10 The earliest occupation of Europe: the British Isles

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The evidence presented here suggests that the British Isles was first colonized at the beginning of the temperate or interglacial stage that immediately pre-dates the Anglian cold Stage. Lithostratigraphic and chronostratigraphic modelling correlates the Anglian with Oxygen Isotope Stage 12, which is dated to between 478 and 423 Kyr BP. Accordingly, the earliest occupation of Britain occurred around half a million years ago. The early colonizers are assigned, from the Boxgrove specimen, to the species Homo *cf* heidelbergensis. *One hundred thousand years later, at Swanscombe, this group begins to exhibit some cranial skeletal characteristics usually associated with the Neanderthal lineage. Throughout the period covered by this paper there is apparent stasis in the lithic industries, which include both biface dominant assemblages and flake tool dominant assemblages. Strict division between these two types of assemblages is no longer tenable on typological or chronological grounds.*

1. Introduction

The remit of this paper is to study the occupation of the British Isles from the first evidence of human colonization to the end of the second major temperate event after the Anglian cold Stage. Although the starting point is self explanatory, the cut-off point may seem at first to be of an arbitrary nature. However, it may be demonstrated that by this time the continent of Europe, outside the ice margins (Holm and Larsson, this volume), was colonized over a large part of its land mass and that in our geographical region of Britain and northwest Europe, the cut-off point coincides with the emergence of the Levallois technique of lithic reduction and flake production.

The sites included in this paper (Fig. 1) have either been recently or are currently being, excavated and/or studied as part of on-going research programmes. Sites that satisfy these criteria have been chosen because the research methodology utilized in their study is multidisciplinary and thus the quality of the contextual information facilitates greater accuracy in both inter-site and inter-regional correlation.

The sites have been divided into two groups, those that pre-date and those that post-date the Anglian Glaciation. This division is not based on any shift, real or perceived, in hominid material culture nor on any concept of hominid species change; rather it reflects the large scale changes to the palaeogeography and mammalian fauna composition of Britain, that occurred as the result of physical and climatic factors relating to this glacial/cold event. The fixing in time of the Anglian Stage has not yet been unequivocally agreed upon by British Quaternary scientists but the weight of evidence suggests correlation with Oxygen Isotope Stage (OIS) 12 (see below and Table 1). The model presented here, although it fits with this hypothesis, is free-standing and allows for future fine tuning of the geochronological timescale.

On the evidence currently available to Quaternary scientists, it is thought that the first hominids arrived in Britain approximately half a million years before the present day. This view fits well with the short chronology perspective of the demographic expansion of humans through continental Europe (Roebroeks 1994; Roebroeks and Van Kolfschoten 1994, this volume) and certainly accords with the picture from northern France, Belgium, Spain and Portugal (see various contributions in this volume), where the earliest sites are dated to the end of the Cromerian Complex. There remains a problem of reconciling these dates with the much earlier dates of sites in southern France (Bonifay and Vandermeersch 1991) and central Europe (Valoch 1991 and this volume). However, many of these sites are controversial and not all of them are accepted by archaeologists as containing evidence of human occupation (Roebroeks and Van Kolfschoten 1994; Raynal *et al.*, this volume). There may however, have been sporadic colonization of the Mediterranean region for a long period of time prior to the main geographical expansion of *Homo* around 500 Kyr BP. The reasons behind this apparently sudden and dramatic movement are beyond the scope of this paper but it may be noted that solving the problem of the colonization of Europe during the Middle Pleistocene is going to be dependant on moving away from a site based approach to human ecology towards large scale regional modelling along the lines of Geographical Information Systems (GIS), to study geographic and climatic factors (Gamble 1986) that may have affected

Table 1. Revised stratigraphic correlation for part of the Middle and Late Pleistocene.
References. 1. Mitchell *et al.* 1973. 2. Roberts, this paper. 3. Adapted from Zagwijn 1992. 4. Shackleton 1987.

Conventional British stages[1]	**Modified scheme**[2]	**Sites**	**Dutch/European sequence**[3]	**OIS**[4]
OIS do not apply to this column				
Devensian	Devensian		Weichselian	5d+
Ipswichian	Ipswichian	Bobbitshole, Trafalgar Square	Eemian	5e
These stages not recognised	Cold stage		Saalian Complex	6
	Temperate/interglacial stage	Marsworth, Stanton Harcourt		7
	Cold stage			8
	Hoxnian	Hoxne?, Little Thurrock, Globe Pit, Purfleet		9
Wolstonian	Cold stage			10
Hoxnian	Temperate/interglacial stage	Swanscombe, Barnham, Beeches Pit, Clacton	Holsteinian	11
Anglian	Anglian		Elsterian	12
Cromerian	Temperate/interglacial stage	Boxgrove, High Lodge, Wivenhoe, Westbury-sub-Mendip, Kent's Cavern, Warren Hill, Waverley Wood	Cromerian IV	13
Beestonian	Cold stage		Glacial C	14

demographic expansion. Such modelling would provide a framework within which other variables such as technological capacity (Binford 1989), food availability (Roebroeks *et al.* 1992) and competition from other mammals (A. Turner 1992) could be empirically tested.

2. Middle Pleistocene Colonization of NW Europe: Sites pre-dating the Anglian Cold Stage

2.1. Introduction

The number of archaeological sites dated to the period of the Cromerian Complex (Zagwijn 1985; 1992) in Britain has increased dramatically in the past two decades. The sites are located within the block of time between the Cromerian *sensu stricto*, as represented in the type section at West Runton, Norfolk, and the Anglian Glaciation. There exists however a problem in fixing the position of West Runton in the Quaternary timescale; previous biostratigraphical and lithostratigraphical work by Stuart (1975) and West (1980) postulated that the Cromerian *sensu stricto* warm stage immediately pre-dated the Anglian. This correlation was questioned by Bishop (1982) in his report on the fauna from the site at Westbury-sub-Mendip, Somerset. Current research at Boxgrove (Roberts 1990) and on the pre-diversion course of the River Thames (Bridgland 1994), together with work in the Rhine Valley of Germany at Miesenheim I and Kärlich (Van Kolfschoten 1990; Van Kolfschoten and Turner, in press) further supports the view that there was at least one fully temperate event between the Cromerian *sensu stricto* and the Anglian/Elsterian (Table 1).

All the sites listed below are thought to occur in a temperate stage that immediately precedes the Anglian; this stage has been correlated with the interglacial Cromerian IV in the Dutch stratigraphic sequence (De Jong 1988; Zagwijn 1985; 1992). However, there exists a problem with the date assigned to this stage by the aforementioned researchers; their placement of Interglacial IV at or around 400 Kyr BP is based upon young dates for the hornblende/augite boundary from the Eifel area volcanic eruptions (Evernden *et al.* 1957; Frechen and Lippolt 1965). Current research now puts this transition earlier in the Middle Pleistocene (C. van den Bogaard *et al.* 1989; Bosinski, this volume). If the correlation of the Anglian Glaciation and cold event to OIS 12 is correct (Šibrava *et al.* 1986;

Fig. 1. Location of sites mentioned in the text: 1. Waverley Wood; 2. Warren Hill; 3. High Lodge; 4. Barnhem; 5. Beeches Pit; 6. Hoxne; 7. Wivenhoe; 8. Clacton; 9. Purfleet; 10. Little Thurrock; 11. Swanscombe; 12. Boxgrove; 13. Westbury-sub-Mendip; 14. Kents Cavern.

Shackleton 1987; Bowen 1991; Bridgland 1994), then hominids first entered the Britain in OIS 13, between 524 and 478 Kyr BP (Imbrie *et al.* 1984).

2.2. WAVERLEY WOOD FARM PIT. SP 365 715[1]. WARWICKSHIRE

The Waverley Wood artefacts (Fig. 1) (Shotton *et al.* 1993; Wise 1993), which include three well made symmetrical andesite bifaces and a number of flakes, were recovered from the base of the Baginton-Lillington Gravel (Shotton 1953; 1968). In addition another flake was recovered from the organic deposits underlying the Baginton-Lillington Gravels (Fig. 3) (Shotton *et al.* 1993). The organic deposits at Waverley Wood Farm have been ascribed to OIS 15 by aminostratigraphic correlation (Bowen *et al.* 1989; Bowen 1991). If this date of >565 Kyr BP (Imbrie *et al.* 1984), which remains equivocal, is accepted then this occurrence of artefacts is the earliest discovered in Britain to date.

Apart from the amino acid geochronology there are other lines of evidence, essentially lithostratigraphic, that suggest the deposits are pre-Anglian (pre OIS 12). Rose (1987; 1989; 1992) proposed that the Baginton-Lillington Gravels, together with their downstream equivalents the Bytham Sands and Gravels, the Shouldham Sands and Gravels and the Ingham Sands and Gravels and their upstream correlatives at Snitterfield (Maddy and Lewis 1991) were deposited by a river (Fig. 2), in a now buried valley, that flowed west to east through the Midlands to south Lincolnshire, then southeastwards into Norfolk and Suffolk, where it was confluent with the River Thames and finally eastwards into what is now the North Sea. Rose (1989; 1992; 1994), has also suggested that this river was depositing over a substantial period of time during the Early and early Middle Pleistocene.

In East Anglia the Ingham Sands and Gravels underlies the Lowestoft Till (Anglian) and is disposed as a series of terrace aggradations (Bridgland and Lewis 1991; Lewis 1993). The oldest formation can be correlated (Lewis 1993) with the Stebbing Formation of the High-level Kesgrave Subgroup [Sudbury Formation: (Whiteman and Rose 1992)], part of the Kesgrave Group of the River Thames. The youngest formation is correlated with the entire Low-level Kesgrave Subgroup [Colchester Formation (Lewis 1993)]. Thus these gravels probably span from the Early Pleistocene to the Anglian Stage. However, these Early Pleistocene gravel aggradations in central East Anglia cannot be correlated with the Baginton Formation in the West Midlands as there are no upstream equivalents of the older terraces identified within the Ingham Formation in that area. The Baginton Formation in the West Midlands, together with the Bytham and Shouldham Formations of Lincolnshire and west Norfolk respectively, are correlated with only the lowest (and youngest) member of the Ingham Formation and probably represent a drainage pattern that existed immediately prior to the Anglian glaciation.

