Berkshire Archaeological Journal, 74, 1991–3

THE EXCAVATION OF A LATE BRONZE AGE ARTEFACT SCATTER ON WEATHERCOCK HILL

MARK BOWDEN, STEVE FORD, and VINCE GAFFNEY

with contributions by Wendy Carruthers, Hugh H Carter, Geoff Mees, Peter Northover, and Robin J Taylor

SUMMARY

The trial trenching in 1983 of a Late Bronze Age artefact scatter, discovered by fieldwalking, is described. Particular attention was paid to the evidence of topsoil finds and their relationship to subsoil features.

INTRODUCTION

Perhaps one of the most pressing problems of field survey is that of the interpretation of artefact scatters located by fieldwalking and the nature and status of traditionally defined sites. This situation is likely to continue unless corroborative work is carried out which examines surface artefact patterns themselves as well as relating them to the more usual subsurface features (eg Crowther 1983; Drewett 1982).

There has been a tendency to dismiss surface-derived pottery or flint as simply the result of plough-damaged features and occupation layers. This is a dangerous assumption. It ignores the possibility that this material still relates in some way to an archaeological deposit. If these deposits have been destroyed through ploughing, an understanding of the secondary deposits may be the only way to recover information related to the most fragile of archaeological stratification. Too many downland reports lament the fact that only subsurface features survived – not altogether surprising when the introductory passage of the report explains that the site was stripped by machine.

The excavation carried out at Weathercock Hill represents an attempt to provide information on one artefact scatter whose discovery, definition, and subsequent excavation was planned entirely with regard to the results of fieldwalking the site. During excavation, data from both the body and the surface of the topsoil were treated as potentially useful archaeological contexts. A sieving programme was devised in an attempt to provide a relatively objective view of the topsoil artefact content. This was considered an essential step towards gauging the relevance of fieldwalking data to the excavated record. The use of sieving also afforded a chance to investigate the possibility that the topsoil itself might contain evidence for superficial stratification, destroyed by ploughing, but which might be traced through spatial variation across the site. It was hoped that, in conjunction with subsurface features, this type of evidence might begin to provide spatial evidence for past activities usually not expected, or indeed looked for, on anything but the best preserved of sites.

The discovery of archaeological material, mainly Late Bronze Age pottery and flint, on a ploughed strip on the east side of Weathercock Hill towards Park Farm Down

(SU 295 820) (Fig 1), was made by the Maddle Farm Survey in the winter of 1982. The Berkshire Field Research Group mounted a project to study the site in the winter and summer of 1983. The strip of land under plough had been a gallop in relatively recent years but a substantial deposit of clinker and ash is evidence of an earlier episode of steam ploughing. The site is not visible on aerial photographs despite good coverage of the area.

The first stage of the project was total collection fieldwalking of 7025m^2 gridded into 5 × 5m squares and aligned along the south field boundary. This grid was numbered along its X and Y axes from an origin in the south-west corner to facilitate computer handling of the data. (The site grid was not aligned on the national grid due to the difficult shape of the field.) These 5 × 5m squares were subsequently used as the basis for excavation. The results of the fieldwalking are shown in Figures 2 and 3. All struck flint, burnt flint, pottery, and metal finds were retained.

Areas for excavation (Fig 2 (top)) were located on the basis of the fieldwalking results. The strategy was to sample areas of

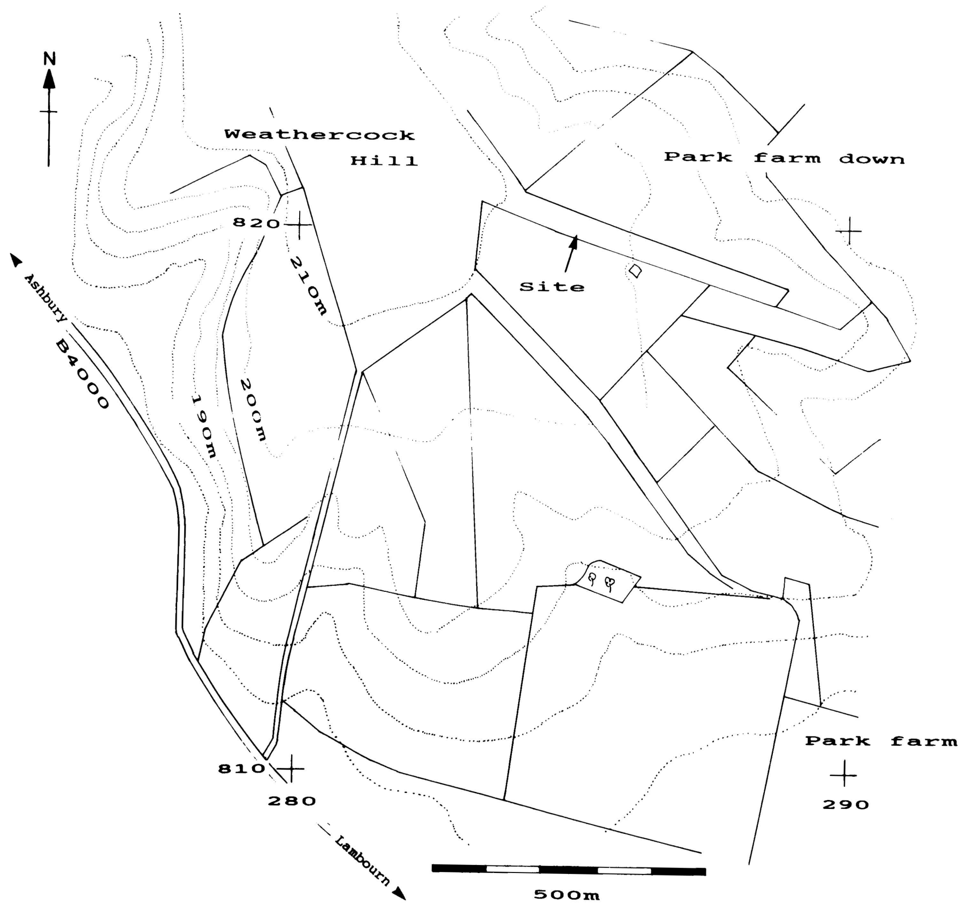

Figure 1 General location of Weathercock Hill site

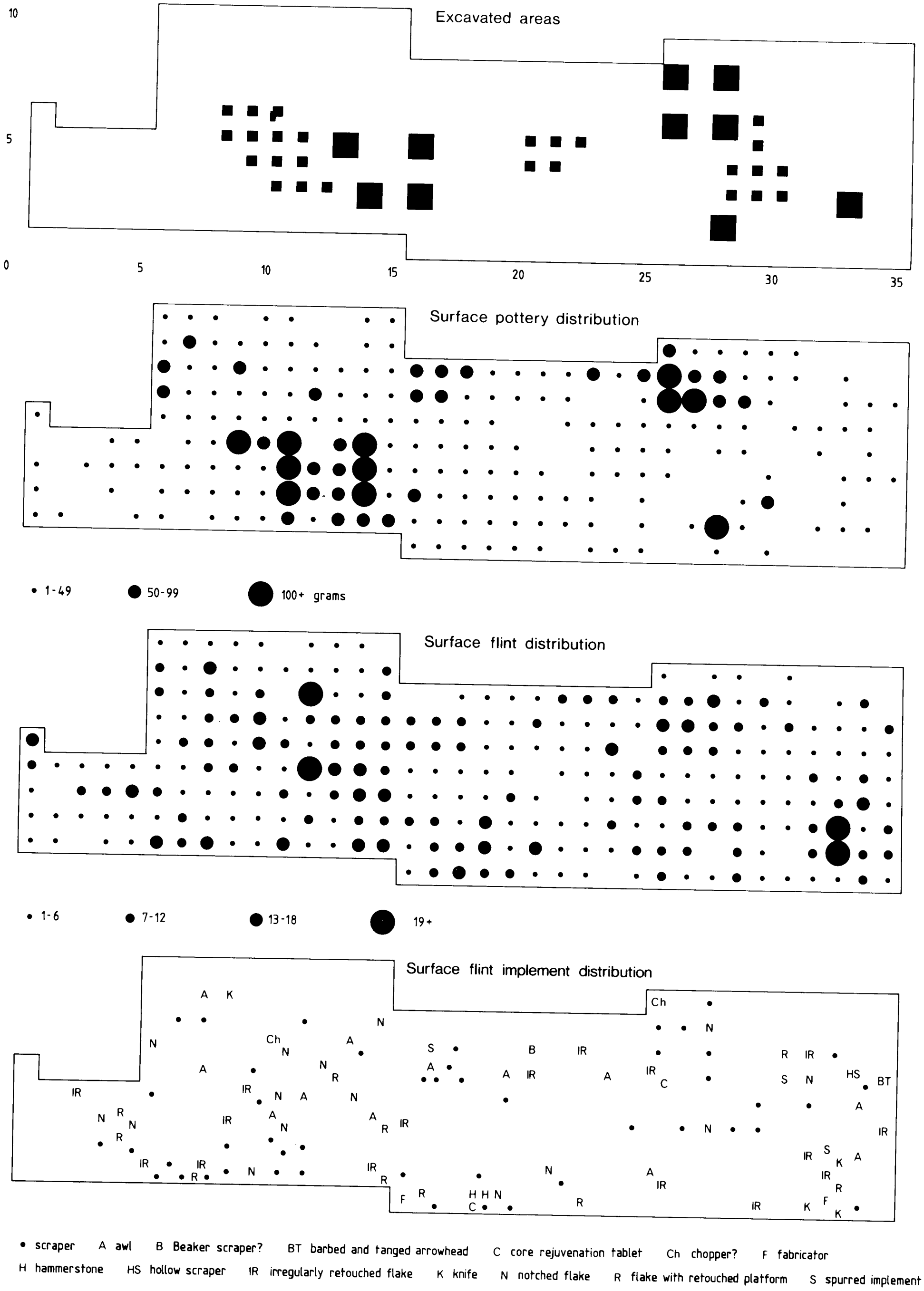

Figure 2 Weathercock Hill: site distribution plans

high and low density of finds. In addition, one trench (28, 2) was located where fieldwalking had produced several sherds of collared urn, perhaps indicating a funerary area. Subsequently, a number of 2 x 2m squares were dug to extend the sampled area. Each 2 x 2m square occupied the north-east corner of an original gridded 5 x 5m square. The digging took place over several weekends and one complete week in September 1983.

During the excavation part of the fieldwalked area was sampled for phosphate analysis (Fig 3). This showed high phosphate levels in the areas with a high density of pottery and where the pits were located, but abnormally low values where the collared urn sherds were found. At the beginning of the excavation a metal-detector survey was undertaken by A Waller and R Austin. This resulted in the recovery of some significant finds, notably prehistoric bronze work.

The finds and site archive have been deposited in Newbury Museum (accession number 1986.90); the site's Berkshire Sites and Monuments Record number is 1058.03.

EXCAVATION

The plot of fieldwalking finds (Figs 2 and 3) reveals two distinct pottery concentrations with two subsidiary ones. The major flint concentrations do not exactly coincide with these but are adjacent and overlap in part. In general, the pottery concentrations are more discrete than the relatively diffuse flint concentrations. Five areas were examined by excavation. These were the two major pottery scatters and the low density area between them, the easternmost flint scatter, and the area containing the collared urn.

Sieving strategy

Within each 5 x 5m trench a sample unit was placed in the metre square at each corner with a further metre-square unit in the centre of the trench. For each unit 0.06m^2 of soil was sieved through a 10mm mesh. After excavation the volume of soil for each trench was calculated and it was found that for each 5 x 5m trench an average of 5.1% of the topsoil was sieved. For the 2 x 2m trenches, the single metre-square sample unit provided 6.3% of the topsoil volume for sieving. These data were used to calculate the probable artefact content of the topsoil.

The sieving strategy was partly intended to determine that proportion of the total finds in the topsoil that occurred on the surface. Several versions of the data can be examined, ranging from the figures relevant to a single excavated square, through to the whole excavated area. Surface totals corresponding with excavated 2 x 2m squares have been adjusted downwards accordingly. The data are summarised in Table 1.

