

THE LOWER PALAEOOLITHIC PERIOD IN THE LONDON REGION

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SUMMARY

The London region is in the centre of one of the richest concentrations of Palaeolithic sites in Britain. It is shown that since some 430,000 years ago human groups have been present intermittently. Their presence is known from the flint tools and debitage they discarded and which were mainly washed into various deposits along the former courses of the River Thames, at heights of up to 40 metres above the present river. The locations of the major sites are noted and the current assessment of how they probably fit into the complex sequence of climatic and geographical changes apparent from detailed study of the Thames sediments. It can be shown that people were coping with environments varying from interglacials as warm as the present day, to very cool, if not semi-arctic conditions, during the glacial stages. The sites are related to the dating obtained by the applications of methods based on amino-acid ratios and the fluctuation of world temperatures indicated by the changes in the isotopic composition of marine micro organisms as found in deep sea cores.

INTRODUCTION

There has been human activity in what is now the London region at various times since the ice sheet of the northern hemisphere once extended to the fringes of the present Thames Valley. When this was so is difficult to assess, but a date of about 450,000 thousand years ago is favoured by some; rather less by others. During this enormous span of time, in relation to historical periods, there have been considerable geological and climatic changes. It is only at the end of the Palaeolithic which is, by definition, coincident with the last retreat of the oscillating ice sheet at about 8500 BC, that the geography and landscape

begins to conform with that of today. Some consideration of these changes is necessary in order to understand the conditions which were contemporary with these earliest inhabitants of the London region.

The London Basin is a syncline or trough of ancient sedimentary rocks of the Tertiary Era, folded into their present position by the great upheavals of the Miocene. This brought about the uplift of the chalk around the edge of the basin, now reduced to the Chiltern Hills and the North Downs. Between these resistant chalk ranges a river system was imposed upon the softer Tertiary rocks, mainly clays and sands. At the beginning of the Pleistocene sea level is thought to have been about 180m OD and the ancestral Thames flowed far to the north of its present valley. This was two million years ago, at a time when the earliest hominids were evolving in Africa and beginning to make stone tools. However, about one and a half million years were to pass before their very human descendants began to occupy parts of north west Europe or, at least, were leaving stone tools around to record their one-time presence. By this time, the Thames was flowing through the Vale of St Albans, across East Anglia to the sea (Whiteman & Rose 1992). No English Channel existed. There is mounting evidence for some human activity in Britain at this time, but no definite evidence yet anywhere in the London region (Wymer 1988). Northward flowing tributaries of the Thames joined the main river after flowing across this area but no stone tools have ever been found in the patches of gravel they left behind them. Possibly, some of the much-weathered, almost unrecognisable flint hand-axes

found on the surface, high up on the North Downs, do belong to this time, but it cannot be proved.

The climate was becoming colder and it was then that the great ice sheets eventually spread slowly southwards, further than any known previous advance or at any time since. One tongue of glacial ice blocked the Vale of St Albans and diverted the Thames into its present valley system (Gibbard 1985). This period is known as the Anglian Stage of the British Quaternary sequence (Mitchell *et al* 1973). Northern Britain, the Midlands and most of East Anglia were buried beneath ice. Boulder clay or till remains over much of the land once covered by the ice; proof of its former presence. Remnants remain in London at Finchley, and at Hornchurch and Upminster in Essex. Thus, although Britain has suffered further ice advances between periods of retreat (interglacials), as stated, never again has the ice ever reached as far as the London Basin. However, the effects of varying climates and falling and rising sea levels have been profound. The Thames and its tributaries have had to respond, the result of which is that they lowered their valleys in a series of episodes, leaving traces of their former courses as terraces, at least as far as the Middle Thames is concerned, *ie* between Goring Gap and the tidal reaches. The situation in the Lower Thames is far more complicated because of the effect of changing sea levels. These terraces (Fig 1), in general, run in sequence, so the higher the terrace the older it is likely to be. Many of these terraces in the London region have yielded Palaeolithic flintwork and the evidence will be summarised below for what it can tell us of the people who produced it: when, where and in what environments.

This is not the place to review the history of Palaeolithic research in the London region of the Thames Valley, but it would be unthinkable not to mention that London has the distinction of having the first published record in the world of the discovery and recognition of a flint hand-axe. It was found about 1690 not far from King's Cross railway station, near Granville Square (Vulliamy 1930) but is usually referred to as coming from Grays Inn Lane which is nearby. The discoverer was a London apothecary who, when observing diggings for some gravel, recognised the flint as having been humanly fashioned and described it as a 'lance, like unto the head of a spear' although, apart from some

quaint suggestions relating to ancient Britons, its significance was not understood when it was published (Bagford 1715). This is not surprising as the antiquity of Man was not seriously questioned until nearly a century and a half later. From then onwards, until the end of the 19th century and well into the 20th, the London region was a centre for Palaeolithic studies, from the amassing of flint collections to the gradual awareness of the implications of the contexts in which the flints were found. Terrace gravel deposits in the Lower and Middle Thames Valley were exploited to meet the demands of an ever-increasing city and not until the invention of mechanical diggers could the workmen tackle anything but the higher, dry, often implementiferous gravels. Victorian and Edwardian houses had cellars and, dug by hand, they gave a multitude of neat geological sections and further opportunities to find flint implements and fossil mammalian remains. Brickearth pits and railway cuttings added to the collections, many of which grace the stores of the Museum of London, the British Museum and other institutions.

It is only in the past few decades that this great body of archaeological evidence has become integrated with scientific, Quaternary studies. The Middle Thames and its tributaries has received considerable attention. Much of the previous work has been summarised by Gibbard (1985) in addition to his own interpretation of the geological history of the river. In this work will be found the full bibliographic references that space does not permit, or require, to be repeated here. Similarly, details of the individual sites of the region can be found in Brown (1887), Waechter & Wymer (1973), Roe (1968, 1981) and Wymer (1968).

Below, is a summary of the Lower Palaeolithic in the London region as it would appear to be seen at present. The term Middle Palaeolithic is not used here and Lower Palaeolithic includes the whole Palaeolithic period until the advent of blade-based leptolithic Upper Palaeolithic flint industries which appeared in north west Europe about 35,000 BC.