The organic channel fills at Waverley Wood Farm (Shotton *et al.* 1993) and Brandon (Maddy *et al.* 1994) which occur within the Baginton Formation, contain palaeoecological evidence for a warmer climatic regime. Analyses of pollen and the coleopteran assemblage (Coope, in Shotton *et al.* 1993; Gibbard and Peglar 1989; Shotton *et al.* 1993) of the lower organic deposit at Brandon and Waverley Wood suggests these channels may be of the

Fig. 2. Position of the Midlands/Bytham River, and the late Cromerian River Thames.

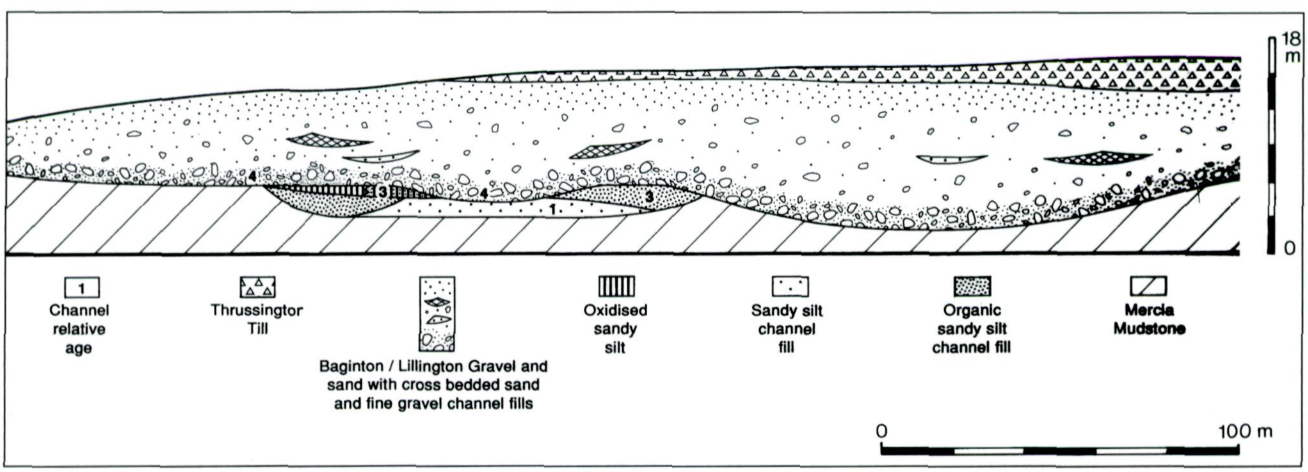

Fig. 3. Section through the stratigraphy at Waverley Wood (from Shotton *et al.* 1993).

same age in absolute terms, and probably also represent the same time span within a temperate stage or sub-stage. Maddy *et al.* (1994) suggested that the Baginton Formation may span OIS 15 to 12.

The mammalian fauna from these deposits is again equivocal as there are no truly thermophilous elements (Lister 1989), while some boreal/cold climate taxa are present. Biostratigraphically the fauna, as a group, is what would be expected from an early Anglian or early Saalian context. There are similarities with the Anglian fauna from Homersfield in Norfolk (Stuart 1981; Coxon 1979), but there are none of the classic Cromerian Complex fossils that would be expected if the sediments are as old as Rose believes. The *Sorex savini* M^1 from Waverley Wood (reported by Shotton 1989) was misidentified and therefore, as has been stated above, the mammalian assemblage contains no Cromerian Complex type fossils but only material associated in Britain and northern and central Europe with the onset of the Anglian/Elsterian cold stage or with later periods.

In conclusion the amino acid geochronological assignation of Waverley Wood to OIS 15 is seriously questioned. This site which, on the aminostratigraphic timescale, is put as older than West Runton (Bowen 1992) contains the descendant, *Arvicola terrestris cantiana*, of the West Runton form of the water vole, *Mimomys savini*. The history and nature of the change, from the rooted to the unrooted form of this rodent, is well documented (for summary see Von Koenigswald and Van Kolfschoten, in press) and accepted by all researchers into Pleistocene rodent faunas. Thus to invert the ages of these sites on the basis of amino acid ratios directly contradicts a well established and accepted biostratigraphical lineage. The evidence from Waverley Wood and its position within the Baginton/Ingham River system suggests a stratigraphic position in OIS 13 or at the beginning of OIS 12 and no older.

2.3. High Lodge, Mildenhall. TL 739 754. Suffolk

The site at High Lodge (Fig. 1) is located at the western edge of the low Breckland Plateau and at the southeastern margin of the Fen Basin (Rose 1992; Cook *et al.* 1991; Ashton *et al.* 1992). The Pleistocene sediments are located in a channel cut into the chalk at a height range between 19-30m OD.

The archaeological material is contained within a body of silts and clays that have been transported as a wedge by the ice sheet responsible for depositing the underlying diamicton, the Lowestoft Till. These rafted, fine grained deposits are overlain and in places dissected by a series of gravelly deposits, widely interpreted as glaciofluvial outwash that contain derived archaeological material. In fact these deposits form the highest of a series of terraces of the old Lark valley (Bridgland and Lewis 1991) and a fluviatile origin is perfectly possible. The lithic industry (Fig. 4) contained within the silts and clays may be described as a flake industry produced on the debitage from core reduction (Ashton 1992). The flakes are sometimes worked further by the flaked flake technique (Ashton *et al.* 1991), or made into classic High Lodge scrapers with semi-invasive, semi-scalar and non-stepped retouch: the mode of percussion being hard hammer. The flake industry was originally thought to be Middle Palaeolithic on the basis of the morphology of the flake tools (Anon 1968; Coulson 1990), thus post-dating the Hoxnian Interglacial. The use of typology to date the industry conflicted with views of geologists working at the site (C. Turner 1973) and led to a delay in the publication of the site report (Ashton 1992). It is now accepted on lithostratigraphical grounds that the site must pre-date the Anglian, as the only ice sheet that came as far south as High Lodge in the Middle Pleistocene formed during the Anglian (Perrin *et al.* 1979). This evidence for dating is further corroborated by the discovery in the silts and clays of a molar of *Stephanorhinus hundsheimensis*, which became extinct in northern Europe during the Anglian/Elsterian. The archaeological material in the overlying sands and gravels contains some flakes and flake tools reworked from the silts and clays below, but more importantly it is almost exclusively composed of bifaces, which given their condition are thought to derive from a nearby source and may be contemporaneous with the flake industry.

The palaeoenvironment of the High Lodge silts and clays, which contain the flake/core industry, is interpreted as a gently flowing fluvial system, forming the silts and clays as an overbank deposit, associated with a flora of spruce-pine woodland with marsh and aquatic plants. The insect fauna supports the scenario of shallow pools and swampy ground and indicates cool-temperate conditions. On the basis of the lithology (Lewis 1992), mineralogy (Rose *et al.* 1992) and the assemblage of pre-Quaternary pollen and spores (Hunt and Rose 1992), these sediments were deposited on the floodplain of a river draining source areas in the English Midlands (Fig. 2), represented by the Baginton Formation in the Midlands and by the Ingham and Shouldam Formations in East Anglia.

Thus it is likely that the High Lodge flake industry was made at the end of a temperate stage immediately pre-dating the Anglian glaciation. The age of the bifaces is problematic given their context but it is likely that they are of a similar or slightly later age of the flake industry. This industry finds parallels throughout the British Palaeolithic, for example at Clacton and Hoxne (Ashton and McNabb 1992) and is not seen to have any stratigraphic importance.