Individual squares

For the 2 x 2m squares, using the whole topsoil assemblage, there was a highly variable relationship between the surface and excavated totals for both flint and pottery (Table 1(A)). Using sieved data, a much reduced range of between 0.4 and 9.1%

Table 1 Weathercock Hill: summary of data concerning the relationship of surface finds to topsoil content

	Flint %	*Pottery %*
(A) 2 x 2m squares, surface % of all finds recovered	1.1–53	1–80
(B) 2 x 2m squares, surface % of surface and sieved finds only	0.4–9.1	0.6–9
(C) 5 x 5m squares, surface % of all finds recovered	2.3–13.8	6.6–63.6
(D) 5 x 5m squares, surface % of surface and sieved finds only	1.7–3.1	0.7–90
(E) 2 x 2m and 5 x 5m squares combined, surface % of all finds recovered	5.6	18.6
(F) 2 x 2m and 5 x 5m squares combined, surface % of surface and sieved finds only	2.1	7.1

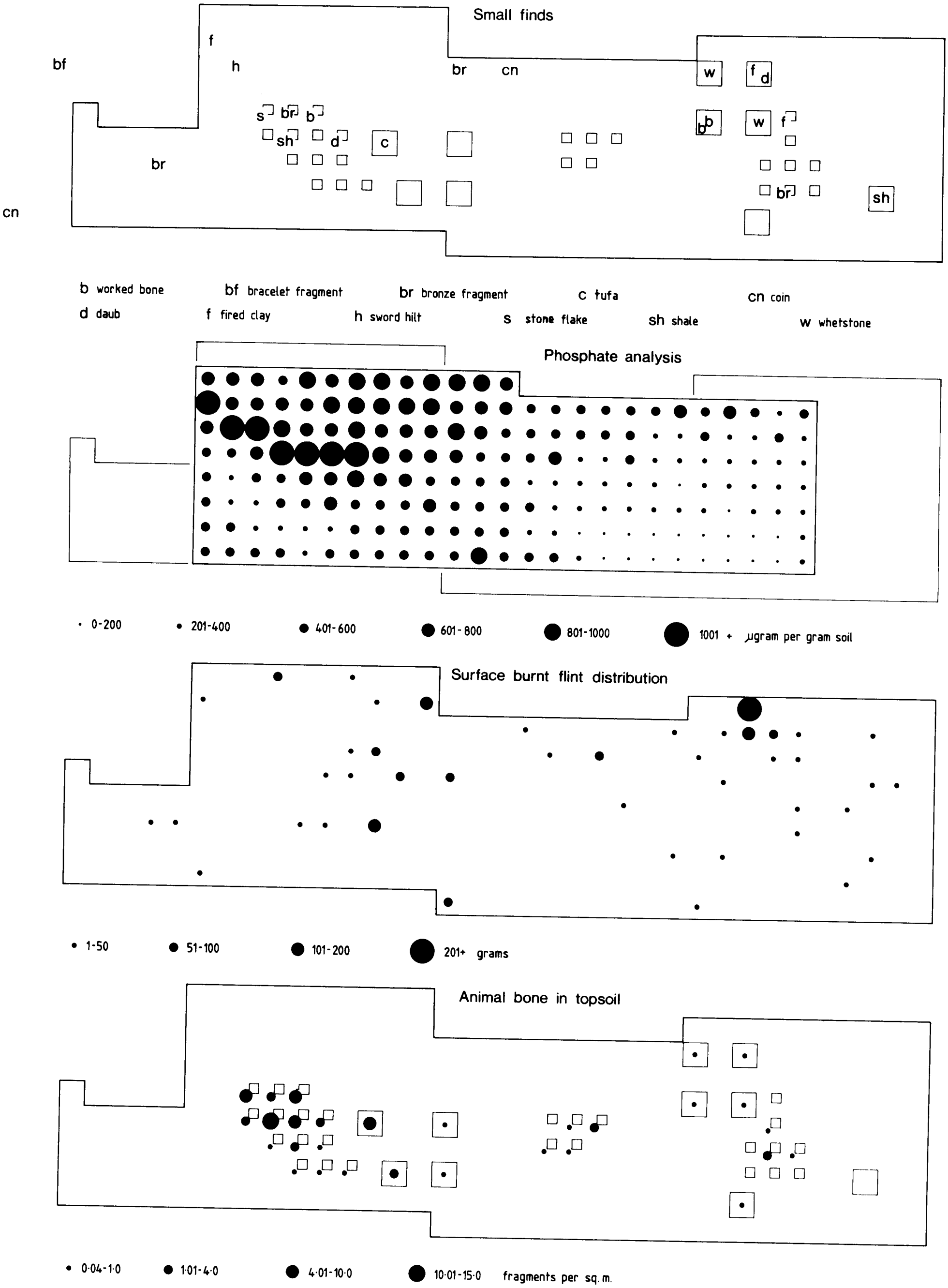

Figure 3 Weathercock Hill: site distribution plans

was observed for both categories (Table 1(B)).

For the 5 × 5m squares, using the whole excavated assemblage, flint produced a reduced range, of 2.3–13.8% (Table 1(C)), compared to the 2 × 2m squares. This was not the case for pottery where a large increase in range occurred. The sieved data (Table 1(D)) reduce this range even further for flint (1.7–3.1%) but not so for pottery.

Total excavated area
As a whole for all topsoil finds 5.6% of flint and 18.6% of pottery were found on the surface (Table 1(E)). Sieved figures reduce this to 2.1% for flint and 7.1% for pottery.

Discussion
A number of points are raised by these data concerning the nature of surface scatters and actual topsoil content. First, and predictably, non-sieved recovery of finds during excavation is poorer than sieved recovery. Second, the higher percentage of pottery on the surface and the more variable proportions recovered may be a result of continuing fragmentation of sherds, especially in the highly disturbed top few centimetres of ploughsoil. Squares with lower numbers of finds overall tend to be the most variable. Third, the smaller 2 × 2m squares were more variable than the 5 × 5m ones, perhaps indicating that the latter smooth out localised variability in densities. As such these data may be relevant to the interpretation of finds located during 'testpitting' strategies of site location.

Subsurface features (Figs 4 and Mf5)
Both major pottery scatters were found to overlie surviving subsurface features. No features were located outside the main areas of pottery. All the features located were either postholes or small pits, with the exception of two shallow scoops and a number of hollows which were shown to be natural. All features were graded 1, 2, or 3 according to their status as genuine archaeological contexts. No structural patterns could be deduced from the small number of features revealed but the existence of structures of some form or another is amply demonstrated. Unfortunately, it has not proved possible to return to the site to dig larger areas. Description of individual features is presented in microfiche.

SPATIAL PATTERNING IN THE TOPSOIL

Pottery
A broad similarity is evident between the distribution of finds predicted from the sieved data and the pattern using actual topsoil finds (Fig Mf12 (A) and (B)). There are some spatial differences and greater variation of density for the predicted values. Comparison of the distributions of topsoil finds (both predicted from sieving and actual) with subsurface features shows variation across the site. First, there is a general correlation between topsoil finds and the area of pits centred on squares 9/5–10/6. The density decreases across the area with postholes only, to the areas with no subsurface features. There is not, however, a close correlation between an individual trench with a pit and the highest density of topsoil finds. It appears that a greater depth of topsoil over squares 9/6 and 10/6 has reduced the quantity of finds being released into the topsoil from plough-damaged pits.

At the other end of the site, similar densities to the above area are only associated with postholes. Pit 28/6/8 is of dubious nature and possibly late in date. The correlation of surface patterns of pottery with subsurface features (Fig Mf12 (C)) is less clear than the above. This is probably a result of the low topsoil ridge running down the centre of the site which is due to the ploughing of an elongated field (cf 'envelope' patterns on aerial photographs). This ridge of soil has afforded some protection to certain deposits but not to others. As such the pit group to the west (centred on 10/6) is not closely matched by the surface distributions.

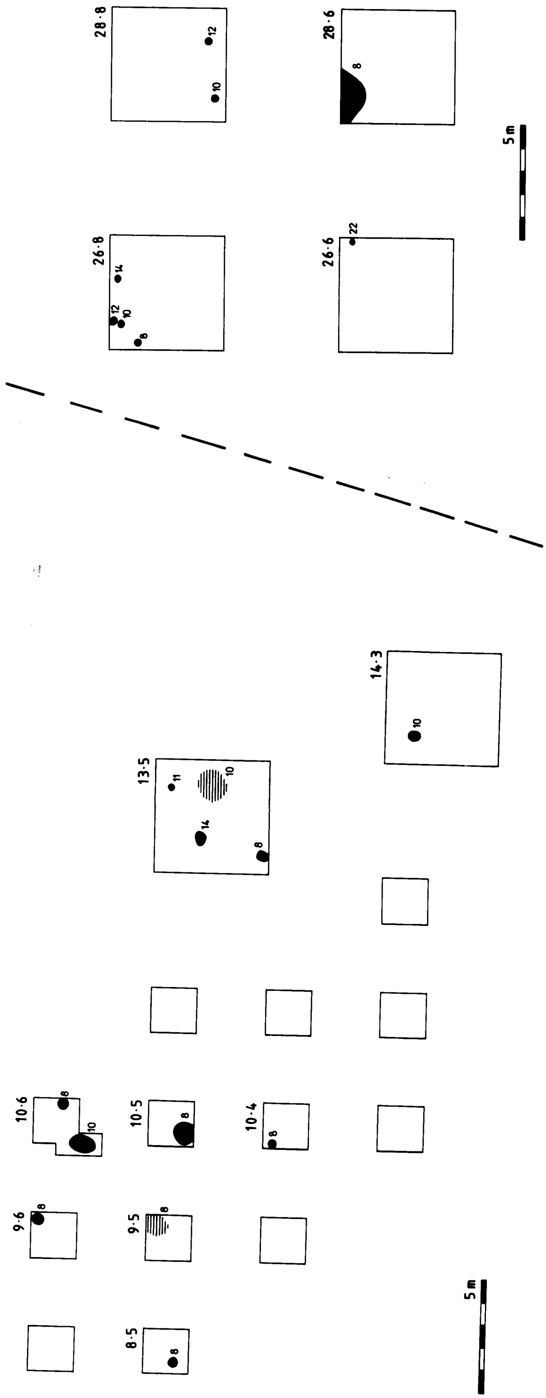

Figure 4 ***Weathercock Hill: location of features***

On the other hand, two features of the distributions are well correlated. First, the east cluster of surface pottery (eg centred on 26/8) is closely matched by subsurface features and, second, finds in the centre of the site (eg centred on 20/5) appear, as anticipated, to be in an area with no subsurface features.

In the major pottery concentration to the west of the site, the highest density is adjacent to the area with pits and is more or less coincident with the posthole groups. We interpret this pattern as either a midden deposit or as the remains of house floors. Although some pottery was clearly deliberately buried in its pits, it is possible that most was more informally discarded in living areas. An archaeological demonstration of such informal discard is Pitt-Rivers' pottery 'mound' at South Lodge Camp, which has been reinterpreted as a house platform (Barrett *et al* 1981, 201). Ethnographic evidence for the deposition of debris within living areas during the phase of abandonment is well attested (eg Ratheje 1979, 9).

In the east cluster the highest density of pottery is adjacent to the area with postholes rather than strictly coincident, indicating a slightly different discard pattern, perhaps on a midden. Rings of debris around individual structures have been recorded elsewhere, possibly indicating another result of abandonment (Carillo 1977).

The finds of collared urn clearly do not fit any such pattern, falling well away from any subsurface features and probably unrelated to the Late Bronze Age phase of use of this site.

Flint

The predicted distribution from sieving of flint in the topsoil (Fig Mf13 (A)) only gives a partial correlation with surface patterns. Area 33/3 is well matched as generally is the east cluster (centred 26/6). Differences between the two are more apparent in the west cluster where the higher densities of the area centred 13/5 are shown by sieving to extend further west. Spatial patterning of surface flint subdivided into functional categories was examined but was not highly informative (see microfiche, flint report). A check on this using sieved data was not attempted as the generalised functional categories used and the small numbers recovered from sieving would be even more difficult to interpret meaningfully.

Phosphates by Geoff Mees

The highest level of phosphates is coincident with and adjacent to the cluster of pits to the west of the site (centred on 10/6) and tails away in all directions from this area. However, the highest levels of phosphates are not coincident with the highest densities of artefacts in this area. On the other hand, the low phosphate level is more or less coincident with low artefact densities. (The method used is described on microfiche.)

Burnt flint

Surprisingly little burnt flint was recovered from the site. The slight clusters which appear are adjacent to, but not coincident with, the main pottery densities.

Animal bone

Most bone in the topsoil is coincident with the pit group and is probably derived from this source. The one anomaly is within the area of postholes (centred on 13/5). The formal discard of the majority of bones is not surprising given the nature of this material. Proportionally far less 'clean' debris, such as pottery and flint, is formally discarded in this way.

FINDS

The specialist reports are presented in fiche. A summary only is presented here.

Pottery by Vince Gaffney

A total of 2760 sherds was recovered, mostly from within the topsoil (Figs 6, 7, and 8). The earliest pottery recovered was of collared urn tradition represented by at least two vessels.

