 2.31, 2).

Debitage.

Amongst the artefacts represented in the collection are blade cores and blade and bladelet debitage. The unretouched waste also includes flakes and the products of core rejuvenation such as crested pieces and core tablets.

The majority of cores are of opposed platform prismatic type (10 out of 19). They range in size from 3.9-18.8 cm in length and include several bladelet cores (Figure 2.31, 3). Striking platforms of plain type on the prismatic cores are more than twice as common as faceted examples. Platform abrasion is more frequently associated with the cores with plain platforms. Modification of the back of the core does not

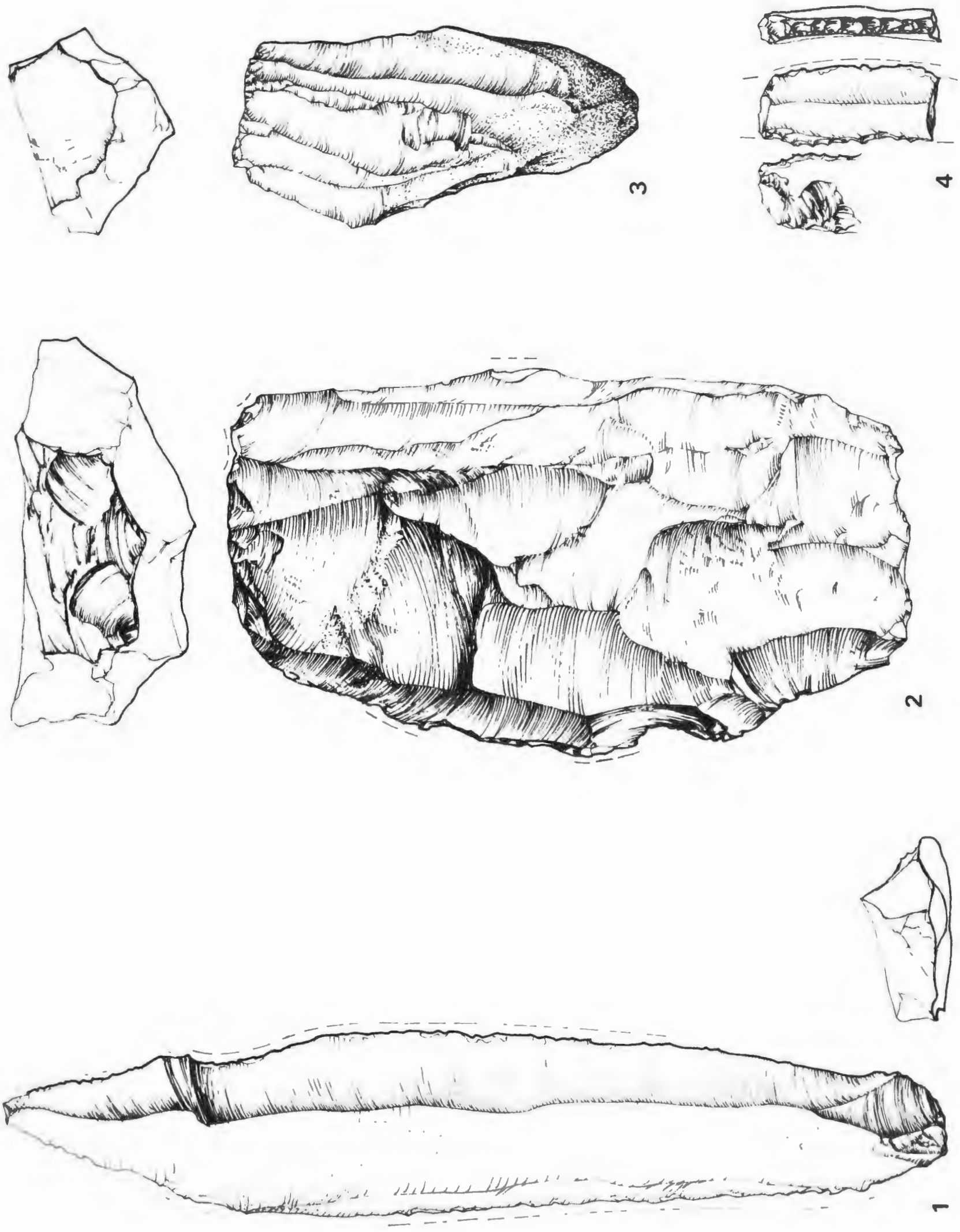


Figure 2.31 Titchwell: 1. Unretouched (slightly rolled) blade with plain butt; 2. Opposed platform blade core with faceted platform; 3. Single platform bladelet core with plain plaform; 4. Backed bladelet. Scale 1:1.

appear to be uniform. Only one example displays a dorsal bidirectional crest, whilst most show either a plain cortical back or highly irregular flaked surfaces with no evidence of cresting at all. Other limited evidence of cresting is present on the sides of four of the blade cores, but overall this method of preparation to the back or sides of the core is not common.

A sample of blades measured by J. Wymer showed a wide range in lengths running from 2.6-20.7 cm. Mean maximum dimensions were 7.2± 2.93 cm x 2.2±0.82 cm x 0.8±0.34 cm (n=99). As in many of the long blade assemblages there is no clear division between blades and bladelets with one type naturally grading into the other.

The blades are typically straight and relatively narrow. A study of the butts by myself revealed a clear predominance of plain (60%) and punctiform (17%) types (n=161). A smaller proportion of pieces displayed faceted butts (9%), whilst linear (5%), dihedral (2%) and cortical (1%) examples were all but absent. Unlike the other long blade assemblages, these proportions have much more in common with the Upper Palaeolithic material from Hengistbury Head, and may hint that the Titchwell assemblage belongs to a slightly different grouping from the bulk of the long blade material in this chapter. The butt sizes are generally much larger than those from superficially comparable material at the King's site, Mildenhall, where plain butted blades are also relatively common.

Bulbar surface features indicate that the hard hammer flaking mode was seldom used in the production of the Titchwell blades. Fairly commonly represented are the characteristic stigmata of the soft organic hammer (18%) and the soft stone

alternative (31%). It has to be said however that 45% of the sample could not be identified with any of the existing categories (n=161).

Retouched tools.

An estimated total of 35 retouched tools exist in the same black-stained flint as the long blade debitage. The surfaces of other tools of Neolithic and Bronze Age type which are occasionally found in the collection do not appear to be affected to the same extent. The long blade assemblage is made up of 21 end-scrapers, nine burins, one backed bladelet, one microlith and three miscellaneous retouched pieces. Several retouched items which lacked heavy staining were rejected.

End-Scrapers.

Of the 21 examples present, 12 are made on blades, six on flakes, with the other three being double end-scrapers. The longest scraper is made on a blade support and measures 9.1 x 3.2 x 1.0 cm (Figure 2.32, 1). A general preference for blade blanks is also reflected in the small number of pieces which show cortex on their dorsal surfaces.

Not all of the scrapers are retouched at the distal end. Apart from the double-ended examples, six others are modified at the proximal extremity. The retouch is generally semi-abrupt, but in some instances can be quite steep and made up of lamellar (bladelet-like) removals (Figure 2.32, 2).

Few of the scrapers show convincing signs of lateral retouch, but this is not always easy to gauge since the support edges are often damaged by rolling. Bilateral retouch is nevertheless visible on one blade end-scraper (Figure 2.32, 1).

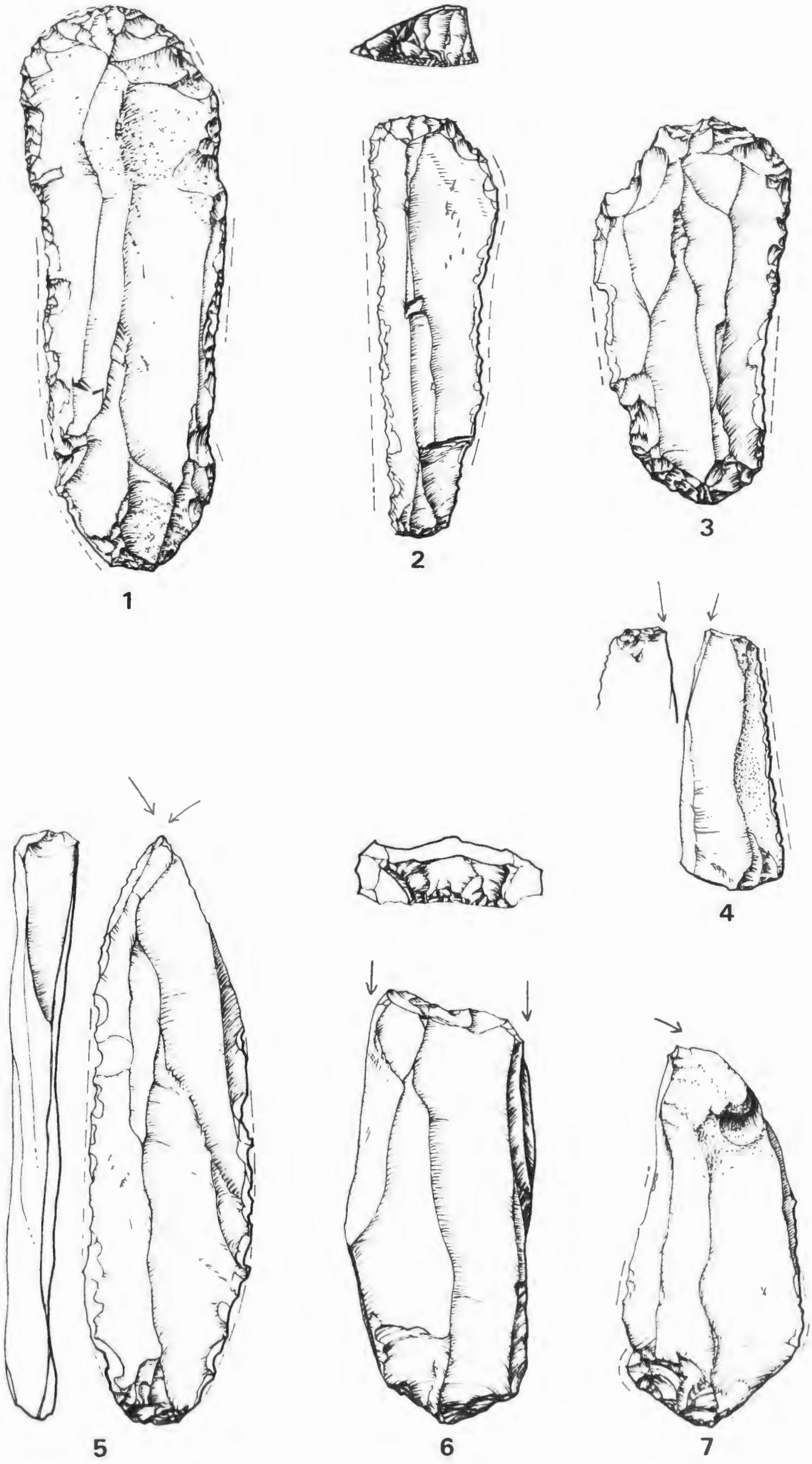


Figure 2.32 Titchwell: 1-2. End-scrapers (1 with lateral retouch); 3. Double end-scraper; 4. Burin on an inverse truncation; 5. Dihedral burin; 6. Multiple burin on truncation; 7. Dihedral transverse burin. Scale 1:1.

Burins.

The nine burins in the collection consist of five on truncation, three dihedral and one unclassified example. They mainly occur on blade supports and are fairly thick in section. The average dimensions of the burins are 7.0±2.41 x 2.8±0.77 x 1.4±0.72 cm.

Amongst the five truncation types are two multiple burins, one of which is on a concave truncation (Figure 2.32, 6). Two others are made on oblique truncations, whilst the final example is made on a straight, inversely retouched edge (Figure 2.32, 4). The dihedral burins comprise a straight symmetrical example (Figure 2.32, 5), a burin on a break and a transverse burin (Figure 2.32, 7).

The lateral edge facets of the burins are all relatively broad, the largest being up to 74 mm in size. None of the nine tools examined showed any pronounced signs of damage along the burin facets (cf. the burins from Hengistbury in Chapter 1).

Backed Bladelet.

A single broken backed implement has been recovered from the beach (Figure 2.31, 4). It measures 3 x 1.3 x 0.6 cm and is broken both proximally and distally. At the distal end it displays heavily invasive scalar retouch on the ventral surface which does not appear to be recent in origin, since there is no difference detectable in the ventral surface patina or the retouch scars. The break is reminiscent of those observed on experimentally impacted arrowheads (Bergman & Newcomer 1983) but, without knowing more about the original context of the artefact, it is hard to be more certain.

Microlith.

One non-geometric microlith, with an oblique proximal truncation, was collected in the same area as the long blades. It is a complete specimen and measures 3.4 cm long, by 1.0 cm wide.

Retouched Tool Waste.

Two burin spalls are the only clear examples of retouched tool debitage yet found at Titchwell. No microburins or backed bladelet waste have been recovered from the finds area.

Bruised & edge-damaged artefacts.

One possible example of a heavily edge-damaged blade occurs in the surface collection (T3 Sharman coll.). Invasive scalar retouch is developed along both edges of the ventral surface of the piece, with some of the scars measuring up to 12 mm in maximum length. However, since many of the other artefacts in the collection show varying degrees of edge damage, the identification of the 'bruised' blade must remain tentative. Several of the blades from the beach reveal markedly "rubbed" edges. In these cases the rubbed areas are patinated and stained and are therefore not likely to be of recent origin.

The Titchwell finds were collected from widely dispersed contexts along the beach and it is not known from where they ultimately derive. Given the similarity of staining and overall condition of the majority of flints, it seems not unreasonable to assign them to one homogeneous assemblage, perhaps originating from a single, though now greatly dispersed site. Various differences, for example in blade preparation

techniques, have been noted between Titchwell and the long blade groups referred to above. These will be discussed in greater detail in the next section.

Summary and Discussion.

In the previous section, nine assemblages of long blade type from Southern Britain have been described in detail. Each is characterised by the presence of large flakes and blades, sometimes up to 30 cm in maximum length. Other occurrences of long blades and isolated findspots are summarised in the appended Gazetteer. At the nine sites examined the majority of artefacts consist of flaking waste, with only a very restricted formal tool component. Retouched tools rarely exceed >1% of the full assemblage. In addition, little burnt flint or other material is known from any of these sites, even where the finds were recovered by excavation. This point is stressed because the absence of any charred material or hearth structures has important implications for assessing both the nature of activity and length of occupation at the sites. Each of these factors is treated at some length below.

From an analysis of the technological attributes of the long blade debitage, it is possible to put forward certain arguments for grouping the assemblages into one major techno-complex (although various reservations are made concerning the King's Site, Suffolk and Titchwell, Norfolk). Despite the fact that the dating evidence is scanty, there is at least some indication that the long blade assemblages broadly pre-date early mesolithic ones and may belong to Zone III or an early part of Zone IV.

Dating of Long Blade Sites

One of the major difficulties in producing a satisfactory chronological framework for the British Long Blade assemblages is the virtual absence of any reliable dating evidence. Most of the finds either derive from poorly documented contexts or else were excavated under far from ideal conditions where no contingency was made for obtaining datable material.

Of the nine sites under examination here, only two have sufficient information to make possible even the broadest generalisations about their dating, whilst amongst the rest the best available evidence is that which can be deduced from the relative positions of the archaeological finds within local stratigraphic sequences.

There are two major points of reference in the chronological arguments. The first is acceptance of the suggestion that the Avington VI site is stratified above a soil horizon of late Devensian (Zone II) type; the second is the fact that the dated channel deposits at Sproughton provide a near contemporary age for that particular assemblage.

The evidence for dating the Avington site has been discussed above. In summary, a fairly rich pollen assemblage was recovered from a dark organic horizon beneath the long blade site. A large amount of non-arboreal pollen including juniper was represented with small but nevertheless significant percentages of tree pollen including birch (Holyoak 1980, table 5.2, Figure 5.4). From other better known pollen sequences in the Kennet Valley it is clear that this is unlikely to be representative of either mid-Devensian or fully postglacial temperate conditions. The most economic explanation is that the dark band is broadly equivalent to the Windermere Interstadial (Pennington 1977) and in particular may date to

the latter half of that period, ie. Zone II or the 'Allerød' chronozone (Holyoak 1980). This would place the long blade industry, which lies well above the dark band, certainly no earlier than the beginning of Zone III (c.11,000 BP). It is the most suggestive piece of evidence we have so far that the British long blade assemblages do not belong within the complex of Upper Palaeolithic backed bladelet industries which can be dated to the Northwest European Bølling-Allerød chronozones, as many might have expected. So far as Continental Europe is concerned, the picture seems to be generally similar, though again precise dating evidence is usually lacking.

The Sproughton site is stratified at the base of a palaeosol resting on top of Devensian channel deposits. The prime evidence for dating derives from a good series of radiocarbon dates from the channel deposits which all occur in the correct chronostratigraphic order. The latest, near the top of the sequence gives a maximum age of 9888 $\pm$ 120 BP, which would fall in early Zone IV. Since these deposits lie just below the long blade occupation, the flint assemblage itself could be of a broadly similar age. Possibly also of contemporary date are a group of heavily rolled long blades which actually derive from the channel deposits themselves (Wymer 1976). However, the best evidence for placing the occupation in Zone IV rests on the fact that the flints occur in deposits which mark certain distinct changes in river regime and sedimentation. These are consistent with similar fluctuations seen in other parts of Southern Britain at the beginning of the Flandrian. It must however be stressed that no dates are yet available for sediments sealing the Sproughton long blade horizon and therefore only a maximum age for the flints can be accepted unreservedly.

Actual evidence for occupation in southern Britain during late Devensian Zone III and early Flandrian zone IV is at present only sparsely documented. Of particular relevance to any discussion is the earliest likely dating for Flandrian mesolithic occupation sites in southern England which are technologically and typologically quite strikingly distinct from the long blade material. With the anomalously high dates for Thatcham III in the Kennet Valley now largely disregarded (see Jacobi 1975; for new accelerator dates of the Thatcham sites see Barton, Gowlett and Jacobi forthcoming), most of the early Mesolithic sites in this particular area would appear to be no older than the first centuries of the 9th millenium BP (c.9,700 BP). This picture is not contradicted by the age of the North European Duvensee-type sites and their British equivalents such as Star Carr which can be dated to c. 7535 ± 350 BC (Clark 1972,16) close to the Zone IV/V boundary.

In this respect it is of no small significance that several of the long blade assemblages come from contexts clearly stratified below mesolithic-bearing deposits. In the Kennet Valley, for example, the long blade material from Crown Acres is mostly white patinated and derives from beneath deposits, which elsewhere in the valley contain artefacts of early Mesolithic type (Peake & Crawford 1922; Wymer 1962). In other words we have no reason to doubt that, in the Kennet Valley, long blade assemblages characterise the earliest Flandrian human occupation of the area.

Elsewhere in Southern Britain, it can be shown that in certain cases long blade assemblages are stratified below Mesolithic material of substantially later date (e.g. Sproughton, Avington VI). Less certain associations are available for the material from Titchwell Beach, but the peat-

stained long blades may belong to the first of three different peat deposits in the area, which has been argued as early Flandrian in age (Jeffries 1976).

Overall the dating evidence for long blade sites is far from satisfactory. The available evidence points to a Zone III or early Zone IV age for occupation of some of the sites. We should also particularly note that there is no instance of a long-blade assemblage of the type described overlying a British Mesolithic industry.

Climatic change at the end of the Devensian.

Recent work in Europe has suggested a rather complex sequence of events at the Pleistocene/Holocene boundary, marked by a series of climatic fluctuations. The nature of this evidence (almost totally palynological) will be discussed in more detail in the next chapter. In the meantime, it is sufficient here to say that the Pre-Boreal (at least in its European expression) should now be divided into two sub-stages: A warm stage (cf. Friesland interstadial) and a cold stage (cf. Rammelbeek phase). The latter is considered to be as cold in its intensity as the coldest parts of Late Glacial Zone III (Van der Hammen 1971). New dates for these oscillations place the beginnings of the Friesland interstadial at c. 10,200 BP and the onset of the Rammelbeek at c. 10,000 BP (Behre 1978). A return to warmer conditions marking the beginning of the late Pre-Boreal occurs at about 9,600 BP, although this might have been considerably earlier in some parts of N.Europe (c.9,800 BP according to Van der Hammen 1971).

Evidence for the colder Rammelbeek phase during the Pre-Boreal is as yet barely present in southern Britain, although one such interpretation has been put forward on the basis of

Simmons' (1964) work on Dartmoor, Southwest England (Frenzel 1966). This absence of positive proof is perhaps not altogether surprising, given that the areas most sensitive to climatic change are likely to be transitional zones between different vegetational units (Behre 1967). Elsewhere, within the broader vegetational zones such changes may be far less perceptible. This is well-illustrated in some of the lowland alpine pollen diagrams (Lang 1961).

Slightly better evidence exists in Britain for a very early onset of post-glacial conditions, perhaps equivalent to the beginning of the Friesland oscillation. This is illustrated in several pollen diagrams from Scotland and Ireland, where rises in birch and juniper can occur as early as the middle of the 10th millenium BP (Smith and Pilcher 1973). In the Scottish highlands, basal organic deposits in kettle-holes have yielded pollen which suggests that deglaciation also occurred much earlier than had previously been expected. At Rannoch Moor, for example, empetrum heath and juniper scrub had become well-established in the area sometime before 10,000 BP, and perhaps even as early as 10,200 BP (Walker & Lowe 1980, 257). An even earlier glacier retreat has been suggested at Callender, where the lowest organic horizon produced a date of c.10,500 BP (Lowe & Walker 1977). When considered together, the Scottish dates imply that fully-developed shrub and grassland communities had already become established prior to 10,000 BP: that is, well before the traditionally accepted end of Zone III.

A further possible indication of early postglacial climatic improvement is shown in stratified lake sediments from North Wales (Lowe 1981). Here a date of 10,020 $\pm$ 130 bp (SRR 1702) was obtained on birch, which suggests that woodland of

this sort was already well-established on the slopes of Cader Idris as early as the end of the 10th millenium BP. In Northeast England, late 10th millenium BP dates have also been recorded for the occurrence of birch, for example at Scaleby Moss, Cumberland (Godwin et al. 1957), where significantly an early rise in juniper is also recorded. Overall, one of the most sensitive indicators of the onset of warmer conditions in zone IV is measured by the early rise of juniper.

Contemporary pollen records from Southern Britain are not particularly instructive on this point. Together with macrobotanical evidence they indicate that pine and probably birch were growing locally in the south even in Late Devensian contexts. Analyses of profiles from Hampshire and Surrey (Seagrief 1959; Seagrief and Godwin 1960) reveal the existence of pine needles, leaf bases and other pine macro-remains dating to Zone III. Similarly, high values of pine pollen are recorded in Zone IV deposits from Wareham, Dorset and Cranes Moor, Hants (Seagrief 1960). Elsewhere, early records of birch have been found in Zone IV peats in Berkshire (Clapham & Clapham 1939; Churchill 1962), whilst wood fragments of the same genus have been C14 dated to 9,960 ± 120 BP in East Kent (Kerney et al. 1980). In sum, the evidence seems to suggest that birch and particularly pine, survived in local refugia during the Late Glacial, and had managed to colonise some parts of Southern Britain relatively soon after 10,000 BP.

The generally rapid initial rise in temperature during the early postglacial is also documented in the changing beetle faunas (Coope 1977). Somewhat surprising however, in view of the fact that coleoptera can respond very rapidly to climatic changes, is the general persistence and late disappearance of cold faunas typical of Zone III. Occurrences of this kind have

been recorded from as far south as Croydon, Surrey at 10,130 ± 120 BP (Osborne 1971) and in the Midlands from West Bromwich at 10,025 ± 100 BP (Osborne 1976). In the latter a remarkable increase in temperature is indicated by a warm fauna replacing the cold one in the next layer up, dated less than a hundred years later.

Despite apparently unambiguous results, the response of beetle faunas to the short-term climatic oscillations which mark the beginning of the postglacial is not well understood. Evidence of a 'biotal imbalance' (Coope 1977), created by these short episodes, may be shown by the lack of correspondence between some insect faunas and other botanical indicators. Osborne (1974) illustrates a case in point from the Midlands where a late Pre-Boreal thermophilous beetle assemblage was found inhabiting a birch woodland, when it should by rights have been living in a mixed oak forest! Clearly, anomalies of this kind must be resolved before coleopteran evidence can be used to build up wholly reliable local or regional environmental sequences.

Alongside the various vegetational changes that were taking place, the climatic oscillations must have had significant effects on the movements of certain large land mammals. Here it is interesting to record the presence of genera in the Pre-Boreal previously thought to have become extinct during the Pleistocene. Amongst the most surprising are the late dates for the wild horse (Equus ferus), with well-established records at 9,770 ± 80 BP (BM 1619) from the Darent gravels in Kent, and presumably a more or less contemporary example from Thatcham, Berkshire (Clutton-Brock & Burleigh 1983), although not indisputably from the Mesolithic levels at this site. Further afield, a very similar date of 9,720 ± 130

BP (OXA 462) has been obtained on a horse tooth from the long blade site of Belloy-sur-Somme in Northern France (J. Gowlett pers. comm.).

The cold open habitats of the middle period of the Pre-Boreal must also have favoured the reindeer (Rangifer tarandus). The latest records for this species are dated to 9750 ± 110 BP (BM 440b) from Anston Stones Cave, Yorkshire, and 9760 ± 70 BP (BM 1674) from the Darent Gravels, Kent (Clutton-Brock & Burleigh ibid.). Another date of 9770 ± 180 BP (OXA 505) has been obtained on a bone of reindeer from the site of Marsangy in the Paris Basin (J. Gowlett pers. comm.). These and other similar faunal dates (Burleigh pers. comm.) suggest that the early part of the Pre-Boreal was certainly more open and colder than the traditional view of the period suggests, an observation which would certainly have important implications for Southern Britain.

Technological Features

All the nine long blade sites examined share some characteristics which distinguish them from the late Devensian (Upper Palaeolithic) and early Flandrian (Mesolithic) sites dealt with in this dissertation. The most striking feature of this material is the large size of blade and flake debitage, with individual pieces sometimes reaching 30 cm or more in length. Nevertheless, despite the overall similarity in technique and blade size, significant variation does in fact exist from assemblage to assemblage of long blade type (contrast for example mean measurements of Riverdale, Canterbury and the King's Site: Table 2.1). Not all differences of this kind can be simply attributed to factors of raw material size or sample bias (e.g. comparing excavated

material with surface collections), and it is my contention that the long blade assemblages themselves may exhibit considerable diversity. For the moment, however, such differences as there are will be laid aside whilst the broader similarities are considered.

Characteristic of the nine assemblages is the combination of large prismatic cores (for extracting long blades) with smaller bladelet types made either on flakes or on greatly reduced core debitage. Although a continuum undoubtedly exists between the two types, ie. blade cores being reduced into bladelet cores, they both remain separately identifiable components of the assemblage. This contrasts markedly with the Upper Palaeolithic material from Hengistbury where no such distinction exists.

The cores from the long blade sites all show a high degree of consistency in their form. They are usually prismatic blade cores of opposed platform type. The flaking methods employed are relatively simple: They generally consist of preparing a single frontal crest, leaving the back of the core more or less unmodified. In only a very few examples do the cores exhibit an additional dorsal crest. As has been seen in Chapter 1, the preparation of cores from Hengistbury and other Northwest European Upper Palaeolithic sites differs markedly from this. In the Upper Palaeolithic assemblages the preferred method is to use two or in some cases even three crests: one to control the flaking face and the other(s) at the back of the core, to regulate the angle of the striking platforms. The methods displayed at the long blade sites are much closer to some of the mesolithic ones.

Details of blade sizes are presented in Table 2.1. Despite the large maximum size of blades from each site (vide

LONG BLADES: MEAN MEASUREMENTS

Sites	Sample Size (n)	Mean Measurements (cms) Length	Breadth	Thickness	Butt Types Rel.% n	1	2	3	4	5	6	Butt End Rel % n	1	2	4	5	3
Avington VI	104	8.43 ± 4.29	2.57 ± 1.30	0.81 ± 0.51	104	40(42)	1(1)	42(44)	6(6)	1(1)	10(10)	104	1	23	33	12	31
Crown Acres	62	10.4 ± 2.60	2.91 ± 0.76	0.82 ± 0.27	47	66(31)	0(0)	23(11)	2(1)	2(1)	7(3)	47	0	36	15	15	34
Springhead, Lower Floor	21	10.51 ± 3.06	3.06 ± 1.10	1.18 ± 0.53	38	66(25)	0(0)	26(10)	5(2)	0(0)	3(1)	38	3	10	50	21	15
Riverdale, Canterbury	57	12.98 ± 4.90	4.04 ± 1.01	1.29 ± 0.47	73	40(29)	0(0)	32(23)	5(4)	8(6)	15(11)	74	14	20	19	0	48
Sproughton, Devil's Wood Pit	99	11.5 ± 4.48	3.49 ± 1.28	1.19 ± 0.51	4	69(65)	3(3)	2(2)	20(19)	2(2)	3(3)	98	27	5	44	13	11
Wrabness	33	8.28 ± 3.63	2.43 ± 0.91	0.75 ± 0.28	34	50(17)	0(0)	26(9)	9(3)	6(2)	9(3)	38	0	34	21	16	29
Swaffham Prior	68	7.2 ± 3.78	2.16 ± 0.98	0.69 ± 0.40	174	64(112)	1(2)	26(46)	6(11)	2(3)	-	71	7	11	38	18	26
King's Site, Mildenhall	100	6.28 ± 2.76	1.94 ± 0.94	0.55 ± 0.34	100	86(86)	1(1)	4(4)	2(2)	3(3)	4(4)	100	2	28	36	6	28
Titchwell	99	7.20 ± 2.93	2.17 ± 0.82	0.76 ± 0.34	161	77(125)	2(3)	9(14)	5(8)	1(1)	6(10)	161	6	18	25	6	45

Table 2.1 Long Blades: Mean Measurements (bracketed numbers indicate absolute counts) and butt characteristics.

range), the mean average for each group is considerably smaller than might be expected. This is certainly due to the significant bladelet component in each assemblage. At some sites such values can be particularly high, e.g. the King's Site, and may well indicate a closer relationship with sites of Mesolithic type (see Chapter 4), or some particular functional consideration unperceived by us.

Other technological features of interest are related to the method of platform preparation and detachment of blades. Here again certain variation can be detected within the long blade group itself. For example, in some of the East Anglian material (e.g. at Sproughton, the King's Site and Titchwell) nigh percentages of plain butt types are encountered, with significantly lower numbers of faceted examples (Table 2.1). This dominance of plain butted types is particularly manifest in Mesolithic assemblages, where apart from abrasion of the edge, the core platforms are generally left plain and unmodified. However, it should be added that Mesolithic blade butts are generally very small, and this feature has only been noted in the King's site material. In sharp contrast, the careful preparation of platforms by the removal of small flakes (faceting, cf. Tixier et al. 1980, 105) is a particular characteristic of the Riverdale (Canterbury) and Avington VI artefacts, whilst significant percentages of faceted butts also occur at Springhead, Crown Acres, Wrabness and Swaffham Prior. This is a feature more commonly associated with palaeolithic technologies, although perhaps surprisingly it is seldom used at Hengistbury (see Chapter 1).

An important characteristic, which must have technological significance, is the consistently large dimension of blade butts. Only at the King's Site are repeatedly small butt sizes

recorded, but as we have seen this sample appears to diverge with the long blade material in a number of ways.

Morphological traits of the bulbar ends of long blades suggest that a variety of hammer-types may have been used. Particularly well represented however are artefacts displaying a broad, though relatively flat bulb of percussion, often in common with pronounced radial fissures and a large negative bulbar scar (attributes 4 & 5, e.g. Figure 2.17). Occasionally they include incipient cones of percussion on the butt itself. The diffuse nature of the bulb implies a relatively soft-hammer flaking mode (Newcomer 1975; Ohnuma & Bergman 1982). Recent experiments by the present writer and his colleagues however have shown that such artefacts may not have been detached by organic hammers (e.g. antler, bone or wood) but rather by soft stone percussors. In any case, this again shows significant differences with the Mesolithic assemblages where the highest proportion of debitage displays typical soft-hammer mode features. Morphological differences are nevertheless less apparent between the Mesolithic bladelets and their equivalents in the long blade assemblages.

The combined percentage of attributes 4 & 5 reach relatively high values at Springhead, Sproughton and Swaffham Prior (>55%), whilst at only one site (Riverdale) does the percentage actually fall below 30%. This may possibly be due to lack of experience on the part of the writer as the sample in question was examined before detailed experiments had been carried out. Significantly, in this latter case 43% of the sample was deemed unclassifiable.

The fact that retouched tools are generally poorly represented in long blade assemblages is an interesting one. In a fairly typical excavated example, that of Sproughton,

tools make up <1% of the total assemblage. This is a pattern which is repeated for the other sites as well. Despite the small numbers of tools represented many of the assemblages include either microliths or backed pieces or both. This combination of artefacts is not particularly unusual in the northwest European late Glacial/early Postglacial flint industries (see Chapter 3), and indeed suggests that likely comparisons could usefully be made, especially with some of the Ahrensburgian sites. Two features emerge of importance. First, the microliths in British assemblages are generally of simple outline, but include non-geometric as well as geometric forms. Secondly, when backed pieces occur in combination with microliths they normally outnumber them (Table 2.2). The one exception to this rule is the King's Site, where the microlith component also includes small geometric shapes more in keeping with Late Mesolithic forms.

Several explanations may be put forward for the paucity of retouched material. The most obvious one is simply that the Long Blade sites merely represent knapping floors, where primary extraction and flaking of raw material took place. This view is supported to a certain extent by the large amount of cortical blade and flake debitage which occurs at sites such as Avington VI and Sproughton. In both instances many large nodules of flint were found, some of them abandoned in the early stages of reduction, indicating amongst other things that the raw material was locally, and abundantly available. At Avington, in particular, there can be little doubt that the finds represent the remains of an undisturbed flaking floor. Even the smallest chips and flint dust have been recovered in the recent excavation of the site (Barton & Froom In press).

On the other hand, the fact that the long blade sites in

LONG BLADES: RETOUCHED TOOLS & DEBITAGE

Sites	RETOUCHED TOOLS: Scrapers	Scraper/ Burins	Burins	Backed Bl/ts	Micro liths	Bruised Fl/Bds	DEBITAGE: Micro- burins	Fl/Bd Cores
Avington VI *	4	-	2	9	6	6	-	1
Crown Acres	5	-	1	2	-	-	-	-
Springhead, Lower Floor	5	-	7	-	1	4	-	-
Riverdale, Canterbury	-	-	-	-	-	16	-	-
Sproughton, Devil's Wood Pit	6	?1	9	3	2	6	2	5
Wrabness	1	-	2	-	1	-	-	-
Swaffham Prior *	113	4	26	2	1	18	2	3
King's Site * Mildenhall	40	1	20	1	17	11	13	1
Titchwell	21	-	9	1	1	1	-	1

* estimated or incomplete counts

Table 2.2 Long Blades: Retouched Tools and Debitage.

general do not simply represent quarries or primary knapping workshops is demonstrated by two features. In the first place, there are few obvious signs at any of the locations of specially prepared core 'pre-forms' or blanks for movement elsewhere. Indeed at the sites where refitting has been undertaken (e.g. Sproughton, Avington VI) the indications are that many of the artefacts were used and discarded in the same area as they were manufactured. This is contrary to our traditional view of raw material extraction sites (Holmes 1919; Rainbird Clarke 1935). Secondly, from the presence of broken tools, retouched tool debitage and heavily damaged blades, there would appear to be ample evidence that activities other than blade manufacture were also carried out at these locations. The implications of these observations will be discussed more fully in the next section.

Site Function

Few clues as to the nature of activities at these sites are contained in the retouched tools themselves, which as we have seen are frequently limited to only a handful of specimens from each site (Table 2.2 & 2.3). A better measure of the scale of site activities may be provided by unretouched, but heavily damaged artefacts found with them. Bruised blades and flakes occur at almost all of the nine long blade sites referred to above. They also occur in analogous continental assemblages, where they sometimes make up the largest single 'tool' component (e.g. Belloy-sur-Somme, Chapter 3). At Riverdale, near Canterbury, bruised blades constitute the only formal evidence of tool use at that site.

The function of bruised flakes and blades has been investigated in some detail through the writer's experiments

Sites	END- Total	SCRAPERS: BES/FES	DES	ES(LR)	BURINS: Total	BD/BT
Avington VI, (areas B-C)	>4	1:3			2	1:1
Crown Acres	5	0:4	+		1	1:0
Springhead, Lower Floor	5	4:0	+		7	4:3
Riverdale, Canterbury						
Sproughton, Devil's Wood Pit	6	5:1		+	9	5:2
Wrabness	1	0:0	+		2	2:0
Swaffham Prior	>113	59:41	+	+	26	17:8
King's Site, Mildenhall	>40	B < F	+	+	20	16:3
Titchwell	21	12:6	+	+	9	2:5

Key:
BES-Blade End-Scrapers
FES-Flake End-Scrapers
DES-Double End-Scrapers
ES(LR)-Laterally retouched End-Scrapers
BD-Dihedral Burins
BT-Truncation Burins
+ -present

Table 2.3 Long Blades: End-scrapers vs. Burins.

(Barton In Press). Summarising the results, it appears that edge-damage of this kind occurs when using blades and flakes to chop hard materials such as bone and antler. These highly characteristic edge wear patterns are easy to identify and are reliable indicators of some heavy form of use. Other activities which may have left little or no trace on unretouched flakes and blades are harder to detect, but might be accomplished by microwear and other functional analyses. Such studies are beyond the scope of this thesis, but would be a project well worth undertaking in the future.

Despite the presence of retouched tools and utilized waste, most indications are that the long blade sites represent relatively short-term episodes of use rather than residential sites. It is clear for example from the quantities of artefacts found that these could have been generated during the course of an hour's work in each case. Considerably less time was probably involved in the case of Riverdale, Canterbury, where nearly all of the artefacts recovered were refitted to form two or three nearly complete knapping sequences. The discrete clusters of flint at the sites of Avington VI and Sproughton could likewise be explained in the same manner. It is highly likely therefore that long blade sites of this type, with very localised concentrations of flint, represent short-term flaking episodes. Another line of evidence which suggests that most of these sites would soon have been vacated is in the lack of associated burnt material. The absence of burnt flint or charred wood remains is in my opinion of critical importance, since any extended occupation would almost certainly have involved the utilization of fire.

As stated above, it seems improbable that the long blade floors can be explained simply in terms of 'quarry' sites in

the traditional sense. According to modern ethnographic accounts we would expect not only few retouched tools at sites of this type, but also "rough-outs" or possibly discarded tools used in procuring the raw material itself (Allchin 1957; Gould et al. 1971; Binford & O'Connell 1984). Convincing evidence of this kind does not exist at long blade sites where amongst the few tool types present, are items of processing equipment such as scrapers and burins (Table 2.3).

A key factor in the siting of the long blade floors seems to be their proximity to high quality flint sources. The most striking feature of the distribution of the nine long blade sites is their distance from usable raw material: none of them is situated more than 5 km from a good primary source of flint, and in most of the excavated sites the distance may be a few hundred metres. This pattern is to some extent repeated in the other long blade finds from southern England, which closely follows the known distribution of Upper Cretaceous Chalk deposits (Figure 2.33 & 2.34). This fact is in itself hardly surprising, given the requirement of large, relatively high quality chalk flint, necessary for producing long blades. The proximity to good sources of flint is likely therefore to be a major determining factor in influencing the size of artefacts.

A second important influential factor in the location of sites is the topographic position occupied by most of them. Figure 2.35 shows that of the 159 find spots in southern England nearly all occur in low-lying areas, particularly floodplain situations, at altitudes seldom more than 61 m OD. If denuded valley slopes provided an easily accessible source of raw material, this would no doubt have contributed to making such locations highly desirable.



Figure 2.33 Distribution of Southern British Long Blade findspots in relation to flint-bearing Upper Cretaceous Chalk.



Figure 2.34 Distribution of Southern British Long Blade findspots (see Gazetteer for key to numbers).

A much more basic requirement and an obvious advantage with floodplain-edge situations is the abundant availability of water. Apart from domestic uses, these locations may especially have been near places favoured by large land mammals such as the elk. The elk is an aquatic feeder which spends much of its life-cycle close to rivers. Modern accounts suggest that only during the winter and late spring do they move away from riverine habitats into the surrounding countryside (Nelson 1973, 87). Only very rarely, because of deep snow or heavy infestations of insects are they driven back to the water in these periods (Winterhalder 1981). During the rut, when the males are in prime condition, an adult bull can reach a weight of 1,000-1,600 lbs., and females 800-1,200 lbs. (Nelson 1973), providing ample meat weights for would-be hunters. There is no indication that the late glacial or early postglacial European elk differed greatly in size from its present-day North American relatives (Lister 1984). Today modern hunters like the Kutchin of subarctic Alaska prefer the autumn for pursuing the elk (there, known as the moose), when the animals move along the river valleys, often choosing the inner, willow-covered banks of meanders for shelter and protection. It is this tendency to gather along rivers, plus a general fearlessness among the bulls during the autumn rut, that "makes for good hunting" (Nelson 1973, 86).

Apart from the elk it should be borne in mind that some of the larger valleys may have served as major migration routes for herds of reindeer and wild horse. River crossing-points are often cited as favoured kill-spots for these animals (White 1985). Evidence for the hunting of reindeer and elk in the same area is provided by a number of examples from Canada (Rogers 1983) and Siberia (Forde 1934 in Gowlett & Jacobi In



Figure 2.35 Distribution of Southern British Long Blade findspots in relation to major rivers.

press). In Southern Britain the presence of reindeer is known to have persisted well-into zone IV (Clutton-Brock & Burleigh 1983) and may well have overlapped substantially with the elk (Lister 1984).

The location of long blade sites, then, appears to owe much to a combination of factors ranging from resource availabilty (flint raw materials; water etc), to strategic values of being located close to likely game routes. To what extent the location is dictated by one or other of these factors is difficult to gauge especially since there is an almost total absence of organic remains at all of the open-air sites concerned.

Certainly, enough ethnographic examples exist to suggest a variety of circumstances which might explain the function of such sites. One plausible 'scenario' is that recorded by Janes (1983) of the indigenous Mackenzie Basin Dene Indians of northern Canada. Here caribou kills were often dragged down from the steeply sloping ground of a river or lake valley where the kill had taken place to the water's edge, for butchering and jointing. Even given topographic and other differences between northern Canada and Southern England, it is not hard to imagine the major practical reasons for performing butchery tasks on flat ground near water.

A similar point is made by Nelson (1973, 99), in relation to elk (or moose) hunting. However, he also adds that in many cases butchery does not immediately follow the kill. The carcass is sometimes cached for a day or two, while the hunters try their luck further upstream.

Such ethnographic examples go some way to providing explanations as regards the archaeological data (in this instance, particularly the location of long blade sites along

major rivers and streams). The important presence of heavily edge-damaged blades and flakes, probably used to chop bone and antler, lends weight to the suggestion that these were primarily butchery sites. Again it is worth recalling an ethnographic case of butchering a moose by the Chalkyitsik :

> "Butchering an animal essentially involves cutting it into natural sections or parts..... If a man knows where to cut, where the joints and weak points are, he can cut a moose into relatively small pieces with a knife alone. Usually, however, an axe is used to cut through bones in difficult places, largely because it saves time." (Nelson 1973, 98. My emphasis).

This is an interesting observation since it shows that heavy-duty chopping tools are used for butchery even by the most skillful of modern hunters. It also provides a plausible model for the function of bruised blades. No axe tools, complete or broken, are known from any of the Long-Blade sites. Axe sharpening flakes are also absent.

Regrettably, none of the British sites has so far produced remains of bone or antler, or other organics to test these hypotheses. However, it will be shown in the next chapter that such evidence might be looked for at sites on the European mainland, where associations of long blades and faunal material are better documented.

It remains to be seen whether long blade sites in the Kennet Valley or elsewhere in Southern Britain will eventually provide evidence of this kind. In the meantime, it would perhaps be more prudent simply to use the catch-all term "special purpose sites" (sensu Binford 1983) to describe the long blade locations. These appear in the main to be short-term occupations marked by a restricted series of activities.

Chapter 3.

Selected European Long Blade Assemblages.

Introduction

Essential to placing the late Glacial/early Postglacial archaeology of the British Peninsula in its true perspective is the discussion of contemporary finds from the European mainland. In this chapter three major assemblage types containing long-blades are briefly examined. All of them come from areas bordering the North Sea basin and therefore joined to Britain via a substantial landbridge throughout much of the late Glacial period. They comprise the southern Scandinavian sites of Bromme type, the Ahrensburgian group stretching over a wide area of Germany, Belgium and the Low Countries and finally the small group of assemblages of Belloy-type in the Picardie region of Northern France.

The unpublished information presented here was largely gathered during a two-week study tour of Denmark and North Germany which I undertook in the Spring of 1985. My visits to Aarhus, Copenhagen and Schleswig allowed me to make first hand observations of the Bromme and North German Ahrensburgian material. I am indebted to many of my continental colleagues including S. Andersen, K. Bokelmann, E. Brinch-Petersen, A. Fischer, B. Madsen for generously sharing their information and for making unpublished excavation material available to me. I am also grateful to J.P. Fagnart for communicated details which appear in the section on Belloy.

Bromme-type Assemblages.

Introduction

The Bromme group is by far the best known of the late glacial industries of southern Scandinavia. It is characterised by two kinds of site: large concentrations of artefacts (e.g. Stoksbjerg-Bro, > 870 retouched tools), and smaller more localised flint concentrations (e.g. Bro and Segebro, with 69 and 35 retouched tools respectively). In both kinds of site the tool inventory is highly restricted consisting of large tanged points, end-scrapers and burins. Long blades up to 15 cm in size have been recovered from Jutland (Andersen 1972; Madsen 1983). These are known to occur relatively close to good raw material sources (Madsen pers. comm.). The scarce faunal remains preserved at Bromme sites (Table 3.3) indicate that land mammals such as the European elk, the red deer, and beaver were hunted. Amongst the fish remains found are pike and perch, whilst birds include both swan and goose.

The type site for the group is that of Bromme, near Søro, in Zealand. Discovered by Erik Westerby in 1944, and excavated shortly afterwards by the National Museum (Mathiassen 1946), the site revealed a rich archaeological layer stratified in a dark organic horizon containing faunal remains and pollen of late glacial type. The flint assemblage consisted of the three major tool classes which are identified with sites of this type: large tanged points, end-scrapers and burins.

Since 1944, many more sites of Bromme-type have come to light in Denmark, on the Jutland Peninsula, as well as on Zealand, Fünen, and the smaller islands (Becker 1971). Small assemblages have been recorded at Bro in northwest Fünen

(Andersen 1972), Ommelshoved on the island of Aerø (Holm 1972), Trollesgave, in southern Zealand (Fischer 1976) and in the area of Randers in northeastern Jutland (Madsen 1983), whilst others have yet to be published (Mosegården, Jutland; Højgard and Stoksbjerg, Zealand. For main sites see Figure 3.1). In addition to these, well over fifty isolated find spots of Bromme points have now been recorded from Denmark (Andersen In press).

In the same group can be included the site of Segebro, near Malmö in southern Sweden (Salomonsson 1964), whilst assemblages of structurally similar type to Bromme have been found as far east as Rydno in Poland (Chmielewski et al. 1975).

Elsewhere, outside Denmark, points of a morphologically comparable type to the Bromme finds have been recovered from several sites in Schleswig-Holstein with material of Ahrensburgian type (Taute 1968, 80). Isolated finds of large tanged points have also been made over a very wide area of Northern Europe stretching more than 2,000 kms from the Niemen Basin in the east to the Hampshire Avon basin in the west, and perhaps a fifth of this distance north-south (Jacobi 1980).

Despite the widespread occurrence of such finds, the typical Bromme assemblage, as defined at the type-site itself, has a much more restricted geographic spread which is more or less limited to Southern Scandinavia.

The artefact assemblages.

Debitage.

The flaked stone raw material is almost exclusively of flint. despite differences in the size and overall quality of flint, the core reduction techniques follow a highly uniform pattern which is repeated from site to site. Despite the fact



Key:
1-Bromme;
2-Bro;
3-Højgard;
4-Langå;
5-Løvenholm;
6-Mosegården III;
7-Nørre Lyngby;
8-Ommelshoved;
9-Stoksbjerg;
10-Trollesgave.

Figure 3.1 Distribution of Principal Bromme sites in Denmark (after Fischer, and Madsen).

that the manufacture of blades is an important feature in the Bromme assemblages, the proportion of blades to flakes is generally fairly low. For example at Løvenholm, Bromme (dark cultural layer) and Bro, blade waste comprises only 8-10% of the waste material (Madsen 1983, 25). Only in exceptional circumstances (notably Langå I in Jutland) does the "blade index" ever reach as high as 20% (Madsen ibid.).

The blades vary greatly in length as well as in breadth. Maximum lengths range from 11.5 to 15.0 cm (for Langå, Bro and Segebro): most of the blades however are not as long. At Bro the mean length is 7 cm and the mean width is 2.5cm (n=142) (Andersen 1972, fig. 18 a-b). Similar observations have been made at other Bromme sites such as Segebro , where most of the blades have length measurements which fall between 7 and 10 cm (Salomonsson 1964, 9). The blades that I was able to examine in detail from Langa, Mosegarden III, Højgard, Trollesgave and Bromme, shared broadly similar characteristics: they were all generally thick in section and many displayed a markedly curved profile. The blades frequently had large plain butts and were heavily abraded at their proximal ends. A common feature of the artefacts was the presence of a well-pronounced point and bulb of percussion on their ventral surface. This characteristic was also noticed at Segebro by Salomonson (ibid., 9). Incipient cones of percussion were frequently seen on the bulb itself. These combined features suggest the use of a hard hammer mode of percussion (Newcomer 1975, Ohnuma and Bergman 1982). The presence of 'siret' flakes (a common accident associated with hard stone hammer flaking-see Introduction: Notes to the Reader) were also frequently noted amongst the finds.

Few bladelets or ("microblades") occur at Bromme sites.

They comprise only about 5% of the Bro blades, but possibly as many as 25% of the Langå blade assemblage. However, neither of these sites has produced convincing evidence of bladelet cores, and none of the retouched tools from the assemblages appear to have been made on such supports. In the opinion of Bo Madsen, the bladelets (<5 cm long) may quite simply be the results of platform abrasion. In experiments to replicate the flint industry from Langå I, he has been able to produce up to 20% bladelet debitage in this manner, by using a quartzite hammerstone to abrade the edge of the striking platform (Madsen pers. comm.).

The blade cores are either pyramidal (conical) in shape with a single platform, or prismatic (sub-cylindrical) with striking platforms at both ends. The latter can vary in length from 6 cm to 11 cm at Bro (Andersen 1972, 51). In many of the examples examined from other sites the cores were flaked only on one side with the back of the core retaining its natural or cortical surface. The striking platforms generally consist of a plain, flat surface, whilst evidence of heavy platform abrasion was nearly always visible along the platform edge. Core tablets associated with the rejuvenation of the striking platforms were also fairly common at these sites. The core fronts were generally marked by broad blade removals with deep negative bulbs and by occasional bladelet scars. None of the Bromme-type cores examined showed any signs of bidirectional cresting and the cores generally appear to have been prepared without the use of this technique. Very occasionally, partial unidirectional cresting was used at the distal end of the cores to repair the flaking face (e.g. Trollesgave, Langå).

The apparent absence of both the bladelet cores and tools on bladelet blanks are features quite unlike those seen in the

Southern British long blade assemblages. Likewise the core preparation techniques appear to be significantly different.

Retouched Tools

End Scrapers.

End scrapers are a constantly present element in the Bromme-type assemblages, although their numbers in proportion to tools such as burins may vary considerably from site to site. For example, at Bromme, Bro and Stoksbjerg they are clearly outnumbered by burins, whilst at Langå and Trollesgave end scrapers form the dominant component (Table 3.1).

Given the otherwise striking similarities between assemblages it is likely that variation of this kind merely reflects an emphasis on one particular activity or another (which could be simply due to factors of seasonality - cf. Andersen In press). On the other hand stylistic differences between scraper-types could indicate Bromme material of perhaps radically different age. For example, much has been made of the tanged scrapers which occur at Løvenholm and Bromme. Similar types are known from northern Germany within the so-called "Wehlener Federmesser Gruppe" (Schwabedissen 1954) which contain no Bromme points, and at the putatively (late) Hamburgian site of Jels in Denmark with shouldered pieces (Holm and Rieck 1983). This has led various authors (Andersen ibid.; Madsen 1983) to suggest an evolutionary scheme in which early sites are found with "Wehlener" scrapers, whereas the later sites lack them. For the chronological arguments concerning these scraper types see Madsen (ibid.).