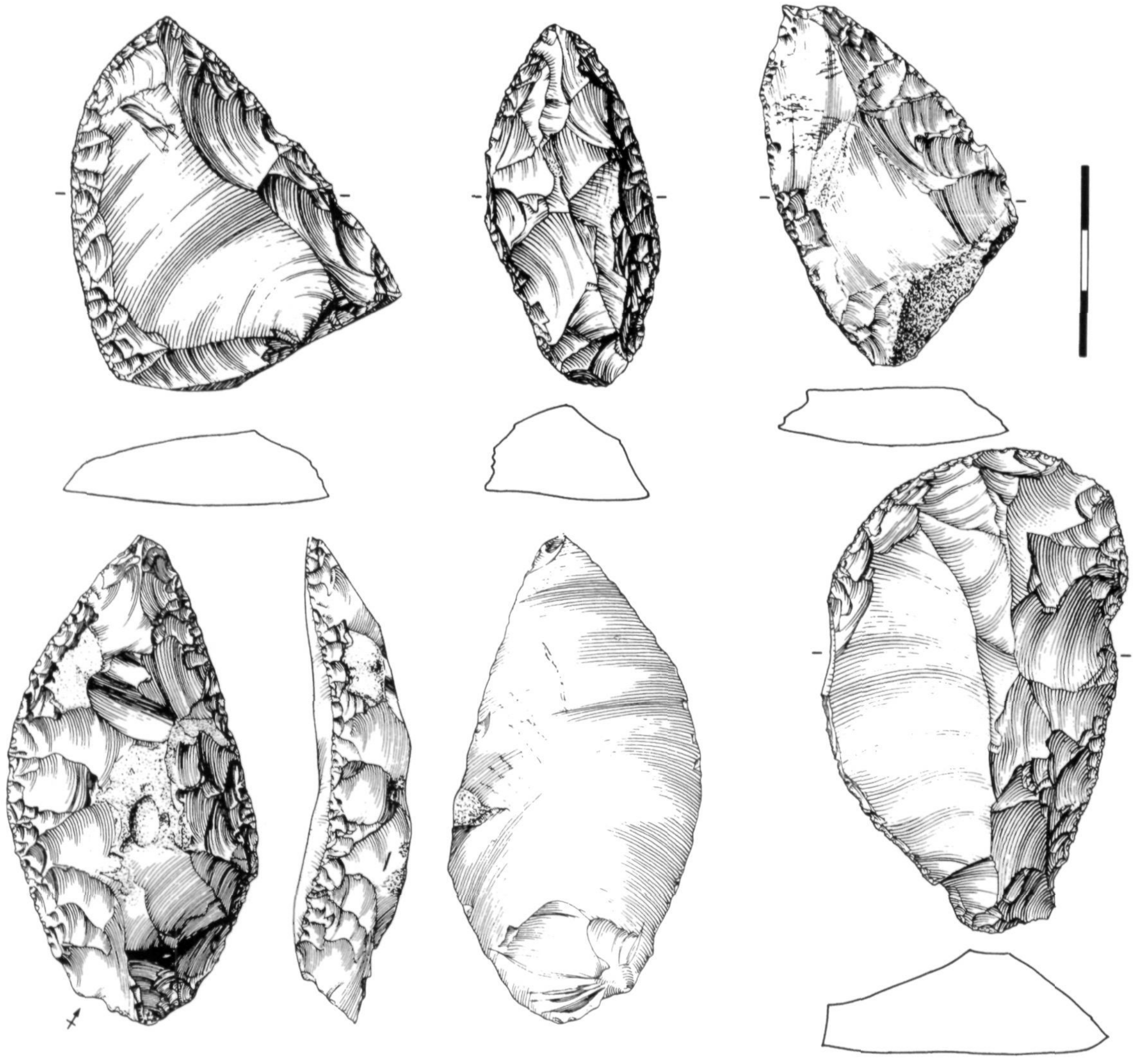

Fig. 4. High Lodge scrapers (from Ashton *et al.* 1992). Scale in cm.

2.4. WARREN HILL. TL 744 743. SUFFOLK

This site (Fig. 1), or more accurately the deposits of this area, has produced the largest number of handaxes in Britain (Roe 1968; Wymer 1985). At Three Hills, the part of Warren Hill where gravel quarrying was undertaken, two lithologically distinct units are recognised. These are, from the base upwards, the Warren Hill Sands and Silts and the Warren Hill Sands and Gravels (Wymer *et al.* 1991). The sands and silts were deposited in a relatively low energy environment and are over 4.6 m thick, with the base of the unit extending lower than 9 m OD. The sands and gravels overlie the silts and sands, with a contact recorded at 13.6m OD. Sedimentary structures within the unit indicate that the sands and gravels are the result of an increase in the energy of the depositing source. The unit is up to 6.5m thick with a present day surface height of 20.1m OD.

There are two current hypotheses for the source of the gravels. The first suggests that they were deposited as glacial outwash (Solomon 1933; Wymer 1985), the second, that they are fluvial in origin, deposited by a river system that flowed west-east (Bridgland and Lewis 1991; Wymer *et al.* 1991). The lithological composition of the gravel is unlike the glaciofluvial gravels in the area (Bridgland *et al.* 1995) and the high percentage of quartzite and quartz suggests that they were laid down by the same fluvial system that deposited the Ingham Sand and Gravel further to the east (Fig. 2). At this point in its development the river that deposited the Ingham Sand and Gravel was probably linked to the Baginton Formation, forming a major west-east drainage system from the Midlands into central East Anglia. There is little biostratigraphical evidence from the site, although Andrews (1930) records *Archidiskodon meridionalis*. This species is only known in Britain from the Cromerian *sensu stricto* as represented at West Runton (Stuart 1982).

The archaeological material from the sediments is mostly unprovenanced, although Wymer *et al.* (1991) record material from the lower part of the Warren Hill Sands and Gravels. The assemblage consists predominantly of bifaces with little debitage; whether this reflects sediment sorting or collection bias remains, for the present, unknown. Many of the ovate bifaces are made on flakes (Moir 1938), an uncommon phenomenon in the British Lower Palaeolithic, and are notched, although this characteristic may be the result of transportation. In addition to the ovate/cordate bifaces there are a large number of extremely battered and rolled bifaces and cores which have been interpreted as being typologically separate from the other bifaces (Solomon 1933; Roe 1981). This hypothesis needs to be re-examined taking into account the factors such as raw material availability through the development of the fluvial system and environments of deposition during the life of the river.

On the basis of the gravel lithology it is likely that the important Warren Hill lithic collections are of pre-Anglian or probably early Anglian date and fall in the other groups of pre-stage 12 sites in this paper. It also means that the latest terraces of the Ingham River and its tributaries should be investigated for evidence of early human occupation in the same manner as the post-Anglian terraces of the Thames system.

2.5. Boxgrove. SU 924 085. West Sussex

The Middle Pleistocene sediments at Boxgrove (Fig. 1) were deposited through a warm temperate episode into the ensuing cold event. They thus represent a wide range of modes and environments of deposition. What makes this site so important is that archaeological remains have been excavated from *in-situ* contexts, at all levels, through the stratigraphic sequence giving a continuity of occupation for this part of southern England over a 10^4 year timescale, through markedly changing climatic regimes (Roberts 1990).

The Pleistocene sediments at the site sit upon and are contained within a marine platform and chalk cliff cut into the Cretaceous Upper Chalk of the South Downs (Fig. 5). These features were formed during a Middle Pleistocene high sea-level event that entailed a marine transgression moving northwards over the deposits of the Lower Coastal Plain and cutting into the south facing dipslope of the Downs. The marine beach complex associated with this high sea-level attains a maximum elevation of 43.5m OD at the junction of the cliff and the wave cut platform; this high altitude may be the result of subsequent tectonic activity in the area (Preece *et al.* 1990). Associated with the high sea-level are a marine sand unit, the Slindon Sands which grade up into a lagoonal unit, the Slindon Silts. The known extent of these deposits is substantial: from Ports Down in the West (ApSimon *et al.* 1977; Roberts 1986) to the River Arun in the East, a distance in excess of 30 km. The Slindon Silts were formed when the direct path of the sea into a large embayment, formed by the downs, was blocked. Although the exact mechanism by which this happened is not yet known, a large salt water, tidally fed lagoon was created. At the end of the lagoonal phase a soil developed on the surface of the silts, which represents the most extensive Pleistocene landsurface at the site. Subsequent sedimentation derives from the north of the site, firstly when the soil was flooded with fresh water to create an alder/fen carr and then, secondly, as the soils covering the relict chalk cliff and the downland block, to the north of the site were stripped off, as vegetation cover declined under an increasingly severe climatic regime. Finally, under periglacial conditions large amounts of gravel from the chalk cliff and the Tertiary regolith covering the Downs moved down-slope as periglacial mass movement deposits.

The archaeology at the site (Bergman and Roberts 1988; Bergman *et al.* 1990; Wenban-Smith 1989; Roberts 1992) consists of scatters of lithic material in all the geological units, but best preserved and most extensive in the Slindon Silts and in the chalk scree material overlying the beach, from where raw material was obtained. Recently, *in situ* bifaces and refitting debitage have been found in the cold climate mass movement gravels that cap the sequence (Roberts 1992). The presence of archaeology at this level may suggest that early humans were able to survive in Britain throughout periods of extreme cold such as glacial stages. The assemblages, from the site as a whole, are mainly biface reduction scatters with some very limited core reduction. The bifaces (Fig. 6) are essentially ovates, limandes and cordate forms (Bordes 1961), although pointed forms are found when the raw material quality drops. There are few formal flake tools; two end-scrapers, a transverse scraper, a side scraper and some notched scrapers. The flaked flake technique is present but at low frequency and there is some secondary retouch on flakes for blunting and edge strengthening. Evidence of use of the lithics is apparent from butchered animal remains; these include red deer, rhinoceros and horse.

The site has been dated (Table 1) using mammalian biostratigraphy to the end of the Cromerian Complex. The marker fossils are listed below:

