

depositional processes can alter and obscure genuine use-wear traces and polish without leaving clear signs that this alteration has taken place, even in apparently inactive depositional environments. This conclusion has obvious implications for those who study such traces, and Irene highlighted for the future the need to develop a critical approach to the distinction of post-depositional from genuine traces. One can only regret that Irene herself is not able to follow up the research avenues highlighted in this volume, as she undoubtedly would have done, and hope that others will take up her typically, but unduly, modest concluding exhortation that "the flaws in this work may spur others to continue the investigation of polish and post-depositional processes on flint artefacts to develop the usefulness of such studies still further".

Bibliography

- Keeley, L. H. 1980. *Experimental Determination of Stone Tool Uses: a Microwear Analysis*, University of Chicago Press, Chicago.
- Newcomer, M. H., Grace, R. and Unger-Hamilton, R. 1986. Investigating microwear polishes with blind tests, *Journal of Archaeological Science* 13, 203-17.
- Semenov, S. 1964. *Prehistoric Technology*, Moonraker, Bradford-on-Avon.
- Vaughan, P. 1981. *Lithic Experimentation and the Functional Analysis of a Lower Magdalenian Stone Tool Assemblage*, PhD dissertation, University of Pennsylvania, Pennsylvania.

Francis Wenban-Smith, *Department of Archaeology, University of Southampton*

***Excavations at the Lower Palaeolithic Site at East Farm, Barnham, Suffolk 1989-94.* Ashton, N.M., Lewis, S. G. and Parfitt, S.A., 1998. British Museum Occasional Paper 125. British Museum Press, London. ISBN 0 86159 125 9, ISSN 0142 4815 £25.00.**

Between 1989 and 1994 a British Museum team lead by Nick Ashton investigated a series of exposures in and around East Farm brickpit, Barnham, Suffolk, principally to investigate claims of a relationship between the Acheulian and Clactonian on site as well as hopefully recover more refitting cores and flakes that had originally been recovered by John Wymer. A third aim was to place all existing and new discoveries in sound geological and environmental context. That all of these aims were clearly successful is ably demonstrated in a lavish volume running to 22 chapters and 7 appendices, illustrated by Phil Dean's characteristically superb illustrations. The result is a clearly presented account of Lower Palaeolithic activity around a watercourse that deservedly joins the published ranks of High Lodge, Swanscombe, Hoxne and Boxgrove as flagships of the British Lower Palaeolithic.

This is a multidisciplinary project par excellence, but even excluding everything-but-the-lithics there are still five chapters and one appendix that will be of direct interest to LSS members. The main chapters of the book are penned by the triumvirs of the new generation of East Anglian Lower Palaeolithic British scholars - Simon Lewis (geology), Simon Parfitt (fauna and environment) and Nick Ashton (lithics); all of these are of exceptional quality. In addition, a number of scholars have made important contributions to the volume ranging from, for example, Rob Kemp (micromorphology),

ichthyofauna (Brian Irving), avifauna (John Stewart), mollusca (Mary Seddon), wood charcoal (Caroline Cartwright) and palynology (Chris Hunt). The application of absolute dating techniques is reported by D. Q. Bowen (aminostratigraphy), Nick Debenham (TL) and Eddie Rhodes (OSL and ESR). As the archaeological and palaeontological horizons overlie Anglian gravels and tills with no apparent unconformity it seems clear that the deposits can be attributed to the immediately post-Anglian warm stage (OIS 11, between 364 and 427 ka BP), which is supported by the mammalian faunal assemblage which shows the strongest affinities with the early part of the Hoxnian. For once the aminostratigraphy results agree with this, although there are problems with all other dating methods which have yielded minimum ages of some 300 ka BP.