Stylistic differences in tools may be due to other factors too. For instance where the availability of flint is limited some tools may be re-sharpened or intensively re-worked. This

BROMME SITES: ABSOLUTE NUMBERS OF TOOLS

Site & Location	Total	Tanged Points	Scrapers	Burins	Bu/Scs (tanged)	Source
Bro, Fünen	69	07	25	39	Y	Andersen 1972
Bromme, Zealand (Dark Culture Layer)	88	16	23	49	Y	Mathiassen 1946
Højgard, Zealand	128	09	67	52	X	Andersen pers comm Madsen pers comm
Langå, Jutland	33	01	18	14	N	Madsen 1983
Løvenholm, Jutland	47	24	16	07	Y	Madsen 1983
Mosegården III, Zealand	30	00	16	14	N	Andersen pers comm Madsen pers comm
Ommelshoved, Aerø	111	111	00	00	N	Holm 1972 Fischer pers comm
Segebro, Malmö, SW	35	06	14	15	Y	Salomonsson 1964
Stoksbjerg Bro I, Zealand	>870	>120	>250	>500	Y	Brinch Petersen, pers comm.
Trollesgave, Zealand	52	06	30	16	N	Fischer 1976

BROMME SITES: RELATIVE PERCENTAGES OF TOOLS

Site	Total	Tanged Points	Scrapers	Burins	Source
Bro, Fünen	69	10	35	55	Andersen 1972
Bromme, Zealand (Dark Culture Layer)	88	18	26	56	Mathiassen 1946
Højgard, Zealand	128	07	52	41	Andersen pers comm Madsen pers comm
Langå, Jutland	33	03	55	42	Madsen 1983
Løvenholm, Jutland	47	51	34	15	Madsen 1983
Mosegården III, Zealand	30	00	53	47	Andersen pers comm Madsen pers comm
Ommelshoved, Aerø	111	100	00	00	Holm 1972 Fischer pers comm
Segebro, Malmö, SW	35	17	40	43	Salomonsson 1964
Stoksbjerg Bro I, Zealand	>870	14	28	57	Brinch Petersen, pers comm.
Trollesgave, Zealand	52	12	58	31	Fischer 1976

Table 3.1 Bromme sites: Retouched tool counts.

seems to have been the case at the site of Løvenholm. Under such circumstances it is hardly surprising if some tools such as tanged points are "cannibalised" and reworked into scrapers. The tanged scrapers from the site are also noticeably very short and carry a flat lamellar retouch which may be the result of pressure flaking (Madsen pers. comm.). Resharpening the scraper edge by pressure flaking is efficient and also minimises the risk of accidental breakage. It would have been a useful method of re-sharpening already hafted tools such as tanged points.

More generally, the scrapers from the Bromme sites show a morphological continuum ranging from those on small flakes to scrapers on the ends of long blade supports (Figure 3.2). True blade end scrapers are on the whole not common and not surprisingly tend to occur on sites which contain longer blade debitage (notably Langå, Segebro). Simple flake end scrapers with a convex edge are common, and very rarely can occur on (unilaterally) retouched blanks. Carinate scrapers are likewise present, albeit infrequently. Another fairly frequent type consists of scrapers with a "nosed" edge (Tixier et al. 1980, fig. 28), which occur at Bromme, Segebro, Bro and Løvenholm. Single examples of double end scrapers are found at Bromme, Løvenholm and Mosegården III, as are scrapers made on proximal ends from each of the latter sites. Composite tools with scrapers at one end are either rare (e.g. only one example from Mosegården III) or are otherwise totally absent.

In terms of functional traces, few of the scrapers I was able to examine showed signs of heavy or prolonged use. For example, in no case was the heavy damage noted on some Magdalenian scrapers (Rigaud 1977) seen on the Bromme-types. Equally absent was any sign of pronounced edge-rounding (cf.

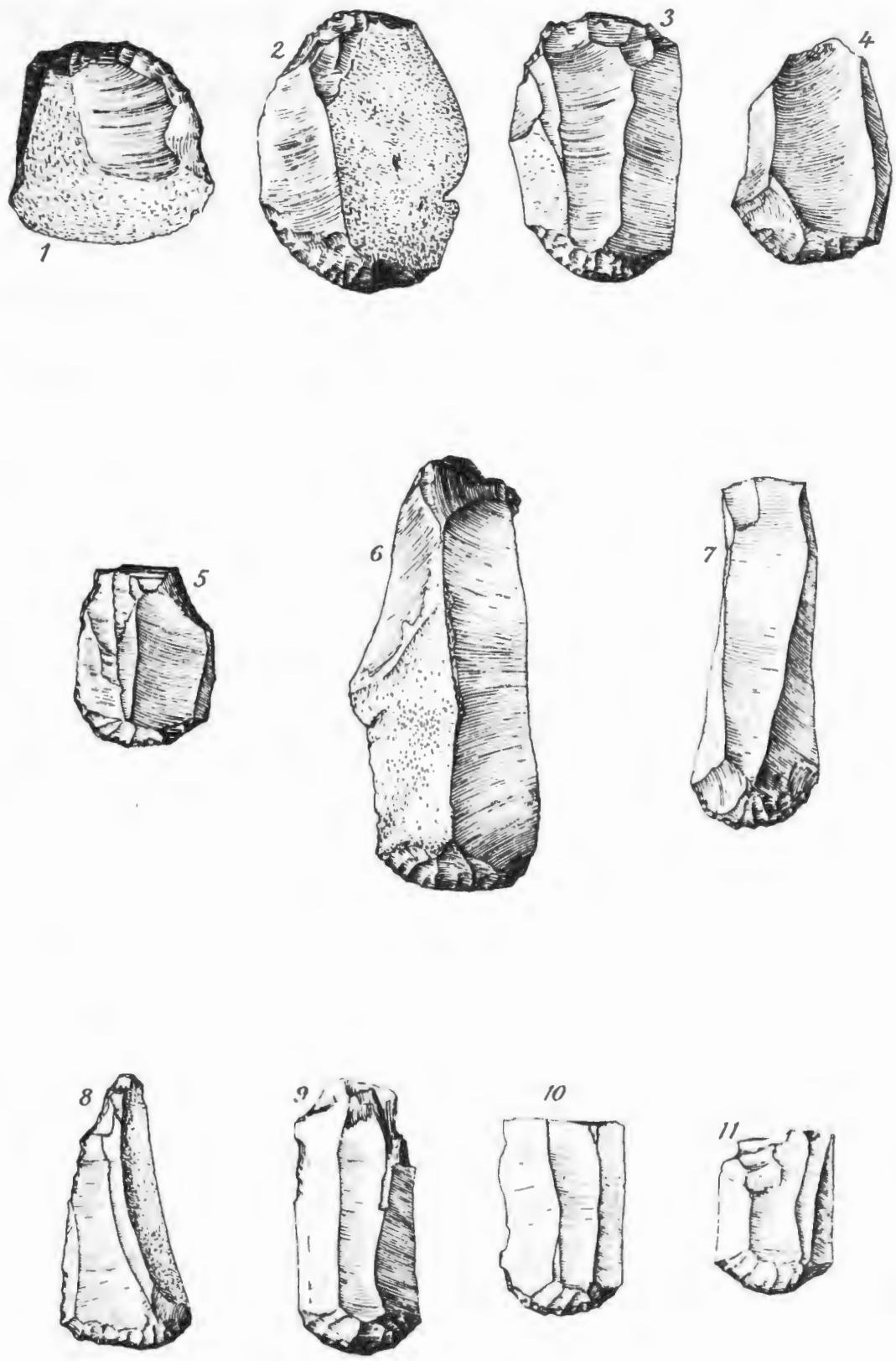


Figure 3.2 Bromme: End-scrapers (after Mathiassen 1946). Scale 2:3.

Bosinski and Hahn 1972) on the scraper fronts. Nevertheless, occasional rounding of the edge has been noticed on scrapers from the Late Glacial period in Denmark (Madsen pers. comm.). Another interesting feature which might relate to function is the acute angle of the working edge of the Bromme scrapers (Andersen 1972, 52; Salomonsson 1964, 14). In my own experience, acuter edges are more efficient for working softer materials (e.g. hides) than for materials of a more durable kind (e.g. wood or bone). However, confirmation of the above will have to await a detailed microwear study of the specimens by someone else in due course.

Burins.

Burins of various types are represented at all but one of the sites in the sample (Ommelshoved - a site dominated by points with no scrapers or burins). Dihedral burins (simple angle types) are the most common burin amongst the inventories from Bro and Segebro, whilst dihedral burins (symmetrical and asymmetrical) dominate at Bromme (Figure 3.3) and Højgard (Andersen pers. comm.). Transverse burins, sometimes with lateral retouch and truncation burins are also fairly common throughout. However, it should be mentioned that at Stoksbjerg Bro I evidence from refitting demonstrates that truncation burins were transformed into dihedral burins (Brinch-Petersen pers. comm.). The two classes are undoubtedly of closely related technological type.

Burins on breaks form another fairly constant group, being present at Bro, Bromme, Løvenholm, Langå I, Højgard, Mosegården III, and Segebro. Time did not allow examination of all the assemblages with equal thoroughness. Nevertheless it was possible to recognise enough "contact features" (cf. Bergman

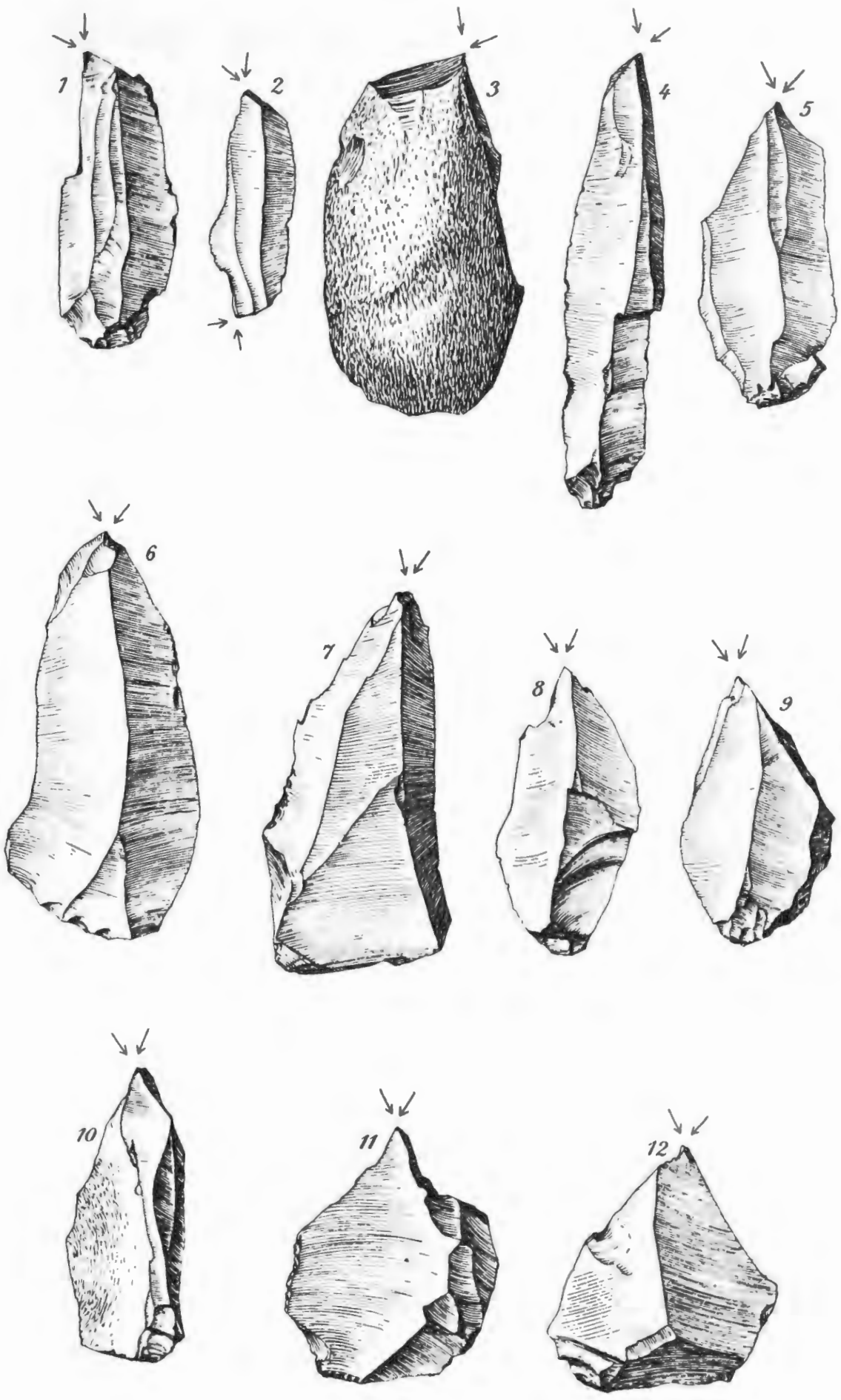


Figure 3.3 Bromme: Dihedral burins (after Mathiassen 1946).

Scale 2:3.

et al. 1983) on the break surfaces of burins to indicate that intentional fracture was certainly used in their manufacture. At Højgard it was even possible for me to refit various burins together, i.e. a transverse burin on laterally retouched edge to a burin on a break and, an asymmetrical dihedral burin to a burin on a break. These examples confirm that the break surface was deliberately created to provide a platform for the removal of the side spall. It was perhaps surprising in view of the fairly common use of this method in burin production that very few examples of deliberately snapped blades or flakes were noticed amongst the unretouched artefacts and blade debitage.

A constant feature of the burins from sites of Bromme-type is the broad size of the burin facets. At Bromme itself, for example, maximum facet widths ranged from 0.45 to 1.55 cm (n=54) with the mean at 0.77 cm. Similar figures have been recorded from other sites (Madsen pers. comm.). The thickness of the burin edge facets and the robust nature of the burins seems to suggest that a heavy method of use was intended. Indeed, signs of heavy damage are clearly visible along the edges of the burin facets rather than at the tips. It appears that a very steep edge-angle of almost 90 degrees was an important requirement. Similar macroscopic damage patterns have been noted on burins I have used experimentally to scrape bone and antler. Given the evident selection for thicker lateral facets, it is perhaps surprising that more frequent use was not made of naturally snapped ends of artefacts or steep dorsal ridges (cf. Crabtree 1973). Damage on the resharpening spalls was also commonly present. Clearly, detailed microscopic analyses will have to be carried out on the burins and other artefacts before these problems can be more fully

resolved.

Tanged burins, though rare, are included in the inventories of Bro, Bromme (Figure 3.4, 10) and Segebro. The tangs show no overall difference in size from those of tanged points and there seems little reason to doubt that at least some are simply reworked from former tanged points.

Bromme Points.

These artefacts are generally made on blades and can vary in total length from 3.4 to 11.0 cm. Despite the large differences in size, they are all characterized by a broad robust tang at the proximal end (Figure 3.4). The tang is relatively long, typically making up about a third of the total length of the piece. It is defined by direct abrupt retouch leaving the proximal end intact with the bulb in most cases unmodified. Above the tang, the blade is fairly broad (mean measurements range from 1.2 to 2.4 cm), tapering towards the distal end to form a point symmetrical to the long axis of the piece. Additional retouch may sometimes be used to accentuate the actual point itself. This mainly takes the form of an oblique truncation obtained by direct retouch. Like many other Bromme artefacts the blanks used for points frequently display ventral surface features indicating a hard hammer flaking mode.

The term Bromme point is synonymous with the so called "pointe de flèche de Nørre-Lyngby" as described by Vaufrey (1938,104). According to Heinzelin this type of point differs little from the Teyjat point or "pointe a soie Magdalénienne" (Heinzelin 1962) sharing the following features in common: "pédoncule court et large obtenu par retouches abruptes éventuellement alternes, dessinant des crans. Pointe peu ou même non-retouchée" (Heinzelin ibid,. 36).

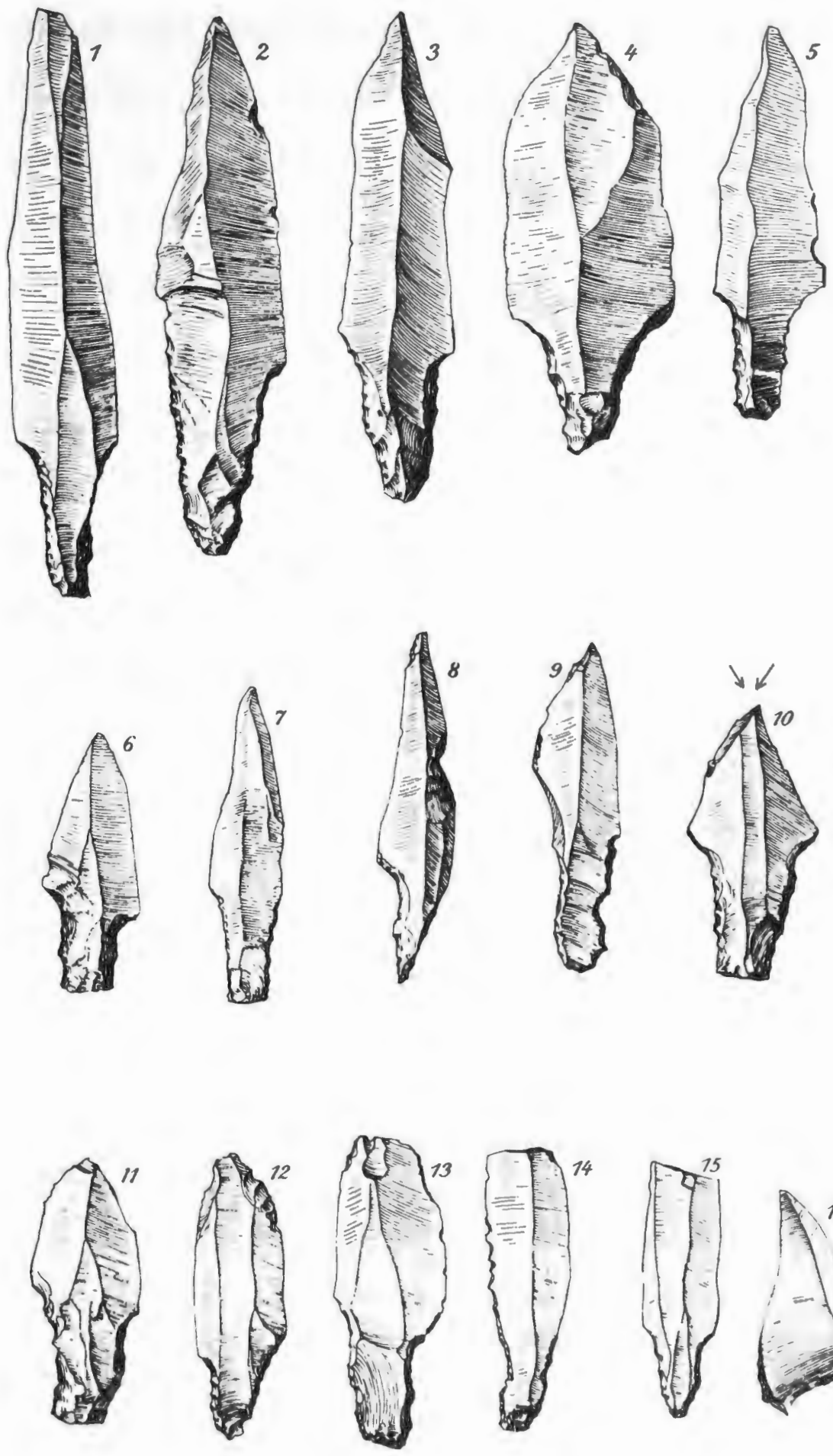


Figure 3.4 Bromme: 'Bromme' tanged points (after Mathiassen 1946). Scale 2:3.

Whilst this definition makes a useful general statement, it is also slightly misleading. For one thing, the tang of the Bromme point is not particularly short. As we have seen it occupies about a third of the length of the piece. It compares with the tangs on the Ahrensburgian points (see below). A second important feature is that the great majority of Bromme points are made with direct retouch; only very few are produced by alternate or inverse retouch. Finally, it has been widely recognised that Bromme points are generally rather different from those of the late Magdalenian, being larger and more robust than the French ones (Bohmers 1960). For the present therefore, it would seem more prudent to adopt a more simple technological/morphological definition (similar to that outlined in the first paragraph) for the North European points.

The points examined from Denmark and Southern Sweden show a clear degree of homogeneity in mean measurements for length, breadth, and thickness at one standard deviation (Table 3.2). Despite the limited sample, the same may well be true for the dimensions of the tang. For example, at Bromme, the mean breadth of the tang is 1.09 cm with a standard deviation of $\pm$0.27. Very similar measurements have been recorded for the Segebro points, where the average tang size falls between 1.0 and 1.1 cm (Salomonsson 1964,18). A slightly greater mean tang breadth of 1.46$\pm$0.2 cm is record at Højgard.

At the very least, the narrow range in overall size of tanged points seems to imply a relatively high degree of standardisation. Given the fact that the tangs were most probably designed to fit into a haft, it would not be surprising if a significant degree of patterning were apparent in the dimensions of the tanged end: especially since flint points can be quickly replaced ,whereas the wooden hafts

BROMME SITES: TANGED POINT MEASUREMENTS

Sites	Sample Size	Mean Measurements (cms) Length	Breadth	Thickness	Tang Length	Tang Breadth
Bromme	50	6.4 ± 1.61	2.0 ± 0.5	0.6 ± 0.2	2.2 ± 0.6	1.1 ± 0.3
Højgard	6	5.4 ± 0.8	1.8 ± 0.2	0.5 ± 0.1	1.9 ± 0.4	1.5 ± 0.2
Ommelshoved	102	7.7 ± 1.5	2.4 ± 0.2*	0.7 ± 0.2*	-	-
Segebro	6	6.1 ± 1.2	1.9 ± 0.4	-	-	1.0 - 1.1
Stoksbjerg Bro I	35	6.8	2.3	-	-	-

* <100% sample

Table 3.2 Bromme sites: Tanged point measurements.

represent a considerably greater time investment. However, in the absence of more complete data on the tang sizes this is difficult to prove from the measurements alone.

The suggestion has often been made that the Bromme points were used as spearheads (Mathiassen 1946; Becker 1971) presumably on the basis that as a group they were substantially larger than examples mounted on pine arrowshafts from Stellmoor (Rust 1943). On the other hand, the observation has been made that Bromme points are strikingly similar in size to flake arrows of the Scandinavian middle Neolithic (Clark 1975,83). Similarly, recent experiments at Leijre in Denmark have shown that the heavy Bromme points can be used as arrowheads with devastating effect (Fischer et al., 1984). Moreover, impact fractures produced on the tips of some of the experimental points bear a remarkable resemblance to broken archaeological examples from Bromme and Ommelshoved (Fischer et al., ibid.).

Chronological Framework.

The chronological background to the Danish sites is not well established. At present a single pair of 14 C dates constitutes the only radiometric evidence available for the Bromme group. Both dates of 9120±120 bc and 9151±160 bc (no laboratory numbers available) come from the site of Trollesgave in Zealand (Fischer and Mortensen 1977). They relate to waterlogged lake-edge deposits rather than the occupation area itself, but since flint artefacts were scattered amongst the same sediments (Fischer and Mortensen 1978:12), it seems highly likely they reflect a true age for the occupation of the site.

Somewhat stronger chronological indications are available from faunal and floral material associated with the archaeological sites (Table 3.3). Four of the sites (Bromme,

BROMME CHRONOLOGY

Site	Date	Associated Flora	Associated Fauna	Source
Bromme (area XI)	Allerød	Birch Pine	Elk Beaver Swan Pike	Iversen 1946
Langå	-		Elk	B. Madsen, pers comm
Nørre-Lyngby	Younger Dryas	Dwarf Birch Arctic Willow	None	Iversen 1942
Segebro	-		Beaver Red Deer/Reindeer Roe Deer Wild Goose	Salomonsson 1964
Trollesgave	9120 + 120 BC 9150 + 160 BC	Birch Juniper Willow	Elk Red Deer Beaver(cut branches)	Fischer & Mortensen 1977

Table 3.3 Bromme sites: Chronological data.

Trollesgave, Langå 1, Segebro) have yielded sufficiently well-preserved faunal material to make identification possible whilst pollen and plant macrofossils were recovered at two of the sites (Bromme, Trollesgave).

From the dark cultural layer at Bromme (Area XI) were recovered the remains of elk (Alces alces), beaver (Castor fiber), swan (Cygnus sp.), and pike (Esox lucius) (Mathiassen 1946). The occupation layer also yielded indications of birch (Betula alba) and pine (Pinus sp.), whilst the mollusca included the woodland species Bithiniya tentaculata and Bithiniya leachi. Elsewhere, the presence of elk is recorded at Trollesgave where it occurs with red deer (Fischer pers. comm.) and at Langå 1 (Madsen pers. comm.). Finds of Beaver have also been made at Segebro (Salomonsson 1964) and possibly (by implication of beaver cut birch branches) at Trollesgave (Fischer pers. comm.). Twigs of willow and juniper occurred at the same site. In addition to beaver, the remains of roe deer (Capreolus capreolus), wild goose (Anser sp.) and less certainly red deer (Cervus elaphus) were identified at Segebro.

Evidence from all the above Bromme sites seems to suggest occupation during a relatively temperate phase of the late last glacial and the probability is that, for the earlier Bromme sites at least, the occupations coincide with the last part of the Allerød interstadial (Zone II), a factor which would accord well with the tenth millenium BC 14C dates from Trollesgave.

Positive evidence for Younger Dryas (Zone III) occupation of the Danish peninsula is at present scanty. For the most part it is restricted to the remains of modified reindeer antler and post cranial material (for a summary of finds see

Clark 1975). The only reliably dated stone artefacts so far known are those which eroded out of the famous sea cliff at Nørre Lyngby in northern Jutland (Jessen and Nordmann 1915). In particular, a large tanged point which was recovered in 1915, with an associated late glacial flora, which included dwarf birch (Betula nana) and arctic willow (Salix polaris). Later pollen analysis of samples (Iversen 1942) taken at the time corroborated a Younger Dryas date for the tanged point. However, the pollen diagram may be open to conflicting interpretation (Jacobi 1980,78).

Bromme Summary.

The assemblages of Bromme-type are based on fairly long, broad and thick blades of triangular cross-section. Many of the blades end either in plunging or in hinge terminations and display a slightly curved profile. Bladelets (or "microblades") are rare. Core preparation techniques are minimal and cresting was apparently seldom used. The final stage of core reduction leaves one platform pyramidal cores. Longer opposed prismatic cores also occur.

A hard hammer mode is predominantly indicated. "Siret" accidents are quite common and many of the blade bulbs have pronounced points of percussion with conchoidal fracture marks visible on the bulbs. Blade and flake butts are generally large, plain and show signs of platform abrasion.

Three main tool types are represented in the assemblages: tanged points, end scrapers and burins. The points have broad heavy tangs always located at the proximal end and sometimes, but not always, with additional distal retouch. A well-developed cone and point of percussion is frequently visible at the proximal extremity. The butts are mainly left intact.

Although lengths may vary considerably within assemblages the tang generally makes up about a third of the length of the piece. Some of the points show "impact fractures" which suggest that they were used as projectile tips.

Flake end-scrapers are more common than those made on blades. The scraper edges generally display a pronounced convexity, sometimes with a distinctive "nosed" appearance. In some cases the scraper edges show a regular, flat invasive, retouch which is most probably due to a form of "pressure flaking". Tanged forms exist. Because of their small size some are considered to be reworked from tanged points.

Burins of various kinds are represented, although dihedral forms are the most common. Tanged examples exist too, but are not frequent. Burins on breaks, sometimes clearly intentional, are regularly present, although deliberate snapping of flakes and blades is not a common feature of Bromme-type assemblages.

The soft hammer flaking mode appears to be conspicuously absent. Heavily edged damaged pieces such as 'bruised flakes and blades' are also generally missing from the Bromme inventories. The few backed pieces or small tanged points which occur, all seem to derive from mixed surface collections. The microburin technique was not used.

From the above summary it would seem that few obvious parallels can be drawn between the Bromme material and the British Long Blade assemblages. A fuller discussion of the absence of analogies is presented at the end of the chapter.

Ahrensburgian Complex.

Well before the advent of the microlithic traditions of the postglacial period flint assemblages combining small tanged points and microlithic forms made their appearance over a wide area of northern Europe. Their occurrence coincides with the first unequivocal evidence for the use of archery equipment on the North-European plain. The best documented example so far comes from the famous site of Stellmoor in the Ahrensberg tunnel valley, where over 100 pinewood arrow shafts, some with tanged flint tips still in place, were recovered from deposits of late glacial (Younger Dryas) age (Rust 1943; see also the sections by Schütrumpf in the same volume). Further evidence for archery equipment can also be found in the presence of grooved shaft smoothers at sites in Germany and the Netherlands (Taute 1968, 202) and further east into central Poland (e.g. Strumienno, Burdukiewicz pers. comm.).

Following Taute (1968), all these assemblages can be assimilated under the term Tanged-Point Groups. The Ahrensburgian merely forms one part of this complex, which stretches from the North Sea coast in the west to the Neimen basin in the east. Three contemporary sub-groups of the Ahrensburgian are recognised, all characterised by the presence (to varying degrees) of diminutive tanged points without invasive ventral retouch. Within the Ahrensburgian Complex the Eggstedt-Stellmoor group with long-blades and the small-bladed Tegel-Ketzendorf group are further distinguished from the western Geldrop-Callenhardt group by the absence of backed tool forms. According to Taute, there is a trend towards increased "microlithisation" in the later Ahrensburgian but, as we shall see, the recent dating evidence casts considerable doubt on the validity of this simple evolutionary scheme.

Ahrensburgian Long Blade Assemblages.

These assemblages are easily identified by the large size flake and blade debitage. Big blades (Grossklingen) are defined as being 12-15 cm long and 2.5 cm wide, whilst the giant blades (Riesen-klingen) include artefacts over 15 cm long and those pieces 12 cm or longer with a width 5 cm and above (Taute 1968, 16). Ahrensburgian long blade assemblages have a limited geographic distribution (Figure 3.5), with most sites occurring in the North German region of Lower Saxony. Elsewhere, on the sandier lowlands and areas to the south, they are relatively rare. According to Taute (ibid.) there is only one convincing long blade site on the sandier soils of the Netherlands, while the material from Callenhardt provides the single exception to the otherwise total absence of long blades from cave assemblages. A recent discovery in the Ruhr provides one of the most southerly German findspots for Ahrensburgian long blades (Blank 1985).

The availability of good quality raw material is clearly a key factor in the location of long blade sites. It is highly pertinent that Ahrensburgian sites of this type are seldom, if ever, situated far from good sources of flint. Nowhere in northern Germany is this more apparent than in the region around Hamburg. Here, the proximity of flint bearing morainic deposits provides a rich source of raw material, and there is little reason to doubt that such a provenance was highly accessible during the late Glacial (Taute 1968, 175).

A surprising feature, however, in view of the clustering of long blade sites near sources of good raw material, is the ubiquitous presence of contemporary smaller blade Ahrensburgian assemblages in the same areas. The sites do not appear to occupy mutually exclusive geographic areas. Relevant examples

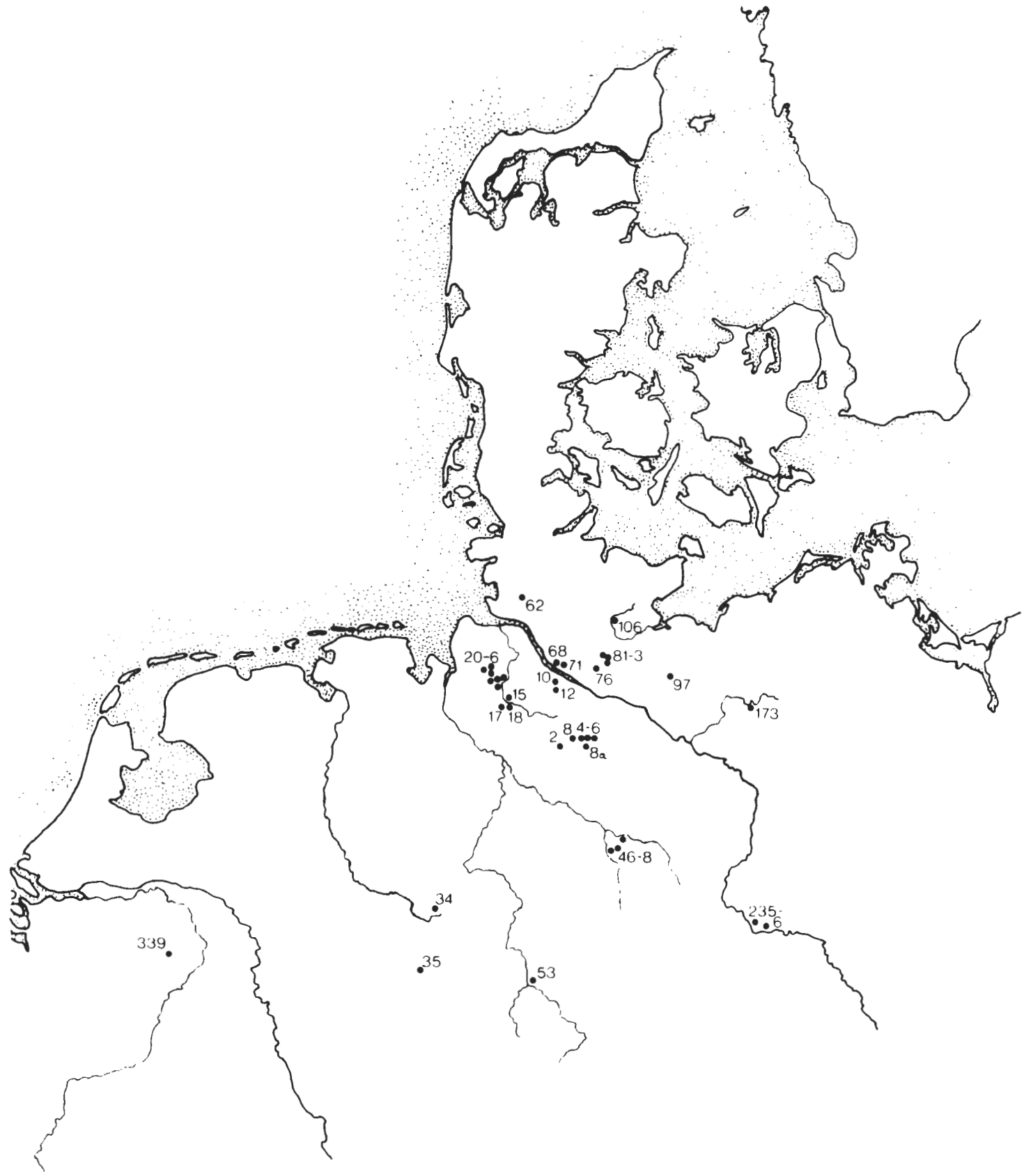


Figure 3.5 Distribution of Ahrensburgian long blade sites, North Germany (after Taute 1968).

GROSSKLINGEN

(6) Hörpel 7 III
(8) Hörpel 40 I
(12) Immenbeck III
(22) Glinde 5e
(23) Glinde 5g
(35) Callenhardt
(46) Giforn
(48) Klein Vollbüttel 3
(53) Volkmarshausen
(81) Ahrensburg-Borneck-Ost
(83) Ahrensburg-Borneck-C
(97) Bresahn
(235) Steckby
(339) Geldrop II, Neth.

RIESENKLINGEN

(2) Neuenkirchen 41 & 50
(4) Hörpel 7 I
(5) Hörpel 7 II
(8a) Steinbeck
(10) Immenbeck I
(15) Lavenstedt A
(17) Godenstedt
(18) Eitzmühlen
(20) Bremervörde 176
(21) Glinde 5a
(24) Glinde 5h
(25) Glinde 5i
(26) Minstedt
(34) Stuckenbrock K
(47) Didderse
(62) Eggstedt
(68) Rissen 11
(71) Rissen 14a
(76) Ahrensburg-Stellmoor
(82) Ahrensberg-Borneck Nord
(106) Negernbötel A
(173) Siggelkow
(236) Brambach

are the Immenbeck I and II long blade sites found close to the smaller blade Ketzendorf assemblages, or the Deimern 45 site with smaller debitage which neighbours the Neuenkirchen and Hörpel I assemblages. In the absence of other criteria, this led Taute to suggest that the production of large size material was clearly a culturally determined choice, and not influenced by the availability of raw material alone (Taute ibid., 175). A most interesting feature which seems entirely to have escaped Taute's attention concerns the retouched tools. It can be shown that, whilst the type of tools recovered from each site is virtually identical, very considerable differences exist in the proportion of finished implements in each assemblage. Thus at Deimern 45 and Ketzendorf (II and IV) retouched tools outnumber by a factor of nine to one those recovered in any of the four long blade assemblages in the same area. Clearly, these factors have important implications for discussion of site function and they may be expected to apply not only to the North German sites, but to the Southern British long blade assemblages also. Questions of this kind will be treated in more detail in a later part of this chapter.

The Artefact Assemblages.

Ahrensburgian Long Blade Debitage.

Blades are well represented in the debitage of Ahrensburgian assemblages. At the type site of Stellmoor, out of 1421 unretouched waste pieces 603 (or 42%) are blades (Rust 1943,164). At the similar site of Teltwish 2, situated not far from the Ahrensburg lake margin, they are likewise common in an assemblage also based upon the production of long blades (Tromnau 1975). During the course of a short visit to the Schleswig Museum I was able to measure a limited sample of

unbroken blades from Teltwisch 2. The figures given below are necessarily of a summary nature, representing perhaps only 12-13% of the total number of complete blades available. They do not include for example any of the smallest material (<5cm).

The blades from Teltwish 2 are typically long (mean length = 9.6±2.6 cm, n=54), fairly narrow (mean width = 2.8 ±1.0 cm) and not particularly thick (mean thickness = 0.8±0.4 cm). The smallest blank measured from the assemblage was 3.7 cm long. In profile the blades are straight or nearly straight, with few examples showing any twisting or pronounced curvature. Only three plunging pieces occurred in the sample, whilst a similar number ended in hinging or step terminations. Signs of platform abrasion were visible on a high percentage of the proximal ends (83%).

Most of the blade butts examined were plain (79%) and generally of large size (mean length = 0.93±0.52cm; mean breadth = 0.35± 0.25cm). Only a small percentage of faceted types are present (5%). The Teltwisch blades display a variety of bulbar features. These could be divided into four categories: the most common (59%, n=51) are those with a relatively broad, but flat bulb of percussion, sometimes marked by a large negative bulbar scar attributes 4 & 5). Six percent of the blades showed a diffuse bulb with a lipped butt (attribute 2); whilst 25% displayed a well defined cone of percussion with conchoidal fracture marks prominently visible on the bulb itself (attribute 1). The rest (10%) comprised those which fulfilled none of the foregoing descriptions. The above observations suggest a predominantly soft-hammer flaking mode (sensu Newcomer 1975) perhaps with the use of soft-stone hammers rather than purely organic ones. Of the few clear examples of hard-hammer struck pieces (attribute 1) it is

interesting to note that nearly all of them revealed some percentage of cortex on their dorsal surface. This would be entirely consistent with hard stone hammer usage during the earlier stages of core reduction. One small hammerstone of quartzite weighing some 200 grams was recorded at Teltwisch 2.

The eight cores in the sample from Teltwisch 2 are blade cores all with two opposed platforms; 6 are prismatic, only 2 are of pyramidal type. The length of the cores ranges from 10.5 cm to 4.2 cm, the smallest being a prismatic form showing the negative scars of blade and bladelet removals. All of the cores have plain striking platforms and the only apparent sign of preparation is a pronounced abrasion along the platform edge. None of the cores displayed traces of a prepared crest either at the front or back. Cresting at the back of the core does not seem to be a common feature of the Ahrensburgian cores, although examples from Deimern 45 (Taute 1968, Tafel 15.5 & 6; Tafel 16.1) and Stellmoor (Rust 1943, Tafel 142,2) indicate that cresting along the side of the core was occasionally used. At Teltwisch 2, four of the cores displayed some proportion of cortex on the rear side, whilst the rest were flat and partially flaked (but not crested).

Amongst the blade debitage from Teltwisch were several unidirectionally crested pieces, suggesting this method was used to re-modify the front of the core. Core tablets were also noted. Few Siret accidents were recognised amongst the blade debitage.

Ahrensburgian Debitage without Long Blades.

The majority of Ahrensburgian assemblages fall into this category. As with the long blade assemblages the debitage from these sites is made on opposed platform blade cores using a

soft hammer mode. Actual figures for blade dimensions are not available for the north German sites, but related assemblages in the Netherlands give some idea of blade size. At the Vessem-Rouwven Ahrensburgian site, for example, statistics show the majority of blades (72%) fall within the bladelet class. They range from 1.0 to 3.0 cm long (n=761). The breadth of 78% of the artefacts is between 0.5 and 1.0 cm, whilst thicknesses range from between 0.2 - 0.4 cm for 72% of pieces. None of the blades from the site is over 8.5 cm long (Arts and Deeben 1981). Figures for the sites of Budel IV and Neer III suggest that blade lengths are quite variable but the majority, as at Vessem-Rouwven, clearly fall into a bladelet (ie $\leq$ 5 cm long) classification (Bohmers 1956). Broadly comparable dimensions have been recorded for the blade debitage at Remouchamps where mostly short blades ("lames courtes" = 4-5 cm long x 1.2 cm broad) occur in the assemblage (Dewez 1974).

The most common type of blade core recovered from Ahrensburgian sites is of opposed platform type (Taute 1968, 172). At Deimern 45, for example, 47 of the cores are prismatic (sub-cylindrical) blade cores with two opposed platforms (zwei gegenüberliegenden Schlagflächen). Of the other identifiable types, 32 are pyramidal (conical) with one platform (einseitige and Kegelförmige kernsteine) and may well be worked out examples of the opposed platform type. The rest include flat globular multiplatform cores (linsenförmige Kernsteine) and irregular types (unregelmässige Kernsteine). A not dissimilar predominance of prismatic and conical blade cores of two opposed platform type is recorded in the Ahrensburgian level at Stellmoor (Rust 1943, 165).

Various comparisons may be made between the Ahrensburgian long blade technologies and those of Southern Britain. These

will be discussed in detail at the end of the chapter.

Retouched Tools.

End-Scrapers.

End-scrapers comprise one of the commonest tool types in Ahrensburgian flint assemblages. They can be made on blades or flakes and generally seem to occur in greater numbers than other retouched tool forms such as burins. Blade end-scrapers are frequently found in association with shorter flake scrapers (Kurzschaber; Halbrundschaber); double end-scrapers however are rare.

At many sites, including those with larger blade debitage, flake and shorter end-scrapers predominate over true blade end-scrapers (e.g. Rissen 14, Ahrensburg Borneck-Ost). A few examples of blade end-scrapers on laterally retouched supports have been recorded (e.g. Siggelkow, Taute 1968, Tafel 102) but these are not particularly common. From the long blade site of Glinde 5i in the district of Bremervörde (Taute ibid., Tafel 51) a single tanged scraper was recorded in a surface collection but this is the only example of which I am aware from any Ahrensburgian long blade assemblage. Composite tools, especially those combining scrapers and burins are also known from long blade assemblages.

As regards the recognition of visible functional traces, in the sample of end-scrapers I examined from the Ahrensburg Tunnel valley (over 200 from Stellmoor, Teltwisch 2 and Ahrensburg Borneck) I noticed none with obvious edge-damage on the ventral side of the working edge (cf. Sproughton, Figure 2.18). Moreover, relatively few pieces displayed noticeable edge-rounding along the scraper front. As with the majority of such assemblages, these tools seldom showed signs of lateral

retouch on their edges.

The end-scrapers from the Dutch and the Belgian Ahrensburgian sites seem to differ little from their northern counterparts. They show a tendency to be made on shorter flake supports - 3-5 cm (Bohmers 1956) or less (2-3 cm at Vessem-Rouwen) - with fairly acute edge angles at the scraper front of 50-70 degrees. The dorsal scar patterns on some of the scrapers suggest they were made on much reduced blade supports.

According to the published accounts, the incidence of laterally retouched edges is markedly higher in the Dutch and Belgian assemblages (Bohmers ibid., plate 1), but such differences might be exaggerated by the fact that according to the German typology some of these (with partially or single retouched edges) would be classed in the Haldrundschaber category (e.g. Arts & Deeben 1981, fig. 21,205). As has been mentioned true blade end-scrapers are overall rather rare components in these assemblages.

Burins.

One of the distinct hallmarks of the Ahrensburgian assemblages in northwestern Germany is the presence of the transverse burin (Querstichel). These are produced when the burin blow is delivered from the side at more or less right angles to the long axis of the piece. It includes those artefacts which are prepared by lateral retouch before the burin side blow is made (transverse burin on a retouched edge = Querstichel mit Randretusche) or those on an unprepared edge (Querstichel). Both types are a common feature of the German industries (Taute 1968, 188). At Deimern 45 in lower Saxony for example, no less than 66 out of 144 burins are of this type. Although much smaller numbers of burins are recorded at

other sites, a similar preponderance of transverse types has been noted at the long blade sites of Immenbeck I and Bremervörde 176 (Taute 1968).

Besides the transverse burin, other types of truncation and dihedral burin are frequently in evidence. In many cases they are both present in more or less equal numbers. Their association is hardly surprising given the fact that in some cases they undoubtedly represent different stages of manufacture of the same tool. Most of the burins from the Ahrensburgian level at Stellmoor appear to be truncation types. In Rust's Tafel 45 (1943) the eleven burins drawn include five on truncation, four dihedral burins and two others, one of which is possibly another truncation type. Amongst the truncation burins are four on end truncations (two straight and two concave) and one transverse burin on a retouched edge. The dihedral examples comprise two transverse types, one straight dihedral and one angle burin. The burin supports are fairly uniform in type; all but three are made on long blanks c. 7 - 9 cm and all but one are 2 - 3 cm wide.

At Teltwisch 2 truncation burins and dihedral burins occur in more or less equal number. They are made on blades, ranging in maximum breadth from 1.8 - 4.5 cm and in thickness from 0.6 -1.9 cm. The lengths vary considerably, according to the stage of manufacture. The longest is a transverse burin measuring some 12 cm, whilst the shorter examples include a broken dihedral burin 4.7 cm long and a broken truncation burin 3.2 cm long. The burin facets are fairly broad ranging in size from 0.28 - 0.74 cm.

Few of the tools or burin spalls examined from Teltwisch showed obvious signs of edge damage. Evidence of heavy use of the burin-edge facets is however suggested on tools from other

sites namely Hörpel 7 III and Immenbeck I (Taute 1968, Tafel 31,10; Tafel 33,22). In one example from Teltwisch 2 the proximal broken end of a dihedral burin displayed heavy scalar edge damage along the ventral side of the break.

A slightly different pattern emerges in the western distribution of Ahrensburgian sites. The larger assemblages in the Netherlands contain a higher proportion of truncation burins and they are the most common burin type at Vessem-Rouvwen (Arts & Deeben 1981), at Geldrop, Budel IV and Neer III (Bohmers 1956, plate 1). Dihedral burins (of straight, asymmetrical and angle type) are also generally well represented in the retouched tool assemblages. It is noteworthy that whilst transverse burins on an unprepared edge do occur (i.e. in the same category as angle burins or A-steker, see for example Arts & Deeben ibid., fig. 28, 395), they are nevertheless correspondingly rare items in the Dutch assemblages. The breadth of burin facets differs little from those of the north German sites. From Bohmers statistics it would seem that the majority fall between 0.2 - 0.6 cm with relatively few exceeding 0.7 cm in maximum size (Bohmers ibid., Plate 1).

The presence of transverse burins on a prepared edge is a feature noted in some of the Southern British long blade assemblages (e.g. Sproughton, Swaffham Prior). Such burin types are not common at the Upper Palaeolithic site of Hengistbury.

Ahrensburgian Points.

These small pedunculate points were first described by Alfred Rust (1943) from the Ahrensburgian level at Stellmoor. The artefacts are made on bladelets; they seldom exceed maximum dimensions of 5.5 x 1.7 cm and are generally much shorter

(Taute 1968, 12). Apart from their generally small size these pieces are characterized by a straight and rather narrow retouched tang or stem with an obliquely retouched tip at the opposite end. The tang may be situated either proximally or distally, and as a rule is defined by direct, abrupt retouch. Of 24 tanged points examined from the Upper Level at Stellmoor, 17 had proximal tangs while the remaining 12 were tanged at the distal end (Figure 3.6). A similarly high proportion of distally tanged pieces has been recorded from Teltwisch 2.

The tip opposite the pedunculate end may be truncated by direct, abrupt or semi-abrupt retouch, forming a point fully symmetrical or slightly offset to the main axis of the piece. Out of the 36 points figured from Stellmoor (Rust 1943, Tafel 46), all but 6 show a retouched tip. However as other examples show (Taute 1968), the frequency of retouch is no doubt largely dependent on the original shape of the blank.

Such indications as there are suggest the Ahrensburgian points served as arrowheads. At Stellmoor itself their function can hardly be in doubt since the broken tangs of two points were found still firmly wedged in the pinewood arrowshafts (Rust 1943). Because the Stellmoor examples provide very rare evidence of hafted prehistoric projectile tips it would be worthwhile considering some of the features of the arrowshafts. Despite the fact that none of the wooden shafts are preserved today (they were destroyed during bombing raids over Germany in World War II), from photographs in the monograph it is possible to gain some approximation of their original size. The diameters of the foreshafts range from 0.8 - 1.0 cm near the base to 0.7 - 0.8 cm near the slotted end housing the tanged flint tip. The two hafted flint specimens each have a maximum tang breadth of between 0.4 - 0.5 cm (Rust

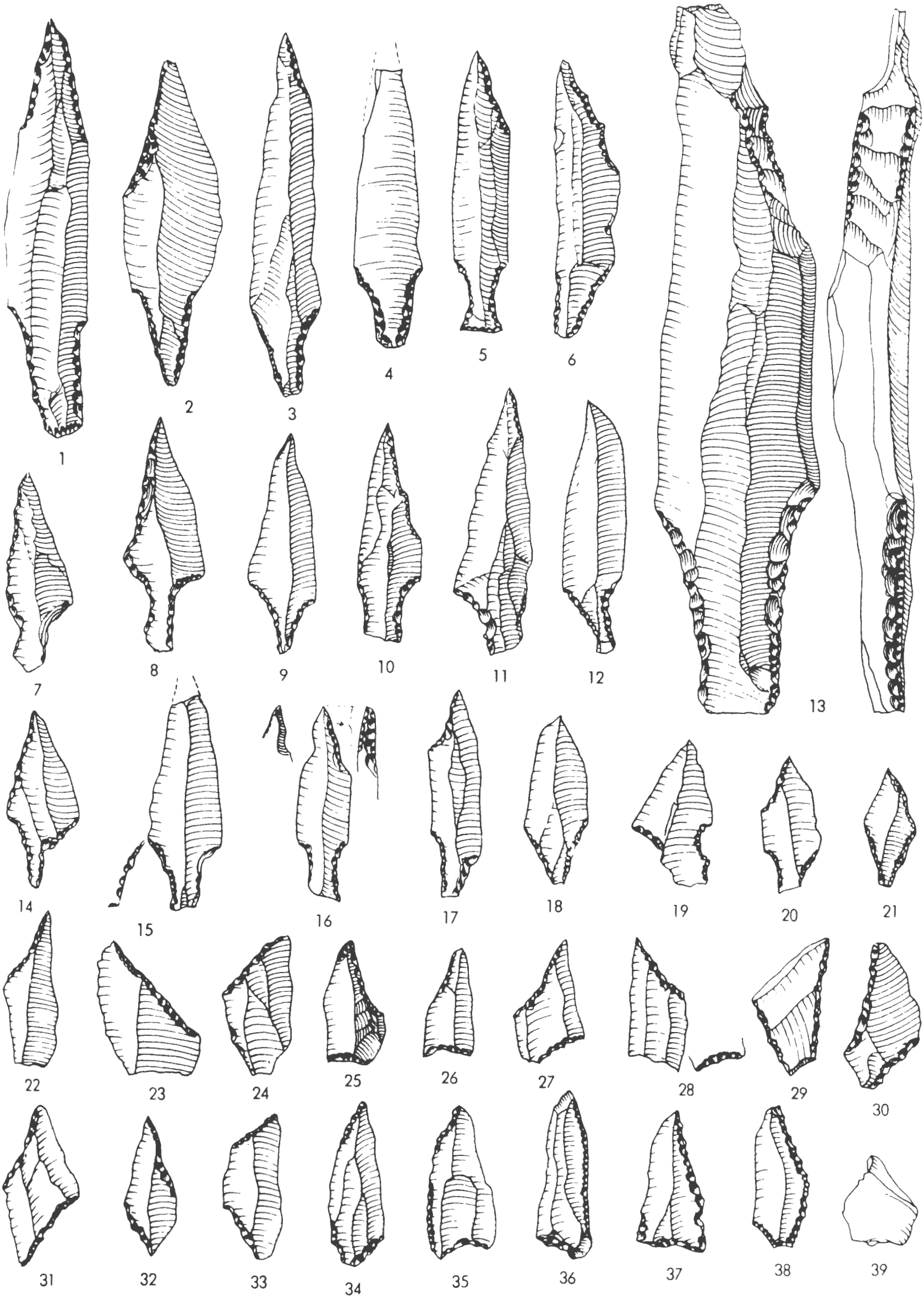


Figure 3.6 Stellmoor: Ahrensburgian level and local surface finds (after Taute 1968). 1-21. Ahrensburgian points; 22-28. Zonhoven points; 29-38. Atypical Zonhoven points & microlith forms; 39. Microburin (surface collection).