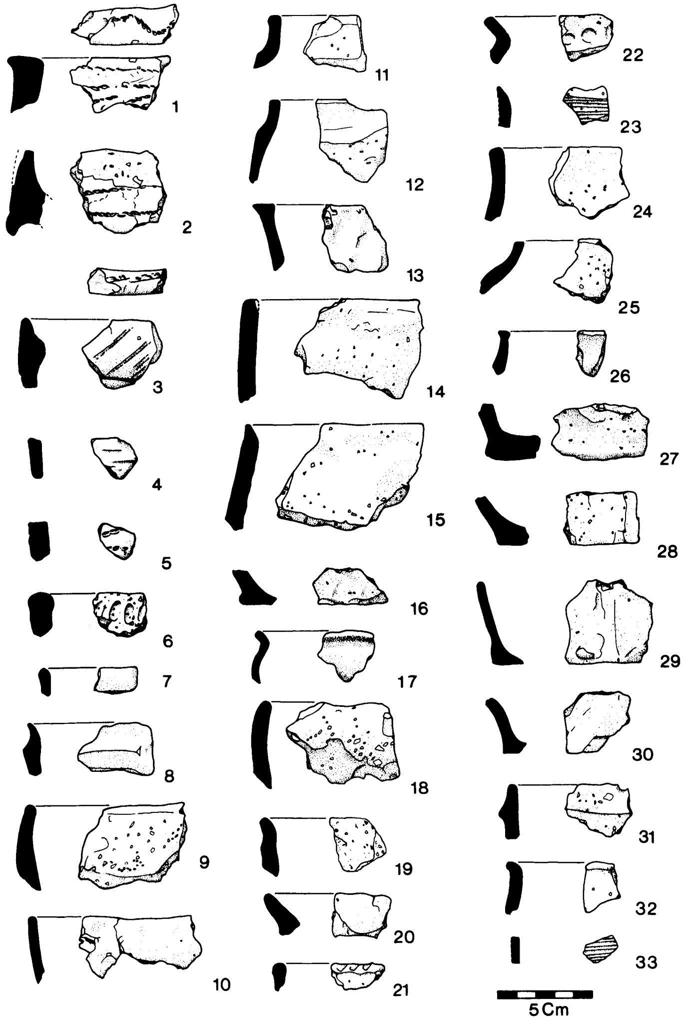

Figure 6 Weathercock Hill: pottery (see appendix catalogue)

The remainder of the pottery belongs most likely to Barrett's plain post-Deverel-Rimbury tradition of the Late Bronze Age (eleventh–eighth centuries BC) (Barrett 1980).

Struck flint by Steve Ford
2800 pieces of struck flint were found, again mostly from the topsoil (Fig 9). Dating would suggest a large degree of contemporaneity with the Late Bronze Age pottery but earlier finds include a barbed and tanged arrowhead. Spatial patterning was examined using K-means analysis (Kintigh and Ammerman 1982), but this did not suggest marked contrasts in the distribution of dated finds or activities.

The bronzes by Robin J Taylor
Five items were recovered including a sword hilt, probably of Wilburton type (Fig 11). An

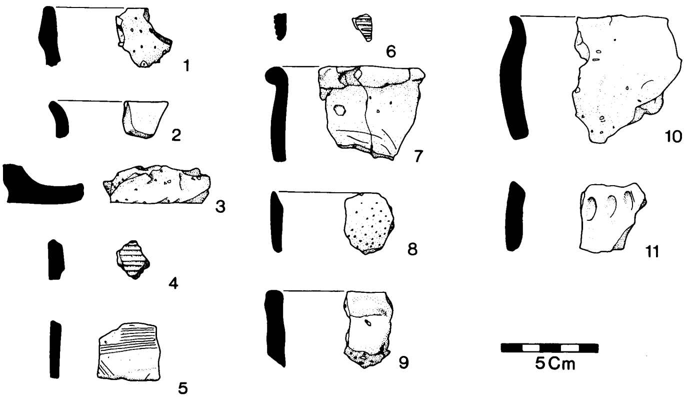

Figure 7 Weathercock Hill: pottery (see appendix catalogue)

unused rivet and a casting drip point suggest the possibility of metal production on the site. The latter items were subject to metallurgical analysis by Peter Northover (report in fiche).

Other finds
These included a block of tufa, a quartzite flake, whetstones, a shale bracelet, worked bone, fired clay and daub, and a Roman bracelet fragment (Fig 11).

Carbonised plant remains by Wendy Carruthers
Samples from two pits were examined, both of which produced small numbers of cereal grains.

Animal bone by Hugh H Carter
748 bones were recovered. As for most finds from the site they came from the topsoil, but are likely to be contemporary with the other finds.

CONCLUSION

This study was undertaken with the express intention of approaching the problem of an artefact scatter by the techniques of total surface collection, sample excavation, sample sieving, geochemical analysis, and metal detector survey. All of these techniques proved to be of benefit, especially in conjunction with one another. Valuable

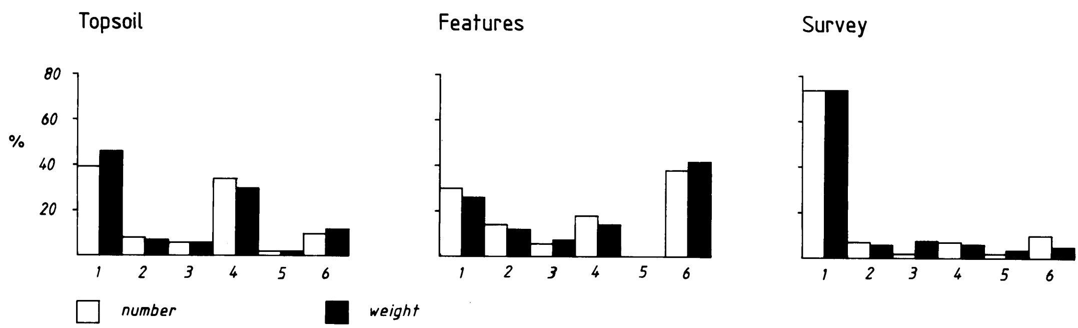

Figure 8 Weathercock Hill: pottery histogram showing changing proportions of categories for topsoil body, features, and surface survey

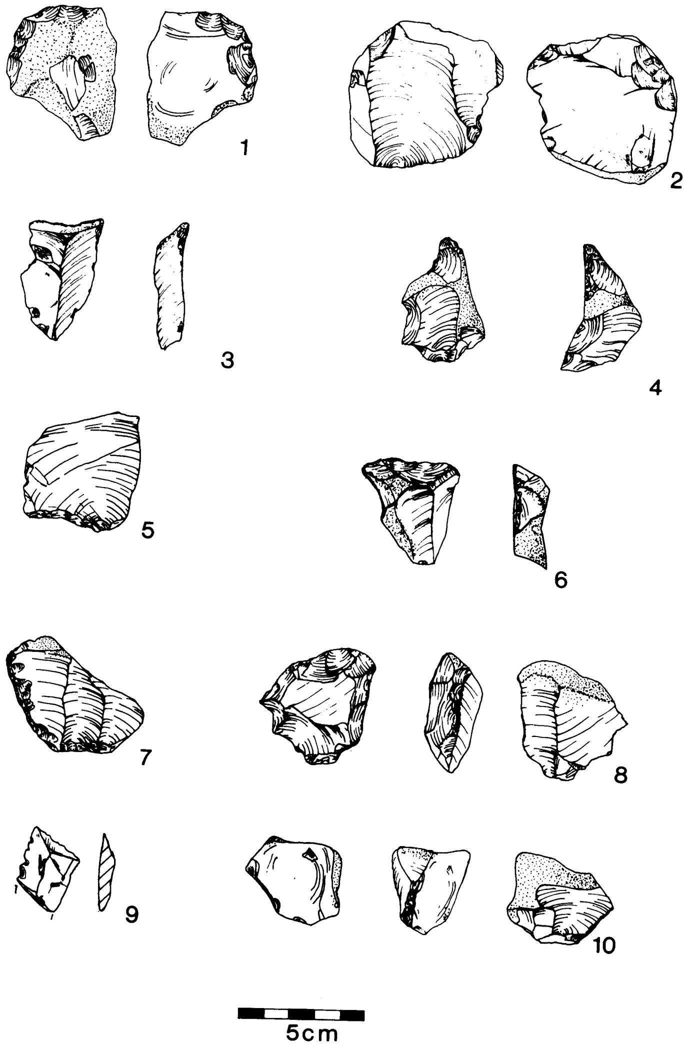

Figure 9 Weathercock Hill: flint. 1: chopper (11/7); 2: knife? (13/5/9); 3: awl (28/8/6); 4: awl (33/3/6); 5: retouched platform (8/6/6); 6: awl (14/3/6); 7: knife (16/3/7); 8: abraded edge tool (28/6/6); 9: serrated flake? (33/3/6); 10: abraded edge tool (26/9)

information was derived from the topsoil by these means and demonstrates a useful source of data given the paucity of subsurface features frequently experienced on sites of the Bronze Age and earlier.

The site, first defined as an artefact scatter, represents two separate major foci of activity of later Bronze Age date as well as the earlier focus indicated by the finds of collared urn. It is important to note that the apparent negative area shown between the two major foci by surface collection has been proved to be a *genuinely* negative area by excavation and geochemical analysis, whereas other

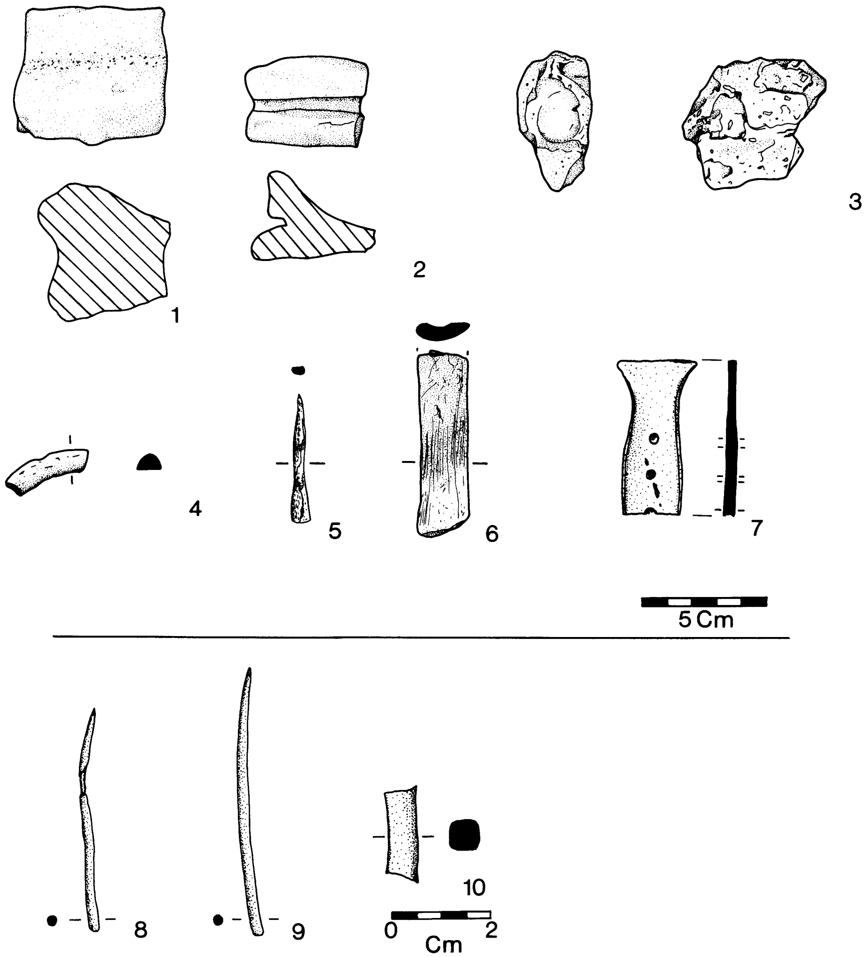

Figure 11 Weathercock Hill: small finds. 1: whetstone (28/6/6); 2: whetstone (26/8); 3: loom-weight fragment? (28/8/6); 4: shale bracelet (33/3/1); 5: bone pin (26/2/9); 6: polished bone handle (26/6/23); 7: bronze sword hilt (7/8); 8: bronze pin (29/3/6); 9: bronze pin (9/6/6); 10: bronze rivet (16/8)

apparently negative surface collection areas, such as that about 8/6, did not prove to be so negative under other techniques. Whether the two major foci are strictly contemporary or whether they represent settlement shift over a relatively short period it is impossible to say given the relatively weak chronological control offered by the artefacts recovered.

