The Mesolithic Period in Cornwall

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Introduction

The Mesolithic has been regarded as the first major period of human occupation in Cornwall and covers the period from the end of the last Ice Age (*c.* 8000 bc) to the onset of the Neolithic (*c.* 3500 bc). Despite the length of time involved, surprisingly little information is available about the hunter-gatherers who lived in Cornwall during the Mesolithic. In this paper we review the existing knowledge of the period in this area. We also briefly survey the preceding Palaeolithic period in which Cornwall seems to have had at least intermittent visits by human groups.

Prior to the formation of the Cornish Archaeological Society (CAS) in 1961, little work had taken place on the postglacial hunter-gatherers of Cornwall. In fact in 1958 Charles Thomas pointed out that the extent of knowledge and the distribution of known Mesolithic sites in Cornwall had changed little from that presented in Grahame Clark's seminal work on the British Mesolithic in 1932. Unfortunately the lack of work continued for another decade, despite the completion of Geoffrey Wainwright's doctoral thesis on the Mesolithic of South Western Britain and Wales in 1961. However, in the early 1970s interest in the subject began to grow and continues to rise. The advances in Cornish Mesolithic studies, which owe much to CAS involvement, are substantial but further research is imperative. It is to be hoped that the CAS will continue to support work on this period of Cornish prehistory.

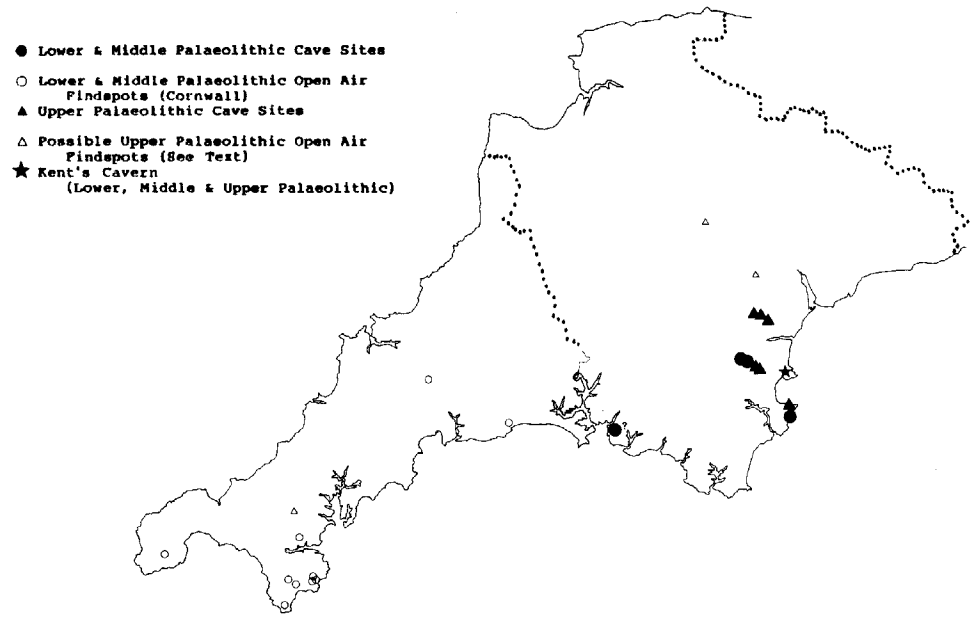

Fig 1
Location of Cornish Palaeolithic Finds and Devonshire Palaeolithic Cave Sites.
(Information on caves provided by RNE Barton & SN Collcutt)

Palaeolithic

Despite the occasional claims for finds of Palaeolithic age, it has long been assumed that Cornwall was not inhabited by man before the Mesolithic. Most of the supposed Palaeolithic evidence has failed to stand up under close scrutiny (Thomas 1958b; Jacobi 1979). Nevertheless, several recent finds and the reassessment of older material have considerably strengthened the idea of at least sporadic human activity in Cornwall during the Palaeolithic. The evidence is briefly reviewed below.

Only two pieces from Cornwall were recorded in the CBA Gazetteer of Lower & Middle Palaeolithic finds in England and Wales (Roe 1968), neither from a good stratigraphic context. One was a small ovate handaxe of chert from the Lizard (Marsden 1922). The other was an Acheulian handaxe found near St Buryan in the 1950s (Guthrie 1960). To this list can now be added seven further finds. A 'palaeolithic implement' discovered on Higher Polcoverack Farm (Hunt 1973), is a large struck Levallois core, probably of Middle Palaeolithic age (PB). A small chert handaxe was recovered near Lanhydrock during rescue work conducted by the CAS (Irwin 1976). Another handaxe was found in the garden of Mrs P. Wingrave-Newell at Trewardreva, Constantine, and was donated to Truro Museum in 1979. Two small pointed handaxes of chert have been uncovered at Coverack and Grade Ruan on the Lizard Peninsula and are retained by the finders (M. Hunt, pers.comm.). Recently a broken ficron handaxe was discovered at Looe (S. Hartgroves, pers.comm.). Finally, during fieldwalking two handaxes were located by the Lizard Project (G. Smith, pers.comm.). Figure 1 illustrates the location of these findspots. The slowly accumulating number of Lower and Middle Palaeolithic finds in Cornwall is not surprising in view of the many finds of these periods from southern Devon (Fig 1), including what may be one of the earliest handaxe industries in Europe from Kent's Cavern near Torquay (Campbell & Sampson 1971).

The Upper Palaeolithic is represented by substantial evidence from the cave sites in southern Devon (Fig 1). But no convincing artefacts of this period have previously been recorded elsewhere in Devon or from Cornwall. Four new finds from the South West of potentially Lateglacial age, however, suggest that the distribution of sites may be wider than currently accepted. These finds are described here to alert fieldworkers to this possibility, and to illustrate the range of distinctive artefacts from this period commonly found in the South West.

Material collected by the Cornwall Committee for Rescue Archaeology (CCRA) near Stithians Reservoir included a large backed bladelet (Fig 2.1). These tools are a common component of Later Upper Palaeolithic assemblages. In fact they formed the largest group of retouched tools at the Hengistbury Head Upper Palaeolithic site in Dorset (Barton, In Prep). Although similar bladelets can also occur in Early Mesolithic contexts, the size of the Stithians example strongly suggests an Upper Palaeolithic age (R. Jacobi, pers.comm.).

A broken point reminiscent of an Upper Palaeolithic tool type (shouldered or tanged point) was found near Bow in Devon, during fieldwalking of a newly discovered henge monument (Griffith 1985). The Bow piece (Fig 2.2) is a large apparently angle-backed bladelet, although the shape is obscured by the loss of both the distal end and the butt.

The third piece is a combined burin and scraper of honey-coloured chert from Greater Haldon in Devon (Fig 2.3). Burins are less common outside the Palaeolithic, and composite tools with burins are usually accepted as of Upper Palaeolithic age. The piece was found in the collection at Exeter Museum from the 1930s excavation of the Neolithic site there (AR). The burin/scraper has no exact association with the house, and is technologically dissimilar from the Neolithic assemblage. It perhaps derives from activity areas associated with the exploitation of nearby flint and chert deposits during the earlier age.

Finally, a large curved backed point of coarse white flint (Fig 2.4), was discovered in a previously unassessed flint collection in Truro Museum (PB). The type and location of the retouch on the piece is typical of Later Upper Palaeolithic 'penknife points', such as are found in cave sites throughout Britain (Campbell 1977). Several such pieces were found during the recent excavations at the Upper Palaeolithic site of Pixie's Hole, Chudleigh, Devon (Collcutt 1986). However, Campbell also cautioned that the points occasionally occur in Mesolithic contexts (pp 188–9). Even if this was the case the tool is still of great interest as it is provenanced to the Scilly Isles which were supposedly unoccupied before the Neolithic.

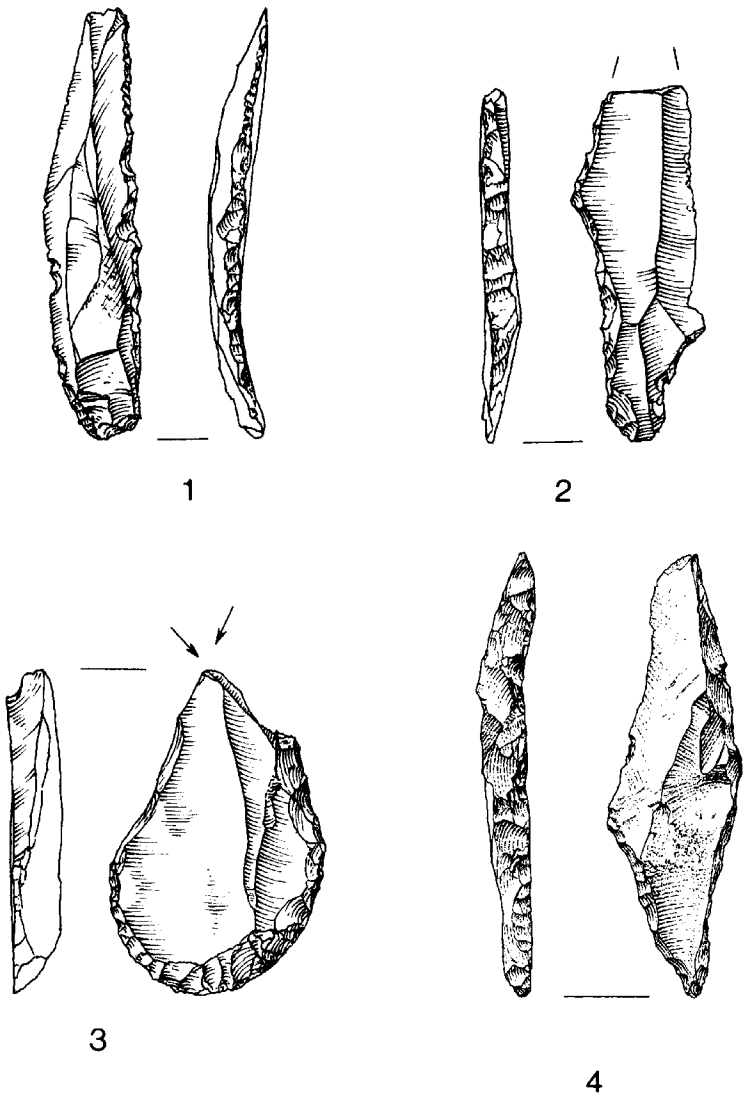

Fig 2
Probable Upper Palaeolithic Artefacts
1. Backed Bladelet (Stithians, Cornwall); 2. Tanged or Shouldered Piece (Bow, Devon); 3. Dihedral Burin/Scraper (Haldon, Devon); 4. Curved Backed Piece (Scilly Isles). Scale 1:1.

Despite the recent finds there is still an obvious paucity of Upper Palaeolithic remains from Cornwall, in contrast to the relative density of sites of this period in Devon and Somerset. There is no obvious geographical barrier preventing access to the county and the limited evidence for a Lateglacial human presence may simply reflect a low visibility rather than a physical absence. The problem could be twofold: first, the difficulty of recognising Upper Palaeolithic industries, for instance if manufactured from beach pebbles; and secondly, the loss of sites due to the rise in seal-level and erosion. The second factor is probably very significant.

The rise in sea-level caused by the Postglacial warming resulted in the overwhelming of a considerable area of land, and presumably many archaeological sites. Erosion may also have been responsible for washing away other sites or burying them under deep deposits of hill-wash. Therefore Cornish Palaeolithic sites will not be easy to find, especially in the absence of such natural repositories as caves, where many of the British remains of this period are preserved. In future years it would be profitable to identify areas where Pleistocene deposits survive in order to locate this missing part of Cornwall's prehistory.