1943, Tafel 92,93) leaving considerable leeway for fixing them into the slots.

The estimated widths compare well with tang measurements taken from 29 points in the Stellmoor Upper Level collection in the Schloss Gottorf Museum at Schleswig. The mean width obtained was 0.57±0.12 cm, whilst the mean tang length and thickness amounted to 1.03±0.34 cm and 0.25±0.06 cm respectively. These measurements accord well with those from other Ahrensburgian sites with and without long blades (Taute 1968, Tafeln 1-90; Arts & Deeben 1981, figs. 2-9; Table 3.4). In all they suggest that a high level of standardisation had been reached in the manufacture of tool-kits over a wide area of the Ahrensburgian social-territory.

• Very occasionally tanged points of large size occur amongst the normally diminutive Ahrensburgian examples (e.g. Stellmoor, Teltwisch 2). Superficially they appear similar to some of the Bromme points from Denmark. The main technological difference, however, lies in the fact that the Ahrensburgian supports display none of the hard hammer features frequently present on the Scandinavian examples.

Zonhoven Points.

· These forms are characterised by an oblique truncation at one end of a small flake or bladelet. They occur at Stellmoor and most other Ahrensburgian sites (Figure 3.6).

First described by J. Hamal-Nandrin and J. Servais in 1909 (Brézillon 1977) from the site of Zonhoven in the north Belgium province of Limbourg, they were given the following definition: "éclats retouchés rappelant les outils tardenoisiens, sans avoir toutefois leur régularité géometrique" (small retouched flakes recalling the tardenoisian implements, without always

AHRENSBURGIAN POINTS

Sites	Sample Size	Mean Measurements (cms) Length	Breadth	Thickness	Tang Length	Tang Breadth	Tang Thickness
Ahrensburg-Stellmoor	29	3.87 ± 0.82	1.33 ± 0.21	0.32 ± 0.06	1.03 ± 0.34	0.57 ± 0.12	0.25 ± 0.06
Vessem-Rouwen (Arts & Deeben 1981)	69	3.11 ± 0.71	1.13 ± 0.28	0.34 ± 0.10	1.23 ± 0.41*	0.78 ± 0.23*	0.28 ± 0.08*
Remouchamps (Dewez)	21	2.41 ± 0.41	1.05 ± 0.30	-	-	-	-
Teltwisch 2	10	3.63 ± 0.46*	1.26 ± 0.35	0.30 ± 0.06	-	0.25 ± 0.57*	0.25 ± 0.57*

* <100% sample
(VR = 43: T2 = 8)

ZONHOVEN POINTS

Sites	Sample Size	Mean Measurements (cms) Length	Breadth	Thickness
Stellmoor	5	2.59 ± 0.37	1.29 ± 0.35	0.26 ± 0.06
Teltwisch 2	4	3.01 ± 0.25	1.19 ± 0.13	0.30 ± 0.08
Vessem-Rouwen	21	2.83 ± 0.77	1.37 ± 0.36	0.32 ± 0.08

Table 3.4 Ahrensburgian and Zonhoven points: Mean Measurements.

having their geometric regularity). Subsequently, however, considerable confusion has arisen over the exact meaning of the term Zonhoven point. For some French and Belgium prehistorians (e.g. Bordes and Fitte 1964, 267; Gob 1984, fig. 84) the term covers all obliquely truncated points (with and without additional basal retouch). For others, including many Dutch archaeologists a stricter definition is preferred which allows only those points with additional retouch at the base (Arts and Deeben 1981). Points without basal retouch are simply termed B-points. German authors in general follow Taute's usage which distinguishes between those with and without basal retouch (mit und ohne Basisretusche). Since the Zonhoven type site itself yielded both forms, albeit with basally retouched examples in the minority (Schwabedissen 1954, 50), the broader definition will be used here.

From the small numbers of Zonhoven points I examined from the north German sites the following observations may be made. First, they frequently appear to be made on broad bladelet supports. The examples from Stellmoor and Teltwisch have mean breadths respectively of 1.29±0.35 cm (n=5) and 1.20±0.13 cm (n=4). Compared to the Dutch examples these measurements would not appear to be exceptional (Table 3.4).

The points examined from the north German assemblages exhibit an oblique truncation which is assymetrical to the long axis of the piece. The truncation can occur either proximally or at the distal end of the bladelet; the side profiles are generally straight. Lengths for Zonhoven points may vary considerably, (see for example Steckby and Siggelkow in Taute 1968, Tafeln 121,100) with examples up to 3.5 cm in length, whilst shorter specimens of 1.78 cm and less exist at Bremervörde and Ketzendorf IV (Taute 1968, Tafeln 45, 39).

Again the few examples measured at Stellmoor and Teltwisch 2 appear to be fairly typical and fall well within this range (Stellmoor = 2.59±0.37 cm; Teltwisch 2 = 3.02±0.25 cm).

At many of the sites featured Zonhoven points outnumber tanged specimens (Table 3.5), and in only three of the thirty-seven sites reviewed did tanged points occur without the presence of Zonhoven points.

Although insufficient evidence exists to determine their exact function, it is an interesting fact that alongside the pedunculate points they are the most consistently occurring item in the Ahrensburgian tool-kit (Taute 1968; also Table 3.5). At Stellmoor, where they are found in lesser quantity than the Ahrensburgian points, the possibility arises that they too were used for arming arrowshafts, either as an alternative form of arrowtip or as additional side barbs. One example from this level displays what appears to be clear signs of an impact fracture (Fischer et al. 1984, fig. 25,d).

Microliths.

Various microlithic flint tools have been recorded from Ahrensburgian sites. Leaving aside those simple Zonhoven points, truncated at the proximal end (cf. microliths sensu Clark 1934a), other non-geometric as well as geometric microlith forms occur within the assemblages also.

Amongst the types found at Stellmoor in the Upper Level are forms which resemble Later Mesolithic geometric types. They include two rhombic elements (Vierecken), retouched on three of their four sides (Rust 1943, Tafel; figure 3.6, 21). Elsewhere, broad triangles (Breites Dreiecken) are represented in the Ahrensburgian long blade assemblages of Glinde, Klein Vollbüttel, Ahrensburg Borneck-C, Neuenkirchen and Didderse

AHRENSBURGIAN LONG BLADE ASSEMBLAGES

Site	Ahrens Points	Tanged Points	Zonhov Points	Micro Liths	Scrapers	Burins	Bu/Scs
GROSSKLINGEN							
(6) Hörpel 7 III	1	-	2	-	>5	1	-
(8) +Hörpel 40 I	3	-	3	-	9	2	-
(12) +Immenbeck III	-	-	5	-	8	-	1
(22) Glinde 5e	1	-	-	-	-	-	-
(23) Glinde 5g	-	-	3	4	-	-	-
(35) +Callenhardt	13	1	24	5	13	8	-
(46) Giforn	-	-	>6	1	-	-	-
(48) Klein Vollbuttel 3	35	1	>1	3	-	-	-
(53) +Volkmarshausen	11	-	4	-	8	4	2
(81) +Ahrensburg-Borneck-Ost	>1	-	>1	-	33	5	-
(83) +Ahrensburg-Borneck-C	4	-	>1	1	>50	61	-
(97) Bresahn	1	2	-	-	-	-	-
(235) +Steckby	1	-	3	-	1	2	-
(339) Geldrop II, Neth.	3	-	3	1	-	-	-
RIESENKLINGEN							
(2) Neuenkirchen 41 & 50	>1	-	>1	>1	-	-	-
(4) Hörpel 7 I	9	-	12	1	>5	9	-
(5) Hörpel 7 II	1	-	2	1	-	-	-
(8a) +Steinbeck	2	-	5	-	-	-	-
(10) +Immenbeck I	3	-	12	-	18	9	-
(15) +Lavenstedt A	4	-	9	-	>5	-	-
(17) Godenstedt	2	-	1	-	-	-	-
(18) Eitzmühlen	-	-	9	-	-	-	-
(20) +Bremervörde 176	1	-	11	-	6	21	1
(21) Glinde 5a	-	-	1	1	-	-	-
(24) Glinde 5h	1	-	3	2	-	-	-
(25) Glinde 5i	2	-	6	-	-	-	-
(26) +Minstedt	-	-	4	-	-	-	-
(34) Stuckenbrock K	-	-	-	-	-	-	-
(47) +Didderse	-	-	13	1	3	-	-
(62) +Eggstedt	4	1	6	-	43	24	-
(68) Rissen 11	4	-	13	-	-	-	-
(71) +Rissen 14a	7	-	8	-	6	3	-
(76) +Ahrensburg-Stellmoor	45	>4	5	2	13	15	-
(82) +Ahrensberg-Borneck Nord	1	-	>1	-	2	5	-
(106) Negernbötel A	10	-	>1	-	-	-	-
(173) Siggelkow	14	4	>1	-	-	-	-
(236) Brambach	1	-	-	-	-	-	-

+ = Excavated Assemblage
- = No information/absence

Microliths:
Dreiek-2,21,24,47,83.
Lanzettspitze-23,24,35,339
Trapeziform-4,6,48.
Others-5,46,76.

Table 3.5 Ahrensburgian long blade sites: Major retouched tool classes.

(Taute 1968), whilst narrow backed bladelets (Lanzettspitze and Nadelformige Spitze) occur amongst other places at Hörpel and Glinde (Taute ibid.) and further south in the Ruhr valley (Blank 1985). A fuller list of these occurrences is presented in Table 3.5. (See also Taute 1968, Liste 9 which includes Zonhoven points with additional basal retouch.).

Retouched Tool Debitage: Microburins.

Although typical examples of microburins do occur in some Ahrensburgian assemblages, they are not regarded as particularly common. Contrary to claims that they are altogether absent (Clark 1936,54), both Menke (1951, 77) and Taute (1968, 176-178) have noted their presence at a number of Ahrensburgian sites.

In the long blade group of assemblages, characteristic examples of microburins are found at Glinde 5h in Lower Saxony (Taute 1968, Tafel 48, 9-10), and in the Holstein sites of Eggstedt, Borneck-Ost and Borneck-Nord (Taute ibid ., Tafel 70, 14). A single specimen has been recovered from Stellmoor, but not in certain association with the Ahrensburgian cultural level (Figure 3.6, 39; Rust 1943, Tafel 48).

Not surprisingly, microburins are particularly common in Ahrensburgian assemblages with a high microlithic component, most notably Pinnberg 1b and Klein-Nordende 2 (Taute 1968, Tafeln 84, 33-37; 78, 6-10). A few examples also occur in the Belgian cave site of Remouchamps (Dewez 1974, fig. 19) and, by implication, at the Hohler Stein, Callenhart, where at least one tool displays a clear microburin facet (Taute ibid., Tafel 56, 2). Proximal microburins have also numbered amongst the retouched tool debitage in some Dutch assemblages (Arts & Deeben 1981, fig. 46, 529-530).

Despite the undoubted presence of these waste pieces in some Ahrensburgian assemblages, it should be emphasised that they are rare items even from well-excavated sites (cf. Deinern 45 in Taute 1968). The use of the microburin technique is not a characteristic feature of the Ahrensburgian complex as a whole. It is worth noting in passing that earlier evidence of the use of the microburin technique in northern Germany occurs in Hamburgian assemblages where it was used in the making of shouldered points (Taute 1959, 190; 1968).

Finally, brief mention should be made of a technique related to that of the microburin method and used in the production of small tanged points. With this technique two notches were made on opposite sides of a bladelet before the piece was deliberately snapped in two across the notched area. Examples of this type of waste fragment have been recorded from several Ahrensburgian sites, amongst them the long blade assemblages of Minstedt (Taute 1968, Tafel 52, 5) and Volkmarshausen (Taute ibid., 64).

Bruised Flakes and Blades.

The presence of these heavily edge damaged implements is as yet only sparsely documented in Ahrensburgian assemblages of northern Germany. Apart from several well known examples in the literature (see especially, Rust 1943, Tafel 47; Taute 1968, Tafeln 80,81), I have personally examined specimens in the collections from the long blade sites of Teltwisch 2 and Eggstedt (in Schloss Gottorf, Schleswig). It is highly likely that a careful search will reveal many more such examples. The following observations are based on these two sites.

Seven bruised artefacts were measured in the Teltwisch 2 collection. Seven to ten others were observed, but were on

supports too broken or incomplete for measurement. All of them were made on large flakes or blades ranging in size from 10.8 to 16.3 cm. Two examples measured in the Eggstedt collection were also both on large supports over 14.0 cm long.

The damage seen on the flakes and blades was mainly confined to one edge; only on three of the Teltwisch specimens did the damage extend to both edges. The damage occurs mostly in the form of invasive scalar retouch on the ventral surface, sometimes producing such a distinctly rounded or worn edge as to fully warrant the description "bruised". In two instances (both from Teltwisch 2) the edge had also the appearance of being heavily rubbed. All of the pieces displayed what could be described as thick edges forming relatively steep angles of approximately 55-70 degrees. The extent of damage seen was always fairly similar, with most of the scars ranging in size from 0.5 - 1.0 cm; the largest recorded was over 2.4 cm.

According to Taute's observations, pieces fitting a broadly similar description have been reported from the Ahrensburgian sites of Lavenstedt A, Bremervörde 176, Klein Nordende 11, Rissen 11, Siggelkow, and Brambach (Taute 1968, Tafeln 45,80,81,103: pp. 45,76,77,102,119).

Dating.

The best estimates for dating assemblages of Ahrensburgian type come from a series of published and unpublished 14C dates on charred wood and unmodified bone and antler. These broadly confirm the evidence from pollen and stratigraphic analyses which had earlier placed the Ahrensburgian material within the Younger Dryas period (Schütrumpf 1938; 1943). The few available C14 dates are mostly those published by Lanting and Mook (1977), but include one new date from the Ahrensburgian

level at Stellmoor itself (Bokelmann pers. comm.). They can be summarized as follows:

Geldrop I, North Brabant, Netherlands.

GEN-1059 10,960±85 bp Burnt charcoal in hearth (Lanting and Mook 1977,26).

The finds from near the charred wood sample in layer C include typical Ahrensburgian tanged points, Zonhoven points and a backed bladelet (Federmesser) component (Taute 1968, Tafel 148).

Stellmoor, Holstein, W. Germany

Y-159-2 10,320±250 bp Organic fraction from reindeer antler (Lanting & Mook 1977,25).

The date derives from reindeer antler from the Upper (Ahrensburgian) level, with tanged points, Zonhoven points and various microlithic forms. Two other dates on antler exist from the same level; both of these are considered to be too young and there are reasonable grounds for doubting their validity because the samples did not undergo sufficient pretreatment.

A new date of 10,150±150 bp has been obtained on a single piece of unshed antler (Bokelmann pers. comm.) from the same level at Stellmoor. The fact that this date overlaps at one sigma with the pretreated assay lends considerable support to the latest glacial dating of the site.

Another site with a similar flint assemblage to Stellmoor can be dated on stratigraphic grounds to the Younger Dryas also. The site of Rissen 14a lies in a soil formed at the top coversands which in turn overlie an earlier "Federmesser" level (Schwabedissen 1954) dating probably no later than

11,450±180 bp (H75/68). Younger Dryas coversand deposits extend over a wide area of Germany and N. Netherlands, and may be related to those which contain Ahrensburgian material at Deimern 45 and Eggstedt (Taute 1968).

Remouchamps, Luttich, Belgium.

Lv-535 10,380±120 bp Organic fraction from bone material (Dewez 1974).

This sample derives from bone within the Ahrensburgian layer which contained small tanged points, Zonhoven points and microlithic forms.

Most of the age determinations quoted here fall within the Younger Dryas (Zone III). They confirm the suggestion that the Ahrensburgian generally post-dates the Bromme occurrences in Denmark.

Faunal Remains

Due to poor conditions of preservation, faunal remains are rarely recovered at the open-air sites. A noteworthy exception is the Ahrensburgian level at Stellmoor, where preservation is exceptional and reveals an overwhelming predominance of reindeer (Rangifer tarandus), with isolated examples of wild horse (Equus sp.), beaver (Castor fiber), wild pig (Sus scrofa) and hare (Lepus sp.). A similar combination of open habitat and woodland forms has been recorded from several Ahrensburgian cave sites. At Remouchamps in Belgium and Hohlen Stein (Callenhardt) in Westphalia open steppe species are mainly represented by the reindeer with a few finds of wild horse (Equus ferus), arctic fox (Canis lagopus), the variable hare (Lepus variabilis) and white grouse (Lagopus albus). Amongst woodland genera there are beaver (Castor fiber), wild pig (Sus

scrofa), a bovid (Bos sp.) and giant deer (Cervus megaceros), the latter is recorded at Remouchamps only.

A faunal assemblage containing mainly open elements is known from the German Eifel (Kartstein Höhle). Here, a small Ahrensburgian toolkit was excavated with a cold fauna consisting mainly of reindeer, with some horse and (arctic?) fox (Löhr 1978). Amongst the microfauna was lemming, whilst the grouse (Lagopus sp.) was also identified (Löhr pers. comm.). The absence of certain woodland species is probably explained by the fact that the site lies at an elevation of 500 m above sea level. In the Belgian site of Grotte du Coleoptere the presence of reindeer is indicated by an engraved rib bone (Dewez 1975). The occurrence of ochotona (Ochotona pusilla) and the hamster (Cricetus cricetus) at the same site (Couche 6) confirms the essentially steppic conditions of Zone III corresponding with the human use of the cave.

All of the above mentioned faunas are consistent with the cold open conditions which prevailed during the Younger Dryas (Zone III). Two of them (Stellmoor and Remouchamps) are also associated with C14 dates. The existence of warmer forest fauna in late Zone III is not surprising, especially given the known sharp contrast between vegetation of the uplands and the river valleys in Western Europe during this period of rapid climatic change (Van der Hammen 1971; Deeben In press). The close proximity of these diverse habitats may explain the unusual abundance of pig (c. 47%), with reindeer and chamois, at the Ahrensburgian site of Fond-de-Forêt (Lequeux 1923). An alternative view is that the site might contain an admixture of Holocene material (Dewez pers. comm.).

Overall the best evidence suggests that the Ahrensburgian in N. Germany and Belgium is a mainly Zone III phenomenon, with

antecedents in Zone II (e.g. Geldrop I). The recent C14 dates further indicate that the Stellmoor site is more or less of contemporary age with Remouchamps. Indeed, at one standard deviation they are indistinguishable. If the dating is correct, as seems probable, then there are no longer reasonable grounds for placing the Stellmoor-Eggstedt group (according to Taute's scheme) earlier in time than the putatively "late" assemblages with their important microlithic component as represented at Remouchamps and Deimern 45. Rather these differences should probably now be seen in terms of regional variability reflecting preferences in particular styles of projectile point.

A second implication is that if the "Federmesser" assemblages are <u>not</u> contemporary with Ahrensburgian ones (<u>pace</u> Deeben's model for the S. Netherlands, in press), then it might be possible to suggest a simple time transgressive model in which "Federmesser" (backed blade) elements become progressively less important during the course of Zone III. In this way assemblages such as Geldrop I would occupy a "transitional" position between the more typical Federmesser and Ahrensburgian industries. An alternative view is that they represent merely eastern and western variants of the same Ahrensburgian complex (the view held by Taute and see later this chapter).

Finally, the degree of "microlithisation" in the Ahrensburgian assemblages does not now appear to be a valid chronological marker. Tool inventories with high proportions of microlithic shapes such as Remouchamps may be contemporary with, or, arguably, even earlier than those containing few microliths.

Ahrensburg Summary.

Long blade assemblages from Ahrensburg-Stellmoor; Teltwisch 2 and Eggstedt display a high degree of uniformity in style and similarity in flaking technique. The debitage from these sites is characterised by long and relatively narrow blades with a fairly thick cross-section. The blades are normally straight in profile with no signs of pronounced curvature or twisting. Smaller blade/lets also occur in the assemblages, although bladelet cores are not particularly common. Many of the blade cores are of opposed platform prismatic type generally displaying only one major flaking face. The back of the core is often left unmodified with a natural or cortical surface. Crested blades are common, but are mainly of unidirectional crested type. Cresting was used for repairing the flaking face as well as initiating the reduction sequence. Core tablets are included amongst the waste flakes and seem to represent the preferred method of platform rejuvenation.

A soft hammer percussion technique is predominantly indicated. Siret flakes are rare. Many of the blades display diffuse bulbs with large negative bulbar scars. Butts are characteristically plain and large; signs of platform abrasion are visible on a high percentage of the proximal ends.

Characteristic amongst the retouched tools from long blade sites is the small tanged point (Ahrensburgian point) considered to be the type-fossil for Ahrensburgian assemblages. Very occasionally, the tanged points can be of large size. Although typologically identical to the Bromme points the supports generally do not share the same bulbar surface features as the Scandinavian examples. The Bromme points often exhibit features associated with the hard hammer mode. A

common component of the Ahrensburgian assemblages is the obliquely retouched point (Zonhoven point). These may outnumber tanged points, and significantly in only three out of thirty-three assemblages reviewed did tanged points occur without the presence of Zonhoven points. This strong presence of Zonhoven elements is not just restricted to the long blade sites; it has also been noted in the smaller-blade assemblages.

Technologically, both the Ahrensburgian points and the Zonhoven types are made on small, fairly broad supports. The tangs can be either proximal or distal. The same is true of the oblique truncation on the Zonhoven point and much seems to depend on the original shape of the support as to the position of retouch. True examples of geometric microliths are also present in the Ahrensburgian tool assemblages. The most commonly occurring types are the broad triangle (Dreieck) and the lanceolate form (Lanzettspitze). All or some of these retouched types may be examples of projectile tips or side barbs. The specimens from Ahrensburg-Stellmoor show that tanged points were certainly used in the former of these two ways.

End-scrapers generally predominate over burins at Ahrensburgian sites. Examples on the end of long blade supports are rather rare as are those with additional lateral retouch. For the most part scrapers seem to be made on shorter blades or small thick flake supports which show varying amounts of cortex on their dorsal surface. Within this category are numbers of distinct morphological types but no particular forms (e.g. round "thumb nail" scrapers) seems any more common than the rest. Few examples of double end-scrapers are found, whilst tanged specimens are all but absent.

Most of the Ahrensburgian scrapers examined, including

those from the Stellmoor type-site itself, showed few visible signs of damage. For example, none of them exhibited the heavy scalar damage seen on Upper Palaeolithic scrapers (cf. Rigaud 1977), whilst few show pronounced edge-rounding.

A distinct feature of the German Ahrensburgian assemblages is the presence of transverse burins. These occur at both long blade and non-long blade sites alike. Other forms of truncation and dihedral burin are also frequently in evidence. The burins are generally made on longer and thicker blade blanks. Most of the burins show a relatively broad burin edge. Macroscopic damage in the form of retouch scars on the burin facet or edges of burin spalls is seldom present. Within the western distribution of Ahrensburgian sites (particularly in the Netherlands) a higher proportion of burins are made up of truncated types, whilst there are few transverse forms.

Heavily edge damaged blades and flakes are found in the German Ahrensburgian sites. Most of the damage scars occur on the ventral surfaces and the thick edges of the blades can display a markedly bruised appearance. The scars sometimes occur on both edges. Microburins, although not particularly common are found at these sites too.

Many of the technological and typological characteristics described for the Ahrensburgian assemblages have close parallels in the long blade material from Southern Britain. However, before proceeding to make more formal comparisons between the British and N.W. European industries, evidence from a third long blade group situated in Northern France is considered below.

Long Blade Assemblages in Northern France.

Introduction

Almost a century ago, Victor Commont, the director of a technical college in Amiens, was instrumental in bringing together and publishing many of the earliest prehistoric finds in this area. One of his first major discoveries was at the site of Belloy-sur-Somme, where in 1898 numbers of long blades were collected in low meadows bordering the River Somme. In the following years Commont conducted largescale excavations of the site (Commont 1908, 1913). In the meantime other blade assemblages had come to light during extensive brickearth quarrying around Amiens, so that in his 1913 publication Commont was able to report on four stratigraphically distinct Upper Palaeolithic industries in the Somme region (Commont 1913).

Despite the fact that some of his earlier ideas have been superceded (e.g. few now accept the presence of typical Solutrean assemblages in the Somme) Commont's work nevertheless remains an important landmark in all subsequent prehistoric studies of the region.

Belloy-sur-Somme.

One of the best known sites of long blade type is that which he recorded at Belloy-sur-Somme. It stands in the field "Champs Magnier" on the north side of the River Somme, only a few meters above the present river level (Figure 3.7).

The valley itself is deeply incised into the underlying Cretaceous chalk of Senonian and Turonian facies providing abundant sources of flint raw material (Fagnart 1984a).

Major excavations have taken place there twice: between

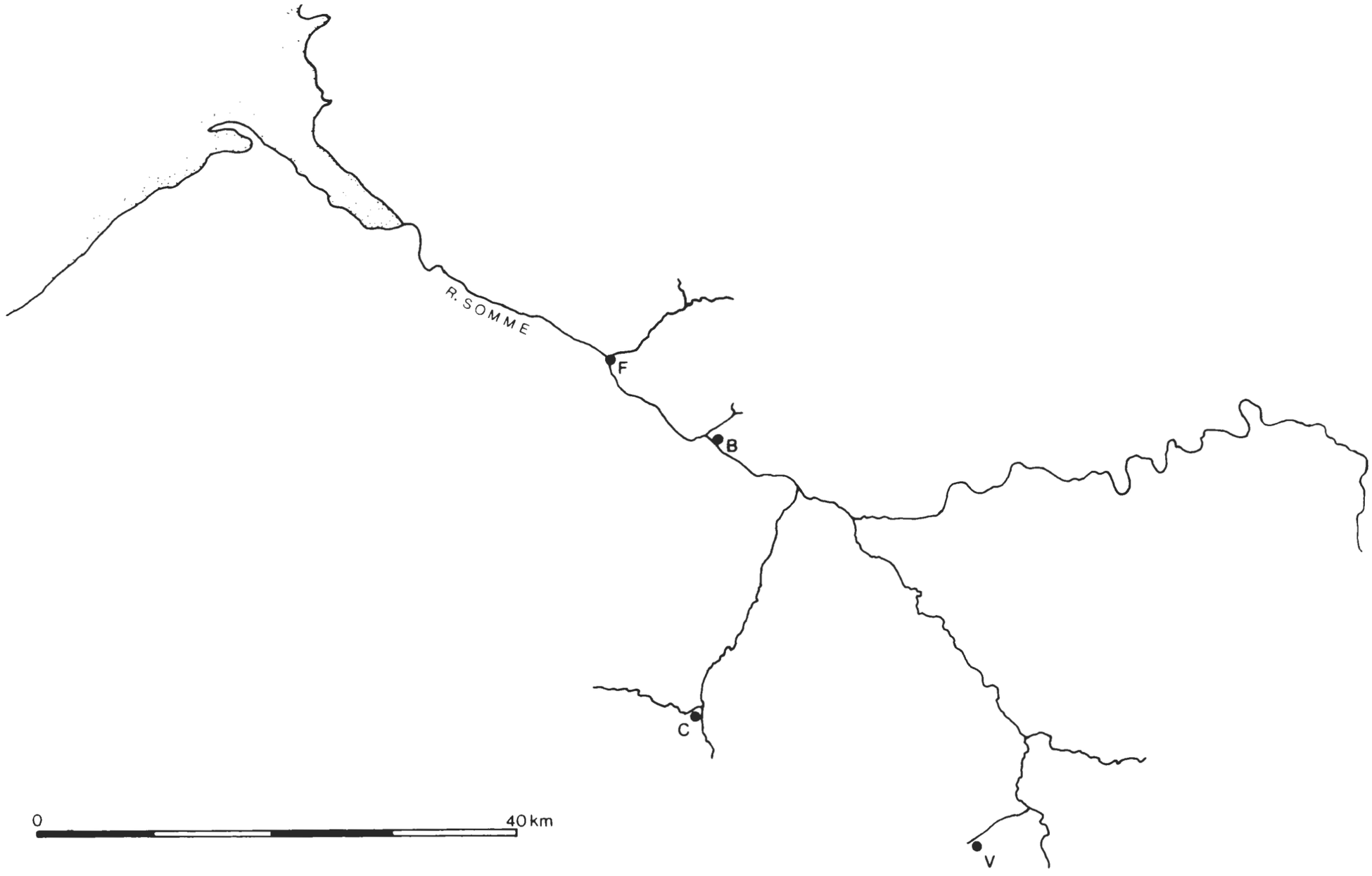


Figure 3.7 Distribution of Belloy-type long blade sites in the Somme, North France. B. Belloy; C. Conty; F. Flixecourt; V. Villers-Tournelle.

1907-10 by Commont and recently (since 1983) by J.P. Fagnart, regional archaeologist for the Somme. So far (up until 1984) a total of over 1,079 square metres of the site have been excavated (most of them in the early campaign by Commont) revealing a series of flint concentrations interspersed with thin isolated scatters of faunal material. The flint clusters are generally quite discrete, being widely spaced with only a few artefacts found in the intervening areas (Commont 1908, 638). The recent excavations have added considerable detail to Commont's original findings and have provided a first series of radiometric dates for the site.

One of the main characteristics of the flint assemblage is the low number of retouched tools in proportion to waste. Amongst the artefacts are also typical examples of bruised blades and flakes (lames & éclats machurés). Sharing these principal characteristics are the long blade assemblages from Conty, Villers-Tournelle and Flixecourt (all in the Somme area, see Figure 3.7), whilst sites of a similar kind are known as we have seen in Chapter 2 from southern Britain. So far no hearths or other structures have been found at Belloy.

Stratigraphy.

From the recent excavations the following stratigraphy was recorded.

0 -30 cm	Present-day soil consisting of a blackish humic loess (limon humifère noirâtre) only slightly calcareous.
30-50 cm	Whitish-grey sandy loess (limon sableux gris-blanchâtre).
50-150cm	Calcareous loess, light yellow slightly clayey, with grey blotches (limon calcares jaune et clair avec taches grises).
>150cm	Fluviatile gravels several metres thick containing frost shattered flint and chalk clasts.

The upper part of the profile has been affected by a later

(Holocene) soil formation, with a well-developed A2 horizon visible between 30-50 cm (Fagnart 1984a, 59). The archaeological finds occur mainly at the base of the A2 horizon but penetrate slightly into the underlying calcareous loess.

Apart from a small amount of later prehistoric material in the upper units (mainly Neolithic and Bronze Age with some Mesolithic) Commont claimed the existence of two separate archaeological levels lower down the profile. He distinguished the industries partly on the basis of surface patina, but also noted technological dissimilarities (Commont 1913, 541). This is an interesting observation since the lowermost of the two industries apparently included examples of becs and small bitruncated pieces, one of which displays a pronounced "shoulder" (Commont 1913, figs. 111 & 112). However Fagnart could find no trace of this second layer in his recent excavations and the problem has not yet been resolved. Despite the uncertainty still surrounding the second layer, the fact remains that few typical becs (more characteristic of Magdalenian facies) have yet been found in the recent excavations. It seems likely therefore that the lower level typified by white-patinated flint and a typologically distinct assemblage does not extend into the area currently under investigation.

Through the kindness of Jean-Pierre Fagnart I was able to examine some of the material at first hand during a short visit to Amiens in the Spring of 1984. Due to constraints of time I was not able to measure the assemblage in detail and most of the statistics which appear in the following sections are from Fagnart 1984a.

The Artefact Assemblage.

Raw Material.

The stone raw material at the site is exclusively of flint. For the most part it consists of large nodules with pink cortical exteriors. Inside it is characteristically black, homogeneous and has good flaking properties (Commont 1913, 541). According to Commont this type of flint with Micraster cor testudinarium fossils can be found outcropping today in a dry river valley near Yseux, a short distance from the site (Commont ibid., 541).

Occasionally some of the Belloy artefacts are made of a grey or yellowish flint, the provenance of which is unknown. Normally the original colour of the flint is heavily masked by a blue-white patina, which gives it a somewhat marbled appearance. Other artefacts are nonetheless wholly unpatinated or only patinated on one side (Fagnart 1984a, 60).

Debitage.

The debitage is typified by large blades up to 23 cm in length, detached from sizeable blade cores. Of the 38 cores from the 1983-4 excavations, 33 (85.2%) are opposed platform prismatic cores, 1 (3.7%) is a one platform prismatic core and 3 are globular cores (11.1%). The rest are unclassifiable (statistics from Fagnart 1984a).

According to Fagnart, the cores also fall into two subgroupings depending on their overall size. The smaller cores all measure less than 8 cm whilst the larger examples are 10 cm and above (the longest measuring 17.5 cm). Judging from the bladelet debitage and the various tools made on small blanks, some of the smaller cores doubtless include bladelet types (<5cm), although Fagnart does not refer to them directly.

Many of the prismatic cores exhibit a dorsal crest with relatively few showing the same unprepared cortical backing seen in a high proportion of the Southern English examples. Not all of the core striking platforms are plain, many show multiple scars of faceting. The unfaceted examples invariably display some degree of abrasion along the platform edges. However this is rarely of a heavily pronounced kind (Fagnart pers. comm.).

The analysis of 1,051 artefact butts shows that plain (62.8%) and punctiform (9.2%) types predominate, with faceted (17.9%), cortical (6%) and dihedral examples (4.1%) occurring in lesser number (Fagnart 1984a, table 11). No other details of the proximal end features are presented.

A study of the unretouched waste (Fagnart ibid., table 12), reveals that out of 1,795 artefacts over 2 cm in size, 656 are blades; 135 are bladelets, and the rest (1,004) are flakes. Most of the blades are broken, but out of the 238 complete blade specimens over a quarter are over 10 cm in length. The largest is 23.3 cm long (Fagnart ibid., 61). These details accord well with Commont's earlier observations which describe the upper assemblage containing long relatively broad blades, as well as significant numbers of bladelets (Commont 1908, 639).

Retouched Tools.

The most recently excavated material (1983-4) consists of only a few tools. It includes 8 end-scrapers, 3 burins and 2 backed elements (Figure 3.8). A variety of notched or retouched pieces including an obliquely truncated blade brings the total number of tools to 42.

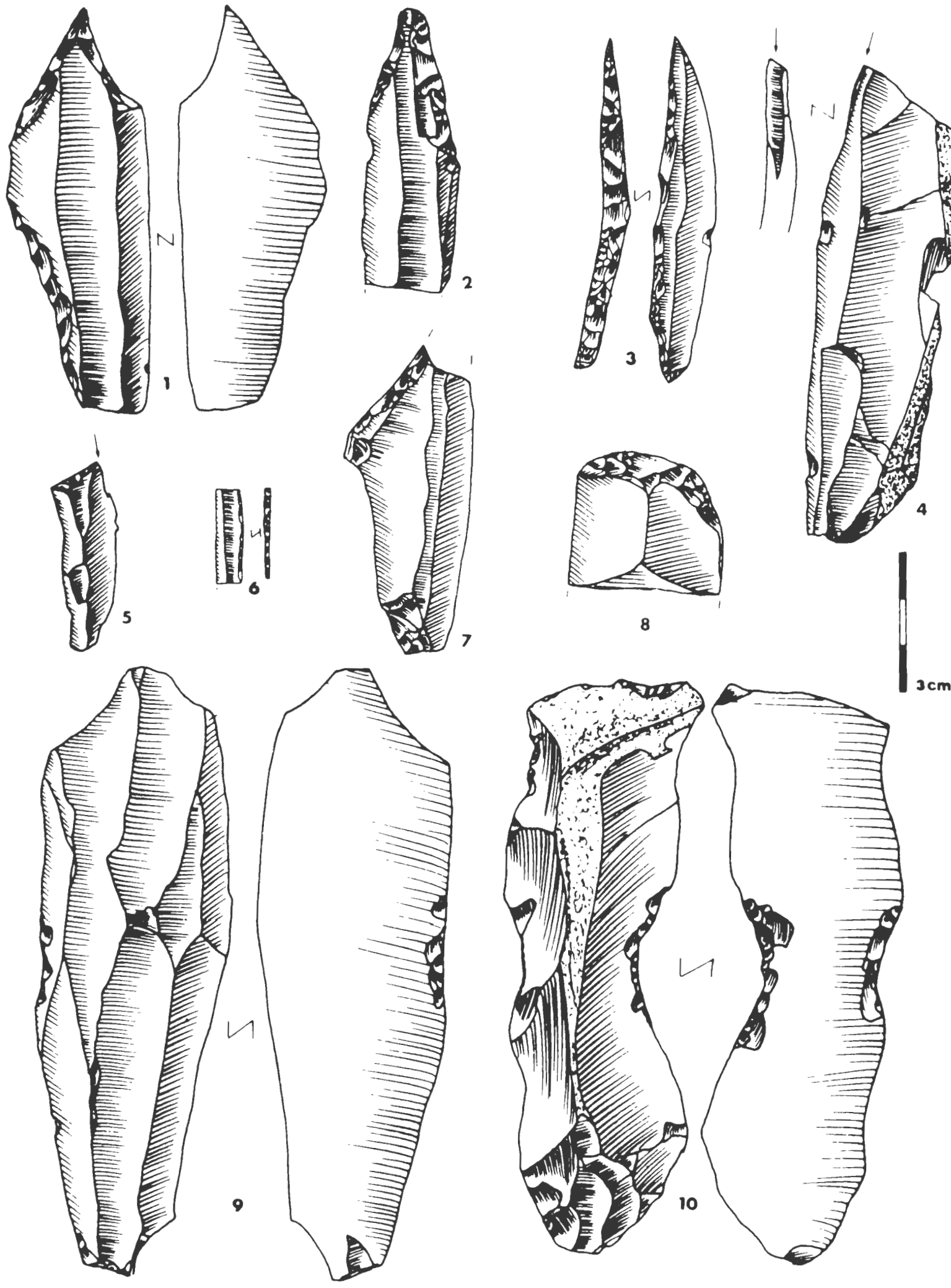


Figure 3.8 Belloy-sur-Somme: 1-2. Becs; 3. Curve backed blade; 4-5. Burins; 6. Backed bladelet; 7. Truncated blade; 8. End-scraper; 9-10. Bruised blades (after Fagnart 1984b).

End-Scrapers.

Amongst the 8 end-scrapers are 6 made on blades. The scrapers are all located at the distal ends; they are usually characterised by low scraper angles with laminar removals, although the edges are markedly steeper on the thicker flake supports.

No double end-scrapers were found in the recent excavations or by Commont. Similarly none of the scrapers occurs on a laterally retouched support.

Burins.

The few burins found in the recent excavations are entirely consistent with others found ploughed up on the surface (C. Martin coll.). These include transverse burins where the edge is first prepared by lateral retouch. Dihedral burins (mainly on breaks, e.g. Figure 3.8, 4) are also quite common, with truncation burins either single or mixed represented in the collections (Fagnart 1984a,62).

All of the burins are made on blades that are relatively thick in size. The burin facets are likewise fairly broad. They appear on the whole not to be marked by heavy edge damage.

Backed Blades and Bladelets.

A single fragment of a backed bladelet and a large backed blade are the only such elements from the excavated sample. The large backed piece is 7.2 x 1.4 x 0.6 cm, has continuous abrupt retouch along one edge and is slightly curved (Figure 3.8, 3). The retouch scars are bidirectional indicating the use of an anvil. Additional partial retouch can be seen opposite the backed edge at the proximal end. The bladelet fragment is fairly narrow (c. 0.6 cm) and is characterised by

abrupt direct retouch along one edge (Figure 3.8, 6).

Microliths.

One broken fragment of a microlith was recovered. It is broad (c. 0.8 cm), displays continuous retouch along both edges and tapers slightly towards the distal end. The piece is broken proximally.

Retouched Tool Waste.

Only two burin spalls have been recorded from the recent excavations. No microburins were found.

Bruised Flakes and Blades.

Victor Commont was the first to draw attention to blades and flakes with heavily crushed edges which he referred to as having "ecrasements" (1907, 245). Artefacts of this kind were later described by Bordes as éclat or lame machuré (Bordes 1967), literally bruised-edge blades. The bruising was ascribed to a particularly heavy form of use producing invasive scalar retouch. Since the retouch was an accidental by-product of use, Bordes suggested they should be called a posteriori tools to distinguish them from other tools in which the retouch was clearly deliberate (Bordes 1970b).

The importance of these artefacts at Belloy is considerable since they outnumber all of the other retouched tools put together. Most of them occur on blades (43), or on large flakes (10). The largest is on a blade measuring 21 cm long. In addition, Fagnart has observed that crested blades were frequently selected because of their robust form (Fagnart 1984a,65). This apparent preference for "thicker" edges is a feature I have also noted in the British assemblages (Chapter 2).

In the Belloy examples the "bruising" is characteristically concentrated in the middle section of the blade but can appear on one or both edges (Figure 3.8, 10). Forty-one percent of specimens show damage on both. In many cases the use-retouch is more clearly apparent on the ventral surface (Fagnart pers. comm.), this suggests that the implements were held ventral side up during use and employed at a fairly steep angle (Barton In press). Judging from my recent experiments it is also highly probable that such damage was produced by chopping a hard dense material such as bone or antler. The faunal remains at Belloy are predominantly of horse.

Hammerstones.

Although no hammerstones were recovered in the recent excavations, Commont describes their occurrence in his earlier work at the site (Commont 1913, fig. 110). Naturally spherical nodules of flint covered in cortex and circa 10-15 cm in diameter appear to have been used as hammerstones. Small flake removals are shown at either or both ends of the nodules and are similar to my experimentally produced examples. Commont also notes that cores were sometimes used in this way (Commont 1908, 1609).

Fauna and Dating.

Thin scatters of animal teeth and bones of weathered appearance have been recovered from the archaeological horizon, but otherwise faunal remains are not well preserved. Finds from the recent excavations consist almost entirely of a species of small horse (Equus przewalski), with a bovid (Bos primigenius?) represented by a single astragalus and vertebra

(Fagnart 1984b, 296). A noteworthy feature of the faunal assemblage is the absence of cervids. The reindeer, normally an important component in the French late glacial faunas, is entirely missing.

According to J.M. Cordy, the Belgian palaeontologist who studied the collection, there is a surprisingly high proportion of lower limb bones and cranial material represented in the Belloy assemblage. The apparent association of lames machurées with these bone scatters has led the excavator to interpret them as butchery zones where horse carcasses were jointed (Fagnart 1984a, 68), presumably for transfer elsewhere. Even though the preservation of bone material is poor it is clear that such a site represents an important accumulation of horse remains. It is also worth noting that Belloy lies near the edge of a major watercourse and in just the situation where it might have been possible to intercept migrating herds of horse. The absence of other animals such as reindeer also suggests a single major hunting episode.

Radiocarbon accelerator dating of individual horse teeth from the main long blade horizon have provided the following dates:

OXA 462	9,720 ± 130 BP
OXA 722	10,110 ± 130 BP
OXA 723	9,890 ± 150 BP
OXA 724	10,260 ± 160 BP

These dates are remarkably consistent with one another, producing an average date of c. 10,000 BP, the significance of which is discussed below. Since all the dated specimens derive from within or close to the blade scatters it is highly likely they accurately reflect the age of the Belloy long blade assemblage. Interestingly, the average age obtained from these figures comes out very close to the dates given for the German

and Belgian Ahrensburgian sites. The faunal dates also compare favourably with other dated cold open fauna in the nearby Paris Basin (J. Gowlett pers. comm.). Similar dates for both horse and reindeer faunas have also been recorded in Southern Britain (Burleigh & Clutton-Brock 1983).

Other Finds in the Somme Area

Long blade assemblages containing bruised blades have been recorded from elsewhere in the region. Prominent amongst these are finds from Conty (Commont 1913) and Villers-Tournelle (Fagnart 1984a, 67), both of which derive from the southern part of the Somme. Dredged examples from beneath the present level of the river have also recently been discovered at Flixecourte (Fagnart pers. comm.).

Discussion of European Assemblages.

Late Glacial and Early Postglacial Climatic Changes in Northwestern Europe

The traditional view that the end of the last glaciation was marked by a gradual, steady climatic improvement to fully temperate conditions has been challenged by recent work (Behre 1978). Results accumulated over the past two decades mainly from palynological sources suggests, that in Northwestern Europe, the transition from cold to fully temperate conditions is evidenced by a series of oscillations far more complex than hitherto suspected. The newest framework summarised by Behre (1967 and 1978) shows an early short-lived warm oscillation at 10,200 BP, followed by a longer cold oscillation at 10,000 BP. The cold phase terminates around 9,600 BP and signals a return to warmer fully postglacial conditions.

Early investigatory work into the short-term postglacial oscillations was carried out by Zoller on the Piottino Ridge in Southern Switzerland (Zoller 1960). He was able to establish that a distinct climatic deterioration occurred in the early postglacial period which he named the "Piottino Oscillation". The beginning of the deterioration was radiocarbon dated to 10,000 BP. Elsewhere in Switzerland, in the highlands of Vallois and Bernese, a similar cold oscillation had already been recognised by Welten (1958, reference in Frenzel 1966), and could be matched in profiles from Lake Garda in North Italy (Beug 1964).

Evidence for a short-lived warm phase, pre-dating the "Piottino Oscillation", has been found over a wide area of Northern Europe, stretching from the Low Countries in the west to the Urals in the East (Behre 1978). In Western Europe some

of the best studied pollen profiles come from the Netherlands (Van der Hammen & Wijmstra 1971). In the Puntbeek-Gele Beek valley, for instance, the authors were able to demonstrate an early climatic amelioration beginning around 10,200 BP, marked by an open sedge vegetation being succeeded by birch woodland. This phase was halted abruptly by the sudden catastrophic disappearance of the birch at around 10,000 BP to be replaced by open grassland (ibid., 204-5). An identical sudden decline in birch after an initial early rise has also been observed in diagrams from the Dinkel Valley (ibid., 67).

Elsewhere in the Netherlands, changes of a similar nature are documented for the vegetation on the sandier soils of Friesland at Westrhauderfehn (Behre 1967) and Waskemeer (Casparie & Van Zeist 1960). Unlike the Dinkel Valley sites, the Westrhauderfehn diagram shows a rapid rise of pine, followed by a sharp fall-off corresponding with increases in non-arboreal pollen. A broadly comparable sequence of events can be traced in the Waskemeer profile. Since the Friesland localities were amongst the first where these short-term events were recorded, the name "Friesland Oscillation" is now the generally accepted term for the early warming phase (Van der Hammen 1971).

Outside the Netherlands a mild oscillation corresponding closely to the "Friesland" has been recorded in the pollen profiles from Stellmoor, North Germany (in the levels associated with the Ahrensburgian horizon) (Schütrumpf 1943) and at the Belgian locality of Belle-Croix (Van der Hammen 1951).

Whilst widespread agreement now exists over the nature and timing of this "Friesland" phase, considerable doubt surrounds the succeeding "Piottino" oscillation. Indeed various authors

have abandoned the term altogether which has led to a proliferation of many alternative regional names being used instead (see Behre 1978, table 1). The main problem has been that at the Piottino type-locality itself the major cold phase ("Piottino Oscillation") has recently been shown to last from the Younger Dryas until latest Pre-Boreal times without any signs of intermediate improvement (Kuttel 1977). One possible solution to this difficulty has been put forward by Behre (1978) who proposes the new term "Kryomer" corresponding to Pollen Zone IVb and perhaps lasting about 400 years. In northern Europe the colder period is known from Dutch pollen profiles where it is called the "Rammelbeek phase" (Van der Hammen 1971). It is noteworthy that in the Netherlands the cooler conditions of the "Rammelbeek" may only have lasted 200 years (Van der Hammen ibid.).

The above synopsis highlights some of the current problems concerning the sequence of events marking the Pleistocene/Holocene boundary. The vegetational changes which took place at this time were undoubtedly a response to worldwide climatic events. No attempt has been made here to examine the mechanisms behind these fluctuations (but see Van Geel & Kolstrup 1977). Evidence for short-term oscillations beginning with a general warming at 10,200 BP now appears to be widely accepted. The effects this must have had upon the movements of animal and human populations must have been considerable. That the first warming phase was short-lived is shown by the rapid return of open grassland at around 10,000 BP. The duration of this colder period in Europe is not well understood, but it is interesting to note that fauna indicative of cold open conditions are still present in Southern Britain and Northern France up until c. 9,700 BP.

Similarities between British and Northwest European Long Blade Assemblages.

Bromme Complex.

Little comparison seems justifiable between the Southern Scandinavian Bromme Complex and the British Long Blade assemblages. In the first place the Bromme sites appear to date mainly to the Allerød stage (Zone II) of the late last glacial, whilst the balance of probability is that the British sites all belong either within Zone III or the early part of Zone IV.

The Bromme assemblages are based on thick, heavy blades made with a predominantly hard hammer flaking mode. One platform pyramidal cores are a common by-product of blade production. In direct contrast, the British long blades are struck from opposed platform cores using a soft hammer flaking technique. The British assemblages frequently include bladelet cores; these are all but absent in the Bromme debitage where the rare appearance of bladelets owes more to core preparation methods and seems largely fortuitous. Although cresting is used to repair the main flaking face, it is seldom employed in the initial preparation of Bromme cores. Another difference, often seen in the Southern British material, is the presence of faceting on the striking platforms of blade cores. Adjustments to the Bromme platforms almost always involved the removal of successive core tablets.

Of the three major tool classes in the Bromme assemblages all are made on blade or flake blanks. Unlike the British examples small blades or bladelets were never used as tool supports. A common component of the Bromme assemblages is the tanged point. Isolated and undated finds of large tanged points have sometimes been interpreted as evidence of a Bromme

presence in Southern Britain (Jacobi 1980). However, since large tanged forms are also recorded from Ahrensburgian (Rust 1943; Taute 1968; Tromnau 1975) as well as Magdalenian contexts (Sonneville-Bordes & Perrot 1956; Combier & Desbrosse 1964), such an assumption must be questionable. So far, the only dated British examples come from the Upper Palaeolithic site at Hengistbury Head, Dorset (Barton & Huxtable 1983). These pieces however are made with a soft hammer flaking mode and are dissimilar to many of the Bromme examples. Apart from the tanged points, both end-scrapers and burins can occur on tanged supports in Bromme toolkits. Neither these forms nor large tanged points have yet been found in a British Long Blade assemblage.

The total absence of microliths or the microburin technique in Bromme assemblages is another point of divergence with the British material. Likewise bruised flakes and blades are seldom if ever present in the Southern Scandinavian assemblages. Finally, it could be added that there is no evidence that the very clear characteristics of the Bromme industries merely reflect the local raw material; i.e. there is every reason to suppose that if Bromme industries were found in Britain, they would look just the same as they do in Southern Scandinavia.

Ahrensburgian Complex.

In contrast with the above, important similarities can certainly be recognised between the British material and some of the Ahrensburgian assemblages. The Ahrensburgian blades are generally well made and were detached from opposed platform prismatic cores. Blades may vary in size from 20 cm or more to bladelets under 5 cm in length. Technologically they are very

similar to the British examples. The blades are characterised by large rather than punctiform butts, whilst features on the bulbar surfaces indicate a predominantly soft hammer percussive mode (most probably soft stone). Preparation of the blade cores involved the production of a frontal crest and as with the British examples there is little or no modification to the back of the core. Judging from the low proportion of faceted blade butts in the Ahrensburgian sample examined, rejuvenation of the striking platforms was mainly carried out by the removal of large core tablets, plentiful evidence for which occurs in the flint debitage. Slight differences may be recognised here with the British assemblages where faceting is used fairly commonly (i.e. present on >20% of blade debitage in six of the nine featured assemblages). Characteristics of this kind give the British long blade assemblages a certain distinctiveness.

Many of the Ahrensburgian retouched tools are made on relatively small blanks, bladelets frequently being used as supports for flint projectile equipment (e.g. Ahrensburgian points, Zonhoven points and microliths). The toolkits of both the long-blade Eggstedt-Stellmoor and small-blade Tegel-Ketzendorf groups are characterised by such forms although implement totals are very much lower at the long blade sites. A recurrent feature in all the German assemblages is the dominance of obliquely truncated (Zonhoven) points over diminutive tanged (Ahrensburgian) points, sometimes to the total exclusion of the latter. Although important divergences exist between the German and the British material it is noteworthy that microliths with oblique truncations have been recorded from five of the nine long blade assemblages discussed in Chapter 2. By contrast, the small Ahrensburgian tanged point is so far only known from a single Southern British

context (Avington VI).

Other components making up the Ahrensburgian toolkit include microliths retouched down one edge ('Lanzettespitzen'), and geometric 'dreieck' or 'viereck' types. Typologically identical pieces are to be found in several of the Southern British sites, most notably Avington VI, Swaffham Prior, and Sproughton.

Apart from small flakes and bladelets it is clear that larger blanks were used for making tools also. In the North German examples burins are sometimes made on long blades, whilst the edges of long blades and flakes frequently show heavy signs of utilization or bruising. Again, parallels may be drawn here with the British assemblages.

