Palaeolithic Artefacts from Berinsfield, Oxfordshire

By R.J. MACRAE, with a contribution by P.R. JONES

SUMMARY

A large assemblage of flint and other stone artefacts from the gravels at Berinsfield and the conditions in which they were recovered are described. Such additions to the knowledge of the Lower Palaeolithic period in Oxfordshire happen only rarely and greatly help in an understanding of early man's occupation of the Upper Thames Valley. The handaxes and flake tools, many of which were made between 300,000 and 100,000 years ago, are examined. The presence of the first recorded artefacts of Levalloisian aspect in this part of the Thames river complex is noted, and the importance of quartzite tools in this primeval economy is for the first time recognised. The principal Palaeolithic industries are identified as Acheulian, and the Pleistocene geological background of the area is briefly sketched.

ACKNOWLEDGMENTS

The author is grateful to Dr D.A. Roe, University of Oxford Lecturer in Prehistoric Archaeology, for his scrutiny of the text, his emendations and suggestions. He is also indebted to Dr D.J. Briggs, lecturer in the Department of Geography at Sheffield University, for his generous permission to use results of his researches into the Pleistocene geology of the Upper Thames valley. Without the technological skill and experience of Peter Jones, mostly gained during excavations at Olduvai Gorge in East Africa, this article could hardly have been written; and valuable comments on the petrology of the quartzites came from Fiona Roe. Thanks are due to the Amey Roadstone Corporation for permitting the author to trespass so frequently in their gravel pits, and to Colin Winterbourne for his considerable contribution to the artefact assemblage. Finally, the author is most fortunate to have had Jeff Wallis to draw the specimen artefacts.

INTRODUCTION

About 250 Lower Palaeolithic flint and quartzite tools, flakes and debitage have been collected from gravel pits in and around Berinsfield near Dorchester-on-Thames during the past 8 years. They constitute the most important addition for many years to our knowledge of the Old Stone Age in the Upper Thames valley. The recovery of the stone tools near Oxford was one of the most rewarding experiences for the author in 20 years of examination of gravel pits at many sites in southern and eastern England, finding and recording thousands of artefacts.

At Berinsfield many tools and flakes were recovered from Amey Roadstone Corporation's pits during gravel extraction, others from the floors of worked-out pits, more from the conveyor belt which runs from hopper to washing plant, and some from the heaps of reject stones. The finds were made by the author and by Colin Winterbourne, engineer at

the washing and grading plant, who, after minimal training, was able to spot even small flakes and rough quartzite tools on the conveyor belt as it sped dizzily along at 4 miles an hour. As he was able to spend no more than about half an hour, or at best an hour, a day with his eye on the belt, his was a remarkable achievement. His enthusiasm extended to a frequent search of the reject heap and to careful handling and storage of all pieces of flint and stone that might be genuine artefacts until the author should arrive to sort them out. Nor did he neglect the occasional bones and teeth that turned up.

THE SITE AND ITS LIMITATIONS

Gravel pits have been dug within the triangle formed by Berinsfield, Drayton St. Leonard and Dorchester-on-Thames for 30 years or more, recently on an extensive scale, but the *Gazetteer* of 1968[1] records only two handaxes and a single flake for the whole area. In this the present author can be held guilty for neglecting a potentially rich source of palaeolithic material which he passed by on his many trips in the 1960s and 70s to the Ancient Channel deposits near Henley-on-Thames. If the gravel had been watched consistently over this period the number of finds would have been greatly increased. But the pits closed in 1981, and it may be a decade or more before new ones are opened around Dorchester.

Any kind of controlled excavation at Berinsfield was impossible, as is always the case in any modern working gravel pit where the dragline scoops up hundreds of tons of mixed gravel every day and leaves sloping, scree-clad sides to the pit, with vertical sections visible for perhaps only a few moments. The artefacts were collected from pits spread over about a square mile, the two main sites being Queenford Farm pit and Mount Farm pit. The same processing plant served all the pits, and since it was at the plant that most finds were made, any distribution map would be guesswork. We are reasonably sure that about a third of the total came from the southern side of the big Mount Farm pit at SU 583960, and another third from two pits at Queenford, SU 585592.