Palaeo-environment

Rise in sea-level

When the last Ice Age ended *c.* 10,000 years ago, the rising temperature caused many significant changes to both the physical environment and the flora and fauna. The climatic changes led to the disappearance of cold-adapted species of plants and animals, and their replacement by others more suited to the new conditions. The warming also caused the melting of the huge ice sheets to the north, resulting in a general world-wide rise in sea level, counterbalanced in some places by a rising of land freed from the weight of the ice. Cornwall was affected by both of these processes, which caused dramatic changes to the coastline in the first few millennia of the postglacial period. Figure 3 shows the difference between the

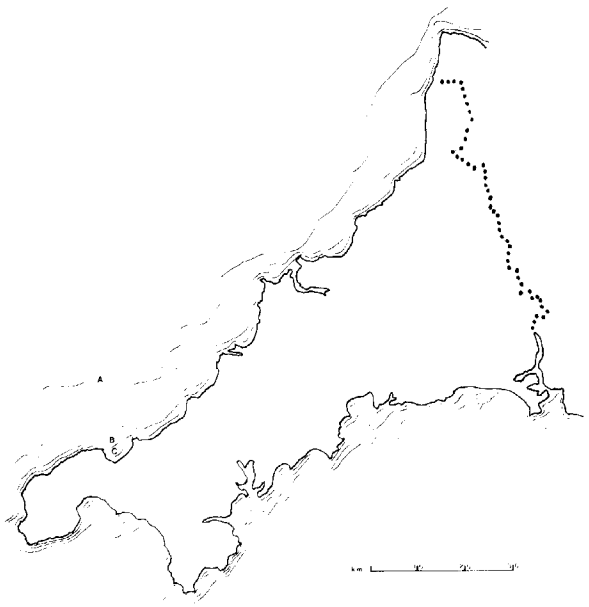

Fig 3
Former Cornish Coastlines
A. Late Last Glacial; B. Early Mesolithic; C. Later Mesolithic.

present coastline, and the approximate shorelines contemporary with the Later Upper Palaeolithic, and the Early and Later Mesolithic. This loss of land is an important factor in discussing the function of Mesolithic sites. For example, proximity to the present-day coastline does not necessarily mean that a site was originally located on the coast. Indeed most of the original coastal sites are presumably submerged today.

How sea-level curves are derived, and the difficulties involved in assessing information on former sea-levels for the South West, are discussed in Kidson & Heyworth's 1982 report for the International Commission on Sea Levels (see also Thomas 1985). Despite gaps in the information about Cornwall, they were able to construct a general curve for the South West by reviewing all previous work and comparing data from several points. On this basis they maintain that 'at least in the last 8000 years, the rate and timing of sea-level rise is comparable over the whole region' (p 93). They do, however, emphasise the need for more intensive study in the future. We have based our estimates of former shorelines upon their curve.

Rivers

The Postglacial rise in sea level also affected the river systems in the county. The present day estuaries came into existence after the Flandrian transgression and usually represent drowned river valleys, reshaped by tidal current movements. These changes to the rivers can cause difficulties in reconstructing the Mesolithic landscape.

Rivers have also been changed by factors such as silting caused by mining activity. For example, the Red River which runs into the sea near Gwithian is today heavily polluted, shallow and capable of supporting little life. But, a detailed boreholing operation in 1898–1899 showed that the river had once been a tidal estuary ending in a 'deep little bay', which had been choked by a combination of drifting sands and mining detritus (Stephens 1899). The exact developmental history of the river is uncertain, but it is possible that the estuary existed in the Mesolithic, before either tin mining or the sand drifting began, and provided an optimum location for hunter-gatherer encampments.

Submerged forests

The rising sea-level also engulfed areas of woodland located on the former coastal plain. Deposits of these submerged forests can be seen in the intertidal zone at several places in the South West, usually uncovered at low tide after stormy weather (see review in Johnson & David 1982). Although a Mesolithic date for all the deposits can not be assumed, the forests presumably predate the mid-Neolithic when sea-level data indicates that most of the trees died (Heyworth 1978). The submerged forest at Westward Ho! has been securely dated to the Later Mesolithic (see Dating section). The recent work at Westward Ho! by the Central Excavation Unit (CEU) has also shown the potential of submerged forests for the preservation of organic remains and environmental data in association with archaeological levels (see Balaam *et al,* forthcoming). As this information is needed in the study of the south-western Mesolithic, it is hoped that the forests will be the subject of future work.

Pollen and molluscs

The analysis of ancient pollen and spores trapped in dateable sediments is the major source of information for reconstructing the prehistoric environment. Unfortunately there has been little work on pollen relating to the Cornish Mesolithic, with the exception of deposits from Bodmin Moor (especially Brown 1977). But, by reviewing all previous work, and with comparisons to sequences elsewhere in Britain, Caseldine derived a general succession of environmental changes in the county since the last Ice Age (1980). Although the article was

written several years ago little can be added to its conclusions regarding the Mesolithic which are summarised below. When the ice sheets of the last Glacial began to recede after the maximum *c.* 16,000 bc, the 'Polar desert' which covered the county gave way to open grassland. Later small patches of birch woodland became established in lowland areas. The woodland continued to expand at the beginning of the Postglacial period, but did not spread to the most exposed upland areas of Bodmin Moor. As the climate warmed, hazel and oak developed *c.* 7000 bc and became the dominant species. Soon after, during the Later Mesolithic (when the temperature was probably slightly higher than today), the woodland expanded to its maximum extent. Even then upland areas had only sparse tree cover, with grassland covering the highest places. Confirmation of the earlier reports has recently been provided in the Early and Mid-Flandrian pollen sequence from the Redhill Marsh peats (Walker & Austin, 1985). However, the claimed artificial platform from these same peats must be considered doubtful in the absence of any artefacts or proof of human interference.

Land snails sensitive to climate and environment are another major indicator of the palaeo-environment. Regrettably there has been little analysis of this kind of Mesolithic deposit in Cornwall, and none recently. The existing information suggests deforestation during the Neolithic of a previously wooded region, based upon the introduction of open-country species at the start of the deposition of blown sand deposits (Spencer 1975; Evans 1979). The beginning of the major sand influx can be dated to the Earlier Neolithic by stratigraphic evidence from several sites in Cornwall, including Gwithian (Spencer 1975; Thomas 1958a). Therefore the presence of woodland during the Mesolithic can again be inferred.

Dating

There is little absolute dating evidence for the Mesolithic of Cornwall, due to the poor preservation in the acidic soils of organic materials suitable for radiocarbon dating, coupled with the lack of recent work on the subject. Indeed only two sites in Cornwall have radiocarbon dates: Poldowrian and Windmill Farm, both in the Lizard Peninsula and both excavated with CAS assistance by Mr George Smith of CEU. Poldowrian has been dated to 4500 ± 110 bc (HAR 4568) on charred hazel nuts, and Windmill Farm has a preliminary date of 4210 ± 150 bc (HAR 4626) on charcoal (further dates are awaited) (Smith & Harris 1982; Smith 1984b).

The shell midden at Westward Ho! in north Devon is the only other south-western site nearby to be radiometrically dated. It is also Later Mesolithic and has been dated to 4860 ± 140 bc (Q1212), 5005 ± 140 bc (Q1211), and 4635 ± 130 bc (Q672) (Jacobi 1979). A series of dates from the recent excavations has confirmed the Later Mesolithic age of the site (Balaam *et al,* forthcoming).

Several sites in Cornwall have also been assigned a relative age by Roger Jacobi (1979) on the basis of microlith types and the composition of retouched tool assemblages. In 1973, Jacobi proposed that the early stage of the Mesolithic was characterised by simple non-geometric microliths (mainly obliquely blunted points and isosceles triangles), while in the later part of the period the assemblages were dominated by small geometric forms (micro-scalene triangles, crescents, etc). He later claimed that differences in microlith typology could also be identified between large geographical regions during the Later Mesolithic (1979). The South West peninsula was suggested as forming a distinct territory where small convex-backed and lanceolate pieces were the most common forms, in contrast to other areas of the country where small scalene triangles or narrow rod forms predominate. He also noted an absence of inversely retouched or leaf-shaped points in the south-western assemblages. Subsquently Jacobi has revised his ideas and now regards Devon and Cornwall to be part of a much broader 'Southern English' grouping (Jacobi & Tebbutt 1981).

Jacobi has also recently elaborated his chronological scheme for microlith occurrences. He proposes that assemblages dominated by scalene triangles are early in the Later Mesolithic while those characterised by convex-backed and lanceolate forms occur later in the sequence (Jacobi *et al* 1980). Following this scheme, the assemblage from Windmill Farm (with 55% scalene triangles) should be older than Poldowrian (with only 15%). However, the more recent radiocarbon dates from these Mesolithic sites on the Lizard Peninsula reverse the expected pattern. The present authors believe that although there are as yet insufficient grounds for a final assessment, the composition of microlith elements in south-western Mesolithic assemblages need not necessarily imply a simple chronological progression. An alternative explanation for the differences in the microlithic components of the Lizard sites might relate to site function, especially in view of their differing geographic locations. The dates in question, which overlap at two standard deviations, could also indicate the contemporaneity of the sites.

Material Culture and Technology

Raw materials

Most of the Mesolithic flint and chert assemblages from Cornwall appear to be derived from beach pebbles identical to those found today along the coastline. These probably originate from the offshore Haig Frais Cretaceous chalk deposits (Naylor & Shannon 1982). Much of the flint is a bluish-black colour, and is often of high quality for tool making. The chert is mainly a Cretaceous greensand, presumably derived from the same beds. The use of flint predominates in the assemblages. Items such as hammerstones, anvils, and bevelled pebbles also appear to be made on local beach pebbles of various raw materials.

Flaked quartz has been claimed from the Cornish Mesolithic (Reid & Reid 1904; Lacaille 1942; Rankine 1956). However, there is great difficulty in recognising artefacts of this material, especially as naturally shattered quartz from degrading geological seams can be found in many areas of Cornwall – often close to the supposed Mesolithic worked quartz findspots. The present authors have yet to see convincing evidence either for tools or human working of this material from Cornwall.

There have also been occasional reports of artefacts of non-local materials from Mesolithic contexts in Cornwall. For example, the occasional occurrence of artefacts of 'Portland Chert' on south-western Mesolithic sites has long been claimed as evidence of prehistoric contact with Dorset (Rankine 1956; Palmer 1970). However, there may be a simpler explanation. Several pieces of the material, including two microliths and a retouched fragment, were found during the excavations at Poldowrian. The cortical surface on one of the pieces showed that it came from a beach pebble rather than a primary chert deposit (Smith & Harris 1982). This seems also to be the case for an unretouched flake from the Gwithian site GU/- (AR). Accordingly, locally derived or drifted beach material may be the most likely source of this characteristic chert in Cornish assemblages.

Both Wainwright (1960) and Jacobi (1979) noted that high quality black flint was used for tool manufacture at the Early Mesolithic site at Dozmary Pool on Bodmin Moor. Wainwright further proposed that the flint had been transported from the *in situ* Cretaceous deposits at Beer Head in Devon (*ibid,* 197). There is a small percentage of Beer flint in the Brent collection from the area, but it is unlikely that it relates to the Mesolithic assemblage. Brent's collection was made in the general vicinity of Dozmary Pool during the last century, and presumably contains material from more than one findspot. The collection also contains a substantial number of leaf and barbed-and-tanged arrowheads, which accords well with the presence of several Neolithic and Bronze Age monuments in the area. Given that Beer flint was utilised during the Neolithic and Bronze Age and that there are other artefacts of these