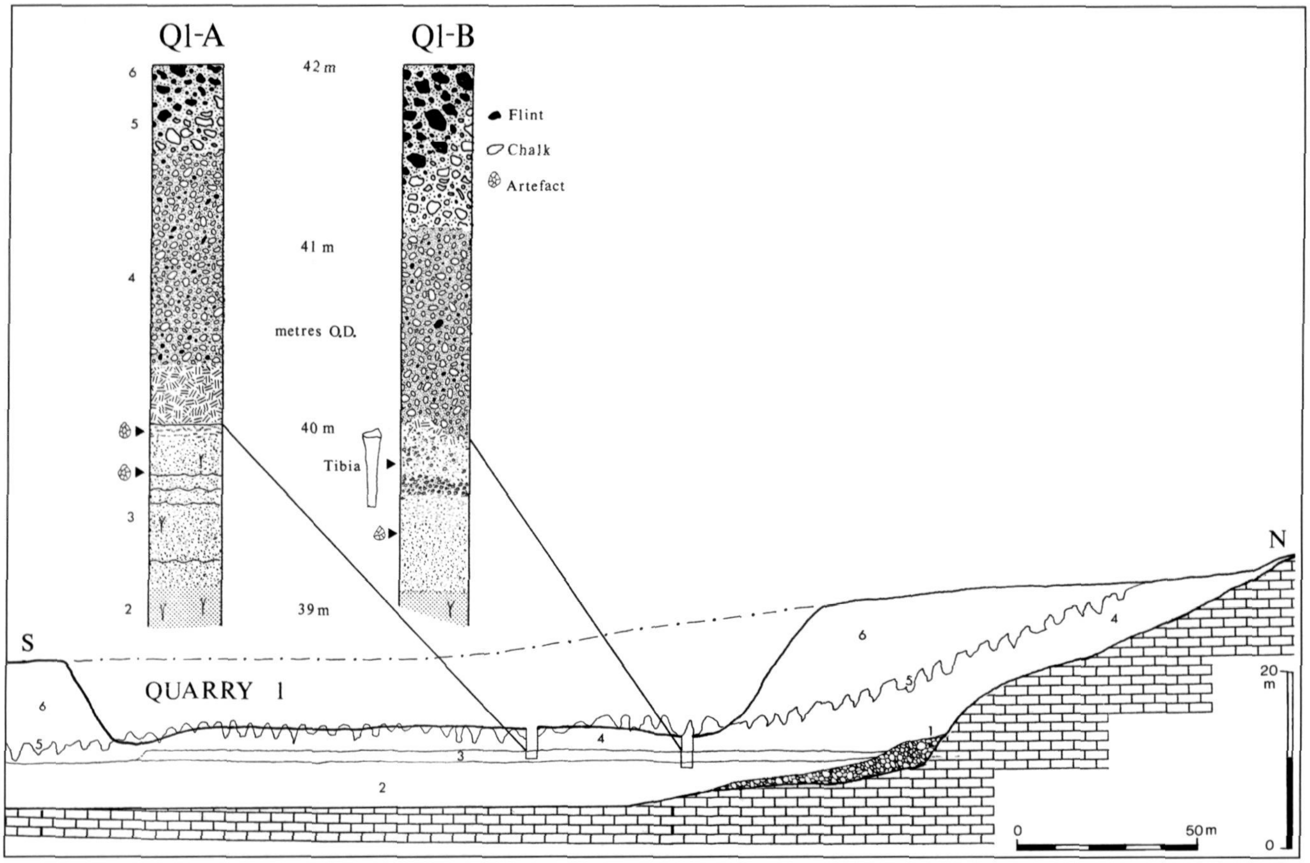

Fig. 5. Composite section through the geology in Quarry 1 at Boxgrove, including detail of deposits containing the hominid tibia. Key to the section diagram is as follows: 1. Raised beach gravels; 2. Slindon Sands; 3. Slindon Silts, with soil horizon developed in upper part at Q1-A; 4. Calcareous silts and gravels, derived from weathering of the chalk cliff; 5. Solution weathering contact; 6. Soliflucted Tertiary regolith.

Table 2. Biostratigraphically significant mammalian taxa from Boxgrove.

INSECTIVORA
Sorex runtonensis
Sorex savini
RODENTIA
Pliomys episcopalis
Arvicola terrestris cantiana
Microtus gregalis (gregaloid morphotype)
CARNIVORA
Canis lupus mosbachensis
Ursus deningeri
PERISSODACTYLA
Stephanorhinus hundsheimensis
ARTIODACTYLA
Megaloceros dawkinsi

The biostratigraphical model contradicts the amino acid racemization ratios on marine mollusca which, using aminostratigraphy, suggest correlation with OIS 11 (Bowen 1991; Bowen and Sykes 1988). Bowen (*ibid*) correlates Boxgrove with Swanscombe, an interpretation that seems untenable given the differences in the mammalian faunas from the two sites (see below). The aminostratigraphy argument is further weakened by the fact that the ratios for Barnham (Ashton *et al.* 1994a) and Beeches Pit (R.C. Preece pers. comm.) also indicate OIS 11 and at these sites, as at Swanscombe, none of the species listed above have been found, despite an extensive sieving programme. Other methods of absolute dating, including E.S.R and T.L., have proved inconclusive thus far, or beyond the current reach of the method (Roberts 1994).

During the editing stages of this report a hominid tibia was discovered in the upper part of the Slindon Silts (Fig. 7), in a facies that is a temporal correlative of the soil horizon developed on the surface of the silts. The hominid has been assigned to *Homo* cf. *heidelbergensis* (Roberts *et al.* 1994). Further excavation of the hominid findspot is planned for 1995.

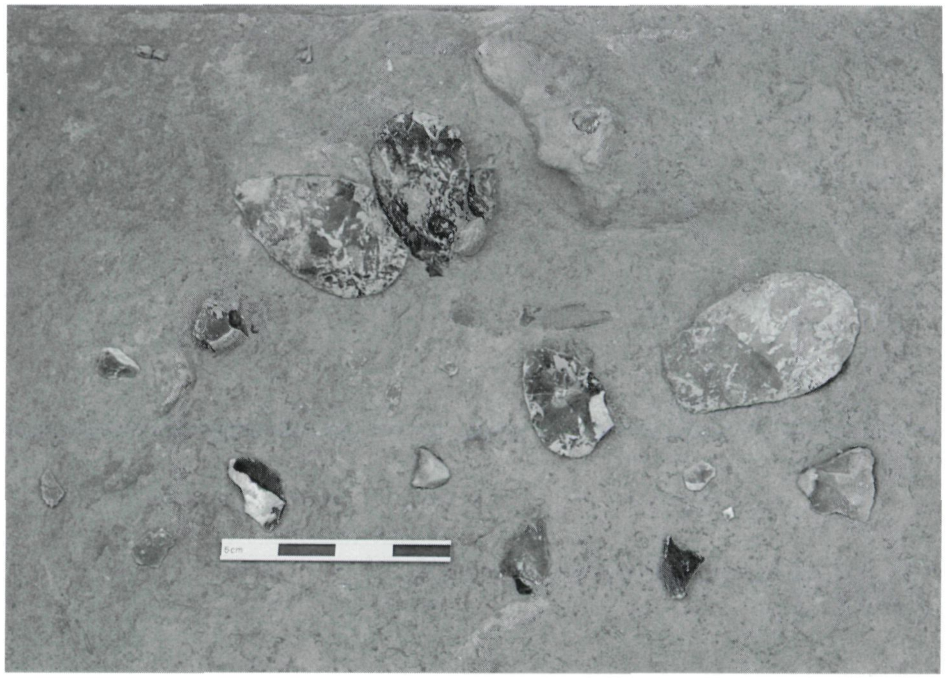

Fig. 6. Boxgrove flintwork on the surface of the marine Slindon Sands.

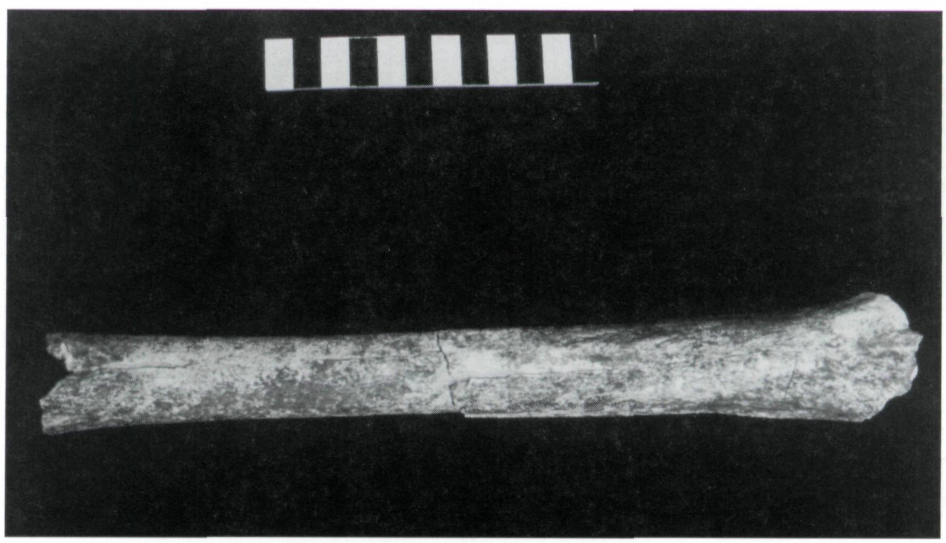

Fig. 7. The Boxgrove hominid tibia (scale in 10 mm divisions).

2.6. Westbury-sub-Mendip. ST 506 504. Somerset

The Pleistocene deposits at Westbury (Fig. 1) were located in a limestone quarry situated at the southern edge of the Mendip Plateau at between 213 and 244m OD. The deposits accumulated in a cave system that formed in the Clifton Down limestone. There are two chambers which have been investigated and sampled (Bishop 1982; Andrews 1990), a main or southeastern chamber at least 70 m in length and a secondary deep, narrow side chamber, that follows a fault line to the northwest. Correlation between the deposits in the two caves is difficult as the deposits suggest infilling from different origins. The basal member in each chamber is similar, in that this is a siliceous deposit composed of sands and gravels that were washed into the cave from outside. The fauna from this unit is sparse compared with some of the overlying units and its composition suggests that it is older and belongs to a separate Early or early Middle Pleistocene stage. Indicator species include: *Mimomys savini*, *Microtus* (*Allophaiomys*), and *Hyaena brevirostris*. Following the deposition of the siliceous sediments, both chambers experienced roof collapse episodes and subsequent deposition of angular breccias. These were succeeded by the further deposition of extensive breccia deposits, fully described by Andrews (1990). In brief it may be stated that the breccias in the main chamber, above the angular breccia, are different from those anywhere else in the cave. Their origin is from outside the cave and they were deposited as flow deposits. In the side chamber the breccias are formed from constituents within the chamber itself.

The importance of Westbury for this paper lies with the mammalian faunas recovered from the cave deposits. Firstly, from a taxonomic/biostratigraphic angle, the fauna contains those elements which are associated with a post-Cromerian *sensu stricto* and pre-Swanscombe position in the Quaternary timescale (Bishop 1982; Von Koenigswald 1973). These species include *Sorex runtonensis*, *Sorex savini*, *Arvicola terrestris cantiana*, *Microtus gregalis*, *Canis lupus mosbachensis*, *Ursus deningeri* and *Stephanorhinus hundsheimensis*. This group has very close parallels with that excavated from the open site at Boxgrove (Table 2). Secondly, taphonomic studies of the small mammal assemblages (Andrews 1990) has allowed a detailed palaeoecological reconstruction to be undertaken through the sedimentary profiles. From this reconstruction the following climatic inferences have been made. In the northwest side chamber there are two temperate episodes separated by periods of colder climate. The temperate episodes are thought to represent temperatures similar to those of today at the latitude of Westbury. For the two cold periods the first is indicative of cool dry conditions whilst the latter suggests a climatic regime considerably colder. If tentative correlation is made between the two chambers at the end of the second cold period, it may be demonstrated that this is followed by a further warm event. Andrews (*ibid*) suggests that there may therefore be more than one fully temperate or interglacial event recorded in the Westbury sequence. However in the light of the recent work on the Greenland Ice Core Project (GRIP Members 1993) it can be seen that there may be far more climatic diversity within temperate isotopic stages than previously thought. Whether the Westbury sequence contains one or more temperate stages, it is certain that the climatic complexity, extrapolated from the small mammal assemblages at the site, indicates that the *Arvicola* faunas of the Cromerian Complex (Table 1) were not developing in a pollen biozone at the end of the Cromerian *sensu stricto* (Stuart and West 1976; Stuart 1988), but belong to one or more fully interglacial stages.