Unstratified finds, therefore, these artefacts must remain, and in spite of repeated scrutiny of the ever changing pit floors and partly exposed sections, nothing in the way of a living site or occupation level, or a particular concentration of artefacts, ever came up. The author extracted a few flakes and tools from the actual surface of the Oxford clay, where they seemed to have been embedded at the very base of the gravel. The suggestion that there was an old land surface here, on top of which the gravel sheet was deposited, seems to be supported by Dr. Briggs's assessment later in this report of the geological conditions. Sometimes the matrix around the artefacts gave a clue to their depth in the gravel, and where this was so, the lower levels were invariably indicated. It is also significant that Colin Winterbourne, a conscientiously keen observer, again and again reported that nearly all the worked pieces came from the lower strata of the gravels, which are deposited in depths from 6 ft. to 22 ft. over the Tertiary clay. He stated that he could tell at a glance by the colour and texture of the material moving along the conveyor belt from which depths the loads came. Dr. D.A. Roe, director of the Donald Baden-Powell Quaternary Research Centre at the University of Oxford, whose unparalleled knowledge of the Palaeolithic in Britain has so generously been put at the disposal of the author, adds the comment, 'Whether or not there was ever a land surface with artefacts *in situ* on the underlying clay surface, their tendency to occur at the base of the gravel might

[1] D.A. Roe, *A Gazetteer of British Lower and Middle Palaeolithic Sites* (1968).

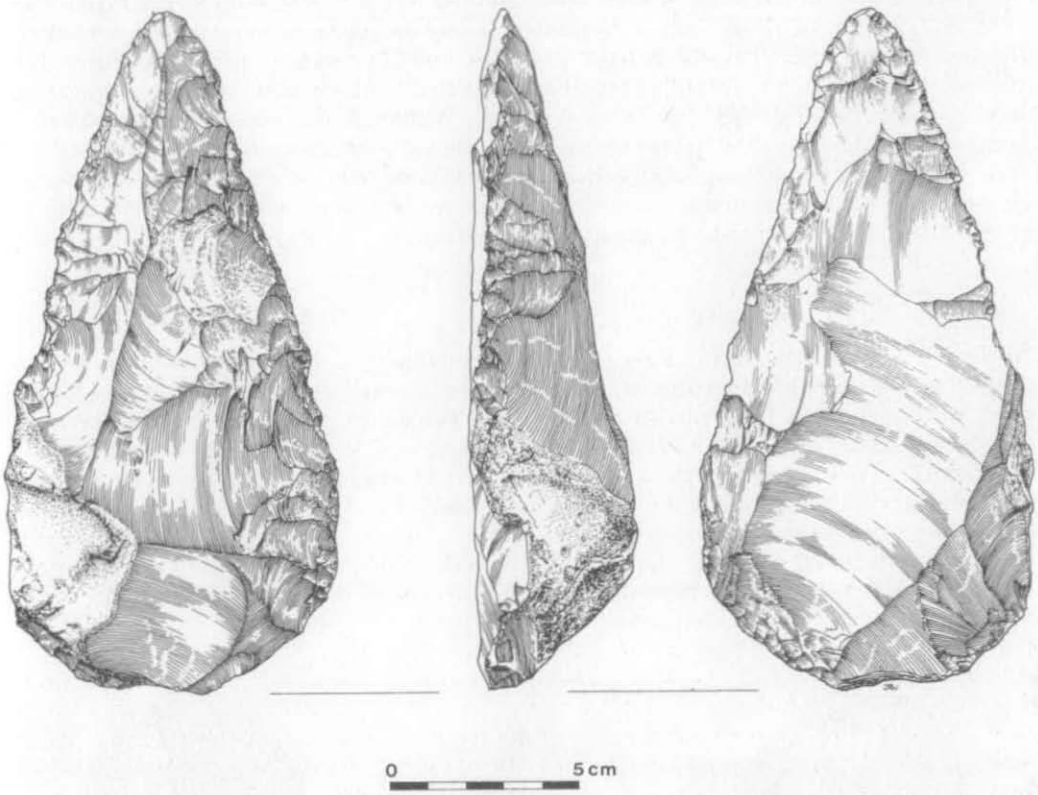

Fig. 1. Flint handaxe of Late Acheulian (or Micoquian) type.

suggest that the majority of them were present before the main body of the gravel was laid down, and that they were disturbed by the processes which began its deposition and were caught up into its lower layers.'