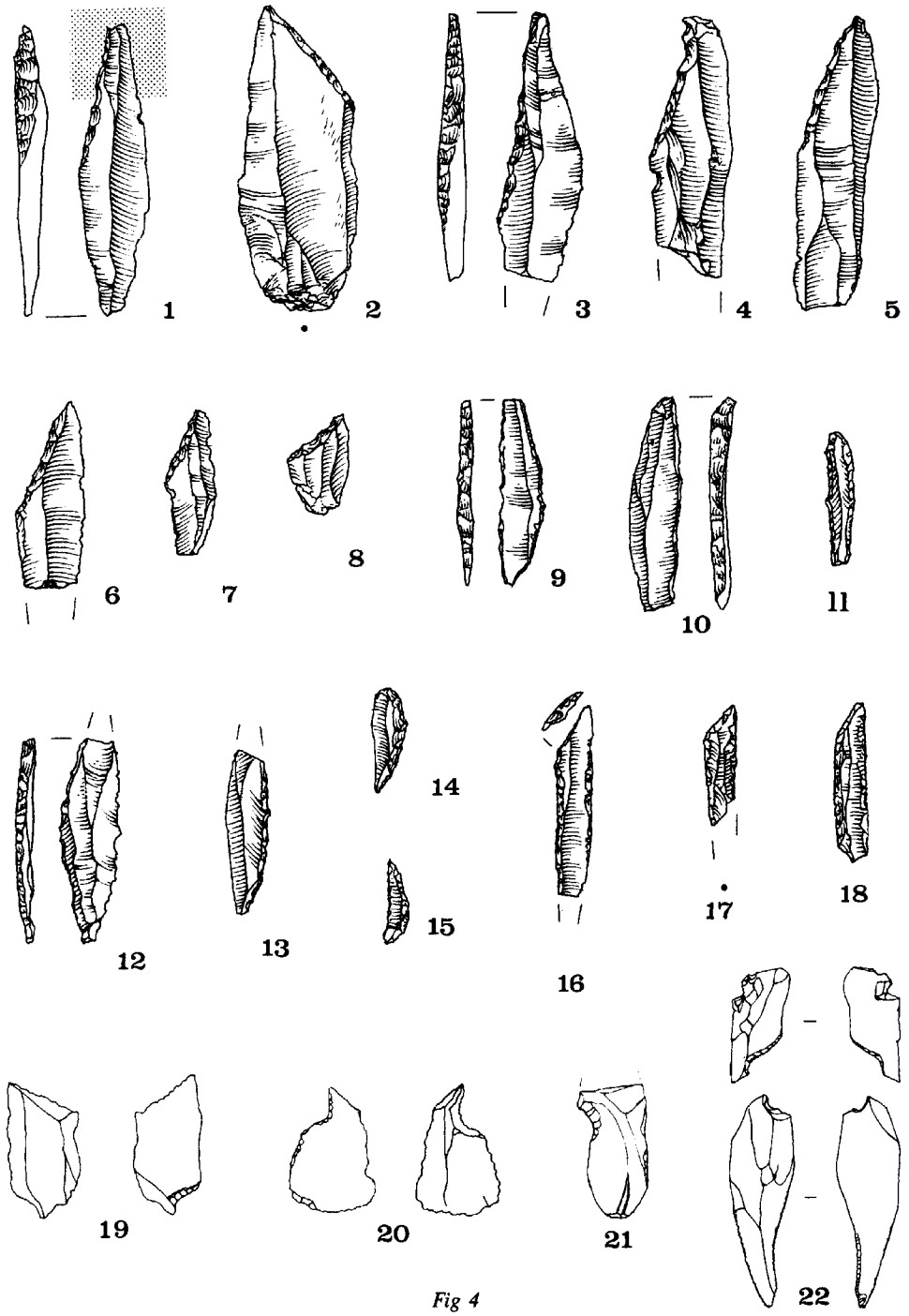

Fig 4
Microliths and Microburins
1. Obliquely Blunted Point with burnt tip; 2–8. Obliquely Blunted Points; 9–10. Straight-backed Pieces; 11. Rod; 12–15. Convex-backed Pieces; 16–8. Scalene Triangles; 19. Distal Microburin (Gwithian); 20. Proximal Microburin (Gwithian); 21. Miss Hit (TV 1); 22. Refitting Microlith and Microburin (Poldowrian). Scale 1.1. (All pieces from Trevose Head TV 12, except where indicated. 21 reproduced by courtesy of A David & N Johnson. 22 reproduced by courtesy of G Smith).

periods in the collection, it is very likely that the Beer pieces derive from the later occupation rather than the Mesolithic. In addition, none of the distinctively Mesolithic artefacts retain traces of nodular cortex typical of that on flint extracted from *in situ* deposits. Instead, the remaining cortical surfaces on these artefacts display the characteristic chattering associated with beach pebbles.

The use of Beer flint on Bodmin Moor during the Mesolithic would also be contrary to the pattern of raw material procurement in the areas north and west of the main Cretaceous outcrops in East Devon and Somerset. There, assemblages from earlier Mesolithic sites within a radius of up to 30km from the Cretaceous rocks are typified by the predominant use of the local Greensand Chert. This pattern was first noted in Somerset (Norman 1975), but has since been recognised in the Lowman Valley area of Devon (Berridge & Doggett, In Prep) and, most recently, at a site in the Exe Valley (PB).

Another possible example of the use of non-local materials is the preferential use of Greensand Chert for heavy tools such as axes, adzes and picks over a wide area of both Cornwall and Devon. A full study of this material by one of the authors (PB) is still in progress, but available data indicates that well over 50% of such tools from both counties are made of the chert. Although this may simply imply the selective use of greensand chert from local sources or beaches, the widespread distribution of material may point to an exchange system involving movement of finished tools. It is interesting to note that a Mesolithic chert axe production site has recently been identified in east Devon close to the raw material source (Berridge 1985). There is also some tentative evidence that Mesolithic flint axes in Cornwall may sometimes have come from distant sources (Berridge 1982).

Manufacturing techniques

Deliberately broken flint and chert beach pebbles were employed as cores for producing flakes and bladelets. Figure 5.1 shows a refitted beach pebble composed of two cores and a scraper from Gwithian site BZ/- and illustrates this procedure. The main method of breaking the pebbles was by direct percussion with a hard hammer-stone. They were also occasionally fractured on an anvil.

Cores were carefully prepared for producing bladelets, and were often worked to a very small size. Removals were sometimes made from only one end of a core (single platform). However, the cores were often turned around and other surfaces were used as platforms as well, the end result being small multi-platform cores. The small and 'worked out' nature of many of the cores may well be linked to the relative scarcity of good quality flint for tool manufacture.

Waste products

The largest component of most flint assemblages is unretouched flakes and blades, the waste products of flint knapping. Individually these pieces are rarely chronologically distinctive. However, the detailed analysis of this material from a site can be valuable. The type of hammer (antler or hard stone) used to flake flint can often be determined from characteristic features on the debitage (Ohnuma & Bergman 1982). The refitting of waste products can reveal not only manufacturing techniques, but also provide important information about activities that took place on a site (eg Barton & Bergman 1982). A chronological change in flake dimensions from narrow flakes in the Mesolithic to broad flakes in the Bronze Age has been proposed on statistical grounds (Pitts, 1978). Similarly the metrical analysis of cores also appears to be chronologically relevant (see Johnson & David 1982).

It is important to remember, however, that the classification of unretouched flakes and blades as 'waste' is adopted for convenience and need not have a functional significance. The microscopic analysis of use-wear traces and polishes on unretouched blades has revealed that they were often used for a variety of tasks (eg Juel-Jenssen, 1986).

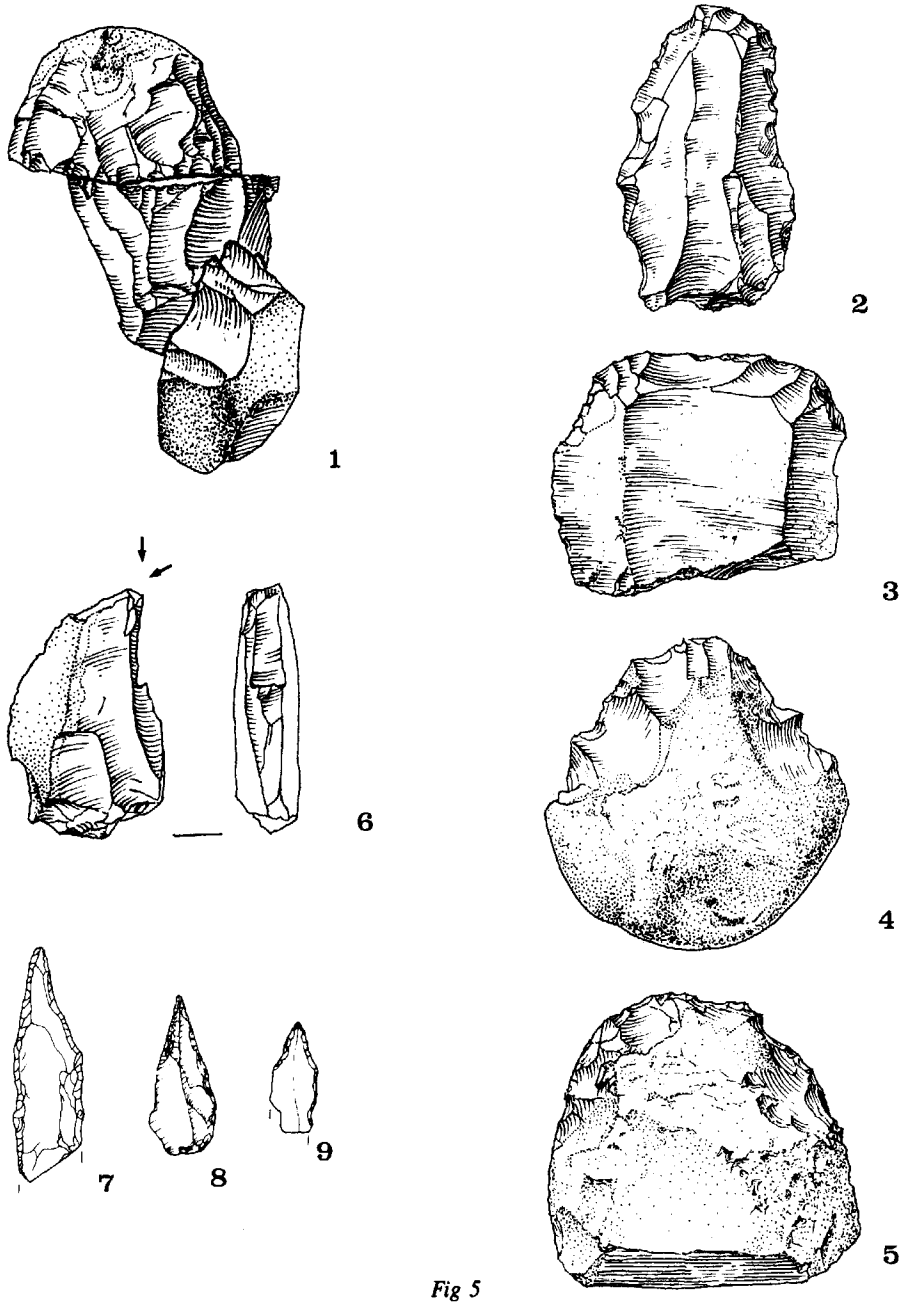

Fig 5
Retouched Tools
1. Refitted Cores and Scraper (Gwithian); 2–5. Scrapers (Gwithian); 6. Dihedral Burin (Gwithian); 8–10. Borer, Awl and Mèche-de-Fôret (Trevose Head TV 1). Scale 1:1.
8–10 reproduced by courtesy of A David and N Johnson).

Microliths

The small retouched points known as microliths which occur in abundance on Mesolithic sites are the most commonly recognised artefact of this period. They are assumed to have been the tips and side armatures of arrows, as wooden arrowshafts with microlith points still in place have been found in waterlogged sites in Denmark and Germany (see Clark, 1975). Mesolithic bows have also been recovered from these deposits. Experimental work has supported the interpretation of microliths as components of arrows (Barton & Bergman 1982). It is interesting to note that a microlith was found at Trevose Head with only the tip burnt, perhaps because a hafting resin had protected the rest of the piece (Fig 4.1). The various forms of microliths were first discussed in detail by J.G.D. Clark in 1934 and his typology, with minor modifications, is still used. The major differences between Early and Later Mesolithic microliths have already been discussed (see Dating). A range of typical forms is illustrated in Figure 4.

Microlith manufacture often produces a characteristic waste product known as the microburin, also frequently found on Mesolithic sites (Fig 4.19–20). Usually one end of a bladelet is removed by a process of notching and diagonal snapping across the notch. The resulting truncated bladelet is then retouched to form the microlith. Two less common types of waste are also produced during microlith manufacture: pieces where the bladelet has snapped horizontally through the notch are termed 'miss-hits' (Fig 4.21); and notched bladelets are often considered as a preliminary stage in the technique. Refitting microliths and microburins are rare even on excavated sites, presumably as microliths manufactured by nomadic hunter-gatherers at one location would have been used and possibly discarded or lost at another. There was one refitted example from Poldowrian (Fig 4.22).

Scrapers

Scrapers are common tools on Mesolithic sites in Cornwall (Fig 5.2–5). They are classified according to the type of support (flake, blade), location of retouch (end, side), type of retouch (abrupt, semi-abrupt, shallow, invasive), and edge morphology (convex, concave, straight, pointed, denticulated). A chronological distinction has been drawn among Cornish sites by Jacobi (1979) according to which forms predominate. He suggests that at Early Mesolithic sites convex-edged end-scrapers on flakes or blades occur most frequently, while the most common forms on Later Mesolithic sites are end-scrapers on large thick cortical flakes with convex and/or denticulated edges. The distinction may be valid, but as it is based on highly subjective criteria, we should prefer to reserve judgement until more objective data are available – especially for industries made on beach pebbles.

Scrapers have long been presumed to be tools for working animal hides. Microscopic examination of wear-traces and use-damage on such tools from Mesolithic contexts, however, has shown that they were used on a variety of materials such as wood and antler as well as hide (eg Dumont 1983).