Although we do not know the full extent of the site or sites, some of the spatial patterns discussed above yield crucial information. The surveyed area seems to consist of two distinct parts. It seems likely that dwelling areas are represented by the discard of some pottery and flint and by subsurface structural features, whereas formal disposal areas, represented by the discard of organic material as well as pottery and flint, are also indicated by correspondingly high phosphate values and by subsurface pits. Areas peripheral to the centres of activity yielded a generally low density of flint and pottery. However, anomalies in this pattern, notably at the edges of the study area, may be due to the existence of other activity foci.

The excavation at Weathercock Hill provided a number of novel research problems. As the definition of the site and consequent excavation decisions were based on the results of fieldwalking, it seemed natural that an attempt should be made to gauge the utility of such data by the analysis of data held within the topsoil. The topsoil appears to retain behavioural information that is not normally detected by standard excavation techniques which often demand machine stripping of all topsoil deposits.

Bradley *et al* (1980) have drawn attention to Kennet valley Late Bronze Age sites on or close to seasonally waterlogged land which have weaving equipment such as spindle whorls and loomweights, in contrast to drier sites such as Beedon Manor Farm (site 8) (Richards 1984) where such equipment is absent. This pattern is interpreted as indicating a more pastoral emphasis of the low-lying sites than for others. The absence of such material from Weathercock Hill adds a little extra data in support of this observation.

The significance of particular finds needs to be stressed. Bronzes, especially weaponry, are rare on settlements of this period and on the Berkshire Downs in general, tending to cluster, apparently in river valleys and other low-lying areas. Whereas metalwork production has been recorded from several downland sites, the discovery of a sword hilt at Weathercock Hill appears to create an anomaly in this pattern. The bronze objects clearly represent imports to the site and so do the whetstones and quartzite flake (from a quern?) which were brought in from some distance.

Other aspects of the economy of the settlement on Weathercock Hill are shown by the bone and seed remains. Barley and possibly other cereals were present on the site. The bone evidence suggests the presence of a dairy herd and the production of mutton and hides, while the presence of some deer bones implies hunting.

The research project at Weathercock Hill represents one approach towards understanding the nature of artefact scatters discovered by fieldwalking. Undoubtedly many will consider the approach flawed and the methodology will be bettered but the work is significant in showing that artefact scatters are not simply a product of damage by modern ploughing. It is of particular significance to contemporary archaeology that amateur groups, such as the Berkshire Field Research Group, have a place in this important work.

ACKNOWLEDGEMENTS

We would like to express our gratitude to the following for their help: the landowner, Mr J Spence; Lloyds Bank Fund for Independent Archaeologists; N Spence, R Bradley, and the various members of the Berkshire Field Research Group who did the digging and helped process the finds.

CONTENTS OF MICROFICHE

BIBLIOGRAPHY

Barrett, J, 1980, The pottery of the later Bronze Age in lowland England, *Proc Prehist Soc*, **46**, 297–320.

Barrett, J, Bradley, R, Green, M, and Lewis, B, 1981, The earlier prehistoric settlement of Cranbourne Chase – the first results of current fieldwork, *Antiq J*, **61**, 203–37.

Bradley, R J, Lobb, S J, Richards, J C, and Robinson, M, 1980, Two Late Bronze Age settlements on the Kennet gravels: excavations at Aldermaston Wharf and Knight's Farm, Burghfield, Berkshire, *Proc Prehist Soc*, **46**, 217–95.

Bradley, R, 1984, *The social foundations of prehistoric Britain*, Longmans, London.

Brown, M A, 1982, Swords and sequence in the British Bronze Age, *Archaeologia*, **107**, 1–42.

Brown, A G, and Edmonds, M R (eds), 1987, *Lithic analysis and later British prehistory: some problems and approaches*, Brit Archaeol Rep, **162**, Oxford.

Calkin, J B, 1953, Kimmeridge coal money. The Romano-British shale armlet industry, *Proc Dorset Natur Hist Archaeol Soc*, **75**, 45–71.

Carillo, R F, 1977, Archaeological variability–socio-cultural variability, in South, S (ed), *Research strategies in historical archaeology*, 73–88, Academic Press, New York.

Clarke, J D G, 1936, Report on a Late Bronze Age site in Mildenhall Fen, West Suffolk, *Antiq J*, **16**, 29–50.

Colquhoun, I A, 1979, The Late Bronze Age hoard from Blackmoor, Hampshire, in Burgess, C, and Coombs, D (eds), *Bronze Age hoards – some finds old and new*, 9–115, Brit Archaeol Rep, **67**, Oxford.

Coombs, D, 1975, Bronze Age weapon hoards in Britain, *Archaeol Atlantica*, **1** (1), 49–81.

Crowther, D, 1983, Old land surfaces and modern ploughsoil: implications of recent work at Maxey, *Scot Archaeol Rev*, **2**, 31–44.

Drewett, P, 1982, *The archaeology of Bullock Down, Eastbourne, east Sussex: the development of a landscape*, Sussex Archaeol Soc Monograph ser, **1**, Lewes.

Ford, S, 1987a, Flint scatters and prehistoric settlement patterns in south Oxfordshire and east Berkshire, in Brown and Edmonds, 1987, 101–35.

Ford, S, 1987b, Chronological and functional aspects of flint assemblages, in Brown and Edmonds, 1987, 67–85.

Gaffney, V, and Tingle, M, 1985, The Maddle Farm (Berks) project and micro-regional analysis, in Macready, S, and Thompson, F H (eds), *Archaeological field survey in Britain and abroad*, 67–73, Soc Antiq London Occas Pap n ser, **6**, London.

Gerloff, S, 1975, *The Early Bronze Age daggers in Great Britain and a reconsideration of the Wessex culture*, Prähistorische Bronzefunde, **6** (2), Munich.

Gingell, C, 1980, The Marlborough Downs in the Bronze Age: the first results of current research, in Barrett, J, and Bradley, R (eds), *Settlement and society in the British later Bronze Age*, 209–22, Brit Archaeol Rep, **83**, Oxford.

Healey, E, 1982, The flint report, in Britnell, W, The excavation of two round barrows at Trelystan, Powys, *Proc Prehist Soc*, **48**, 133–201.

Hodges, H, 1976, *Artefacts: an introduction to early materials and technology*, 2 edn, John Baker, London.

Kintigh, K W, and Ammerman, A J, 1982, Heuristic approaches to spatial analysis in archaeology, *Am Antiquity*, **47**, 31–63.

Longley, D, 1980, *Runnymede Bridge 1976: excavations on the site of a Late Bronze Age settlement*, Surrey Archaeol Soc Res Vol, **6**, Guildford.

Murphy, J, and Riley, J P, 1962, A modified single solution method for the determination of phosphate in natural water, *Anal Chem Acta*, **278**, 254.

O'Connor, B, 1980, *Cross-channel relations in the later Bronze Age*, Brit Archaeol Rep, **S91**, Oxford.

Ratheje, W J, 1979, Modern material culture studies, in Schiffer, M B (ed), *Advances in archaeological method and theory, 2*, 1–37, Academic Press, New York.

Richards, J C, 1984, The excavation of a Late Bronze Age settlement and ditch at Beedon Manor Farm, Berkshire, in Catherall, P D, Barnett, M, and McClean, H (eds), *The southern feeder. The archaeology of a gas pipeline*, 56–70, British Gas Corporation, London.

Rowlands, M J, 1976, *The production and distribution of metalwork in the Middle Bronze Age in southern Britain*, Brit Archaeol Rep, **31**, Oxford.

Saville, A, 1980, On the measurement of struck flakes and flake tools, *Lithics*, **1**, 16–20.

Saville, A, 1981, *Grimes Graves, Norfolk: excavations 1971–72. Vol 2. The flint assemblage*, Dept Environment Archaeol Rep, **11**, London.

Schiffer, M B, 1983, Towards the identification of formation processes, *Am Antiquity*, **48**, 675–706.

Smith, I F, 1965, *Windmill Hill and Avebury*, Univ Press, Oxford.

APPENDIX: CATALOGUE OF ILLUSTRATED POTTERY

Full fabric descriptions are given in microfiche. Six basic fabric groups were defined (see Fig 8): (1) coarse flint (fabrics A, B, C); (2) fine sandy (fabrics D, S); (3) fine dense flint (fabrics P, K, R); (4) medium sand and flint (fabric F); (5) collared urn (fabrics I, U); (6) other (fabrics E, G, H, J, L, M, N, V). Numbers in parentheses refer to excavation context or to total collection unit.

Figure 6

.1 Rim collared urn, fabric I. Cord decoration on top of rim and ext. Brown to buff ext, brown core (28/2).
.2 Body sherd collared urn, fabric I. Cord decoration on collar. Brown to buff ext, brown core (30/3).
.3 Collared urn, fabric U. Cord decoration on internal bevel, tooled decoration on ext. Medium red ext, black core (28/6/6).
.4 Body sherd, fabric S. Tooled decoration. Red brown ext and core (10/6/11).
.5 Body sherd, fabric A. Fingernail decoration. Light brown ext, dark brown core (28/6/9).
.6 Rim, fabric B. Fingernail decoration. Black ext and core (8/6/6).
.7 Rim, fabric A. Dark brown ext and core (8/6/6).
.8 Rim, fabric E. Dark brown ext and core (9/5/9).
.9 Jar, fabric A. Buff to dark brown ext and dark brown core (10/4/10).
.10 Body sherd, fabric R. Tooled decoration. Light int, black ext, dark brown core (10/5/9).
.11 Jar, fabric F. Smoothed on neck and rim. Medium brown ext and core (10/5/9).
.12 Jar, fabric F. Smoothed surface. Dark brown ext, orange margins, brown core (10/5/9).
.13 Rim, fabric A. Pinched-out rim. Brown ext, dark brown core (10/5/9).
.14 Rim, fabric A. Brown ext and core (10/5/9).
.15 Bevel rim jar, fabric A. Smoothed neck and rim. Medium brown ext, dark brown core (10/5/9).
.16 Base, fabric A. Brown ext and core (10/5/9).
.17 Bowl, fabric U. Black ext and core (10/6/6).
.18 Rim, fabric A. Dark brown ext and core (10/6/6).
.19 Rim, fabric A. Brown ext, orange int, dark brown core (10/6/9).
.20 Rim, fabric L. 'Slick' surface. Medium brown ext and core (10/6/11).
.21 Jar, fabric A. Fingernail decoration. Orange brown ext and core (10/6/11).
.22 Jar, fabric A. Finger impression. Light brown ext, black int, dark brown core (11/5/6).
.23 Body sherd, fabric R. Tooled decoration. Light brown int, black ext, dark brown core (13/5/5).
.24 Jar, fabric G. Brown ext and core (13/5/6).
.25 Jar, fabric A. Dark brown ext and core (13/5/6).
.26 T-shaped rim, fabric D. Grey/brown ext, dark grey core (13/5/7).
.27 Base, fabric A. Medium brown ext, dark brown int, brown core (13/5/7).
.28 Base, fabric A. Medium brown ext and core (13/5/7).
.29 Base, fabric S. Wiped. Dark brown ext, black int and core (14/3/6).
.30 Base, fabric F. Wiped? Medium brown ext, black int and core (14/3/11).
.31 Jar, fabric A. Light brown ext, dark brown core (26/6/6).
.32 Rim, fabric A. Light brown ext and core (26/6/6).
.33 Body sherd, fabric N. Tooled decoration. Dark brown ext and core (26/6/7).

Figure 7

.1 Rim, fabric A. Dark brown ext and core (26/6/9).
.2 Jar, fabric S. Smoothed ext. Dark grey ext, black core (26/6/15).
.3 Base, fabric B. Medium brown ext, dark brown int and core (28/6/7).
.4 Body sherd, fabric D. Tooled decoration. Brown ext and core (28/4/6).
.5 Body sherd, fabric F. Tooled decoration. Dark grey ext and grey core (28/6/6).
.6 Body sherd, fabric D. Tooled decoration. Black ext and core (28/6/9).
.7 Jar, fabric E. Smoothed ext. Dark brown/black ext and brown core (28/6/9).
.8 Bevel rim jar, fabric E. Dark brown ext and core (28/8/6).
.9 Jar, fabric A. Wiped ext. Dark brown ext and core (28/6/9).
.10 Rim, fabric A. Dark brown ext and core (31/1/13).
.11 Body sherd, fabric A. Finger decoration. Dark brown ext and core (31/1/13).

The publication of this report has been aided by a contribution from the Berkshire Field Research Group.