With the exception of one assemblage (Geldrop I), all the other known dated occurrences of Ahrensburgian material fall within the later stages of Zone III. In some instances (for example Stellmoor and Remouchamps) the occupations apparently coincide with the Friesland milder oscillation (c. 10,200 BP): a period which in Northern Europe may only have lasted 200 years. Even if the majority of Ahrensburgian toolkits are eventually shown not to belong to this one short oscillation, it might be possible to explain any slight variation in the flint equipment in terms of the kind of diversity expected over a geographically extensive social territory, rather than as a time transgressive characteristic. Such factors might explain the tendency, already noted by Taute, for sites further west to contain higher proportions of backed pieces. If this hypothesis is correct and the backed pieces are replacing tanged points in western Ahrensburgian toolkits, it is not greatly surprising that Ahrensburgian points are all but absent from Britain and Northern France. In this way, the Southern British and French

sites which lie on the western fringes of the main Complex could be seen as the functional equivalents of the Ahrensburgian long blade sites, with the only significant differences being in the presence of alternative projectile-head equipment.

Belloy-type Assemblages.

Although various long blade sites are known from elsewhere in the region, the best documented information of this kind comes from the type-locality of Belloy-sur-Somme itself. The age of the site (c. 10,000 BP) demonstrates its broad contemporaneity with the Ahrensburgian sites of Stellmoor and Remouchamps, and indeed the radiocarbon dates of all three cannot be separated at one standard deviation.

As in the Ahrensburgian, blade manufacturing techniques are generally similar to those observed in the British long blade assemblages. Blade cores are predominantly of opposed platform prismatic type, with the initial stage of reduction involving the preparation of a frontal crest. A particular feature in common with the British material is the use of platform faceting, evidence for which is also present on many of the blade butts. A noticeable difference however, is the use of cresting at the back of the core. As we have seen, dorsal cresting is not commonly employed on the British long-blade cores. In common with the other contemporary European long blade assemblages, the French material displays significant numbers of bladelets and small (bladelet) cores.

As in the case at many of the British sites, retouched tools only make up a small proportion of the whole flint assemblage. At Belloy, they comprise under 4% of the total flint recovered. The tools include transverse burins, a type

common in the German Ahrensburgian assemblages and likewise, though more sporadically, in the British material. Apart from end-scrapers, notably present are backed and geometric microlith types. These too have parallels in the British assemblages.

Heavily edge-damaged blades and flakes - lame & éclat machurés - are a common characteristic of the Belloy assemblage. Like the British examples they generally occur on thicker long blades and flakes. At the French site, however, they exist in much greater number than at any of the British sites.

In summary, even closer parallels can be recognised between the British and French assemblages than with the typical Ahrensburgian examples. It has been suggested above that the British and French sites probably represent a continuum of the extensive Ahrensburgian social territory across the North European Plain. In the more westerly regions the assemblages contain slightly different flint projectile equipment, which rarely includes diminutive tanged forms.

Site Function.

Having outlined the general similarities between the S. British and European long blade assemblages, I will now briefly review the evidence concerning the likely function of these toolkits and how the sites may be interpreted. Although considerable variation exists between the long blade sites in question, a number of features are common to nearly all of them. These include:

1) Their close proximity to sources of good raw material,

2) a relatively low proportion of retouched tools to unretouched waste and,

3) the absence or near absence of burnt material.

Of these, the first characteristic is the least surprising and indeed is highly predictable, given the fact that the size of the units of raw material will ultimately determine the maximum size of blade blank produced. Thus the French, German and British long blade sites are mostly located within a short (walking) distance of primary sources of raw material, which in this case is chalk flint.

The second feature of these sites is the high number of waste pieces to retouched elements. This seems closely dependant on the type of site activities undertaken and the length of time a site was occupied. Before discussing what these activities might have been, it is important to mention the third common element of long blade assemblages, namely the almost total lack of associated burnt material. This is unusual since the presence of burnt artefacts, charred bone and wood or structural evidence (hearths) is commonly present at so-called occupation sites. The absence of such remains at many of the long blade sites is striking, and, in my opinion, bespeaks the strictly short-term nature of the majority of the occupations.

"Quarry" sites vs. "butchery" sites.

Two models are juxtaposed: neither is mutually exclusive and indeed in certain instances both might be considered to be partially applicable. In the first, long-blade sites are represented as provisioning locations where flint is procured and the raw material (perhaps in the form of prepared blanks or core roughouts) is removed to other localities. The second model sees the long-blade sites as special purpose sites where specific tasks (e.g. butchery) were carried out. These are

also envisaged as short-term non-residential occupations peripheral to "home bases" and perhaps other task specific areas.

Quarry sites of modern stone-using peoples are well-documented in the ethnographic literature (Allchin 1957; Gould, Koster & Sontz 1971), whilst various archaeological examples have been described from the North American continent (see Ericson and Purdy 1984 for recent references). Generally speaking the sites are characterised by large quantities of unused stone artefacts, with relatively few retouched tools. Collecting the material may be undertaken as a special trip or in the form of a casual visit made during the course of other activities ("embedded procurement", cf. Binford and O'Connell 1984). Evidence of the latter is difficult to demonstrate in the archaeological record. In the late last glacial some well-known examples of "procurement" involve long distance movements of raw materials (and perhaps people), rather than local ones, but this maybe because highly exotic objects are easier to identify. For instance in Younger Dryas contexts of Eastern Europe, small tanged-point industries made on so-called chocolate flint can be found more than 400 km from the raw material source (Schild 1979, 813). Similar patterns of movement during this period are implied by the presence in the Belgian Ahrensburgian of fossil molluscs deriving from the Paris Basin (Dewez 1974), whilst parallels of this kind are known from the Magdalenian (Veil 1983) and have been claimed for various British Upper Palaeolithic sites also (Campbell 1977).

The application of simple procurement or quarrying models does not accord well with the existing data from long blade sites. For one thing, if raw material was being moved from one

locality to another it may well have been transferred in the form of prepared blades (cf. Late Magdalenian examples from the Paris Basin: Leroi-Gourhan and Brézillon 1972) or core roughouts. A reasonable expectation would be for recipient sites to contain more retouched tools and fewer debitage products than the quarry sites. This certainly seems to be the case with the rich Magdalenian occupation site at Sweikhuizen, Netherlands (Arts & Deeben 1984), where prepared blanks are thought to have been brought from quarry workshops several tens of kilometres away in Belgium (e.g. Kanne and Orp, Vermeersch 1981). Superficially, a similar argument may be put forward to explain the dichotomy between the Ahrensburgian long blade sites (e.g. Neuenkirchen and Hörpel) and the small-bladed equivalents (e.g. Deimern and Ketzendorf), particularly since retouched tools are well-represented, in one group (small-blade) and not the other. Unfortunately, this model fails on the grounds that the debitage/retouched tool ratios remain more or less constant from site to site and there is no positive proof for the importation of either prepared blades or cores to the small-blade sites. Given that these two groups do not represent distinct cultural variants (for the celebrated debates on this subject, especially in relation to the French Mousterian, see Binford & Binford 1966, 1969; Bordes 1961; Bordes and Sonneville-Bordes 1970), the differences may best be explained in terms of site activities. This is a subject to which I shall return to shortly. Meanwhile, the best evidence for dispensing with the "quarry" model is provided by the long blade site at Stellmoor, North Germany. Here, large blades were found in association with flint projectile tips, over a hundred arrowshafts, and other signs of what must have been a massive reindeer kill, or succession of kills (Bokelmann 1979).

This was clearly not a quarry workshop in any sense of the term.

A better adapted model for interpreting the long blade sites is that of the task-specific or "special purpose" site (Binford 1983). Included in this category of site are certain types of butchery location. In his account of Eskimo hunting and butchery practices Binford describes one instance where:

> "The caribou were actually hunted and killed at quite some distance from the (main processing) site itself. So as not to interrupt the movement of herds of caribou arriving subsequently, the eskimo hurriedly butchered the animals in the location where they were shot and then dragged the desired portions of the animal back behind the willows to the Kongumuvik site" (Binford 1983, 133; my brackets).

Analogous examples are hard to find in the archaeological record because of the frequently poor preservation of organic materials. However, given reasonable conditions it might be predicted that kill/butchery sites of the kind suggested above would occur in the form of isolated flint and bone scatters, with the only surviving traces being a few broken tools and discarded portions of the kill. Some similarities may be recognised here with lake-edge site of Stellmoor where the remains of slaughtered reindeer were found with relatively sparse flint equipment including projectile heads and large blades. This contrasts sharply with the neighbouring small-blade assemblages which are characterised by especially large quantities of end-scrapers. Differences of this kind lead me to suspect that the Ahrensburgian small-blade group represents the second type of site mentioned by Binford, where, at some distance from the kill, the main processing of the carcasses and skins was carried out.

The description of Binford's kill/butchery site also accords well with the excavated concentrations at Belloy, the long blade site on the river Somme. By substituting the

caribou herds for wild horse and the Alaskan barren-lands for the open tundra of Northern France, a not dissimilar 'scenario' to that outlined by Binford might have been enacted on the banks of the river Somme.

The predominance of horse is a striking feature of the Belloy faunal assemblage. Like the reindeer, the horse is a migratory animal, making its movements highly subject to predictable seasonal factors (Bökönyi 1974). Although well-adapted to cold, steppic conditions, the horse's mobility seems to be restricted by the availability of standing water; even during the winter migration, herds were unlikely ever to have strayed far from watering places (Heptner & Naumov 1966). A combination of heavy meat weights and predictable behaviour would thus have made this animal a particularly attractive target to man. The location of the Belloy site, near a major watercourse, would also have provided a natural point to intercept migrating herds of horse.

The task of butchering slaughtered game undoubtedly required the use of stone tools. Although this could be carried out in a number of different ways it is generally recognised amongst flint technologists that using large tools with strong cutting-edges is one of the most effective means of undertaking tasks of this kind (Jones 1980; Toth 1982). The prospect of processing large numbers of animals using only small flakes must have been too daunting to contemplate, even for the accomplished hunters of the late ice age! In the apparent absence of heavy-duty chopping tools, it is likely that large flakes and blades would have fulfilled the same purpose being particularly suitable for separating the haunches and jointing the meat. Evidence that animals were dismembered and the meatier parts carried away is convincingly demonstrated

at the French site of Belloy by the high proportion of lower limb bones and cranial material in the sample.

One of the characteristics of long blade assemblages is the presence of heavily bruised flakes and blades. Similar damage has been shown to develop experimentally on flint artefacts used to chop bone and antler (Bordes 1971; Barton In press). Such artefacts would certainly be expected to occur at sites where animal carcasses were butchered, and it is therefore hardly surprising to find many such examples in the Belloy assemblage.

The occurrence of small but significant numbers of retouched tools is a consistent feature of long blade assemblages. Using the analogy of short-stay butchery camps their presence could be attributed to the need for interim repair of broken hunting equipment. The few end-scrapers and burins which also frequently accompany them would indicate other limited processing activities, or even the makeshift repair of damaged bone, antler or leather equipment.

In summary therefore it is hypothesised that long blade sites which have low numbers of retouched tools and also feature heavily bruised long flakes and blades, represent butchery locations of one kind or another. The presence of flint projectiles and other lithic equipment suggests that ancillary activities, such as the repair of hunting tackle, were also carried out. Many of the sites occur around the edges of large lakes (e.g. North German sites) or along the banks of major watercourses (e.g. Southern British and Northern French sites). Such locations would have been strategic points for intercepting migrating animal herds and may well explain why they were sited at these places.

Chapter 4.

The Mesolithic Assemblage from Hengistbury Head.

Introduction.

The data presented below are based almost entirely upon the study of the Mesolithic occupation site at Hengistbury Head, Dorset. The case study concentrates on technological and typological aspects of the flint assemblage, which will serve as a basis for making comparisons between the Early Mesolithic and other Late Devensian and Early Flandrian flint technologies in southern Britain. These will be dealt with in ensuing sections.

History of Research.

Although Mesolithic material had frequently been collected from the surface of Hengistbury Head (Rankine 1956; Palmer 1977), until recently it had never been recovered in any quantity from a secure stratigraphic context. In 1977 the chance discovery of a sizeable assemblage of Mesolithic artefacts, including many microliths, was made by a local flint collector, Mr. Ronald Powell. The finds indicated a more than merely background presence of Mesolithic material and enabled the first full-scale archaeological investigation of the site to take place.

Before the recent discovery most of the artefacts had been picked up as stray finds, residing in private collections with only general locational details such as "Warren Hill", "North Field", or "South Field" indicating they came from the headland or adjoining areas, but little other information. In the winter of 1977, Mr. Ronald Powell, a local Southbourne man and amateur archaeologist noticed an unusual density of Mesolithic

artefacts eroding out of a sandy area near the cliff-edge on Warren Hill, part of the headland's upland plateau (figure 4.1). Unlike so many 'casual' collectors he assiduously noted where they came from, marking the back of each artefact with an eight figure grid reference. Such details proved immensely useful in re-locating the site and linking this initial surface collection with the assemblage that was later excavated.

In 1980 the writer and a senior colleague, S.N. Collcutt, were invited by Bournemouth Corporation to organize a feasibility study of the archaeological deposits at Hengistbury, with special reference to the Upper Palaeolithic and Mesolithic sites on the southern cliff-edge. Following the recommendations of the report a plan was implemented to conduct rescue excavations of the sites. Urgent priority was given to investigating the Mesolithic site which was being severely damaged by cliff erosion and work was begun in September of the same year.

By the time the excavations started, Mr. Powell had already carefully catalogued well over 3,000 finds from the one site. Entirely due to his persistent efforts (encouraged by other flint collectors such as the Marchese A. Nobili-Vitelleschi, Messrs. A.J. Cotton, R. Atkinson and others) the site was eventually brought to the attention of the museum authorities in Bournemouth. It therefore appears singularly fitting that the site should have become known as the Powell Mesolithic site, for without his interest and resourcefulness it is extremely doubtful whether any excavation of the site would ever have taken place.

After preliminary trial excavations in September 1980 demonstrated the richness of the site (Barton 1981), further archaeological work was undertaken over three consecutive

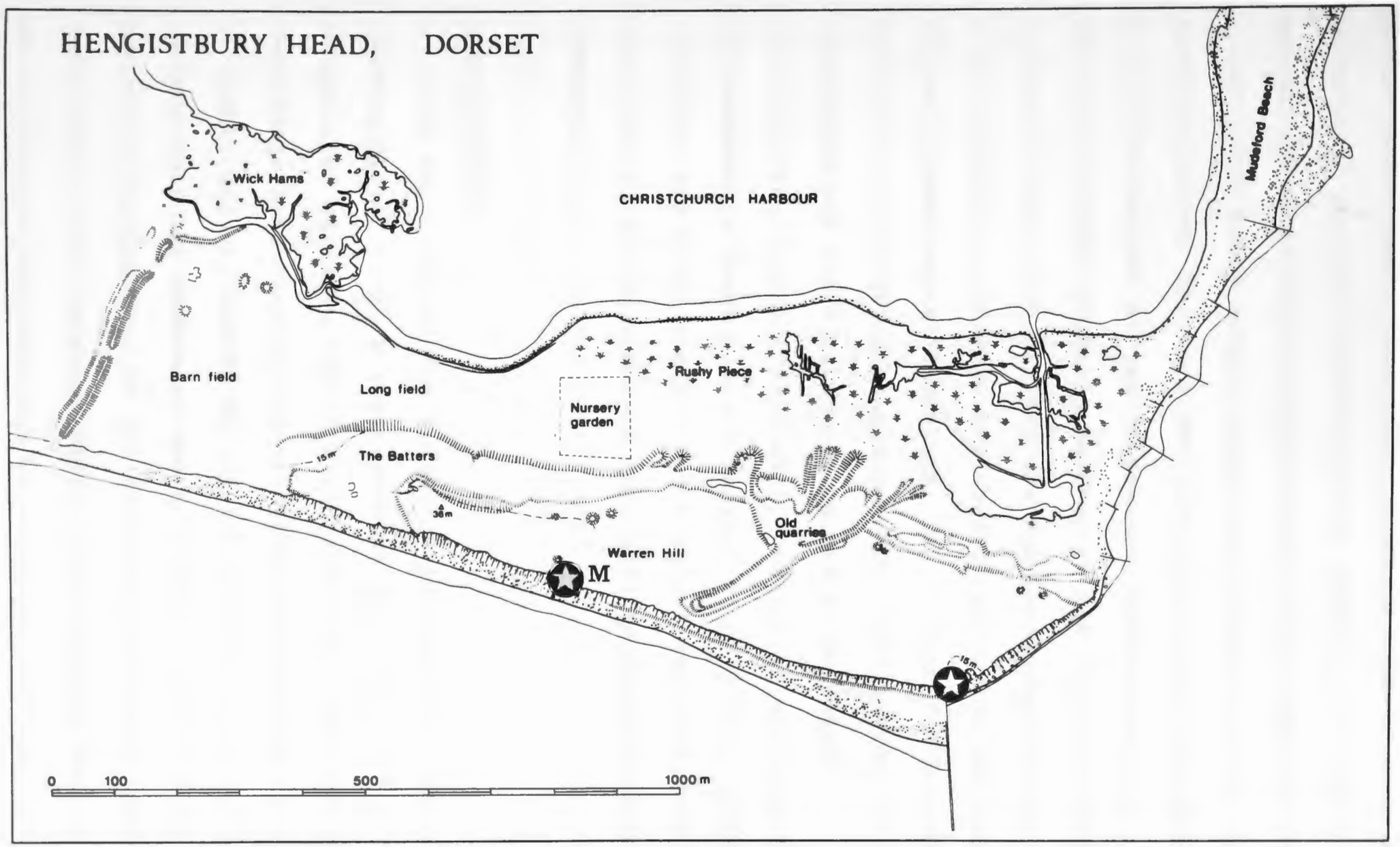


Figure 4.1 Hengistbury Head: M- Mesolithic site location.

seasons from 1981-1983. The project was organized from the Donald Baden-Powell Quaternary Research Centre, Oxford University, and was directed by the writer. In the four seasons of excavation 78 square metres were examined in detail whilst other badly eroded areas were gridded and the surface finds collected. The work was carried out with the permission and active support of the landowners, Bournemouth Corporation, who also provided valuable back-up in the form of equipment and financial help. The project was also supported by other grants from the British Academy, the Department of the Environment, Dorset Archaeological Committee, the Prehistoric Society, the Society of Antiquaries, the Wenner-Gren Foundation, the Leakey Foundation and the Friends of the Red House Museum, Christchurch. The archaeological collection and archive are to be permanently housed in the Russell-Cotes Museum, Bournemouth. Copies of the final archive and computer data are available for consultative purposes at the Donald Baden-Powell Quaternary Research Centre, Oxford University. Oxford.

Site Location.

The site lies on the eastern slope of Warren Hill, a plateau rising 30-36 m above present sea level. The site itself is situated close to the 30 m contour line. The view extends over large stretches of the existing Dorset coastline, the Isle of Wight, and northwards beyond the estuary of Christchurch harbour into the Hampshire Basin. Part of the site is today perched close the edge of the present cliff which drops almost vertically to the seashore below. The original southern extent of the site is not known and it is likely that this portion of the site has been damaged by cliff erosion. Some 10-15 metres inland, further areas are protected by a low grassy bank which

runs parallel to the present cliff line and demarcates the edge of a earlier coastal path. A slight hump marking the remains of a Bronze Age barrow, originally excavated in 1919 by H. St. George Gray (St. George Gray 1919) is located approximately 35 m north-west of the Powell site.

The present Dorset coast owes its shape largely to the scouring effects of the sea, and we may note that large-scale ironstone quarrying operations in the 19th century did much to increase the rate of erosion of the headland itself. It has been estimated for instance that over 150 m of land has been washed away by the sea in the last 200 years alone (Cunliffe 1978:11). More recently, the removal of ironstone in 1983, ironically for constructing a protective sea wall, produced calamitous results to the southern cliff. It has subsequently receded in some places by several metres (Lavender 1984:4).

The foregoing information highlights various important points concerning the Powell site and its location. In particular, the present topographic position of the site bears little if any relation to the original one. It is essentially an inland site, not a coastal one. Evidence from south-eastern Britain (Devoy 1982) indicates a fairly rapidly rising sea, advancing quickly up the English Channel through the Dover Straits by c. 9,600 BP to a level of c. -30 m by 9,300 BP. Elsewhere in Northern France and Belgium sea levels at between -20 and -30 m have been recorded from Pre-Boreal off-shore peats (Ters 1973). These measurements suggest that the contemporary Early Mesolithic shoreline may have lain close to the 15 fathom (90 foot) sub-marine contour which occurs approximately 15-20 km south of Hengistbury. Thus the Early Mesolithic occupants of the headland would have looked out over a substantial dry-plain area, probably traversed by a major

east-west river, the 'Solent River' (Reid 1898), with the sea lying some distance further south.

It was not until around 6,000 years ago that the Isle of Wight was finally separated from mainland Britain and the sea approached its present levels (Scaife pers. comm.). This and the extensive cliff-erosion which has occurred since the nineteenth century (Cunliffe 1978) are factors to be taken into account when attempting to reconstruct the Mesolithic site and its environs.

Geological Background.

The headland is composed of Eocene marine and dry-land deposits belonging to the Bracklesham Series (not the older Bagshot Series as shown on GS 329, 1893) which outcrops further to the west, near Bournemouth. The series comprises four main units (Reid 1898; White 1917). From the base upwards these are the Boscombe Sands; the Lower Hengistbury Beds, with flint pebble bands derived from Upper Cretaceous Chalk; the Upper Hengistbury Beds, with ironstone nodules or "doggers" and, at the top, the Highcliff Sands.

Overlying these Tertiary deposits are superficial Pleistocene gravel spreads, first described as Peistocene Plateau Gravel in an early account by Lyell (1827). They consist largely of angular and rounded flint cobbles derived from the Upper Cretaceous Chalk. The flints display heavily battered surfaces and are generally white patinated. The gravels also contain small pebbles of silicified sandstone or "sarsen" (Melville and Freshney 1982). The small size of flint material and its general unsuitablity for flaking purposes has important implications for the archaeological site and will be discussed below.

Capping the gravels are sands of aeolian origin. Little is known of the windblown deposits of this area. Perrin et al. (1974) include the Hampshire Basin in their loessic province, although no samples were taken by them from the Bournemouth area. Localised coversands have been recognised for many years but their age is uncertain. Earlier suggestions that they could be dated by virtue of containing archaeological type-fossils of the "Aurignacian period" (Palmer and Cook 1923) have now been largely discounted. Quite apart from the inherent difficulties of such a 'relative' dating method, the original arteract identifications are now thought unconvincing. More recent work at Hengistbury by Dr. S. Collcutt and Dr. R. McPhail, and elsewhere by Catt (1977) suggests that the blown sands of this kind began to be deposited during the Late Devensian.

Sedimentary Context.

The Mesolithic site is stratified in fine windblown sands about a metre in thickness. According to preliminary particle size analyses the sands are homogeneous (S.N. Collcutt pers. comm.), but there is a slight tendency towards increased coarseness near the base of the profile. A thin scatter of rounded and angular white patinated flint gravel occurs throughout the sands. This is thought to be the remains of soliflucted plateau gravel, probably derived from further upslope on Warren Hill. In places, particularly near the base of the sands, the gravels form a compacted pavement similar to others observed on the headland. These features appear to be entirely natural in origin.

The fine windblown sands are marked by the horizons of a well-developed humus-ferric podzol (McPhail pers. comm.). The

typical profile through the sands shows a dark grey A1 horizon ranging from 30-50 cm thick, overlying a bleached pink A2 horizon about 50 cm thick. An uneven but highly compact pan occurs towards the bottom of the profile. It consists of Bh, Bf and Bhs horizons. McPhail suggests (pers. comm.) that the continual rising and falling of soil water has tended to concentrate humus and sesquioxides into cemented Bh and Bs horizons, producing a very firm pan.

Under the bank which protects part of the site from modern erosion can be seen a slightly deeper profile. Here, the 'main' sand unit is overlain by c.60 cm of Ea1 and Ah/Ea horizon material which represent later and rather more poorly sorted sediments. The deposits consist of sand and turf lines which could be of very recent origin (Collcutt pers. comm.). The base of these deposits shows a sharp break with the underlying fine sands, most probably representing an important hiatus.

The build up of successive sand and turf lines protecting the site may have been extremely rapid, and possibly occurred within the past hundred years. Some evidence for a rapid increment has been found in a test trench cut north of the site. This exposed a part of St.George Gray's spoil tip left from his 1919 excavations of Barrow E, 35m N.W. of the Mesolithic site. It is significant that a lobe of his spoil heap (containing fragments of broken iron pan) was visible towards the base of the sand and turf lines at that point, and 'sandwiched' within them.

The Mesolithic artefacts occur well within the main sand unit and near the top of the bleached A2 horizon of the present-day humo-ferric podzol. Although the degree of soil development at the time of the occupation is conjectural, the subsoil horizons of today's podzol show traits of an earlier

brown soil origin (McPhail pers. comm.). This is an interesting observation, since it is the first evidence we have that the headland was doubtless wooded during the Mesolithic period. From fabric studies of individual sand grains it is possible to recognise a succession of events (limpid clay illuviation followed by dusty clay illuviation) which elsewhere in Southern Britain have been tentatively identified with Mesolithic disturbances to woodland, e.g. at Selmeston, Sussex (Scaife and McPhail, 1983) and High Rocks, Kent (McPhail et al. In press). It is therefore well within the bounds of possibility that the Mesolithic occupants of Warren Hill likewise produced significant effects on the woodland.

Although pollen from the site is only poorly preserved (S. Colledge pers. comm.) substantial evidence for at least localised woodland cover during the Early Flandrian is provided by a series of well-dated sequences in southern Britain (Kerney et al. 1980; Scaife 1982). Pollen and plant macrofossils indicate that although birch was locally present, pine seems to have been dominant on the sandier soils of Dorset and Hampshire (Seagrief 1959; Seagrief 1960).

The Excavations.

The fieldwork at the site was spread over four seasons 1980-1983, with an average of three weeks spent on excavations each season. The project employed an average of fifteen individuals per day, made up largely of university students, but including many full-time archaeologists and various colleagues from overseas. During the whole period, 78 square metres of the site were examined in detail with a further area of approximately 50 square metres covered by surface collection.

The excavation programme concentrated its efforts in the first two seasons, on the area along the southern cliff-edge where the worst erosion damage was occurring. In addition to this a long exploratory trench was cut northwards to establish the full extent of the occupational scatter. In the final seasons 1982-1983, work centred upon the richest area of the site in the north-eastern section where high concentrations of retouched tools suggested an important focus of site activity (Figures 4.7; 4.9; 4.11). The overall aims of the project were three-fold:

(1) to examine areas of the site immediately threatened by destruction, including partially eroded levels near the cliff-edge;

(2) to obtain samples of well-stratified Mesolithic material and where possible additional dating and other contextual evidence;

(3) to devise the most appropriate methods of excavation given the problems of (1) and the large numbers of stone artefacts recovered (>30,000).

Excavation Techniques.

A conventional metre grid system was laid out and oriented with respect to magnetic north. Individual metre squares were divided into eight rectangular sub-quadrants (50 x 25 cms) with the long axis oriented north-south. The sub-quadrants form the standard horizontal unit at the Powell site to which all finds are referable.

A spit system of excavation was used, trowelling the sediments in artificial horizontal "slices" of 2 cm. In the absence of any recognisable microstratigraphy (e.g. dune bedding, lag deposits etc.) this method proved to be a fast and

most efficient technique of excavating finds distributed over a wide vertical range (see below: Taphonomic Considerations).

Where the windblown sands were already exposed on the deflation surface near the cliff-edge, a surface collection by metre squares preceded excavation. In areas under the protected bank, the modern sand and turf lines were first removed down to the windblown sand unit. Thereafter the deposits were hand-trowelled in sub-units of metre squares.

Close vertical control was maintained throughout by taking height readings at regular intervals at the four corners of the metre square after each spit using "dumpy level" measurements. In addition, spot heights were recorded for each tool found *in situ*. Details of square number; depth, x-and y- coordinates; and information concerning orientation, angle and direction of dip were entered on finds cards and bagged with the artefact. Artefacts less than 1 cm long (other than retouched tools or tool waste) were not treated individually but were allocated a general finds card and collected according to square number, sub-quadrant and spit number.

The separate bagging of individual finds is a simple precautionary measure to prevent unnecessary damage of the artefacts. For example, it is *essential*, if any low magnification edge-damage studies are to be carried out, that any kind of post-excavational micro-chipping of the edge is avoided.

Since the overall density of artefacts varied considerably with depth (Figure 4.2), the spits were sometimes doubled up into 4 cm units for convenience. For instance, it rapidly became apparent that artefacts were more dispersed and much fewer in number in the grey A1 horizon than in the underlying bleached pink A2 horizon where they appeared to form a marked

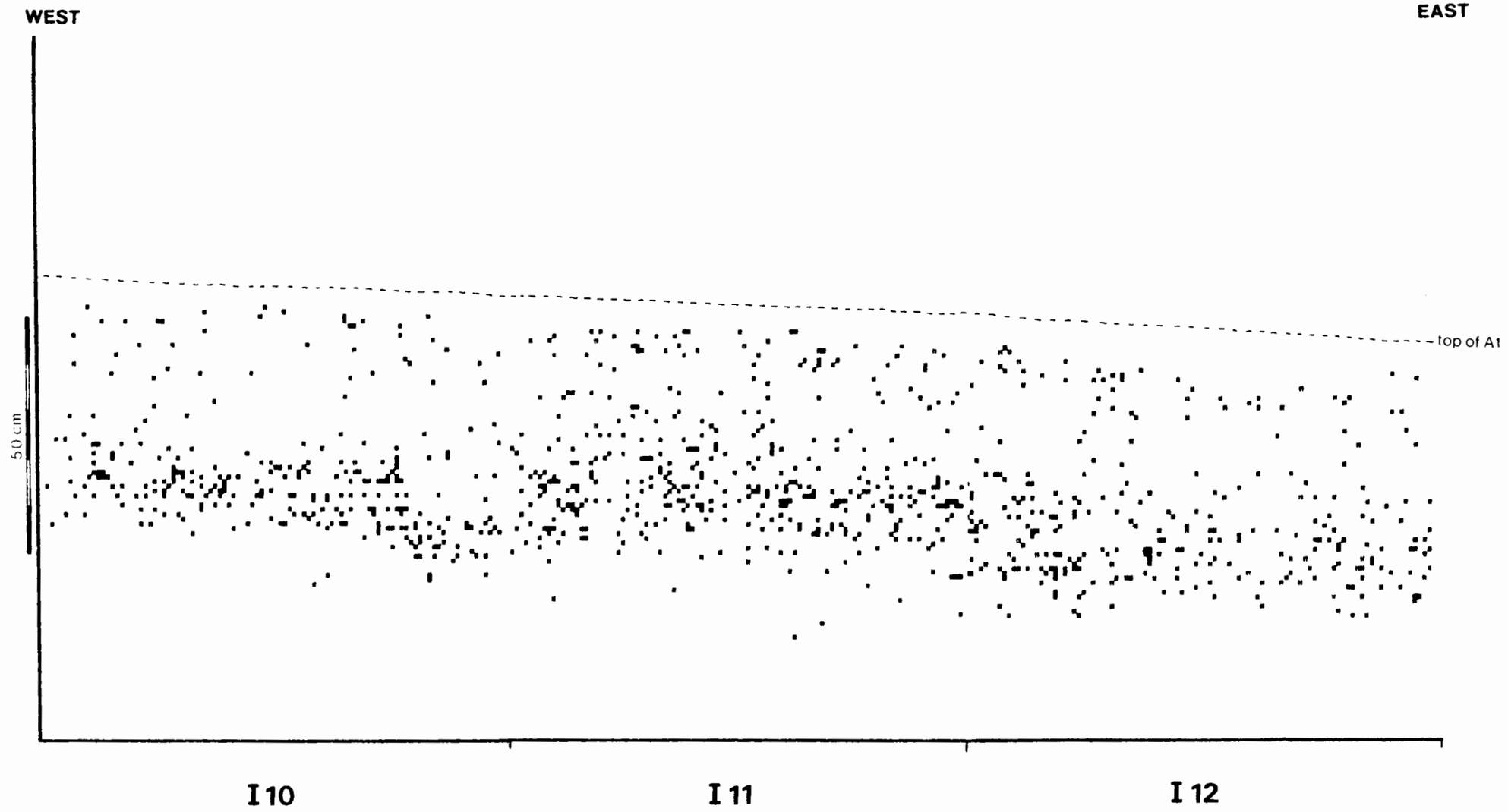


Figure 4.2 Powell Mesolithic site: Vertical distribution of artefacts from three square metres.

concentration 20 - 30cm thick. In the first season the grey sands were excavated in spits of 5 cm. In the succeeding years this was standardised to double spits of 4 cm.

Once excavated, all sediments were systematically dry screened using fine mesh sieves. Spot checks carried out in the first season suggested that the eighth inch (3.17 mm) mesh was far too coarse for our purposes, as we appeared to be losing much of the finer debris. In the following seasons this was remedied by replacing them with 1.98 mm mesh. One immediate result was that some tiny retouched proximal ends and other debris from microlith manufacture which might otherwise have been missed were recovered. Overall, it confirmed that we were finding many of the tiny chips which were small enough to have been removed by the wind or subject to other sorting processes (e.g. fluvial action). These observations are particularly important in evaluating to what extent a site has been affected by post-depositional disturbance(s) (see below: Taphonomic Processes).

Raw Material Analysis.

All the flaked material from the site is of flint. The only other material with signs of use are two sandstone "rubbers" of elongate shape (Figure 4.3). Various unworked 'exotic' rocks have also been recovered. They include a small sarsen boulder (c. 4 kg.), a broken slab and several fragments of ironstone and a possible quartzite hammerstone.

The artefacts are generally made of a brown, black or blue/grey flint with crystalline inclusions. Despite the inclusions, it is a good quality flint, highly suitable for flaking purposes. Amongst the flaked stone is also a distinct speckled grey chert, coarse in texture but grading into a

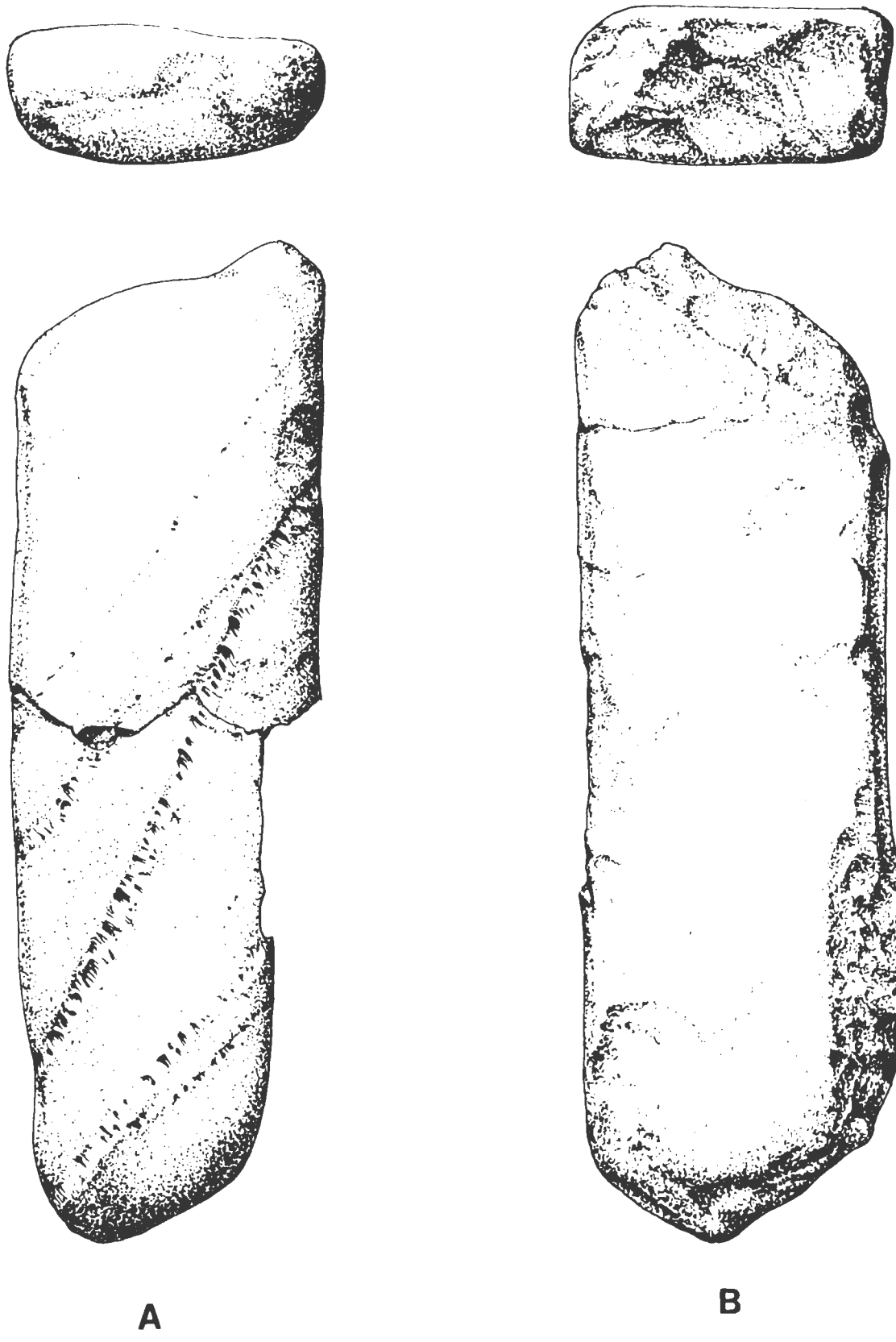


Figure 4.3 Powell Mesolithic site: Sandstone 'rubbers'. A-Tourmaline bearing sandstone. Scale 1:1.

smooth cream flint; it was used to make microliths (see below). There is no record of the darker, highly distinct 'Portland' chert from anywhere on the site.

Most of the flint artefacts are affected to a varying degree by surface patination ranging from a light milky alteration to heavy white patina. They are otherwise in very fresh condition and quite unabraded. However, despite the apparent 'freshness' of the flint, preliminary microwear analyses have shown that in many cases the surface alteration has been sufficient to destroy or mask traces of wear polish (I. Sala pers. comm.).

Most of the artefacts appear to be flaked either from rounded flint cobbles or angular fragments extracted from larger flint blocks. The smaller cobbles appear to be of local origin, and probably derive from river gravels, since they display a heavily rounded and thin cortical exterior. Superficially, they resemble the flint from the plateau gravels on the headland: however, very few display the same heavy external 'chattering' or angularity which are the particular hallmarks of the headland gravels. The plateau gravels are a source only of low quality material. Unlike the flint used on the site they are often heavily calcined and when broken open often reveal a partly desilicified interior. This flint is largely unsuitable for flaking purposes. The only other highly local source of material known today is in the underlying Tertiary deposits of the headland. However, none of the very distinct, dense olive-green flint cobbles in these strata bears any resemblance to the Mesolithic material.

Instead, the most obvious provenance of such flint lies either in beach deposits or in local river gravels. The nearest existing exposures of the latter are less than a kilometre away

from the headland. By contrast, the early Mesolithic shoreline may have lain over 15 kilometres to the south. In this respect it is noteworthy that today the closest available river gravels, at the confluence of the Stour and Avon, are generally poor in the larger type of cobbles flaked at the Mesolithic site. Flint of a more suitable size exists a few kilometres to the west (e.g. near Poole, K. Jarvis, pers. comm.). A further potential source of flint may well have been the beds of the 'Solent River' referred to above (Site Location).

The question of where the large angular flints come from is harder to resolve. From the size, shape and texture of one refitted example it would appear that such flint is not of immediately local origin. The angular block of grey speckled flint, consists of three cores and, weighing a minimum of 0.654 kg, is of a kind which does not occur in the Hengistbury plateau gravels today. Clearly this is a piece of raw material which was brought to the site expressly for the purposes of flaking. Interestingly, it was first 'smashed up' into fragments on site before the separate components were themselves used as cores.

A number of cores, including the above, display a thin chalky cortex which is powdery to the touch and if abraded gently rubs off in the hands. Although the friable nature of the cortex could arguably be related to some secondary process possibly associated with diagenetic changes in the soil, it is highly unlikely that such exterior surfaces would have survived long in a stream bed. Significant also is the fact tnat no flints from the plateau gravels or local river gravels that I have examined display well-corticated surfaces. In these cases then, the possibility remains that some of the raw material derives directly from the chalk or deposits marginal

to it. Up until now however, despite collecting samples from chalk exposures on the Isle of Wight, Purbeck and inland near Tarrant Rushton, no likely source for the speckled flint has yet been found.

A further possibility that some of the flint used at Hengistbury comes from derived or residual deposits (e.g. clay-with-flints) has been considered for Post-Mesolithic industries on the headland (Gardiner pers. comm.). For the Mesolithic site at least, the use of such materials seems unlikely. The local Dorset and Hampshire Basin clay-with-flints produces material which frequently displays a distinct green or black staining on the cortex (Melville & Freshney 1982,124). On the higher parts of the Chalk on the Isle of Wight and in southern Dorset, the clay-with-flints is characterised by unworn and broken flints set in reddish-brown clay. From my own first-hand observations, both types of flint display a hardened cortex, with clay residues often trapped in cavities or voids in the nodules. None of these distinguishing features has been observed on the Mesolithic flints, which frequently exhibit a clean friable cortex, completely unmarked by any staining.

In summary, despite the fact that the provenance of the flint exploited by the Mesolithic occupants of the headland remains uncertain two general observations can be made. First, it is clear that much of the flint used at the site does not come from the headland itself, so that we can at least conclude that it was brought to Hengistbury from elsewhere. Secondly, from the outward appearance of the flint (cortical surfaces and texture) it is likely that one major source of flint was a local river gravel deposit. The nearest occurrence of this kind with comparable material lies not at the confluence of the Stour and Avon (where the gravels are small and unsuitable) but

further upstream. Gravels containing larger flint clasts would still have been within comfortable reach (5-7 km) of the site.

Finally, of the non-flint materials exploited, only the sandstone appears to have travelled any distance to the site (see below). All the rest of the rocks used (quartzite, sarsen, ironstone) are found even today within very close proximity of the headland (Pleyder 1895; Solly 1910; Melville & Freshney 1982).

Flint Debitage.

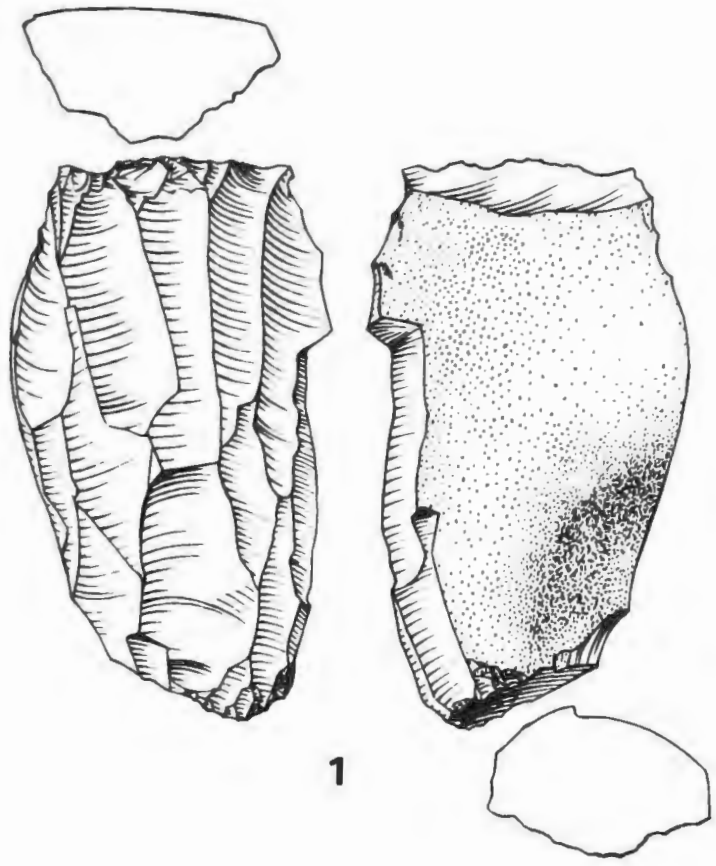
The flaking waste from the site consists of 35,489 artefacts, although approximately two-thirds of this total is accounted for by small chips and flint debris less than 1 cm in length. Of the remaining 13,722 artefacts 6,312 are flakes; 5,699 are blade/lets and the rest (1,666) are unclassifiable. There are 660 retouched tools. Also included in the totals are 145 cores and 45 core fragments.

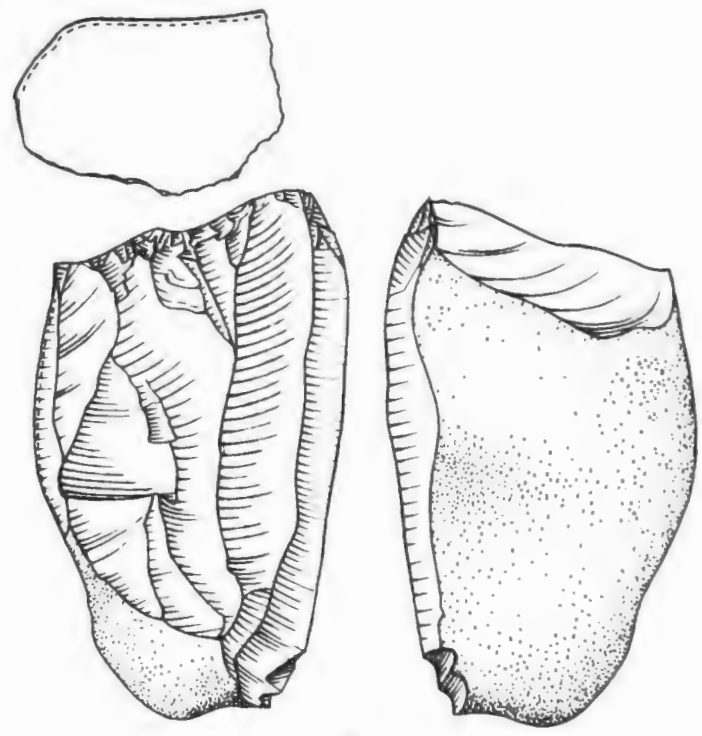
A striking feature of the assemblage is the high proportion of blade/lets to other pieces (41.5%). Most of them are less than 5 cm long and are thus considered as 'bladelets'; only 574 specimens are demonstrably larger than 5 cm and accordingly belong within the 'blade' category. The high representation of bladelets is not altogether surprising in view of the fact that microliths, the commonest element in the retouched tool class, are all made on blanks of this type. Amongst the complete bladelets (1,204) most are between 1-4 cm long (85%). The mean measurements of a small sample of complete blade/lets are presented in Table 4.2. An artificial lower limit of 2.1 cm was imposed on the Hengistbury specimens to enable comparisons with blank lengths from a selection of other Mesolithic assemblages.

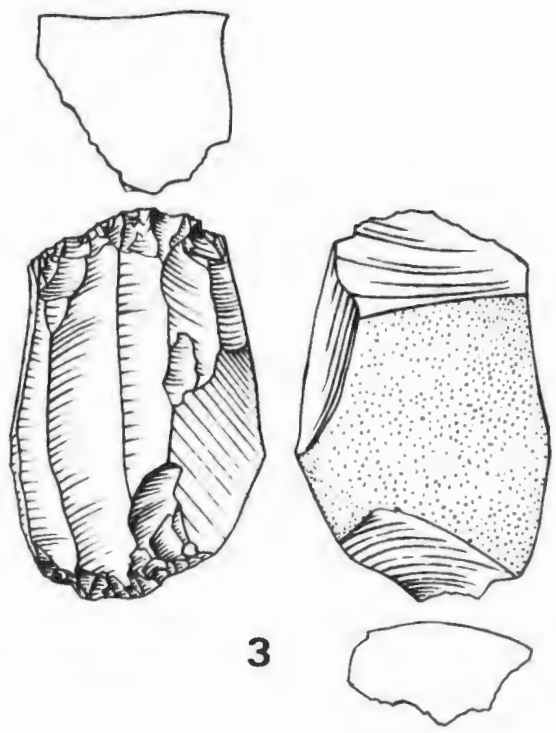
A typical bladelet from the Powell site is an artefact more than twice as long as it is broad. It generally shows an uncorticated dorsal surface with fairly straight arētes. The proximal end is often characterised by butt abrasion, but seldom shows any additional signs of preparation. Average butt sizes are small (length x breadth= 0.43 $\pm$ 0.207 x 0.13 $\pm$ 0.087 cm, n = 177), and most would be considered punctiform. As the overall totals suggest, a high percentage of bladelets are broken (76.5%). A significant proportion of incomplete specimens are also burnt (15%). Similar figures are represented in both the flake and blade (>5 cm) categories.

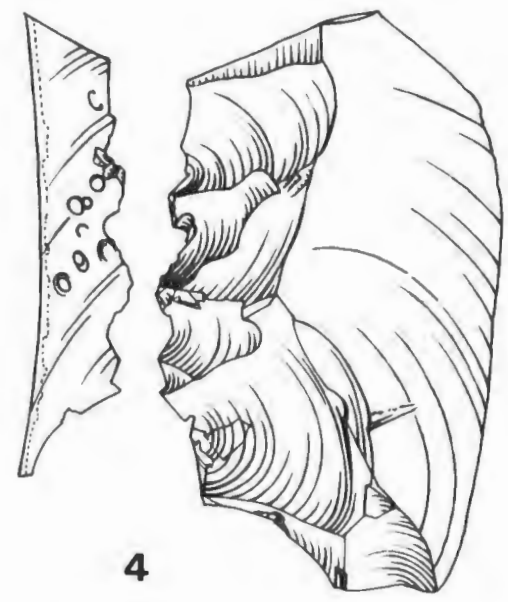
Flakes in the assemblage may vary a great deal in terms of size. Like the blades they can reach up to 9 cm in length but are generally much smaller. The majority of complete examples are between 1-2 cm long (54.1%), whilst most of the remainder occur in the 2-5 cm size class (42.8%), with a sharp fall-off beyond 5 cm. Unlike the blade/let blanks many flakes retain large areas of cortex on their dorsal surfaces, indicating they come from the exterior part of the nodule.

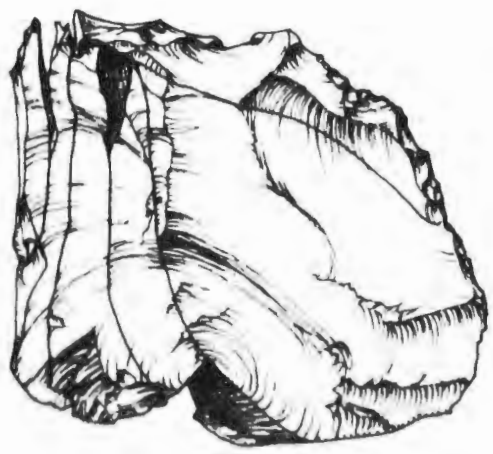
Included in the waste material are a large number of core tablets, crested pieces and various other core rejuvenation flakes. Examples of some of these are shown in Figure 4.4, 5-7. From the presence of such waste forms it is possible to infer that considerable flaking activity took place on the site itself. All stages of core reduction are represented, from the earliest shaping of the nodule (see below) to later re-modification (re-cresting, removal of core tablets) and abandonment.













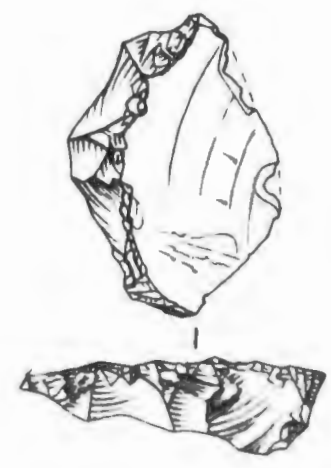


Figure 4.4 Powell Mesolithic site: 1,3. Opposed platform prismatic bladelet cores; 2. Single platform prismatic bladelet core; 4. Flake core on a flake; 5-6. Bladelet cores on flakes with refits; 7. Core tablet. Scale 1:1.

Cores.

The total of 145 cores can be divided into bladelet cores (93), flake cores (46) and unclassified cores (6). Excluded from this total are a further 45 core fragments. Amongst the bladelet cores are 53 prismatic types (Figure 4.4), with either one (35.8%), or two (7.5%), or two-opposed platforms (56.6%). Pyramidal (4), globular (4) and irregular examples make up the rest of the total.

The length of prismatic cores ranges from 2.80 cm to 6.54 cm. The mean length is 4.79 cm with a standard deviation of 0.853.

At the Powell site the early stages of core reduction often involved the preparation of a central crest at the front of the core. The fact that unidirectionally crested pieces are more frequently encountered in the waste than bidirectionally (or 'bifacially') crested examples need not imply different methods of pre-forming cores. From refits and residual crests left on cores it seems that unidirectional cresting was commonly employed in removing obstructions and repairing the main flaking-face of the core. This could be carried out at several stages during the reduction of a single flint nodule, but not necessarily in the initial stages when bidirectional cresting may have been preferred (an exception, however, concerns the preliminary shaping of cores on flakes, e.g. Figure 4.4, 5). The back of the core was mainly left unmodified and many examples retain cortical or natural surfaces (58%).