Burins

Burins are not frequently found on Mesolithic sites in Cornwall, and when they do occur they are generally restricted to dihedral forms. Burins are flakes or blades from which at least one spall has been removed to produce a thick chisel-like end. In the case of the dihedral burin, intersecting facets left by spall removals make up the burin edges (Fig 5.6). Burins are presumed to be tools for working bone and antler (Clark & Thompson 1953).

Caution must be exercised in identifying burins, however, since accidentally broken flakes and blades, or pieces of cores can appear superficially similar to these tools. Unfortunately such misidentifications have led to several spurious references in the Cornish literature.

Burins are best identified by the negative bulb and fracture marks left by the burin spall on the burin facet. True burins occur only rarely in primary contexts on post-Mesolithic sites.

Awls and Mèches-de-Fôret

Pieces with abrupt retouch along both edges forming a point are occasionally found on Mesolithic sites (Fig 5.7–9). Larger forms are classified as awls and assumed to be piercing tools. Smaller forms, often with extensive damage along the retouched edges, are classified as 'mèches-de-fôret' and assumed to be drill-bits (see Brézillon 1972). Both mèches-de-fôret and perforated slate beads occur at the Mesolithic site on the Nab Head in South Wales (Gordon-Williams 1926). These pieces are also referred to as piecers and borers.

Microdenticulates

Blades with serrations along one edge in the form of a small saw can occur on Mesolithic sites. It has been proposed that these tools were used to process plant fibres or cut meat, but microwear analyses have so far proved inconclusive (Dumont 1983). Experimental work has shown that they must have been used on soft materials (Barton, forthcoming). They are most often found on Early Mesolithic sites, but occasionally occur in later prehistoric assemblages. Such forms are generally rare in the South West.

Miscellaneous retouched pieces

Retouched pieces which do not fall into any recognisable category of tool form a significant component of the assemblages on most Cornish Mesolithic sites. These pieces all have some form of retouch along their edges, but their function is usually unknown.

Ground-edge pieces

Although flakes and blades with heavily worn and rounded edges are relatively common features of Mesolithic assemblages in Britain (Saville 1977), they are extremely rare in the South West. The function of these pieces remains uncertain but they were clearly used against a hard material. One possible cause of the edge-grinding effect is indicated by experimental use of flint and chert bladelets to engrave flint cortex (C. Bergman, pers.comm.) and waterworn pebbles (AR, forthcoming).

Utilised pieces

Unretouched flakes and blades with edge damage often occur in flint assemblages, and are assumed to have acquired the damage during use. The damage can take many forms but very little is known about this type of artefact. One exception is the recent work by Nick Barton on large flakes and blades with highly characteristic battered edges from a number of Lateglacial and Early Postglacial open air sites in Southern Britain. He has proposed that this group of artefacts represents expedient but highly efficient heavy duty chopping tools for processing antler and bone, perhaps at butchery sites (Barton 1986).

Edge damage should always be examined carefully and critically before assigning its origin to prehistoric use. Many post-depositional factors can damage the edges of flakes and blades (eg trampling, ploughing), and the likelihood of these processes affecting artefacts must be taken into account. Generally, when the overall patina of an artefact is different from that of the damage scars, it is unlikely that they derive from the original use of the piece. It should be remembered that edge damage does not always result from use, and use does not always lead to edge damage.

Axes and Adzes

Axes and adzes of Mesolithic type are known from a number of localities in Cornwall (Fig 6.1). Traditionally the distinction between the two rests on the shape of the cross-section of the body, with axes having biconvex cross-sections, while adzes are D-sectioned. In a Mesolithic context, this distinction often has little relevance and intermediate forms abound. A characteristic feature of Mesolithic axes/adzes is the transverse removal of a tranchet flake from one face of the tip to form a sharp cutting edge. These axes are presumed to have been used for tree felling, and hafted examples have been found in Scandinavia (Clark 1975). One of the tranchet axe sharpening flakes from Dozmary Pool shows traces of extensive use on the cutting edge (AR). However, tranchet forms are not the only types found, and forms without this feature are probably more common (PB).

It was once thought that axes and adzes might provide a valuable chronological marker within the Mesolithic, as in some parts of the country such tools appeared to be restricted to the 8th millennium bc (Jacobi 1979, 56). In the South West, at least, this would no longer appear to be true since examples of these heavy tools have been found on Later Mesolithic sites as well. For example, a tranchet axe has been reported from the site of Windmill Farm (Smith 1984b).

Choppers and Picks

Large core tools made on beach pebbles occur frequently at Mesolithic sites near the coast in the South West. They take two major forms: choppers and picks. The difference between the two forms can be defined by the shape of the worked area: choppers have a cutting edge (Fig 6.2), whereas picks come to a thick triangular point (Fig 6.3). Although the term 'chopper' has been used to describe pieces where the edge has been formed by both unifacial (on one side) or bifacial (on both sides) flaking, it should be restricted to only the pieces with unifacial working. The correct term for bifacially flaked pieces is 'chopping tool' (cf Bordes 1968). The raw materials used in manufacturing these tools seem to be of local origin. In Cornwall, both choppers and picks are usually made on flint or chert beach pebbles, although there are some quartzite examples (see Smith & Harris 1982; Johnson & David 1982).

Pebble hammers

Quartzite pebbles with small, central, hourglass perforations have generally been considered to be of Mesolithic date (Rankine 1949). However, the contextual associations are weak and the form apparently continued into the Neolithic and Bronze Age (F. Roe 1979). These implements were originally known as 'pebble mace-heads', but Fiona Roe *(ibid)* suggested the more appropriate term 'pebble hammers' as they often show traces of battering at the ends and bear little relationship to the stone maceheads of the Neolithic and Bronze Age, being unmodified apart from the perforation. Various functions have been attributed to these artefacts, the most common being that of weights for digging sticks or hafted percussion tools (Rankine 1953). The CBA Mesolithic Gazetteer reports eleven mace-heads from Cornwall (Wymer 1977). Unfortunately, most are doubtful identifications or not from a clear Mesolithic context. Missing from the list is a good example from St Germans (G. Berridge 1973).

Pebbles with indentations on one or both sides are also occasionally found on Mesolithic sites, although they can occur in later prehistoric deposits (Fig 6.4). Some forms are likely to be unfinished pebble hammers, but others may have had different uses such as small anvils for flint knapping. Fiona Roe has recently suggested that the wear traces are not inconsistent with their use as nutcrackers (F. Roe 1985).

Bevelled pebbles

A tool-type apparently associated with Later Mesolithic assemblages is the elongate beach pebble worked to a bevel at one or both ends (Fig 6.5). As large numbers of complete and broken pieces, together with unworked pebbles of similar raw material and dimensions, are found on sites located near the coast, it is probable that the pebbles were collected on nearby beaches and brought to the sites, where they were used and discarded.

Tools of this kind are found at various locations along the western coast of Britain and in Ireland. The coastal distribution raises the question of whether or not the tools have a function specifically related to the coastal environment, or whether they reflect merely the availability of the pebbles themselves on the coast. As yet the function of the tools remains unclear, although many suggestions have been made, the most common being that they were 'limpet hammers', or 'limpet scoops' for removing limpets either from rocks or from their shells. However, this seems an unsatisfactory explanation for the Cornish pebbles, as experiments have shown them to be too large and thick to serve as 'scoops', whilst used as 'hammers' they acquire a blunt rather than a bevelled end (see Roberts, In Press). An analysis of these artefacts is currently in progress by one of the authors (AR), including a programme of experimentation and scanning electron microscopy. The results are still preliminary, but the bevels appear to have been produced by a percussive action rather than by rubbing or grinding.

Non-Lithic artefacts

From the ethnographic study of modern hunter-gatherer societies, it can be predicted that stone tools formed a relatively small percentage of the material culture of Mesolithic groups. Many objects and tools would have been made completely of organic materials such as plant fibres, wood, shell, bone or antler. Even the stone tools are likely to have had organic components such a arrow shafts, hafts, or thongs (see Orme 1981, 34–55). Unfortunately, organic materials rarely survive in Mesolithic deposits, and then only because of exceptional conditions of preservation, such as in waterlogged sites or in caves. Several types of bone, antler and, occasionally, wooden artefacts from this period have been found in north-western Europe (reviewed in Clark, 1975). Perhaps the most exciting finds come from the recent excavations at the submerged site of Tybrind Vig in Denmark, where an unprecedented wealth of organic remains has been preserved including net fragments and decorated wooden paddles (Andersen 1984). No Mesolithic artefacts of organic material are yet known to have survived in the acidic soils of Cornwall.

There is a similar lack of organic Mesolithic artefacts from Devon where the waterlogged site of Westward Ho! has produced almost exclusively unworked antler and bone. However, the offshore peat beds at Torre Abbey Sands could possibly contain worked antler from this period. Several pieces of cut red deer antler have recently been identified in the faunal collections from these peats held at the Torquay Natural History Society (PB). Although a precise age is not yet available for these submerged peats, information from sea-level curves suggests that they may be in part Mesolithic. It should also be noted that a Mesolithic tranchet axe has been reported from the same deposits (Pengelly, 1883).

Economic Interpretations

The Mesolithic is assumed to have been a time of great change in activities related to subsistence, presumably due to the changes in flora and fauna brought about by the warming of the climate. The people who lived then are generally held to have been hunter-fisher-gatherers leading a nomadic or at least an only semi-sedentary existence. Evidence for

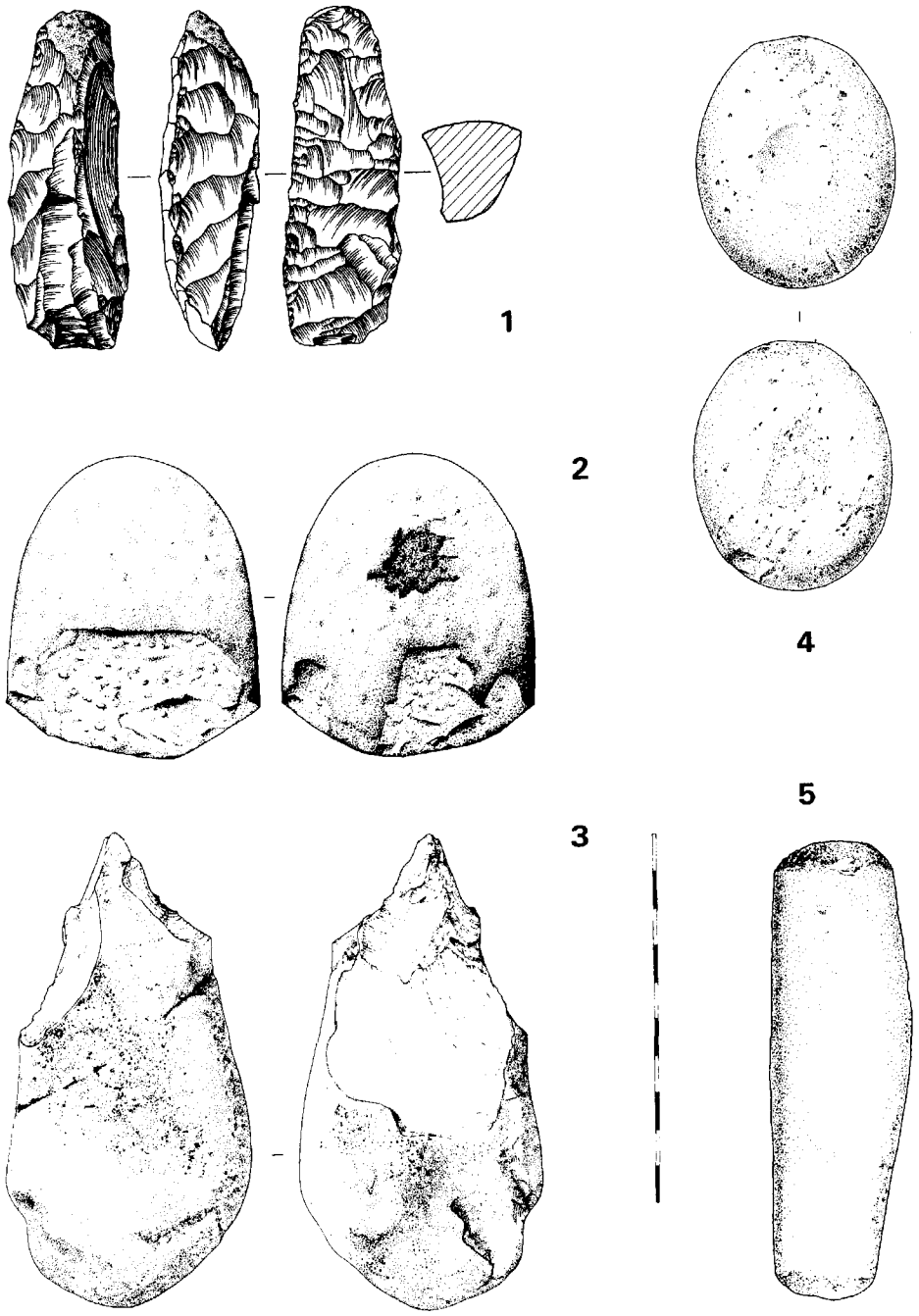

Fig 6
Pebble and Core Tools
1. Axe (Trevose Head); 2. Chopper (Poldowrian); 3. Pick (Poldowrian); 4. Countersunk Pebble (Gwithian); 5. Bevelled Pebble (Gwithian). Scale 1:2.
1 reproduced by courtesy of R Jacobi. 2–3 reproduced by courtesy of G Smith).

