THE BIRDCOMBE MESOLITHIC SITE, WRAXALL

BY C. M. SYKES and S. L. WHITTLE

The Birdcombe Mesolithic Site lies at the foot of a slope facing South across the valley of the River Land Yeo at a height of 30 to 50 feet above Ordnance Datum and may, perhaps, extend at a lower elevation below the present marshy floor of the valley. The National Grid Reference is ST/475718.

ACKNOWLEDGMENTS. The writers' thanks are due to Mr. A. D. Lacaille and Mr. W. F. Rankine for their constant interest and encouragement; to Dr. I. W. Cornwall for carrying out soil analysis; to Dr. F. S. Wallis for identifying the non-flint material; to Messrs. K. S. Gardner, W. Solley and A. Selway for photography and survey work; and to Mrs. D. P. Dobson Hinton, Mr. C. A. Ralegh Radford, Mr. L. V. Grinsell, Mr. Nicholas Thomas and Dr. H. Taylor for visiting the excavation and offering valuable suggestions.

ABBREVIATIONS USED IN THE TEXT. Much repetition of matter already available in print can be avoided by referring readers to W. F. Rankine's *The Mesolithic of Southern England*, published by the Surrey Archaeological Society as a Research Paper in 1956 and referred to as *M.S.E.* This Paper gives brief descriptions of all sites discovered by that date, with publication references that can be followed up by students. The technique of Mesolithic flint-knapping and tool-making is described with illustrations.

P.P.S. ..... *Proceedings* of the Prehistoric Society.

U.B.S.S. ..... *Proceedings* of the University of Bristol Spelaeological Society.

DISCOVERY

Worked flints were first found in 1952 after ploughing. Others came from test holes and from a trial trench. This preliminary work showed that the flints had reached the surface as a result of inserting modern land-drains, and that elsewhere they lay undisturbed at an average depth of 25 inches.

Attention was next turned to the smaller of two springs which rise at the foot of the slope. The temperature of this water stays constant and even the hardest frosts do not affect it. Water rises gently through a mixture of sand and gravel. This mixture was

examined by spreading a shovel-full at a time on to the surface of a flat stone and then "washing" it very much in the manner used by prospectors. By this means were retrieved:

Many hundreds of flint chippings, mostly minute, of which only 6 were fire-crackled.

2 small cores of flint.

1 large core of cretaceous chert.

1 broken scraper.

2 small blades showing signs of use.

1 small serrated blade.

21 Microliths, of which 2 were fragmentary and 1 apparently unfinished.

Most of these flints had a slight brown staining imposed on the normal white patination. The microliths included two small rod-like types (Fig. 3. Nos. 36-7) not found elsewhere on the site.

EXCAVATION

Having found that the "scatter" of flints extended along the slope for over 100 yards, the writers began a search early in 1955 for the area of greatest concentration, using a manually-operated post-hole digger, shaped like a giant gimlet, with which soil from the lower levels could be lifted out on to the surface. Nowhere is the site as prolific as those of the Weald; not more than ten flints were found in any one of these holes.

This probing finally led to the place where it was decided to take out a series of small trial-trenches, 3 feet apart, and each measuring 4 feet by 2. These trenches are shown on the site-plan (Fig. 5); the figures show the number of flints found in each. The original E.-W. line of eight trenches was supplemented by digging two more trenches N. and S. of that showing the greatest number of finds. Almost all the flints were found 26-28 inches down. Below this depth they became much rarer, and below 33 inches, where the reddish-brown soil gave way to a purplish clay, none were found.

Our hope throughout this work was that we might find the flint-level dipping suddenly and would thus locate a dwelling-pit similar to those found in the past in Surrey and Sussex (*M.S.E.* pp. 25, 28 and 29). In fact, in the area of the main excavation the level rose

abruptly to 20 inches, where the flints rested on a dark, hard layer, 1 inch thick, that sloped downwards to the North. From this moment our aim was to uncover this dark layer (which we shall refer to as the "floor") and to determine its relation to the occupation-layer found at a lower level outside it.

All work immediately above and down to the floor was carried out with small trowels, so that nearly all the flints were found *in situ*; almost all of them lay flat, a few were on edge, but none lay point upwards. All either rested on the floor or were embedded in its surface. Except at the Eastern end, all the flints were at a higher level than those found outside. The layer of flints at 26-28 inches did not extend beneath the floor.

The positions of all implements were recorded as they were found and rough drawings were made on the spot.