The collection is now in the Pitt Rivers Museum in Oxford.

PLEISTOCENE CONDITIONS IN THE AREA

It is necessary to envisage the type of terrain over which the Acheulians hunted (and scavenged). Numerous streams and meanders ran roughly in the line which the Thames follows today. At what stage, or stages, during the sometimes gradual, sometimes violent succession of aggradations, solifluxions and repeated scourings and redepositions early man came into these parts is unknown, but the probability is that human tools were made and used on a riverine landscape only lightly covered with sediment or soil and having a temperate climate. This Middle and Upper Pleistocene predecessor of the Thames ran between chalk and limestone hills, themselves drastically altered since by massive climatic changes.

Early man, we have to assume, was only an occasional visitor to these hunting grounds, and then only in temperate periods, when he may well have shared the valley and its adjacent drier slopes with red deer, bison, straight-tusked elephant and horse. He may have been familiar with hippopotamus in the main stream, and certainly sought food among the smaller game, and perhaps fished. Although the presence of *Mammuthus primigenius* is shown in the gravel fauna, it is unlikely that mammoth was disturbed by man in the immensely long cold periods. It should be said here that any relationship between early man's occupation and the fragmentary bone material and elephant teeth is so speculative that it would be unwise to comment.

THE GEOLOGICAL BACKGROUND

In the 1920s Kenneth Sandford mapped,[2] interpreted and named the gravel terraces, and until the 1960s contributed the most authoritative geological data. Most of the recent work in the area has been carried out by David Briggs (geology) and David Gilbertson (mollusca) from Sheffield University, and Russell Coope (coleoptera) from Birmingham University.[3] They argue that the bulk of the Upper Thames gravel was laid down in cold, near glacial conditions, when the streams were braided and were supplied with immense amounts of debris by solifluxion from the valley sides. During interglacial periods the rivers were confined to single, meandering channels. The age, relationship and environmental significance of the Berinsfield gravels nevertheless remains unclear. In 1965

Fig. 2. Flint ovate handaxe.

[2] K.S. Sandford, 'Notes on the gravels of the Upper Thames floodplain between Lechlade and Dorchester', *Proc. Geol. Assoc. Lond.* lxxvi (1), 61–76.

[3] A.S. Goudie, 'Introduction to the Oxford Region', *Field Guide to the Oxford Region*, ed. D.A. Roe (Quaternary Research Assoc. 1976), 1–5.

Sandford re-affirmed the presence in the area of the Floodplain terrace a few feet above the present river level and of the higher, composite Summertown–Radley terrace. He demonstrated that the latter consists of two layers: a lower gravel rich in mammalian remains such as woolly rhinoceros and mammoth (cold conditions), and an upper, 'warm' layer with temperate fauna. Berinsfield gravels, he stated, were lower Summertown–Radley terrace, overlain by gravels of the Floodplain terrace.

Recent investigations by Briggs and Gilbertson[4] have permitted an alternative explanation. At Linch Hill, west of Oxford, they discovered a new warm stage site at the very base of the Summertown–Radley terrace. Work on this site is still progressing, but it is clear that this Linch Hill channel pre-dates the cold gravels of the Summertown–Radley terrace. In a personal communication Briggs writes, 'It is possible that the Berinsfield gravels are a correlative of this channel. I am of opinion that these gravels of the Summerton–Radley terrace protrude like a low island through the surrounding Floodplain terrace. While the Mount Farm pit cuts into the higher terrace, the Queenford Farm pit is confined to the Floodplain terrace. In this case, the human artefacts may derive from two gravel bodies of significantly different age.'