KEY SITES

The diversion of the Thames into its present valley system during the Anglian Stage has already been mentioned. The gravels of the Winter Hill Terrace dating from this Stage (Fig 1) can be traced from Cookham, north eastwards

Middle Thames Valley Terraces and Deposits

(After Gibbard 1985)

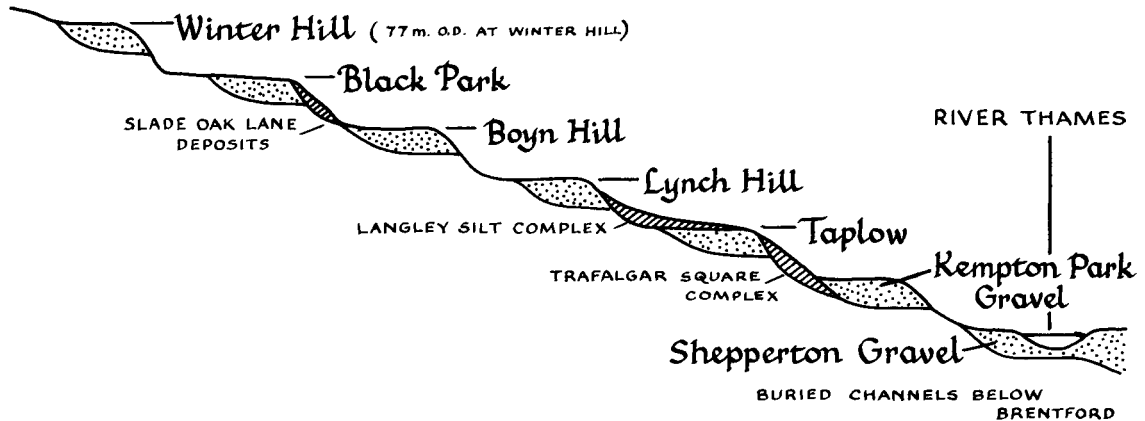


Fig 1. Diagrammatic section of Thames Terraces. The oldest terrace shown is the Winter Hill Terrace, the type site of which is at Cookham, Berkshire. No palaeoliths have ever been recorded from it. Palaeoliths have come from numerous sites in the gravels of the Black Park, Boyn Hill and Lynch Hill Terraces. Those which have come from the Taplow Terrace Gravels would appear to have been derived from the earlier higher terraces, as are the few known from the Kempton Park and Shepperton Gravels. The Black Park Gravels represent the course of the Thames immediately after it was diverted by Anglian Stage ice into its present valley. The Slade Oak Lane deposits are of the Hoxnian Stage (interglacial), and the Boyn Hill, Lynch Hill and Taplow Gravels of the succeeding Wolstonian Stage which was mainly cold. The Trafalgar Square complex dates to the Ipswichian Stage (the last interglacial) and the Langley Silt Complex is a superficial deposit of the Devensian Stage (the last glaciation) although some of it may be earlier. The majority of the artefacts found in the Black Park, Boyn Hill and Lynch Hill Gravels are considered to be broadly contemporary with their deposition. Clactonian industries come from the Black Park and Lynch Hill Gravels, and various traditions of Acheulian industries from the Black Park, Boyn Hill and Lynch Hill Gravels

through Uxbridge into the Vale of St Albans, where they are overlain by boulder clay. No palaeolithic artefacts have been found in these Winter Hill Gravels, which is not surprising in view of their being mainly contemporary with the maximum of a glacial phase. Humanity at this stage could hardly be expected to cope with such an extreme climate and, presumably, had no need to. However, after this drastic diversion of the Thames, its new course is represented by gravels of the next terrace below, the Black Park Terrace. Remnants of these gravels remain at about 45m above the present level of the river, between Reading and Henley-on-Thames, at Hillingdon and Richmond Park.

They contain palaeoliths: well-made as well as crude hand-axes, of pointed or ovate form. At a site near Henley-on-Thames there are also many flakes and chopper-cores of a different type. These palaeoliths in the Black Park Terrace Gravels are the earliest known tools in the Thames Valley (Wymer 1968) (Fig 1). The flint

industries with hand-axes are referred to as Acheulian, those with just flakes and chopper-cores as Clactonian. The significance of this distinction, or what it might mean, is discussed below. What is implied by their situation in this Black Park Terrace Gravel is that they probably date to a time after the maximum glaciation of the Anglian but certainly before the onset of truly interglacial conditions. It is thought that the majority, if not all, of the terrace gravels in the Middle Thames were deposited by braided courses during cold or even periglacial conditions, and there is no reason to think the Black Park Terrace Gravels would have formed otherwise. This does not mean that the people who left the flint tools were necessarily living near the river during the time of this gravel deposition; they may have been derived from earlier deposits or swept off nearby land surfaces. In either case, they are likely to have suffered considerable abrasion in the process and present a rolled appearance in their final resting place. However,

when relatively large numbers of palaeoliths including finished forms and debitage are found in a terrace gravel in sharp or only slightly rolled condition it seems reasonable to regard them as broadly contemporary with its formation.

The Quaternary Stage after the Anglian is known as the Hoxnian, after a type site at Hoxne, Suffolk. This was unequivocally an interglacial period, and pollen profiles from Hoxne itself (West 1956) and Marks Tey in Essex (Turner 1970) show plainly the climatic and vegetational cycle from full glacial to Pre-temperate, Early-temperate, Late-temperate, Post-temperate and so back to glacial conditions again. Unfortunately, only very fine-grained (muds, silts, sands) or organic deposits (detrital muds, peats) tend to form during interglacial periods and these are very vulnerable to erosion when the river once more becomes a series of braided streams, cutting and filling across a wide flood plain. If groups of people had discarded their flint tools and manufacturing debitage beside the Thames during an interglacial phase, these would almost certainly end up in a gravel deposit, as already explained above. Only one place in the London region, in fact in the whole of the Middle Thames valley, has been identified with confidence as of Hoxnian date: Slade Oak Lane, Higher Denham (Gibbard 1985). Organic deposits are preserved in what was not the main river but an isolated, shallow pool. Sediments accumulated during the Late-temperate and Post-temperate zones of the Hoxnian interglacial stage, and the change towards the colder climate of the next stage known as the Wolstonian could be detected. Unfortunately, no archaeological remains were associated so, again, there is only circumstantial evidence for any human presence during the Hoxnian in the London region.

At Hoxne itself, in Suffolk, there are Acheulian industries but they date mainly, if not entirely to the closing stages of the interglacial (Wymer 1983; Singer *et al.* 1993). The 'brickearths' at Grays, famous for their rich mammalian fauna, are probably of Hoxnian age but, again unfortunately, there are no known associated palaeoliths. The Palaeolithic site at Clacton-on-Sea, just outside the London region can certainly be dated to the full Hoxnian interglacial on the basis of pollen and faunal remains (Wymer 1985). Here, a rich Clactonian flint industry is found in association with remains of straight-tusked elephant, horse, giant ox, fallow, red and roe deer, rhinoceros, giant bears and other mammals.