THE FINDS

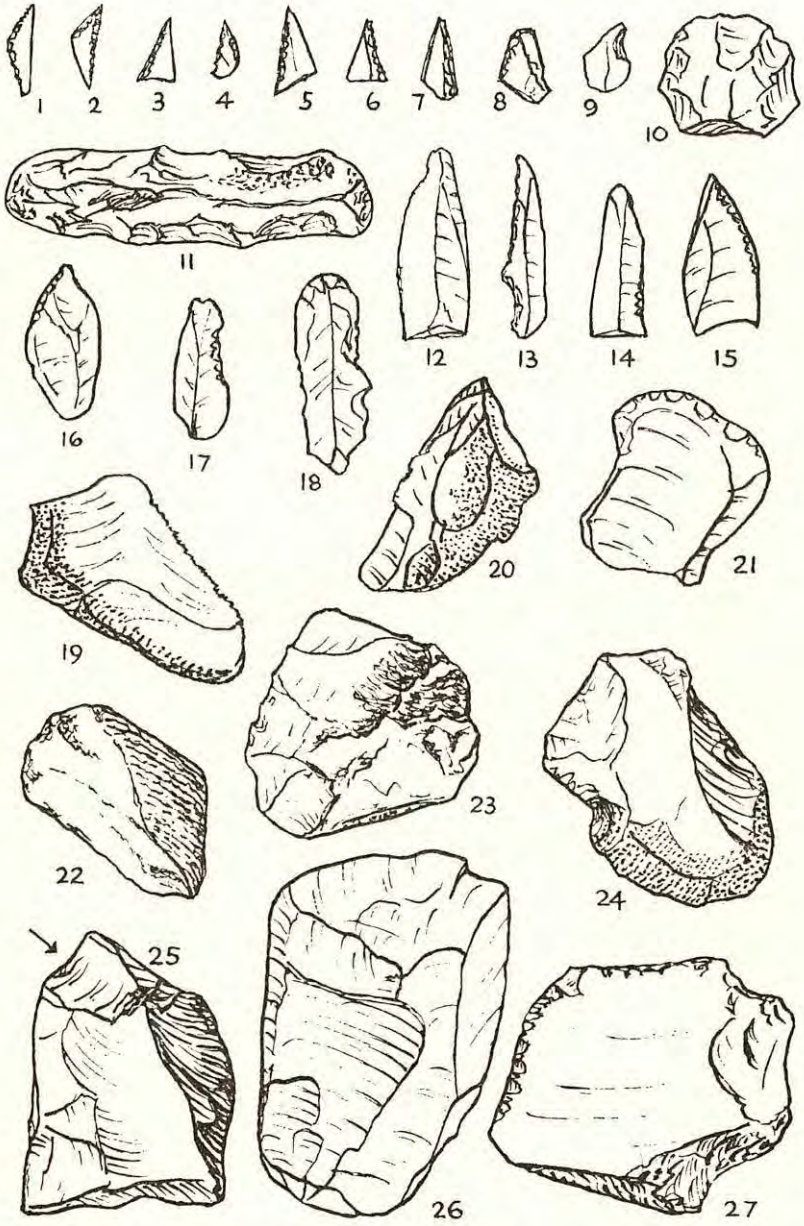
The following flints were found on the floor:

450 (approx.) waste fragments, some very small.

1 Primary Flake	Fig. 1, No.	12.
1 Notched intermediate	,,	13.
8 Cores (not illustrated)		
1 Flint Scraper	,,	21.
2 Chert Scrapers	,,	22 & 23.
1 Flint Scraper with steep retouch	,,	27.
1 Conical Scraper made on a small core	,,	10.
1 Large Flake with faceted butt	,,	26.
1 End Scraper in black flint	,,	18.
1 Thick Flake with used notch	,,	24.
2 Used Flakes (1 illustrated)	,,	14.
*1 Small Punch	,,	11.
1 Saw	,,	19.
1 Small Graver	,,	20.
1 Core Graver	,,	25.
3 Micro-burins (1 illustrated)	,,	9.
3 Microliths	,,	1, 2 & 4.
5 Broken Microliths	,,	3, 5, 6, 7 & 8.

* For a description of these tools see W. F. Rankine's Oakhanger Report (*P.P.S.* Vol. XVIII Pt. 1, p. 33).

FIG. 1



IMPLEMENTS FROM FLOOR
(Nat. size)

This assortment of tools, too few in number to indicate more than a brief occupation, does none the less represent a reasonably complete Mesolithic kit. In contrast, the part of the excavation outside the floor produced no such variety of tools; apart from waste chippings, it yielded 12 Microliths and the all-important sharpening-flake from a tranchet-axe (Fig. 4, No. 3).

WOOD-TAR. A small fragment of this material was found on the floor and was identified by Dr. I. W. Cornwall of the Institute of Archaeology. Wood-tar was prepared by Mesolithic folk by heating rolls of birch-bark. One of its uses was to fix microlithic barbs on their shafts (See Star Carr, *P.P.S.* Vol. XVI (1950) Plate IX).

SOIL ANALYSIS

Soil samples from all levels were examined by Dr. Cornwall and served chiefly to confirm that the soil is too acid for anything organic, such as bone, wood or vegetable matter, to have survived.

Dr. Cornwall's report on the material of the floor itself proved it to be "hard pan", which is formed as the result of certain mineral salts being washed down through the soil and re-deposited at a lower level; soils in which it occurs (often as the result of prolonged cultivation) are described as having a *podsol* profile.

It had then to be considered why this phenomenon appeared at only one of a number of places examined and why it should occur in an area where the reddish, hillside soil has what is called a "brown earth" profile. The explanation was given by Dr. Herbert Taylor when he visited the site. He pointed out that the old land surface beneath certain Mendip round barrows is defined by a layer of hard pan as much as 4 inches thick (See Tyning's Farm Barrows, *U.B.S.S.* Vol. 6, No. 2, p. 136). In the case of our Mesolithic floor, minerals washed downwards may have been arrested when they reached a level hardened by trampling and perhaps covered by occupational rubbish, such as wood-ash, which acted as a chemical trigger. (Dr. Cornwall's analysis showed that a few small grains of charcoal were found at floor level; the upper levels contained even less).

Cultivation, with a resultant down-wash of hillside soil, does not seem to have started before the 14th century, since scraps of both medieval and Romano-British pottery were found only 2 to 3 inches above the highest Mesolithic level. The presence of either need not cause surprise. Birdcombe Court dates from early Norman times,

and Romano-British sherds can be found on both sides of the valley; a Roman villa was found on the Southern slope in 1949.