Although demonstrative proof is not absolute, it is interesting that more handaxes of advanced Acheulian workmanship came from Queenford than from Mount Farm, including one superb biface clearly of Micoquian (or very late Acheulian) type, matching the best of the famous Wolvercote Channel handaxes from upstream. Briggs agrees that some re-sorting of the artefacts must have occurred, but that everything points to only a limited movement after manufacture. 'The unusual nature of the lithic materials frequently used at Berinsfield', he adds, 'demands some comment: the quartzite and the diorite are not found *in situ* locally, but are important components of the drift deposits, particularly the Plateau Drift which caps much of the plateau along the Upper Thames.'

ORIGIN OF FLINT MATERIAL

Where did the flint come from? Plainly there has never been anything like an abundance of flint *at any stage* in or below the gravels in the area. Seldom can one find a flint nodule large enough and sound enough to have made even a moderate-sized handaxe. Most of the implements are rolled or abraded, but only to a moderate degree, and some remain quite sharp, though none is mint-fresh. Perhaps enough flint was found lying about for the makers' purposes, but, if not, raw material must have been brought from the abundant sources of flint only 6 miles away in the Chiltern foothills; or else the implements were brought from there ready-made, though the presence of typical handaxe trimming flakes argues against this. What flint there was in the valley may have drifted from the Chiltern fan-gravels.

The size of the flint tools varies greatly, and so does the colour and texture of the flint. It is easy to observe that the local scarcity of flint (there is no natural source of flint in the Thames valley above Wallingford and not even much derived flint well into the Midlands) exercised the makers' ingenuity more often than giving them opportunity to display advanced knapping skills. Where a good, frost-free nodule of suitable size was found, a well-fashioned handaxe resulted. Where a smaller piece or broken fragment was all that could be had, a crude ovate or trimmed flake emerged.

[4] D.J. Briggs and D.D. Gilbertson, 'Quaternary processes and environments in the Upper Thames Valley', *Trans. Institute of British Geographers*, N.S. v (1980), 53–65.

The Berinsfield gravels contain a very low percentage of flint, almost all of it made of small (2 cm.–3 cm.) heavily-rolled or frost-cracked pebbles. Some larger pieces are internally frost shattered, though they may not all have been so at the time of human occupation, as one or more major glacial phases occurred subsequently. (Goudie gives a 10 per cent flint proportion in the Plateau Drift in the Oxford region.) Unhappily, many artefacts are severely frost cracked, and we must be thankful for at least a dozen handaxes nicely flaked, undamaged and only minimally rolled. Colour, staining and patination vary markedly, from a ceramic white to a deep brown, from unstained blackish-grey to iron-stained yellow. One small handaxe is thickly encrusted with yellow lime deposit of uncertain origin. There is great diversity in types and sizes. Among the pointed handaxes the largest is 21 cm. long, the average 15 cm., and the smallest 10 cm. There is a small, well-made biface only 5 cm. long, and a fabricated point of the same size. Damage by accidental fracture in antiquity about equals thermal damage, especially in the heavy-butted handaxes.

TABLE I

TOTALS OF FLINT ARTEFACTS

Pointed handaxes, undamaged or slightly damaged	21
Handaxe butts	14
Handaxe points	7
Ovates, undamaged or slightly damaged	16
Small bifacial tools, under 10 cm. long	23
Cleavers	4
Ficron type handaxes	2
Retouched flakes	10
Unretouched flakes	27
Handaxe trimming flakes	48
Miscellaneous worked fragments	24
Cores	–
Levallois flakes	7
Levallois cores	2
Total	205

TYPOLOGY AND AGE

Because dating by stratification is not possible, we are thrown back on typology, which, of course, by itself is not held to be sufficient. The assemblage has a strong mid-Acheulian flavour, but any date we might postulate would have a margin of error of 60,000 or 70,000 years. The Levallois content, small though it is, may point to a considerable time gap between man's earlier appearances in the valley and the later emergence of the prepared-core techniques.[5] It would be unsound reasoning to attempt to categorise early, middle or late arrivals of man in the region by the crudity or refinement of the tools, but on close examination of the nature of the flaking (on the flints), skilled knapping is detectable on an otherwise crude implement — a 'tool for the moment', quickly fashioned from the poor flint available by a hunter who, given good material, could have produced a much more

[5] J. Wymer, *Lower Palaeolithic Archaeology in Britain* (1968), Thames Valley.