Flint tools have been found at the site (Bishop 1975) but have been the subject of some controversy as to whether they were man-made or not (cf. Cook 1983). The problem is that the flint in the Westbury sediments is chemically altered by alkaline solution (Schmalz 1960) which has made identification of the pieces difficult. The assemblage has, however, been re-examined recently by a group of experts (C. Stringer pers. comm.), who have verified its authenticity and confirmed the view of Bishop (1982), who found it difficult to explain the presence of the flint on geological grounds.

2.7. Wivenhoe TM 005 235 Essex

The site at Wivenhoe is in a gravel pit located near the southern edge of the Tendring Plateau (Fig. 1), approximately two km from the River Colne. The site is now regarded as the type locality for the Wivenhoe Gravel, which is chronologically the third of the four terrace formations that constitute the Low-level Kesgrave subgroup (Fig. 8) (Bridgland 1988; 1994). This subgroup has been recently described as the Colchester Formation (Whiteman and Rose 1992), although this particular utilisation of stratigraphic nomenclature would seem superfluous given the formation status advocated for individual terrace gravels within the subgroup (Bridgland 1994). The Wivenhoe/Cooks Green Gravel terrace formation can be shown to post-date the Ardleigh/Oakley Gravel (Bridgland *et al.* 1990), which is dated to the Cromerian Complex, and pre-dates the St. Osyth/Holland Formation, which is correlated with the Anglian glaciation.

At the site, fossiliferous sediments in the form of an organic silty clay are interbedded with the Wivenhoe Gravel (Bridgland 1988). Pollen, plant macrofossils and insect remains have been recovered from the unit. The results from preliminary analyses of this material are indicative of boreal forest vegetation of a type found in many interglacial and interstadial sequences and can not be used for chronological correlation. Two small undiagnostic flint flakes were also recovered from the silty clay during sampling.

The site at Wivenhoe is unequivocally pre-Anglian as demonstrated by correlation of fluvial terraces within the Low-level Kesgrave Subgroup and by clast lithological analysis. However further work is needed at the site to ascertain whether it falls into the Boxgrove/Westbury/High Lodge group.

2.8. Kent's Cavern SX 934 641 Devon

This site is currently being re-investigated, but the information given here is mainly from earlier published work. The cave system is cut in Devonian Limestone and has a complex stratigraphy that contains archaeology from the Lower Palaeolithic to the Mediaeval Period. The Lower Palaeolithic material consists of bifacial tools including handaxes and miscellaneous flakes. The artefacts are

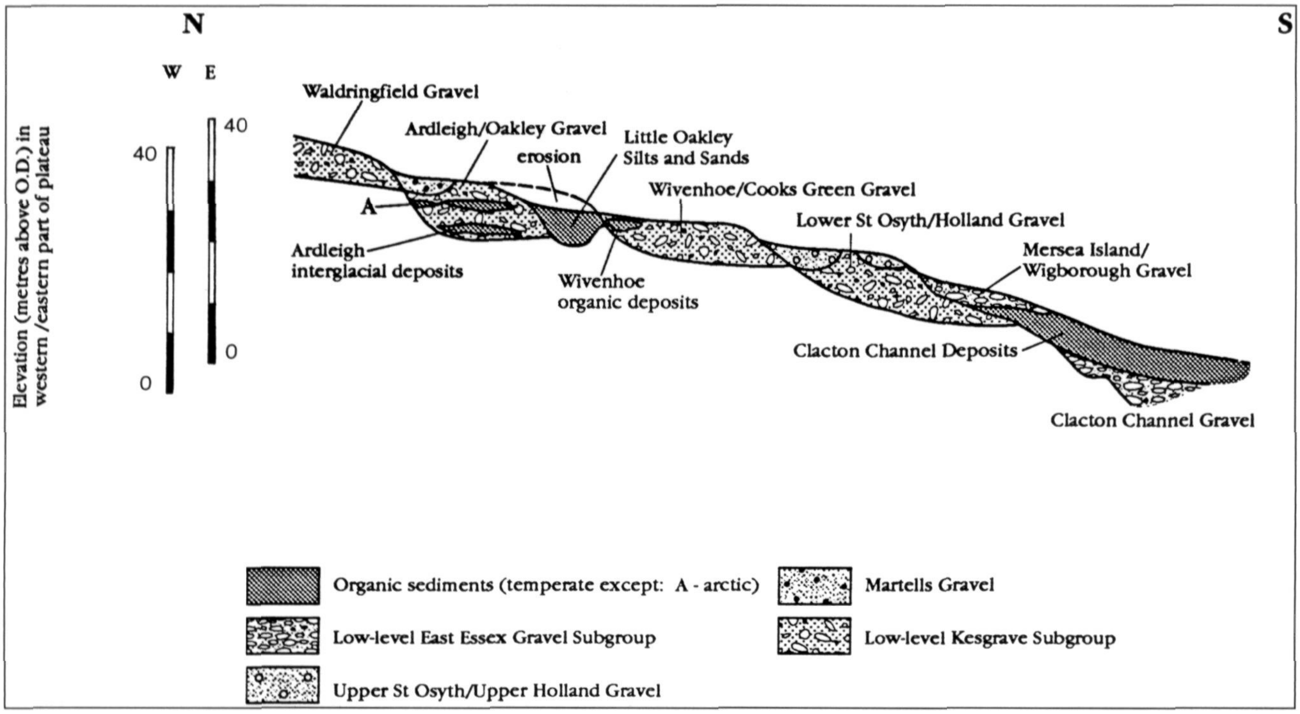

Fig. 8. Idealized section through the Pleistocene deposits of the Tendring Plateau (after Bridgland 1988).

described as archaic by Roe (1981) and typologically fall into his Fordwich/Farnham group. They occur in the breccia below the cave earth as described by Pengelly (1873a; b) and Campbell and Sampson (1971). Sediments at the site have recently been dated using the Uranium-series technique on the stalagmites but the results remain equivocal (P. Berridge pers.comm.). The most reliable age estimate for the Middle Pleistocene deposits and the archaeology is obtained by studying the composition of the mammal fauna, which includes the following species:

Table 3. Biostratigraphically significant mammalian taxa from Kent's Cavern.

Arvicola terrestris cantiana	extinct water vole
Microtus gregalis	extinct pine vole
Ursus deningeri	extinct bear
Homotherium latidens	extinct machairodont cat

Although this is a small fauna, it contains species that are biostratigraphically very important, *Microtus gregaloides* and *Ursus deningeri* have not been found in deposits post-dating the Anglian in Britain and *Homotherium latidens* became extinct throughout Europe during the OIS 12 cold event (A. Turner 1992). There does, however, exist an element of doubt surrounding the context of the remains of the machairodont cat, as they are associated with sediments correlated with the later Pleistocene (M. Bishop and P. Berridge, pers. comm.) and there exists the possibility that they were introduced to the cave by humans, in a similar fashion to the tooth at Robin Hood's Cave (S. Parfitt, pers. comm.). The presence of *A. terrestris cantiana* is important because it demonstrates that the site is younger than the Cromerian *sensu stricto*. Accordingly the site falls in with the others in this group in terms of broad age estimates.

3. Middle Pleistocene Occupation of the British Isles: Sites post-dating the Anglian Cold Stage

3.1. Introduction

According to the 1973 Geological Society of London Quaternary time scale (Mitchell *et al.* 1973) there were two temperate or interglacial events after the Anglian Glaciation, the Hoxnian and the Ipswichian (Table 1). This scheme based on lithostratigraphic subdivision of the Quaternary was supported by palynological work (West 1956; 1957; 1963; C. Turner 1970; 1975; Ventris 1986) and by mammalian biostratigraphy (Stuart 1974; 1982). This sequence was first challenged by Sutcliffe (1975) and in the seminal work of Sutcliffe and Kowalski (1976), and has recently been demonstrated to be oversimplified, vindicating much of Sutcliffe's research. There are now thought to be three

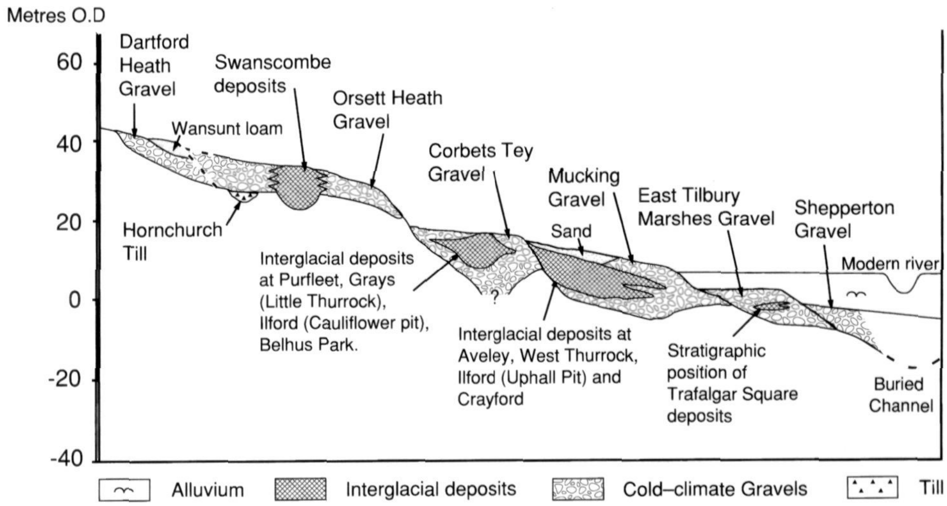

Fig. 9. Idealized transverse section through the terraces of the Lower Thames (after Bridgland 1994).

major temperate and three cold stages between the Anglian and the Ipswichian/Eemian warm stage at c. 125 Kyr BP (Bowen *et al.* 1989; Bridgland 1994). These climatic events correlate with OIS 12 to 5e (Shackleton and Opdyke 1973). The sites discussed below fall into OIS 11 and 9. The important issues that arise from studying these sites are the differences in the taxonomic composition between these faunas and those in the Boxgrove/Westbury group, with a pre-Anglian age. Of equal importance is the fact that sites that have been lumped together as belonging to the Hoxnian Interglacial may well belong to two separate temperate stages.