In some cases, especially those cores made on long cylindrical nodules, preparation was of a more cursory type. My refitting of material onto Core G shows a typical example where cresting was not used. Both ends of the nodule were

removed before flakes and bladelets were detached from opposite ends of the core. This example illustrates that the decision to use cresting also depended on the original shape of the nodule or fragment in its pre-core stage.

Another example (Core A) shows a block made of three cores. All three were flaked after the block had been broken into several fragments. Whilst cresting was used in the early stages of preparation in one of them, neither of the other two (one is represented only by flakes as the core itself was never found) were prepared in this way. Instead, the unmodified corners of these angular fragments served as guiding edges for the first removals.

An interesting feature of the Mesolithic assemblage is the presence of fifteen bladelet cores made on flakes. One of these with refitted bladelets and a unidirectionally prepared crest is illustrated in figure 4.4, 5.

Flake cores also make up a significant proportion of the total core assemblage (31.7%). Amongst these however are 15 which have had no more than 1-8 removals from one platform and may have been trial pieces which were subsequently rejected. The reason for their rejection is not always clear, except that many examples show pronounced hinge fractures. Amongst the other cores represented are 15 multiplatform cores which may in some cases represent fully worked out bladelet cores, but without refitting they are too marked by deep hinge fractures and broad flake removals to be certain of identification.

A problem encountered in presenting a full inventory of all cores is the undoubted presence of a small but significant number of possible Neolithic and Bronze Age artefacts (e.g. figure 4.4, 4). Whilst criteria for singling out these 'contaminating' elements are not easily recognisable

(especially as isolated flakes), in the case of cores the differences are more clear cut. Features which help distinguish them from Mesolithic cores seem to rest on two factors: the original choice of flint and the technological approaches to the material (i.e. reduction methods).

As has been demonstrated above, the quality of raw material was of singular importance to the Mesolithic flintknappers. It is undoubtedly significant that only one of the bladelet cores seems to have been made on the low-quality gravel flint widely available on the headland. By contrast the Bronze Age barrow northwest of the Powell site has yielded large amounts of flake debris and cores made on small pebbles of the same low-grade flint which occurs locally on the headland. The reduction method at the barrow site was also markedly different. It appears mainly to have been directed towards the manufacture of short broad flakes; the type of blank used for scrapers and bifacially flaked arrowheads. None of the Barrow pebbles shows the careful same preparation associated with the manufacture of bladelets, although it could be argued that these types might be indistinguishable from Mesolithic cores rejected in their earliest stages. Another distinguishing feature, however, is present on a high proportion of non-cortical flakes from the barrow. They are evidently hard-hammer struck and frequently display a series of incipient cones on their butts. This last feature is also visible on a whole range of pebbles used as cores and would appear to represent less controlled use of the hard-hammer. Incipient cones of the same kind are rarely visible on the bladelet cores or their refitting elements at the Powell site. By contrast however, eighteen of the <u>flake</u> cores at the Powell site show these features (e.g. Figure 4.4, 4). Seven of them

occur on natural pebbles similar to those associated with the barrow. For the present these seven will be treated as intrusive elements of post-Mesolithic date.

If this number of cores accurately reflects the level of intrusive material, it suggests an estimated 2.4% of artefacts recovered from the site are not of Mesolithic origin. In mitigation, however, it should be stated that the same pattern is not apparent in the unretouched and retouched artefacts, where the proportions are significantly lower. The actual 'contamination' level is therefore likely to be much closer to 1% of the total assemblage (see below: Taphonomic Considerations).

The Retouched Tool Assemblage.

A total number of 660 retouched flint artefacts have been recovered from the Powell site, 61 of which derive from the surface collection. The retouched tools represent 1.7% of all the flaked material. If the smaller chips and flakes <1 cm which do not provide supports for tools are subtracted, the proportion of retouched tools rises to 4.4%.

The various tool categories presented below are based on the type descriptions provided by J.G.D. Clark for defining Mesolithic tools (1932; 1934a; 1934b). The only divergence is in the use of the term 'microdenticulate' (cf. Bocquet 1980) which is preferred to 'saw'. The tools consist of 425 microliths, 100 end-scrapers, 65 microdenticulates with 75 miscellaneous retouched artefacts. Ample evidence for the on-site manufacture of tools, particularly microliths, occurs in the form of 273 microburins, plus 16 unfinished forms and broken fragments. These will be considered in a separate section ('Retouched Tool Debitage').

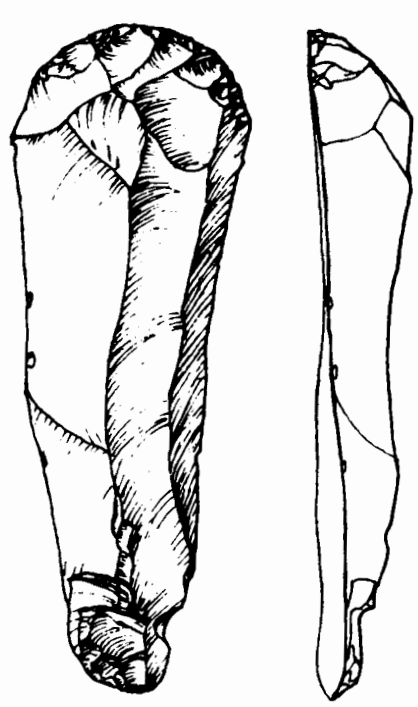
End-Scrapers. (Figures 4.5 & 4.6).

Of 100 end-scrapers from the site, 91 come from the excavations and 9 from the surface collection. The scraper types are dominated by flake end-scrapers (69%). The rest are made up of 12 blade end-scrapers, 6 side-scrapers (five of which are made on flakes), and 12 scraper fragments. There is only one double end-scraper in the collection (Figure 4.5, 11).

The scrapers are generally made on small supports. Out of 56 unbroken items, all but seven are on flakes. They range in size from 1.5 - 6.5 cm, with a mean of 3.31 $\pm$ 1.08 cm. The breadths range from 1.3 - 4.7 cm, with a mean measurement of 2.6 $\pm$ 0.72 cm, whilst the thicknesses vary between 0.2 - 1.7, with the mean occurring at 0.8 $\pm$ 0.33 cm.

The scraper fronts themselves tend to be convex in shape, but include some examples with a distinct 'nosed' appearance (Figure 4.5, 5), as well as a few with a straighter working-edge. The retouch is generally semi-abrupt and located at the distal end; five examples are retouched proximally. A few scrapers display added continuous retouch down one of the lateral edges; none however is retouched around the whole perimeter. No particular preference is indicated for the angle of the working edge. The retouch is generally semi-abrupt, but can produce angles ranging from as much as 80 degrees to 40 degrees or less. The actual inclination of the scraper front varies from piece to piece, but seems to be largely independent of the overall thickness of the blank. Its steepness therefore probably reflects the degree of sharpening and usage of the tool.

An indication that a certain degree of expediency was involved in selecting blanks for scrapers is indicated by the fact that four core tablets and one crested piece number

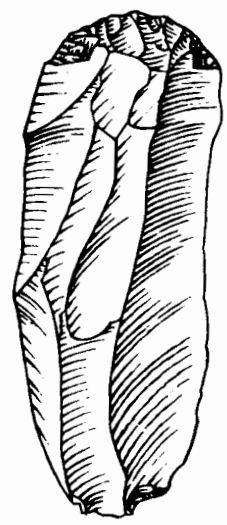


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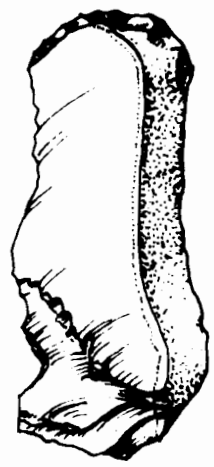




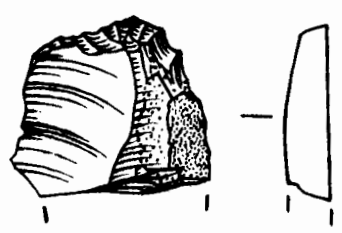
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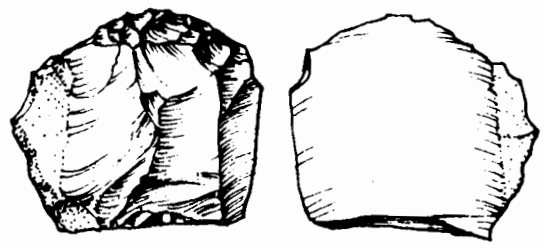
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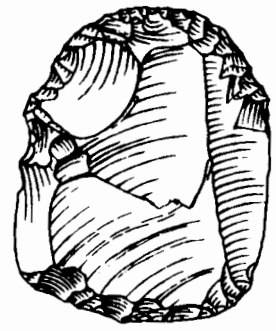
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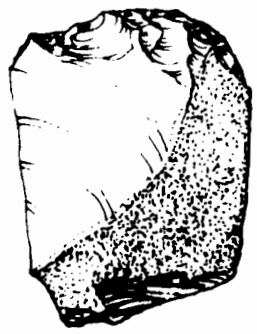
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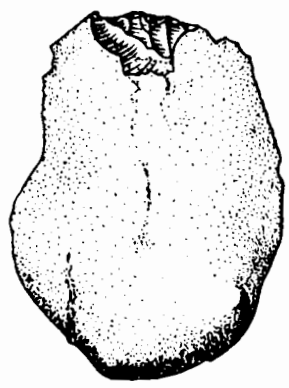
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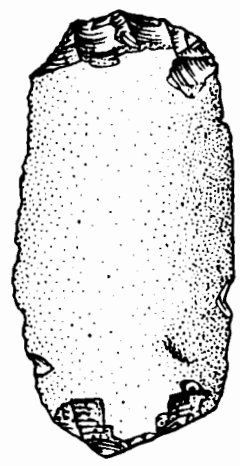
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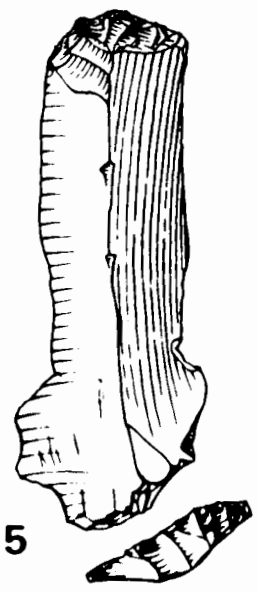
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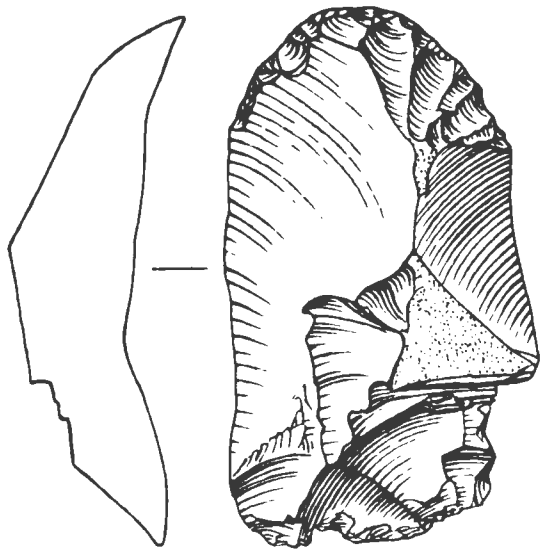


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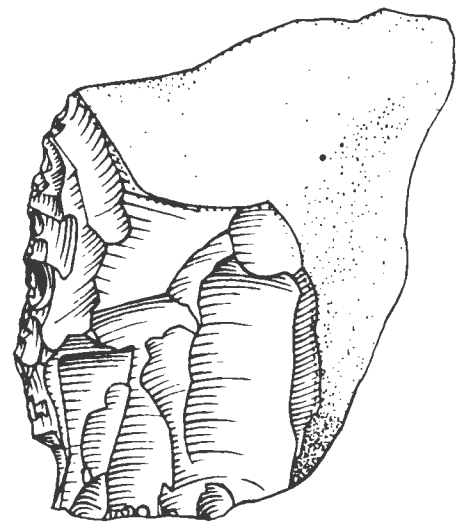


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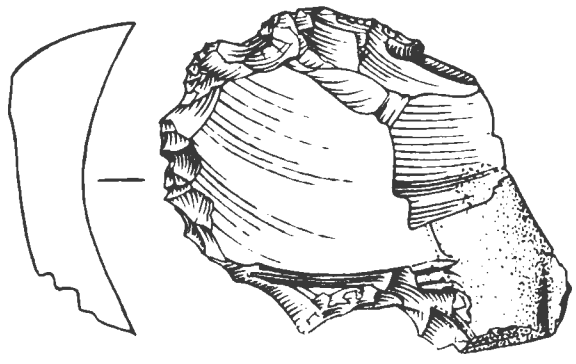
Figure 4.5
Powell Mesolithic site: 1-4. Bladelet end-scrapers; 5-10. Broken distal fragments of end-scrapers; 11. Double end-scraper; 12-14. Flake end-scrapers; 15. End-scraper on a core tablet. Scale 1:1.



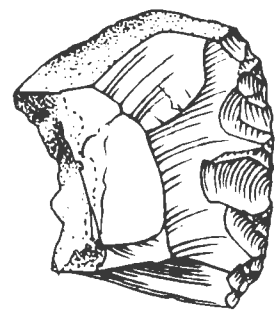
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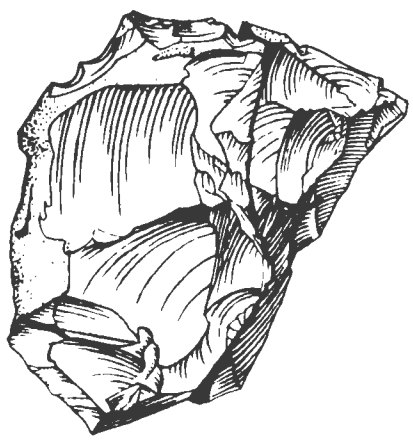
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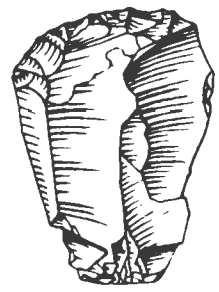
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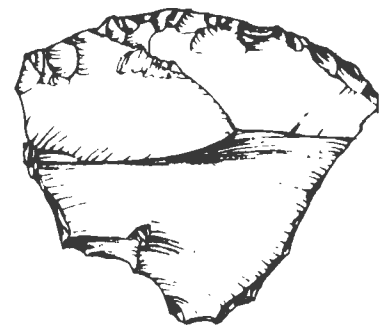
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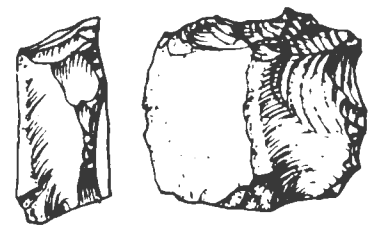
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Figure 4.6 Powell Mesolithic site: 1,3,6-8. Flake end-scrapers; 2,4. Side scrapers; 5. Two refitting end-scrapers. Scale 1:1.

amongst the supports used (Figure 4.5, 15). Likewise 78% of the scrapers show significant areas of cortex on their dorsal faces, which suggests that usable flakes regularly came from the initial stages of core reduction. Not surprisingly, the blanks exhibit a great variation in size and thickness. A broken flint hammerstone fragment appears also to have served as a scraper support. None of these factors suggest that specially prepared blanks were used in scraper manufacture.

Just under half of the scrapers are broken (24 proximally; 8 distally and 12 at both ends). None of them appears to be deliberately snapped (sensu Bergman et al. 1983) but those that are broken include examples with flexional breaks (13). This is a type of snap which often occurs as the scraper-edge is being retouched. Breakages of a similar nature may also result if an artefact is trampled. The features produced on or near the break surfaces can imitate effects of intentional breakage. One of these features (wedge-shape fracture lines) can be seen in Figure 4.5, 10. Note also the spontaneous retouch along the edge of the break.

Relatively few of the scrapers are burnt (21%) which contrasts with the condition of some of the other tools such as microliths.

Although many of the scrapers show signs of surface patination, like the rest of the flint assemblage, they are otherwise sharp and in extremely fresh condition. A microscopic examination of a small sample of end-scrapers was made at my request by Mrs. I. Sala of the Institute of Archaeology, London. As with the denticulates (see below) nearly all the artefacts examined proved to have been affected by some form of post-depositional alteration. Nevertheless, the scraping-edge of one of the tools (J9/4a/30; Figure 4.5, 2) displayed traces

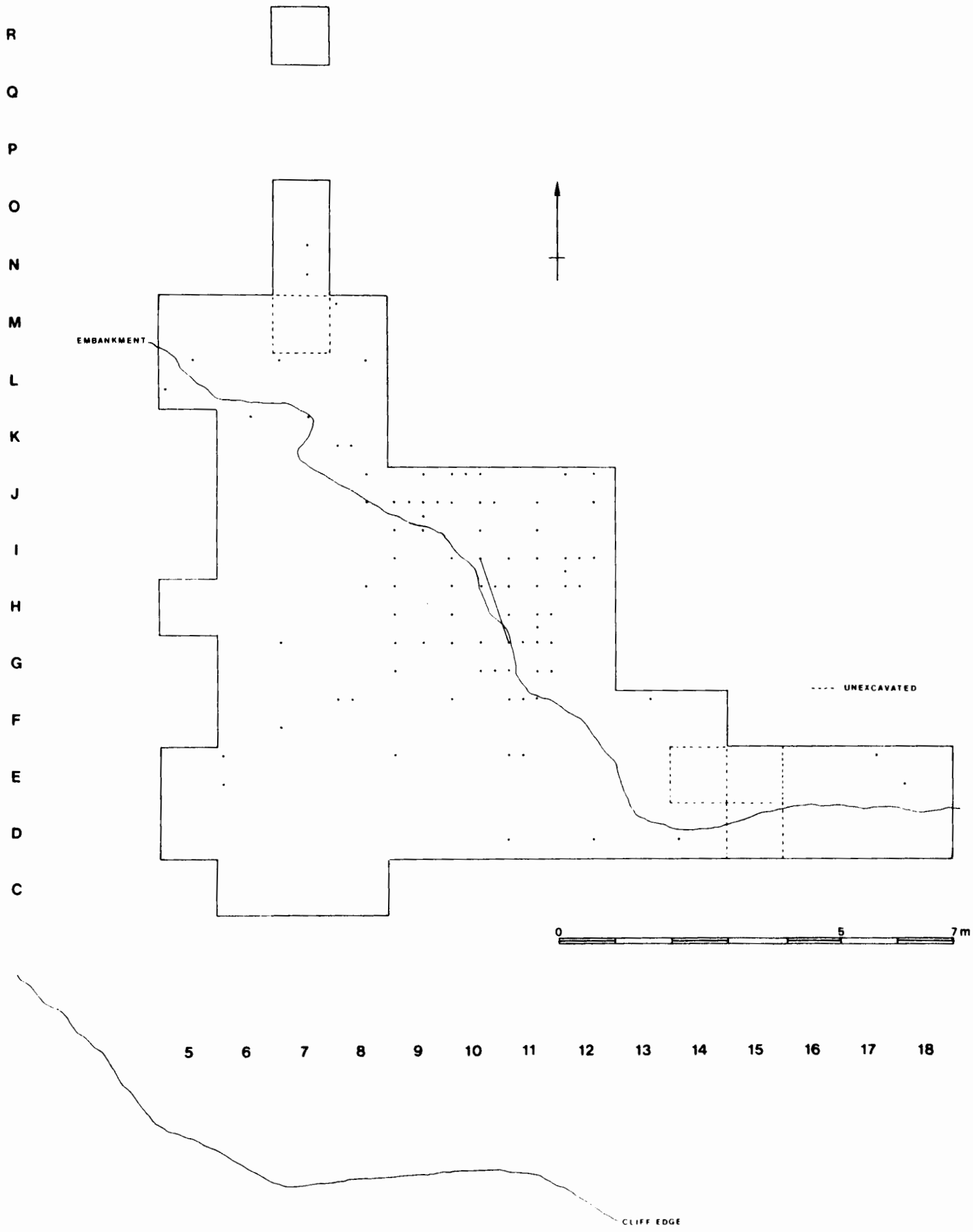


Figure 4.7 Powell Mesolithic site: Distribution of end-scrapers.

which resembled those of wood polish (I. Sala In prep.). None of the others, however, yielded convincing use-wear traces.

Macroscopic edge-damage is seldom visible on the end-scrapers. The damage, when present, is mostly confined to minute breakages along the lateral edges of the tools; it need not be the result of utilization. Similar breakages have been observed by the writer on experimentally trampled artefacts. Damage formed in an identical way has also been noted by Tringham and others in their experiments (1974). None of the Powell scrapers shows any signs of edge-rounding along the scraper front (cf. Bosinski and Hahn 1972) or scalar damage of the kind noted on the examples from Sproughton (Figure 2.18).

Although end-scrapers are widely dispersed across most of the site there appears to be a marked increase in their density in the N.W. sector of the excavated area (Figure 4.7). This might indicate some concentration of scraping activities in this part of the site. Two scrapers have been refitted (Figures 4.6 and 4.7). They were found within a few metres of one another which suggests they were perhaps made and used very close to where they were eventually discarded.

Microdenticulates.

65 microdenticulates (cf. Bocquet 1980) or 'saws' (sensu Clark 1934b) are known from the excavated tool assemblage. These artefacts are generally made on bladelet blanks characterised by a concave or sinuous edge on which a series of tiny continuous notches have been retouched (Figure 4.8). The minute denticulations are usually only restricted to a small area of the edge and rarely if ever extend along the entire margin of the artefact. Only one tool from the site shows denticulations on both lateral margins.

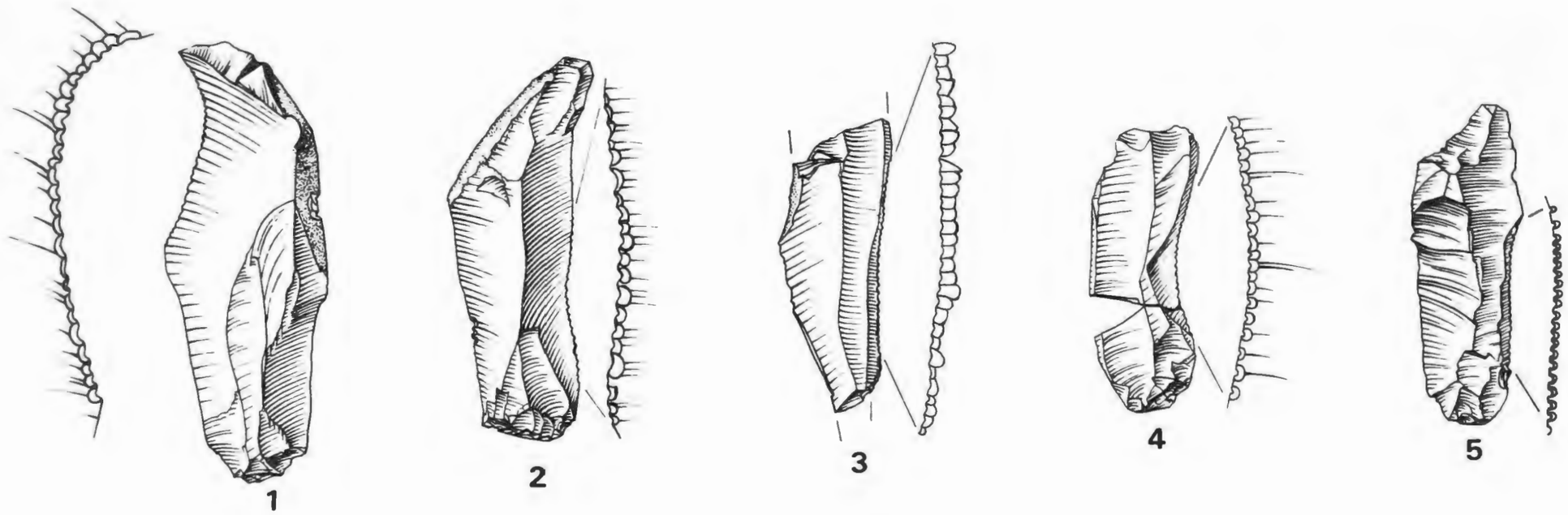


Figure 4.8 Powell Mesolithic site: Microdenticulates. Scale 1:1.

The 32 unbroken specimens from the Powell site range in length from 3.1 - 6.3 cm with a mean measurement of 4.54 ± 0.707 cm. Some variation is seen in the breadths of the 62 examples complete enough to be measured. These range in size from 0.8-2.5 cm with a mean breadth of 1.37 ± 0.332 cm. The thickness of pieces likewise varies between 0.2-0.9 cm with a mean value of 0.41 ± 0.142 cm. The small standard deviation shown for the lengths of the denticulates seems to indicate that this was an important criterion when selecting a suitable blank for tool manufacture.

Most of the tool supports fall within the blade/let category. They can be curved or slightly twisted in profile, but are mostly fairly straight in side view. A feature common to many of them is the presence of a suitably concave edge. In addition, relatively few of the tools carry extensive areas of cortex (20%) which suggests they were made on blanks from the later stages of core reduction.

No particular preference seems to have been given towards modifying one side or other of the tool blank. 43 have serrations along the right edge and 21 on the left, with only one example displaying them on both. A more important criterion however was the shape of the edge itself. Out of the pieces complete enough for assessment most displayed a concave edge (77%, n=48). Less frequently used were blanks with either straight (14%), concave/convex (6%) or convex (2%) sides. The length of the denticulated edge also shows some consistency. In the examples measured the serrated portion of the edge ranges from 1.5 - 2.7 cm in overall length, with the mean at 1.86 ± 0.313 cm. Taken as a proportion of the average lengths of complete tools, the mean figure suggests that up to 40% of the blank's edge was modified in this way.

The method of producing the microdenticulation appears to have been relatively simple. In all but two examples, the point of origin of the small notch scars making up the serrated edge occurs on the dorsal side (Figure 4.8). The tiny notches are more or less continuous with the intervening high points between them making up the saw-edge. These can be produced in a number of different ways. According to Bocquet (1980, 83) they can be made by a pressure technique using another stone tool as the 'compressor'. On the other hand, I have produced identical examples of the Hengistbury tools using a controlled percussive technique. This involves dragging a blade held at right angles gently across the edge of the intended tool. When carried out in a dorso-ventral direction, the point of percussion in the notch scars originates from the dorsal surface. This is in fact exactly the same as those observed on the Hengistbury implements. Bocquet has claimed that damage in the form of irregular notching also occurs to the 'compressor'. No artefacts with this kind of damage have yet been recognised at Hengistbury. My own results left few visible traces on the artefact used to make the tiny notches, and this is perfectly in accordance with the archaeological findings from the Powell site.

Differences in the character of denticulation can be recognised between individual tools. Some artefacts show well-defined teeth, whilst others reveal only shallow continuous scars along the tool-edge. Such differences probably depend more on the thickness and angle of the edge, and the manufacturing technique used, than on actual use-wear. In none of my experiments have I been able to reproduce the 'light' or 'heavier' form of denticulation by using the microdenticulate tool in a particular direction or on an especially hard

material (e.g. bone, antler, wood.).

A microwear analysis was carried out on selected pieces by Mrs. I. Sala of the London. Institute of Archaeology. Although the artefacts chosen were unpatinated and initially appeared suitable for microwear studies, the results were inconclusive. The surfaces of many of the 34 artefacts examined had been affected by post-depositional alteration, which had either destroyed or completely masked any of the original use-wear traces (I. Sala pers. comm.).

Experimentation with copies of the Hengistbury pieces showed that whereas heavy damage was caused to the 'teeth' when using materials as hard as bone or antler, little or no damage was produced to a denticulate when cutting or sawing through soft materials such as green wood or fresh plant stems. Since the archaeological specimens are likewise not heavily worn, it is likely that if used, they were employed on some kind of soft material. A not dissimilar conclusion was arrived at by J. Dumont (1983) from a microwear study of a small sample of microdenticulates from the Mesolithic site of Star Carr.

Like the end-scrapers the spatial distribution of denticulates suggests a greater concentration of activity in the N.W. section of the site (Figure 4.9).

Microliths.

The microlith series comprises the single largest group of retouched tools from the Powell site. It consists of 425 examples, including 50 pieces collected from the surface; all are made on bladelets. Of the microliths complete enough to be classified, only a few lie outside the "non-geometric" class of artefacts as defined by Clark (op. cit.). These comprise a small isosceles triangle or D-shape microlith and a bi-

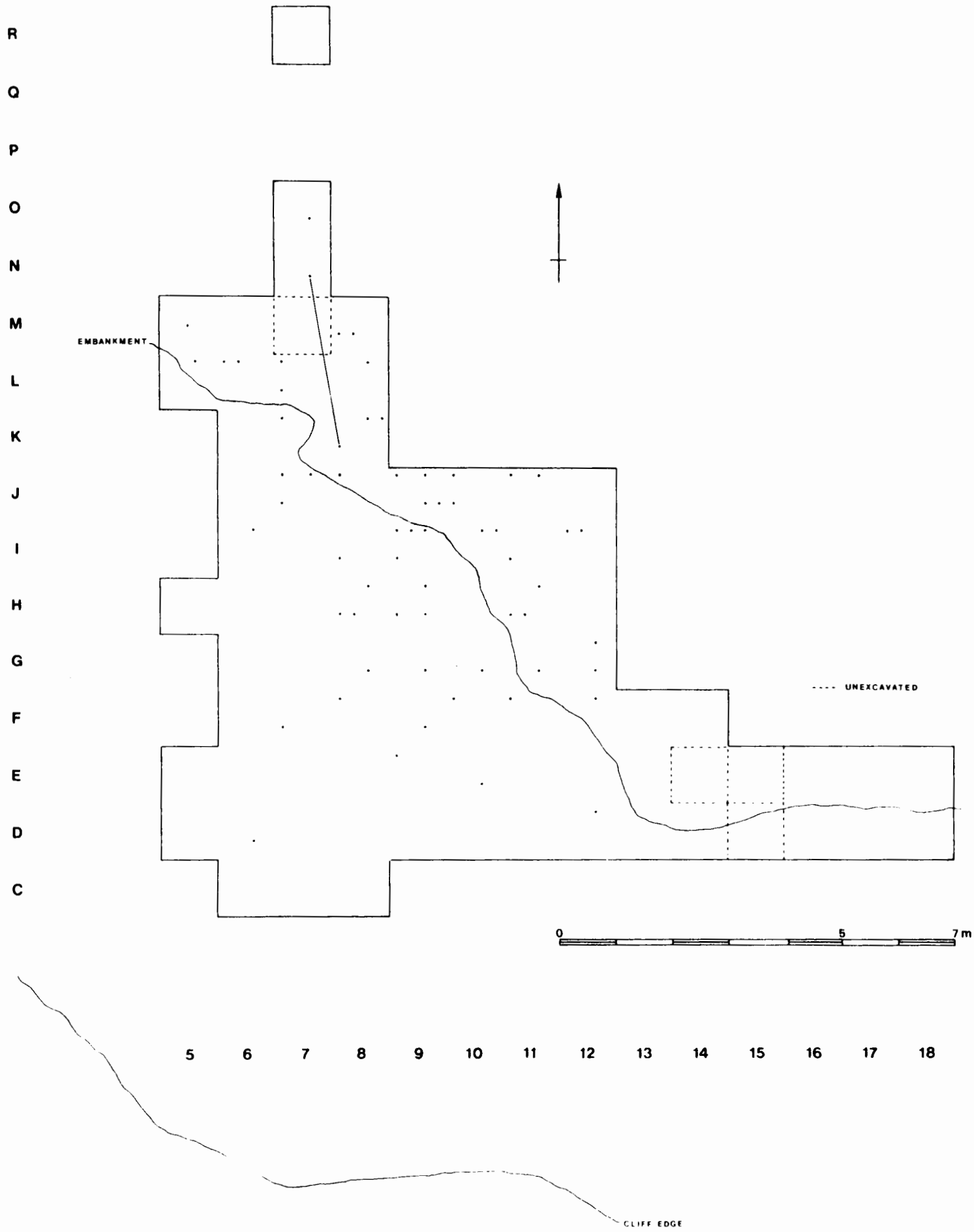


Figure 4.9 Powell Mesolithic site: Distribution of microdenticulates.

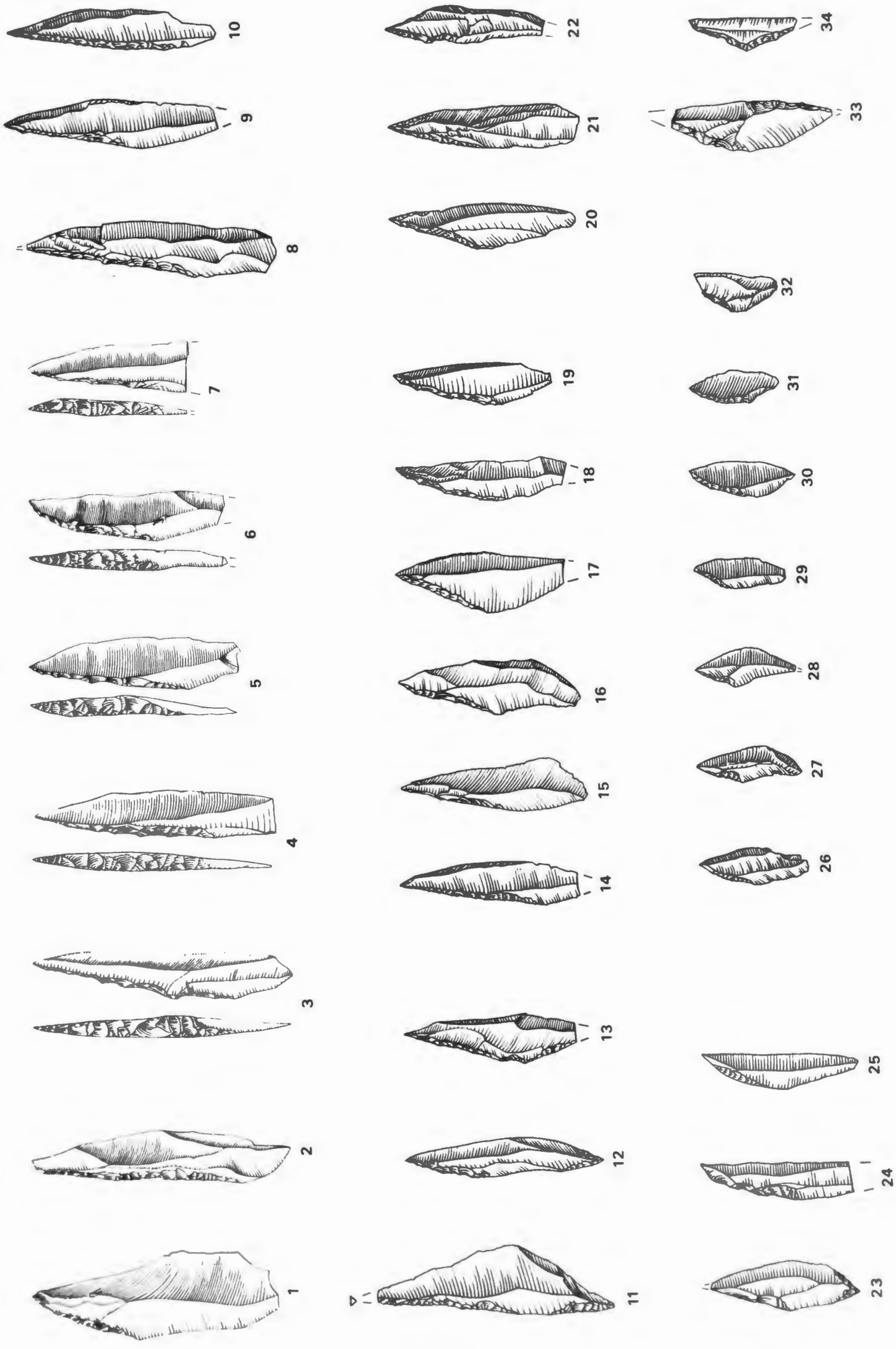
truncated C-type (Figure 4.10, 33 & 34).

By far the most common types represented are the non-geometric microliths with an oblique retouched truncation. These correspond with microlith A-types, in the concise typological definitions set down by Clark (1934a, 55). Strictly speaking the term "microlith" should only apply to pieces which have been truncated at the proximal end by the removal of the bulb of percussion (Clark op. cit.) In practice however, it is possible to include several kinds of partially or irregularly retouched pieces some of which represent unfinished tools or tools broken in manufacture. Not included in this category are the deliberate by-products of microlith manufacture (microburins) which are treated separately below.

A-type microliths comprise 90% of the microlith assemblage. These are characterised by abrupt or semi-abrupt retouch forming an oblique truncation at the proximal end of the piece. The obliqueness of the truncation gives the microlith its characteristic pointed appearance, with the retouched tip either slightly offset or precisely bisected by the main axis of the bladelet (i.e. symmetrical point).

Out of a total of 384 classified A-types, only 59 (15.3%) are fully complete. The rest are made up of broken fragments with either one or both ends missing (125), and many remnants of retouched tips (200). A fairly high percentage of broken pieces are also burnt.

The 59 complete microlith A-types have a combined mean length of 3.1 cm with a standard deviation of 0.747 cm. The total range represented in the sample is 1.6 - 5.0 cm. The breadths of the unbroken pieces vary between 0.6 - 1.3 cm, giving a mean measurement of 0.81 cm. The standard deviation is 0.171 cm. Broken pieces with breadth dimensions complete


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enough to be measured are much more numerous, but their inclusion does not significantly alter statistics quoted above. The mean thickness of pieces is 0.25 $\pm$ 0.08 cm. The range in size varies between 0.1 - 0.5 cm and again this compares well with the maximum thicknesses of broken points.

Most of the A-types are retouched on the left side (that is, with the pointed end uppermost, as is the formal convention). Only 8 out of 384 are retouched on the right hand side. They generally have abrupt or semi-abrupt retouch (321) or include some combination of both with other forms of retouch (41). The retouch is almost always direct (from the ventral surface), although signs of bidirectional retouch are also present on the thicker pieces (Figure 4.10, 3-7).

The most common form of microlith A-type has a simple outline with oblique partial retouch at the proximal end (289). But included in the same class of microlith are a number of different sub-categories. These comprise examples that have additional semi-abrupt or fine retouch at the tip or the base (figure 4.10, 11-13, 20-22 & 23). In most cases, the retouch appears to be of ancillary importance to the main oblique truncation and is therefore not treated as a separate type.

A frequent example of such retouch is opposite the main retouched edge, where it was no doubt used to enhance the pointed proximal end of the microlith (74 pieces). A similar refinement is sometimes seen at the distal (basal) end. Here the most common version is on the left side of the base (7), but the same modification to the right side (3) or both sides of the base (4) are also present. These adjustments may have been made to facilitate hafting of the microliths in a wooden shaft. None of the basally retouched examples possesses either the straight or concave truncation characteristic of the

"Hollow-based" F-types (also known as 'Horsham Points'). Equally, only one microlith displays an abruptly retouched edge at the distal end. This has been classified as a C-type microlith (Figure 4.10, 33).

Amongst the broken A-types are 35 which can be described as 'Krukowski' microburins. Although strictly speaking these belong within the retouched tool debitage (and will be discussed under that section later in this chapter) they are in most respects synonymous with microlith tip fragments accidentally snapped during manufacture. Broken tips (excluding the Krukowski microburins) make up 57% of all the broken A-types. Whilst not all of them can be explained as manufacturing breaks (see discussion of 'impact fractures' below) it is interesting to note that a significant proportion of broken tips (17%) display bidirectional scars along their retouched edge. This is often taken as a good indicator of anvil-use during manufacture. In my own experiments I have noticed a high incidence of similar breakages especially when retouching thicker blanks on an anvil. Many of the tips are characterised by ordinary transverse (straight) snaps. Similar breakages have been recognised on the middle and distal fragments of microliths which represent 30.4% and 11.8% of the broken A types in the assemblage. These also may largely be the result of common manufacturing accidents.

Apart from the A-types there are 8 B-types (Figure 4.13, 2), 1 C-type (Figure 4.10, 33) and 1 D-type (Figure 4.10, 34) represented amongst the microlith assemblage. The rest (31) are made up of unclassified fragments.

As with the other tools, the microliths appear to be concentrated in the N.W. part of the excavated area (Figure 4.11).

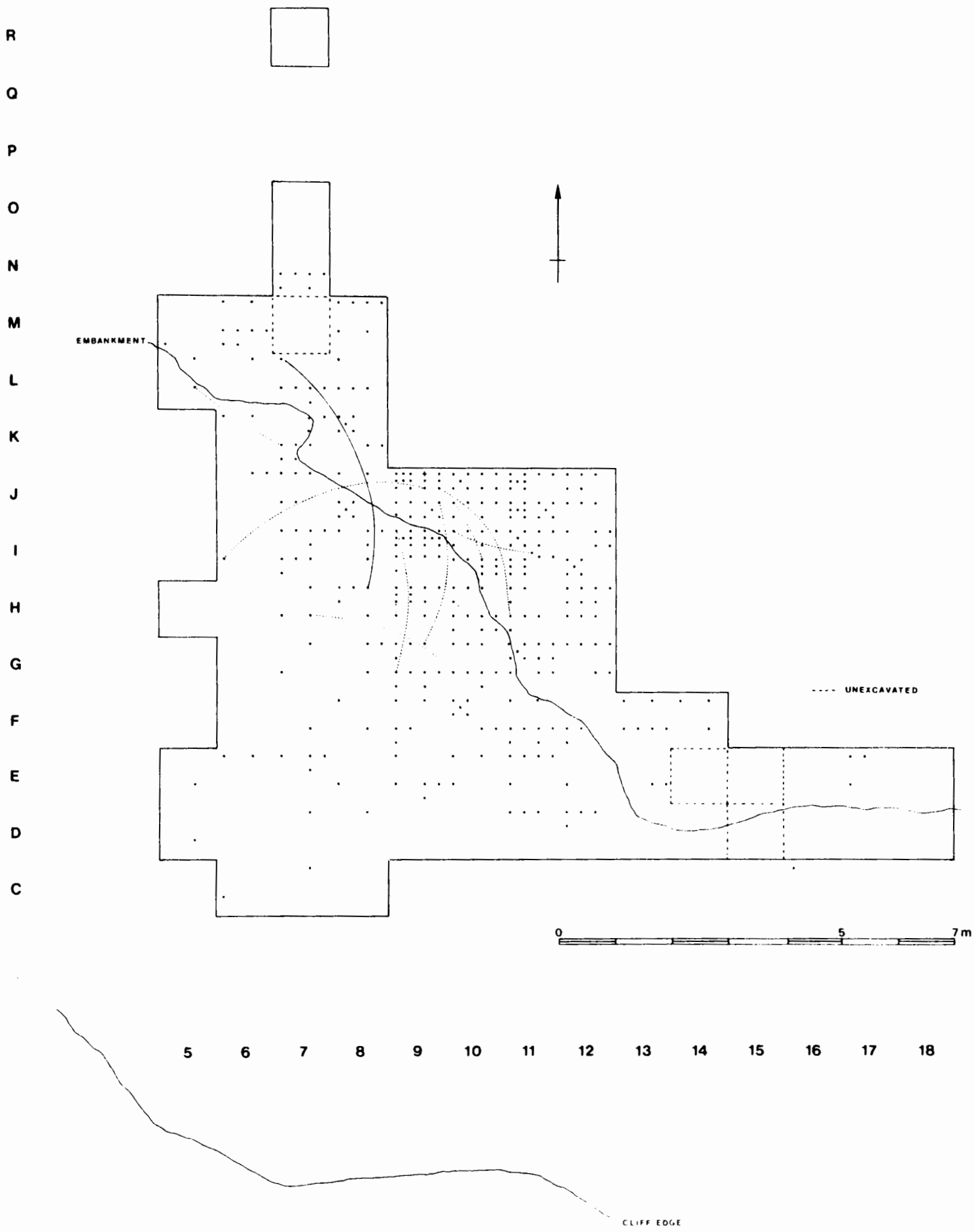


Figure 4.11 Powell Mesolithic site: Distribution of microliths. Solid line indicates technological refit; broken line represents break refit.

Suggestions for the possible functions of these items have been made by various authors. Amongst their more likely uses are as components of hafted projectile equipment (Clark 1962; Clark 1975) and as insets in slotted knives for plant (Clarke 1976) or sinew cutting (Barton and Bergman 1982). Effective methods for testing such ideas are often hindered by the total absence of preserved organics at archaeological sites. In these cases, the only evidence may be from wear traces on the flint artefacts themselves. For example if any of the broken microliths were brought back to the site in arrow stubs or embedded in animal bones, they might show signs of impact breakages.

'Impact Fractures'.

Amongst the microlith points are at least six examples with breakages which the writer and his colleagues have tentatively identified as 'impact fractures' (Barton & Bergman 1982). The breaks are of several kinds but generally include fragmentation of one or both extremities of the arrowtip (resulting in burin-like removals) or simple transverse snaps (Bergman & Newcomer 1983).

In order to test whether similar breakages would result from firing flint-tipped arrows into an animal target my colleague Dr. C. Bergman and I decided to set up an experiment using a dead animal and copies of Mesolithic arrows. The specimens shown in Figure 4.12 belong to a series of modern experimental points which were shot into a fallow deer carcass. The arrowtips were replicas of the A-type microliths found at the site; they were made of East Anglian flint. The arrows were based on equipment with parallels in a number of Late Pleistocene/Early Holocene archaeological contexts from N.W.

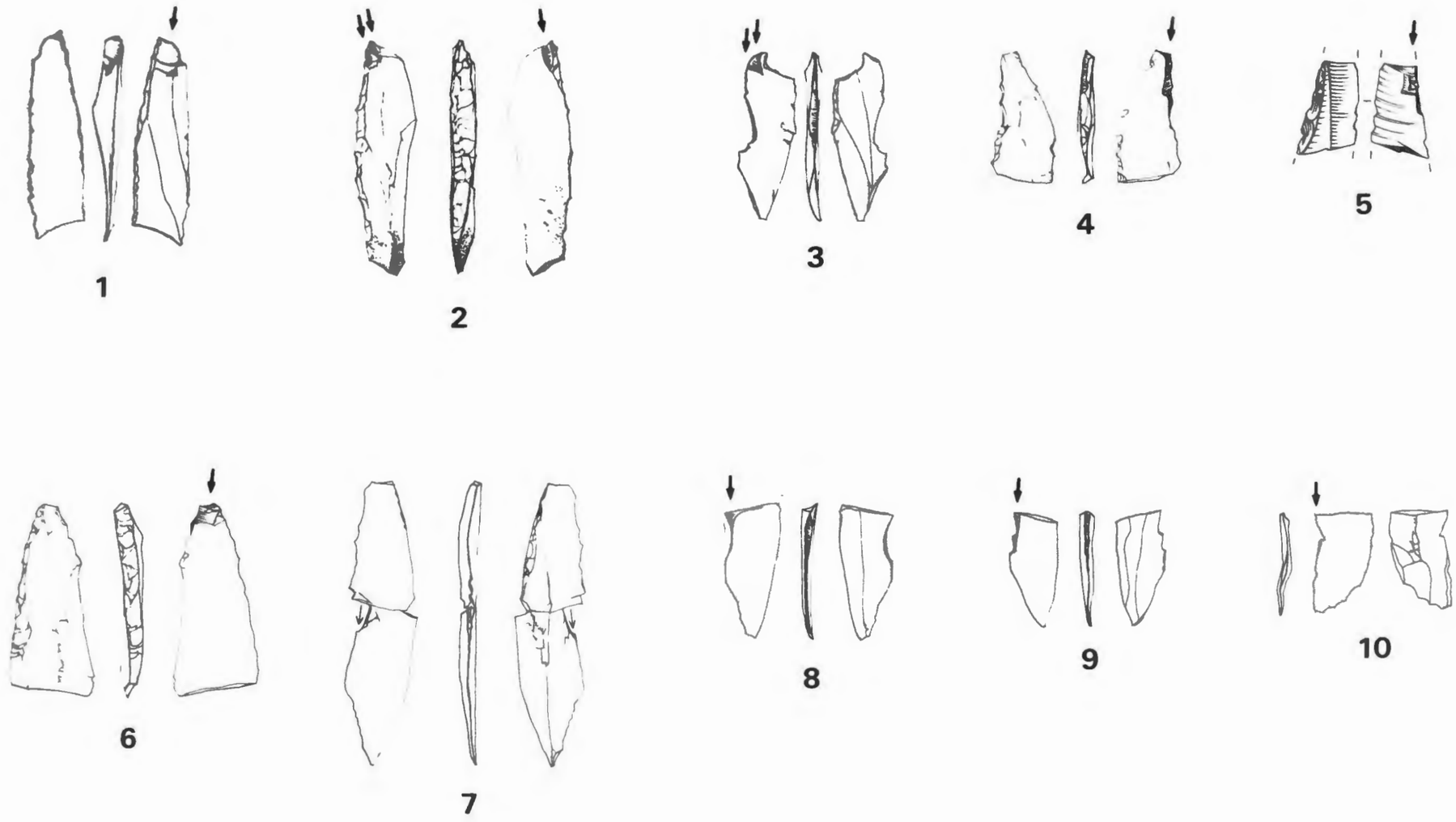


Figure 4.12 Powell Mesolithic site: 1-5,10. Archaeological points with 'impact' fractures; 6-9. Experimental points with impact damage. Scale 1:1.

Europe (Rust 1943; Petersson 1951; Clark 1975).

Manufacture of the arrows consisted of cutting a central slot into the top of the wooden shafts (Port Orford Cedar and ordinary household Ramin dowel). Next, the flint points were inserted and held firm either with a pine resin/beeswax fixative or animal sinew, or sometimes a combination of the two. The arrows were shot using a self bow made of yew which drew 40 lbs. at 26 inches and was a replica of one of the well-known Holmegaard bows from Denmark (Becker 1945). They were fired from distances between 4 and 8 metres from the deer target. This was judged to be a reasonable distance: simulating a likely target range for stalked prey (Kroeber 1964), whilst at the same time ensuring a maximum number of 'hits' by the modern archer (in this case my colleague Christopher Bergman).

The results of the arrow firing experiments produced an unexpectedly high number of microlith points which showed no macroscopic damage whatsoever. Although these had penetrated the carcass (most effectively), they had cut through skin and softer tissue without striking bone. In marked contrast the specimens illustrated in Figure 4.12 had all broken as as a result of impacting against the ribs or other bone in the deer's upper abdomen. The flexion snap (Figure 4.12, 7-9) was a common form of breakage, whilst minute burin facets were also noted on a number of pieces. All of these breaks could be duplicated in the archaeological sample (Figure 4.12, 1-5 &10). It should be noted that one set of fractures occurs at the extremity of a B-type microlith; the rest are on obliquely blunted points or microlith A-types.

In addition to the macroscopic damage noted on the archaeological and experimental pieces, a microscopic analysis

of both sets of points was undertaken to see what small-scale effects, if any, might be produced by a flint projectile passing rapidly through an animal carcass. Observations on experimental flint arrowheads by Peter Rasmussen (Fischer et al., 1984) had already demonstrated that minute striations might occur near the flint tip. The suggestion is that as the point breaks on impact, fragments of the tip are dragged across the surface of the remaining portion of the arrowhead as it 'follows through' in the split second before coming to rest. Examination of the Hengistbury points was carried by Dr. R. Unger-Hamilton of the Institute of Archaeology, London. Although problems were again encountered with post-depositional alteration of the archaeological pieces, traces of similar kind have tentatively been identified on one of the five impacted microliths.

Retouched Flakes and Blade/lets.

Amongst the other implements represented at the Powell site are approximately 70 flakes and blade/lets with 'miscellaneous' retouch. In many instances the artefacts are characterised by semi-abrupt, direct retouch extending along most or part of the lateral edge (37). Related to these pieces are 4 others with signs of inverse retouch down one side. Besides these pieces a further 22 artefacts are retouched at one extremity, usually the distal end.

Excluded from the above totals are a large group of pieces which display edge-damage along their sides. This 'retouch' is difficult to classify, but varies in type from isolated retouched notches to crescentic breaks along the edges. Some of the irregularly retouched pieces compare well with those sometimes classified as 'Montbani' bladelets (Rozoy 1978; Huyge

and Vermeersch 1982). In these and other cases there may be a considerable grey area between genuinely modified artefacts and those where retouch is the result of use or some accidental process (e.g. 'spontaneous retouch', the effects of trampling). Such problems may well be resolved by microwear studies, but for the present it is sufficient simply to state that the irregular 'retouch' on flakes and blade/lets in this group is not necessarily a product of deliberate modification.

One of the problems of interpreting 'edge utilisation' is illustrated in Figure 4.13. Number 2 shows a bladelet retouched down the right lateral edge. Whereas the edge angle on this side remains more or less constant, the retouch type does not. The upper half of the artefact is marked by semi-abrupt retouch whilst towards the proximal end the edge displays scalar and stepped retouch scars. These may be the result of use rather than deliberate modification, since the edge opposite the retouched side is covered by cortex. A similar interpretation may be made for Numbers 3 and 4, where in each case a cortical edge occurs opposite the retouched one. All three pieces therefore should probably be considered as 'naturally backed' knives with utilisation damage.