Sections were cut through the floor at A-A1 and B-B1 (Fig. 5). No flints were found below it, and barren purplish clay was encountered at 33 inches.

IMPLEMENTS OF FLINT

The following is an analysis of the Microliths found on all parts of the site:

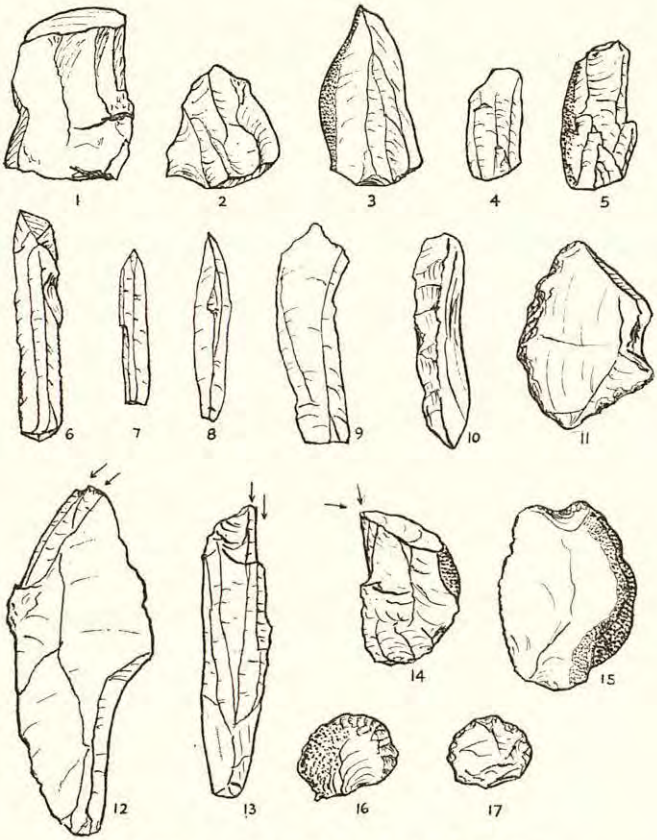
Type	*Description*	*No.*	*Reference to Illustration*
1A	Obliquely blunted points	12	Fig. 3. Nos. 1-9
1B	Points trimmed on both sides	8	,, ,, 11-20
2A	Blades blunted on one side	13	,, ,, 21-32
2B	Blades blunted on both sides	10	,, ,, 33-41
4A	Triangles	3	,, ,, 45,46 & 48
5A	Crescent with blunted arc	1	,, ,, 44
6A	Elongated Triangles	14	,, ,, 49-53
6C	Obliquely blunted at both ends	4	,, ,, 42-3
6G	Rhomboid (variant)	1	,, ,, 47
	Fragmentary	28	
	Not classifiable	13	
	Micro-burins	16	

This classification is recommended by Dr. J. G. D. Clark (*P.P.S.* Vol. XXI, p. 16), who has also urged that the term Tardenoisian, previously used to describe industries where geometric forms of microliths occur, should now be discarded in favour of "Sauveterrian".

Although classification by type is a convenient way of sorting material, it tells us nothing about the purpose of microliths. In most cases the point or points, to which a blade was trimmed, were clearly of more importance than any cutting edge that may have been left on it. The tiny, rod-like microliths (Fig. 3, Nos. 36-7) and other minute forms have so far resisted all attempts to identify their purpose.

This report does not enumerate objects such as cores, core-trimmings and primary blades, since most of them come from very poor quality gravel-flint, and it is not always possible, for example, to say whether a fragment is a core or merely a piece of flint from which a few flakes have been detached. A few of the best cores and

FIG. 2



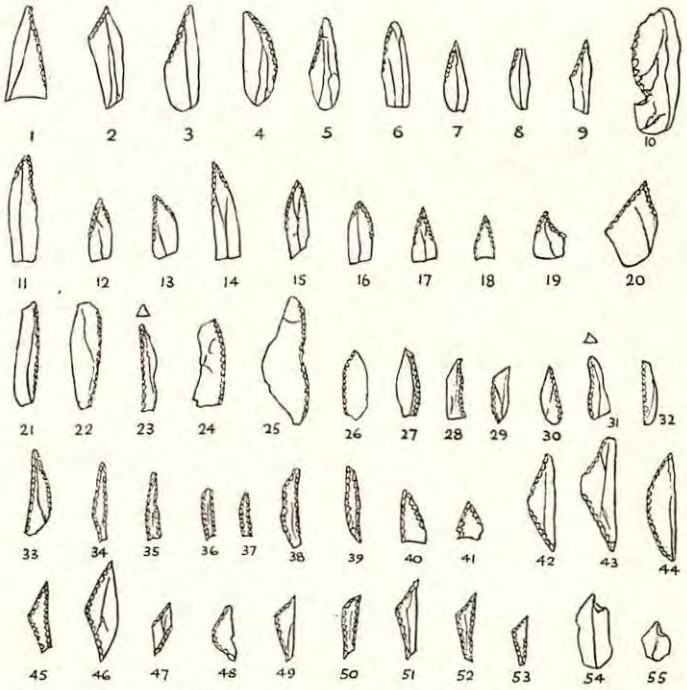
CORES, BEADLES, SCRAPERS AND GRAVERS
(½ Nat. size)

a core-trimming are illustrated (Fig. 2, Nos. 1 - 5 and 10), but, in general, the industry is notable for an exceptionally high percentage of shapeless waste material. The two primary blades (Fig. 2, Nos. 7 and 8) in good flint and a larger blade showing signs of use (Fig. 2, No. 6) are outstanding, as are also two large gravers (Fig. 2, Nos. 12 and 13). The small gravers shown in Fig. 2, No. 14 and Fig. 1, Nos. 20 and 25, are not so easily recognisable.