Later interglacial sediments, not discussed here, are represented at sites attributed to OIS 7 and Substage 5e. These have all been classified in the past as Ipswichian/Eemian but there is now unequivocal evidence from amino acid ratios and lithostratigraphy (Bowen 1991; Bridgland 1994), which corroborate earlier ideas based on mammalian and molluscan faunas, that two separate temperate episodes are represented. The older one is equivalent to OIS 7 and the younger is the last interglacial.

3.2. Swanscombe TQ 595 745 Kent

The site at Swanscombe is probably the best known of all British Palaeolithic sites. It is located in the Lower Thames Valley (Fig. 1), in the highest terrace of the post-Anglian course of the river, 5 km to the east of Gravesend. The sedimentary sequence is described in detail elsewhere (Waechter 1972; Conway and Waechter 1977; Hubbard 1982; Bridgland 1994) and will only be alluded to briefly in this paper.

The deposits at Barnfield Pit rest upon the Thanet Sand at a height of 23m OD (Fig. 9), they were laid down in a channel formed soon after the diversion of the Thames by the Anglian ice sheet (Bridgland 1988; 1994). The deposits have been divided into the following sequence:

Table 4. Archaeology and Geology at Swanscombe.

Depositional Environment	Unit	Industry
Land derived sediments	Upper Gravel	Acheulean
	Upper Loam	Acheulean
Aggrading stream deposits	Upper Middle Gravel*	Acheulean
	Lower Middle Gravel	Acheulean
Overbank deposits	Lower Loam	Clactonian
Aggrading river deposits	Lower Gravel	Clactonian

* Skull horizon.

Previous researchers have argued for a substantial hiatus in the Swanscombe sequence at the junction of the Lower Loam and the Lower Middle Gravels. Although there is an erosional contact at this boundary, present research shows it to be the result of a change in stream dynamics rather than a long term event (Bridgland *et al.* 1985). One reason for requiring a major gap in the sedimentary record at this point had its roots in archaeological typology. The lowest two units at Swanscombe contain lithic assemblages designated as Clactonian, overlain by Acheulean artefacts. However, the site at Little Thurrock Globe Pit, in the lower terrace of

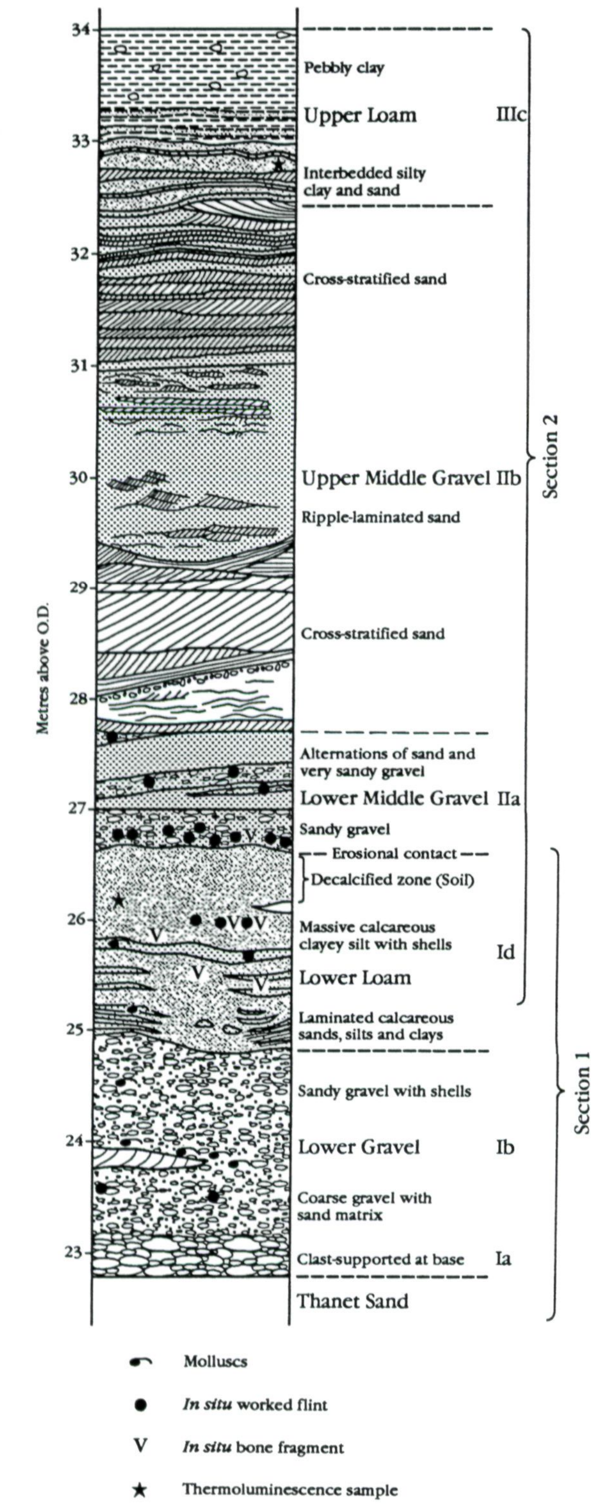

Fig. 10. The sequence at Swanscombe (after Bridgland *et al.* 1985).

the Corbets Tey Formation, also contains Clactonian artefacts. Thus it was necessary to invoke a convoluted scheme of events with the river being at one level depositing the Lower Gravels and Loams, cutting down to the Globe Pit level and then rising again to lay down the sediments containing Acheulean material at Swanscombe (King and Oakley 1936). It has been demonstrated (Bridgland *et al.* 1985) that the Swanscombe deposits represent a single gross upwards fining sedimentary fill (Fig. 10), terminating in periglacial sedimentation and involution and that the temperate sediments at the site represent the first warm event after the Anglian (Bridgland 1994). The age of the Swanscombe sequence is further supported by the clast composition of the Lower and Lower Middle Gravels (Bridgland *et al.* 1985), amino acid ratios consistent with a OIS 11 date (Bowen *et al.* 1989) and the composition of the mammalian fauna which contains none of the Cromerian Complex marker species and sees the appearance of species such as *Stephanorhinus hemitoechus*, *Stephanorhinus kirchbergensis*, *Megaloceros giganteus* and *Bos primigenius* (Stuart 1982).

The site at Swanscombe is probably best known for the refitting hominid skull fragments that were recovered from the Upper Middle Gravel. The occipital bone was discovered in 1935, followed by the left parietal in 1936 and the right parietal in 1955, the latter being poorly preserved (Stringer 1985). The skull is believed to be female with a brain size of about 1300 ml. The overall cranial shape is less angular than more archaic hominids and there are two features that have Neanderthal affinities. Firstly, there is evidence of a developed juxtamastoid eminence at the occipital margins and secondly a slight, double arched occipital torus surmounted by a central depression, a suprainiac fossa (Stringer and Gamble 1993). If the short chronology hypothesis of the occupation of Europe is accepted (Roebroeks and Van Kolfschoten, this volume), then it would mean that the Neanderthal characteristics displayed by the Swanscombe skull developed during the first 100 Kyr after colonization. If these physiognomic changes were the result of adaptation to a colder climate, then it is likely that the early population of hominids in Europe were able to operate and survive in, or close to, the climatic and hence environmental regimes associated with a major cold stage. Such a hypothesis is supported by work at Boxgrove (Roberts 1992; Roberts *et al.*, this volume), at Clacton (see below) and at Kärlich, layer H (Bosinski, this volume).

To conclude, it may be demonstrated from recent work on the Lower Thames (Bridgland 1994) that the assemblages described as Clactonian both pre-date and post-date biface industries in this region. Current re-investigation of the Swanscombe archive has revealed at least one biface from the Lower Gravel (McNabb and Ashton 1992). When this piece is considered with other evidence beginning to emerge from sites like Clacton and Barnham, it appears that the division of British Lower Palaeolithic industries into two separate, culturally distinct entities is an unsustainable concept.

3.3. East Farm Barnham TL 875 787 Suffolk

The site at East Farm, Barnham (Ashton *et al.* 1994a) is located in an old brick pit 4 km south of Thetford and 24 km north of Bury St Edmunds (Fig. 1). The pit is in a dry valley that runs parallel to the present course of the Little Ouse river valley. The workings cut through temperate climate fluvial deposits which overlie the Lowestoft Till; the solid geology to the south is Cretaceous Chalk and there are also extensive spreads of glacial outwash gravel, predominantly to the north of the site. The first controlled excavations at the site were undertaken by Patterson (1937) and subsequently by Wymer (1985).