A series of sections cut in and around the pit facilitates the reconstruction of the geological succession, and these are illustrated clearly in a number of section illustrations in Lewis' chapter. A (disappointingly small) number of photos convey the general impression of the site. Essentially the succession relates to processes of an initial incision and filling of a channel in the chalk substratum during the Anglian and a subsequent smaller channel at the end of the glaciation through to the succeeding warm stage; the sediments of the latter preserve evidence of environment, animal and human activity in the form of faunal remains within the channel and archaeology

at several locations along its banks. As the channel matured, changes in its regime are indicated up the stratigraphy in the form of faunal succession and sorting, from increasing species diversity within the context of a mosaic environment with closed and open elements, culminating in a slow-moving or still body of water with low fish and avian diversity but diverse small mammals and herpetofauna. It is in the context of this that humans were active in the area - essentially an interglacial pollen zone II with a mixed deciduous oak woodland and open forest-edge communities, within which lived, among other species, lion (*Panthera leo*), straight-tusked elephant (*Palaeoloxodon antiquus*), polecat (*Mustela* sp.), bear (*Ursus* sp.), rhinoceros (*Stephanorhinus* sp.), wild boar (*Sus scrofa*), fallow and red deer (*Dama dama*, *Cervus elaphus*) and a bovid (*Bos/Bison*).

Lithic assemblages were excavated from four locations within the brickpit, three of which were located along the edges of the channel, i.e. the river bank. These have been subjected to taphonomic study (Ashton), technological and typological study (Ashton), microwear study (Donahue) and spatial distribution analysis (Ashton). In addition the effect of locally available raw material on the lithic technology was investigated (Wenban-Smith and Ashton) and a model of landscape use forwarded (Ashton) that places the site in the overall environmental context. While the taphonomic and microwear studies are essential in isolating different assemblages within the overall collections, and the raw material study, Ashton's technological study and Wenban-Smith and Ashton's raw material testing are the crucial elements of the lithic studies, and reveal much of the technological behaviour of Middle Pleistocene hominins.

Eight artefact groups could be discerned on the basis of site formation and artefact taphonomic studies. The main source of raw material - at least for two of the three river bank areas - was a band of cobbles derived from outwash gravel within which and on which the artefactual material lay. The technology of the lithic production is described by the clear methods used previously for High Lodge (Ashton 1992) and Swanscombe (Ashton and McNabb 1996). In short, both the production of flakes and bifaces was practised in the two main lithic areas. Three groups of refitting lithics allow a clear view of flaking practice on site. Flake production was organised into a number of relatively simple but effective *chaines opératoires* ranging from the removal of a single flake from a cobble, through parallel flaking in which two or more flakes are removed from the same platform, i.e. along the same plane, to the more complicated alternate flaking in which the core is revolved and the scars of previous

removals are used as platforms from which to remove subsequent flakes along new planes of orientation. The latter two predominate suggesting at least that flake production along the banks was not brief and profligate. These techniques are explained clearly in the text although it is Phil Dean's exceptional illustrations that really bring them to light, accompanied by an ingenious schematic employed by Ashton whereby arrows indicate the sequence and direction of removals and which therefore facilitate a 'reading' of the illustrated refitting groups which is of particular importance to those uninitiated to Lower Palaeolithic technology. They are just about as good as seeing the real things.

The analysis of flakes seems to indicate that most, if not all, were produced using hard hammers, although this cannot be demonstrated unequivocally - soft hammers may have been in use occasionally judging by a few flakes, and were to thin bifaces. Few differences in *chaines opératoires* or flake attributes appear between areas, and where they do probably relate to the effects of fluctuations in the size of the cobbles available. This lends support to the homogeneity of the assemblages. Differential degrees of reduction between the two main assemblages, however, give us a tantalising glimpse of the dynamics of flint working between two areas along the river. Flake tools were also recovered and take the form of scrapers (18), denticulates (2 clear examples), a notch, and the dominant flaked flake (34), i.e. flakes that have had a further flake removed. The recovery of flaked flake spalls indicates that such modification occurred on-site too and in all a clear impression of on-the-spot, *ad hoc* technology is formed. In addition to the flake element, three assemblages result from biface manufacture, and three-stage reduction sequences involving roughing out, shaping and thinning were identified from characteristic products. The analysis of the products of these stages, assisted by a strategically employed biface knapping experiment yield a number of clear insights into the specifics of biface production.