Of intermediate forms — that is, blades which have been blunted, but from which the micro-burin has not become detached — only two were found (Fig. 1, No. 13 and Fig. 3, No. 10).

Of the scrapers, only two small steeply trimmed specimens (Fig. 2, Nos. 16-17) can be regarded as typically Mesolithic, together with a small pyramidal core showing signs of use on the edges (Fig. 1, No. 10). Others (Fig. 2, No. 11 and Fig. 1, Nos. 21-3 and 27) appear to have been improvised on chance forms. Fig. 2, No. 11 can be described either as a concave scraper or as a flake with a used notch; a similar notch occurs on a specimen from the floor (Fig. 1, No. 24).

FIG. 3



MICROLITHS AND MICRO-BURINS
($\frac{1}{2}$ Nat. size)

Only two serrated blades were found, one on the floor (Fig. 1, No. 19) and a smaller one in the spring.

A very small percentage of cretaceous chert occurs throughout the site. All the material has a white patination, with the exception of a few implements made of black flint (Fig. 1, No. 18) which does not patinate.

Two specimens call for special notice, because they suggest some link with the Wealden Mesolithic. First, the small punch found in the floor (Fig. 1, No. 11). Implements of this kind were first found in a definite Mesolithic context at Oakhanger, Surrey (*P.P.S.* Vol. XVIII Part 1, p. 33). If found on the surface they would pass as Neolithic "fabricators". Secondly, the trimming- or sharpening-flake from a tranchet axe. (Fig. 4, No. 3). Tranchet axes are regarded as typical of the Wealden or Horsham industries, and do not occur on sites now described by Clark as Sauveterrian.

NON-FLINT IMPLEMENTS

Fig. 4, No. 1 is a knife-like implement made of shale, which perhaps comes from the Old Red Sandstone; it has slight traces of abrasion on the butt end. There is also a micro-core of white lias (not illustrated).

Fig. 4, No. 4 is a quartz pebble which has been roughly trimmed and subsequently blunted by use at both ends. Fig. 4, No. 2 is of Old Red Sandstone and shows signs of use as a whetstone; this object is not datable, but we have no reason to think it intrusive.

All four implements are of material that can be found within a few miles of the site. The use of shale and white lias was probably experimental, since both these materials, though easy to work, would quickly lose their sharp edges.

OTHER FINDS IN THE DISTRICT

A number of hilltop finds of microliths come from within a short distance of Birdcombe. They were found in past years by A. Selley of Bristol and R. E. Rogers of Portishead, and are now in Bristol and Taunton Museums respectively. Despite brief written records, the find-spots cannot be located precisely, but, as they appear to be casual losses, this is of no great importance. We may also include in the Mesolithic the quartzite pebble with hour-glass perforation found many years ago at East Clevedon and now in Taunton Museum.

PLATE IV

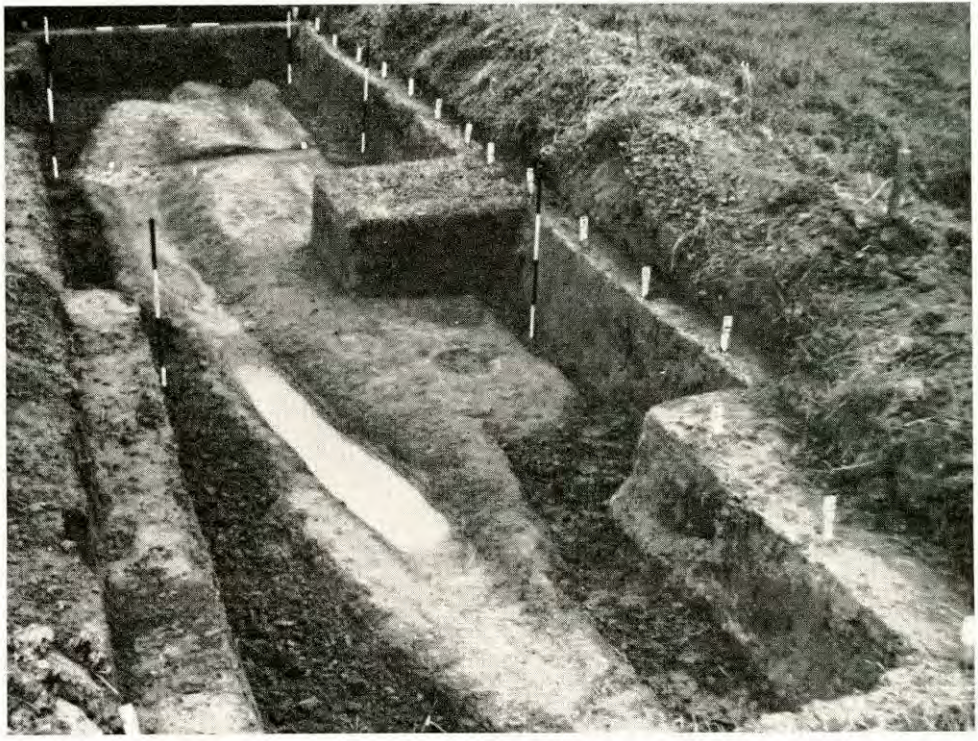
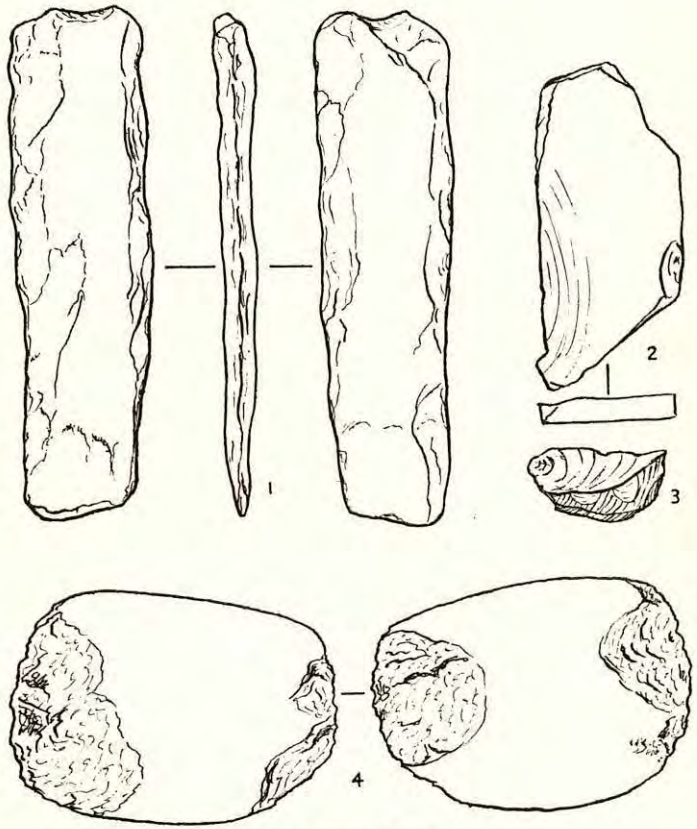