The excavation of a Late Bronze Age artefact scatter on Weathercock Hill

Mark Bowden, Steve Ford, and Vince Gaffney

STRUCK FLINT by Steve Ford

2800 pieces of struck flint were found during the course of fieldwork but as something in excess of 90% were ploughsoil finds they cannot be used *sensus stricto* to provide data to form a basic chronology. Work here though has been sufficient to demonstrate a large degree of contemporaneity with the Late Bronze Age pottery also recovered. There is one further requirement for examining the dating evidence. It has been observed elsewhere (Ford 1987a) that small, spatially limited 'early' sites can be masked by much more voluminous and extensive later sites. That some activity on this site prior to the Late Bronze Age did occur is demonstrated by a barbed and tanged arrowhead, Collared Urn and a bronze casting drip of Middle Bronze Age metallurgical composition. The question remains as to what is the nature and extent of this early activity. To this end the chronological data has been subject to spatial analysis.

Technology and Raw Materials

This site, located on Upper Chalk, has an abundance of flint locally available. Nodules revealed during cultivation would be sufficient for the production of the flint tools here. There is no requirement for large flaw-free pieces in order to make core tools such as axes.

The vast majority of flints suggest a simple use of hard hammer for flaking with few examples of more thoughtful core preparation represented by core rejuvenation tablets and retouched platforms (see below). Similarly the majority of the retouched pieces are simple and capable of manufacture by hard hammer alone. The small number of technologically distinct pieces appear to belong to earlier periods. These include blade-like pieces with small, prepared platforms, diffuse bulbs of percussion and wide thin flakes with invasive retouch.

Five attributes of the assemblage have been considered for chronological purposes.

These are:

1) Length:Breadth ratio of intact unretouched flakes.

2) Variations in the proportion of certain shapes of broken unretouched flakes.

3) Thickness of intact unretouched flakes.

4) Core types.

5) Implement types.

Intact flakes were measured by the standard method (Saville 1980). Other characteristics were measured following the guidelines in Ford (1987b).

Intact Flakes (Table Mf5a)

The low percentage (7.5%) of flakes exceeding a L:B ratio of 2:1 places this assemblage firmly after the Earlier Neolithic and probably but with less certainty in the Bronze Age. Less securely the thickness Mean and Standard Deviation would indicate a Later Bronze Age rather than Later Neolithic date.

Broken Flakes (Table Mf5b)

In sharp contrast to the examination of intact flakes, broken flakes from post-glacial assemblages are usually ignored despite accounting for between 30% and 70% of some assemblages. From total collection at Weathercock Hill 42% of unretouched flakes were broken, and as such not suitable for length and breadth measurements. Using the scheme presented in Ford (1987b) it can be seen that the number of broken blades and possible broken blades is low, accounting for less than 5% of the total. As such it compares most favourably with the figures expected for Bronze Age assemblages (< 10%).

Cores

Table Mf6 presents the numbers of each core type for the three contexts of surface, ploughsoil and subsoil features. For simplification purposes here classes 1 to 5 are 'narrow flake' cores, class 6 is 'broad flake' cores and classes 7 and 8 are bashed lumps and core fragments respectively.

Taking both certain and possible narrow flake cores together and excluding bashed lumps and fragments from the total there are only 7% and 6% respectively for the surface and topsoil assemblages. These figures, although low compared to the majority of Earlier Neolithic assemblages, are higher than the majority of Later Neolithic and Bronze Age assemblages. This may indicate some pre-Late Neolithic activity and could explain the slightly high number of intact blades.

Retouched Pieces (Table Mf7)

With the exception of the barbed and tanged arrowhead, Beaker scraper (NB Healey 1982, 179) and possibly some knives, all other retouched pieces would not be out of context in a Later Bronze Age assemblage. Retouched pieces of exclusively Neolithic date are not present. A typological breakdown is presented in Table Mf7.

Most of the retouched categories recovered were of fairly standard morphology and do not require discussion. However a number of classes were unusual and are considered below.

Awls

Several awls recovered were of predictable form (eg. Fig. 9, 4) but some (eg. Fig. 9, 3) may be likened more with Hollow scrapers, Y shaped tools or spurred flakes.

Flakes with Retouched Platforms

Several pieces were recovered with retouched striking platforms. Some of these were retouched prior to flake removal (faceted platforms) and are best regarded as a manufacturing technique but other flakes most certainly had platforms modified after removal. Some of these pieces can be regarded as scrapers with the platform end being the most suitable for shaping. Such features do not occur on this site in isolation and have been observed on pieces of both Earlier Neolithic date as at Windmill Hill (Smith 1965), and Earlier Bronze Age date as at Mildenhall Fen (Clarke 1936), and Later Bronze Age date as at South Lodge Camp (J. Barrett and R. Bradley pers. comm.).

Choppers/Abraded Edge Tools

A number of pieces of variable morphology have been lumped together into this category with no one function attributed. They consist of pieces crudely shaped such as Fig. 9, 8) which may have been used as a hand held chopper, or pieces such as Figure 9, 10 having received much edge abrasion perhaps a result of use as a wedge or flint retouching.

Miscellaneous Retouched Pieces

Two elongated pieces have received crude flaking that might be for shaping purposes. As such they might just be classified as Rods (Saville 1981) but this is very uncertain.

Discussion

Taking these five categories of evidence together the dating of this assemblage as a whole suggests contemporaneity with the Later Bronze Age ceramics. The site is comparable in terms of composition, flake shape etc. with other local Later Bronze Age assemblages eg Beedon (Richards 1984). There are however two reasons for investigating the chronology further. Firstly, as mentioned above, there are grounds for suspecting the masking effect of slight early traces by much more voluminous later ones. The presence of some possible blade cores and blades hints to this possibility. Secondly the presence of the barbed and tanged arrowhead and less securely dated knives and 'Beaker' scrapers need not be interpreted as 'residual' or casually lost finds. From both a Late Beaker assemblage at South Lodge camp, Wilts. (Barrett and Bradley pers. comm.) and Deans Bottom, Wilts (Gingell 1980), the unretouched material is metrically indistinguishable from assemblages of later Bronze Age date.

Consequently a proportion of the lithic material may date to a phase earlier than the Late Bronze Age such as the Early/Middle Bronze Age. The following spatial analysis was undertaken in order to test this notion.

Spatial Analysis

Figure 2c shows the distribution of all flint and it can be seen that material is well dispersed but perhaps with four or more clusters. Spatial analysis for chronological and functional patterning can take two forms. Firstly, a visual comparison of the relevant data and secondly examination of variation in the composition of the clusters.

The latter is more appropriate where some characteristics, such as the percentage of blades, are proportionally determined. To define these clusters with a degree of objectivity a K-MEANS cluster analysis was undertaken using all broken and intact flakes from total collection (Kintigh and Ammerman 1982)*.

One peculiarity of K-MEANS analysis is that the operator determines how many clusters are to be designated. In order to determine the most appropriate number of clusters with material that does not visibly cluster strongly the method provides additional data. A graph can be plotted of log Sum of Squared Errors against clustering stage. At a point where extra number of clusters fails to reduce the log SSE significantly an inflection occurs in the graph and this corresponds to a best fit for the number of clusters. However, in data sets that do not markedly cluster or are distributed randomly or uniformly, such an inflection is difficult to recognise. A simulation study can be undertaken to determine if distributions are random, uniform or clustered (see below) but were not used in this case. Using the visual comparison, log SSE v clustering stage data and minimum valid sample sizes it was decided that 6 clusters were the most appropriate.

a) DATE (Table Mf8a)

As can be seen the highest % of combined blades is about 10% for the clusters centred on squares 32-3 and 12-2. These two clusters have figures higher than that expected for Bronze Age assemblages and could represent a Later Neolithic/Earlier Bronze Age event more substantial in nature than the stray diagnostic finds suggest. They could also represent Mesolithic or Earlier Neolithic activity.

Cluster 32-3 is not coincident with the majority of pottery of Later Bronze Age date but is coincident with the distribution of Collared Urn. These two features might be related with a pre Later Bronze Age use of the site other than for burial. Similar evidence is not available for cluster 12-2. If these two clusters do reflect an earlier phase of activity, the exact nature of this is in doubt, particularly with the absence of any domestic pottery other than Later Bronze Age types. The compositions could be fortuitous or reflect minor, perhaps off-site use of the location in the Mesolithic. Mesolithic activity is recorded at Knighton Bushes in the valley 1Km to the north east (see Bowden et. al. this volume).

In summary the evidence points to a Later Bronze Age date for the majority of the finds. The analysis has implied some earlier activity but was unable to demonstrate conclusively that this is no more than off-site material.

b) FUNCTION (Table 8b)

Functional analysis was was undertaken to attempt to understand the nature of the distributions of finds and to determine what if any activity patterning is represented.

The distribution of various categories related to function was examined but no patterning of material other than that resulting from the overall clustering of flint was visible for flakes and cores. On the other hand retouched pieces (Fig. 2d) may show slight patterning. Firstly there may be a slightly higher number of implements excluding scrapers coincident with the cluster in the most SE of the site. (This is equivalent to K-Means cluster 32-2 above). Secondly scrapers are slightly more marked centred on area 8-2 between K-Means clusters

5-3 and 12-2. Both observations could imply areas of different use and/or discard of implements relative to most other finds. In addition the most SE cluster could be of a different date. The K-MEANS derived data is shown in Table 8b. It shows that the values are remarkably consistent for each cluster and as such it cannot be suggested that any one cluster has resulted from different activities than for others. A second K-MEANS analysis tried to produce clusters of individual categories but ran into the problem of determining the number of clusters present. The graph of log SSE against clustering stage for each class was plotted (Fig. Mf10) but failed to produce conclusive results as to the most obvious best fit. Clusters of 5 or 6 again seemed most appropriate but subsequent examination failed to produce meaningful patterns.

The spatial patterning of flint has not produced strong evidence of either functionally specific use/discard areas or chronologically based patterning. The flint then is best treated as a single class for further spatial analysis along with other classes of evidence.

Footnote

* The programme was rewritten in Basic to run on a BBC microcomputer by R. Yorston. This version was modified by P. Fisher to indicate the degree and direction of linearity of clusters by splitting the RMS value in the original programme into X and Y coordinates and an angular measure. As such, cluster sizes portrayed by the RMS values are oval.

THE POTTERY by Vince Gaffney

A total of 2,760 sherds of pottery (weight 13,636 Kg) were collected. Most of the pottery survived only as a residual deposit within the topsoil. Accordingly all pottery from excavated features, topsoil and fieldwalking were analysed in order to define such relationships as were possible. The pottery was examined macroscopically using a x10 hand lens and nineteen fabrics were identified (Table Mf3).

DISCUSSION

1) Chronology

Although 2,760 sherds were recovered the majority of pottery was composed of plain body sherds and only 111 (4%) rim sherds were found, many of these were badly abraded defying identification and only 14 (0.5%) sherds carried any decoration.

A) Excavated Pottery

1100 (39.8%) sherds were recovered through excavation though only 342 (12.3%) were recovered from stratified deposits. Rims and bases formed a surprisingly low proportion of the total 91 (3.2%) and 19 (0.68%) respectively. Only 38 (1.3%) rims and 2 (0.18%) bases were retrieved from stratified deposits. Thirteen decorated sherds (0.5%) were recovered, of which 6 (0.2%) were stratified.

The earliest pottery identifiable in the excavated sample were 4 (0.6%) sherds of collared urn, none of which occurred in a stratified deposit. Three of the collared urn sherds represent one fabric (I) and probably only one pot. The same pot was also represented on the site in the total collection as well as in an extensive survey carried out by the Maddle Farm Project in 1981. The remaining sherd is a rim form in fabric U (Fig. 6.3).

The majority of the remaining pot easily fits into a Late Bronze Age context and consists of a series of jars and bowls devoid of decoration. As such the most likely date for such an assemblage is within the range of Barretts 'plain LBA' assemblage dated between the 11th and 8th centuries B.C. (Barrett 1980).

Of the decorated sherds, 7 carry finger tip or finger nail decoration restricted to the rim. One example of a weak shouldered vessel (Fig. 7.11) carried finger impressions on the shoulder. All of these sherds were in coarse fabrics A or B.

The remaining 6 decorated sherds were body fragments carrying tooled decoration and may represent evidence for later phases of use. The significance of these sherds is diminished by the small numbers involved but it is likely that they may indicate LBA, or EIA sherds. The only feature likely to post-date the plainware assemblage is 28/6/9 which contained 16 sherds, only 3 of which were in coarse fabrics, 3 were decorated and 2 tooled. This feature also contained a possible Middle Iron Age form (Fig. 7.7).

A small amount of abraded Roman sherds were recovered. None were stratified and it seems likely that these were associated with manuring deposits originating in the Maddle Farm villa (Gaffney and Tingle 1985).