The temperate sediments at Barnham were laid down in a post-glacial river system that flowed in a channel developed in glacial outwash gravels. Prior to Ashton's work, the site was portrayed as a classic example of the British Clactonian-Acheulean succession (Wymer 1974). However, recent excavations have shown that debitage from the production of bifaces has been found in the same context, the cobble band (Wymer 1985), as that which contains the classic Clactonian Industry (Ashton *et al.* 1994b). This adds further strength to the argument proposed by Ashton and McNabb (1992), that the Clactonian cannot be viewed as a chronologically significant independent stone working tradition in the Middle Pleistocene. The silt units at the site have yielded rich ichthyofaunas, herpetofaunas and mammalian faunas (Ashton *et al.* 1994a and b). The biostratigraphical evidence from the fauna is consistent with a post-Anglian date; no Cromerian Complex indicators, such as those from the Boxgrove/Westbury group, have been recovered. The presence of *Emys orbicularis*, the European pond tortoise and *Elaphe longissima*, the Aesculapian snake indicate temperatures warmer than the present day. The herpetofauna also supports the view that this site cannot be the same age as Boxgrove, where the herpetofauna temperature signal indicates a less temperate interglacial, that is climatically similar to the current stage. These lines of evidence fit well with Shackleton's (1987) interglacial temperature histories (Table 1). Amino acid ratios from the site are consistent with a date that equates to OIS 11 (Bowen in Ashton *et al.* 1994a).

3.4. Clacton TM 148 128 to TM 175 143 Essex

Pleistocene sediments at Clacton (Fig. 1) were first described early last century (Brown 1840), the associated Palaeolithic archaeological material was first recognised by Kenworthy (1898), since which time the sites at Clacton have been accorded international significance for their archaeology, stratigraphy and palaeontology.

The exposures run from Lion Point in the southwest to Clacton-on-Sea in the northeast (Fig. 11). The archaeological flintwork has been collected and excavated from a series of channels that are cut through the London Clay and Middle Pleistocene gravels of the pre-diversion Thames-Medway fluvial system. The main channel of the Clacton sequence was formerly exposed in the West Cliff, Clacton-on-Sea (TM 174 143). Here the channel is over 400m wide and has a maximum depth of 15m (Bridgland *et al.* 1988). At this location the northwestern edge of the channel has been observed cutting through the Lower Holland Gravels, and at its feather edge the channel is overlain by post-diversion gravels of the Thames-Medway river. The stratigraphy of the main channel at Clacton is described by Warren (1955) (see Bridgland 1994 for a full list of references).

In brief the basal units of the channel are freshwater sediments, comprising fluviatile gravels and sands, with occasional peaty lenses. The pioneering palynological work of Pike and Godwin (1953) led to these units being assigned to biozone Ho II (Turner and Kerney 1971). Sedimentologically the freshwater series is divided into the Lower and Upper Freshwater Beds, both units contain Clactonian artefacts and the lower bed is particularly rich in faunal remains. Important faunal elements include *Trogontherium cuvieri*, *Palaeoloxodon antiquus*, *Stephanorhinus hemitoechus*, *Stephanorhinus kirchbergensis* and *Dama dama "clactoniana"*. Overlying the Freshwater Beds lie the Estuarine Beds. These comprise loams, marls and clays with lenses of shelly sand and estuarine peat. The estuarine beds contain little mammalian fauna and artefacts are rare. Turner (Turner and Kerney 1971) places this unit in biozone Ho III. It is as well to emphasize that the main channel at Clacton is the only place where this stratigraphic succession is observed.

Two controlled excavations have been undertaken at Clacton to the east of the main Clacton Channel, the first at Jaywick Sands (Oakley and Leakey 1937) and more recently at the Golf Course site (Singer *et al.* 1973). The stratigraphy recorded at the Golf Course site (summarized in Roe 1981) is interpreted as being deposited at the end of the Anglian, as there is evidence of periglacial phenomena, and in the early part of the ensuing temperate episode. The units containing artefacts are all thought to pre-date the deposition of the main channel sediments. The lithic assemblages from Clacton are pre-dominantly composed of flaking debitage from core reduction, following a tradition (McNabb 1992) that runs through the British Lower Palaeolithic from c.500 Kyr BP to c.300 Kyr BP (Imbrie

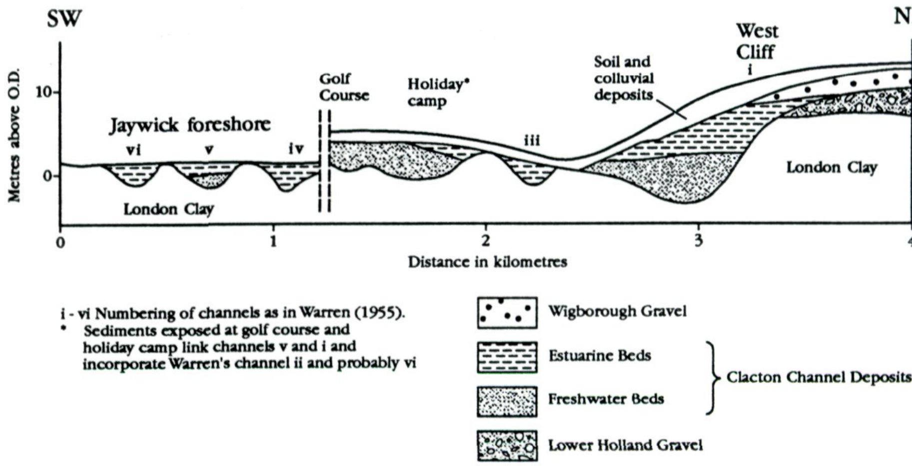

Fig. 11. Section through the Clacton area, showing the various Clacton Channel occurences (modified from Warren 1955).

et al. 1984). Keeley (1977) was able to conjoin over 20 flakes from the Golf Course Industry and found use-wear traces indicative of butchery and wood working on some of the flakes. Recently doubt has been cast on the status of the Clactonian as a separate cultural tradition (Ashton *et al.* 1994b) and evidence from Clacton in the form of two bifaces from Warren's collections, made at Lion Point, add support to this view (McNabb and Ashton 1992). Notes from the Warren archive also mention three bifaces from the "*Elephas*" *antiquus* bed at West Cliff, in the main channel, this bed is without doubt part of the freshwater series from the channel. Thus, although the predominant technique of lithic reduction is core based, there is also an unequivocal biface presence at the site. This revelation, occurring as it does at the Clacton type site seriously calls into doubt the validity of retaining the name Clactonian.

The sediments at Clacton were deposited from the end of the Anglian into the following interglacial (Table 1), the earliest archaeology being dated to the late Anglian. The deposits are correlated with Swanscombe on the basis of molluscan biostratigraphy (C. Turner and Kerney 1971), the mapping of long down stream profile gradients between the sites (Bridgland 1994) and on amino acid ratios (Bowen *et al.* 1989).

3.5. HOXNE TM 176 769 SUFFOLK

The site at Hoxne is the type locality of the Hoxnian Interglacial Stage in Britain (Fig. 1). The site is included here as a note because there already exists a voluminous amount of literature on the site (Wymer 1983; 1985 and Singer *et al.* 1993). The importance of the site to this paper is twofold. Firstly there is a growing body of opinion that believes the sediments at Hoxne to date from a separate temperate stage to Swanscombe and Barnham, based on amino acid ratios (Bowen *et al.* 1989; Bowen 1991) and is therefore equivalent in time to sites such as Little Thurrock, Globe Pit. There exists little evidence either to support or contradict this view. The faunas from OIS 11 and OIS 9 in terms of taxonomic composition are very similar; the archaeology found at Hoxne has been shown in this paper to be prevalent in the British Isles for over a quarter of a million years and is thus redundant as dating device. Secondly recent work on the flintwork from High Lodge and the Hoxne Upper Industry (White 1993) has shown them to have very definite technological similarities, but that these are the result of reduction strategies rather than any similarity in age (Fig. 12). The palynological work at the site (West 1956) demonstrated a continuous pollen profile from late glacial into the following temperate stage. When this evidence was considered in conjunction with the supposed mode of origin of the Hoxne deposit – in a kettle hole left by the retreating Anglian ice sheet – the case for a Stage 11 date looked quite strong, and was subsequently further strengthened by C. Turner's (1970) work on the pollen from Mark's Tey. However Bowen, arguing in favour of the amino acid ratios, suggests that the depression at Hoxne could have formed by solution of the underlying calcareous strata (Bowen 1991). Further more detailed work is required on the small mammal assemblages from the site to resolve this debate.

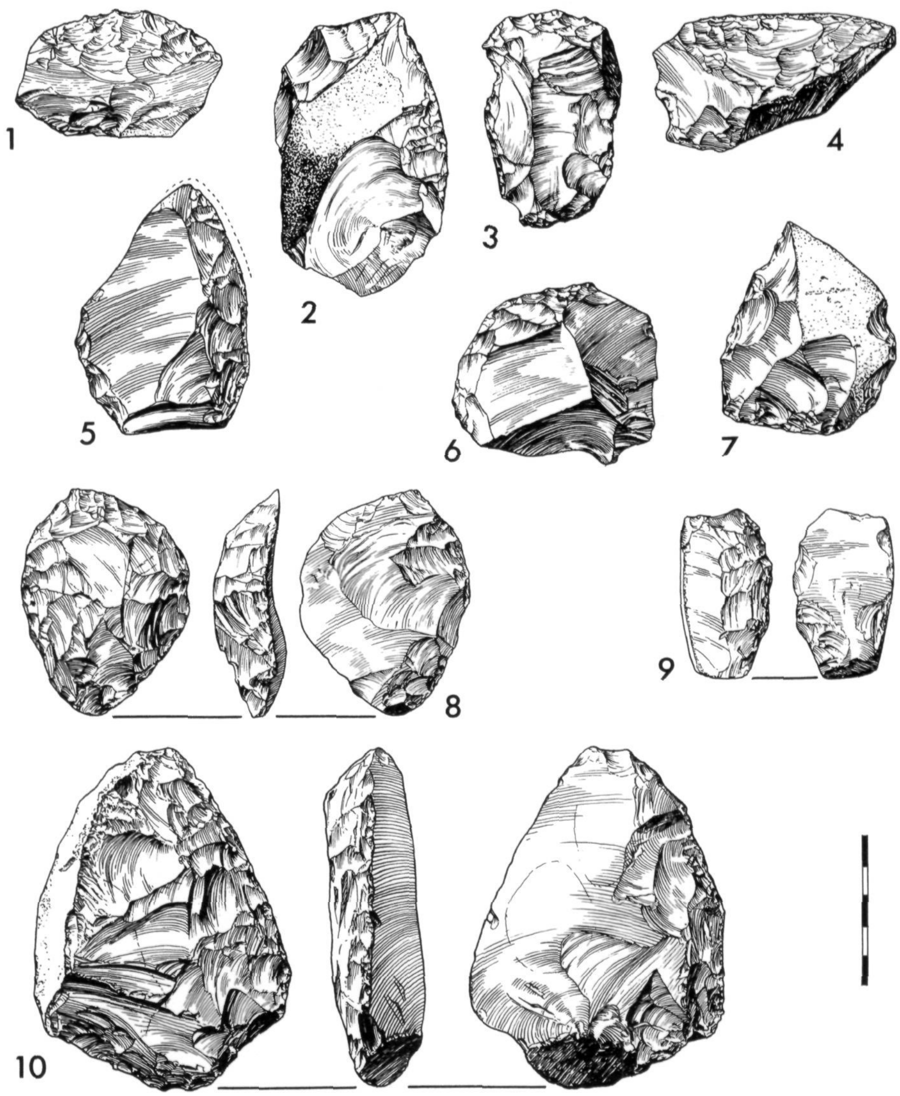

Fig. 12. Hoxne industry scrapers (from Wymer 1983). Scale in cm.