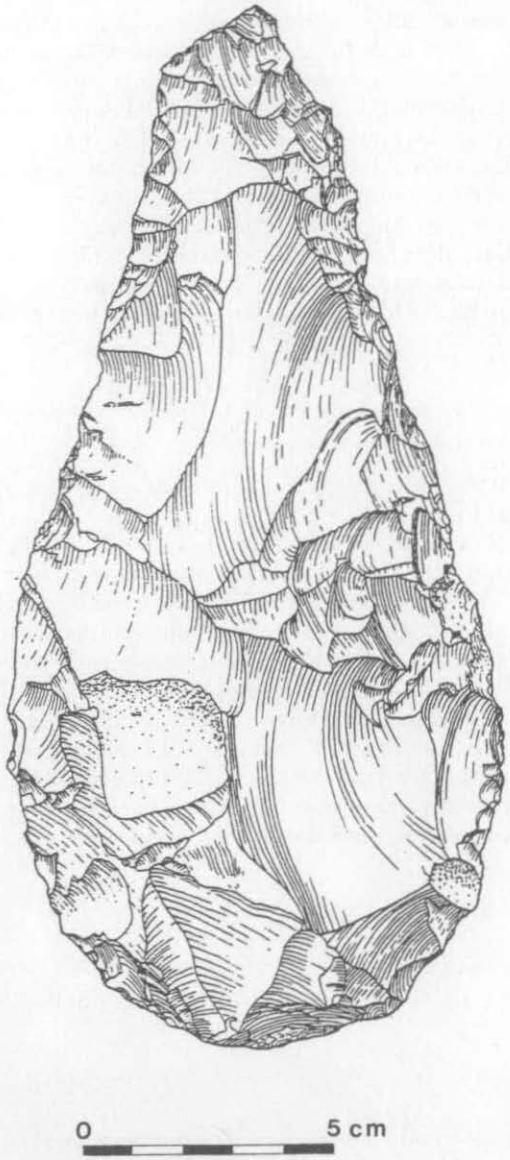

Fig. 3. Large pointed handaxe of flint approaching the ficron type.

shapely and effective handaxe. The Acheulians, by the very nature of their existence, had to be masters of expediency.

The whole assemblage has been carefully scrutinised for evidence of possible Clactonian material, bearing in mind the important Clactonian site at Rotherfield Peppard 15 miles to the south-east. Although individual Berinsfield tools, especially the choppers and chopping tools, may be said to resemble Clacton work, such pieces also occur in the Acheulian, and a Clactonian industry is not present. Levallois technique is also documented in the Acheulian, but the cores and flakes of this type are believed to be the first to be recorded, if not found, in the Upper Thames valley.

Nor are there, at the more recent end of the Old Stone Age, any blade-tools or any firm evidence of Upper Palaeolithic technology. The cleavers are a feature of interest, being uncommon in the Upper Thames though well known on the other side of the chalk hills in the Reading–Maidenhead area.[6] More interesting still are the quartzite and other non-flint artefacts, and these are here considered separately by P.R. Jones, who has excavated extensively in East Africa, and who specialises in experimental fabrication in flint and stone.

THE NON-FLINT LITHIC MATERIAL

The 36 artefacts of quartzite, one seventh of the total assemblage, represent the largest recovery of such material in the Upper Thames valley since the early part of this century. The list of recorded finds of Palaeolithic tools in quartzite and other non-flint rocks in the Oxford region before the Berinsfield collection was made is a very short one. North Hinksey was the first find spot in 1883, with a pointed handaxe. At Iffley, 70 years ago, 6 handaxes of quartzite and 2 of 'other rocks' were found. In the Wolvercote channel, early this century, among the dozens of fine flint handaxes, were 17 artefacts in quartzite. In Lonsdale Road, Oxford, in 1923 a small handaxe was unearthed. J. Wallis came across a small handaxe and a flake of diorite at Drayton in 1980, and the author recovered a large chopper at Yarnton, another at Drayton, and a small ovate at Rotherfield Peppard. The total is 32, against several thousand artefacts of flint in Oxfordshire, where, Dr. Roe remarks, 'finds have the geographical interest of proximity to the very edge of the Lower and Middle Palaeolithic settlement of Europe. The regular use of rocks other than flint is a most unusual feature.'[7]