B) Surface pottery

A total of 1660 sherds was recovered from fieldwalking. Again the majority of the material was composed of highly abraded body sherds. The earliest period represented in the pottery sample was a group of 28 (1%) sherds of Early

Bronze Age collared urn, again all in fabric I and probably all representing the same pot recovered during excavation and earlier survey. Only 20 (0.7%) other diagnostic rims and 9 (0.32%) bases were recovered, and these would all fit into a Late Bronze Age context. Only one sherd carried decoration, exhibiting finger nail decoration on a rounded upright rim. The fieldwalked pottery appeared to be chronologically similar to that provided by excavation.

2) Fabric and sherd size analysis

In a further attempt to guage the relationship of fieldwalked and excavated results the fabric range of each was quantified by weight and number for comparison in histogram form (Fig. 8). Six basic groups were defined for this purpose and consisted of:

1) Coarse flint group, fabrics A, B, C
2) Fine sandy group, fabrics D, S
3) Fine dense flint group, fabrics P, K, R
4) Medium sand and flint, fabric F
5) Collared Urn
6) All other fabrics

The histograms of the feature and topsoil collections provide a basic visual similarity, but with some notable differences. Group 6 (collared urn fabric I) appears purely within the topsoil. The anomalous amount of group 6 pottery is the result of two almost complete pots in fabric H and L within feature 10/6/10. The two fabrics compose 38% of the total feature assemblage by weight. H is a refired fabric and might be included in group 1 more realistically. The significantly large amount of fabric 4 within the topsoil is also intriguing. Given that this is a finer, fragile fabric this is unlikely to be the results of differential ploughing. We would expect less of this fabric than the more robust categories. It is conceivable that we are observing a specific discard practise and that finer and smaller sherds are more likely to remain where they fall on the surface, and suffer further fragmentation by trampling unlike larger utilitarian pots which might demand a more formal pit disposal (Schiffer 1983).

More dissimilarity occurs when we consider the fieldwalking data. Coarse group 1 now comprises 75% of the data by number and weight. Medium flint group 4 represents less than 10% of number and weight and other than group 6 (Collared Urn), all the other fabrics diminish. Explanation of such a phenomenon is difficult without further excavation. However, the distribution of group 1 pottery within the fieldwalked date does not indicate significant concentrations outside excavated areas which might explain such a bias. The effect may be a chronological indicator or related to discard practices. However analysis of the mean sherd weight of the three assemblages (Table Mf2), clearly shows a decrease in sherd size from the features, through the topsoil and ending with the smallest sherds within the survey data. It seems likely that we might link the results from the field survey to the differential survival and robustness of pottery fabrics, the relative durability of the coarse fabrics increasing their representation within the surface assemblage. Further work on this topic would be very useful as a control of fieldwalked data.

THE BRONZE METALWORK by Robin J. Taylor

Five small copper alloy objects were found associated with the site at Weathercock Hill; they are here described, illustrated and discussed. Two of the pieces have been analysed scientifically (see Northover, below).

Description

1. Sword hilt of bronze. (7/8) Fig. 11,7.

Weight 24 gm, length 60 mm., width across widest part of the grip 23 mm., width across the top of the hilt 31 mm. Green/brown in colour, the object is well preserved, although about the top third seems to have been subject to more active corrosion. The hilt is flanged and neatly shaped to form a handgrip with a fairly wide pommel at the top. It is pierced by three rivet holes, the lowest being cut across by a rough break, which appears to be ancient. The top rivet hole is the biggest and more cleanly bored, while the smaller rivet holes have slight recesses around the top, as if intended to have been larger. The object is slightly bent in the horizontal plane, suggesting that the hilt may have been deliberately snapped. There is a casting seam up the side of one flange and across the top, although this is worn down on the widest part of the handgrip. The surfaces are quite well finished but rough from casting; there is a general appearance of usage.

2. small bar of bronze, (16/8) Fig. 11,10.

Weight c. 4 gm., 19 mm. long, 6 mm. thick, of roughly square section with rounded corners. The facets of the object are smooth and a dull green/brown with some dirt adhering. The piece is slightly curved over its length, and slightly expanded at each end. The ends, although uneven, appear to be as cast; they would be rough if broken off from something longer.

3. Small lump of bronze casting waste (not illustrated)

Weight 8 gm. Rather irregular in shape with excrescences of metal. Grey/green colour; There are no cut facets, so probably a complete droplet of metal, or possibly a small, rough casting jet.

4. Rod of copper alloy (29//3/6) (Fig. 11,8)

Length 45 mm., thickness c. 2 mm., khaki green in colour. It is round-sectioned, but tapering in thickness towards one end. It is slightly bent along its length in two places; the surface has broken away at the sharper bend, exhibiting a laminated structure. This could suggest that the piece is actually tightly rolled sheet metal, but it appears otherwise to be a solid object. One end shows a recent break, but since this is the thinner end, it may only be a missing point. The other end is smooth and shows no sign of a head, which might have been expected with a pin. The surface of the object is smooth with a few abrasion marks.

5. Tapered rod of copper alloy, (9/6/6) Fig. 11,9.

Length 53 mm., 2 mm. across the thickest part. A green/brown colour, and very smooth, shiny and finished. It is round-sectioned and neatly tapered to a rather rough, broken point. It is slightly, but evenly, curved along its length. The top is fairly even and does not appear to have been snapped off. The object appears to have been made as one solid piece.

Discussion

While difficult to reconstruct a complete sword on the basis of a broken hilt, the form would suggest an example of the flange-hilted sword of Wilburton type (Coombs, 1975, fig. 9), although there are affinities with the later Ewart Park types (O'Connor 1980, 188-9). Indeed, Brown has directed attention to the problems of chronologically separating the two types, preferring to see the pieces as overlapping (1982, 32); a view reinforced by Colquhoun's observations on the pieces on the Blackmoor hoard (1979, 106-9). Colquhoun dates the Blackmoor hoard to the transition between Wilburton and Ewart Park metalworking, giving it an absolute date of 900 BC (1979, 113). This is the overlap between LBA2 and LBA3 in O'Connor's terminology (1980).

The rod or rivet is a small piece and it is impossible to be certain of its function or antiquity; however, association suggests a Bronze Age date. It would appear to be a rivet, probably unused since the ends have not been hammered over, and its weight suggests a use requiring some strength in the join (also probably due to the admixture of lead, (see Northover, below). Rivets were used in a variety of ways in the Bronze Age, principally for the attachment of hilts to swords and daggers, and for the joining of sheet metal to make vessels; a variety of joining methods are illustrated by Hodges (1976, 77, fig. 13). An early use for rivets was in the attachment of hilt plates to Wessex daggers (cf. Gerloff, 1975, Pl. 16 No.164). The use of such large rivets persisted in Middle Bronze Age rapiers, such as an example from the Thames at Kingston (Rowlands, 1976, Pl.43: 1773) . The presumed rivets in the Nottingham Hill hoard are smaller and thinner: this hoard has Late Bronze Age lead-shaped swords, the rivet holes of which would compare with our hilt, and thus too small to admit an object of this size. Our example is better matched by two rivets in the Isleham hoard of LBA2 date. One of these is square-sectioned and slightly bent, and there are riveted cauldron fragments in this hoard. The rivets are unused, but could also be

Middle Bronze Age survivals, as is other material in the hoard. The analysis suggests a metal composition typical of LBA3, however, and a general Late Bronze Age date seems most likely.

Casting waste is common in hoards of the later Bronze Age, but a droplet of this size is less common. The object could be a direct by-product of moulding activities: a casting jet trimmed off, when the casting was removed from the mould but the irregular shape suggests a small lump of metal left over after the casting process. Such droplets have been found at Runnymede Bridge, for example (Longley and Needham, 1980, 23, fig. 13, 32-5). The implication of this is that bronze casting was actually being carried out, albeit on a small scale, at the site, which could also explain the occurrence of the other small pieces (to be melted down for re-use). The analysis suggests a likely Middle Bronze Age date for the composition of the metal (see Northover, below), but this conflicts with the proposed dating of sword hilt and rivet, although none of these pieces were directly associated.

The thin rods or pins are hard to interpret: they are lacking in any useful features to assign them to any date, even outside the Bronze Age; both could be of recent origin, and their patination and appearance is different to that of the other pieces. Metal rods are known in Bronze Age contexts, and were sometimes used for fine bracelets or torcs (Rowlands 1976, 16-17). Both pieces taper generally, suggesting that they were pointed and intended to be pins, but the lack of other features makes close dating impossible. Such small pieces do occur quite frequently on Bronze Age settlement sites, such as the pinshafts from Runnymede Bridge (Longley 1980, 20, fig. 12, 13017). Our slightly curved example could equally be the pin from a fibula of Iron Age/Roman date.

Conclusion

The general date of these pieces would seem to be later Bronze Age and, more closely, LBA2/3 i.e. about 900 BC. Their interest lies in the possibility of small-scale bronze production at Weathercock Hill, in an area which has generally few such finds. Recent Bronze Age studies suggest that production and supply of such objects was carried out in the lower lying river valleys with areas such as the Downs providing an agricultural surplus to maintain this (Bradley 1984, 122-4). However, there are a number of downland sites providing some evidence of production (e.g. South Lodge Camp, Barrett et. al. 1981), especially of ornaments and tools. The unusual feature here is the presence of the sword hilt. Such objects seem to be more often associated with low-lying land (Bradley pers. comm.).

ANALYSIS OF BRONZE METALWORK by Peter Northover

BAS 1: a small length of rectangular bronze bar, 18.1 x 6.5 x 6.4 mm. this piece is most probably a rivet during the course of manufacture. It is of roughly square section and slightly curved along its length. The forging of the sides has raised metal around the rim of the ends suggesting that, if the object is a rivet, it has never been closed over. If it is Bronze Age it is not a usual cross-section for a finished rivet. The angle of the two ends to the long axis suggests that it has been cut from a larger bar. A small piece was cut from one end and mounted for electron probe microanalysis and optical metallography.

Composition (the average of three points; lead measured separately):-
8.18% Sn; 0.12% As; 0.05% Sb; 14.6% Pb; tr Co; 0.04% Ni; tr Fe; 0.04% Ag; tr Au; balance Cu; copper sulphide inclusions present.

Metallography

Surface pitted by corrosion but no intergranular or transgranular peneration; lead present as rectangular blocks, roughly 20 x 10μ; sulphide particles large, 5-10μ diameter, undeformed; some lead particles decorated with sulphides; no $\alpha\delta$ eutectoid. Fully recrystallised equiaxed grain structure with annealing twins; grain diameter = 30μ; some grain deformation and very frequent slip traces with well marked etch-pits; no residual coring. Annealing times/temperatures have been sufficient to homogenise the bar implying an annealing temperature around 700^{0}C at some stage in its history. The shape of the sulphides suggests that the total deformation of the bar does not represent more than a 40% reduction in thickness. the extent of cold work visible represents a 20-25% reduction since the last anneal, but around the ends of the piece is probably where deformation of the metal is greatest.

It is very difficult to be certain about the dating of this piece. Although it could come from many periods the Late Bronze Age is in fact the most likely. Later leaded bronzes would probably have had less lead although one cannot be firm about this. The impurity pattern and distribution of sulphides are typical of the Ewart Park and Llynfawr periods although the alloy is perhaps more appropriate to the Ewart Park period. Bronze with a high lead content did reach Britain in the Llynfawr period in the form of Armorican socketed axes but it did not greatly influence the compositions of other objects. As suggested above this is not a typical shape for a rivet in the Ewart Park periods and it is likely that it was only partly finished.

BAS 2: An irregular piece of casting waste.

Composition:-

16.12% Sn; 1.44% As; tr Sb; 1.8% Pb; 0.05% Co; 0.35% Ni; 0.10% Fe; 0.05% Ag; tr Au; balance Cu; copper sulphide inclusions present.

Metallography

Surface shows some deep narrow pits, extended as dendritic corrosion attacking the low tin areas; complete interdendritic network of $\alpha\delta$ eutectoid; small lead and sulphide particles trapped in eutectoid; etching revealed markedly cored dendritic structure with no clear growth direction; arm spacing 10-12μ; no signs of working or heating. A typical rapidly cooled high tin bronze in the as-cast condition.

The microstructure of this object requires no further discussion but the composition is interesting. It is much more securely of Bronze Age date than the rivet. Within the spectrum of Bronze Age compositions it is closely similar to the low-lead bronze produced by the mines and workshops of north Wales in the Acton Park phase (MBA I). The only difficulty with this attribution is the tin content which normally did not exceed 14% for this group. However, this dating is still the most likely; the impurity pattern would be unusual in any period later than the Middle Bronze Age.

ANIMAL BONE by H. H. Carter (Fig. 3d)

748 bone fragments were recovered from field survey and excavation. Normally bone from topsoil would not be considered for analysis but in this case its coincidence with a dense concentration of LBA artefacts suggests that they may be contemporary. The figures are presented in Table Mf 9. The figures for minimum numbers of individuals have been presented as a matter of form but the inadequacy of the data makes them of little value.