Two artefacts with semi-abrupt/abrupt direct retouch are modified in such a way as to produce a distal projection demarcated on either side by slight concavities (e.g. Figure 4.13, 5). Despite the fact that the 'prongs' are not accentuated, the tools bear a resemblance to awls or becs (Brézillon 1977, 146-8). No obvious signs of damage accompany the retouch, although one tool has a flexion break which may indicate that it was broken during use.

Amongst other artefacts with retouch at the distal end are several possible specimens with 'spontaneous retouch'. This

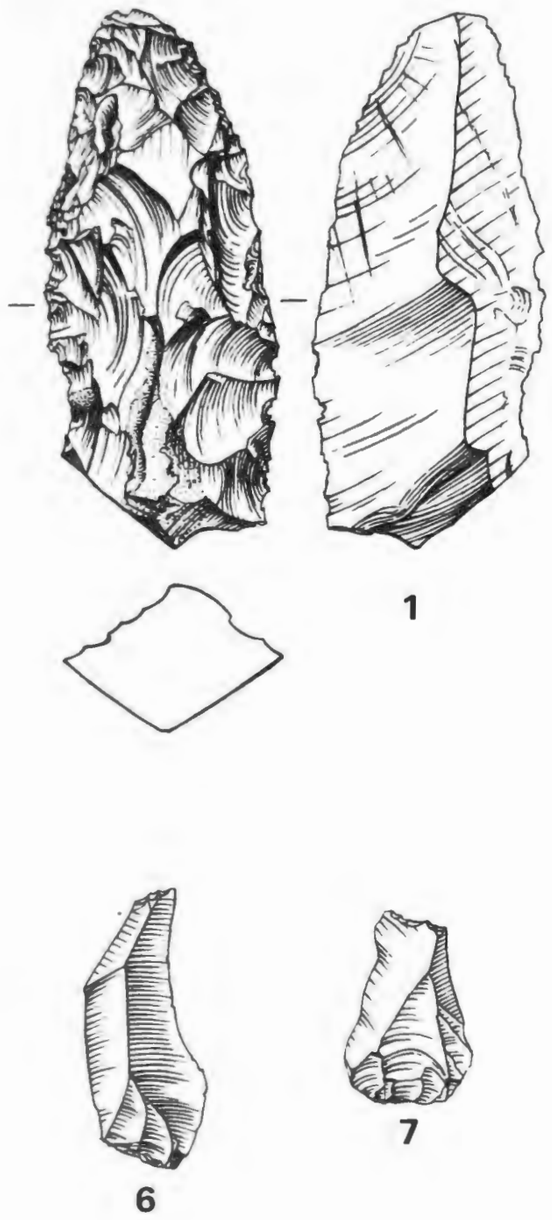


Figure 4.13 Powell Mesolithic site: 1. Fabricator?; 2-4. Retouched blade/lets; 5. Truncated blade; 6-7. Pieces with 'spontaneous retouch'; 8. Bi-laterally retouched bladelet ('mèche de foret'); 9-10. Neolithic/Bronze Age artefacts. Scale 1:1.

type of retouch has been observed experimentally to occur casually as the blank detaches from the core; it is typically direct, abrupt and at the distal end (Newcomer 1976). Numbers 6 and 7 (Figure 4.13) exhibit retouch of this kind. The possibility that the retouch was accidental is made more likely by the fact that no other ancient damage or retouch is found along the lateral edges.

Fabricator?

One tool made on a thick flake, with a rhombic cross-section and flaked on two sides, may have served as a fabricator for retouching other tools. However, no marked damage occurs where it might be most expected, close to the robust tip (Figure 4.13, 1).

Retouched Tool Debitage.

Microburins.

Originally identified by Siret (1893) as the by-product of flint trapeze manufacture (the 'coup du trapeze'), the artefact-type suffered a reversal of fortunes at the hands of Henri Breuil who described them as a small form of burin or 'micro-burin' (1921). Although he subsequently retracted this view (1947), after the work of Vignard (1931), the term has remained in use ever since. Tixier's later experiments (1963) did much to clarify matters by establishing a clear link between the microburin technique and the method of microlith manufacture. In Britain, Grahame Clark was one of the first to recognise the relationship between the tool and the waste product (1934a, 71).

The 273 microburins from the Powell site are all proximal examples (Figure 4.14). They range in size from a few

TOOL TYPE	N	%
End-scrapers	100	14.9
Microdenticulates	65	9.7
Microliths:		
A-type	384	57.2
B-type	8	1.2
C-type	1	0.1
D-type	1	0.1
unclassified	31	4.6
Retouched Flakes/Blades	70	10.4
Fabricator (possible)	1	0.1
Post-Mesolithic pieces	10	1.5
Total:	671	99.8

Table 4.1 Hengistbury Head Mesolithic Type List of Tools.

millimetres to over two centimetres long. No true examples of distal microburins have been recovered in the assemblage. The method involves the deliberate notching and breakage of a bladelet to detach the (thicker) proximal end. When the bladelet is snapped at its weakest point, across the notch, it leaves a characteristic proximal fragment which displays part of the notch and an oblique break facet on the ventral surface. This portion is known as the microburin.

Evidence that this technique was used for making microliths at Hengistbury is shown by a microburin which refits to the proximal section of a microlith (Figure 4.15, 3). Negative microburin facets are also sometimes visible on the tips of microliths (Figure 4.10, 23-27).

A regular feature of the Hengistbury microburins is the presence of the notch made by direct retouch on the right hand side (99%). This accords well with the high proportion of microliths which are retouched on the corresponding side.

Both the breadths and thicknesses of microburins display enough uniformity to suggest that blanks of a regular shape and form were selected for making the microliths. The breadths of the microburins range in size from 0.1 - 1.7 cm, with a mean measurement of 0.73 $\pm$ 0.227 cm. Thicknesses of the pieces vary from 0.1 - 0.4 cm and have a mean of 0.23 $\pm$ 0.065 cm. Not surprisingly, they are slightly thicker in dimension than the microliths.

Not all microliths were made by deliberately notching then snapping a bladelet. Occasionally, it appears that the bulb of percussion was either accidentally or deliberately removed during the course of retouching the edge. Figure 4.15, 11-13 shows three retouched bulbar fragments un-notched and with straight breaks. Although none has yet been refitted to a

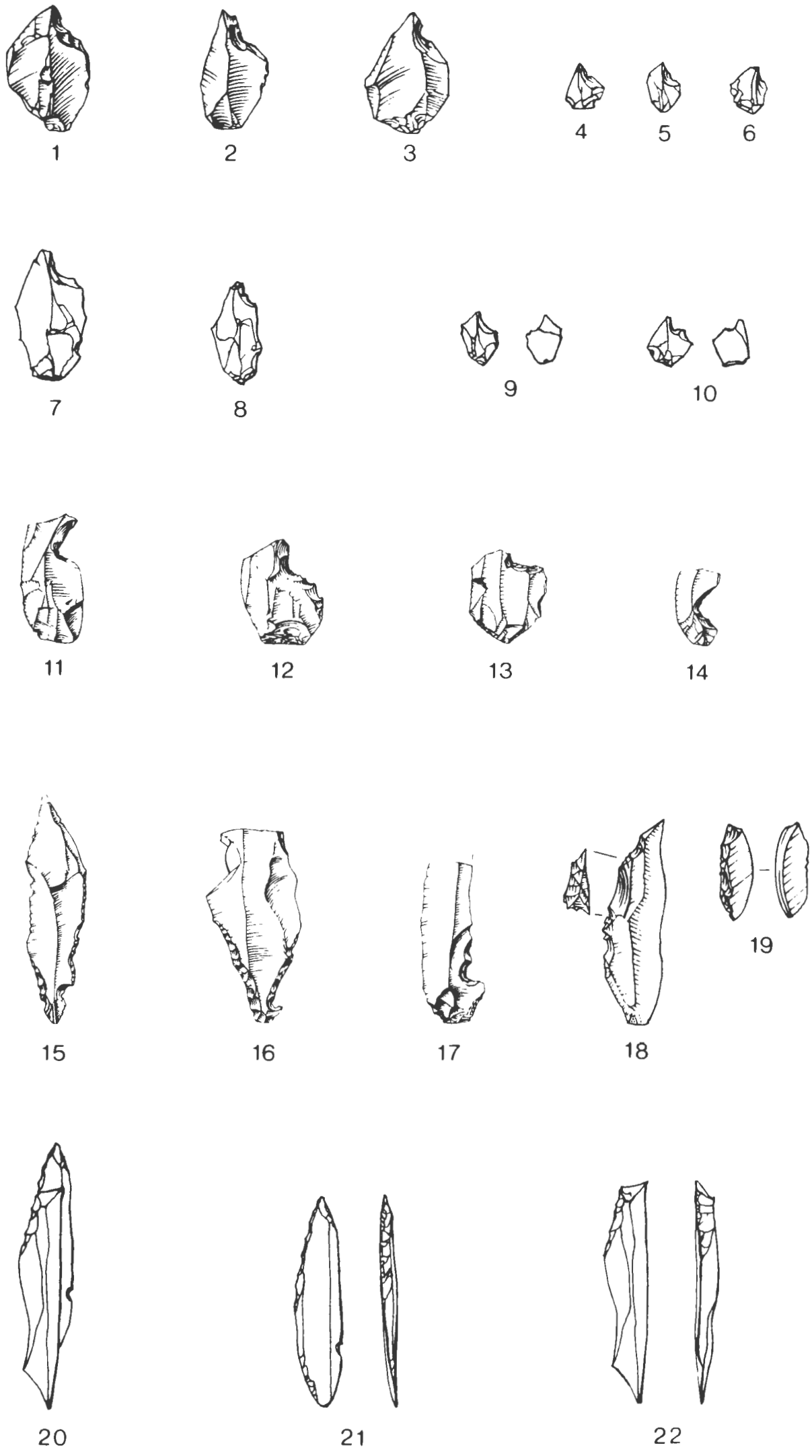


Figure 4.14 Powell Mesolithic site: 1-10. Proximal microburins; 11-14. Microburin miss-hits; 15-17. Unfinished forms; 18. Experimental microlith with lateral snap; 19. Lateral edge fragment of microlith; 20. Two refitted microliths; 21-22. Prior to refitting. Scale 1:1.

tool, these pieces are undoubtedly the by-products of microlith manufacture.

When the microburin break produces a straight snap it is known as a miss-hit (Figure 4.14, 11-14). There are 44 such examples in the assemblage.

Unfinished Forms.

Another category of waste comprises those pieces in which the first stage of notching preparation was carried out but for some reason the microburin blow was never made. Figure 4.14, 16 & 17, illustrates two examples where the reasons for abandonment are relatively clear: both the distal ends are broken. In the third example (Figure 4.14, 15), the reason for discarding the bladelet might have been related to the steepness of retouch on the edge opposite the notch.

"Krukowski Microburins".

35 broken tips of microliths have been recovered which can be described as "Krukowski Microburins" (Figure 4.15). These waste pieces were first recognised from the Polish Mesolithic (Krukowski 1914) but the name itself does not appear to have been used until 1938 when it was coined by Giraud and others (Tixier 1963). The term itself is somewhat misleading since unlike the true microburin, the Krukowski microburin usually appears to be a purely accidental form as opposed to a deliberate by-product. According to François Bordes, the Krukowski is a type of fortuitous waste flake which occurs particularly when backing the edges of blades and bladelets. It often results when the retouching blow is delivered too close to the middle of the bladelet and the piece breaks, producing a fracture scar almost exactly similar to a typical

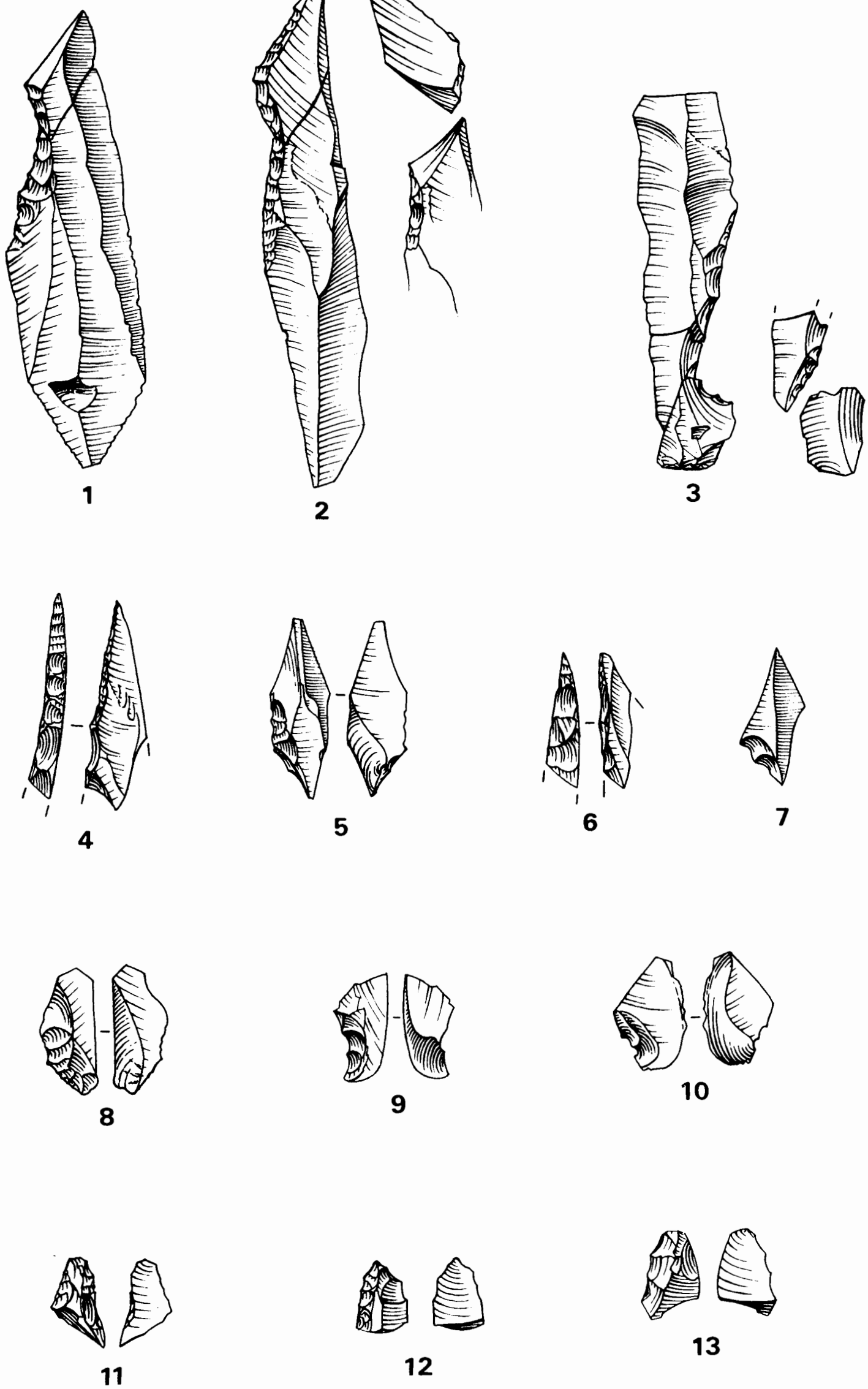


Figure 4.15 Powell Mesolithic site: 1-2. Microliths with refitting krukowski microburins; 3. Microburin with refitting proximal microburin, plus ventral views; 4-8. Krukowski microburins; 9-10. Notch fragments; 11-13. Retouched proximal end fragment. Scale 2:1.

microburin facet (Bordes 1957, 580).

At Hengistbury, tips of this kind display retouch along one edge and a microburin-like facet on the ventral surface. Another common breakage during microlith manufacture is the ordinary transverse snap which leaves a 90 degree break on the end instead of a pointed tip. It requires further retouch to modify the broken end into a true point. I have noticed in my experiments that it is during this further shaping stage that the Krukowski accidents frequently occur, particularly when an anvil is used. One such example from the Powell site is shown in Figure 4.15, 1; it has been refitted to the proximal section of a microlith fragment.

All of the Krukowski microburins at the Powell site are proximal end examples, and so cannot easily be confused with distal microburins which sometimes occur in other Mesolithic assemblages.

Post-Mesolithic Artefacts.

A small number of artefacts of clearly post-Mesolithic age have been recovered from the Powell site. These include 4 polished stone axe fragments and several fragments of arrowheads, probably abandoned in the early stages of manufacture (Figure 4.13, 9-10). Together, the tools constitute no more than 10 pieces, that is just over 1% of the total tool assemblage.

Hammerstones.

In addition to one rounded quartzite cobble, several slightly battered flint pebbles have been recovered, which may have served as hammerstones.

Non-Flint Artefacts.

Two sandstone 'rubbers' each measuring about 12 x 4 cm have been excavated from the Powell area (Figure 4.3). Neither shows obvious signs of utilisation on the flatter sides (e.g. heavy abrasion or striations), but the ends of both of the pieces exhibit some modification. The end of one piece in particular displays a marked angularity which might have been due to some form of use. The second rubber shows slight rounding at one extremity. Both pieces were found within a metre of one another and close to the quartzite 'hammerstone' described above.

No precise function has yet been determined for these artefacts. From their apparent association it seems likely they were used together, while modification at the ends suggest the extremities were the focal points of use. Similar elongate stones are recorded from various ethnographic contexts where they are known to have been used in a number of ways ranging from grinding of plant materials and red ochre to skin-working (Miles 1963; Osgood 1940).

Petrographic analysis of the artefacts by Mr. D.T. Moore of the BM (Natural History) has confirmed that both are made of sandstone. Interestingly, one of the 'rubbers' is a mixed tourmaline bearing sandstone, the nearest occurrence of which is in Devon. The presence of this rock-type at Hengistbury need not imply long-distance human transport or complex exchange networks. Even today, rocks with a normally more westward distribution (e.g. Portland Chert) are occasionally washed up on the present beach line. A similar provenance, albeit 15-20 kilometres distant, would have provided the most likely source of this material during the Mesolithic.

Unworked elongate pebbles of fine-grained rock are quite

common to Mesolithic sites in southern Britain (Rankine 1949; Rankine 1952; Rankine 1961). Interestingly, the ones reported from Oakhanger V and Farnham are of a tourmaline-bearing 'siltstone' of similar south-western provenance to the example from Hengistbury. For a fuller discussion of such objects see Jacobi (1981c).

Dating.

A series of five thermoluminescence dates have been obtained on burnt flint artefacts from the Mesolithic horizon. The individual ages all of which have been previously reported (Barton and Huxtable 1983) are:

C1-I9	9,320 ± 1260
C2-G11	7,000 ± 1140
C3-F14	12,300 ± 1670
C7-D14	8,880 ± 1000
C9-G11	10,750 ± 1500

The dates are all expressed in years BP. The laboratory designation and site square number precede the dates. The error limit quoted for all the dates is the total error (systematic plus random) at 68% level of confidence, calculated according to the scheme of Aitken and Alldred (1972). On the basis of these figures the average age of the Mesolithic site would be 9,750 ± 950 BP (OXTL 707C).

Taphonomic Considerations.

The site's vertical distribution of artefacts has been the subject of intensive study. Like many other Mesolithic sites in sands, the one at Hengistbury contains artefacts widely dispersed throughout the profile (Keef, Wymer, & Dimblebey 1965; Vermeersch 1982; Gendel et al. 1985). Depths into the main sand unit may vary between a few tens of centimetres to as much as 60 cm at the Powell site. A typical distribution

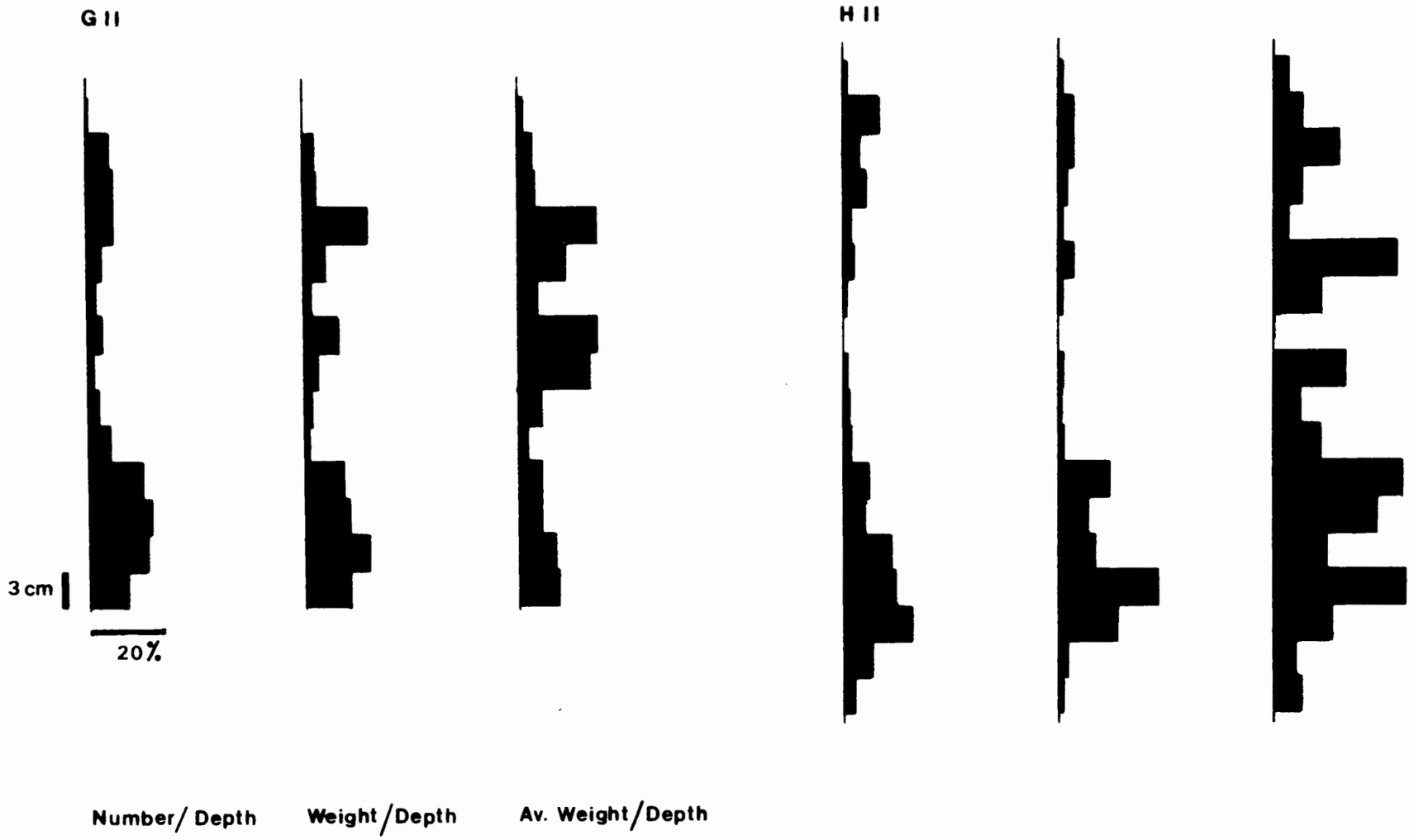


Figure 4.16 Powell Mesolithic site: Vertical distribution of artefacts for two metre squares.

diagram (Figure 4.2) shows the depth (z) coordinates of all artefacts from a metre wide transect across the site. Despite the obvious problems of overplotting pieces up to a metre apart horizontally, no significant difference in the pattern is detectable when a narrower slice (25 cm) is taken and plotted in the same way. However, a weight by depth distribution histogram shows a bimodal distribution of values (Figure 4.16). It should be noted that isolated post-Mesolithic finds also occur in the upper part of the distribution.

Fairly numerous break and technological refits reveal that the depth discrepancy between related pieces can sometimes be considerable. Amongst the greatest differences recorded for individual artefacts are vertical intervals of 39 cm (Barton 1981), whilst refits of between 5-20 cm are quite common. When all the rejoined items are taken together, they form a series of interlocking fits which extend from the top of the artefact horizon to the base.

Despite the important effects major geological processes may have on the movement of artefacts (for a useful summary see Villa 1982), no indications of this kind are apparent in the Hengistbury sands. An analysis of the sediments show they consist entirely of homogeneous windblown sands, with only slight variation in particle size (Collcutt pers. comm.; McPhail pers. comm.). The sands are generally featureless with no obvious bedding structures or traces suggestive of mass movement. Anthropogenic disturbances which could account for the vertical spread of finds (e.g. pits, hearths, post-holes) are also absent, whilst there is nothing in the stratigraphy to indicate multiple occupation levels produced by successive Mesolithic visits to the site. The only apparent delimiting factor to the downward migration of artefacts is a natural

'pavement' of pebbles and small cobbles which mark the base of the finds distribution. Since similar gravel features are visible over a wide area of the headland, they are likely to be of an entirely natural origin (e.g. ancient deflation surfaces).

Several factors might contribute to the vertical dispersal of artefacts in sands. A few of them are outlined below. They describe a range of processes which may not always be visible in the sediments, doubtless other examples could be found to supplement this short list.

1) Trampling.

This anthropogenic factor has been used to explain the vertical displacement of artefacts at a number of archaeological sites with relatively homogeneous sandy layers (Matthews 1965; Stockton 1973; Hughes and Lampert 1977). In modern experiments, trampled artefacts have been shown to migrate vertically downwards by as much as 16-18 cm in unconsolidated deposits (Stockton, ibid.), although appreciably shallower values of 3-8 cm have been recorded elsewhere (Courtin and Villa 1983; Gifford-Gonzalez et al., 1985).

An interesting feature noticed by Stockton was the size sorting of artefacts under these circumstances with some of the larger pieces occurring on or near the surface, while small objects were pushed down to depths of 10 cm or more. Significant too, in all the experiments, was the visibly high proportion of edge-damage and other breakages incurred by the artefacts. In soft sediments this is presumed to be mainly the result of stone on stone contact (Tringham et al., 1974; Flenniken and Haggerty 1982).

Although superficial parallels may be drawn between these

results (particularly the scale of vertical drift) and the distributions at the Powell site, my own observations suggest that caution should be exercised before applying this model unreservedly. In my own trampling experiments, devised and carried out at Hengistbury, I was unable to repeat either the dramatic downward migration of artefacts evidenced in the experiments of Stockton, or even some of the minor ones suggested by Gifford-Gonzalez and others. The negative results of one of my experiments, and the experiment itself, are worth describing in detail, since they so radically contradict the accepted philosophy of the 'tramplers'.

A flint scatter consisting of pieces with a size range of 6 - <1 cm (commensurate with flakes in the Mesolithic sample) was laid down on a bare sandy surface not far from the excavation. The conditions followed as closely as possible those of the previous experiments where unvegetated sand surfaces were mainly used. The sands were made up entirely of sediments taken from the sieving pile and were about 50 cm in thickness. The surface had been smoothed and flattened but, was otherwise not highly compacted. Traffic over the flint scatter consisted of frequent passes to and from the new sieving area. All participants wore soft-soled shoes, or the equivalent (i.e. bare feet (!)). The scatter was trampled in this manner for a period of seven days. At the end of the week, the artefacts had not moved to any noticeable extent and indeed most were still visible on the surface. Next, a covering layer of 5 cm of sand was placed over the first scatter and a new scatter (this time sprayed red to aid identification) placed above the earlier one. The same procedure was repeated with trampling again for seven days, before the 'site' was excavated.

The results were surprising. Contrary to what we had been

led to expect, neither of the scatters had been greatly disturbed. Few of the pieces from either the buried or the exposed scatter had moved more than a centimetre or two downwards from their original positions (the horizontal picture was much the same). The flint scatters remained vertically discrete and completely distinguishable one from the other.

One clue as to the general absence of movement may lie in the slightly damp feel to the sediments as they were being re-excavated. Indeed, higher moisture levels were also noted 6-8 cm below the surface in Gifford-Gonzalez's experiment which, she concluded, prevented even further downward migration of the artefacts (op. cit., 810). Such an explanation seems a reasonable one, but does little to allay the suspicion that humidity levels in archaeological sites must have varied a great deal (even on a daily basis), particularly during the temperate postglacial period when the Powell site was occupied. It should also be said that the Mesolithic occupation surface may well have been vegetated.

A second feature noted in the experiments reported in the literature was the extensive edge-damage and other breakages sustained by the artefacts. Whilst transverse breaks were indeed common in both my experimental and archaeological samples, from my own knapping experience it is quite clear to me that a high percentage of them could equally be attributed to manufacturing accidents. Likewise, in none of the reported experiments was it made clear (to me at least) whether the artefacts were examined before they were trampled. Again, according to my own observations, which were made prior to the scatter being laid down, as many as 57% of pieces (n = 198) showed signs of 'spontaneous retouch' (cf. Newcomer 1976), virtually indistinguishable from edge-damage resulting from

treadage.

Finally, the size sorting observed by Stockton, with the larger pieces found higher up, is an almost complete reversal of the weight distributions from the Powell site. If anything, these show a greater tendency for the heavier elements to occur nearer the bottom of the artefact concentration (Figure 4.16 - average weight/depth measurements). These differences constitute important divergences between the trampling data and those obtained from the Mesolithic site.

It could also be added that the results of <u>all</u> trampling experiments reported to date are bound to be different (Collcutt pers. comm.). Until factors such as moisture content, particle size distribution, organic content etc. are properly evaluated in controlled experiments, we will never be able to predict the nature of trampled scatters.

2) <u>Bioturbation.</u>

Major bioturbation such as that produced by repeated tree-fall (Newell 1981), or, more commonly, by animal burrowing, would appear not to have been a major cause of artefact displacement at Hengistbury. As we have already noted there is a general absence of any structures or visible traces of disturbance in the windblown sediments making up the site. Despite the connotations of a name such as 'Warren Hill', there are remarkably few signs of major rabbit burrowing (e.g. differential compaction of sands, mixture of podzolic horizons) or of similar disturbances within the site. Such disturbances have been observed in sections further inland but these differ markedly from anything seen in the Mesolithic area. Moreover, bioturbation of this kind would certainly leave some trace on the horizontal distribution of finds. Again, refitting shows

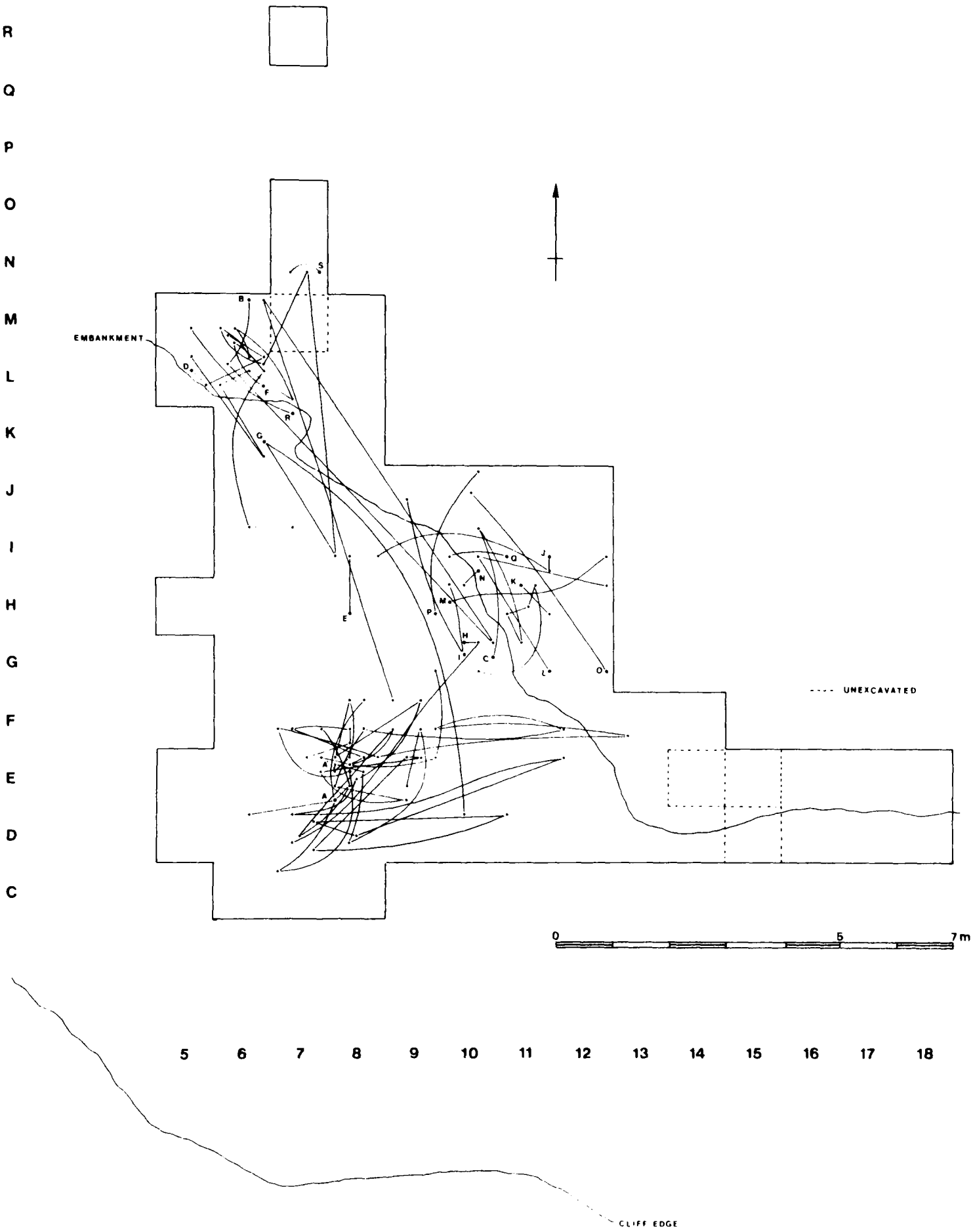


Figure 4.17 Powell Mesolithic site: Horizontal distribution of refitted artefacts.

this not to have been the case (Figure 4.17).

Darwin's observations on the contribution of earthworm activity to the burial of objects (1883), had largely gone unnoticed by archaeologists until Atkinson's influential paper on the subject three-quarters of a century later (1957). Since then various authors have recognised soil mixing by fauna as an important factor in the vertical migration of artefacts. Cahen and Moeyersons (1977) were able to deduce biogenic activity (by termites) to explain the vertical dispersal of artefacts at Gombe, whilst in northern temperate latitudes Erlandson (1984) neatly demonstrated the effects of gopher burrowing on the distribution of a range of archaeological materials.

Although there is no demonstrable evidence of this kind at Hengistbury, it is worth reflecting that the headland was certainly wooded as recently as the Bronze Age (Scaife pers. comm.). It also seems in the light of new information that the Mesolithic site itself was covered by a brown forest soil (McPhail pers. comm.). Under these conditions it is not hard to imagine the effects earthworm and other biogenic activity (e.g. fine root systems) may have had on the prehistoric flint scatters.

It therefore seems likely in the writer's opinion that small-scale biogenic activity over a long period undoubtedly contributed to the downward movement of artefacts at the site. However, it also seems clear that these were not the only processes at work.

3) Drift and Deflation Processes.

In sands, two processes seem to be particularly influential in the downward movement of artefacts. The first involves the dilation or loosening of the sediment by biogenic

activity, which might only be on a small-scale as described above (e.g. earthworms, plant rootlets). The second concerns the continuous compaction of the deposits caused by the weight of the artefacts and the overlying sediments themselves. Both of these processes (dilation and compaction) are contributory causes in the differential vertical movement of the artefacts and are the main reason they do not all occur at one level. It is not hard to imagine that if these simple processes were repeated many thousands of times they could cause the marked vertical displacement often seen at sites in sands.

Another mechanism might also have influenced the artefact distributions at the Mesolithic site: that of wind deflation. A model for explaining the artefact distributions has been devised by Dr. Simon Collcutt, who has also been studying the sediments from the site in close cooperation with the writer. The new model has yet to be thoroughly tested, but it is worth setting it down briefly here to emphasise how stratigraphic problems at sites in sands might be tackled in future. The need to devise a testable method arose principally out of my conviction that despite vertical dispersal of the artefacts the site was otherwise not much disturbed and secondly to explain the small but significant number of post-Mesolithic artefacts amongst the Mesolithic material.

The six-stage scheme is presented as follows (Figure 4.18):

(1) Shortly after the Mesolithic occupation both large and small artefacts are distributed evenly in a narrow band near the surface of the brown forest soil (some earthworm activity).

(2) The surface continues accreting. Some minor upward movement of flints may occur due to major root action and 'larger' animal burrowing. At the same time a downward drift of material begins (effects of dilation and compaction), resulting in a size sorting of flints, with the heavier pieces moving furthest.

(3) Accumulation of sand deposits at the surface continues. The artefact drift is by this time well-developed with most of the larger and heavier items near the bottom of the profile. Further downward drift is impeded by the pebble band at the base of the sediments.

(4) The post-Mesolithic flint (Neolithic/Bronze Age) is discarded on a new occupation surface stratified above the main Mesolithic artefact horizon (some earthworm activity). The Mesolithic material is by now well-separated by size, but the pebble barrier is causing a build-up of artefacts near the base of the profile (and therefore a slight loss of vertical size grading).

(5) Intensive land-use by the Neolithic/Bronze Age occupants is marked by the construction of funerary monuments (barrows) and probably localised agricultural activity. Only isolated stands of woodland survive. A more open landscape is succeeded by rapid erosion of the surface producing a winnowing of the upper sediments. The net result of the wind erosion is the mixing of post-Mesolithic material with the smaller (and higher) of the Mesolithic artefacts in deflated surface areas.

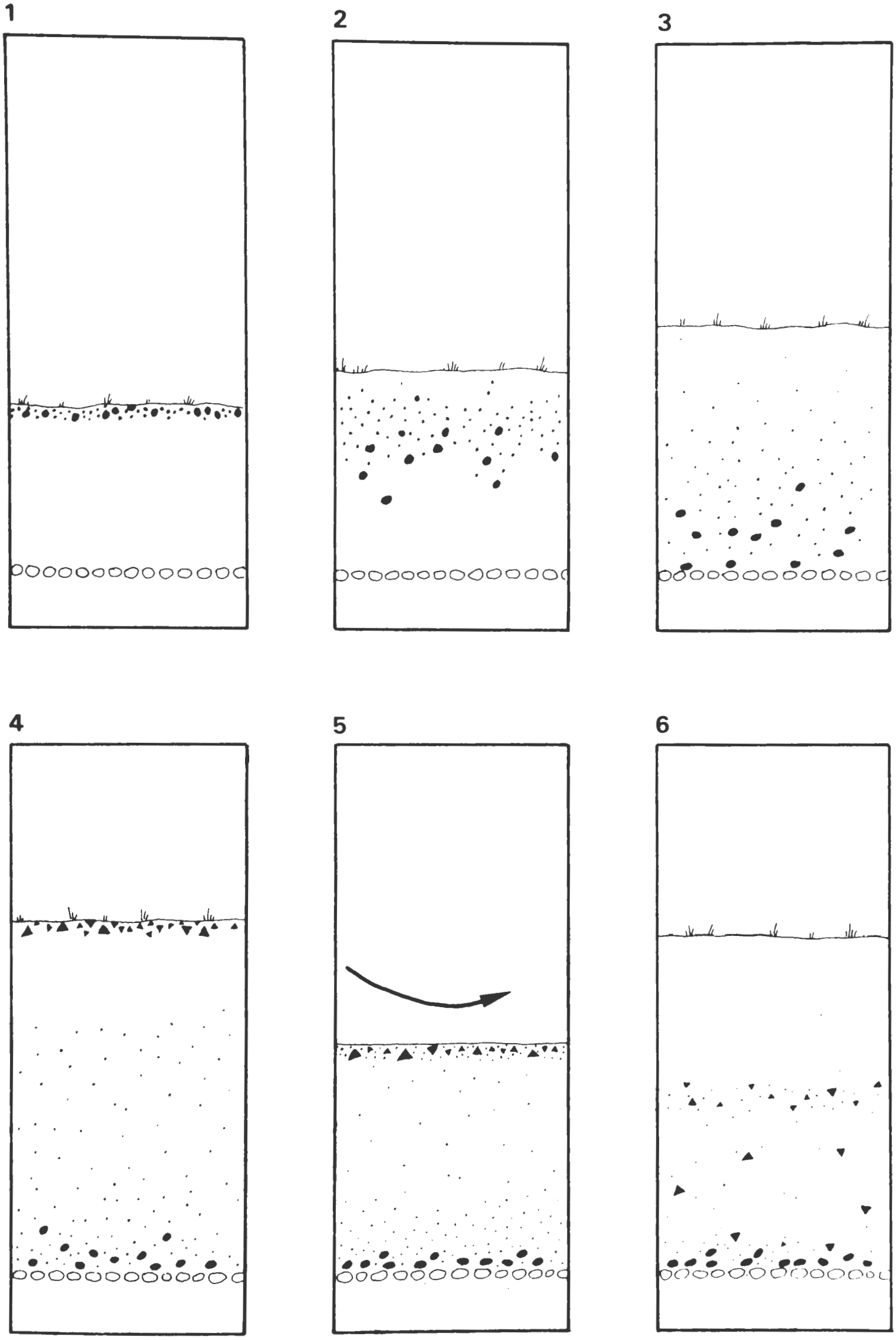


Figure 4.18 Powell Mesolithic site: Model to show different stages in site formation.

(6) Abandonment of the top of the headland; renewed vegetational cover, probably heathland. Surface again accreting and a repeat of Stage 2, except that the artefact drift is by now mostly affecting those pieces formerly on the deflation surface. The Mesolithic artefacts of small size maintain a discrete upper band with a significantly smaller concentration between them and the main lower band (consisting of heavier artefacts). The Neolithic/Bronze Age artefacts are also affected by size drift, with some of the heavier pieces even reaching the main Mesolithic concentration. Drift parameters eventually change (overall slowing of movement) as the soil type takes on its present fully podzolic character and the activity of living soil organisms diminishes).

Obviously such a complex model depends on a number of major assumptions, not all of which will be verifiable. However, as far as the vegetational history of the headland is concerned, there appears to be a fairly close match between the 'scenarios' proposed and the known environmental background. True, no major period of erosion can yet be proved, but it seems not an unreasonable deduction given the known intensive exploitation of the headland by the builders of the prehistoric barrows. Much the same deflation of the surface can be seen today where the turf cover has been removed.

One possible method of testing the processes taking place in stage 6 would be to produce depth/weight statistics on the known Post-Mesolithic artefacts. In particular, it should be possible to predict that the heavier pieces (say, the Post-Mesolithic cores marked by many incipient cones and made on local raw material) would tend to occur amongst those artefacts

which are making their way downwards into the main lower Mesolithic band. Once these had been subtracted from the equation it might be possible to make a calculated guess about the average size (or at least weight) of other contaminating pieces in the different levels.

At Hengistbury, however, it is fortunate that no major mixing of industries occurs. Less than 0.1% of the whole assemblage can be recognised as Post-Mesolithic on typological, technological and raw material criteria. Even if we multiply this figure by a factor of ten (to be on the safe side), it can be seen than any such later artefact contamination is still negligible and will have no important effect on the accurate characterisation of the Mesolithic industry. However, at sites where some major doubt exists (e.g. Downton, Wilts.), methods of this kind will doubtless add precision in the identification of flint material which is otherwise difficult to isolate.

Before proceeding to compare Hengistbury with other Mesolithic sites it would be as well to summarize what we know about the Powell location and its flint assemblage so far. First, despite present appearances the site once overlooked a substantial dry plain with the contemporary shoreline perhaps lying as far away as 15-20 km. Secondly, from soil fabric studies and presumed contemporary pollen profiles it would appear that the sandy upland ridge of Hengistbury was also wooded.

The flint artefacts themselves represent a highly standardised toolkit, consisting of microlith points, end-scrapers and microdenticulates. There are no associated burins or tranchet-axes. The significance of these absences will be discussed below. The considerable numbers of microburins, krukowski types and other tool debitage indicate on-site

manufacture of the microlith points. Amongst the microliths, however, are specimens with clear signs of 'impact damage'. Their presence at the site may be explained by repair and replacement of broken flint projectile equipment.

Relatively small, discrete flint assemblages of this kind probably describe short-term, task specific hunting sites, perhaps occupied for no more than a few days. Larger, more permanent residential units may have existed some distance away. The possibility that the Hengistbury campsite was occupied by transient hunters moving inland from the coast or from further west may be indicated by the presence of drifted beach material, like the sandstone rubbers, at the site.

Selected Comparisons Between Hengistbury and Other Southern British Mesolithic Assemblages.

A definitive account of all the known southern British Mesolithic assemblages and their relation to the Hengistbury site is far beyond the scope of this present thesis. Instead, I have chosen to concentrate on certain aspects of toolkit variability in the Early Mesolithic (*sensu* Jacobi 1976) with reference to a small selection of sites which are related (in a regional sense) to Hengistbury.

The five sites in the study are all open-air locations within 100 km of Hengistbury Head; most of them are in fact a good deal closer (figure 4.19). Each of the collections is considered "Early" (i.e. pre-8,750 BP) either on grounds of C14 dating or typological content or both (cf. Jacobi, 1975; Jacobi 1976; Jacobi *et al*. 1980). Only one assemblage (Iverne



Figure 4.19 Distribution of Mesolithic sites.

Minster) derives entirely from a surface collection and despite a distinctively "Early" appearance in its microlith shapes, various reservations might be felt as to its true status (see below). The rest of the material otherwise comes from reliably documented contexts.

Like Hengistbury, the sites of Winfrith Heath (Palmer and Dimbleby 1979) and Iwerne Minster (Summers 1941) are both in Dorset, whilst Downton (Higgs 1959) lies just north of the Dorset border in Wiltshire. The furthest two sites from Hengistbury are those of Iping Common, W. Sussex (Keef, Wymer and Dimbleby 1965) and Thatcham III, Berkshire (Wymer 1962).

Topographically, the six sites (with Hengistbury) can be divided into two categories: those occupying higher ground or hill-tops, and those in low, floodplain-edge situations. Hengistbury (c. 30 m), Winfrith Heath (c. 50 m) and Iwerne Minster (c. 152 m) all occupy high spots with good all-round views of the surrounding countryside. Iping Common likewise perches on slightly higher ground rising to 30 m above the valley floor. By contrast, Downton occurs on a small bluff not more than 7 m above the existing floodplain, whilst the Thatcham sites are similarly situated along the edge of a 2.5 m low terrace overlooking the present river.

In terms of the geological substrate, Hengistbury and Winfrith are situated on Tertiary sands belonging respectively to the Bracklesham and Bagshot series, whilst Iping lies on sands of the Lower Greensand series. The exception in the 'upland' group is Iwerne, which rests on Clay-with-flints in Upper Cretaceous Chalk. Not surprisingly, in view of their floodplain-edge locations, both of the 'lowland' sites occur on superficial river gravels, albeit within 'sandy' deposits at Downton (Higgs 1959), and silts and silty clays at Thatcham

(Wymer 1962).

A-type (obliquely blunted) microlith points, presumed to be used as hafted projectile equipment, are the dominant tool form in many Early Mesolithic assemblages (Jacobi 1973). Jacobi (ibid.) has suggested that whilst similar types continue into the "Later" Mesolithic, they do so in much lower proportions than in the preceding phase. Current estimates show that in Early Mesolithic assemblages they generally make up 80% of the entire microlithic component (Jacobi and Pitts 1979, 169). Although the proportions may vary from sample to sample, similarly high percentages of A-types have been recognised in all six of the collections dealt with here (Figure 4.20).

Other tool components in the six assemblages include end-scrapers, with lesser numbers of microdenticulates (small saws), burins and tranchet-axes. The latter frequently leave highly distinctive waste flakes (tranchet-axe flakes). Although some of the axes should properly speaking be regarded as "adzes" (Clark 1936, 104), I have chosen for convenience to use the original term in its broadest sense (i.e. covering both types with asymmetrical or symmetrical sections).

An interesting feature previously remarked upon in the literature is the low density of Mesolithic tranchet-axes on the sandier soils of Southern Britain (Clark 1932a; Mellars and Rheinhardt, 1978). The three 'upland' sites on sands in my sample prove no exception to this rule. A second distinctive feature is the quasi-absence of burins from each of the three sites. At Hengistbury neither burins nor axes are found, whilst at Winfrith Heath a single tranchet-axe, a few axe-flakes and less than 5 burins have been identified (pace Palmer, in Palmer and Dimbleby 1979: see especially her fig. 21, in which most of the supposed burins are clearly

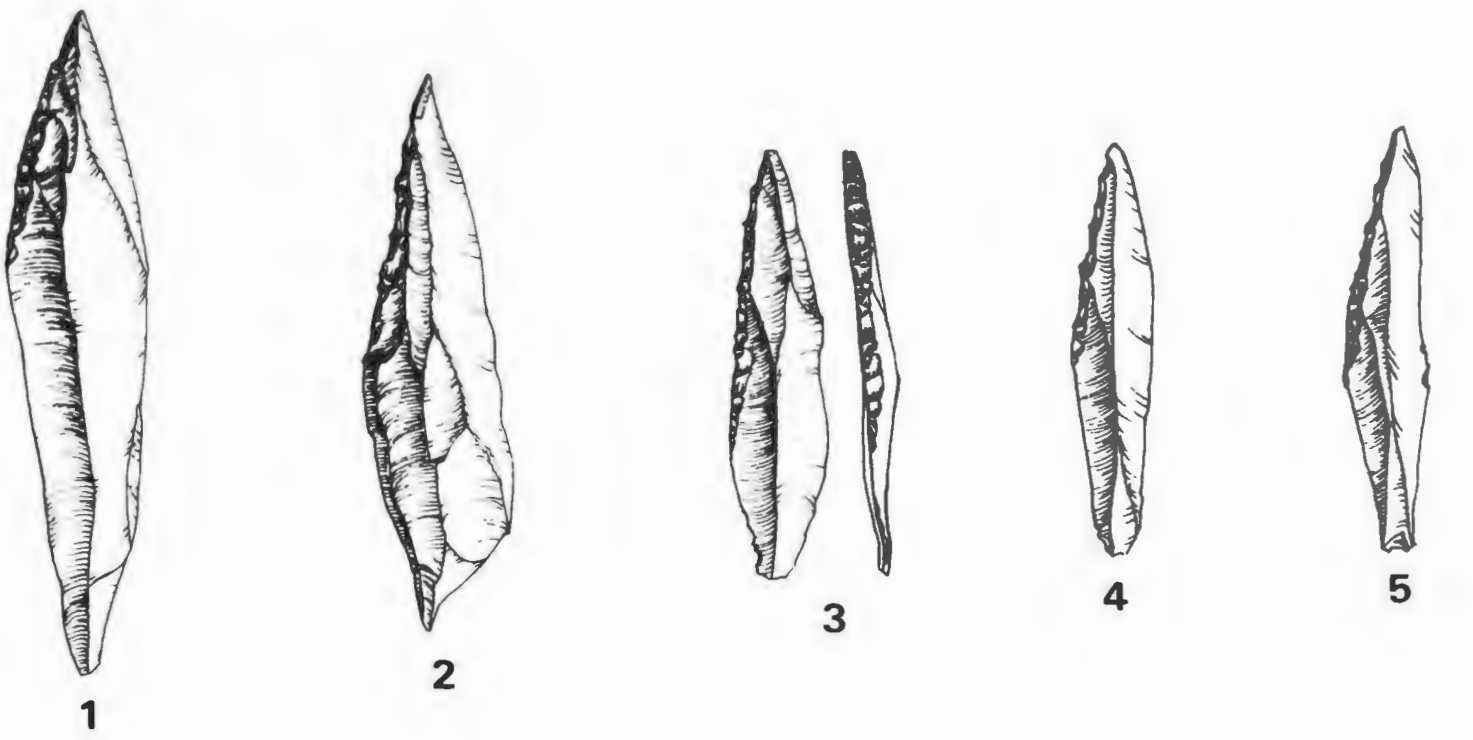


Figure 4.20 Microlith A-type points: 1-11. Winfrith Heath; 12-22. Iwerne Minster.

misidentifications of 'Siret' breaks or other accidental types). Tranchet axes and burins are also conspicuously missing from the Iping Common inventory; only one example of a burin has so far been recorded from the Keef area (Keef et al. 1965, fig. 2, 9).

Inspite of the fact that tranchet axes do not constitute a particularly common element in any of the six samples, much better evidence for the presence of these tools and of burins occurs at each of the low-lying sites of Thatcham and Downton (Jacobi, 1975. fig II, 33). Three tranchet-axes (one being a roughout, consisting of several broken fragments refitted by J. Wymer and myself) were recovered at Thatcham III, together with more than 10 tranchet-axe flakes (my counts are marginally higher than those of Jacobi, op. cit., fig. II, 33). The presence of at least one axe-flake of a different (honey-coloured) flint from the rest of the axes, plus the fact that only two of the axe-flakes can be refitted to an original tool (Wymer 1962, fig. 9), suggest that the actual occurrence of axe finds probably represents a considerable under-estimate of the tools used at the site. Also well-represented at Thatcham are burins, of which 17 have been recorded from Site III (Jacobi 1975, fig. II, 33). An identical number of burins has been identified from the second site of Downton (Jacobi's figures, ibid.). Here, the presence of 27 tranchet-axe flakes likewise suggests that the one axe specimen is a considerable under-representation of the number of these tools made and used on the site. At both Downton and Thatcham it is worth recording that other flint tools (e.g. awls) which do not occur in any frequency at the 'upland' locations, are recorded in the site inventories.