3.6. BEECHES PIT, WEST STOW TL 798 719 SUFFOLK

The site at Beeches Pit is located 11 km to the southwest of Barnham in west Suffolk (Fig. 1). The exposures are in an old brickyard (Preece *et al.* 1991) and are currently being re-investigated by a multidisciplinary team from the Quaternary Research Association and a team of archaeologists from Liverpool University, under the direction of John Gowlett. The sedimentary sequence consists of units of clay and silty clay overlying a chalky diamicton, identified as the Lowestoft Till. In parts of the old workings a calcareous tufaceous deposit is revealed overlying the diamicton and beneath the clays. The tufa contains a rich temperate mollusc fauna that indicates formation in spring fed pools in a temperate forest (Kerney 1976, Preece *et al. ibid*). The mollusc fauna is very similar to that from Hitchin, Hertfordshire (Kerney 1956), and contains species found only at these two sites in the British Isles, although continental European correlatives are known from interglacial tufas in France (Rousseau 1987; Rousseau and Puisségur 1990). A mammalian fauna has been recovered from an organic clay band (unit 3) above the chalky diamicton and from the tufaceous deposits (Parfitt, in Preece *et al.* 1991). The fauna is indicative of a temperate woodland environment in the tufa and the lower

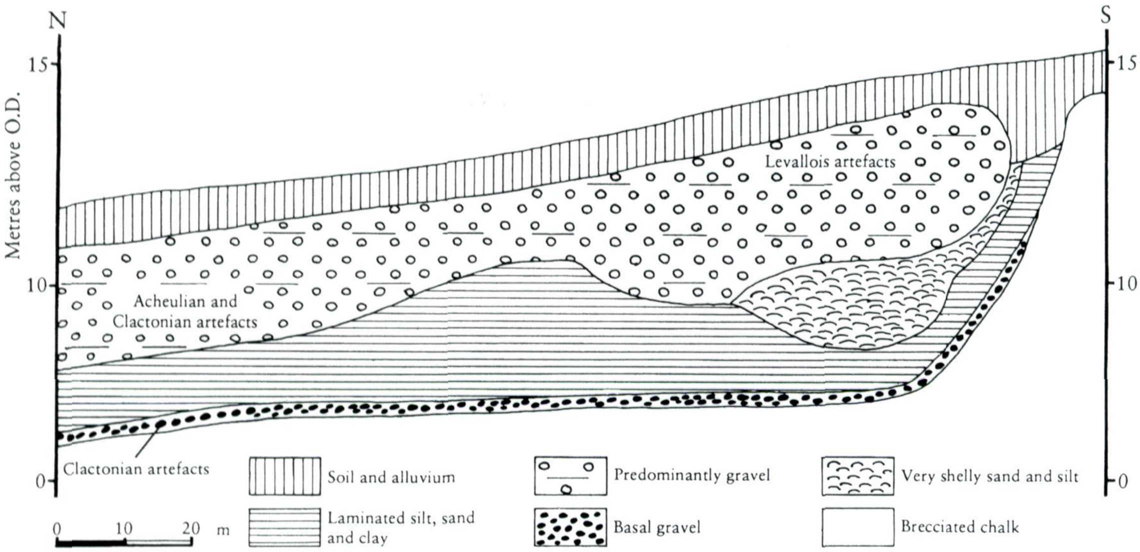

Fig. 13. Idealized section through the deposits at Purfleet (modified from Hollin 1977).

part of unit 3, while the upper part of unit 3 indicates a change to more open grassland conditions. The mammalian fauna composition is similar to that from other "Hoxnian" sites, especially that from nearby Barnham, However, there are marked differences in the tooth morphology of the water vole *Arvicola terrestris cantiana* at the two sites (S. Parfitt, pers. comm.), which given the proximity of the two samples to each other, are interpreted as indicating that the sites are of different ages.

The archaeology at the site consists of bifaces and flakes. These have mostly been collected during section cutting, but the 1993 and 1994 seasons of excavation at the site have also produced material, including refitting flakes and a refitted end shock biface (Gowlett pers. comm.).

3.7. Little Thurrock, Globe Pit TQ 626 783 Essex

The site at Globe Pit is located to the north of the River Thames in the terrace of the Lynch Hill/Corbets Tey Formation (Fig. 1). This terrace occurs below the terrace containing the Swanscombe interglacial sediments (Fig. 9). Clactonian flakes and cores have been recovered from the gravel underlying the temperate brickearths, Bridgland (1994) attributes these two units to OIS 10 and OIS 9 respectively (Bridgland and Harding 1993). Wymer (1985) suggests that the brickearths may also contain "mint" Clactonian flakes as well. The brickearth is thought to be the same unit as that found at Little Thurrock, Grays (Zeuner 1959), which contained a rich mammalian fauna but no artefacts. However, recent re-investigation of this fauna by S.A. Parfitt (pers. comm.) has demonstrated the presence of cut marks on some of the bones. The importance of this site is that it shows that the Clactonian knapping tradition is not restricted to a single stage or interglacial and if, as some researchers believe (Wymer pers. comm.), it exists as an separate entity from the Acheulean, then it both pre- and post-dates it (Bridgland and Harding 1993).

3.8. Purfleet: Bluelands, Greenlands, Esso and Botany Pits, Essex. (from TQ 556-570 and 785-786)

These pits, which are cut down to the chalk, contain Pleistocene fluvial sediments assigned to the Corbets Tey Formation (Bridgland 1994), which are in turn overlain by slope deposits (Figs 1, 9). Lithic material described as Acheulean, Clactonian (Wymer 1968; 1985) and Levallois (Palmer 1975) has been recovered from these sites. The general Purfleet sequence has Clactonian material in the basal gravel, succeeded by Clactonian and Acheulean artefacts (Fig. 13) from the gravel above the temperate sediments; higher up in this gravel unit a Levallois flake was recovered (Palmer *ibid*). At Botany Pit the basal gravel contains handaxes and may correlate with the gravel above the interglacial deposits at Bluelands and Greenlands (Bridgland 1994). The deposits range in age from OIS 10 for the basal gravel, to OIS 8 for the upper part of the gravel sequence and conform to Bridgland's (1994) model for terrace formation. The interglacial sediments are dated to OIS 9. Mention must be made here, however, of the high value amino acid ratios obtained on molluscs from the temperate sediments (Miller *et al.* 1979; Bowen *et al.* 1989). These ratios suggested a date within OIS 13 but this figure is hard to reconcile with the lithostratigraphical evidence, as the Thames was not diverted into this course until the latter part of the Anglian, which is correlated with OIS 12 (Table 1).

4. Conclusion

The earliest evidence for the human occupation of Britain occurs around half a million years ago in an interglacial/temperate episode that immediately pre-dates the Anglian Glaciation. This stage is as yet unnamed in Britain.

The earliest occupants of Britain exploited a wide range of geographic areas and environments. There is archaeological evidence for human occupation of Britain both from cold climate deposits laid down during the Anglian and from sediments dating to the end of the Anglian. Thus hominids may have been present in Britain throughout the duration of the glacial. This point poses interesting questions about the adaptability of Middle Pleistocene hominids.

It is well known that the stratigraphic record for the British Isles between the Anglian and the Ipswichian has been oversimplified, primarily by relying too heavily on palynological work. There is now evidence that the two warm periods following the Anglian contain similar vegetational and mammalian signatures. This has led to sites of different ages being erroneously grouped together. It has been suggested recently (Bowen *et al.* 1989; Bowen 1991) that the site at Hoxne may be a whole climate cycle younger than that at Swanscombe. If this is the case then the interglacial following the Anglian will need to be renamed.

During the period that covers the initial occupation, there are both biface and flake tool industries: these industries are not mutually exclusive in the archaeological record. There is no temporal ordering between these industries, both traditions carry on throughout the rest of the Middle Pleistocene.

The so-called Clactonian Industry can be shown to pre-date and post-date biface industries after the Anglian, therefore the concept of the Acheulean succeeding the Clactonian in Britain is false. We therefore suggest that the initial Middle Pleistocene occupants of Britain utilized both biface and core reduction techniques throughout this time period. Current evidence suggests that the different techniques can be neither culturally or temporally distinguished. Thus to continue to describe these techniques in terms that imply both culture and time is misleading and accordingly, it is suggested that the terms Acheulean and Clactonian should be abandoned forthwith.

Acknowledgements

The authors are grateful to Simon Lewis (Centre for Environmental Change and Quaternary Research, Cheltenham) and Simon Parfitt (Institute of Archaeology, University College London) for critically reviewing this manuscript. We also thank John Wymer, Nick Ashton and the editors of the Journal of Quaternary Science and the Proceedings of the Geologists' Association for permission to reproduce previously published figures.

note

1 *National grid reference coordinates.*

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