Ages at death

The ages at death for cattle shows an even spread from before birth to 76 monthly, but a slight concentration at 4-5 years old. This pattern is consistent with the use of cattle as a milking herd or as a capital asset rather than killing for beef as soon as full growth is attained. There is no evidence for killing of males at an early age as in modern milking herds.

The ages at death of sheep are strongly concentrated in the early months. Half the animals were killed before reaching the age of 18 months. This pattern is consistent with the keeping of sheep for meat and hides rather than for an annual wool clip.

Live weights

The live weight estimates for cattle lie within the range for Bronze Age cattle generally, with the exception of the naviculo-cuboid from 9/5/8 which is bigger than any Bronze Age example I have known and overlaps with the size range of *Bos primigenius* females. However, domestic males from other periods can be this big.

Body part analysis

Because of the high proportion of shattered bone fragments which cannot be assigned anatomically to any particular part of the body no meaningful analysis can be made. The most that can be said is that there is no evidence from the more complete bone fragments of any excess or defect of 'edible' or 'inedible' parts and every indication that whole carcasses were butchered on site.

OTHER FINDS by Steve Ford

Tufa

A small block of tufa c. 100 mm. x 80 mm. (13/5/10).

Flake of Quartzite

A single large flake with evidence for previous removals on its dorsal surface. The likely source is to be found in glacial outwash deposits in the Midlands. 8/6/5.

Whetstones

i) Whetstone with V-profile groove, 10 mm. wide by 7 mm. deep. (26/8). Fig. 11,2.

ii) Whetstone with wide, shallow groove, 25 mm. wide by 1 mm. deep (28/6/6). Fig. 11,1.

Both are of early cretaceous feruginous sandstone, a stone found in a number of outcrops, the farthest in Norfolk and the closest at Abingdon.

Shale

i) D-section bracelet fragment of bituminous shale; internal radius c. 45 mm. This piece compares well with the smaller diameter bracelets (40 mm.) produced at the Romano-British shale workings at Kimmeridge, Dorset (Calkin 1953). The fragment appears to be lathe turned and is therefore very probably of the Roman period. (33/3/1). Fig. 11,4.

ii) Fragment of shale, not particularly bituminous. (9/5/6).

Worked bone

i) Bone pin, 52 mm. long. (26/8/9) Fig. 11,5.

ii) Bone handle from part of cattle longbone, polished and stained black for most of its length. (26/6/23) Fig. 11,6.

iii) Fragment of polished bone. (10/6/9).

Fired clay and daub

i) Block of fired clay with flint grits; possibly part of a loomweight. (28/8/6). Fig. 11,3.

ii) Three fragments of fired clay without grits. (29/6/6).

iii) Fragment of fired clay without grits. (6/9).

iv) Fragment of daub? (28/8/2).

v) Fragment of daub. (11/5/6).

2 Roman coins (unidentified)

Roman bracelet fragment

PHOSPHATE ANALYSIS- Method by Geoff Mees

Method (after Murphy and Riley 1962)

1) Five 200 x 13 mm. cores were taken from the centre of each 5 x 5 m. square.

2) The samples were bulked, sieved through a 2 mm. mesh and dried at room temperature.

3) 1 gm of subsample was extracted for 24 hours with 2N HCl (50ml) at room temperature.

4) A 1ml aliquot was reacted with acidic ammonium molybdate- potassium antimonyl tartrate- ascorbic acid solution (10ml) for 30 minutes.

5) Absorbance was measured at 882nm using a Unican SP8-100 spectrophotometer.

6) A Standard curve was obtained by analysis of potassium dihydrogen phosphate solutions.

7) Results were expressed as μg phosphorus per gm of air dry soil.

CARBONISED PLANT REMAINS by Wendy J. Carruthers

Carbonised plant remains from two Late Bronze Age pits were received as processed and sorted samples. The recovery of these remains had been by the manual flotation of 3kg soil samples, with the flot being recovered in 250μ sieves.

The following taxa were found to be present;

10/5/8		**habitat preference**
Bromus sect. Genea (brome grass)	1	cultivated and waste land
Trifolium sp. (clover)	2	grassy places
Crataegus monogyna Jacq. (hawthorn)	1	scrubs, woods, hedges
Indeterminate cereals	1	
Straw frag.	1	
10/6/10		
Hordeum vulgare L. emend/ *distichon* L. (hulled barley) grains	4	
Hordeum vulgare L. emend. (hulled 6-row barley) rachis frag.	2	
Indeterminate cereals	3	
Indeterminate rachis frag.	2	

It is not possible to make any suggestions as to the economy of the site, as such a small amount of material is unlikely to be representative of the site as a whole. However, there is evidence for the cultivation of hulled 6-row barley (*Hordeum vulgare* L. emend.). Pit 10/6/10 contained both cereal grains and chaff fragments, but the number of fragments is too small to indicate whether or not this represents any kind of crop processing debris. Several habitat types are represented by the plant remains from pit 10/5/8, as given above.

Table Mf1 Description of features

8/5/8
Oval posthole; width 350 mm., depth 200 mm.; fill sarsen and flint nodules in brown silt; bone; grade 1.

9/5/8
Shallow scoop; width 1000 mm. depth 100 mm.; fill small pieces of flint, chalk and sarsen in dark brown silt; pottery, bone; possibly a natural hollow into which material had settled; grade 3.

9/6/8
Oval pit; minimum width 500 mm.; depth 220 mm.; fill pieces of chalk, flint and sarsen in brown silt; bone; grade 1.

10/4/8
Oval posthole; width 300 mm.; depth 150 mm.; upper fill black silt, stone free except for one sarsen (150 mm.), lower fill brown silt with some small flints; pottery; grade 2.

10/5/8
Oval pit; minimum width 700 mm.; depth 280 mm.; upper fill some chalk and flint pieces in dark brown silt, lower fill small flint pieces and larger chalk lumps in light brown silt; pottery; bone; seeds; grade 1.

10/6/8
Circular pit; minimum diameter 450 mm.; depth 220 mm.; fill large sarsens (c. 120 mm.), small chalk and flint pieces in dark brown silt; pottery; bone; grade 1.

10/6/10
Oval pit; width 900 mm.; depth 320 mm.; fill occasional small flints and chalk flecks in brown silt; pottery; bone; seeds; grade 1.

13/5/8
Sub-rectangular posthole; width 350 mm.; depth 140 mm.; fill sarsens and flint pieces in dark brown silt; bone; grade 1.

13/5/10
Irregular shallow scoop; width 800 mm.; depth 120 mm.; fill sarsens in brown silt; pottery; bone; possibly a natural hollow into which material had settled; grade 3.

13/5/11
Circular post or stake hole; diameter 250 mm.; depth 200 mm.; V-profile with slight trace of square stake impression on the bottom; fill chalk flecks and small flint pieces in light brown clay silt; grade 1.

13/5/14
Circular shallow depression; diameter 550 mm.; depth 110 mm.; fill small chalk pieces in pale brown clay silt; possibly base of truncated pit; grade 2.

Table Mf1 Description of features (continued)

14/3/10
Oval posthole; width 420 mm.; depth 200 mm.; upper fill brown silt, lower fill flint nodules, chalk flecks and small flint pieces in pale brown silt; pottery; bone; grade 1.

26/6/22
Posthole; width 270 mm.; depth 210 mm.; dark brown silt with some flint pieces; cut through periglacial feature; grade 3.

26/8/8
Oval feature; width 220 mm.; depth 150 mm.; fill small flint pieces and chalk flecks in brown silt; possible posthole; grade 3.

26/8/10
Circular posthole; diameter 320 mm.; depth 110 mm.; fill large sarsen (120 mm.), flint pieces and small chalk pieces in brown silt; grade 2.

26/8/12
Oval posthole; width 380 mm.; depth 190 mm.; occasional flint and chalk pieces in dark brown silt; bone; grade 1.

26/8/14
Circular feature; diameter 230 mm.; depth 90 mm.; fill sarsen (100 mm.) and some small chalk pieces in brown silt; bone; possible posthole; grade 3.

28/6/8
Large irregular hollow; diameter c.2000 mm.; depth 700 mm.; brown silt with flint and sarsen pieces; pottery; bone; possible pit cut through periglacial feature; grade 3.

28/8/10
Circular posthole; diameter 240 mm.; depth 200 mm.; fill three sarsens (up to 120 mm.) in brown silt; bone; grade 1.

28/8/12
Circular feature; diameter 350 mm.; depth 150 mm.; fill flint and chalk pieces in brown silt; bone; possible posthole; grade 3.

33/3/9
Linear feature; length 2120 mm.; width 980 mm.; depth c. 350 mm.; fill brown silt with some flint pieces; superficial resemblance to a ditch terminal but probably a natural solution hollow.

Table Mf2 Mean sherd size analysis

	All excavated contexts	Features	Topsoil	Fieldwalked
Mean Sherd Weight (gm)	6.48	7.26	5.98	3.9

Table Mf3 Pottery fabric descriptions

Percentages in parentheses refer to total sherd numbers and include surface finds.
A) Coarse ware, abundant poorly sorted flint temper up to 5 mm. diam. Highly variable colour, red to dark brown. (49.3%)

B) Coarse ware, abundant very large flint grits up to 7 mm. diam. Colour variable but often buff. (6.9%)

C) Coarse ware, uniform large flint inclusions up to 4 mm. diam. Colour variable but often displaying reduced interior. (2.7%)

D) Fine ware, occasional quartz and flint grit, 2 mm. diam. max. colour dark brown to buff. (4.4%)

E) Medium ware, moderate inclusions of sorted flint grits up to 2 mm. diam. Variable colour. (2.5%)

F) Medium ware, moderate flint and quartz inclusions, sandy feel and brown coloured. (15%)

G) Coarse ware, moderate amounts of shell? and flint, max. 2 mm. diam. and poorly sorted, occasional voids. Brown. (0.9%)

H) Coarse ware, moderate and poorly sorted flint inclusions, 2 mm. diam. max. Very light in weight with a highly variable colour, probably represents refired pottery, probably only one pot. (2.3%)

I) Fine ware, Collared Urn, moderate grog temper 2 mm. diam. max. Dark brown core and light brown margins. (1.6%)

J) Medium ware, moderate grog inclusions 2 mm. max. and rare flint grit. Highly variable colour. (0.25%)

K) Coarse ware, abundant flint inclusions up to 3 mm. diam. max. Colour buff to dark grey. (1.4%)

L) Medium ware, moderate and poorly sorted flint inclusions 2 mm. diam. Occasional grog inclusions. Very distinctive smoothed exterior. (2.25%)

M) Medium ware, occasional, poorly sorted flint 2 mm. diam. max. Abundant mica, rare grog, ironstone and voids. Colour buff. (0.2%)

N) Fine ware, soft sandy fabric. Grey interior and white iron free exterior. (1.3%)

P) Coarse ware, hard fabric containing abundant and very poorly sorted flint grit up to 4 mm. diam. (0.5%)

R) Coarse ware, hard fabric containing very abundant and sorted flint grits of 1 mm. diam. colour variable. (2.7%).

S) Fine ware? Hard very sandy fabric, occasional flint 1 mm. diam. max. (2.3%).

U) Collared urn, medium sandy fabric, occasional flint, grog and ironstone. Red brown exterior and black core. One example only.

V) Fine ware, hard fabric, occasional void and quartz inclusion. One example only.