The Clactonian industry is also found in the lower part of the famous sequence at Swanscombe, associated with such a similar fauna to that at Clacton that it is difficult to imagine that they are not contemporary. The industry and mammalian remains are found in the Lower Gravel in a derived context as shown by John Waechter's excavations (Waechter *et al.* 1972) but in the Lower Loam in primary context. Possibly the Lower Gravel may, in part at least, date to an earlier stage, but the Lower Loam is usually accepted as a truly full interglacial deposit of Hoxnian date. Its top is a weathered palaeosol, so a considerable hiatus is inferred before the Middle Gravels accumulated on top of it. This complex, stratigraphical sequence at Swanscombe is a key to some of the events in the London region at this time, as can be seen from the simplified diagram, Fig 2. It is famous, of course, for having produced the only Middle Pleistocene human skull in Britain (Ovey 1964), directly associated with Acheulian hand-axes, in these Middle Gravels. It is difficult to substantiate either the relative age of this part of the Swanscombe sequence, or to make sense of the conflicting chronometric dates obtained from various physical methods (Uranium/Thorium, thermoluminescence, amino acids) but, on altimetric grounds alone, it is most likely the latter part of the Hoxnian interglacial or the early part of the Wolstonian Stage. This would suggest a cool climate and the evidence from micro mammals in the Middle Gravels accords with this (Kerney 1971).

The Swanscombe Skull, probably that of a female in her early twenties, may be regarded as typical of our ancestors at this time. Other finds in Europe support this, but discoveries of human skeletal remains of this period are so very sparse that it might not be so. However, assuming it is, the human population was not so very different from ourselves and can be classified as *Homo sapiens*, even if the further sub-specific taxonomic title of *sapiens* (as endowed on us) cannot be awarded. Faces would have been broader and heavier, jaws more massive, but the post-cranial skeleton almost or entirely identical. In this respect the population had traits more akin to the later *Homo sapiens neanderthalensis* than *Homo sapiens sapiens*. Such people are often summed up as Archaic Homo Sapiens. Whether they were hairier, or had black, brown or white skins is unknown. Certainly, they were much more like

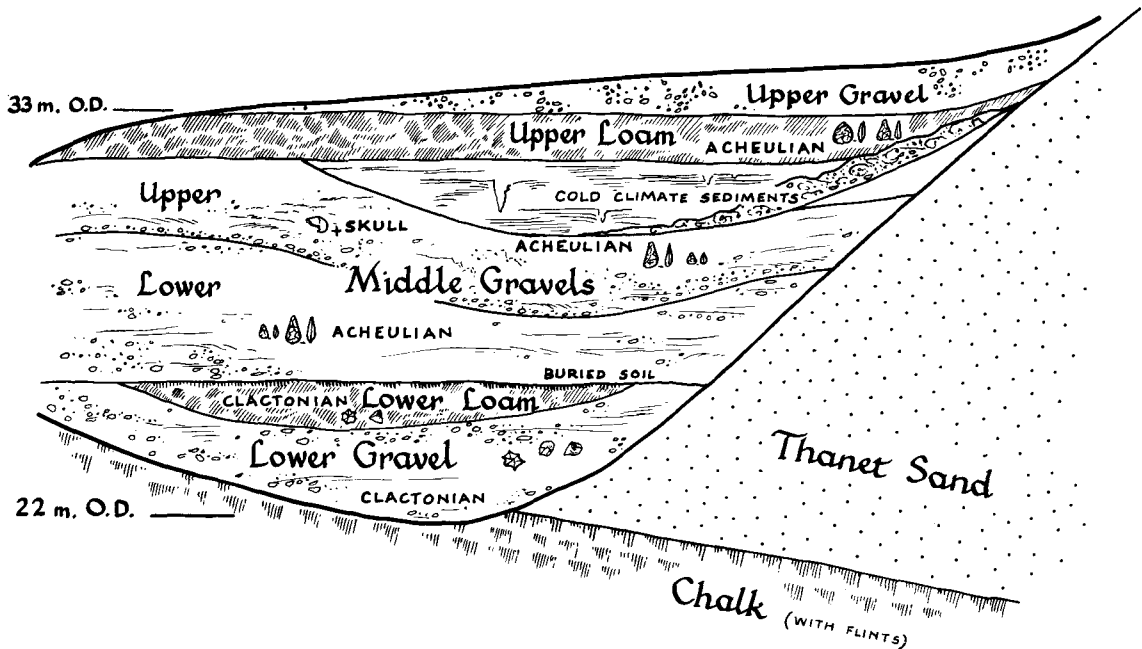


Fig 2. Diagrammatic section of the river terrace deposits at Barnfield Pit, Swanscombe, Kent (the vertical scale is greatly exaggerated). The Clactonian Industry in the Lower Gravel and Lower Loam is clearly stratified beneath the Acheulian of the Middle Gravels. The Lower Gravel and Loam, on the basis of the mammalian remains and molluscs found within them, was flowing through a wooded valley with an open, grassy flood plain. The river was frequently changing its course and abandoned channels silted up while others were eroded. The crude Clactonian flakes and cores discarded by the human groups along the river banks were either washed into the gravels at times of spate or, as in the Lower Loam, gently covered by silt and sand and remain where they were dropped or used. The mammalian remains include large beasts such as straight tusked elephant, two kinds of rhinoceros, giant ox and horse, as well as three species of deer, pig, hare and rabbit. It seems reasonable to think that they provided food for the people, whether hunted or scavenged, probably both. Lion, 'cave' bear and wolf were unwelcome intruders. Monkeys were also present. The top of the Lower Loam is weathered and there was a hiatus before the Middle Gravels were deposited. This hiatus probably represents the middle of an interglacial and the Middle Gravels, which contained the famous Swanscombe Skull, date to the end of this interglacial, or even the beginning of a succeeding cold period. There was a similar range of animals to those found in the Lower Gravel and Loam, but horse predominated and lemming was present, suggesting a cooler climate, as do the associated molluscs. Certainly, the deposits above the Middle Gravels were laid down in periglacial conditions. The elegant hand-axes of the Upper Loam probably relate to less rigorous conditions and, although not confirmed by excavation, were presumably in primary context. The Upper Gravel is mainly a solifluction deposit and the few artefacts known to have come from it are crushed or broken, probably derived from underlying deposits. Part of a musk ox was found in the Upper Gravel

us than the earlier *Homo erectus* from which they had presumably evolved.