Photo: K. S. Gardner

BIRDCOMBE MESOLITHIC SITE, LOOKING WEST

The most promising site found in recent years is at Charlcombe Bay (N.G.R. ST/433751), 50-100 feet above O. D. This also is based on a spring, but most of the flints are of Neolithic/Bronze Age date. Mesolithic types include one obliquely-blunted point, one broken microlith, several small cores and a multi-faceted graver.

FIG. 4



NON-FLINT TOOLS
(½ Nat. size)

Another mixed site was found in 1934, below high-water mark half a mile south-west of Clevedon Old Church (*U.B.S.S.* Vol. 5, No. 1, 1938). Several of the larger tools, especially one identified by

the Abbé Breuil as a Gravette blade, were suggestive of the Creswellian. There were also Neolithic/Bronze Age tools.

OTHER SITES IN SOUTH-WEST ENGLAND

It is customary for writers, when discussing this subject, to sum up by stating that the distribution of the Mesolithic in the South-West is mainly coastal, and to prove this statement by means of a distribution map. Such maps show little more than the distribution of flint-collectors in the last century! The earlier collectors were content to add "pygmy" flints to their knives, scrapers and arrow-heads without enquiring into their significance. In these days, collectors tend to be young, enthusiastic and well-informed, but it is still hard for them to identify unusual implements, such as gravers, or even micro-burins which do not come up to text-book standards. On the credit side, it is no longer possible for a tranchet axe to lie unidentified in what we may politely call the reserve collection of a large museum.

Present-day flint-hunters, however, are rarely men with unlimited leisure; so they still frequent the coast-line, where such agencies as erosion, cliff-falls, the cutting of cliff paths and the shifting of sand-dunes make their efforts more rewarding. In inland districts, search is more likely to be successful on exposed hilltops than in the valleys, where the old land-surface may often lie buried at much greater depth than at Birdcombe.

DISCUSSION

DATING. Sites such as Birdcombe, where geometric forms of microliths predominate, are regarded as belonging to one of two cultures. These are:

1. The Sauveterrian.
2. The Horsham or Wealden, which is usually distinguished by the presence of tranchet axes and a variable percentage of hollow-based points.

In East Anglia and on the Pennines certain Sauveterrian sites have been shown by pollen analysis to belong to late Boreal times (*P.P.S.* Vol. XXI (1955), p. 19). At Oakhanger in Surrey the second of three Wealden occupation-levels has, by radio-carbon tests of

charred hazel-nut shells, been fixed at approximately 4,000 B.C. in the early Atlantic climatic phase (*P.P.S.* XXIV (1958) p. 313).

At Birdcombe, the absence of precise dating material leaves us free to indulge in pleasant, if unscientific, conjecture.

Birdcombe is purely Mesolithic and we must reject the theory that all Mesolithic finds in the Bristol-Mendip area are vestigial and are contemporary with the microliths found in a Beaker context at Gorsey-Bigbury (*U.B.S.S.* Vol. 5, No. 1, 1938). It is tempting to suggest that the Birdcombe flints are not all contemporary and that some of the material, including the two large gravers, may be Creswellian, but this theory is not supported by stratigraphy.