reconstructing their diet comes from a variety of sources. Faunal remains from Mesolithic sites in north-west Europe indicate that they hunted a wide variety of species: large animals such as red deer, elk, aurochs, and wild pig; and smaller animals such as hares and pine martens. Other prey included sea mammals; birds such as swan, crane, and grebe; and fish such as salmon, pike and bream (see detailed list, Clark 1975). Arrows tipped and barbed with microliths, and bone or antler barbed points for spears and harpoons are supposed to have been the main hunting weapons. A few examples of animal skeletons have been found directly associated with such artefacts. The most famous are an aurochs skeleton from Vig, Zealand, which had three flint arrowheads in its chest cavity (*ibid* 138), and the remains of a large pike from Kunda, Estonia with a barbed point in its back (*ibid* 144).

Mesolithic people also presumably exploited the rich plant food sources available, although, with the exception of hazelnut shells, traces of these foods only rarely survive on archaeological sites. Anthropological studies indicate that temperate hunter-gatherers have depended more heavily upon gathering than hunting. We can therefore predict that plant food such as nuts, seeds, fruits, vegetables, roots, tubers, shoots, leaves, and fungi would form a major part of the Mesolithic diet. The potential importance of plant foods to Mesolithic groups is discussed in detail in Clarke 1976.

Elsewhere in Europe, further evidence for gathering and hunting activities can be found represented in the Mesolithic rock art of the Spanish Levant (Beltran 1982). The majority of the paintings show hunting scenes, with the hunters using bows and arrows. Gathering is less frequently depicted, but there are examples of digging sticks, people digging, and gathering food from trees. Bags and baskets can be seen in many scenes. Finally, there are a few examples of paintings showing people gathering honey.

Anthropological work also shows that contemporary hunter-gatherer groups move around a territory purposefully, following the seasonal availability of floral and faunal food sources to best advantage (see Orme 1981, ch 4). Following this evidence, Grahame Clark proposed a model of seasonal exploitation of the landscape by Mesolithic groups in north-east Yorkshire (1972). He hypthesised that the annual cycle of subsistence activities for these people made use of various lowland areas during the late autumn, winter and spring, and areas of upland during the summer.

Several years ago, Roger Jacobi attempted to construct a similar economic model for the south-western Mesolithic based on assessments of potentially available animal resources during the year (Jacobi 1979). His model of the yearly cycle suggested that estuarine areas were exploited in the late spring and early summer for shellfish, salmon, sea fish and sea birds. During the mid- and late summer when deer moved up to their summer pastures, the granite uplands became the favoured location. By contrast, rocky coastlines were used during the autumn and early winter (shellfish and sea birds), and again in late winter and early spring (sea fish and seals). Winter also saw ungulate hunting in inland wooded areas. Although this model was a landmark in the study of Mesolithic settlement in Cornwall, one should keep in mind its limitations. The model relies heavily on proposed red deer movements, and does not take into account other factors that can influence a human group's movements within a landscape, such as the availability of plant foods and lithic raw materials. These may not be primary factors in deciding settlement location, but they could play a critical role in deciding between areas of similar potential. This is especially true for Cornwall where the three ecological zones he discusses are never far away from each other.

Closely linked to the question of the season of occupation is the functions the individual sites served. According to present models, a Mesolithic site could represent a variety of functions ranging from a home base camp occupied for a considerable time during a season and perhaps revisited periodically, a short-term camp occupied for only a day or so in the

course of hunting, a kill and/or butchery area where a catch was dismembered and processed, a site where raw materials for making stone tools were gathered and/or worked, or a site for other purposes as yet unperceived.

Site function is difficult to determine for Mesolithic sites in Cornwall because of the absence of organic remains and structural evidence. As a result, analysis of a site often rests on the lithic assemblage alone. The composition of the stone tool kit is assumed to reflect the types of activity that were undertaken there. Although such an analysis is of considerable importance, there can be many problems involved, especially when dealing with surface collections. For example, Dozmary Pool has been linked with tanning activities on the basis of the heavy representation of scrapers presumed to belong to the Mesolithic occupation (Jacobi 1979; Pitts 1979). Unfortunately, there are two problems with this hypothesis. First, as has been discussed earlier, scrapers need not be used exclusively for working animal skins. Secondly, many of the scrapers may not relate to the Mesolithic occupation. Scrapers are a very common element in Neolithic and Bronze Age assemblages, and the distinction between such tools of the later periods and those of the Mesolithic is not always obvious. As there is a later prehistoric element in the collection (see page 13), it is likely that many of the scrapers date from the later periods and the number attributed to the Mesolithic assemblage is overestimated.

Functional interpretations have also been applied to the recently excavated sites on the Lizard. Both Poldowrian and Windmill Farm have been viewed as relatively long-term base camps due to their large and varied assemblages and lowland positions (Smith & Harris 1982; Smith 1984b). By contrast, Croft Pascoe has been interpreted as a possible transitory summer hunting site (Smith 1984a) on the basis of the restricted range of artefacts and its inland location. Microliths are clearly the dominant tool-type at the site, with only 13 other retouched or utilised pieces recovered. There appears to be evidence of extensive microlith production on all three sites judging by the high numbers of these tools and their waste pieces. Interestingly, the ratios of microburins to microlith from the two lowland sites are slightly higher (1:0.9 and *c.* 2:1 respectively) than those from Croft Pascoe (1:1.2). These ratios contrast markedly with the pattern seen elsewhere in Britain where low ratios have been recorded from several of the larger lowland sites (eg 1:9 from Star Carr, and see Mellars 1974, 387), whilst transitory upland hunting sites are more likely to be typified by the higher ratios (Jacobi 1978). It might be suggested, however, that the ratios from the Lizard sites may reflect the high recovery rate of smaller pieces due to the sieving techniques used in the excavations.

Regional Survey

In the following section the evidence of Mesolithic activity is discussed in relation to the major geographical areas of Cornwall. The main sites within an area are considered and evaluated in a regional perspective. The survey emphasises discoveries made since the founding of the CAS and attempts to incorporate the most up-to-date information, including work in progress at the time of writing. Problems facing Mesolithic research and potential areas for future work are also discussed in this section. Figure 7 shows the location of all sites referred to in the text.

Time and space does not permit detailed discussion of the total distribution of Mesolithic findspots in Cornwall. The major source for this distribution is still the CBA Gazetteer of Mesolithic sites (Wymer 1977). However, caution is advised with regard to the information it contains: the volume is now almost a decade old and in some instances needs considerable updating, and, in addition, the Cornwall section contains several simple, but significant,

errors concerning grid references and parish location. More important are the loose criteria on which many of the Cornish entries were determined. Several 'sites' contained no diagnostic tool-types in their assemblages, and some were even included on the basis of a single scraper or waste flake. As there is considerable typological overlap between Mesolithic and later lithic industries in Cornwall, we have discussed only those sites which contain diagnostic tools and with large enough assemblages to define as Mesolithic on technological grounds. Despite these criticisms, however, the Gazetteer is a valuable source of reference for the Mesolithic of Cornwall, and we would recommend it as an indispensable guide to anyone working in this field.

West Penwith (Fig 7.1–8)

The West Penwith area was the first in Cornwall to be extensively fieldwalked in anything approaching a systematic way. This survey was the work of J.G. Marsden who moved to St Levan in 1912, and located many prehistoric sites during the years he spent in the area (Marsden 1919a & b). Evidence of Mesolithic activity can be recognised from at least nine of his sites. In addition to the fieldwalking, he also carried out small-scale excavations at the site of Pedn-men-an-mere (Marsden 1914, 1915). Marsden's collection should form one of the most important lithic groups from Cornwall but tragically it was split up after his death and much has been lost. Only fragments of the collection now survive (see Jacobi 1979), severely limiting its information value. Analysis is also hampered by the loose provenances for the sites. Although his fieldwalking methodology was advanced for its time, Marsden's 'sites' could vary from '15 or 20 yards square to several acres' (Marsden 1919a, 484), and it was never stated over what area the most important assemblages were collected. This situation unfortunately raises the question as to whether the 'sites' each represent one site or several, possibly of different periods.

Another potentially important early collection from West Penwith belonged to R.J. Noall of St Ives. Noall's collection included material from at least 20 sites in the parishes of St Ives and Zennor, of which eight displayed evidence of Mesolithic activity. Little is known about these sites as Noall did not publish any details of his collection. After his death the collection was neglected and only recovered years later during the excavation of the possible Dark Age house in Noall's garden which he had used as a museum (Guthrie 1954). Sadly, the tin containers that housed the collection had lost their original labels, and provenances for the material were attributed on the basis of the few flints that were marked. In addition, intermixed with the collection are foreign artefacts, prehistoric pieces with recent modifications, and pieces clearly of modern manufacture. As a result of these problems it would be best if the collection were treated carefully in future work on the Cornish Mesolithic.

Scattered evidence for Mesolithic activity has been found in other areas in West Penwith, indicating that such occupation was probably widespread. Several microliths turned up during fieldwalking by Vivian Russell (information in SMR). Other microliths were found during the excavations at the Iron Age village of Carn Euny (Saville 1978). In addition, more substantial activity at New Shop, St Buryan, has been referred to (Jacobi, 1979; Johnson & David, 1982). None of this information has been properly considered in its regional context. Given the early attention, West Penwith should be one of the richest areas for information on the Mesolithic. However, due to the fate of the old collections and the lack of recent research, very little is actually known. There are two priorities for work in West Penwith: first to use the existing data to identify profitable areas for modern research, and perhaps even to relocate Marsden's and Noall's sites; and secondly for new systematic fieldwalking to be undertaken, especially in areas of agricultural development.

Gwithian (Fig 7.9)

On the northern side of St Ives Bay, Godrevy Headland contains rich evidence for Mesolithic activity. The headland has been the subject of much archaeological activity, with excavations undertaken there by Professor Charles Thomas from 1949 to 1969 (see Thomas, 1958a etc), frequently with the help of the CAS and its predecessor, the West Cornwall Field Club. Although most of the 16 Mesolithic sites have been known for some years, others have only recently come to light and are being examined by sampling and systematic fieldwalking. These sites will not be discussed in detail here as the material is being prepared for publication (AR forthcoming).

Briefly, these sites probably reflect Mesolithic exploitation of an estuarine environment. The Red River, apparently once an extensive tidal estuary, would have provided a habitat rich in food resources, with coastal, estuarine and riverine zones all easily accessible from the sites. The Carnmenellis granite uplands at the source of the river were also close at hand for terrestrial hunting purposes. Another essential resource available on the headland was the beach pebbles of flint and chert, raw materials for tool manufacture. As the assemblages contain significant amounts of burnt flint, it is probable that the sites represent at least short-term occupation with the construction of fires. All sites not overlooking the river are located near freshwater springs, and (allowing for the coast-line changes) all were slightly inland, affording some degree of shelter and protection. The sites appear to cluster in certain areas, perhaps indicating what were once places of optimal resource availability. The large number of sites in what would have been a resource rich area could represent a favoured location for Mesolithic people (Roberts, In Press).