Perhaps the most interesting part of the behavioural evidence is Ashton's analysis of spatial patterning based on the artefacts that appear to be broadly *in situ*, i.e. the fresh artefacts from areas I, III, IV(4) and V in which post-depositional movement seems only to have been slight. Area I seems to have been an area primarily of manufacture but some use, continuing in such a use over some degree of time. Area III is the only non-bank area in which lithics were found: cores found here are difficult to interpret but it is conceivable that they were thrown into the water from manufacturing/butchering areas on the bank. Area IV also seems for some time to have been used for the manufacture of flakes but also in the later

stages of its history the production of bifaces, although little use seems to have been made of these here. By contrast Area V seems to have been used relatively briefly and is the most complex of all areas. Finishing of bifaces occurred here, as well as the final reduction of flake cores and the manufacture of flake tools; some items may have been introduced from other areas too. It therefore seems appropriate to interpret Area V as predominantly related to some activity other than manufacture, presumably involving the flakes, bifaces and tools found here.

Wenban-Smith and Ashton's study of the raw material available for use in the lag gravel at Barnham suggested that most of it could be used for biface production; this is not surprising as lag gravels produce large nodules which are best suited to such *chaines opératoires*. Disappointingly the authors ignore the seminal work of White (1995, 1996) on raw material effects on biface production, and the experimental work can be challenged due to the selective nature of the sample of raw material used for biface manufacture. Despite these minor criticisms, Barnham is crucial in that it takes us several steps further into understanding the human behavioural processes that created Lower Palaeolithic archaeology. It raises problems with the specifically cultural model of Lower Palaeolithic lithic variability in the UK as relating to two geochronologically separate traditions, given that both 'Acheulian' and 'Clactonian' *chaines opératoires* seem to be at least broadly contemporary along the river's banks. In addition, technological models suggesting that Clactonian assemblages represent simply the early stages of biface manufacture can be eliminated given the mix of such stages and technologies on the same raw material source in several areas here. Ashton's landscape model is a most plausible interpretation of the material. The key to this is the static lithic resource of the cobble band, around which other resources would fluctuate over time. It functioned as a primary manufacturing zone repeatedly over a

considerable length of time. This difference with lithic representation on other areas of the site - i.e. along/over the river's banks, can be explained as a 'fall off' from source effect. The manufacture of three or four bifaces in the locale might be interpreted in terms of changes in resource procurement patterns, e.g. that a source of better quality flint had become available by the time these were brought to the river. Ashton coins the term 'group focus' to describe this attractive area at which various activities were performed at several locations, an altogether more neutral term than Isaac's 'home base'. In all this is a superb volume which represents excellent value for money. It is a clear example of why Britain has a Palaeolithic and intellectual heritage to be very proud of.

Bibliography

- Ashton, N. M., 1992. The High Lodge flint industries in *High Lodge: Excavations by G. de G. Sieveking 1962-68 and J. Cook 1988*, N.M. Ashton, J. Cook, S.G. Lewis and J. Rose (eds), 124-63. British Museum Press, London.
- Ashton, N. M. and McNabb, J. 1996. The flint industries from the Waechter excavations in *Excavations at Barnfield Pit, Swanscombe, 1968-72*, B. Conway, J. McNabb and N. Ashton (eds), 201-36. British Museum Occasional paper 94. British Museum Press, London.
- White, MJ, 1995 Raw materials and biface variability in southern Britain: a preliminary examination. *Lithics* 15, 1-20.
- White, MJ, 1996 *Biface Variability and Human behaviour: a Study from South-Eastern England*. Unpublished PhD Dissertation, University of Cambridge.

Paul Pettitt, *Research Laboratory for Archaeology and History of Art, University of Oxford, 6 Keble Road, Oxford OX1 3QJ*

Boxgrove. A Middle Pleistocene hominid site at Eartham Quarry, Boxgrove, West Sussex. Roberts, M.B. and Parfitt, S.A. 1999. English Heritage Archaeological Report 17, London. ISBN 1 85074 670 2 £70.

Boxgrove needs no introductions; the flint and bone scatters that lie on relict landsurfaces above marine sediments in the shadow of an ancient Sussex cliff-line, are now of international renown. This major volume covers the principal years of excavation from 1982-89, and additionally contains reports on the hominid fossil remains discovered in 1993. Outdoing the growing number of multidisciplinary reports from this period, the breadth of the book is immense with a

total of 34 contributors, providing specialist reports on subjects as diverse as dating with coccoliths, to the movement of microdebitage in semi-lagoonal environments. Inevitably the following comments will be selective, but hopefully convey the tone of the volume.

Following the introduction, Chapter 2 covers the geological contributions. The Pleistocene background is well set out by Roberts (Mark) with the geophysical