Birdcombe shows some affinity with the Wealden industries, even though it completely lacks their rich abundance of material. Tentatively, on the strength of the not wholly satisfactory evidence of soil-analysis, it may be placed in the advanced Atlantic climatic phase. The matrix of the flints and the soil for over 15 inches below the floor contains almost 50 per cent of silt, which is more suggestive of the wet Atlantic climate than of Boreal or even early Atlantic times. (Many of the Wealden sites are buried in wind-blown sand).

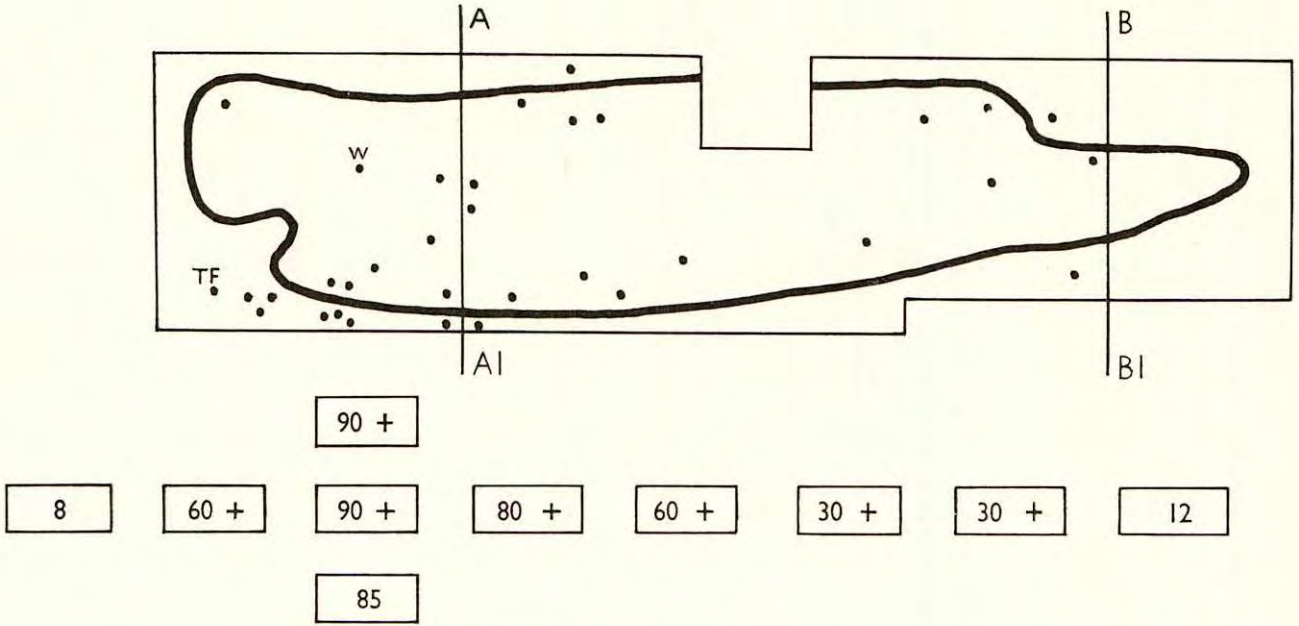
THE FLOOR. Mesolithic dwellings so far discovered are of two kinds:*

1. Those sunk into the ground, as at Farnham, Abinger Common and Selmeston. (*M.S.E.* pp. 25, 27 and 28).
2. Those raised above ground-level. These are on wet sites; only one, that at Star Carr, has so far been found in Britain. Like its European parallels, it was a "platform" of brushwood and branches; its limits do not appear to have been determined by excavation, but European examples were roughly rectangular and sometimes of considerable size.

Dwelling-pits fit well into the Wealden context of wind-blown sand and drier climatic conditions. On the other hand, the Atlantic climate was even wetter than that of present times, so that dwelling-

* In a paper published since this report was written, Mr. Eric S. Higgs describes a Mesolithic site excavated at Downton, near Salisbury, where a group of pointed stakeholes was discovered. Mr. Higgs says, "There is no suggestion whatever that these shelters were dugouts or in any way below ground as with those at Farnham or Selmeston". (*P.P.S.* Vol. XXV, p. 231).

FIG. 5



PLAN OF MAIN EXCAVATION AND TRIAL TRENCHES
Dots represent implements found *in situ*
T.F. — Trimming Flake from tranchet axe
W. — Wood Tar

pits dug into low-lying ground at the foot of a hillside, as at Birdcombe, would serve only as traps for water, as indeed happened more than once during the excavation.

At Birdcombe, a raised floor would have been useful. In outline, though on a smaller scale, it has a marked resemblance to a type of dwelling, which persisted in parts of Russia from late Palaeolithic to Bronze Age times, but these Russian dwellings were semi-subterranean and had central hearths (*P.P.S.* Vol. XXIV, p. 149).

DURATION OF OCCUPATION. The flint tools found on the floor, although varied, cannot reflect more than a very brief occupation by a few people — a mere bivouac, perhaps with a semi-temporary shelter or windbreak represented by the gullies, which interrupt the floor. Most of the chipping seems to have been done outside, and most of the microliths were lost there.

The spread of worked flints and chippings for over 100 yards along the valley, and perhaps much further West on ground that is now too overgrown to be examined, suggests that the site attracted small bands of wandering food-gatherers over a long period. The attraction would be threefold — fresh water, flint for tool-making and game or wild-fowl, and possibly fish. The microliths found on the neighbouring hills northwards to the Bristol Channel may be hunting losses. If so, they tend to discredit the theory that the whole countryside was covered with dense, impenetrable forest. (This is true also of Neolithic/Bronze Age times. There are indeed very few places in this district where flint tools and waste chippings may not turn up. An examination of Selley's maps, now at Bristol Museum, will confirm this statement, which is also based on the writers' experience).