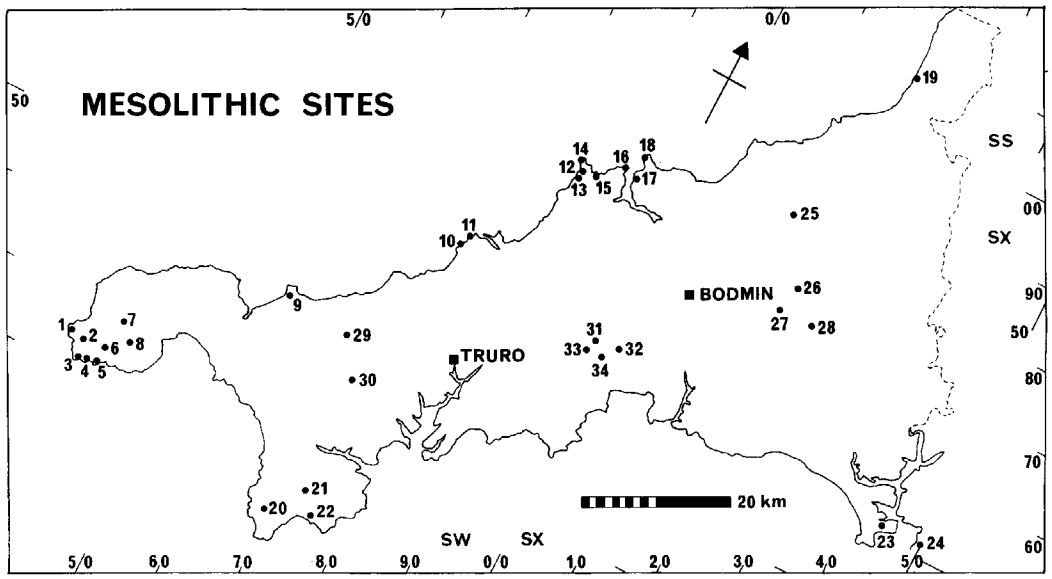

Fig 7

Location of Mesolithic Sites Discussed in the Text

1. Greeb; 2. Stamps; 3. Roskestal; 4. Pedn-men-an-mere; 5. Treen; 6. Crean and Tressider; 7. Carn Euny; 8. New Shop; 9. Gwithian; 10. Penhale Head; 11. Kelsey Head; 12. Booby's Bay; 13. Constantine Bay; 14. Trevose Head; 15. Harlyn Bay; 16. Stepper Point; 17. Daymer Bay; 18. Pentire Point; 19. Crooklets; 20. Windmill Farm; 21. Croft Pascoe; 22. Poldowrian; 23. Maker; 24. Staddon; 25. Crowdy Marsh Reservoir; 26. Dozmary Pool; 27. Colliford Reservoir; 28. Siblyback Reservoir; 29. Carn Brea; 30. Stithians Reservoir; 31. Cocksbarrow; 32. Caerloggas I & III; 33. Watch Hill; 34. Trenance Downs.

Newquay (Fig 7.10–11)

Moving further up the North coast, we find that although early collectors visited the Newquay area (Brent 1886), it did not attract much archaeological attention until relatively recently. In 1950 Joan Harding published the results of her survey of the Newquay area, revealing evidence of activity there from the Mesolithic to Medieval times. On Penhale Headland she discovered many scattered surface finds of Mesolithic age, and two distinct concentrations of material were found during excavation (P1 and P2). On Kelsey Head she found a few Mesolithic flints near the cliff castle. At the end of her article she stated that both areas were under threat from building projects, and that Penhale had in fact already been lost to an 'ugly army training camp'. One of the purposes of her publishing was to try and save the Kelsies from a similar fate (Harding 1950).

Despite the reports of Mesolithic material from the area (Burleigh 1972), little work took place there again until 1983, when the expansion of the Ministry of Defence encampment on Penhale Head led to rescue excavations by Mr George Smith. In one area of the excavations there was found a concentration of Later Mesolithic microliths, possibly associated with a countersunk greenstone pebble (Smith 1984c). Further excavation there is unlikely.

Trevose Head (Fig 7.12–18)

Trevose Head and the surrounding area have attracted the attention of collectors since the mid-19th century (see Johnson & David 1982, for complete bibliography). Unfortunately the provenance of most of these collections is very vague, and the likelihood is that they were drawn from a wide area. There is also clear mixing of material from different periods in many of the collections. The main value of these early collections, therefore, is not in providing detailed locational information for the analysis of Mesolithic settlement on Trevose Head, but in indicating areas for future work. The only systematic fieldwork that has taken place so far was by Nicholas Johnson, who with CCRA assistance identified one major Mesolithic concentration (TV 1) and several smaller ones (TV 2–11) on the headland. The report on this work is an excellent example of the information available from a well-documented surface collection and hopefully sets a standard for future studies (Johnson & David 1982).

Recently Don Cave, an enthusiastic amateur archaeologist, has isolated another area of Early Mesolithic activity on the headland. The new site lies just above Stinking Cove, near to Johnson's site TV 4 (*ibid,* fig 2), and is known as TV 12. So far material has only been collected in a general way, but a concentration has been recognised around a hollow in the centre of the field (D. Cave, pers.comm.). The assemblage consists of nearly 6000 pieces, including 95 microliths, and contains both Early and Later Mesolithic material (Cave 1985). This collection is clearly very important and should be the subject of a future extensive study, including a proper gridded search to isolate any chronologically distinct groupings. A selection of microliths from this site is illustrated in Figure 4.

Major concentrations of Mesolithic material have also been found in the nearby areas of Stepper Point, Pentire Point, Booby's Bay, Constantine Bay and Harlyn Bay, but these still await detailed modern analysis and assessment (see bibliography in Johnson & David 1982).

Bude (Fig 7.19)

Reference to the Mesolithic Gazetteer (Wymer 1977) shows several Mesolithic findspots along the coastline at Bude, which is presently undergoing relatively rapid erosion. Of particular interest is a site known as 'Crooklets' which was originally identified by Bonsall and Selby (1972). Their collection consisted of 82 flint artefacts including two microliths. More recently Mr Beswick of Stratton has casually collected material from the same general findspot, particularly where the cliff edge has slumped slightly. His collection includes six

microliths. The Crooklets site appears to be Later Mesolithic in date on the basis of microlith typology. Unfortunately, as the area is eroding quickly, the site will disappear down the cliff face within a relatively short time.

The Lizard (Fig 7.20–22)

The Lizard has long been known to contain sites of Mesolithic age (eg Brent 1886). The work of early collectors and the Lizard Field Club was reviewed by Dowson (1971). This review pointed out several areas which showed substantial traces of Mesolithic activity, including Poldowrian, Croft Pascoe and Windmill Lane which have all proved to be important sites.

In 1979 the Lizard became the centre of Mesolithic studies in Cornwall with the inception of the long term field project carried out by the Central Excavation Unit in association with the CAS under the direction of George Smith. The Lizard Project combined library research, examination of old collections, systematic field survey, and the controlled excavation of selected sites based on both research and rescue needs. The rescue element was provided by the reclamation of moorland for agricultural purposes. Their first major task was the excavation of a Later Mesolithic site at Poldowrian (Smith & Harris 1982), which provided both the first radiocarbon date for a Mesolithic site in Cornwall and a large assemblage recovered under closely controlled conditions. Further excavation took place at the Mesolithic sites of Croft Pascoe (Smith 1984a) and Windmill Farm (Smith 1984b). The Lizard is now the most extensively studied area in the Mesolithic of south-western Britain, with the largest lithic assemblages from this period. The finds from the three major collections show underlying variations which suggests chronological and perhaps also functional differences (see page 23).

Poldowrian is a large Mesolithic site located on a cliff-top, overlooking the coast, that has been interpreted as a 'base camp'. The presence of hazel-nut shells on the site probably indicates occupation during the autumn and winter at least. The radiocarbon date of 4500 ± 110 bc seems to fit well with the typological assessment of it as Later Mesolithic (see Smith & Harris 1982). The smaller assemblage dominated by microliths from Croft Pascoe presents an interesting contrast to Poldowrian, and has been interpreted as a temporary hunting camp. There are as yet no chronometric dates from this site, but the assemblage contains both Early and Later Mesolithic artefact forms (see Smith, 1984). The last site to have been excavated by the Lizard Project was at Windmill Farm on Predannack Moor. Full details of this site have not yet been published, but an interim statement (Smith 1984b) proposes that it is another large 'base camp'. The chronological difficulties of the relationships between the sites and their proposed functions have been discussed above (see Dating and Economic Interpretations sections).

Southern Coast (Fig 7.23–24)

Moving from the Lizard across the Helford River, we find that the pattern of Mesolithic activity changes quite dramatically. Between the Helford River and the Tamar there is a conspicuous gap in the known distribution of Mesolithic sites. This is in sharp contrast to the pattern seen on the northern coast where considerable evidence of Mesolithic activity is found and continues further up the coast into Devon. The nature of the two coastlines is clearly a critical factor in this distribution, with the relatively rapid erosion in the north causing the regular exposure of material. By contrast, the southern coastline is more protected and less subject to such erosion. There is, however, some evidence that real differences may exist. This is based on fieldwork on the northern side of the Helford River, where two collections of lithic material have been recovered.

The first collection is the work of one of the authors (PB) in the Mawnan Smith area. Although prehistoric activity was recognised in many fields, not a single unequivocally Mesolithic artefact form was recovered. The same pattern seems true of the second collection, derived from the first season's work by an offshoot of the Lizard project, where members of the CAS led by Hilary Shaw have been carrying out a systematic programme of fieldwalking in the area of Gweek and Constantine (material collected more recently by this project has not yet been examined). Artefacts from both collections appear to show Mesolithic traits but in the absence of more diagnostic forms such as microliths and microburins it seems unwise as yet to assign a cultural association.

Whether the apparent lack of unequivocal Mesolithic evidence holds true for the rest of the southern coast is unclear due to the lack of relevant work. Mesolithic material has been found from Maker on the Cornish side of Plymouth Sound, and Staddon from the Devonshire side (Brent 1886), but little else has yet been found along the southern coast. Consequently, this coastline should be an area of high priority for fieldwalking.

Bodmin Moor (Fig 7.25–28)

Traditionally one of the best known sites of the Cornish Mesolithic is Dozmary Pool on the northern edge of Bodmin Moor. It was the first area in Cornwall where Mesolithic material was systematically studied and evaluated (Wainwright, 1960, 1961), and as such is a major focus of any consideration of the subject. The area around Dozmary Pool has long been recognised as an area rich in flint finds. The earliest published reference to the site was in 1866 when Nicholas Whitley, an honorary secretary of the RIC, recorded that 'more than one hundred very perfect flakes' had been found there and that he had dug some out of the soil himself. The site had been brought to his attention by Mr Francis Hext and presumably had been collected from previously. The largest collection from the site was made by Francis Brent, also in 1866, a year of exceptional drought when the whole pool dried out. The drought revealed the presence of later prehistoric monuments in the same area (Brent 1886) and, not unexpectedly, the collection contains Neolithic and Bronze Age as well as Mesolithic material. Brent's collection was divided between the Plymouth Museum and the British Museum (Jacobi 1979), with some going to the Torquay Natural History Society Museum, probably via the collection of R. Hansford-Worth (PB). Many other early collectors also visited the site (see Jacobi *ibid* for details) and there are many widely scattered references to the area.

There have been three recent stdies of the extant material from Dozmary Pool (Wainwright 1960; Palmer 1977; Jacobi 1979). Wainwright first pointed out the similarity of the Mesolithic assemblage, especially the microlith types, to material from the Early Mesolithic sites at Thatcham in Berkshire (1960, 201), radiocarbon dated to the first half of the 8th millennium bc. The later works also note the Thatcham connection and agree with the Early Mesolithic attribution for the site. The general age assessments and affinities of the Mesolithic activity at Dozmary Pool are clearly not in doubt. However other points raised in the studies need more critical examination. Two controversial issues relating to the site have already been discussed: the provenance of the flint used for tool manufacture (see Raw Materials), and the proposed function of the site for tanning hides (see Economic Interpretation). A final point needing discussion is the axe component of the assemblage. Tranchet axes are usually a common element in Early Mesolithic assemblages, yet no examples have been recovered from Dozmary. Wainwright pointed out their absence, but nevertheless maintained that the site belonged to the same cultural grouping as sites that did contain such 'heavy equipment' (1960). Subsequently both later researchers and the current authors have noted tranchet axe sharpening flakes in the collections. (The 'tiny pick' identified by Palmer in the Truro Museum collections cannot be securely located. Therefore,

although there is only slight evidence for the use of axes at Dozmary, a component did exist. This pattern has also been noted on Early Mesolithic upland sites in Dorset by Nick Barton and could relate to the function of such sites (In Prep).