Table Mf4 Flint summary

	INTACT FLAKES	BROKEN FLAKES	SPALLS	CORES	IMPLEMENTS
TOTAL COLLECTION FIELDWALKING	914	673	162	100	118
EXCAVATED TOPSOIL	1224	921	450	192	71
EXCAVATED FEATURES (INC NATURAL ONES)	156	129	93	22	10

Table Mf5 Flint flake statistics

5a INTACT FLAKES

	L:B RATIO				FUNCTION				
	>=5:2	<5:2>=2:1	>1<2	<=1	WASTE FLAKES	CUTTING FLAKES	AWLS	CORTICAL EDGES	OTHER FLAKE
No	14	55	606	239	250	139	35	202	287
%	1.5	6.0	66.3	26.2	27.4	15.2	3.8	22.1	31.4

THICKNESS MEAN (mm)	STANDARD DEVIATION
10.74	5.67

5b BROKEN FLAKES

	BROKEN BLADES	POSSIBLE BROKEN BLADES	BROKEN FLAKES	WASTE FLAKES	CUTTING FLAKES	AWLS	CORTICAL EDGES	OTHER FLAKE
No	4	24	645	347	86	20	129	254
%	0.6	3.6	95.8	41.5	10.3	2.4	15.4	30.4

5c COMBINED BROKEN AND INTACT FLAKES

COMBINED BLADES 97 (6.1%)

	WASTE	OTHER	CUTTING	AWLS	TOTAL
	927	541	225	55	1586
%	58.5	34.1	14.2	3.5	

COMBINED BROKEN AND INTACT FLAKE CORTEX REMAINING

	<1/3	>1/3<2/3	>2/3
	908	367	309
%	57.3	23.1	19.6

SPALLS 706

Table Mf6 Flint core statistics

A) SURFACE COLLECTION

TYPE	1	2	3	4	5	6	7	8	TOTAL
No	-	-	1	-	3	55	28	14	100

MEAN CORE WEIGHT AND STANDARD DEVIATION
(Excluding bashed lumps and core fragments- classes 7 and 8)

MEAN(gm)	STANDARD DEVIATION
73	35.8

CORE REMAINING CORTEX (Excluding classes 7 and 8)

	<1/3	>1/3<2/3	>2/3	TOTAL
No	29	26	4	59
%	49.2	44.1	6.8	

B) EXCAVATED TOPSOIL

TYPE	1	2	3	4	5	6	7	8	TOTAL
No	-	1	2	-	2	91	62	34	192

C) EXCAVATED SUBSOIL FEATURES

TYPE	1	2	3	4	5	6	7	8	TOTAL
No	-	-	-	-	-	14	2	6	22

Table Mf7 Retouched flint summary

Retouched types	Surface	All excavated
Scrapers	46	28
'Beaker' Scrapers	1	3
Hollow Scrapers	1	2
Notched flakes	15	7
Awls	12	12
knives	4	3
Irregularly retouched flakes	16	16
Spurred flakes	3	4
Fabricators/Rods(?)	2	-
Hammerstones	2	1
Barbed and tanged arrowhead	1	-
Core rejuvenation tablet	2	2
Flakes with retouched platforms	11	2
Choppers(?)/Abraded edge tools	2	1
Composite Tool(notch/knife)	-	1

Table Mf8 Flint K-means cluster analysis

8a K-MEANS ANALYSIS 6 CLUSTER SOLUTION OF CHRONOLOGICAL DATA

CO-ORDS X Y	>=5:2	<5:2>=2:1	>1<2	<=1	BROKEN BLADE	POSSIBLE BROKEN BLADE	BROKEN FLAKE	TOTAL
32 3	1	16	105	41	4	9	119	295
%	0.3	5.4	35.6	13.9	1.4	3.0	40.3	
18 3	1	9	130	51	0	1	116	308
%	0.3	2.9	42.2	16.6	0	0.3	37.7	
12 2	1	13	56	20	0	2	70	162
%	0.6	8.0	34.6	12.3	0	1.2	43.2	
25 4	7	11	115	45	0	5	143	326
%	2.1	3.4	35.3	13.8	0	1.5	43.9	
5 3	4	3	71	30	0	1	68	177
%	2.3	1.7	40.1	16.9	0	0.6	38.4	
10 7	0	3	129	52	0	6	129	319
%	0	0.9	40.3	16.3	0	1.9	40.3	

8b K-MEANS ANALYSIS SIX CLUSTER SOLUTION OF FUNCTION FOR INTACT AND BROKEN FLAKES

CO-ORDS X Y	WASTE FLAKES	CUTTING FLAKES	AWLS	OTHER FLAKES	TOTAL
32 3	147	47	6	94	295
%	49.8	15.9	2	31.9	
18 3	144	41	8	115	308
%	46.8	13.3	2.6	37.3	
12 2	76	30	4	52	162
%	46.9	18.5	2.5	32.1	
25 4	154	43	17	112	326
%	47.2	13.2	5.2	34.4	
5 3	90	25	8	54	177
%	50.8	14.1	4.5	30.5	
10 7	154	39	12	114	319
%	48.3	12.2	3.8	35.7	

Table Mf9 Animal bone, species represented

Species	No. of bones	Min. No. of individuals	% of biomass
Horse	4	1	excluded
Cattle	75	5	77
Cattle size	148	-	-
Sheep	4	-	-
Sheep/goat	80	4	15
Sheep size	413	-	-
Pig	16	2	7
Red deer	2	1	-
Roe deer	3	1	1
Hare	2	1	-
Wood mouse	1	1	-
Mole	2(intrusive)	1	-

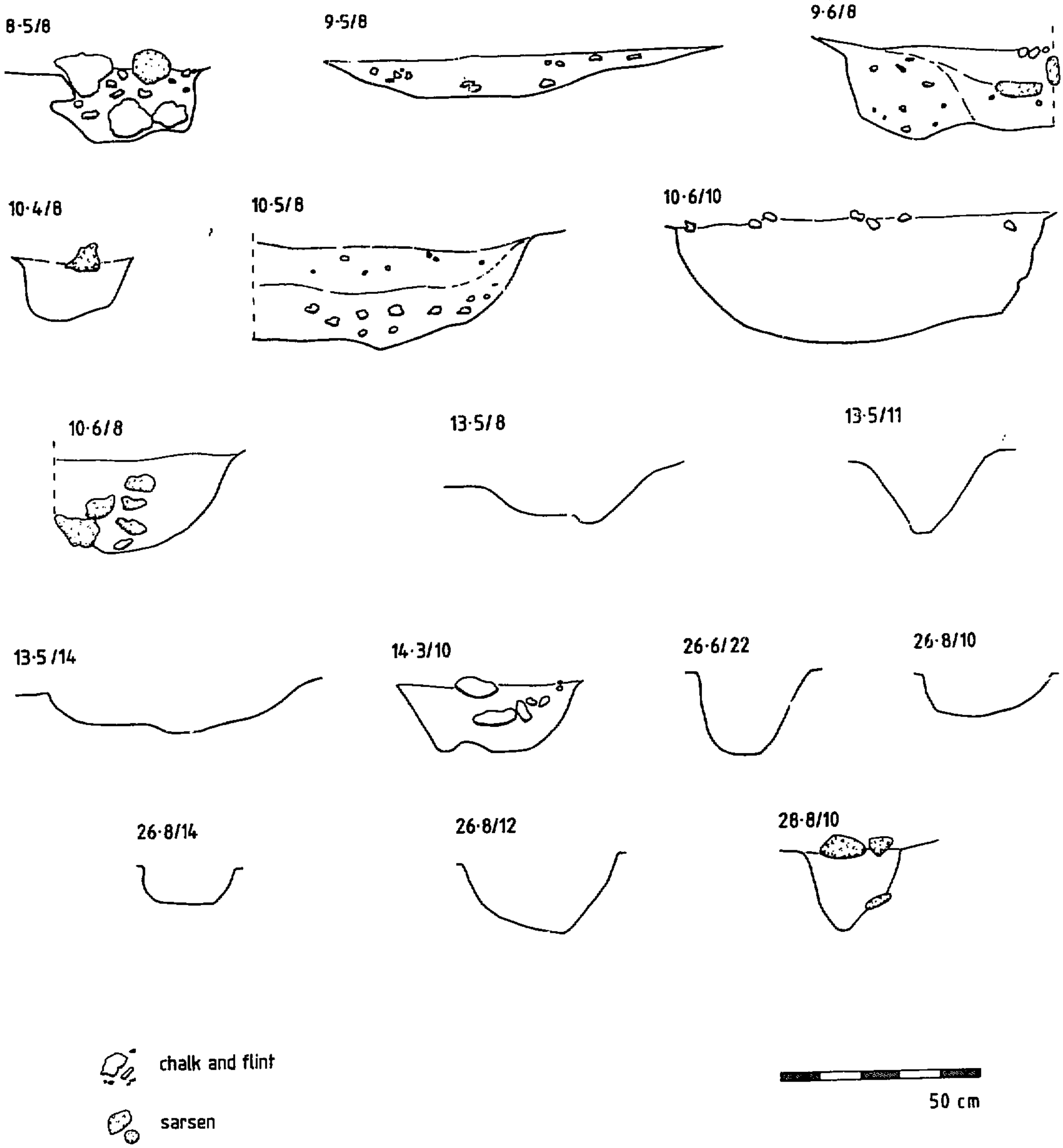

Figure Mf5 Sections of pits and post holes.

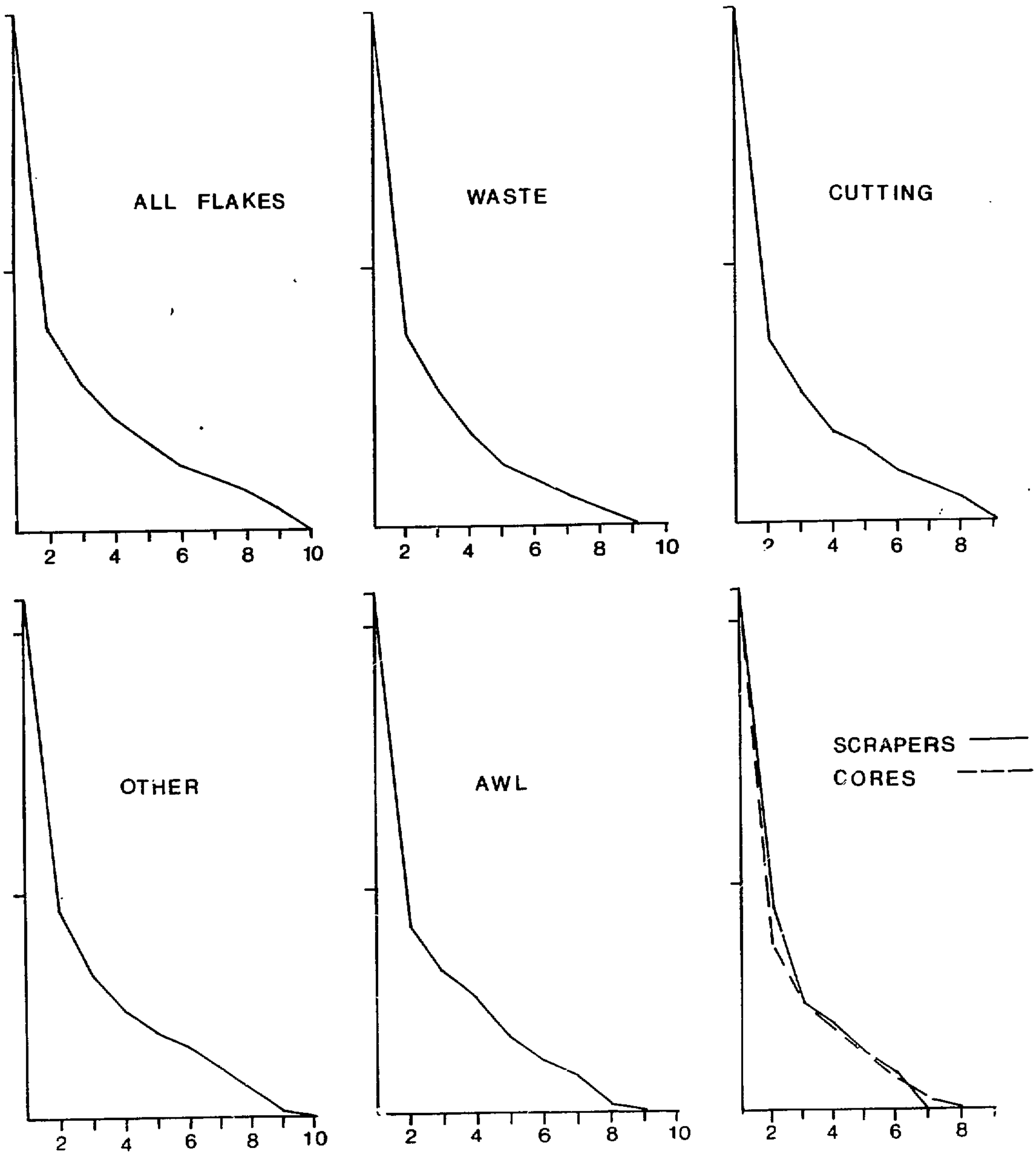

Figure Mf10 Struck flint. Graphs of K-means cluster number with log Sum Squared Errors for various functional categories. Inflexions in the graphs show the optimum number of clusters. Weak inflexions indicate poor clustering.

Figure Mf12 Contour plans (pottery weight(gm)/unit volume) of sieved data

12A Total pottery in the topsoil predicted for excavated areas only.
12B Total pottery in the topsoil actually recovered for excavated areas only.
12C Total collection fieldwalking finds for excavated areas only.
12D Pottery from excavated features.

Figure Mf13 Sieved data- flint

13A Contour plan (Flint No /unit volume) of total flint in the topsoil predicted from sieved data for excavated areas only.
13B Contour plan (Flint No /unit volume) of flint from features.