THE BERINSFIELD QUARTZITE PALAEOLITHS AND THEIR SIGNIFICANCE

by P.R. JONES

Quartzite demands a closer scrutiny than flint to determine which flake-scars are beyond doubt the work of man, and which could be attributable to natural forms of fracture, whether mechanical or thermal. With experience the distinction can be made. A score of Berinsfield 'doubtfuls' were rejected, leaving a collection the authenticity of which is

[6] Ibid.; D.A. Roe, *The Lower and Middle Palaeolithic Periods in Britain* (1981), chap. 5.
[7] Personal communication.

beyond doubt. Among factors in making distinction between genuine and doubtful were morphology, degree of rolling, sharp modern mechanical breaks, and natural thermal or physical fractures of ancient origin.

More than half the bulk of the Plateau Drift, according to Goudie,[8] consists of Bunter pebbles, and the gravels at Berinsfield contain scores of cobbles and pebbles per cubic yard, ranging in size from 3 cm. to 20 cm. Colour, density and weight of the implements made from these erratics vary considerably, but this seems not to affect flaking properties. One handaxe in the collection is not of quartzose rock at all, but under the binocular microscope appears to be a fine-grained igneous rock of a dark grey colour.

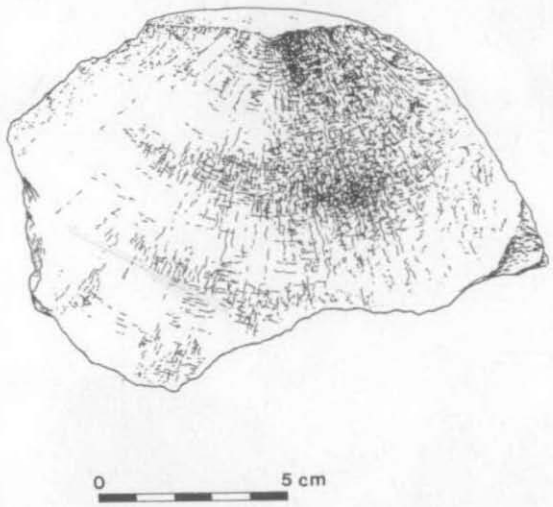

Fig. 4. Well-defined flake of quartzite.

The non-flint artefacts can be divided into six categories: chopper-cores, heavy-duty bifaces, flakes, handaxes, trihedral pieces, and miscellaneous chunks. The 6 chopper-cores are from cobbles preserving most of their original cortex, and have been minimally flaked along an edge. Ten flake-scars are the maximum, and only one cobble is unifacially flaked. Size ranges from 128 mm. long, 90 mm. wide and 39 mm. thick to 88 mm. by 68 mm. by 26 mm. Five cobbles in the heavy-duty tool class have been more extensively flaked, and weigh over 1 kg. each. Three of the specimens are bifacially flaked to produce cutting edges that intersect at the tip of the tool. The other two have long bifacially flaked edges and other single-flake removals around the cobble. There are 10 flakes, from 142 mm. long by 99 mm. wide by 38 mm. thick to 66 mm. by 46 mm. by 28 mm. Two flakes have an entirely cortical dorsal surface; two have cortex and a single flake-scar; 6 have 2 flake-scars and an area of cortex. This means that 8 of the flakes were not the first to be removed from their core, and 6 of them were at least the third flake.

The 10 handaxes are all very similar in size, the largest 136 mm. long by 70 mm. wide by 65 mm. thick. All specimens preserve areas of cortex, and on 5 it can clearly be

[8] Goudie, 'Introduction to the Oxford Region', 3.