Dozmary Pool has great potential as an important Mesolithic site: potential that has yet to be fully realised. The existing collections are too loosely provenanced and mixed with later material to be worth further analysis along previous lines. New systematic investigation of the area is needed, ideally to be supported by environmental work. The peat and other deposits of this natural pool have been the subject of past environmental investigation (eg Brown 1977), but those results, including several radiocarbon dates, are unfortunately not related to the archaeology. A good association of archaeological and palaeoenvironmental data would be invaluable in reconstructing prehistoric activity in the area, and is clearly needed for the Cornish Mesolithic as a whole. It is also worth noting that if we are to find organic Mesolithic remains in Cornwall it would be from just this sort of lakeside context.

Lithic material has been recovered around other areas of water on Bodmin Moor, but these are from man-made reservoirs rather than natural lakes or bogs. The eroding areas around both Crowdy Marsh and Siblyback reservoirs have been known for some years to produce relatively large quantities of Mesolithic flint. Flint artefacts were recovered at Crowdy Marsh during rescue work (Trudgian 1977a, b), and since then Don Cave has recovered more from several points around the edge. Mesolithic material from Siblyback is contained in the collections of Don Cave, Philip Steele, the water authority, and most recently the CAS. The places in these collections are only loosely provenanced, but both reservoirs show extensive evidence of both Early and Later Mesolithic activity. It is tragic that areas of such potential importance for understanding the Mesolithic settlement pattern on Bodmin were only found in the process of their destruction.

A similar situation is found at the new Colliford Reservoir. Only a few Mesolithic artefacts were found during rescue excavations (Griffith 1984), but sites undoubtedly existed there and are now lost. Don Cave has already identified one significant area of Mesolithic activity eroding away (pers.comm.). That Mesolithic material has been found at all three of these reservoir sites clearly shows that early prehistoric activity on Bodmin Moor is likely to have been widespread and not simply concentrated around areas of open water.

Carnmenellis (Fig 7.29–30)

The Carnmenellis area has received little attention from prehistoric archaeologists, with the exception of the well-known Neolithic site of Carn Brea. This important site was excavated by the CAS under the direction of Roger Mercer, and incidentally produced some evidence of Mesolithic activity (Saville 1982). A major advance in knowledge of Mesolithic exploitation of this area has come through the work of Don Cave who drew the attention of the CCRA to the many prehistoric remains eroding around the edge of the Stithians reservoir. Fieldwork here has produced evidence of several areas of Mesolithic activity, including one large site likely to be of Later Mesolithic date. A particularly interesting feature of this site is that there are small groups of refitting flakes, which indicate that they are probably being recovered *in situ* (as the site is washed away). The details of the Stithians fieldwork will be published soon (Hartgroves & Berridge, In Prep) and so no more will be said here. The important point to note is that evidence of hunter-gatherer activity on the Carnmenellis area is now firmly established and likely to prove extensive.

St Austell Granite (Fig 7.31–34)

The final upland area to be discussed is to the north of St Austell, much of it now lost under the vast waste tips of the china clay industry. Little systematic archaeological work has taken place here but a few brief glimpses were provided during rescue excavations of

six barrows (Miles and Miles, 1971; 1975). Five of the barrows produced evidence of Mesolithic activity from the old ground surface or as residual material incorporated into the Bronze Age mounds. Although little can be said about Mesolithic activity based on this limited evidence, it does provide an indication that the potential of the area could be in line with the other Cornish upland areas.

Scilly Isles

It is generally held that the Scilly Isles were not occupied until the Neolithic, but the possibility of an earlier presence should be considered. Theoretically Scilly could have been visited by various hunter-gatherer groups. Sea-level data about the islands is uncertain before the beginning of the postglacial, but the islands might have been joined to the mainland at the end of the last glaciation. After the beginning of the warmer Postglacial period, no landbridge existed, but the Isles could have been reached by boat. There is good evidence for the existence of watercraft and sea travel in the Mesolithic. Human groups apparently first populated Ireland then, for which boats would have been necessary (Woodman 1978). There are also the physical remains of Mesolithic boats and paddles scattered throughout North-Western Europe, including Britain (ie the paddle from Star Carr: Clark 1952).

Although hunter-gatherer use of Scilly is possible, artefactual evidence for such activity is very sparse. The archaeological work that has taken place so far in Scilly has concentrated on later prehistoric and historic field monuments. Flint artefacts are numerous from the islands (Ashbee 1974; and many issues of CAS Newsletter), but no comprehensive study of the flint collections has yet been undertaken by a lithic specialist. Such a study would be invaluable, not only to clarify the question of a Mesolithic presence in Scilly, but also to compare the flint assemblages with those of similar age from the Cornish mainland. So far the only detailed report on any island lithic group remains that of Miles on the material from Nornor (1978). However, the finds from recent work by the Isles of Scilly Project are now being prepared for publication (J. Ratcliffe pers.comm.).

The current artefactual evidence for a Mesolithic presence on the Islands is as follows. Firstly, the chert 'retouched piece' from Halangy (Ashbee, 1955, Fig 6.1) is an obliquely blunted microlith (mentioned in Jacobi 1979, 48). Secondly, another obliquely blunted microlith has been identified by Nicholas Johnson of the CCRA in an unprovenanced collection from the islands (pers.comm.). Thirdly, the Isles of Scilly Project material contains a probable tranchet axe sharpening flake (AR). Finally, Mr Alec Gray's lithic collection at Truro Museum contains (in addition to the large curved-backed piece discussed earlier) a microlith with oblique retouch at both ends forming a rhombic outline. Specific find spots are apparently recorded for these pieces. Three microliths and an axe sharpening flake can scarcely be called overwhelming evidence of hunter-gatherer occupation, but are an indication that such activity is a viable possibility.

Finally, we should mention the recently published pollen sequence from Higher Moor, St Mary's (Scaife 1983). The bottom of the sequence (76–70 cm) was associated with a radiocarbon date of 4300 bc $\pm$ 100 (HAR 3695), and seems to represent extensive tree cover consisting mainly of oak and hazel. Birch was also abundant, probably in the form of scrub growing in exposed coastal localities. Scaife suggested that the birch scrub could be due to initial human disturbance and subsequent abandonment (*ibid*, 39). The radiocarbon date indicates that this disturbance probably relates to hunter-gatherer activity rather than that of the early farmers.

Proof of the existence of a Mesolithic in Scilly would be of major archaeological importance. However, it should be noted that this will not be an easy task: the islands today occupy only a fragment of the land mass that existed in the early Postglacial, and artefactual evidence is likely to have been most abundant on the contemporary coastline, most of which is now under the sea.

Conclusions and proposals for future research

This paper has outlined the current state of Mesolithic studies in Cornwall. Knowledge of this period has changed almost beyond recognition in the 25 years since the founding of the CAS, and it is hoped that in another 25 years we shall have an even clearer picture of the first hunter-gatherer inhabitants of the county. Most of the advances have been either a direct result of CAS activity or have been made with their assistance, and it is to be hoped that this contribution will continue.

In the course of this paper we have pointed out some of the problems facing Mesolithic studies and have suggested areas where further work is needed. These suggestions can be summarized as follows:

1) The evaluation of existing flint collections, and, should they prove to contain important material, attempts to relocate or more closely define the sites.

2) Systematic fieldwalking in areas where little is known of the Mesolithic settlement patterns, and the collection of well-documented, large lithic assemblages for analysis. In the pastoral uplands where fieldwalking is not practical a different strategy must be employed, including the examination of natural sections (eg ditches) and placing limited soundings. It should be taken into account that this approach has more limited opportunities for recovering material.

3) Survey and sampling (including small-scale excavation) of areas identified by the previous activities as being of potential importance, to assess their archaeological value.

4) Finally, and most desirable of all, the controlled excavation of selected Mesolithic sites. These should be guided by clear research designs and concentrate on the most pressing needs of Mesolithic studies in the South West: the recovery of organic remains, evidence for absolute dating, and environmental data relating to the archaeology. Both off-shore and inland water-logged deposits would appear most promising in this respect.

Recent events indicate that we cannot afford to be complacent. Areas of potential archaeological importance are increasingly coming under threat from a variety of sources: for example new agricultural practices, road building, reservoir construction and quarrying. Mesolithic sites are perhaps more vulnerable to such destruction as their existence is much less obvious than visible monuments such as barrows. Indeed as we have discussed previously, many Mesolithic sites in Cornwall were only discovered after they had been irreparably damaged. It would be impractical to suggest that all such areas must be preserved from these threats, but equally, we cannot afford the kind of destruction which has followed the building of reservoirs. The programme we have outlined above can be used to identify areas of importance before they become threatened, so that when planning permission for development is requested, archaeologists can respond quickly and in the most effective way possible.

Acknowledgements

During the course of writing this paper we have benefited from discussions with many people. In particular we would like to thank N. Barton, S. Collcutt and R. Jacobi for their advice and for sharing information on many aspects of their work. We are also grateful to the following individuals for accesss to unpublished data, F. Griffith, M. Hunt; private collections, Mr Beswick, D. Cave, A. Grey, H. Shaw; and for talks with A. David, S. Hartgroves, M. Irwin, N. Johnson, H. Quinnell, J. Ratcliffe, C. Thomas and G. Smith. Thanks are also due to the curators and staff of the following museums: Truro, Exeter, Torquay, Plymouth, and the British Museum. Finally we would like to thank D. Britton for his comments on an earlier draft of this paper. All the artefact illustrations except where otherwise noted are the work of J. Wallis. The illustrations from Gwithian were made possible by a grant from the British Academy.

Bibliography

Andersen, S., 1984. 'Tybrind Vig', *Current Archaeology* **93,** 314–317.

Ashbee, P., 1974. *Ancient Scilly – From the First Farmers to the Early Christians,* David & Charles, Newton Abbott.

Ashbee, P., 1955. 'Excavations of a homestead of the Roman era at Halangy Down, St Mary's, Isles of Scilly, 1950', *Antiq J* **35,** 187–198.

Barton, R.N.E., 1986. 'Experiments with Long Blades from Sproughton, near Ipswich, Suffolk', in D A Roe (ed), *Studies in the Upper Palaeolithic of Britain and Northwest Europe,* BAR International Series 129–141, 296.

Barton, R.N.E., (ed), In Prep. *The Late Upper Palaeolithic and Mesolithic Sites of Hengisbury Head,* University of Oxford Committee for Archaeology, Monograph Series.

Barton, R.N.E. and Bergman, C.A., 1982. 'Hunters at Hengistbury: some evidence from experimental archaeology', *World Archaeology* **14(2),** 237–248.

Beltran, A., 1982. *Rock Art of the Spanish Levant,* English translation by M. Brown. Cambridge University Press.

Berridge, G., 1973. 'A pebble mace-head from St Germans', *Cornish Archaeol* **12,** 77.

Berridge, P., 1982. 'A Mesolithic flint adze from the Lizard', *Cornish Archaeol* **21,** 171.

Berridge, P., 1985. 'Mesolithic sites in the Yarty Valley', *Proc Devon Arch Soc* **34.**

Bonsall, C. and Selby, P., 1975. 'A collection of Mesolithic flints from Crooklets, near Bude', *Cornish Archaeol* **14,** 118.

Bordes, F., 1968. *The Old Stone Age,* London: World University Library.

Brent, F., 1886. 'On the occurrance of flint flakes and small stone implements in Cornwall', *J Roy Inst Cornwall* **9,** 58–61.

Brent, F., 1898. 'On the occurrance of flint flakes and small stone implements in Cornwall', *J Roy Inst Cornwall* **14,** 417–419.

Brézillon, M.N., 1972. *La Dénomination des Objets de Pierre Taillée,* 2nd edition, Paris: CNRS.

Brown, A.P., 1977. 'Late-Devensian and Flandrian vegetational history of Bodmin Moor, Cornwall', *Phil Trans Royal Soc London B.* **276,** 251–320.

Burleigh, R., 1972. 'Mesolithic finds from the Kelseys', *Cornish Archaeol* **11,** 81.

Campbell, J.B., 1977. *The Upper Palaeolithic of Britain: A Study of Man and Nature in the Late Ice Age,* Oxford: Clarendon Press.

Campbell, J.B. and Sampson, C.G., 1971. 'A new analysis of Kent's Cavern, Devonshire, England', *University of Oregon Anthropology Papers,* **3.**

Caseldine, C., 1980. 'Environmental change in Cornwall during the last 13,000 years', *Cornish Archaeol* **19,** 3–16.