Deliberately omitted from this brief summary is the

assemblage of Iwerne Minster. Although probably containing a strong Early Mesolithic element (predominance of A-type microliths; see also the results of the morphometrical analysis), the collection is known to contain an admixture of later material, including Neolithic axes and chisels (Summers 1941). For this reason and the fact that I was only able to inspect the microliths in the collection I decided to exclude the sample from this part of the analysis.

Overall, the sum total of differences between the three 'upland' toolkits is far less marked than it is between this group and the two 'lowland' sites of Thatcham III and Downton. Despite closely matching microlith styles and sizes, the greater diversity of flint equipment present in the floodplain locations seems to me to suggest a range of activities visibly lacking in the upland sites. The differences can be summed-up as follows: 'upland' locations typified by a narrow range of tool types versus 'lowlying' sites near lake or river margins containing a much broader spectrum of implements.

Given these contrasts, what explanations might be put forward to account for such variation in the toolkits? In answering this question I have made the basic assumption that, although not necessarily contemporary in the strict sense, the two location categories (upland and floodplain) may be seen as representing part of a range of sites a given social group might be expected to occupy in the course of its normal seasonal round. Viewed in Binford's terms, the upland assemblages may be seen as 'expedient' toolkits, made up largely of ready to use hunting equipment and containing few carefully 'curated' items such as axes. They are also typified by the fabrication and utilisation of tools in the same area (Binford 1973). Such a notion could turn out to be altogether

too simplistic, but it is worth noting the dense concentrations of microliths and microburins at the Hengistbury site. Such signs of intense, but probably short-term manufacturing activity, coupled with the impact-damaged points are just the kind of vestiges likely to be associated with a temporary hunting stand where the repair and replacement of arrowheads was one of the main activities undertaken. The few other elements in the toolkit include microdenticulates and end-scrapers. Again, these might be expected at locations where processing activities were carried out following an animal kill (e.g. meat cutting, sinew removal, skin scraping).

The presence of large quantities of waste, as well as broken tools, at the water-edge locations could likewise be regarded as features of an 'expedient' toolkit. Here, however, the main difference lies in the additional presence of tool forms generally missing from the upland locations, such as burins and tranchet-axes. Absence of the latter at the upland sites may be partially due to the axes being more carefully curated items, which were less likely to be casually discarded and were probably carried in hafted form from site to site. The absence of burins cannot easily be explained in this way. To judge from their relatively high frequencies at the floodplain sites, it would appear that they were connected with tasks seldom performed at the upland locations. In the floodplain sites then, it is proposed that in addition to everyday repair and maintenance of hunting equipment (cf. Thatcham III with its microliths, bone and antler points etc.), other duties were performed which included bone and antler processing and perhaps woodworking, accounting for the presence of burins and axes respectively.

In summary, it is postulated that the main difference

between the three upland and two floodplain assemblages lies in the greater diversity of toolkit at the lowland locations. Both toolkits might be regarded 'expedient', although more heavily curated items (e.g. axes) seem to be more common in the floodplain assemblages. Despite evidence for a wider diversity of tasks at the water-edge sites it should be emphasised that activities at the two kinds of location should not be regarded as mutually exclusive. Indeed, both might have served as short-term encampments for hunting purposes and supporting evidence for this view could be found in, for example, the bone and antler projectiles from Thatcham III and the impact fractured microliths at Hengistbury. The presence of large numbers of tools at both types of site need not imply long-term occupation. On the contrary, it is more than likely that both represent episodes of intensive tool-use associated with ephemeral campsites.

The purpose of this section was briefly to consider how the Powell site at Hengistbury might relate to other Mesolithic occurrences of similar age in the same region. One can conclude that in a topographic situation where there are distinctive 'upland' and 'lowland' sites, Hengistbury represents a good example of the former and the functional suggestions made about these assemblages all apply to it.

Morphometric Analysis of Microliths.

This last part of the chapter draws extensively upon the formative work by Jacobi and Pitts (1979) on changes in flint tool morphology during the Mesolithic. Using simple length and breadth measurements of artefacts such as microlith points they were able to demonstrate a consistent dichotomy between the Early and Later Mesolithic assemblages, thus adding;

considerable weight to Jacobi's original hypothesis of two chronologically separate stages of the British Mesolithic (Jacobi 1973). On the basis of this study I set out to measure a sample of microliths from each of the six assemblages mentioned above to see whether the values obtained would match those known to be characteristic of the 'Early' group.

The sites selected have been briefly discussed above and we have seen that each was chosen on the basis of microlithic content and/or 'absolute' dating. Only two sites have produced evidence of the latter type. Thatcham III has a series of three C14 dates ranging from 10,365 ± 170 BP to 9,665 ± 170 BP (Wymer 1962; Jacobi 1975); A total of five thermoluminescence dates from Hengistbury give an average age of 9,750 ± 950 BP (Barton and Huxtable, 1983 and see also above). The rest are attributed to the Early Mesolithic on grounds of the nature of their microlithic component, i.e. a clear dominance of microlith A-types. This is generally taken to be a reliable index of 'earlyness' in the British Mesolithic and can now be supported by a growing corpus of C14 dates.

Of the samples selected, three were entirely new (Hengistbury, Winfrith Heath and Iwerne Minster), in the sense they had not been measured by anyone else; the three others (Downton patinated assemblage, Thatcham III and Iping Common (Fitzhall) II) had been measured before but were included for several reasons. Principal amongst these was the fact that one of the samples (Iping) had been substantially augmented by new finds since the original work (Jacobi Collection). I also wished to include the thickness variable (not previously used) for all of the microliths, to see whether this would produce any anomalies not otherwise apparent in the average length and breadth measurements. In the event, this proved to be an

unfruitful exercise, since thicknesses varied more or less evenly relative to the length/breadth ratios of the tools, but the attempt was worthwhile.

Sampling Procedures.

In a rapid survey of this kind, various allowances have had to be made for qualitative differences in the data set. For example, a potential source of bias was the fact that none of the five comparative samples had been collected using the same careful excavation methods we were able to employ at Hengistbury. The net result is that many smaller microliths are likely to be missing from a good number of collections particularly Iwerne Minster, which derives entirely from a ploughed land surface.

Other inconsistencies were minimized by using only wholly complete pieces for the length measurements; these were also measured along the main percussion axis of the piece, which was not always identical to using the maximum length. In some of the smaller samples breadth and thicknesses were measured on incomplete items, but only when they showed minimal breakages to either extremity, i.e. the greater proportion of the piece was still intact, and there was no doubt that the maximum breadth and thickness were present.

Results.

Despite the problems inherent in comparing samples of this kind, a remarkable degree of uniformity is expressed in the mean length/breadth statistics from the six assemblages. They also show very close agreement with the measurements presented by Jacobi and Pitts for their Early Mesolithic group (Figure 4.21).

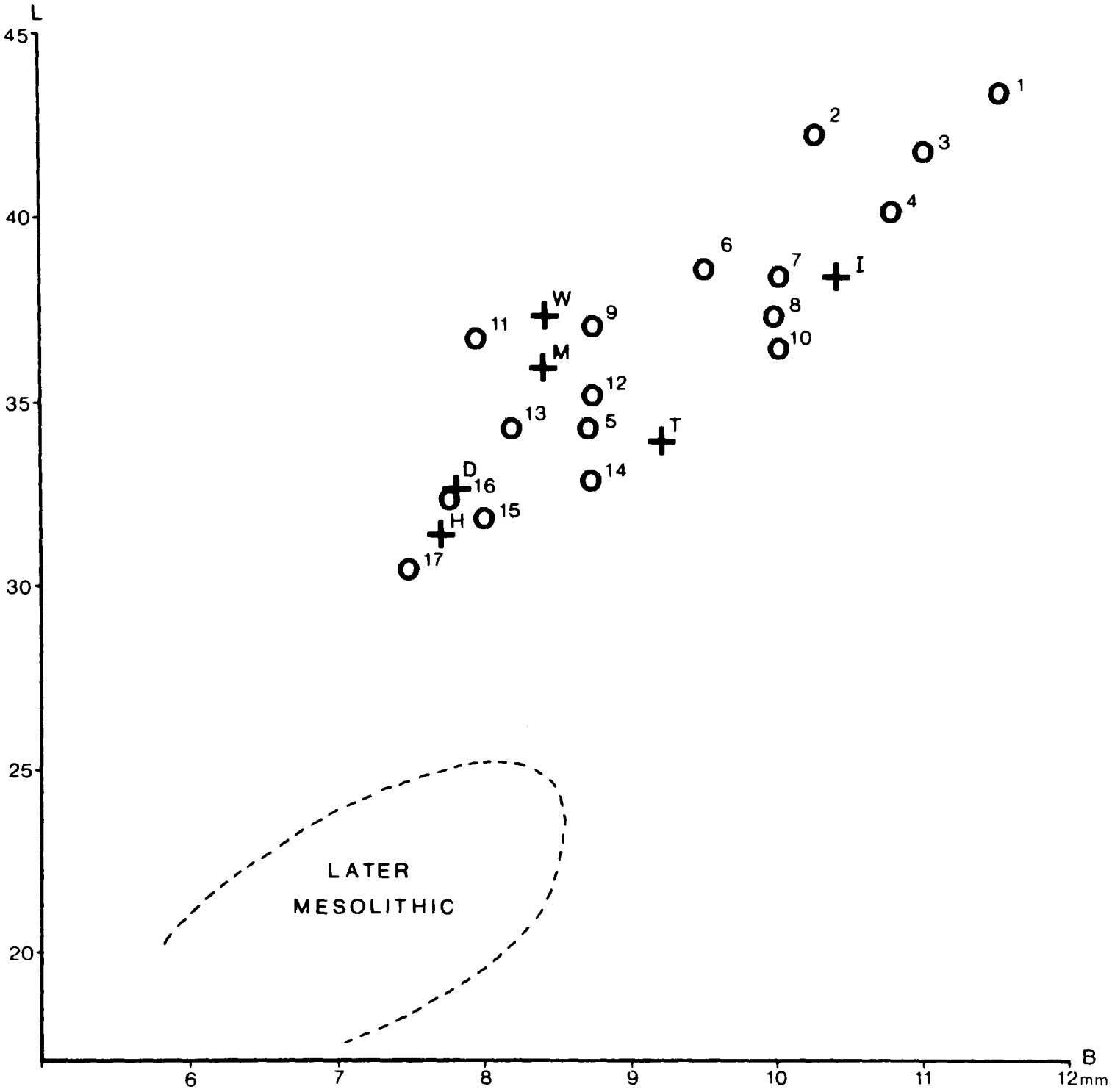


Figure 4.21 Length x Breadth measurement of microlith A-type points (after Jacobi & Pitts 1978).

D. Downton; H. Hengistbury Powell site; I. Iping Common;
M. Iwerne Minster; T. Thatcham III; W. Winfrith Heath;
1. Thatcham V; 2. Lackforth Heath; 3. Thatcham II;
4. Thatcham VII; 5. Kingsley Common Y4; 6. Kelling Heath;
7. Iping (Fitzhall)II; 8. Greenham Dairy Farm; 9. Thatcham I;
13. Downton; 14. Frensham Great Pond (N.); 15. Oakhanger VA;
16. Oakhanger V; 17. Heath Common.

The only slight differences noted between my statistics and those cited in the original work relate to Downton and Thatcham III, and may be attributable to two factors. First, the strict criteria I used for selecting pieces allowed fewer artefacts to be measured than in the Pitts and Jacobi sample. A second source of slight divergence may be due to the methods employed to measure the the microliths (i.e. I used technological rather than maximum lengths.).

Amongst the six samples measured, Hengistbury and Downton fall at the lower end of the scale of microlith sizes. At Hengistbury this might reasonably be explained by good recovery techniques in which 1.98 mm mesh sieves were used. The length range of microliths from the site amply demonstrates this fact. Whereas at Hengistbury the smallest microlith measures 1.62 cm in length, at all of the other sites (including Downton) the minimum size is over a centimetre longer.

However, the differences between all of the groups presented here are very slight indeed and may be accounted for by some small variation in the quality of the local raw material. As stated above, the mean thicknesses of the six microlithic samples are all much the same (Table 4.3). The slightly thicker measurements recorded for Iwerne Minster are very close to those from Winfrith Heath, a feature also expressed in the length and breadth measurements. Whilst no direct link need be implied between these two sites, it is interesting to note that the two locations are less than 27 km apart.

In conclusion, it can be noted that the microliths from the Dorset sites and the other locations fit remarkably well with those of the Early Mesolithic type. Implicit in this observation is the high degree of standardisation which

MESOLITHIC SITES: A-TYPE MICROLITHS

Site		Length	Breadth	Thickness
DOWNTON				
	Sample Size:	11	93	26
	Range (cms):	2.62 - 3.90	0.46 - 1.57	0.10 - 0.38
	Mean (cms):	3.269	0.776	0.233
	Std Dev (cms):	±0.415	±0.179	±0.0694
HENGISTBURY				
	Sample Size:	59	316	326
	Range (cms):	1.62 - 5.00	0.19 - 1.51	0.10 - 0.55
	Mean (cms):	3.151	0.777	0.241
	Std Dev (cms):	±0.747	±0.175	±0.067
IPING COMMON				
	Sample Size:	72	77	77
	Range (cms):	2.07 - 6.57	0.66 - 1.96	0.13 - 0.49
	Mean (cms):	3.862	1.043	0.259
	Std Dev (cms):	±0.751	±0.251	±0.0681
IWERNE MINSTER				
	Sample Size:	14	32	32
	Range (cms):	2.04 - 5.65	0.57 - 1.33	0.19 - 0.48
	Mean (cms):	3.607	0.842	0.288
	Std Dev (cms):	±0.977	±0.174	±0.0658
THATCHAM III				
	Sample Size:	40	47	47
	Range (cms):	2.13 - 5.80	0.37 - 1.76	0.15 - 0.38
	Mean (cms):	3.406	0.919	0.248
	Std Dev (cms):	±0.859	±0.213	±0.0559
WINFRITH HEATH				
	Sample Size:	44	48	48
	Range (cms):	1.83 - 6.49	0.56 - 1.39	0.15 - 0.52
	Mean (cms):	3.746	0.841	0.272
	Std Dev (cms):	±0.909	±0.183	±0.0755

Table 4.3 Mean Measurements of Mesolithic A-type microliths.

characterises the A-type microliths in the Early Mesolithic assemblages of southern Britain.

For the purposes of this dissertation, this concludes my account and brief comparative study of the Powell Mesolithic site, although if time and space were unlimited it would have been interesting to extend the comparison to numerous Mesolithic sites elsewhere in Southern Britain and maybe even to look at Continental material, as I did in my study of selected Upper Palaeolithic and Long Blade sites in the preceding chapters. That however must remain for other research students, or perhaps for post-doctoral work of my own. I have already published accounts of aspects of the Powell site in a number of short papers (Barton 1981; 1983a; 1983b; 1984) Barton & Bergman 1982; 1983) and a fuller treatment of the results obtained will be included in my monograph of the work done at Hengistbury, now in preparation.

MESOLITHIC SITES: UNRETOUCHED BLADE/LETS

Site		Length	Breadth	Thickness
HENGISTBURY				
	Sample Size:	90	90	90
	Range (cms):	2.42 - 6.44	0.42 - 2.49	0.13 - 1.04
	Mean (cms):	3.67	1.28	0.42
	Std Dev (cms):	±1.05	±0.42	±0.19
IWERNE MINSTER				
	Sample Size:	20	30	30
	Range (cms):	2.91 - 5.31	0.47 - 1.61	0.19 - 0.54
	Mean (cms):	3.962	1.066	0.330
	Std Dev (cms):	±0.647	±0.251	±0.786
THATCHAM III				
	Sample Size:	100	100	100
	Range (cms):	2.15 - 6.00	0.59 - 1.98	0.12 - 0.53
	Mean (cms):	3.875	1.182	0.285
	Std Dev (cms):	±0.849	±0.271	±0.088
WINFRITH HEATH				
	Sample Size:	100	103	103
	Range (cms):	2.19 - 8.20	0.58 - 1.95	0.12 - 0.75
	Mean (cms):	4.062	1.119	0.312
	Std Dev (cms):	±1.101	±0.281	±0.113

Table 4.2 Mean Measurements of Mesolithic unretouched blade/lets.

Chapter 5. Discussion and Conclusions.

In this thesis I have brought together a large body of previously unpublished data on blade material from a number of open-air sites in Southern Britain. The present chronological structure for these finds is incomplete and contains many gaps. Reliable dating evidence exists only for one Later Upper Palaeolithic assemblage (Hengistbury Head) in the sample area and a couple of Early Mesolithic occurrences (Hengistbury Head and Thatcham). By any standards this constitutes very poor evidence indeed on which to construct a reliable chronological framework for an important segment of the late glacial and early postglacial periods. However, faced with the alternatives of abandoning the present database altogether until firmer evidence emerges, or using the existing collections to try to build a relative sequence based on criteria other than absolute dating, I have, perhaps optimistically, chosen the latter course. In doing so I would like to stress that the scheme I am proposing has merely the status of a preliminary working model which it will be necessary to test properly in due course, and which may well require substantial adjustment.

Thus, within the present limited chronological framework for Southern Britain there exists a significant hiatus between the Later Upper Palaeolithic and Early Mesolithic (as evidenced at Hengistbury and Thatcham: see below). Whether this gap accurately reflects the overall situation in the south of the country is still difficult to gauge because of the lack of sufficient dating evidence from the majority of sites. On the basis of continental parallels, however, it would appear that Federmesser-like industries (of which Hengistbury may be one) and Early Mesolithic examples are indeed separated by a gap of at least a millennium. In terms of pollen zonation this break would appear to correlate with the greater part of the Younger Dryas Zone III and the earliest part of the Pre Boreal Zone IV. It is to this period in Southern Britain that I believe a third group of assemblages, distinct and separate in type from the Upper Palaeolithic on the one hand and the usually Early Mesolithic on the other, can now be assigned. Because of the appearance of the finds, which combine

distinctively large blades with a restricted retouched toolkit, I have suggested the term "long blade" to describe the assemblages. In many peoples' view they would meet the criteria for use of the term 'Epi-palaeolithic', given that the dating envisaged is correct. The main reasons for proposing a third major blade grouping in Southern Britain are as follows:

(1) Technological and typological differences with the British Upper Palaeolithic and Mesolithic industries.
(2) Relative dating evidence, albeit scanty.
(3) European affinities for the British material.

1) Technological and typological differences.
These can be summarized as follows:

LATE UPPER PALAEOLITHIC (Hengistbury)	LONG BLADE (Southern Britain)	EARLY MESOLITHIC (Hengistbury)
Blade cores grading to smaller types	Long blade cores (>12cm) & bladelet cores (<5cm)	Bladelet cores
Rare faceting of core platforms	Faceting of core platforms	No faceting of core platforms
Frontal & dorsal cresting preparation	Frontal cresting, rarely dorsal cresting	Frontal cresting only
Tools mainly on blades	Tools on blades and bladelets	Tools on bladelets
Backed blades & bladelets	Rare backed bladelets	No backed bladelets
No microliths	Rare geometric and non-geometric microliths	Non-geometric microliths
Dihedral>truncation burins	Dihedral>truncation burins	Burins absent (but cf Thatcham)
No bruised blades	Bruised blades	No bruised blades
Microburins absent	Few microburins	Many microburins

Although one of the most striking features of the long blade group is the size of the artefacts, there are other important purely technological factors which distinguish it from flintwork of Upper Palaeolithic and Mesolithic type.

In the first place, the technique of core preparation generally follows quite a different pattern from that of the other two groups. The

initial stages normally consist of the production of a single frontal crest and two opposed striking platforms. During the course of the reduction process (i.e. the detaching of blades) minor adjustments are made from time to time to the platforms by the removal of tiny flakes: a technique which leaves a characteristically 'faceted' blade butt. The occurrence of such faceting only falls below 20% in three out of the nine long blade assemblages examined. Another customary feature of the long blade group is the occurrence of two distinctive core sizes: large cores abandoned at an early stage showing negative scars of long blade removals or much reduced versions with multiple bladelet scars. This bipartite division does not occur in either of the other groups. In passing, it is worth mentioning the contribution of the refitting work I carried out, in enabling me to make this point.

The Upper Palaeolithic method of core preparation by contrast often involves the production of two crests, one at the back of the core to control platform angle and rejuvenation, and one at the front to guide the initial blade removals. Reduction of the core was very often accelerated by detaching large core tablets and much less frequently by faceting. Only a relatively small percentage of blade butts from Hengistbury showed modification of the latter type. It may well be significant that the least typical of the long blade assemblages (the King's Site, Suffolk, and Titchwell, Norfolk) also contained low proportions of faceted butts. At Hengistbury, the cores were abandoned at a variety of stages and there is no discernible size disparity.

As with the long blades, the method of core preparation in the Mesolithic assemblages, uses the production of a single anterior crest. The main series of removals, however, were commonly detached from one platform only and rejuvenation of the striking platform was achieved by removing sizeable tablets from the top of the core. Again, no clear division occurs in the size of the cores which are in the main restricted to small blade or bladelet forms.

It is interesting to note that retouched tools are not generally a

common component of the long blade material (but see Swaffham Prior and the King's Site). As such, this makes them of little use as typological 'markers' for basing comparisons with other assemblages. Nevertheless, despite the overall paucity of 'formal' lithic equipment, a few general points can be made concerning the nature of tool-supports and the tools themselves. Retouched tools in the long blade assemblages are generally divided between those made on larger flake or blade supports (burins and end-scrapers) and those made on bladelets (backed pieces and microliths). This clear division between the support-types is amply reflected in the appearance of the debitage, where the same size dichotomy can be recognised. In contrast, the tools from the Upper Palaeolithic site at Hengistbury are generally made on blades, whilst at the Mesolithic sites they most commonly occur on smaller flakes and bladelets.

Of the finds represented in the long blade assemblages, dihedral burins are relatively more common than are truncation types. This is a feature also noted at the Hengistbury Upper Palaeolithic site. On the other hand, a more 'Mesolithic' characteristic of the long blade group is the occasional occurrence of geometric and non-geometric microlith forms. Generally absent, however, are the typical by-products of microlith manufacture (microburins) which feature prominently in most of the Mesolithic assemblages. It may also be noted that some of the smaller backed pieces found with the long blades retain part or all of their butt ends, again indicating much greater similarity with Upper Palaeolithic counterparts. Thus, as a generalisation, it could be said that elements of both Upper Palaeolithic and Mesolithic type are found in the long blade tool-kit, but it is their combined presence which makes these tool assemblages so unusual. This is not to say that important divergences are not also present; for example, it should be noted that end-scrapers on bilaterally retouched supports do not consistently feature in the Upper Palaeolithic or Mesolithic assemblages reviewed. Likewise the presence of many heavily edge-damaged blades seems to be restricted to assemblages of long blade type.

Judging by the technological and typological features outlined above, there would in the writer's opinion, seem to be a prima facie reason for postulating that the long blade assemblages represent a genuinely separate and distinctive cultural grouping. On the same grounds there would appear to be little justification for the suggestion that the long blade finds merely represent the specialized task locations of groups otherwise leaving lithic residues equivalent to one or other of the Hengistbury sites described. If this had been the case, why should the assemblages show such clear differences in their basic technology ?

2) Relative dating evidence.

So far, direct dating evidence is singularly lacking for any of the long blade finds in Southern Britain. There are some signs, however, that a time range corresponding to Zone III/early Zone IV (11,000-9,700) is the most likely period for material of this kind to occur.

Principal evidence for this scheme derives from relative dating of the Avington VI site in Berkshire, where the long blade horizon is stratified well above a dark organic layer believed on palynological grounds to be of Allerød (Zone II) age. Pollen from the long blade layer itself is not inconsistent with a Zone III dating. In Kent, at the long blade site of Springhead, mollusca of probable Zone III type (Kerney's mollusc Zone A) also indicate a relative age for the archaeological horizon (Jacobi 1982). Elsewhere in Southern England at Sproughton, Suffolk, the major long blade horizon lies at the top of a sequence of river channel deposits which give a latest C14 date of 9,880+/_120 BP (corresponding approximately with the Zone III/IV boundary), while the major infilling of the channels seems to have taken place in the cooler conditions of Zone III. Although none of these data constitute hard evidence in themselves, it is interesting to note that their cumulative effect does little to contradict the proposed framework.

The implication that there may be a clear chronological separation between the long blade assemblages and those of Upper Palaeolithic and

Mesolithic type is however difficult to demonstrate on the basis of current evidence. Indeed, it could justifiably be argued that in certain instances the same difficulties may be encountered in trying to separate some of the latest Creswellian (Upper Palaeolithic) survivals in Northern England from the earliest Mesolithic occupation sites in the south of the country, if the published dates are indeed to be taken at face value. Even so, on a regional basis, there are as yet no good grounds for supposing a Mesolithic/Upper Palaeolithic overlap and both assemblage-types appear to be temporally quite distinct. At Hengistbury, for example, there can be little doubt that the Upper Palaeolithic assemblage is of pre-Zone III age. Even given the wide margins of error associated with the TL dates (page 33), the lowest average age at one sigma lies at 11,350 BP, which falls well within the time range of Zone II. By contrast, the Hengistbury Mesolithic site has a central TL date of 9,750+/-950 BP (page 343) and even at one sigma this clearly shows no overlap with that of the Upper Palaeolithic site. The central Mesolithic date occurs in Zone IV, whilst the upper limit of its error bracket falls within Zone III.

Less certain, however, because of the lack of resolution in the data, is the question of chronological separation between the long blade and early Mesolithic sites. Acceptance or otherwise of their contemporaneity would have to depend on the interpretation of a small series of C14 dates and TL determinations currently available. The earliest dates so far obtained for a Mesolithic site in Southern Britain are those from Thatcham III in Berkshire, where the central ages of two determinations fall within pollen Zone III (10,365+/-170 BP and 10,030+/-170 BP). Six other C14 dates from the Thatcham sites, however, can be correlated within Zone IV or V (Wymer 1962; Jacobi 1975; Gowlett pers. comm.). It is also the writer's expectation that when a planned series of new assays is carried out on typical items of Mesolithic bone and antler equipment, plus butchered bone, from the same sites, these will mainly concentrate in the later zones. In this connection it is worth noting that the only direct date so far obtained on a piece of worked antler from Thatcham gives an age of OXA-732

9,760+/-120 (Gowlett pers. comm.), clearly within the range of pollen Zone V. However, without better internal consistency of the dates it is difficult to know which, if not all, relate to the Mesolithic occupation horizon(s). For the present, all that can safely be said is that the sites are likely to have been occupied over a long period, perhaps even extending back into Zone III. However, given the known presence of a distinct long blade technology in adjacent areas of the Kennet Valley, I would myself require much clearer evidence than has yet been produced before I was convinced that a Zone III Mesolithic occupation had actually been demonstrated.

Although the possibility may well exist of an overlap between contemporary Mesolithic and long blade facies (e.g. the King's Site), it is interesting to note that wherever long blades have been found in secure stratigraphic contexts in relation to Mesolithic finds (e.g. Avington VI, Wawcott III, Springhead), the latter never appear within or below a long blade horizon. Elsewhere, hints that a pre-Mesolithic bone and antler technology was present in Central and Southern Britain during Zone III are provided by recent dates on the Sproughton uniserial barbed points (page 108) and a Lyngby axe from Earl's Barton, Northamptonshire (Gowlett pers. comm.). The occurrence of this latter find is of particular significance since it would normally be expected to accompany lithic equipment quite distinct from an early Mesolithic tool-kit. Antler parallels of this type can be found in North German Ahrensburgian contexts dating to Zone III, where they are also associated with long blades. The reindeer antler axe from Earl's Barton therefore constitutes important circumstantial evidence for the presence of a distinct pre-Mesolithic population in Britain dating to Zone III, even though (regrettably) no flint artefacts were associated with the find, such as might greatly have aided this discussion.

3) <u>European affinities with the British material.</u>

I have argued that several important points of similarity can be recognised between the British long blade occurrences and certain

assemblages on the European mainland. In particular, technological comparisons may be made with the North German Ahrensburgian groups and certain sites in the Somme Valley in Northern France, which in each area can be dated to late Zone III (for comparisons see pages 278-282).

Typologically, the Southern British toolkits bear closest resemblance to the North French material of Belloy-type, although analogies may also be noted with tool inventories at the western edge of the Ahrensburgian geographic distribution, such as those in the Netherlands. Many of the French, German and Dutch Zone III assemblages contain a combination of backed implements and genuine microliths. Diminutive tanged 'Ahrensburgian' points are totally absent from Northern France, whilst in Germany and the Low Countries the most common items at many of the long blade Ahrensburgian sites are the obliquely backed 'Zonhoven' points. These assemblages are structurally very similar indeed to the Southern British long blade ones and may also show very low numbers of retouched tools. In addition, they frequently contain examples of the bruised flakes and blades to which I have frequently referred in the preceding text.

A chronological framework for the European finds is gradually being constructed with the help of new C14 dates on faunal remains directly associated with them. The most accurately dated continental assemblages with long blades so far are those of Stellmoor in Northern Germany and Belloy-sur-Somme, France. The age of the Ahrensburgian (upper) level at Stellmoor is placed at 10,150+/-150 BP; Belloy can be dated to c. 10,000 BP. Both of these fall at the end of Zone III, but within the milder 'Friesland' oscillation which marks the Pleistocene/Holocene boundary. Although no close correlation can yet be made in Britain with this early warming phase (but for a review of the evidence see pp. 191-195), the dates seem to me to provide some of the best circumstantial grounds for indicating where in the timescale our British long blade technology should lie.

Main Problems Outstanding.

Three distinctive blade industries have been described in this thesis (Upper Palaeolithic, 'long blade' and Mesolithic) each characterised by its own technological and typological features of flintworking. Notwithstanding a high degree of internal consistency displayed by the groups, certain important variations between related assemblages have been recognised which might be attributed either to functional or to chronological factors or both. The problems underlying the dating of these flint assemblages have been dealt with in detail above.

At the Hengistbury Mesolithic site, it is clear that the flint industry differs radically from both Upper Palaeolithic and long blade ones, but compares well with other Mesolithic sites in the same region. The tool assemblage is characterised by only three major implement classes: microlith points, end-scrapers and microdenticulates. There are no associated burins or tranchet axes. From the considerable quantities of waste flakes, it is clear that many of the tools were not brought to the site but were manufactured on the spot out of flint obtained from the local river gravels.

Relatively small, discrete flint assemblages of this kind may represent the accumulated debris of only a few days occupation. Repair and retooling of projectile equipment is suggested by various discarded items such as the microlith points, which show signs of impact damage. These toolkits are described as 'expedient' (sensu Binford 1983) and appear to indicate short-term, task-specific hunting locations. Strikingly similar lithic equipment also occurs at other upland locations in the same region, including Winfrith Heath and Iping Common. By contrast, Mesolithic camping spots occupying lower lying, water-edge situations seem to be associated with a toolkit of a different kind. This may be illustrated by two examples from Thatcham, Berkshire and Downton in Wiltshire where, despite superficial similarities with Hengistbury, the repertory of tools includes forms such as tranchet axes and burins, which are generally absent from the upland sites. Such toolkits seem to represent a much broader diversity of

activities involving wood, bone and antler working, as well as those associated with hunting. Since on existing dating evidence Thatcham and Hengistbury may be regarded as broadly contemporary, it seems likely enough that the differences in toolkit relate to functional variations rather than chronological ones.

Some of the same kind of functional characteristics can perhaps be seen in various of the long blade assemblages. I have already noted that the majority of the Southern British long blade sites are located near good primary flint sources and generally in valleys or on the banks of major watercourses. Practical and functional reasons for using these spots have been suggested and fully discussed in Chapter 2 (e.g. kill/butchery sites; natural chalk exposures for quarrying flint). Analogies for preferred river valley locations have also been drawn with the German and Dutch Ahrensburgian, and for some of the Northern French sites, which occupy very similar topographic situations (see especially Chapter 3). For the British sites, I also concluded that they mostly represent task-specific locations which were only occupied for very short episodes.

One long blade site which seems to depart markedly from the simple butchery location model, is that of Swaffham Prior in Cambridgeshire. This assemblage shows much greater numbers of retouched tools than any of the other sites, a factor which could be explained by an alternative site function. Here, for example, the presence of a much larger proportion of burins and end-scrapers (Table 2.2, page 201) seems to indicate major processing activities. This contrasts strikingly with the highly restricted toolkits seen elsewhere. Since, the site is also situated well away from the more typical valley bottom location, it could well be representative of a different set of activities altogether. It might be not unreasonable to speculate, for example, that this was a longer term residential unit, deliberately placed some distance from potential kill areas and necessitating a different variety of toolkit from the more usual 'butchery' equipment. As with the Mesolithic sites, for this model to work it has to be assumed that assemblages sharing broadly similar typological

and technological traits are more or less contemporary in age. A factor which makes such an explanation more tenable is that in most other respects, the Swaffham material is identical to the rest of the long blade assemblages. However, until certain key long blade sites are dated, it is impossible to test the validity of these hypotheses.

Much harder to evaluate are those long blade assemblages which exhibit significant variation in technological features of the debitage. Thus, at the site of Titchwell, Norfolk, for example, which shows a very high percentage of plain butted blades (Table 2.2), there may be grounds for suggesting a chronological or stylistic separation of the industry. The retouched tools also display some differences (e.g. in representation of burin-types, plus an absence of informal tools such as bruised blades) and I am inclined to place the material much closer to a Federmesser (Upper Palaeolithic) industry than the rest of the long blade material. On purely typological and technological grounds, therefore, I would suggest that the Titchwell assemblage (assuming it is unmixed) may occupy a position chronologically earlier than the other long blade assemblages. However, research is still in progress there and it is perhaps better to suspend judgement.

No such ambiguity exists over the Hengistbury Upper Palaeolithic assemblage, although because of its so far unique nature analogies must be sought on the continental mainland, rather than in Britain. The assemblage consists predominantly of backed bladelet material, with significant numbers of burins and end-scrapers (in roughly equal quantities). From the type of implements recovered, it would appear that considerable processing activities were carried out, such as might be expected at a major seasonal encampment. The fact that this was more than merely a transitory campsite seems to be indicated by the widespread distribution of finds, abundance of burnt flint, and the possible existence of engraved 'artwork'.

Some preliminary confirmation that tools were used to work a range of hard materials (probably bone and antler) has been provided by functional analyses of the edges of certain classes of implement (e.g. burins). Non-

flint materials used at the site include quartzitic rocks and red ochre, of which the latter occurs locally on the headland.

The quartzite and particularly the worked flint are known not to come from the immediate vicinity of the site. This is interesting from a behavioural point of view, since it contrasts markedly with the long blade localities which are usually situated close to raw material sources. Clearly, other considerations might have influenced the choice of site in this case, such as the prominent position of Hengistbury Head as a vantage point, the availability of shelter and possibly the occurrence of desirable materials such as red ochre.

According to thermoluminescence dates on burnt flint artefacts, the Upper Palaeolithic occupation can be dated to c. 12,500 BP. In the writer's opinion, this date might be slightly too high, since typologically and technologically the assemblage accords well with Northwestern European material belonging to the Allerød Chronozone. Parallels may be found particularly with the broad grouping of Federmesser industries in Germany, the Netherlands and Belgium and, with some of the Late Magdalenian assemblages in N. France.

The study of these three different kinds of assemblage in Southern Britain, which between them span the period from the final Pleistocene to the early Holocene, has yielded much information of general as well as of particular interest. Existing gazetteers, to which I have added my own detailed record of Long Blade sites, show not only how much material is available for further study but also the largely untapped potential for developing future work in this field. Above all, however, this thesis is meant to illustrate, by the shortcomings of existing data, the essential importance of seeking good contextual evidence on which to base new arguments. It is therefore earnestly hoped that this work will provide some much needed stimulus for undertaking fresh fieldwork in the areas outlined above.

GAZETTEERS

GAZETTEERS.

Guide to users.

This gazetteer is an attempt to summarize all of the known occurrences of long blade material so far recovered in Southern Britain (see Chapter 3). Inevitably, given the time constraints involved in compiling these lists, they could probably be added to, but it is hoped that all the major public collections as well as many of the privately owned ones have been included. Much of the groundwork for this compilation was carried out by R.M. Jacobi and J.J. Wymer. To them and many others who have helped provide important details, including G. Drown, F.R. Froom, R. Holgate and A. Woodcock, I owe my sincere thanks.

For convenience, the long blade material is divided into three major sub-groupings: Long blades; bruised long blades and long blade cores. Otherwise, the lists are set out in a generally similar manner to those devised for the well-known Palaeolithic and Mesolithic Gazetteers published by the Council for British Archaeology (Roe 1968; Wymer 1977a).

I have not been able to allow myself or the reader the luxury of presenting these lists as a piece of continuous English prose. I estimate that to have done so would have meant producing a gazetteer some 300 pages long, with a great deal of repetitive description. The information contained is factual, quantitative and technical, and the gazetteer lists it without commentary in the most economical way I can devise. If the key provided is followed carefully, everything is completely clear. The reader will need at first to make constant references back to the key, but after a few entries

have been read this should cease to be necessary. As a guide, here is one selected entry to show what information is given.

e.g.

```
 London-Kingston                                                    61
 TQ  177  720 (g)
-LB      120 036 010 ynn 10 N N 098 033 3 1 1
```

This is a complete blade measuring 12.0 x 3.6 x 1.0 cm. Approximately 10% of its dorsal surface is covered by cortex. It is unburnt. The butt is not abraded, it measures 0.98 x 0.33 cm. The proximal end displays a faceted butt. There is a prononced cone of percussion on the ventral surface. The distal extremity of the blade shows a normal, flat or feathered termination.

The columns always occur in the same order, which is also that followed in the key. I have provided a 'bookmark' which will enable the column headings to be read off on each page.

The sites are listed in alphabetical order by counties, with National Grid map references appended. Each findspot has also been individually numbered, to aid location on the various distribution maps in Chapter 3. An asterisk alongside the site name indicates that the collection was examined by myself personally. As with the CBA Gazetteers, map references are graded on a subjective scale of three: a= accurate, e= estimate, g= general.

Keys for the individual artefact entries are given below. The museums where the artefacts are housed are listed at the bottom of each entry. Every effort has been made to provide as full a reference as possible for each find or collection, by including the museum accession number(s). Where

none is available the abbreviation 'NANo' is used. The first column of the last line contains the abbreviation of each museum; this is purely for computer file sorting purposes. Occasionally when a bibliographic reference is the only source of information available this is also included.

At the end of each of the three sections is a list of findspots which have been deliberately excluded either because the artefacts did not fulfill the defined criteria or because the nature of the finds could not be confirmed.

Gazeteer 1: Long Blades.

A long blade is defined as an artefact over 12 cm long and 2.5 cm or more wide (cf. Taute 1968, 16). Smaller artefacts have sometimes been included, either where a reliable association exists with another long blade or where a retouched tool occurs on a blade of large size.

Key.

(1) Description	LB - Long blade BES - Blade end-scraper BD - Dihedral burin BD(B)- Dihedral burin on break BDM - Multiple dihedral burin BI - Unclassified burin BM - Multiple burin unclassified BT - Truncation burin BTr - Transverse burin RB - Retouched blade TO - Obliquely truncated blade.
(2-4) Dimensions	Length x Breadth x Thickness in mm. X - Undocumented I - Inapplicable (X & I signify the same throughout).
(5) Condition	ynn - Unbroken nyn - Broken proximally nny - Broken distally nny - Broken prox/dist.
(6) Cortex/nat.surface	Percentage cover on dorsal surface, 09 - 99 (= <10% - 100%).
(7) Butt abrasion	Y - Present N - Absent B - Heavily abraded
(8) Burnt	Y - Present N - Absent.
(9-10) Butt dimensions	Length x Breadth in mm.
(11) Butt type	1 - Plain 2 - Dihedral 3 - Faceted 4 - Linear 5 - Punctiform 6 - Cortical 7 - Other.

(12) Butt end features	1	- Pronounced point, cone or bulb + conchoidal fracture marks on bulb
	2	- Diffuse bulb, lipped butt
	3	- Other
	4	- Diffuse bulb, large negative bulbar scar
	5	- Diffuse bulb, broad cone of percussion without negative scar.
(13) Distal termination	1	- Normal/feathered
	2	- Hinge
	3	- Plunging
	4	- Cortex/natural surface
	5	- Retouch.
(14) Other comments	bc	- bidirectional cresting
	+bf	- plus other blades & flakes
	bf=	- burin facet (average breadth)
	+lb	- plus other long blades
	pb	- plunging blade
	rd	- recent damage
	sddv	- scalar damage distal, ventral
	uc	- unidirectional cresting
	A B L	- abrupt, bidirectional retouch, left
	AS D D	- abrupt/semi-abrupt direct retouch, distal
	S D BL	- semi-abrupt direct retouch, both edges
	S D P	- s-abrupt direct retouch, proximal
	S D RD	- s-abrupt direct retouch, right and left.

Berks-Bisham by-pass 1
SU 882 122 (e)
-LB >130 XXX XXX XXX XX X X XXX XXX X X X + lbs
ZZ R.Weng coll. R.Holgate pers. comm.

*Berks-Burghfield 2
SU 660 680 (e)
-LB 162 036 013 nyn 00 I N III III I I 1
RM Reading Museum Acc.No.153.1959

*Berks-Crown Acres 3
SU 509 666 (a)
-LBs (see text)
NM Newbury Museum CA 1961; CA JT; CA Lower Way

*Berks-Kintbury, Avington VI 4
SU 377 672 (a)
-LBs (see text)
ZZ FR Froom Coll.

Berks-Maidenhead 5
SU 902 810 (e)
-LB 180 052 XXX XXX XX X X XXX XXX X X X
LM City of Liverpool Mus. Acc.No. 44.23.10,12-18,11,5

*Berks-Maidenhead, Thames 7
SU 900 810 (g)
-LB 127 047 017 ynn 10 N N 169 134 3 X X
RM Reading Museum Acc.No.20.42/-7

*Berks-Pangbourne 8
SU 632 758 (g)
-LB 130 046 021 ynn 09 Y N 101 036 1 X X
RM Reading Museum Acc.No.26.56

*Berks-Reading, Thames 10
SU 720 720 (g)
-LB 140 038 014 ynn 60 N N XXX XXX 7 X X
-LB 122 037 008 ynn 00 Y N 050 017 1 X X
RM Reading Museum Acc.No.$143.45/1&96

*Berks-Reading, Thames 10
SU 720 720 (g)
-LB 148 053 023 nny 09 Y N 214 118 1 1 I
RM Reading Museum NANo.

*Berks-Reading, Thames 10
SU 720 720 (g)
-LB 202 012 050 nny 09 Y N XXX XXX 1 X X
RM Reading Museum Acc.No. 25:71

*Berks-Tilehurst 11
SU 670 755 (g)
-LB 122 034 013 ynn 09 N N 151 076 2 3 1
-LB 125 030 010 ynn 00 Y N 077 027 1 X 1
-BES 098 050 017 nyn 00 I N III III I I 5 sddv
RM Reading Museum Acc.No.$162.45/1&2

*Berks-Tilehurst 11
SU 670 755 (g)
-LB 170 037 015 ynn 00 Y N 038 017 1 X X uc
RM Reading Museum Acc.No.Thames Conservancy 332:58

Berks-Tilehurst 11
SU 670 755 (g)
-LB 124 026 XXX XXX XX X X XXX XXX X X X
CLM City of Liverpool Museum Acc.No.44-23.44

Berks-Wawcott XII 12
SU 408 675 (a)
-LB 150 XXX XXX XXX XX X X XXX XXX X X X +bf
ZZ FR Froom coll. Berks Arch J (1971-2)66:11-22

Berks-Windsor 13
SU 965 773 (e)
-LB 130 028 008 XXX XX X X XXX XXX X X X
ECM Dept. of Geol., ex Eton College Museum.

*Bucks-Denham 14
TQ 050 870 (e)
-LB 151 031 015 ynn 09 C N 157 075 3 4 1
RM Reading Museum Acc.No.103:46

*Cambs-Bottisham 15
TL 545 605 (g)
-LB 148 051 015 ynn 00 N N 275 133 1 4 1 brown flint
CSM Cambridge Sedgewick Museum NANo.drawer 49

*Cambs-Burwell Fen 16
TL 570 670 (g)
-LB 153 030 014 ynn 09 Y N 060 014 1 2 2
CAEM CAEM Acc.No.1883.102,teaching coll.

*Cambs-Kennett 17
TL 700 680 (g)
-LB 176 040 015 ynn 00 B N 128 065 1 4 1
BM BM Acc.No.1909.3-13.2

*Cambs-Swaffham Prior 19
TL 5566 6500 (a)
-LBs (see text)
CAEM Cambridge A & E Museum
ZZ J.W.Clarke and J.G.D.Clark colls.

Dorset-Bosley 20
SZ 147 958 (g)
-BES 110 XXX XXX XXX XX X X XXX XXX X X X
ZZ Proc Hants FC & Arch Soc (1970)27

Dorset-Southbourne, Tuckton Bridge 22
SZ 149 923 (g)
-LB >120 488 204 XXX XX X X XXX XXX X X X
RHMC Red House Mus Christchurch NANo.

*Essex-Southend-on-sea, Prittlewell, Priory Park 26
TQ 867 868 (e)
-RB 104 029 011 nny 00 N N 189 074 3 2 I S D BL
SM Southend Museum Acc No. 265/1

Essex-Tiptree Church Yard 27
TL 897 161 (a)
-LB 150 XXX XXX XXX XX X X XXX XXX X X X
-LB 165 XXX XXX XXX XX X X XXX XXX X X X
CEM Colchester & Essex Museum Acc.No.3359.15

*Essex-Wrabness 28
TM 175 323 (e)
-LBs (see text)
BM BM H. Warren Coll.

Gloucestershire-Stroud, Eastington 29
SO 770 050 (g)
-LB 150 XXX XXX XXX XX X X XXX XXX X X X
SM Stroud Museum Proc Cott NFC (1932)24:166 fig 1

Hampshire-Portsmouth, Baker's Island, Longshore Harbour 30
SU 694 036 (g)
-BES 130 XXX XXX XXX XX X X XXX XXX X X 5 S D P
PM Portsmouth Museum Draper(1962) Proc Hants F.C. 22:2 106

*Herts-Rickmansworth, Mill End 32
TQ 040 945 (g)
-LB >135 045 XXX nyn XX X X XXX XXX X X X
GPM Gunnersbury Park Museum Sadler coll. Acc.No.2143

Herts-Royston 33
TL 360 415 (a)
-LB 188 030 012 XXX XX X X XXX XXX X X X
LCM City of Liverpool Museum Nunn Coll. Acc.No.5449.363

Kent-Bapchild, nr Haywood 34
TQ 935 624 (a)
-LB >130 034 XXX XXX XX X X XXX XXX X X X +bf
ZZ PPSEA (1928)VI:17

*Kent-Canterbury (gravel pit) 35
XX XXX XXX
-LB 156 052 XXX ynn 00 X X XXX XXX X X X pb
-BD 080 032 010 ynn 00 I N III III 4 3 5
CSM Cambridge Sedgewick Mus. Acc.No.D341 Garrod (1925) fig 44

*Kent-Canterbury, Riverdale 36
TR 155 590 (e)
-LBs (see text)
BM BM Grace Coll. NANo.

Kent-Cat Island 37
TR 165 687 (e)
-LB >122 050 XXX NXX XX X X XXX XXX X X X
HBM Herne Bay Museum NANo.

Kent-Cranbrook, Golford 38
TQ 797 364 (a)
-LB >240 XXX XXX XXX XX X X XXX XXX X X X uc
MM Maidstone Mus Arch Cantiana (1952)65:192

Kent-Dartford, Long Reach 40
TQ 560 770 (g)
-LB 140 033 XXX XXX XX X X XXX XXX X X X
DM Dartford Museum NANo. ex Corner coll.Box13

Kent-Dartford Temple Farm 41
TQ 544 755 (g)
-LB 122 028 XXX XXX XX X X XXX XXX X X X
DM Dartford Museum Acc.No.1908 64a-d Box5

*Kent-Folkestone Warren 42
TR 250 380 (g)
-LB 149 035 011 ynn 00 N N 090 035 3 4 1 uc
BM BM Acc.No.94.639

*Kent-Northfleet, Springhead, Lower Floor. 43
TQ 618 737 (e)
-LBs (see text)
BM BM Acc.No.1947 5-2
IM Ipswich Museum Burchell Coll.1938-173
CAEM Cambridge A & E Museum (teaching coll.)

*Kent-Sittingbourne 44
TQ 905 640 (e)
-LB 126 028 009 ynn 00 Y N 039 018 5 2 X
BM BM ex J.Brent coll.Acc.No.1903 11-15.191

*London-Brentford, Old England, Syon Reach 47
TQ 179 769 (e)
-LB >118 034 018 nyn XX I N III III I I 1 uc
LM London Museum Lloyd coll. Acc.No.49.107/37B

London-Darenth, Green St. 48
TQ 585 708 (a)
-LB 139 026 XXX XXX XX X X XXX XXX X X X
HM Hythe Museum NANo.

*London-Ealing, East Acton 49
TQ 203 804 (g)
-BD 101 039 016 ynn 00 I N III III I I 2 bf=062
PRM Pitt Rivers Museum P.R. Coll.932 April 1969

London-Ealing, Hanger Hill 50
TQ 187 815 (e)
-RB 143 033 008 ynn 09 N N 172 108 3 4 5 A B L
GPM Gunnersbury Park Museum Crooke coll. Acc.No.76.20/130

*London-Erith 51
TQ 507 780 (g)
-LB 152 052 014 nny 00 Y N 145 055 7 2 1
LM London Museum Acc.No.49.107/171

London-Erith 51
TQ 507 780 (g)
-BI >112 027 XXX XXX XX X X XXX XXX X X X
GPM Gunnersbury Park Mus. Sadler coll. Acc.No.725 (929)

London-Erith, Long Reach 52
TQ 515 790 (g)
-LB 166 XXX XXX XXX XX X X XXX XXX X X X
ZZ F.S.Clark coll

*London-Fulham, from Thames? 55
TQ 234 767 (e)
-LB 178 033 031 ynn 20 N N 153 062 1 5 3 bc
LM London Museum ex Garroway Rice Acc.No.33 104/6

*London-Hackney, Brightwell 56
TQ 369 845 (e)
-BES 111 032 012 ynn 09 N N 161 035 3 X 5
RM Reading Museum Acc.No.86.52/1

*London-Ham 57
TQ 179 721 (a)
-BDM 082 036 008 XXX 00 I N III III 1 1 5
LM London Museum Knowles coll. Acc.No.60 176/193

*London-Ham 58
TQ 179 720 (g)
-TO 090 028 011 ynn 10 Y N XXX XXX 1 2 4
LM London Museum Orrell Knowles coll. Acc.No.60.176/387

*London-Kingston 61
TQ 177 696 (e)
-LB 120 036 010 ynn 10 N N 098 033 3 1 1
CAEM Cambridge A&E Museum ex Corner coll. 1547 Acc.No.z15147c

*London-between Ladywell and Catford 63
TQ 380 740 (e)
-LB 130 031 019 ynn 00 Y N 061 040 1 2 3 pb
LM London Museum Acc.No.A16431

*London-between Ladywell and Catford 64
TQ 378 749 (e)
-LB 148 031 011 YNN 00 Y N 083 060 1 2 1
LM London Museum Acc.No.A16430

* London-Mortlake 65
TQ 203 762 (e)
-LB 121 025 006 nny 00 N N 112 054 7 2 I +10 scrapers
CAEM Cambridge A&E Museum NANo.

*London-North Cray 66
TQ 490 722 (a)
-LB >130 XXX XXX nny 00 N N 119 106 3 3 I uc
BM BM Warren coll. "North Cray ASK"

*London-North Cray 66
TQ 490 722 (e)
-LB 133 056 008 ynn 09 Y N 174 042 1 5 1
-LB 202 059 042 ynn 20 N N 218 073 3 5 3 pb +c10 lbs
BM BM Vansittart coll. (1910 and 1915).

*London-North Cray 66
TQ 490 722 (e)
-LB 200 044 015 ynn 00 Y N XXX XXX 1 X 1 uc
-LB 131 034 014 ynn 00 N N 260 060 3 3 1
-BD 163 044 013 ynn 00 N N XXX XXX 7 3 1 +c11 lbs
GM Geological Museum IGS Vansittart coll.

*London-Teddington 68
TQ 165 716 (g)
-LB 139 052 021 ynn 00 N N 268 135 3 1 3 pb
LM London Museum Acc.No. A13701

*London-Wandsworth 70
TQ 254 754 (e)
-LB 130 027 009 ynn 00 I N III III I I 1
LM London Museum Acc.No.A5445

London-Wandsworth,Waterside 72
TQ 258 754 (e)
-LB 140 XXX XXX XXX XX X X XXX XXX X X X
-LB 150 XXX XXX XXX XX X X XXX XXX X X X
BM BM J.Wymer pers. comm.