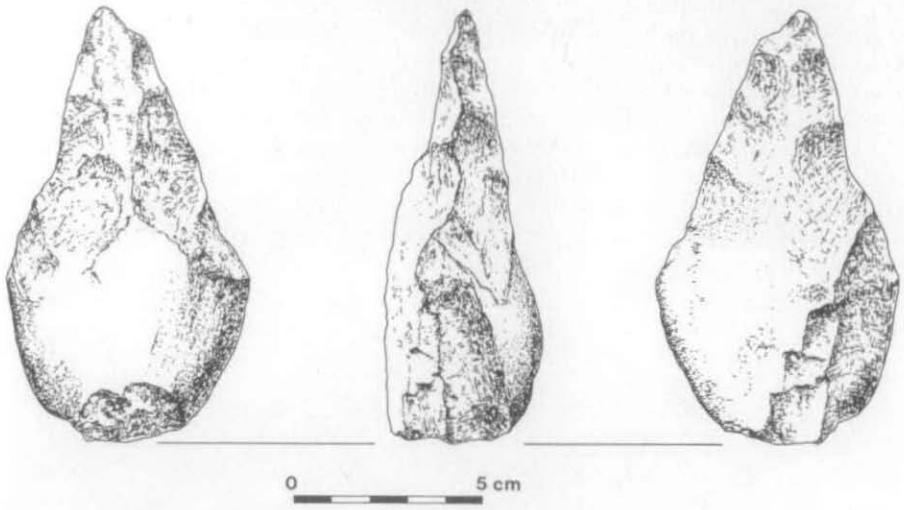

Fig. 5. Pointed handaxe in quartzite.

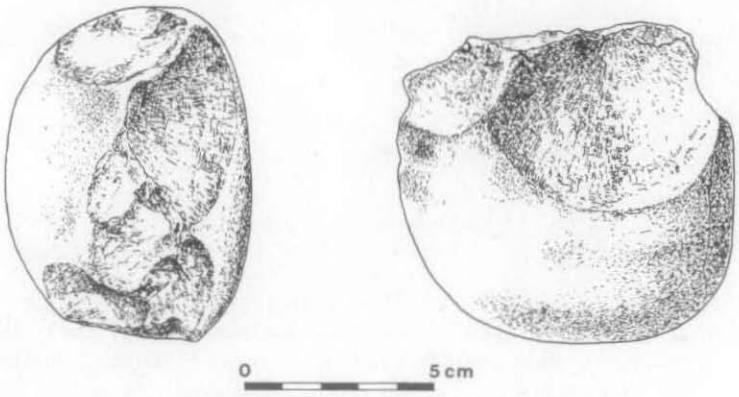

Fig. 6. Quartzite chopper, Oldowan type.

seen that the cobble used was scarcely larger than the final tool. Two of the specimens show possible soft hammer flaking, while the others show simple hard hammer retouch. All the handaxes have at least a 10 cm. edge, and where the tips are preserved they are quite pointed. One handaxe stands out with an edge of more than 30 cm. all round, and this is the only tool which comes close to any flint handaxe in its morphology. The 2 trihedral pieces show extensive secondary flaking, and the 3 chunks are humanly-worked but to no clear pattern.

These Oxfordshire quartzite artefacts are all the more interesting in that they closely

resemble tools from the Oldowan, Developed Oldowan and Acheulian industries in many areas of Africa. Indeed, they have a greater affinity to these African industries than they do to other British ones.[9] Flint is an amorphous, brittle material, ideal for the making of tools. Quartzite is very tough and much coarser-grained, and its flaking by early toolmakers was conditioned by the stone occurring in the form of rounded cobbles. It is exactly these qualities that influence tool form and shape in many Palaeolithic assemblages in Africa, where coarser-grained materials predominate over flint.[10] So techniques in the Thames valley and Africa are remarkably similar. When making tools from quartzite more strength and as much skill is needed as is used during flint flaking. The quartzite tools were probably not as efficient as their flint equivalents and certainly not as refined. In all, rather than representing a set of tools for specific functions, or being the artefacts of a small human group that used only quartzite, they were used where and when suitable flint was not available.

[9] M.D. Leakey, *Olduvai Gorge*, iii.
[10] P.R. Jones, 'Effects of raw materials on Biface Manufacture', *Science*, cciv (1979), 835–6.