ENVIRONMENT AND LIFE-STYLE

Table 1 lists the Quaternary Stages of the British sequence and some of the geological features related to them in the Middle and Lower Thames Valley, and the suggested position of some of the Lower Palaeolithic sites in the London region. It will be seen that the mass of Acheulian hand-axes come from the Wolstonian Stage. Although the climate was probably cool for most of the

very long time covered by this stage, the term must be seen as one of convenience in the absence of firm knowledge of what really happened in the way of glacial events and other oscillations of climate. There may well have been several warmer phases, even at times interglacial in the sense that the climate ameliorated for so long that a deciduous mixed oak forest developed. For perhaps about 300,000 years, or even longer, there is nothing in the archaeological record to show that the life-style of these people changed.

On the meagre evidence available, little more can be done than make common-sense presumptions and then question their validity. Thus, one

Table 1. The sequence and age of Lower Palaeolithic sites in the London region

Quaternary Stage as per Mitchell <i>et al</i> 1973	Thames deposit as per Gibbard 1985	Estimated dates as per amino acid ratios and probable correlation with oxygen isotope stages of marine record (Bowen <i>et al</i> 1989) Years OIS before present	Climate	Major sites in London region Wymer 1968; Roe 1968, 1981	
FLANDRIAN	Modern alluvium	10,000	1	temperate	
DEVENSIAN	Kempton Park Gravel	13,000	2	cold	
	Main mass of Langley Silt Complex		3	some warmer periods	Tilbury (buried channel)
			4		Acton, Creffield Road
			5a-d		Hillingdon, Sipson Lane
IPSWICHIAN	Brentford and Trafalgar Square deposits	110,000	5e	temperate	none known
WOLSTONIAN	Taplow Gravel	120,000	6	cold	
	Some Langley Silt Complex		7	temperate	Crayford
			8	cold	West Drayton, Yiewsley, Northfleet
	Lynch Hill Gravel		9	temperate	Maidenhead, Burnham, Central London
	Boyn Hill Gravel		10	cold	----- ----- -----
HOXNIAN	Slade Oak Lane	352,000	11	temperate	Swanscombe Middle Gravels (with <i>Homo</i>) Lower Loam Lower Gravel
ANGLIAN	Black Park Gravel	428,000	12	cold, fully glacial north of London	Hillingdon

might assume that groups would have to be small; that constant movement was necessary at least by seasons if not months or even days; that large and small mammals were hunted or scavenged, or both, for meat, furs and other useful materials (sinews, bones, bladders); that numerous items were made of perishable substances that have left no record; and that some form of language was in use. At present, these people's ability to hunt at all is being seriously questioned (Binford 1983) and it is suggested that meat was scavenged from natural deaths or carnivore kills. What does seem certain is that human groups adapted themselves to living during times between the extremes of either glacial or interglacial phases. As Gamble (1986) has pointed out such extreme conditions only account for a minority of the time and there are good reasons for regarding them as less suitable: interglacial extremes meant dense, impenetrable forest over much of the land; glacial extremes obviously meant unbearable cold. Between these extremes, although cooler, there would have been a more open landscape more attractive for both beasts and people. If this is true, mankind must have used considerable ingenuity to adapt to these conditions: clothing and shelter would have been essential. Nothing has survived in north west Europe, let alone the London region, to substantiate this.

Conflicting with the assumptions above is the position of the crude Clactonian industry of chopper-cores, flakes and retouched flakes, so well represented as mentioned above at Clacton-on-Sea and in the Lower Gravel and Lower Loam at Swanscombe, also near Henley-on-Thames. The occurrence of occasional similar artefacts in gravels which also contain hand-axes does not necessarily imply the same industry, as even hand-axe industries tend to have a rough component. The conflict lies in that some of this Clactonian industry is found in the environment of an early-temperate zone when the landscape might be expected to be mainly thick woodland, certainly at Clacton and probably at Swanscombe. However, it does not seem to have only been associated with this kind of environment, so some other explanation must be found for its technological contrast with the Acheulian industries. Several suggestions have been made from physical and cultural differences, (*ie* a different human type with a different life-style) to mere functional variation within the Acheulian. The industry is certainly not the result of

preparing pre-forms for hand-axes as has also been suggested. The problem remains, but unquestionably the proponents of this Clactonian industry were within the London region just before and during the Hoxnian interglacial. Whether the people who made hand-axes belonged to very different groups or not, the fact remains that, as yet, no hand-axes have been found in the London region in a situation that unequivocally relates them to the full Hoxnian Interglacial Stage. The evidence is so scanty that the reality may have been quite different. However, there is considerable evidence that hand-axe industries thrived over much of southern Britain during the closing stages of this interglacial and into the succeeding cool period of the Wolstonian Stage, as seems to be the case at Swanscombe. Such industries are found in the Boyn Hill and Lynch Hill Terrace Gravels of the Thames and to a much lesser extent in the Taplow Gravels. All of these deposits must have formed between the Hoxnian Interglacial and the last interglacial or Ipswichian Stage (Jones & Keen 1993). The latter can be dated with some confidence as commencing about 120,000 years ago, on the basis of climatic changes recorded in the sediments from deep sea cores, and by Uranium/Thorium dating. A vast span of time is implied, perhaps 200,000 years or more, between these episodes, during which time Lower Palaeolithic groups continued to hunt, forage and scavenge along the banks of the early Thames, intermittently at least.

In spite of the great numbers of hand-axes, flakes and other discarded flintwork which eventually came to rest in gravels attributed to this Wolstonian Stage, little can be added to our knowledge of their makers. Rarely can it even be deduced in what kind of environment they were living. The gravels were undoubtedly for the most part deposited during cool periods when the discharge of the river was greater than during interglacial times, and when the vegetation cover was much thinner and the land consequently more vulnerable to erosion, but, as already noted, this does not mean that the flint artefacts were necessarily made at that time. However, the majority are probably contemporary and imply an adaptation to the prevailing climate. The same applies to the bones of large mammals often found with them. Overall, perhaps a few generalisations are justified: the palaeoliths in the Boyn Hill Gravels tend to be much rolled and abraded; the richest concentrations occur in the

Lynch Hill Gravels; artefacts in the Taplow Gravels are not common and probably derive from erosion of the terrace above them. Different types of hand-axes can be identified, visually or metrically, and appear to fall into groups that probably have no temporal significance but may identify long-lived traditions among related peoples. It is also evident that towards the close of this long period, a particular style of flintworking known as 'Levalloisian technique' was sometimes employed, often to the exclusion of hand-axes and other tools. This was an extremely skilful technique which produced large, fine, serviceable flakes from specially prepared cores. However, it was a technique very extravagant with flint and suggests that there was plenty of it readily available. Cold conditions could produce such a situation where slopes of flint-rich chalk, devoid of any thick vegetational cover, became a quarry for these Palaeolithic knappers.