*London-Woolwich 73
TQ 430 795 (e)
-LB 133 043 121 ynn 09 Y N 117 025 1 2 1 uc
-LB 113 039 019 nyn 09 I N III III I 2 1 uc
CAEM Cambridge A&E Mus. Acc.No.z15147f (i)1486;(ii)1541

Norfolk-Aylesham, Keeper's Field, Woodgate 74
TG 180 260 (e)
-LB 120 XXX XXX XXX XX X X XXX XXX X X X
NCM Norwich Museum J.Wymer pers. comm.

Norfolk-Cranwich 79
TL 782 950 (g)
-LB 142 038 XXX XXX XX X X XXX XXX X X X
TM Thetford Museum Acc.No.1275,A181 PPSEA (1914)1:454-457

Norfolk-Cranwich, Well Hill 80
TL 780 950 (e)
-LB 229 XXX XXX XXX XX X X XXX XXX X X X
IAL Inst.Arch.London (Basement?) R.Jacobi pers.comm.

*Norfolk-Heacham Park 84
TF 675 375 (e)
-LB 122 032 013 ynn 00 N N 148 056 3 4 1 +lbs
NCM Norwich CM Acc.No.148.23 PPSEA (1914)1:475

Norfolk-Hockham Mere 85
TL 950 920 (g)
-LB >130 XXX XXX XXX XX X X XXX XXX X X X
-BD 083 027 XXX ynn XX X X XXX XXX X X 5 bf=050mm
ZZ PPSEA (1922)IV:92-95

*Norfolk-Hockwold-cum-Wilton 86
TL 7118 8757(a)
-LB 180 XXX XXX XXX XX X X XXX XXX X X X
-LB >120 XXX XXX XXX XX Y X XXX XXX 1 X X +lbs
NCM Norwich CM F.Curtis don.

*Norfolk-Hunstanton area 87
TF 670 410 (g)
-BES 108 034 015 nyn 00 I N III III I I 5 AS D D cf trunc
KLM Kings Lyn Mus. Le Strange coll. NANo.

*Norfolk-Lynford 88
TL 824 949 (a)
-LB 154 042 013 ynn 09 N N XXX XXX 3 4 1 +lbs
NAU Norfolk Archaeo. Unit NANo.

Norfolk-Methwold,Methwold Fen 89
TL 650 930 (g)
-LB 120 XXX XXX XXX XX X X XXX XXX X X X
KLM Kings Lynn Museum J.Wymer pers. comm.

*Norfolk-N.Elmham 91
TF 985 205 (g)
-LB 140 033 XXX nyn XX I N XXX XXX I I I
IM Ipswich Museum Layard coll.

*Norfolk-Quidenham 92
TL 9849 8806 (a)
-LB 134 042 030 nyn 09 I N III III I I 1 rd
NCM Norwich CM Acc.No.333.983 (SMR No.13702)

Norfolk-Rushford/Snarehill 94
TL 900 820
-LB 125 034 XXX XXX XX X X XXX XXX X X X
TM Thetford Museum Acc.No.A1273

*Norfolk-Stalham 96
TG 380 240 (e)
-LB 197 059 021 ynn 00 Y N 101 044 1 4 1 uc
NCM Norwich City Mus. NANo. EJ Padbury Coll.

*Norfolk-Thetford 97
TL 870 830 (g)
-LB 113 027 008 nyn 00 I N III III I I 1
-LB 104 041 010 ynn 00 N N 205 064 3 2 2
-LB 155 032 013 ynn 10 B N 038 009 5 2 1 bc
PRM Pitt Rivers Mus. ex J.W.Flower Coll

Norfolk-Thetford, Barrowhill 98
TL 848 822 (a)
-LB 177 047 015 XXX XX X X XXX XXX X X X
TM Thetford Museum Acc.No.A1259

*Norfolk-Thetford Lodge 99
TL 823 856 (e)
-LB >130 029 009 nny 00 Y N 074 046 1 2 I
IM Ipswich Museum NANo.

*Norfolk-Thetford Warren 100
TL 830 830 (g)
-LB 150 027 080 nny 00 B N 081 035 1 3 I
PRM Pitt Rivers Mus. J.W.Flower coll.

*Norfolk-Thornham 101
TF 747 451 (a)
-LBs (see text)
KLM Kings Lyn Museum Drown coll., Sharman coll.

*Norfolk-Thornham Beach 103
TF 725 424 (e)
-LB 133 039 011 ynn 10 Y N 141 049 1 5 1
NCM Norwich City Mus. Acc.No.85.963

*Norfolk-Titchwell 104
TF 756 450 (e)
-LBs (see text)
KLM Kings Lyn Museum Drown coll., Sharman coll.

*Norfolk-Weeting 105
TL 775 885 (g)
-LB 177 037 014 ynn 00 Y N 103 049 1 3 5 uc
MHM Bury St.Edmunds Museum Acc.No.1977-427 (os) D59

Oxford-Hinksey 108
SP 495 050 (g)
-LB >125 021 007 XXX XX X X XXX XXX X X X
PRM Pitt Rivers Museum Balfour coll.

(Entry withdrawn) 109

Suffolk-Barham,Eastall's Pit 110
TM 120 512 (a)
-LB 130 XXX XXX XXX XX X X XXX XXX X X X pb
IM Ipswich Museum Acc.No.966.127

Suffolk-Bramford"Poplar Ridge" 111
TM 131 469 (a)
-LB 224 XXX XXX XXX XX X X XXX XXX X X X +lbs broken
IM Ipswich Museum Perfect coll. Acc.No.1954-51

*Suffolk-Bury St. Edmunds 112
TL 865 635 (g)
-LB 130 XXX XXX nny XX X X XXX XXX X X X
MHM Bury St.Edmunds Mus. Acc.No.1977-416 (os)C28

*Suffolk-Cavenham 113
TL 764 698 (a)
-LB 152 053 014 ynn 09 N N 250 113 3 5 4
-LB 130 XXX XXX nyn XX X X XXX XXX X X X
MHM Bury St.Edmunds Mus. Acc.No.1977-443&444 (os) D18&19

*Suffolk-Cavenham 114
TL 760 700 (g)
-LB 166 022 010 ynn 00 Y N III III 5 2 1
CAEM Cambridge A&E Museum Acc.No.z31089

*Suffolk-Higham, Broom Covert 117
TM 035 355 (g)
-BD 115 036 020 ynn 09 Y N 046 016 1 1 5
CSM Cambridge Sedgewick M. Acc.No.D345, PPSEA(1924)4:163-4

*Suffolk-Icklingham 118
TL 770 720 (g)
-LB 228 044 018 ynn 09 B N 083 045 1 3 1
MHM Bury St.Edmunds Mus. Acc.No.1977-451 (os)D38

Suffolk-Icklingham, London Bottom 120
TL 774 737 (e)
-LB >150 XXX XXX XXX XX X X XXX XXX X X X
BM British Mus. Sturge coll PPSEA(1914)1:210-232

*Suffolk-Ipswich, 20 Belstead Road 121
TM 158 435 (a)
-LB 127 029 008 ynn XX B N 158 066 1 4 X
IM Ipswich Museum NANo.

Suffolk-Ipswich, Constantine Rd/Portman Rd 122
TM 155 445
-LB 198 XXX XXX XXX XX X X XXX XXX X X X
IM Ipswich Museum ref Moir (1930) PPSEA fig 25,p 202.

*Suffolk-Ipswich, Gipping Valley 123
TM 145 452 (g)
-LB >130 053 014 nyy 09 I N III III I I I
-LB >135 047 017 nny 80 N N 224 135 1 1 I
-LB 154 063 023 ynn 10 N N 294 149 3 1 3
-LB 163 049 022 ynn 00 Y N 169 078 1 1 5
-LB 130 026 011 ynn 00 Y N 131 023 1 3 1 uc
-LB 150 060 018 ynn 10 N N 315 140 3 3 1 + c5 lbs
IM Ipswich Museum Underwood coll NANo.

*Suffolk-Ipswich, Ivry St. 124
TM 159 454 (e)
-LB 161 073 018 ynn 00 N N 360 105 3 5 1
-LB >140 061 015 nny 00 N N 247 098 3 5 1
-LB >120 036 010 nyn 09 I N III III I I 1
-LB 137 051 011 ynn 20 N N III III I I 1 siret
-LB 145 030 008 ynn 00 N N 129 030 3 4 1
-LB 124 049 015 ynn 00 N N 273 109 3 4 1
-LB 124 064 019 ynn 09 N N 590 172 7 1 1 +c16lbs+1b frags
IM Ipswich Museum Acc. Nos.1928 108,1931 139 & 1932 66-68

*Suffolk-Ipswich, Orwell North Bank 125
TM 162 420 (g)
-BM 063 034 014 XXX 09 I N III III I I I bf=11mm
IM Ipswich Museum Acc.No.R1936-100

*Suffolk-Ipswich, Orwell South Bank 126
TM 162 420 (g)
-LB 170 XXX XXX nyn 20 I N III III I I X
-LB 112 074 016 ynn 80 N N 221 066 1 1 1
-LB 110 XXX XXX nyn 50 I N III III I I X
-BB 041 033 010 XXX XX X X XXX XXX X X X bf=70mm
IM Ipswich Museum NANo.

*Suffolk-Ipswich,Orwell South bank/Belstead Brook 127
TM 162 420 (g)
-LB >150 038 010 nyn 09 I N III III I I I
-BT 091 038 018 XXX 09 N N 164 053 1 5 5 +c7 lbs
BM British Museum Todd coll.

*Suffolk-Ipswich, Orwell, South Strand 129
TM 162 420 (g)
-LB 122 037 018 ynn 00 Y N XXX XXX 5 4 1
IM Ipswich Museum Acc.No.1951-226

*Suffolk-Ipswich, Piper's Vale 130
TM 177 413 (e)
-BTr 129 039 017 ynn 20 N N 240 073 3 3 5 b=48
IM Ipswich Museum H.E.P.Spencer Coll.

*Suffolk-Ipswich, Recreation Ground 132
TM 155 444 (e)
-LB 202 039 014 ynn 00 N N 110 088 3 4 1
IM Ipswich Museum NANo.

*Suffolk-Ipswich, Sproughton, Devil's Wood Pit 133
TM 134 443 (e)
-LBs (see text)
IM Ipswich Museum NANo.

*Suffolk-Lakenheath 135
TL 740 820 (g)
-RB 148 033 010 ynn 00 C N 154 105 3 3 5 S D RD
MHM Bury St Edmunds Mus. Acc.No.1977-414 (os)c21

*Suffolk-Lakenheath 136
TL 745 825 (e)
-LB 125 057 022 ynn 00 Y N III III 1 5 3 pb
CAEM Cambridge A&E Mus. Graham Smith coll. Acc.No.72-35

*Suffolk-Lakenheath,Undley 137
TTL 697 812 (e)
-LB 183 031 012 ynn 00 B N 090 044 1 4 1
CAEM Cambridge A&E Mus. Beaching coll. Acc.No.581.

*Suffolk-Lakenheath,Undley 137
TL 697 812 (e)
-LB 156 040 008 ynn 00 N N 097 053 3 1 1
BM British Museum ex Wellcome Acc.No.R2810/1938

Suffolk-Lakenheath/Wangford 138
TL 714 828 (e)
-LB >149 024 XXX XXX XX X X XXX XXX X X X
-LB >150 XXX XXX nyn 10 I N III III I I 1 bc
BM BM Acc.No.1903 11-15,93 ref PPSEA(1914)1:210-232

*Suffolk-Lavenham, Brickyard 139
TL 915 495 (g)
-LB 144 038 014 ynn 00 Y N 158 066 1 3 1
-LB >120 037 009 nny 09 Y N 161 035 1 3 I +c4 lbs
IM Ipswich Museum "Lavenham Brickearth" NANo.

*Suffolk-Mildenhall 141
TL 710 750 (g)
-LB 154 055 014 ynn 00 Y N 232 097 1 4 1
-LB 147 039 010 ynn 00 B N 069 031 1 2 1
-LB 133 043 014 ynn 00 Y N 131 031 1 2 1 uc
-LB 123 035 009 nyn 00 I N III III I I 1
-LB 114 027 012 ynn 00 Y N 061 018 1 2 1
-LB 135 026 011 nny 09 Y N 067 029 1 2 I uc
-LB 120 033 010 ynn 00 Y N 116 049 1 2 1
-LB 139 041 019 ynn 00 Y N III III 3 5 1 uc
-LB 124 040 011 ynn 20 N N 101 038 3 3 1
BM British Museum Sturge coll. Acc.No.3196

*Suffolk-Mildenhall 141
TL 710 750 (g)
-LB 123 033 010 ynn 00 N N 067 015 1 3 1
CSM Cambridge Sedgewick Museum 1901 NANo.

*Suffolk-Mildenhall, Beck Row, King's site. 143
TL 704 794 (a)
-LB (see text)
CAEM Cambridge A & E Museum Acc.No. Z.31230

Suffolk-Mildenhall, Beck Row, King's site. 143
TL 704 794 (a)
-LB 190 XXX XXX XXX XX X X XXX XXX X X X
MBM Bury St.Edmunds Mus. NANo.

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*Suffolk-Mildenhall,Burnt Fen                                          144
 TL  660  780 (g)
-BT      140 049 014 ynn 09 N Y 157 079 3 3 5
 CAEM    Cambridge A&E Mus. (teaching coll) Acc.No.z.31091 112.


*Suffolk-Mildenhall Fen                                                145
 TL  660 780 (g)
-BTr     121 033 009 ynn 09 Y N 113 058 3 5 5 bf=086mm
-LB      161 025 020 nny XX Y X XXX XXX 1 X X uc
 IM      Ipswich Museum  Acc.No.1927 82-20


*Suffolk-Risby, Barrow Bottom                                          149
 TL  7719 6620 (a)
-LB      179 045 012 ynn 00 Y N 094 048 1 4 1
-LB      176 046 018 ynn 09 Y N 079 049 3 3 2
-LB     >150 049 016 nny 00 Y N XXX XXX 3 3 I
-LB      133 047 011 ynn 00 I N XXX XXX X X 1 + 14/15 bfs
 ZZ      Suffolk Archaeo. Unit  NANo.


*Suffolk-Tuddenham                                                     150
 TL  740  710 (g)
-LB      155 042 015 nny 00 N N 120 062 3 2 1
-LB      145 040 023 nyn 20 I N III III I I 3
-LB      114 023 008 nyn 00 I N III III I I 1
 CAEM    CAEM  (teach. coll) Acc.Nos.z.31088 617;D351 (114)
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*Suffolk-Tuddenham                                                     150
 TL  740  710 (g)
-LB      134 034 012 ynn 10 Y N 083 030 1 3 5
 MHM     Bury St.Edmunds Mus. Acc.No.1980-27-80


*Suffolk-Wetherden                                                     151
 TL  995  624 (a)
-LB      124 033 009 ynn 00 Y N 190 045 1 2 1
-LB      107 048 015 ynn 09 N N 283 073 3 5 4 +scraper
 IM      Ipswich Museum  Acc.No.?1956-9


 Surrey-Laleham, Thames bed                                            154
 TQ  050  680 (g)
-LB      120 XXX XXX XXX XX X X XXX XXX X X X
 CEM     Colchester & Essex Museum  J.J.Wymer pers comm.


 Sussex-Fairlight Cove                                                 156
 TQ  882  122 (e)
-LB      170 XXX XXX XXX XX X X XXX XXX X X X
 HM      Hastings Museum  Acc.No.951.17


 Warwicks-"Baginton"                                                   157
 SP  346  749 (e)
-LB      125 027 XXX XXX XX X X XXX XXX 3 X X
 HAGMC   Coventry Museum  Acc.No.A913
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Wilts-Milford Hill 158
SU 150 308 (g)
-LB 131 027 010 XXX XX X X XXX XXX X X X
SSWM Salisbury Museum "found in 1873". NANo.

Wilts-Salisbury,"Churchfields" 159
SU 145 300 (g)
-LB 162 038 014 XXX XX X X XXX XXX X X X
-LB 124 031 007 XXX XX X X XXX XXX X X X
-LB 126 036 009 XXX XX X X XXX XXX X X X
-LB 093 021 006 XXX XX X X XXX XXX X X X
-LB 106 025 007 XXX XX X X XXX XXX X X X
-LB 100 034 009 XXX XX X X XXX XXX X X X
-LB 158 043 015 XXX XX X X XXX XXX X X X
-LB 118 046 012 XXX XX X X XXX XXX X X X
SSWM Salisbury Museum Canon W.F.Short coll NANo.

Sites thought to be of similar age (unmeasured).

(1) Berks-Reading,Tilehurst Rd/Cranberry Rd. RM, Acc.No.23:71 Cole coll.
(2) Cambs-Kennet,?GER Ballast pits. BM, Acc.No.1909,3-13 2.
(3) Essex-Gt.Chesterford. CAEM, Acc.No. z15522 ex Braybrook.
(4) Hunts-Hartford. St.Ives Mus., Acc.No. 286a.
(5) Kent-Durtnalls Brickfield. DM, Box 117 store.
(6) Kent-Folkestone Warren. Folkestone Mus., NANo.
(7) Kent-Folkestone. City of Liverpool Mus., NANo. (R.Holgate).
(8) Kent-Herne Bay. Royal Canterbury Mus., Acc.No. 6519.
(9) Kent-Wantsunt. DM, NANo.
(10) Kent-Wantsunt,(?Bowmans Lodge Pits). London Mus?
(11) London-Chingford. BMNH, Acc.No. E.1697.
(12) London-Dawley,Hillingdon. Gunnersbury Pk Mus., Crooke coll. 76.20/258.
(13) London-Earl of Dysarts Gravel Pit (Ham Common). London Mus., Acc.No.A 18990.
(14) London-Erith. Manchester Mus., NANo. (R.Holgate).
(15) London-Erith. Gunnersbury Pk Mus., NANo. (R.Holgate).
(16) London-Ham(Thames?). London Mus., Knowles coll. Acc.No.176/168.
(17) London-Hanwell. Gunnersbury Pk Mus., NANo. (R.Holgate).
(18) London-Mortlake. London Mus., Acc.No. 81.450/4&5.
(19) London-Mortlake Reach. London Mus., Laylon coll. Acc.No.0777.
(20) London-Petersham. London Mus., Acc.No. 49/107/174.
(21) London-Twickenham. Cambridge A&E Mus., Acc.No. z15147c.
(22) London-Waltham Forest, Lockwood & Banbury Reservoirs. Walthamstow Mus., NANo. (J.Wymer).
(23) London-Wandsworth. London Mus., Acc.No.16.862 (ex Guildhall Mus).
(24) London-Wandsworth. BM, NANo. (J.Wymer).
(25) London-Wandsworth Common. London Mus., Acc.No. A16433.
(26) London-Wandsworth,Wandsworth Rd. Gunnersbury Pk Mus., NANo. (J.Wymer).
(27) London-Wandsworth,St.Anne's Hill. BM, NANo. (J.Wymer)
(28) London-Wanstead. BM, Acc.No. 1965 2-9, 71 B108 (R.Holgate).
(29) London-Whitton. London Mus., NANo. (J.Wymer).
(30) Norfolk-Catton. ZZ. R.Lewis coll. (J.Wymer).
(31) Norfolk-Geldeston. ZZ. T.Gregory coll. (J.Wymer).

(32)Norfolk-Heacham. City of Birmingham Mus., Acc.No. 2515.64.
(33)Norfolk-Northwold, Sargeants Fen. Norwich Castle Mus., ex Warburton coll. Acc.No. 153.929.
(34)Norfolk-Norwich,Carrow Hill. Norwich Castle Mus., NANo. (J.Wymer).
(35)Norfolk-Thetford,Two Mile Bottom. ZZ. ref PPSEA 4:461-7.
(36)Norfolk-Thetford,Wretham Heath. ZZ. ref PPSEA 1-3:374-7.
(37)Somerset-Doniford. ZZ. Proc.Somerset Arch.& Nat.Hist.Soc.(1978-9),122.
(38)Suffolk-Cavenham. Bury St.Edmunds Mus., Acc.No. 1980,27.165.
(39)Suffolk-Eriswell. Pitt Rivers Mus., J.W.Flowers coll. NANo.
(40)Suffolk-Ipswich,Chantry Estate. Ipswich Museum, NANo.
(41)Suffolk-Ipswich,Hadleigh Road. Ipswich Museum, (Wymer 1976).
(42)Suffolk-Ipswich,Orwell,Brickfield side. Ipswich Museum, NANo.
(43)Suffolk-Ipswich,Orwell,Freston south bank. Ipswich Mus., NANo.
(44)Suffolk-Ipswich,Orwell,?Gardhurst Brickfield. Ipswich Mus., NANo.
(45)Suffolk-Ipswich,Wherstead,Bourne Bridge. ZZ. Fosdyke coll. (J.Wymer).
(46)Suffolk-Lakenheath Warren. Norwich C.Mus., Acc.No. 153.929.
(47)Suffolk-Lavenham,Greenwich Farm Brickfield. Ipswich Mus. NANo.
(48)Suffolk-Mildenhall,Kenny Hill. Gunnersbury Pk Mus., Sadler coll. Acc.No. 758.766.
(49)Suffolk-Mildenhall,West Row. CA&E Mus., Acc.No.453 z.30907.
(50)Suffolk-North Stow. Gunnersbury Pk Mus., Acc.No.2301/3.
(51)Suffolk-Risby,Poor's Heath. ZZ. ref PPSEA 3:67-72.
(52)Suffolk-Santon Downham. Pitt Rivers Mus., H.Balfour coll. NANo.
(53)Surrey-Banstead Fields. BM, Acc.No.1935, 11.4, 7.
(54)Surrey-Shere,Sherbourne Farm. ZZ. Shepherd-Thorn (J.Wymer).
(55)Surrey-Sunbury. London Museum. Acc.No.49,107/184 & 185.
(56)Sussex-?nr. Keeper's House. Horsham Mus., NANo.
(57)Sussex-Wadey? Horsham Mus., ex Garroway Rice coll. NANo.

Addenda:

(58)Suffolk-Ipswich, Bolton & Laughlin's Brickpit, Dale's Road. Ipswich Museum (Moir 1932).

(59)Suffolk-Claydon, Mason's Pit. ZZ. (Moir 1930).

Gazetteer 2: Bruised Blades.

Long blades (or flakes) with heavy damage along one or both edges (lames et éclats machurés). The damage takes the form of invasive scalar retouch (Bordes 1967; Barton In Press) and is the product of heavy utilisation. Signs of pronounced crushing or rounding are also sometimes visible, giving the edge a bruised or massively battered appearance. Artefacts rejected because they did not fulfill the criteria are also listed after the last catalogue entry.

Key.

(1) Description
- LM - Bruised blade
- EM - Bruised flake.

(2-13) as Long Blades.

(14) Comments
- SC - Scalar retouch
- B - Both edges
- R - Right edge
- L - Left edge
- V - on ventral side
- VD - on both ventral & dorsal sides
- D - on dorsal side

Other entries as for Long Blade gazetteer.

e.g. uc - unidirectionally crested blade.

*Berks-Kintbury, Avington VI 4
SU 377 671 (a)
-LM 191 055 032 ynn II N N 260 085 3 3 2 SC R V
-LM 136 037 014 nny 09 I N III III 4 4 I SC L V
-LM 154 052 015 ynn 00 N N 271 097 3 4 1 SC B VD
-LM 200 040 019 nyn 00 I N III III I I 1 SC R V
-LM 200 052 019 ynn 00 B N 141 034 1 4 1 SC B VD uc
ZZ F.R. Froom coll.

*Cambs-Swaffham Prior 19
TL 557 650 (g)
-LM 174 450 135 ynn XX Y Y XXX XXX 4 4 1 SC L V + 17 others
ZZ Clarke coll.

Dorset-Bournemouth, Southbourne 21
SZ 140 912 (a)
-LM XXX XXX XXX XXX XX X X XXX XXX X X X XX X XX
BCM Birmingham City Mus. Acc.No.4.46-7 ref R.Jacobi p.comm.

Herts-Hoddesdon, Broxbourne New Pit 31
TL 378 081 (a)
-LM 139 051 XXX XXX XX X X XXX XXX X X X SC B XX
ZZ R.Jacobi coll.

*Kent-Canterbury, Riverdale 36
TR 156 592 (e)
-LM 125 041 011 ynn 99 I N III III 6 3 1 SC B VD
-EM 092 066 018 ynn 40 Y N 006 002 1 3 1 SC R V
-LM >120 055 019 nyn 50 I N III III I I 1 SC B V
-LM >080 XXX XXX nyn 20 I N III III I I 1 SC L V uc
-LM >100 XXX XXX nyn 20 I N III III I I 7 SC B V
-LM >130 048 020 nyn 30 I N III III I I14 SC B VD uc
-LM 120 044 012 nny 10 N N III III 3 3 I SC L V
-LM 155 042 014 nny 09 Y N III III I I I SC B V
-LM 189 031 012 nny 09 Y N 005 002 1 2 I SC B V
-LM >130 039 016 nny 00 Y N 021 008 3 2 I SC B V uc
-LM 131 048 019 nny 00 Y N III III 4 3 I SC L V uc
-LM >140 054 010 nny 20 Y N 019 009 1 3 I SC R V
-LM >150 056 013 nny 00 Y N III III 4 3 I SC B V
-LM >120 044 014 nny 20 N N 019 011 6 4 I SC R V
-LM 173 040 018 ynn 40 Y N 015 008 1 2 1 SC R V uc
-LM 212 044 020 ynn 09 Y N 020 005 3 4 1 SC B V
BM British Mus. Acc.No.1948.7.3 39

*Kent-Dartford Heath, Wansunt Pit 39
TQ 510 737 (e)
-LM 166 042 015 ynn 09 B N 056 018 1 X 2 SC B V
DM Dartford Museum Loft Store Box1 Acc.No.1936-46

*Kent-Northfleet, Springhead, Lower Floor 43
TQ 620 728 (e)
-EM 077 061 020 ynn 10 N N III III I I 1 SC B V + 3 others
CAEM Cambridge Arch & Ethn Mus. Acc.No. 215515
(others in IM & BM colls.)

London-Erith, Long Reach 53
TQ 557 772 (e)
-LM 166 XXX XXX XXX XX X X XXX XXX X X X XX X XX
ZZ F.S. Clark coll., R.Jacobi pers. comm.

*London-Hammersmith, Thames 59
TQ 218 778 (g)
-LM 184 065 026 ynn 09 N N 136 067 1 4 1 SC R B
LM London Museum Acc.No. A13697

*London-Kew, Thames 60
TQ 190 778 (e)
-LM 106 036 018 nyy 00 I N III III I I I SC L V uc
LM London Museum Acc.No.A13711

*London-Mortlake 65
TQ 203 762 (e)
-LM 107 030 090 ynn 00 N N III III I I 1 SC L V uc +scrps
CAEM Cambridge A&E Mus. ex Corner coll. Acc.No.15147a

*London-North Cray 66
TQ 490 722 (a)
-LM 225 040 025 ynn 10 Y N 021 012 1 4 1 SC R V uc
-EM 096 048 026 ynn XX X X 044 018 X X X SC B V
IGS Institute of Geol. Sciences coll. ref PPS 1914-15

*London-North Cray 66
TQ 490 722 (a)
-LM 179 048 021 ynn 30 N N 072 062 1 4 4 SC B V
-LM >130 XXX XXX nny 20 Y N 180 086 3 2 I SC B VD
-LM >130 XXX XXX nyn 10 I N III III I I 1 SC L VD
BM British Mus. Vansittart coll. Acc.No.1910 & 1915

*Norfolk-Lynford 88
TL 824 949 (a)
-LM 180 045 019 ynn 00 N N 160 050 3 X 1 SC B VD
NAU Norfolk Archaeo Unit J.Wymer pers. comm.

*Suffolk-Cavenham 114
TL 760 700 (e)
-LM 150 013 010 nyn 00 I N III III I I 1 XX X XX
MHM Bury St.Edmunds Mus. Acc.No.D19 1977-444

*Suffolk-Cavenham 114
TL 760 700 (e)
-LM 166 022 XXX XXX XX X X XXX XXX X X X XX X XX
CAEM Cambridge A & E Mus. Acc.No.z15438

*Suffolk-Eriswell 115
TL 723 780 (e)
-LM 187 045 017 ynn 00 B N 191 091 1 2 1 SC B V
CAEM Cambridge A & E Mus. (T. coll) Acc.No.z31087 1913(31)

*Suffolk-Ipswich, Ivry Street 124
TM 159 454 (e)
-LM >124 049 019 nyn 10 I N III III I I 1 SC L V
IM Ipswich Museum Acc.No.1928 108.2

*Suffolk-Ipswich, Orwell, South Bank 126
TM 162 420 (g)
-LM >130 041 014 nny 00 B N III III 1 2 I SC R V
BM British Museum ex Todd Acc.No.1950 7-1 146

*Suffolk-Ipswich, Sproughton, Devil's Wood Pit 133
TM 134 443 (e)
-EM 131 086 013 ynn 09 N N 317 108 1 1 1 SC L VD
-LM 143 043 016 ynn 00 I N XXX XXX 7 4 1 SC B V
-LM XXX 062 044 nyn 00 I N III III I I 3 SC D V pb
-LM XXX 043 015 nyn 00 I N III III I I 5 SC B V
-LM 156 051 022 ynn 00 N N 080 046 1 4 2 SC L V uc
-EM 122 076 032 ynn 20 Y N 195 040 1 4 3 SC R V
-EM 101 049 026 nny 09 Y N 230 061 1 4 I SC R V
-EM 048 064 032 ynn 00 Y N XXX XXX 1 1 I SC D V core tablet
IM Ipswich Museum NANo.

*Suffolk-Lakenheath, Undley 137
TL 697 812 (e)
-LM 134 034 015 nyn 00 I N III III I I 1 SC R VD
CAEM Cambridge A & E Mus. Acc.No.z15487

*Suffolk-Lavenham, Brickyard 139
TL 915 495 (g)
-LM 106 042 016 ynn 00 Y N 103 058 3 4 1 SC L VD
-LM 101 028 013 ynn 00 Y N 107 040 1 4 2 SC R VD
IM Ipswich Museum NANo.

*Suffolk-Mildenhall 141
TL 710 750 (g)
-LM 139 036 015 ynn 00 I N III III I I 1 SC R VD
-EM 162 082 019 nyy 00 I N III III I I I SC L V uc
-LM/BES 095 044 016 nyn 00 I N III III I I 5 SC R V
-LM 154 037 011 ynn 00 N N III III 3 I 1 SC B V
BM British Mus. Sturge Coll.Acc.No.3194-5

*Suffolk-Mildenhall, Beck Row 142
TL 690 780 (g)
-LM 148 042 017 ynn 00 Y N 142 049 1 2 2 SC R V uc
MHM Bury St.Edmunds Mus. Acc.No.1977-392 C5

*Suffolk-Mildenhall, Beck Row, King's Site 143
TL 704 794 (a)
-LM (see text)
CAEM Cambridge A & E Mus. Acc. No. Z.31230

*Suffolk-Risby 148
TL 772 662 (a)
-LM 157 050 040 nny 10 B N 189 056 2 4 I SC R V
SAU Suffolk Archaeo. Unit J.Wymer coll.

*Suffolk-Wetherden 151
TL 995 624 (a)
-LM XXX 037 013 nny 00 B N 126 082 3 3 I SC R V +2 scrapers
IM Ipswich Museum Acc.No.(?)1956-99

Rejected:

(1) London-Erith, Long Reach. Dartford Museum NANo Box 13
Corner coll. (=Plough damage.)
(2) Suffolk-Beck Row (Wilde Street). MHM NANo.

Gazetteer 3: Long Blade Cores.

Long blade cores are defined as cores 10 cm or more in maximum length. Where other smaller cores have been found in reliable association, these too have been included. Those omitted because they do not fulfill the above criteria are listed after the last entry in the catalogue.

Key.

(1) Description

- LBC - Long blade core
- CTOPPY - Two opposed platforms, pyramidal
- CTOPP - Two opposed platforms, prismatic
- CTOPPF - Two opposed plat., pris. on flake
- CTOPI - Two opposed platf., unclassified
- CTPP - Two platforms, prismatic
- CTPC - Two platforms, crossed
- CTPI - Two platforms, unclassified
- CMPPY - Multiplatform, pyramidal
- CMPI - Multiplatform, unclassified
- COPPYF - Single plat., pyramidal on flake
- COPPY - Single platform, pyramidal
- COPP - Single platform, prismatic
- COPIF - Single plat., unclass. on flake
- COPI - Single platform, unclassified.

(2-4) Dimensions — Length x breadth x thickness in mm.

(5) Weight in gm.

(6) Cortex/nat.surface — Estimated percentage of total surface.

(7) Platform Abrasion

- Y - present
- N - absent
- X - undocumented
- I - inapplicable

(8) Burnt (see attribute 8, long blades).

(9) Platform modification

- N - plain (one or both ends)
- W - faceting one end/plain other
- V - faceting one end
- T - faceting both ends
- U - other.

(10) Modification of the side of the core

- N - none
- C - cresting

(11) Modification of the back of the core

N - none
C - cresting
F - uncrested but flaked surface
G - uncrested but flaked + cortical surface
Z - cortex/natural surface
E - cortex + cresting

(12) Core x-section

T - triangular
B - trapezoidal
R - circular
D - other.

*Berks-Crown Acres 3
SU 509 666 (a)
-COPP 152 073 046 XXXX 80 Y N N N Z
-CTOPP 138 086 058 XXXX 30 Y N W C G
-CTOPP 147 056 041 XXXX 40 Y N N N Z
-CTOPP 121 064 051 XXXX 30 Y N N N Z
-CTOPP 082 053 034 XXXX 40 Y N N N Z
-COPP 057 047 028 XXXX 40 Y N N N Z
-CTOPP 067 025 021 XXXX 30 Y N N N Z
-CTOPP 119 050 045 XXXX 30 N N V N Z
NM Newbury Museum NANo.

*Berks-Kintbury, Avington VI 4
SU 377 671 (a)
-CTOPP 113 069 048 454 09 N N W C C T
-CTOPP 120 056 060 397 09 N N V N C D
-COPI 129 029 066 283 00 Y N N N C D
-CTOPP 127 065 066 482 09 N N V N C T
-COPPY 108 048 049 198 00 N N V N F D
-CTOPP 166 071 058 567 09 Y N W N C T
-CTOPP 142 076 040 482 09 N N W N G D
-CTOPP 099 061 050 369 20 N N T N Z R
-CTPP 054 036 022 28 20 Y N N N G R
-CTOPP 179 093 055 992 30 N N V C G T
-CTOPP 139 075 042 454 40 Y N N C G R
-CTOPP 080 042 033 113 50 Y N N N G R
-CTOPP 083 045 031 113 50 Y N N N Z R
-CTOPP 090 039 035 113 40 Y N N N Z R
-CTOPP 117 050 067 397 30 N N V N G D + 4 others
ZZ Froom coll.

Berks-Maidenhead 6
SU 900 810 (g)
-LBC 105 048 XXX XXXX XX X X X X X
RM Reading Museum Acc.No. 12*43 J.Wymer pers.comm.

*Berks-Purley 9
SU 668 757 (e)
-LBC 137 054 053 XXXX 30 Y N W N Z R
RM Reading Museum Acc.No. $86.45 11

*Cambs-Litlington 18
TL 315 425 (g)
-CTOPP 117 050 041 XXXX 00 N N T N F D
CAEM Cambridge Arch & Ethn Museum Acc.No.z.15460

*Cambs-Swaffham Prior
 TL 700 680 (a)
-CTOPPY 072 049 038 XXXX 00 Y N W C F T
-CTOPP 083 042 055 XXXX 10 N N W N G T
-CTOPP 072 045 041 XXXX 30 Y N N N Z D
-COPPYF 067 029 053 XXXX 09 Y N N N F D
-CTOPP 054 024 026 XXXX 10 Y N N N C T
-CTOPP 047 027 018 XXXX 00 Y N W C F R
-CTOPPF 056 017 030 XXXX 09 Y N N N F T
-COPP   043 020 042 XXXX 30 Y N N N Z T
-COPP   069 023 045 XXXX 80 N N N N C D
-CTOPP 067 031 022 XXXX 30 Y N W N Z X
-CTOPP 077 044 037 XXXX 10 N N N N G T + c25 others
 ZZ   J.W.Clarke & A.David colls.

*Essex-Mount Bures, Hall Farm 23
 TL 9008 3239 (a)
-CTOPPY 117 064 055 XXXX 09 Y N T C Z D
-COPPY 105 051 035 XXXX 10 Y N N N Z I
 ZZ   McMaster coll. ref (1978) Colch.Arch.Group Ann.Bull.

*Essex-Rawreth site 25, River Crouch 24
 TQ 791 948 (g)
-CTOPP 140 072 053 XXXX 20 Y N W N C T
 PEM   Passmore Edwards Museum NANo.

*Essex-Southchurch Hall 25
 TQ 894 855 (e)
-CTOP   105 050 033 XXXX 30 N N T N Z R
 SM   Southend Museum Acc.No.354/76 R.Holgate/J.Wymer pers.com.

*Essex-Wrabness 28
 TM 175 323 (e)
-CTOPP 095 041 034 167 09 Y N N C G D uc ground edge
-CTOPP 078 044 028 105 00 Y N V C F T
-CTOPP 072 036 028 XXXX 30 Y N N N Z R
-CTOPP 057 036 022 XXXX 00 Y N W C F T
-COPP   067 030 021 XXXX 40 N N N N Z R
 BM   British Museum H.Warren coll. NANo.

*Herts-Rickmansworth, Mill End 32
 TQ 040 945 (g)
-CTOPP 108 057 038 XXXX 00 I N N N I D
 GPM   Gunnersbury Park Mus. Sadler coll. Acc.No.258

*Kent-Canterbury, Riverdale 36
 TR 156 592 (e)
-CTOPP 248 090 080 1595 40 N N T N Z R
 BM   BM ex Grace coll. Acc.No.1948 7.3 45

*Kent-Northfleet, Springhead, Lower Floor 43
TQ 620 728 (e)
-CTOPP 143 075 XXX 849 40 Y N W N Z R
-CTOPP 090 042 031 138 50 Y N N N Z R
-CTOPP 091 046 060 282 10 Y N N N G R
-CTOPP 107 057 XXX 342 09 N N T N G T
BM BM Acc.No.1947 5-2 119-133

*Kent-Northfleet, Springhead, Lower Floor 43
TQ 620 728 (g)
-CTOPI 090 073 056 XXXX 10 Y N W N G D
-CTOPP 061 037 030 XXXX 09 N N V N F R
CAEM Cambridge Arch & Ethn Museum Acc.No. z15515

*Kent-Northfleet, Springhead, Lower Floor 43
TQ 620 728 (g)
-CTOPP 069 051 037 XXXX 30 N N N N G R
-CTOPPY 085 045 045 XXXX 40 N N N N Z R
-CTOPP 070 049 036 XXXX 09 I N N N G T
-CTOPP 063 031 017 XXXX 40 Y N N N Z T
-COPPY 062 048 032 XXXX 50 N N N N Z R
IM Ipswich Museum Burchell coll. Acc.No.1938-173

*London-Barnes, bed of Thames (nr. railway bridge) 45
TQ 214 763 (e)
-CTOPP 136 063 041 XXXX 20 Y N W N Z D
LM London Museum Acc.No. 0.767

*London-Brentford 46
TQ 182 776 (a)
-CTOPP 125 056 041 XXXX 09 Y N U C F D cf axe roughout
CAEM Cambridge A&E Mus. ex Corner coll. 1270 Acc.No.z31180

*London-Brentford (?) 46
TQ 182 776 (e)
-CTOPP 137 055 043 XXXX 00 N C T N C D cf axe roughout
LM London Museum Leyton coll. Acc.No. 0.766

London-Erith, Long Reach 53
TQ 507 772 (e)
-LBC 111 052 XXX XXXX XX X X X X X
BM BM Acc.No.93 3-13 3 R.Jacobi pers.comm.

*London-Foots Cray 54
TQ 475 713 (g)
-CTOPP 101 056 041 309 20 Y N N C G R uc
BM BM Acc.No.1964 10.4 1

*London-Kingsway 62
TQ 306 814 (e)
-CTOPP 164 054 040 XXXX 09 Y N W N F D
LM London Museum ex Garroway Rice Acc.No.33 104/3

*London-North Cray 66
TQ 490 722 (a)
-CTOPP 245 095 XXX XXXX 00 I N X X C
-CTOPP 147 066 XXX XXXX 00 I N X X C + LBs in BM
IGS Institute of Geol.Sciences coll ref. PPSEA 1914-15

*London-Richmond 67
TQ 179 745 (e)
-LBC 099 057 044 XXXX 30 Y N N N Z R
BM BM Acc.No.2D23 6796

*London-Teddington (Thames) 69
TQ 168 716 (g)
-CTOPP 104 054 033 XXXX 09 N N T N F R
LM London Museum Acc.No.A13695

*London-Wandsworth, Mouth of Wandle 71
TQ 255 754 (a)
-CTOPP 125 056 042 XXXX 00 Y N T N F D crushed edges
LM London Museum Acc.No.36 217/25

*Norfolk-Blakeney, Harcourt's Farm 76
TR 020 411 (e)
-LBC >300 110 090 XXXX 09 N N U C N D axe roughout?
NCM Norwich Castle Mus. C.D.Borrer coll. Acc.No. 124.937

Norfolk-Blofield 77
TG 331 089 (e)
-COPPY XXX XXX XXX XXXX XX X X X X X +scraper
ZZ R.Leared coll. J.Wymer pers.comm.

*Norfolk-Brancaster 78
TF 775 454 (g)
-LBC 121 056 036 XXXX 20 Y N N N C D
NCM Norwich Castle Mus. Moade-Waldo coll. Acc.No.90.954

Norfolk-Drayton 81
TG 1914 1262 (a)
-LBC XXX XXX XXX XXXX XX X X X X X
ZZ L.Burroughs coll. J.Wymer pers.comm.

*Norfolk-Eccles, North Gap 82
TG 410 291 (a)
-CTOPP 125 059 050 XXXX 20 Y N N C G R
IM Ipswich Museum NANo. ref (1944) Geol.Mag. 81, 207-215

*Norfolk- Lynford 88
TL 824 949 (a)
-CTOPP 132 063 030 XXXX 10 N N V C F D
NAU NANo. J.Wymer coll.

Norfolk-Morston 90
TG 010 439 (e)
-LBC 130 XXX XXX XXXX XX X X X X X
PRMO Pitt Rivers Museum A.Woodcock pers.comm.

*Norfolk-Rushford, County Hole 93
TL 900 820 (g)
-LBC 106 058 029 XXXX 10 Y N W N Z D
-LBC 115 055 034 XXXX 09 N N W C F T
NCM Norwich Castle Mus. Acc.No.83.24

Norfolk-Santon, Thetford Lodge 95
TL 839 871 (a)
-LBC 142 041 042 XXXX XX X Y X X X
IM Ipswich Museum NANo. R.Jacobi pers.comm.

*Norfolk-Thornham 102
TF 745 451
-CTOPP 108 034 XXX XXXX 40 I N N C Z R
-CMPI 071 068 XXX XXXX 10 Y N W N C T +others
KLM Kings Lynn Museum G.Drown & T.Charman colls.

*Norfolk-Titchwell 104
TF 756 450 (e)
-COPPY 068 034 XXX XXXX 20 Y N N C F R
-COPPY 070 031 XXX XXXX 10 Y N N N N R
-CTOPP 080 050 XXX XXXX 00 N N T N F R
-COPI 071 076 XXX XXXX 10 Y N N N F D
-CTOPP 140 056 XXX XXXX 09 I N N C F T
-COPF 057 036 XXX XXXX 10 Y N V N U D
-CMI 049 053 XXX XXXX 09 Y N N N I D
-CTOP 120 063 072 XXXX 30 X N I I I I
-CTOPP 073 042 026 XXXX 20 Y N N C F D
-CTOPP 148 065 XXX XXXX 10 Y N N N C D
-CTOPP 110 050 058 XXXX 09 Y N W N Z D
-CMPI 064 051 026 XXXX 09 I N U N N D
-CTOPP 097 055 034 XXXX 30 N N W N Z R
-CTPP 088 051 036 XXXX 09 I N U N F D
-CTPP 061 034 028 XXXX 00 Y N W C N T
-CTOPP 079 032 020 XXXX XX X N N N Z D
-COPI 039 052 035 XXXX 30 Y N N N Z R
-CTOPP 188 082 079 XXXX 09 Y N N N U T
-CTOPP 124 079 065 XXXX 10 Y N W N Z R
KLM King's Lynn Museum Drown & Sharman colls.

*Northants-Thornhaugh 106
TF 070 005 (e)
-CTOPP 135 070 067 XXXX 09 Y N N N G R
CAEM Cambridge A&E Mus. Acc.No.74 310

Oxon-Benson 107
SP 623 916 (a)
-LBC 108 057 XXX XXXX XX X X X X C
AMO Ashmolean Mus., Oxford ex. T.H.Powell 1917 R.Jacobi p.c.

Suffolk-Barham, Eastall's Pit 110
TM 120 512 (a)
-LBC 150 XXX XXX XXXX XX X X X X X
IM Ipswich Museum NANo. J.Wymer pers.comm.

Suffolk-Barsham 75
TF 400 900 (g)
-CTOPP c165 XXX XXX XXXX XX X X X X X
ZZ E. Smith coll. J.Wymer pers.comm.

Suffolk- Fakenham Magna 83
TL 895 760 (g)
-LBC 105 XXX XXX XXXX XX X X X X X
TM Thetford Museum NANo. R.Jacobi pers.comm.

*Suffolk-Felsham 116
TL 948 573 (g)
-LBC XXX XXX XXX XXXX XX X X X X X large core roughout
BMM Bury St. Edmunds Mus. Acc.No. 1977-1059-E369

*Suffolk-Icklingham 119
TL 775 725 (g)
-CTOPP 110 048 018 XXXX 50 Y N N N Z R
PEM Passmore Edwards Mus. Fox coll. Acc.No.15937

*Suffolk-Ipswich, Ivry Street 124
TM 159 454 (e)
-CTPP 120 070 048 XXXX 40 N N T G R
-CTPP 110 057 030 XXXX 20 Y N W G D
-CTOPP 093 050 032 XXXX 09 Y N N G D
-CTOPP 144 052 028 XXXX 40 Y N W Z D
IM Ipswich Museum Acc.No.1928 108 & 1932 66

*Suffolk-Ipswich, Orwell South Bank 126
TM 162 420 (g)
-CTOPP 085 048 032 XXXX XX Y N N N Z
IM Ipswich Museum NANo.

*Suffolk-Ipswich, Orwell South Bank, "Magdal Floor" 128
TM 162 420 (g)
-CTOPP 134 056 035 312 40 Y N W V Z R
BM BM Todd coll. Acc.No.1950 7-1 146

Suffolk-Ipswich, Piper's Vale, Pond Hall 131
TM 181 411 (e)
-LBC 130 XXX XXX XXXX XX X X X X X
IM Ipswich Museum NANo. J.Wymer pers.comm.

*Suffolk-Ipswich, Recreation Ground 132
TM 155 444 (e)
-CTOPP 230 110 087 XXXX 50 X N W N Z R
IM Ipswich Museum Acc.No.1928 105.3 ref. PPSEA vol 6

*Suffolk-Sprougaton, Devil's Wood Pit 133
TM 134 443 (e)

-CTOPP	166	084	053	XXXX	40	N	N	N	N	G	T
-CTOPP	183	095	060	XXXX	20	Y	N	W	C	G	B
-CTOPP	183	082	055	XXXX	50	Y	N	N	N	Z	T
-CTOPP	207	105	071	XXXX	10	Y	N	N	N	C	T
-CTOPP	247	073	065	1451	30	Y	N	N	N	Z	T
-CTOPP	282	100	124	>4025	60	Y	N	N	N	Z	R
-COPPY	102	064	055	XXXX	20	Y	N	N	N	G	R
-COPP	150	067	063	690	10	Y	N	N	N	G	R
-CTOPP	254	077	067	XXXX	10	Y	N	N	N	C	R
-CMPPY	040	034	032	045	10	Y	N	N	N	Z	B
-CTOPP	042	035	022	034	09	Y	N	N	N	F	T
-COPPY	033	040	029	038	09	N	N	N	N	F	R
-CTOPP	>35	065	060	411	10	Y	N	N	N	Z	R
-CTOPP	127	066	076	XXXX	00	Y	N	N	N	C	B
-CTOPP	112	064	064	XXXX	10	Y	N	N	N	Z	R
-CTOPP	115	063	049	XXXX	00	Y	N	N	C	C	T
-CMPI	080	076	054	XXXX	10	N	N	N	N	X	D
-CTOPP	140	053	056	XXXX	09	Y	N	N	N	C	T
-CTPP	173	086	073	1313	09	Y	N	N	N	X	D
-COPPY	084	040	040	XXXX	00	Y	N	N	N	F	R
-CTOPP	090	053	049	XXXX	00	Y	N	N	C	F	R
-CTOPP	134	045	043	309	09	Y	N	N	N	F	T
-CTOPP	041	026	035	48	09	Y	N	N	N	Z	R
-CMPI	040	038	021	35	09	Y	Y	N	N	X	D
-COPIF	049	037	015	24	40	N	N	N	N	X	D
-COPIF	057	047	014	XXXX	09	N	N	X	X	X	X + 4 others

IM Ipswich Museum NANo.

*Suffolk-Kentford 134
TL 710 670 (g)

-CTOPP	116	068	043	XXXX	09	Y	N	N	C	F	D

CSM Cambridge Sedgewick Mus. Acc.No.D285

*Suffolk-Lakenheath, Undley 137
TL 697 812 (e)

-CTOPI	128	044	046	XXXX	00	N	N	W	C	F	D

axe roughout?

CAEM Cambridge A&E Museum Acc.No.z15487

Suffolk-Lowestoft nr. waterworks 140
TM 550 930 (e)

-LBC	145	057	040	XXXX	XX	X	X	X	X	C

IM Ipswich Museum Acc.No. R1933-206 R.Jacobi pers.comm.

*Suffolk-Mildenhall 141
TL 710 750 (g)

-CTOPP	101	045	025	XXXX	00	Y	N	N	N	F	D

BM BM Sturge Coll. NANo.

Suffolk-Mildenhall 141
TL 710 750 (g)

-LBC	XXX	XXX	XXX	XXXX	XX	X	X	X	X	X	
-LBC	XXX	XXX	XXX	XXXX	XX	(in shelly marl with Bos bone)					

ZZ Lady Grace Briscoe coll ref Smedley & Owles 1961

*Suffolk-Mildenhall, Beck Row, King's site 143
TL 704 794 (a)
-LBCs (see text)
CAEM Cambridge A&E Mus. Acc.No. z.31230

*Suffolk-Mildenhall, Beck Row 142
TL 690 780 (g)
-CTOPPY 079 057 XXX XXXX 09 N N W N N R
MHM Bury St Edmunds Mus., Acc.No. 1977-408 (os)

*Suffolk-Mildenhall Fen 146
TL 665 785 (e)
-CTOPP 125 063 058 XXXX XX Y N N N F R
IM Ipswich Museum Acc.No.1927-82.29

Suffolk-Nacton, Bridge Wood 147
TM 185 406 (g)
-LBC c150 XXX XXX XXXX XX X X X X X
IM Ipswich Museum NANo. R.Jacobi pers.comm.

*Suffolk? XXX
XX XXXX XXXX
-CTOPP 130 056 038 XXXX 20 Y N W C G
IM Ipswich Museum N.F.Layard ccll. NANo.

Surrey-Godstone, Brook Farm 152
TQ 375 495 (a)
-LBC 108 043 XXX XXXX XX X X X X X
ESM East Surrey Museum NANo. R.Jacobi pers.comm.

Surrey-Jarves Farm 153
TQ 348 452 (a)
-LBC 114 044 XXX XXXX XX X X X X X + Backed bladelet
ESM East Surrey Museum W.Harper coll. R.Jacobi pers.comm.

Surrey-Tilford, Whitemead 155
SU 870 436 (g)
-LBC 114 058 XXX XXXX XX X X X X X
BMNH BMNatural History Acc.No.E.5367 R.Jacobi pers.comm.

Rejected.

(1) London-Crayford, flood plain of R. Cray. Dartford Mus., Acc.No? plunging blade.
(2) London-Wandsworth. LM Acc.No. 16,862, long blade.
(3) Norfolk-South Wooton. NCM Acc.No. 206.951.5, <10 cm.
(4) Suffolk-Icklingham. MHM Acc.No.1977-651 (os) D.38, long blade.
(5) Suffolk-Icklingham. Ashmolean Mus. Acc.No. 1927.3602, not found.
(6) Suffolk-Icklingham. PEM Acc.No. 15682; <10 cm, bladelet scars.
(7) Suffolk-Icklingham. PEM Acc.No. 16410; <10 cm.
(8) Suffolk-Ipswich, Orwell South Bank. IM NANo; <10 cm.
(9) Suffolk-Lakenheath. CAEM Acc.No.72-35; not located.
(10) Suffolk-Wangford. MHM Acc.No. D16 1977-441 (os); axe.

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