PROVENANCE OF THE FLINTS. Those implements obviously of good quality flint were probably brought from a distance, or at least made on the site from flint cores brought from elsewhere. But by far the greater amount, both of implements and of waste material, is of poor quality gravel flint that could certainly have come from the lower hillside slopes from one to three miles further west, at 20 to 50 feet above O.D. Alternatively, the flint may have come from the river-bed at Birdcombe, which has since been covered by marshy ground of unknown depth.

FOLK MOVEMENTS. This question is also discussed at some length

in Rankine's *The Mesolithic of Southern England.* It is sufficient here to remind readers that food-gathering people did not usually stay in one place and that in their yearly wanderings they covered considerable distances. It is, therefore, not surprising that Rankine has found on his Oakhanger site siltstone pebbles that probably came from Cornwall (*P.P.S.* Vol. XVIII Pt. 1 (1952) pp. 34-5).

TYPOLOGY. The classification of microliths is obviously of greatest use to archaeologists on sites where the finds run into thousands. On smaller sites, some significance may be attached to the predominance of certain types. The types of implements made on any Palaeolithic or Mesolithic site depended entirely on the needs of the moment — hunting, wild-fowling, fishing or, perhaps, root-grubbing. Consequently, if on two sites perhaps 200 miles apart entirely different types of tools predominate, they may still have been made by the same people in the same year.

At Birdcombe, all the microliths fit into Clark's Sauveterrian classification, but the sharpening-flake from a tranchet axe suggests affinity with the Wealden industries.

CONCLUSIONS. The Birdcombe site attracted Mesolithic food-gatherers because of (a) supplies of food and water and (b) a supply of gravel flint. Annual visits may have spread over a long period, probably during the Atlantic climatic phase after 4,000 B.C. The floor is that of a bivouac with very slight walls or wind breaks; it was raised above ground-level. No fires were lit on it, and most of the flint-working was done outside. It is probable that hearths marked by a concentration of calcined flints do exist, but we did not find them.

The presence of both implements and flint-chippings in the basin of the spring is interesting.

APPENDIX

REPORT ON SOIL SAMPLES

BY I. W. CORNWALL, B.A., PH.D., F.Z.S.

The uppermost sample, in addition, contains a considerable amount of organic matter, presumably from manuring together with the original humic layer formed by the pre-agricultural vegetation,

all mixed together. In the rest of the profile humus was uniformly low.

The pH's, in the region of 6.0 throughout, suggest a somewhat base-poor soil and the lack of differentiation in the profile shows this to be of the brown earth character — what Kubiena (of *Soils of Europe* fame) calls an oligotrophic braunerde. Under these conditions some movement of iron salts down the profile would be expected, in due course, with evolution towards the type of a podsolic braunerde. The iron concretions at the level of the "floor" clearly stem from this cause, though what caused them to be formed only locally must be due to some local chemical cause which has so far escaped me. It may be due to the presence of ash associated with the occupation.

A search for a local concentration of phosphates (which would also be expected in the area of an occupation) was negative. This does not disprove the occupation but is only to be expected in the prevailing conditions of acidity, which mobilizes phosphoric acid and allows it to be washed out to the water-table. Had we been able to find it, it would have been a strong indication of human occupation. The fact that it is no longer there does not prove that it never was!