In many cases, although the flints found in the gravels are never as fresh as the day they were made, many are fairly sharp and it is clear that they cannot have rolled far from their place of discard. This is even more obvious when they are found in concentrations, such as at sites like Furze Platt near Maidenhead in the Lynch Hill Terrace. Here, finely made pointed hand-axes together with the flakes from their manufacture, were found in their hundreds in one particular pit, including the largest hand-axe so far found in Britain, 32cm long. Llewellyn Treacher watched the pit for many years and thought that many of the hand-axes had been made on the spot 'but the Thames had been there and just turned the implements over' (Treacher *et al* 1948, 153). Furze Platt is just beyond the western edge of the map (Fig 3) which shows the general distribution of palaeoliths in the London region, but a very similar situation existed at Burnham, Lent Rise Pit, in the same Lynch Hill Terrace. On the same map, other finds of hand-axes are indicated in the same terrace gravel, making almost a straight line eastwards to and across central London, showing the course of the Thames at this time, when it flowed about 23m above its present level. Yiewsley, Dawley, Ealing were all famous localities for the collectors of hand-axes during the earlier part of this century. Much of west London is built on the Lynch Hill Gravel and hand-axes have come in small numbers from such unlikely places as Hyde Park, Oxford Street, Piccadilly Circus (Fig 4, Nos 2, 3)

and Great Portland Street. The same gravel can be traced into north-east London and numerous hand-axes have also come from here, particularly in the districts of Pentonville (Fig 4 No. 1), Hackney, Leytonstone, Stamford Hill and Wanstead, recorded mainly through the indefatigable work of Worthington Smith (1894). Further east it is not so easy to identify the same terrace with confidence, but the discoveries of hand-axes at Chadwell and Orsett in Essex are probably the equivalent, as are the Swanscombe Middle Gravels (Bridgland 1988). Palaeoliths have also come from gravels around Rickmansworth and Croxley Green. Both Acheulian and possibly Clactonian industries have been found, but dating is problematical.

Much less remains of the higher Boyn Hill Terrace, but rolled hand-axes have come from these gravels particularly at Burnham Beeches, Farnham Royal and Maidenhead. As can be seen from the map (Fig 3) there are many other localities where isolated or few hand-axes have been found. They come usually from small remnants of terrace gravels, sometimes unrelated to existing streams. One area to the south of London, around Banstead Heath and Walton-on-the-Hill has yielded a considerable number of hand-axes in very different circumstances. Here, at heights of more than 150m OD on a plateau of the North Downs, they occur in the sub-soil of the clay-with-flints. Their age can only be guessed at, but they are probably post-Anglian. The important thing is that they show that Palaeolithic activity was not restricted to the river valleys. It would seem that these artefacts were too high on the plateau to have been swept down the coombes and eventually into river gravels.

Similarly, a fair number of hand-axes have been found on the surface of the North Downs around Ash and Ightham. These were collected for the most part in the latter part of the 19th century by Benjamin Harrison, more famous for his 'coliths,' which are no longer regarded as being of human workmanship. As on the Surrey downs, these hand-axes must have escaped the effects of solifluction during peri-glacial periods, when so much of the landscape was subjected to frost-heaving and mass movement down slopes. Unlike the palaeoliths from around Banstead, those from the high North Downs of Kent are not incorporated in the sub-soil of the clay-with-flints and, exposed to the elements for tens of thousands of years, they are stained, worn and weathered, sometimes to a point of being almost