Cave, D., 1985. 'A collection of artefacts from Trevose Head', *Cornish Archaeol* **24,** 159.

Clark, J.D.G., 1932. *The Mesolithic Age in Britain,* Cambridge University Press.

Clark, J.G.D., 1934. 'The classification of a microlithic culture: the Tardenoisian of Horsham', *Archaeological Journal* **90,** 52–77.

Clark, J.D.G., 1954. *Excavations at Star Carr: An Early Mesolithic Site at Seamer near Scarborough, Yorkshire,* Cambridge University Press.

Clark, J.D.G., 1972. *Star Carr: A Case Study in Bioarchaeology,* Addison-Wesley Modular Publications, Module 10, 1–42.

Clark, J.D.G., 1975. *The Earlier Stone Age Settlement of Scandinavia,* Cambridge University Press.

Clark, J.D.G. and Thompson, M.W., 1953. 'The groove and splinter technique of working antler in Upper Palaeolithic and Mesolithic Europe', *Proc Prehist Soc* **19,** 148–160.

Clarke, D., 1976. *Mesolithic Europe: The Economic Basis,* London: Duckworth.

Collcutt, S.N., 1986. 'The Later Upper Palaeolithic site of Pixie's Hole, Chudleigh, South Devon', in S N Collcutt (ed), *The Palaeolithic of Britain and its Nearest Neighbors: Recent Trends,* 73–74, Sheffield: Collis.

Dowson, E., 1971. 'Flint finds from the Lizard', *The Lizard* **4(3),** 11–16.

Dumont, J.V., 19 83. 'An interim report of the Star Carr microwear study', *Oxford J Archaeology* **2(2),** 127–145.

Evans, J.G., 1979. 'The palaeo-environment of coastal blown-sand deposits in western and northern Britain', *Scot Arch Forum* **11,** 16–26.

Gordon-Williams, J.P., 1926. 'The Nab Head chipping floor', *Arch Cambrensis* **81,** 86–110.

Griffith, F.M., 1984. 'Archaeological Investigations at Colliford Reservoir, Bodmin Moor, 1977–1978', *Cornish Archaeol* **23,** 47–139.

Griffith, F.M., 1985. 'Some newly discovered ritual monuments in mid-Devon', *Proc Prehist Soc* **51,** 310–315.

Guthrie, A., 1954. 'Dark Ages site at St Ives, *Proc West Cornwall Field Club (NS)* **1(2),** 73–75.

Guthrie, A., 1960. 'A Palaeolithic handaxe from St Buryan Parish', *Proc West Cornwall Field Club (NS) 2(4),* 175–177.

Harding, J.R., 1950. 'Prehistoric sites on the North Cornish coast between Newquay and Perranporth', *Antiq J* **30,** 156–169.

Hencken, H. O'Neill, 1932. *The Archaeology of Cornwall and Scilly,* London: Methuen & Co, Ltd.

Heyworth, A., 1978. 'Submerged forests around the British Isles: their dating and relevance as indicators of Post-glacial land and sea-level changes', in J Fletcher (ed), *Dendrochronology in Europe,* 279–288, Oxford: BAR International Series **51.**

Hunt, M., 1973. 'Area correspondents news: Kerrier', *Cornwall Archaeological Society Newsletter* **13,** 3.

Irwin, M., 1976. 'The Bodmin Bypass, 1975', *Cornish Archaeol* **15,** 77–86.

Jacobi, R.M., 1973. 'Aspects of the Mesolithic Age in Britain', in S K Kozlowski (ed), *The Mesolithic in Europe,* 237–266, Warsaw.

Jacobi, R.M., 1978. 'Northern England in the eighth millennium bc', in P. Mellars (ed), *The early postglacial settlement of Northern Europe,* 295–332, London.

Jacobi, R.M., 1979. 'Early Flandrian hunters in the South West', *Proc Devon Arch Soc* **37,** 48–93.

Jacobi, R.M. and Tebbutt, C.F., 1981. 'A Late Mesolithic rock shelter at High Hurstwood, Sussex', *Sussex Arch Coll* **119,** 1–36.

Jacobi, R.M., Laxton, R.R. & Switzur, V.R., 1980. 'Seriation and dating of Mesolithic sites in Southern England', *Revue d'Archéometrie,* **1,** 165–73.

Johnson, N. and David, A., 1982. 'A Mesolithic Site on Trevose Head', *Cornish Archaeol* **21,** 67–103.

Juel-Jensen, H., 1986. 'Unretouched blades in the Late Mesolithic of South Scandinavia. A functional study', *Oxford J Archaeology* **5,** 19–33.

Kidson, C. and Heyworth, A., 1982. 'Sea-level changes in South West England and Wales', *Proc Geol Assoc* **93(1),** 91–111.

Lacaille, A.D., 1942. 'Flaked quartz tools from Cornwall', *Antiq J* **22,** 215–216.

Marsden, J.G., 1914. 'A workshop floor near Porthcurno, Cornwall', *Proc Prehist Soc East Anglia* **2(1),** 41–42.

Marsden, J.G., 1915. 'Further note on workshop floor near Porthcurno', *Proc Prehist Soc East Anglia* **2(2),** 173–175.

Marsden, J.G., 1919a. 'Cone cultures at the Land's End', *Proc Prehist Soc East Anglia* **3(1),** 59–66.

Marsden, J.G., 1919b. 'Notes on flint and other stone implements from South West Penwith', *J Roy Inst Cornwall* **20,** 483–496.

Marsden, J.G., 1922. 'Flint implements of Le Moustier type from Camborne', *J Roy Inst Cornwall* **21(1),** 48–55.

Mellars, P.A., 1974. 'The Palaeolithic and Mesolithic', in C Renfrew (ed), *British Prehistory: A New Outline,* 41–99, London: Duckworth.

Miles, H., 1975. 'Barrows on the St Austell granite, Cornwall', *Cornish Archaeol* **14,** 5–81.

Miles, H., 1978. 'The Flints', 37–91, in S.A. Butcher, 'Excavations at Nornor, Isles of Scilly, 1969–73' *Cornish Archaeol* **17,** 29–112.

Miles, H. and Miles, T.J., 1971. 'Excavations on Longstone Downs, St Stephen-in-Brannel and St Mewan', *Cornish Archaeol* **10,** 5–28.

Naylor, D. and Shannon, P.M., 1982. *The Geology of Offshore Ireland and West Britain,* Graham & Trotman: London.

Norman, C., 1975. 'Four Mesolithic assemblages from West Somerset', *Proc Somerset Arch & Nat Hist Soc* **119,** 26–37.

Norman, C., 1977. 'A flint assemblage from Constantine Island, North Cornwall', *Cornish Archaeol* **16,** 3–9.

Ohnuma, K. and Bergman, C.A., 1982. 'Experimental studies in the determination of flaking mode', *Bull Inst Arch, London,* **19,** 161–170.

Orme, B., 1982. *Anthropology for Archaeologists,* London: Duckworth.

Palmer, S., 1970. 'The stone age industries of the Isle of Portland, Dorset, and the utilization of Portland Chert as artefact material in southern England', *Proc Prehist Soc* **36,** 82–115.

Palmer, S., 1977. *Mesolithic Cultures of Britain,* Dorset: Dolphin.

Pengelly, W., 1883. 'On a flint implement found on Torre Abbey Sands, Torbay, in 1883, *Trans Devonshire Association* **151,** 137–140.

Pitts, M.W., 1978. 'Towards an understanding of flint industries in Post-glacial England', *Bull Inst Arch, London,* **15,** 179–197.

Pitts, M.W., 1979. 'Hides and antlers: a new look at the gatherer-hunter site at Star Carr, North Yorkshire, England', *World Archaeology* **11:** 32–42.

Rankine, W.F., 1949. 'Stone 'maceheads' with Mesolithic associations from south-eastern England', *Proc Prehist Soc* **7,** 70–76.

Rankine, W.F., 1953. 'A study of quartzite maceheads: Functional interpretation and perforation technique', *Arch Newsletter* **4:** 186–188.

Rankine, W.F., 1956. 'The Mesolithic of Southern England', *Research Papers of the Surrey Archaeological Society* **4.**

Reid, C. and Reid, E.M., 1904. 'On a probable Palaeolithic floor at Prah Sands (Cornwall)', *Quart J Geol Soc Lond* **60,** 106–112.

Roberts, A.J., In Press. 'Late Mesolithic occupation of the Cornish coast at Gwithian: preliminary results', in M Zvelebil *et al* (eds), *Recent Studies in the Mesolithic of Northwestern Europe.* Sheffield: Collis.

Roe, D.A., 1968. *A Gazetteer of British Lower and Middle Palaeolithic Sites,* London: Council for British Archaeology.

Roe, F.E.S., 1979. 'Typology of stone implements with shaftholes', in T H Clough & W A Cummins (eds), *Stone Axe Studies,* 23–48, CBA (Research Report) **23.**

Roe, F.E.S., 1985. 'Report on the cupped pebble', 56–59, in P M Christie, 'Barrows on the North Cornish Coast: wartime excavations by C.K. Croft-Andrew, 1939–1944', *Cornish Archaeol* **24,** 23–121.

Saville, A., 1977. 'Two Mesolithic implement types', *Northamp Archaeol* **12,** *3–8.*

Saville, A., 1981. 'The flint and chert artefacts', 101–152. In R Mercer, 'Excavations at Carn Brea, Illogan, Cornwall', *Cornish Archaeol* **20,** 1–204.

Scaife, R.G., 1983. 'A history of Flandrian vegetation in the Isles of Scilly: palynological investigations of Higher Moars and Lower Moars peat mires, St Mary's, *Cornish Studies,* **11,** 33–47.

Smith, G., 1984a. 'Excavations on Goonhilly Down, The Lizard, 1981', *Cornish Archaeol* **23,** 3–49.

Smith, G., 1984b. 'Excavation at Windmill Farm, Predannack Moor', *Cornish Archaeol* **23,** 179.

Smith, G., 1984c. 'Excavation at Penhale Promontory Fort', *Cornish Archaeol* **23,** 180.

Smith, G. and Harris, D., 1982. 'The excavation of Mesolithic, Neolithic and Bronze Age settlements at Poldowrian, St Keverne, 1980', *Cornish Archaeol* **21,** 23–62.

Spencer, P., 1975. 'Habitat change in coastal and sand-dune areas: the molluscan evidence', in J Evans *et al* (eds), *The Effect of Man on the Landscape: The Highland Zone,* 96–103, CBA Research Report *11.*

Stephens, J., 1899. 'Alluvial deposits in the lower portion of the Red River valley near Camborne', *Trans Roy Geol Soc Cornwall* **12,** 324–335.

Thomas, A.C., 1958a. *Gwithian. Ten years work (1949–1958),* Camborne.

Thomas, A.C., 1958b. 'The Palaeolithic and Mesolithic periods in Cornwall', *Proc West Cornwall Field Club,* **2(2),** 5.

Thomas, A.C., 1985. *Exploration of a Drowned Landscape: Archaeology and History of the Isles of Scilly,* Batsford: London.

Trudgian, P., 1977a. 'Excavation of a Cairn at Crowdy Marsh, Advent, near Camelford', *Cornish Archaeol* **16,** 17–21.

Trudgian, P., 1977b. 'Mesolithic flint scatters around Crowdy Marsh', *Cornish Archaeol* **16,** 21–24.

Wainwright, G.J., 1960. 'Three microlithic industries from South West England and their affinities', *Proc Prehist Soc* **26,** 193–201.

Wainwright, G.J., 1961. *The Mesolithic Period in South and Western Britain.* Unpublished PhD Thesis, University of London.

Walker, M.C. and Austin, D., 1985. 'A site of possible Mesolithic activity on Bodmin Moor', *Cornish Archaeol* **24,** 15–21.

Whitehead, P.F., 1973. 'Neolithic and Upper Palaeolithic working sites, Booby's Bay, Cornwall', *Cornish Archaeol* **12,** 5–18.

Whitehead, P.F., 1975. 'Booby's Point working site: A revised chronology', *Cornish Archaeol* **14,** 118.

Whitley, N., 1866. 'On recent flint finds in the South West of England', *J Roy Inst Cornwall* **2(6),** 121–124.

Woodman, P.C., 1978. *The Mesolithic in Ireland: Hunter-Gatherers in an Insular Environment,* Oxford: BAR British Series **58.**

Wymer, J.J., 1977. *Gazetteer of Mesolithic sites in England and Wales,* CBA Research Report No 22. Norwich: Geo Abstracts.