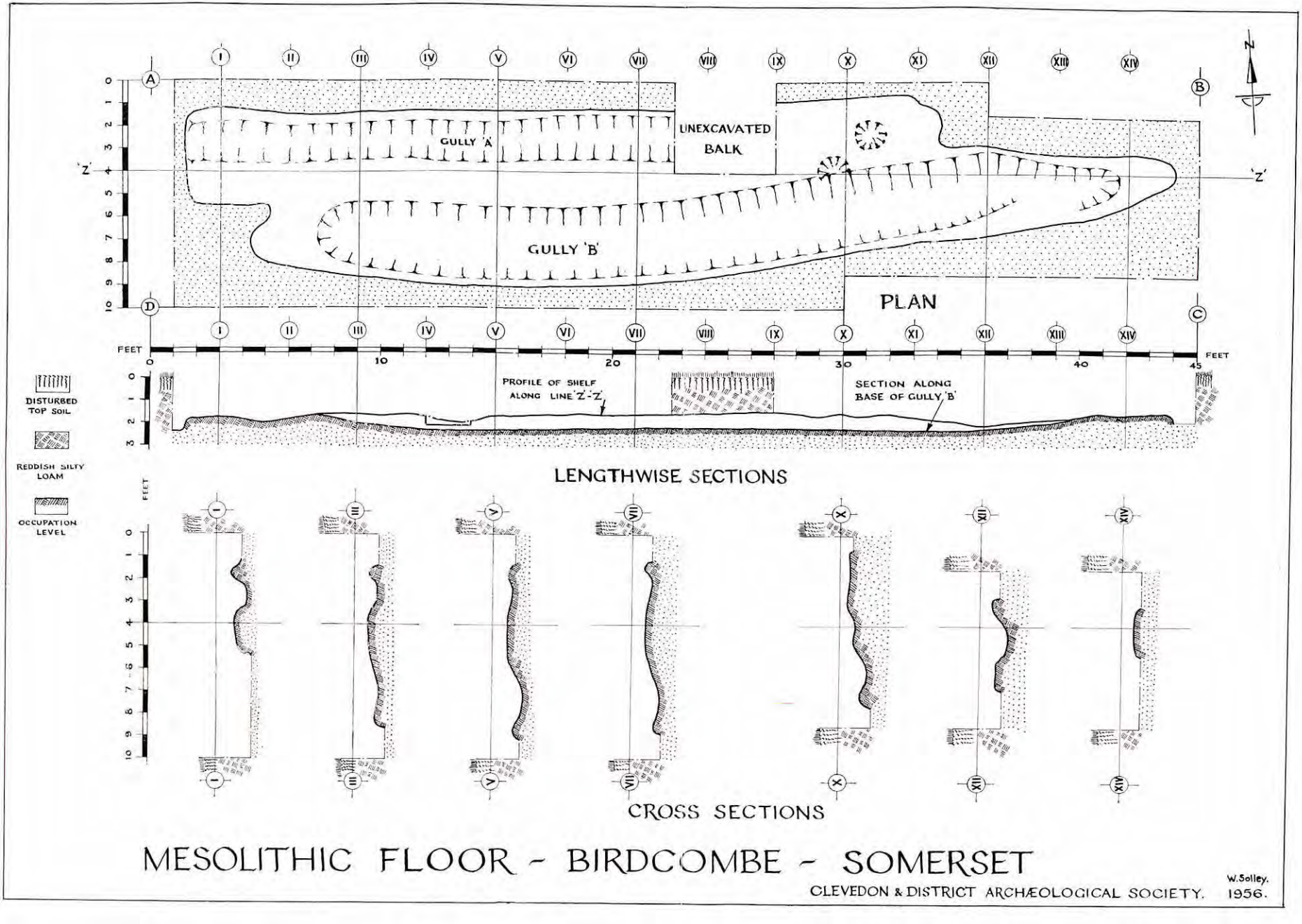
Mechanical analyses showed the soil to be a silty loam, nearly 50% silt. This does not signify anything in particular as to its origin. The mechanical composition is probably to a large extent a legacy from the Keuper Marl. So also is a proportion of mobile iron, clearly to be seen in the thin section under the microscope, which is perhaps the chief source of the iron forming the concretions. Since the Keuper is an offshore deposit of a land-surface subject to tropical weathering conditions, such peptized iron, as seen in modern tropical braunlehms, is only to be expected. The phenomenon throws no light on recent soil-forming processes.

A sample of the purplish clay might have confirmed this conclusion, but would not, I think, much contribute to a solution of the archaeological problems.

All that I can find in the samples, then, points to the soil being a braunerde with indications of degradation in the direction of a podsol. This is quite usually unaccompanied by any visible bleaching of the eluvial layers in the earlier stages. The iron, I am convinced, is natural, as found. The reason for its local precipitation *may* have

been, originally, some accumulation of fire-ashes, though I have been unable to find more than a very few small grains of charcoal at that level. The presence of these at all is necessarily indicative of burning at some time. The upper levels contained even less, so that the charcoal is not derived from above. The undulating character of the "floor" horizon is quite usual in ferruginous horizons, being due, one supposes, to local differences in permeability and vertical extent of the critical chemical conditions governing precipitation of iron solutions.

PLATE V



MESOLITHIC FLOOR - BIRDCOMBE - SOMERSET

CLEVEDON & DISTRICT ARCHÆOLOGICAL SOCIETY.

W. Solley. 1956.

LONDON UNIVERSITY INSTITUTE OF ARCHAEOLOGY

DEPARTMENT OF ENVIRONMENTAL ARCHAEOLOGY

Serial No..... **SOIL INVESTIGATION—SUMMARY OF RESULTS** *Date:* 7th February, 1956

Site Name: Birdcombe, Somerset *Location:* Wraxall, Nr. Bristol *Archaeological Date:* Mesolithic *Nature of Site:* "Floor"

Excavated by: C. M. Sykes, S. L. Whittle *Date of Excavation:* January, 1955 *Date of Samples Received:* March, 1955

Site Seen by..... *Samples Investigated by:* I.W.C. and M. Barton

Sample No.	Description	Colour (moist)	Mechan. Anal. Method..... Stones %	Sand %	Silt %	Clay %	Sand Grains	Thin Sections	Charcoal	pH	Carbonates	mgs/100gms Phosphates	Sulphates	Organic Matter: Total combustion	Organic Matter: Alkali-soluble	Acid Insoluble Residue	Total Iron as Fe_2O_3 mgs/100gms Dry Soil	Other Metals and Radicles	Remarks
1	Reddish silty loams	7.5 yr. 4/3						*	—	6.0	—	1.6	—		Much	Mainly	160		
2		5 yr. 4/4							—	6.3	—	0.9	—		Little	siliceous	210		
3		5 yr. 4/4		33	49	18			—	6.2	—	1.0	—		,,	sand and	210		
4		Mottled 5 yr. 4/4 5 yr. 3/2						*	(little) +	6.3	—	0.9	—		,,	silt.	140		
5		5 yr. 4/4								6.2	—	1.2	—		,,	Rare charcoal grains.	170		
6		5 yr. 4/4								6.2	—	0.65	—		,,		140		
7		5 yr. 3/4								6.2	—	0.75	—		,,		190		

Thin Section * shows typical brownearth structure with very few streaks (birefringent under x nicols) of peptized iron in conducting channels, perhaps derived from bedrock (Keuper Marl). Podsolic braunerde.