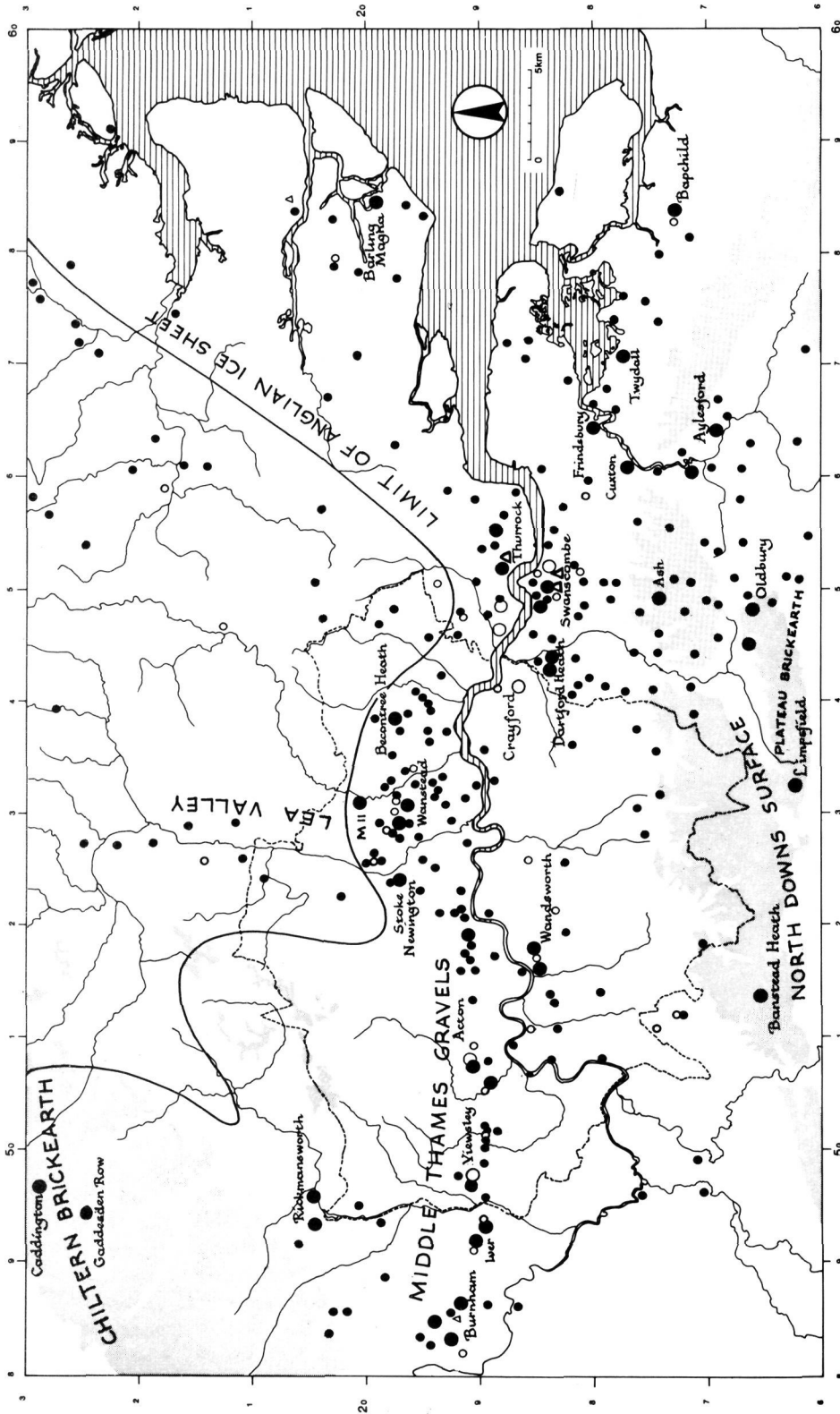


Fig 3. Distribution of Lower Palaeolithic sites in the London Region

KEY

- Sites with numerous artefacts ●
 - Sites with few or single artefacts ○
 - Sites with numerous artefacts △
 - Sites with few or single artefacts △
- ACHEULIAN INDUSTRIES with hand axes prominent
- INDUSTRIES with Levallois technique predominant
- CLACTONIAN INDUSTRIES with chopper-cores and flakes

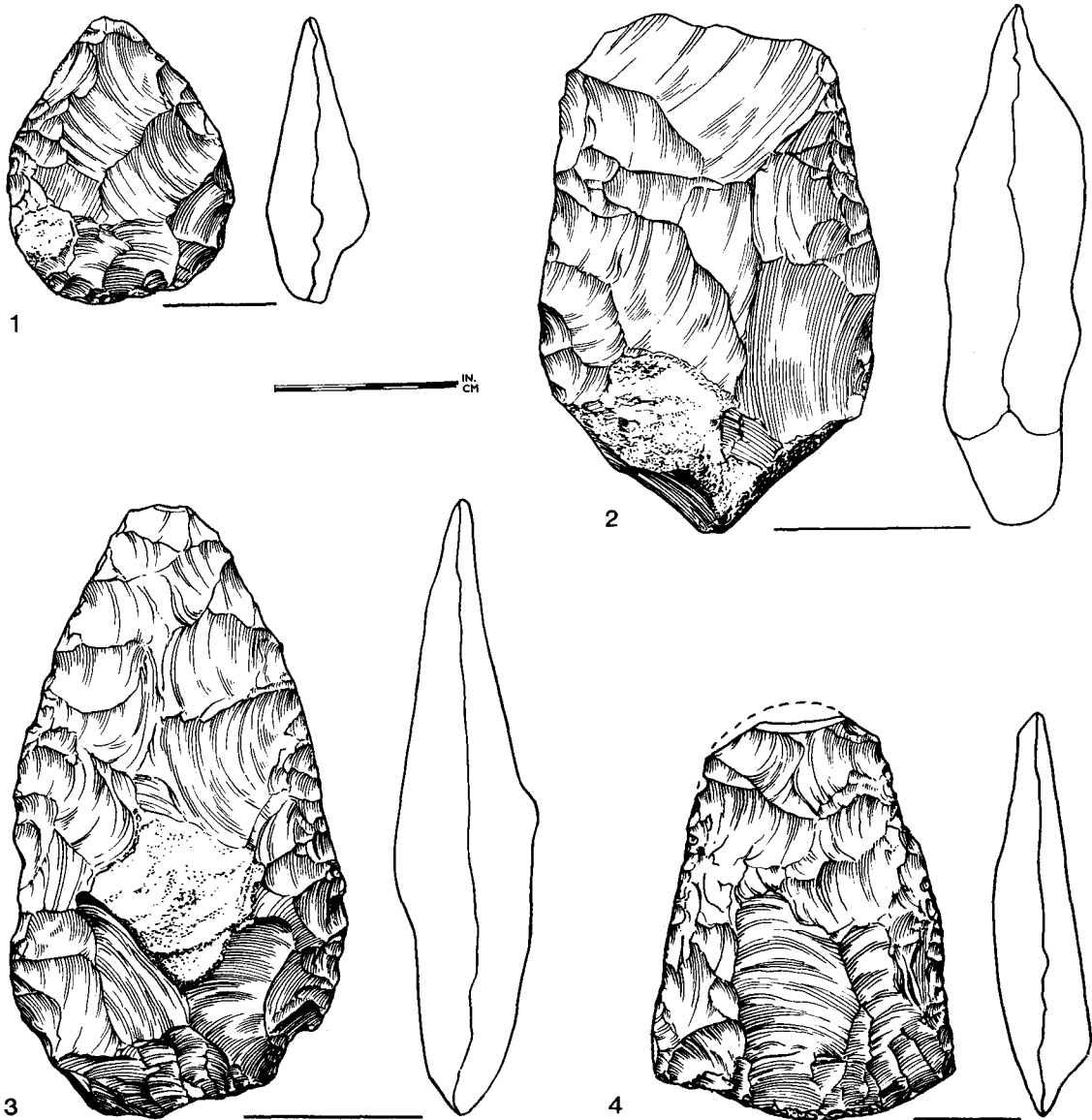


Fig 4. Hand-axes and cleaver from terrace gravels in London. 1. Small, cordate hand-axe. Slightly rolled and stained. From Lynch Hill Gravel at Pentonville (British Museum, Sturge Collection). 2. Tranchet-edged cleaver. Sharp condition with matt brown staining. From Lynch Hill Gravel at Glasshouse Street, Piccadilly Circus (Museum of London). 3. Elegant hand-axe. Slightly rolled and stained. From Lynch Hill Gravel at Glasshouse Street, Piccadilly Circus (Museum of London). 4. Flat-butted cordate (bout coupé) hand-axe. Slightly rolled and stained, the face not figured with blue-white, lustrous patina. From Kempton Park Gravel on site of Berrymead Priory, Acton (British Museum)

unrecognisable as artefacts. Palaeolithic sites are also known on the Chiltern Hills around Luton, mainly at Round Green, Caddington and Gaddesden Row. Worthington Smith, who discovered these sites, was in several instances able to refit flakes and demonstrate the primary

context of the material. More recent excavations on a large scale at Caddington (Sampson 1978) and a section cut at Gaddesden Row (Wymer 1980) failed to locate any rich sites but support the conclusion that these sites represent activity around water holes. Levalloisian flakes and cores

have been found with the numerous hand-axes and, on this slender basis, a Late Wolstonian date seems likely. Pollen analyses suggest interglacial conditions (?Ipswichian) but this interpretation has been questioned (Turner 1985).

It is during the latter part of the long Wolstonian Stage and into the succeeding last interglacial and earlier part of the last glacial stage that there are changes in the flint industries that seem to reflect changes in the life-styles of hunting groups. Mention has already been made of the use of Levallois technique, and a few specialised tool forms begin to appear. There is nothing comparable to the elaborate industries of the continental Mousterian industries but a suspicion of something similar. The most significant thing is that a few sites not only indicate that groups were living in cool conditions, but now occasionally in really cold environments. No human remains have ever been found but it seems most probable that *Homo sapiens neanderthalensis* was about. The sequence of climatic events is still not totally understood so it is difficult to place what evidence there is for human activity into any order with confidence. However, the last interglacial as represented by the Thames deposits found in the centre of London around Trafalgar Square is one fixed point. It is referred to as the Ipswichian Stage in the British Quaternary sequence and, on several lines of evidence, dates within the span of 120,000 to 80,000 years. An Early-Temperate zone of the interglacial is shown by the flora, mollusca, insects, and mammalian fauna. The latter included hippopotamus and straight-tusked elephant. The presence of pond tortoise (*Emys*) indicates a mean annual temperature higher than today. This would appear to have been an ideal environment for Palaeolithic groups but, possibly for the reasons stated above, there are no artefacts to prove their presence. Where artefacts are found in datable contexts they belong to the periods before or after this interglacial. The situation is complicated by a disagreement among geologists as to whether some other Late Pleistocene interglacial deposits in southern Britain are the same Ipswichian Stage as at Trafalgar Square or a separate event. Deposits at Ilford and Aveley, east of London, come into this category, but it makes little difference to the archaeology as they, also, are devoid of any Palaeolithic flints. However, in East Anglia there is sparse evidence of human occupation during

an interglacial between the Ipswichian and Hoxnian Stages.

As mentioned, there is at least some unequivocal evidence for human activity in the cool or cold periods of the Late Pleistocene. There is one very important factor, so far ignored, that may relate to this: that of the English Channel as an obstacle for movement from the Continent. It seems almost certain (Gullentrops, 1974 and Gibbard, 1988) that the great ice sheet of the Anglian Stage glaciation covered most of the North Sea, into which drained the rivers of eastern England and the Low Countries, particularly the Thames and the Rhine. A great ice-dammed lake would have formed and its only outlet would have been across the watershed that presumably existed to the south, into the arm of the Atlantic that now forms the western end of the English Channel. This watery barrier would have remained after the retreat of the Anglian ice. However, although at times of high sea level (interglacial periods) this may have prevented the movement of people into England from France and the Low Countries, during periods of low sea levels (glacial periods), the barrier may not have been impassable, with care and perhaps some simple raft. To this must be added the question of isostatic movements as the land slowly rose or fell in response to the great weight of ice upon it, and a general subsidence of south-east England.

Great spreads of so-called 'brickearth' mantle the terrace deposits from Maidenhead downstream and over much of North London. They cover, as far as the Middle Thames is concerned, the Lynch Hill and Taplow Terraces. Gibbard (1985) refers to this mantle as the Langley Silt Complex. It would seem that several agencies combined to produce this deposit, but its loessic content demonstrates that it formed during cold conditions, at various different times during the Late Pleistocene: some before the Ipswichian Stage, some afterwards. Palaeolithic artefacts occasionally occur in or under it. At Yiewsley and West Drayton (Collins 1978) large collections have been made of Levallois flakes and cores which resemble those found on the other side of London at the Baker's Hole site, Northfleet. At the latter site, an incredibly prolific working floor of this industry was overwhelmed by soliflucted chalk which sludged into the valley of the Ebbsfleet. Dating remains problematical, but there are good arguments for putting it before the earlier of the two interglacial periods

identified by some as separate events although both referred to as Ipswichian. It is a bold skilful industry with superb flakes struck from confidently prepared cores. A few hand-axes may belong and some rare flake cleavers (Robinson 1986).

The prodigious quantity of material from Baker's Hole could be explained by the almost unlimited good quality flint available on the chalk slopes of the valley, but flint would have been much more restricted on the Lynch Hill Terrace of the Thames so, understandably, there is much less material at West Drayton and Yiewsley. Isolated Levallois flakes have also come from the 'brickearth' at Iver and Wexham. A little further down the valley, at about the same level, is the famous Levallois site at Creffield Road, Acton. A rather different industry is found here, with an emphasis on blades, many of them of a pointed type struck from specially prepared cores and perhaps used as spearheads (Fig 5, No. 2). With the industry at Creffield Road are two small, thin hand-axes of a distinctive sub-rectangular form, sometimes referred to as *bout coupé* hand-axes. Roe (1981) and others have regarded this type of hand-axe as a 'cultural marker', in the sense that it would appear to be restricted to Mousterian industries. There are certainly continental correlations and some stratigraphical evidence to support this, even if there is clearly some danger in using isolated

examples to demonstrate the existence of such Mousterian industries (Coulson 1986). In the absence of any good, rich Mousterian assemblages in the London area, or anywhere else in Britain for that matter, compared to what is found in northern France, it seems reasonable to accept these hand-axes, especially when found with Levallois flakes and in contexts that relate to the last glaciation or Devensian Stage, as a possible insular variant of the Mousterian of Acheulian tradition. A couple of others were also found at Acton (Fig 4, No. 4), and they have also come from West Drayton and Yiewsley, Hammersmith, Hoxton and Isleworth. Unfortunately, the circumstances of their discoveries are unknown. However, one such hand-axe, and probably a few others, was dredged from the Thames at Tilbury. It can only have come from deposits of the buried channel formed by the response of the river to the low sea level of the last glaciation. More recently, a hand-axe of this type was found at Sipson Lane, Hillingdon, in brickearth of Gibbard's Langley Silt Complex. The site fortunately received the attention of the Museum of London's Department of Greater London Archaeology and the soil profile was studied by R I Macphail (Cotton 1984). This revealed a complicated history of deposition, erosion and further deposition, within both cold and temperate climates. The hand-axe appears to have been

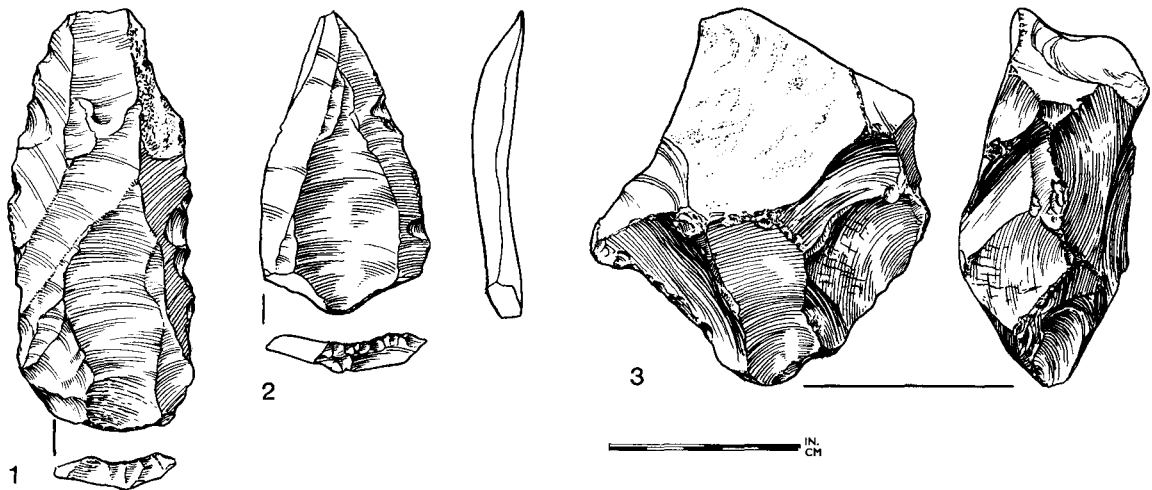


Fig 5. Levallois flakes and Clactonian chopper-core. 1. Levallois blade. Rolled and stained with considerable edge damage. From Kempton Park Gravel at Catherine Street, Strand (Museum of London ex GF Lawrence). 2. Levallois point. Patinated on both faces, slightly worn with some edge damage. From Langley Silt Complex above Lynch Hill Gravel at Creffield Road, Acton (British Museum, Sturge Collection). 3. Clactonian chopper-core. Rolled and stained. From Lower Gravel, Barnfield Pit, Swanscombe, Kent (J J Wymer Coll ex B O Wymer)

on an eroded surface during a cool period which is most likely to have been within the Devensian Stage. Another site that has produced an industry of Levallois flakes and cores is Bapchild in Kent, also in 'brickearth.'

Other hand-axes have occasionally been found in the Langley Silt Complex, particularly at Langley and Iver (Lacaille 1936) and also at higher levels north of Burnham. They are of normal Acheulian types, usually in very sharp condition and patinated shiny white. They seem to be isolated pieces, lying where they were discarded at a time contemporary with the 'brickearth' which contained them. No knapping sites or concentrations of finds which might represent butchering or even camping places are known. Possibly of the same age are the palaeoliths found in 'brickearth' high up on the plateau at Limpsfield. Roe (1981) has reinvestigated the collections and found hand-axes of Mousterian type.

One outstanding discovery that must be mentioned was the complete skeleton, articulated, of a mammoth at Southall (Brown 1889), at a depth of about 4m in sandy loam. A Levallois pointed flake-blade is said to have been found actually in contact with the bones. However, this may be an exaggerated account of a more normal type of discovery, for the only flake in the Sturge Collection at the British Museum which appears to be the one in question is marked: 'Norwood Road, Windmill Lane, Hanwell. 13-14ft down—near it at same levels a tusk, teeth and bones of mammoth. Ian Gosling Sept. 30, 1887.'

Another Levallois site on the other side of London at Crayford was unquestionably one with material in a primary context; that found by F J C Spurrell in Stoneham's Pit about 1880. Here, at the base of 'brickearth' lay numerous Levallois flakes intermingled with the bones of apparently butchered animals, mainly woolly rhinos. Spurrell was actually able to rejoin one nest of flakes to a broken core and restore the original nodule. The date of this site is controversial, but it must have been either just before or just after the earlier of the Ipswichian interglacials. Only one site in the area appears to suggest occupation of a natural shelter by people with a Mousterian-like industry: that of Oldbury near Ightham. Here, it would seem that an outcrop of sandstone of the Folkestone Beds afforded sufficient protection to attract perhaps itinerant hunters. However, excavations by the

Collins's (1970) showed that the harsh effects of periglacial climates coupled with normal aeolian and chemical weathering processes have removed all traces of any original rock shelter and scattered the flints in the subsequent spread of weathered rock and sediment.

Other sites under or within the brickearth of north east London were investigated by Worthington Smith, where material was in a primary context and could be rejoined, particularly in the Stoke Newington area. A similar site was exposed during the construction of the M11 motorway at Woodford in 1975 and investigated by T. Betts (Wymer 1985). It is sites of this nature which need to be examined by modern, multi-disciplinary techniques. There must be other Creffield Roads, Crayfords and Stoke Newingtons awaiting investigation and chance will eventually reveal them. In the meantime, the methodical recording of sections which at least contain or can be related to Palaeolithic material should be attempted wherever possible, as was done in 1981 at Stoke Newington (Harding and Gibbard 1984). Eventually, primary context sites will give a broad idea of the mode of life and the conditions with which our ancestors coped, at different times during the vast span of time when they often frequented the London region.

At present it must be concluded that our knowledge of this latter part of the Palaeolithic period in Britain as a whole is very hazy. Compared to what is known in the adjacent parts of Europe it might seem that the whole area was something of a backwater and that the London region, as elsewhere, was not regularly occupied, but just a remote hunting ground on the fringes of the then known world. The climate, for much of the time during the first half of the Devensian or last glacial stage (*c.* 80,000-40,000 years BP) was cold, but there were warmer interludes, and a wealth of large mammals, especially mammoth, woolly rhinoceros and reindeer inhabited the Thames Valley. Their bones are frequently found in the flood plain gravels of the river. Sea level may still have been too high to afford any communication with mainland Europe without taking considerable risks. As this glacial period progressed so the sea level dropped and, as has been noted above, the Thames was cutting a deep channel which eventually worked its way back to the centre of London. From Westminster downstream, the old flood plains, at about the same level as they are today, were left as dry terraces. It was not until

the climate ameliorated after the maximum last advance of the ice sheet (25,000–18,000 years BP) that the sea level began to rise again and fill this channel with sediment. By this time, modern Man was firmly established in France and central Europe, with a very different society and economy. A type of life faded away that has left its flint litter and fragments of one skull, if nothing else, for some hundreds of thousands of years on the land now occupied by the great urban sprawl of London and its surrounds.

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