GREENHILL BRONZE AGE SITE, OTFORD

J.A. PYKE

INTRODUCTION

The prehistoric site of Greenhill lies on a south facing slope within a coombe set in the North Downs. The coombe overlooks the River Darent at the point where the river passes through the village of Otford and is one of a cluster of five coombes set in the eastern scarp of the Darent valley. The site is well sheltered with the ground rising steeply from 350–600 ft. on three sides. To the south lies Otford Mount on which several earth banks and a bowl barrow can still be seen on the 600–ft. contour and which, it has recently been suggested, could represent an early form of pastoral hillfort similar to those found along the South Downs.[1] The land within the coombe is now taken up with private houses and most gardens have considerable tree coverage with yew, beech and birch the most common species. The North Downs Trackway runs along the ridge above the site and a track, which winds up the eastern face of the coombe and comes out within the enclosed area of the Mount, may well have been a route out of the coombe. (Fig. 1, c).

The soil at the head of the coombe is well drained and conducive to early agricultural techniques, in contrast to the soil on the lower slopes where drainage is impeded by clay. Soil analysis shows that loess is present in the deeper layers of the site and this could have been significant in the choice of the coombe as a settlement site. Wooldridge and Linton pointed out the existence of patches of loess soil along the North Downs[2] and the preference of early farming communities to favour this type of soil for settlement has already been noted.[3]

[1] J.A. Pyke, 'Danes Trench and prehistoric Land Division in the upper Darent Valley' *Arch. Cant.*, xciv (1978), 231–237.

[2] S.W. Wooldridge and D.L. Linton, 'Loessic soils in South-East England'. *Antiquity*, vii (1933), 297–310.

[3] J.G.D. Clark, *Prehistoric Europe : The Economic Basis*; (1952), 91.

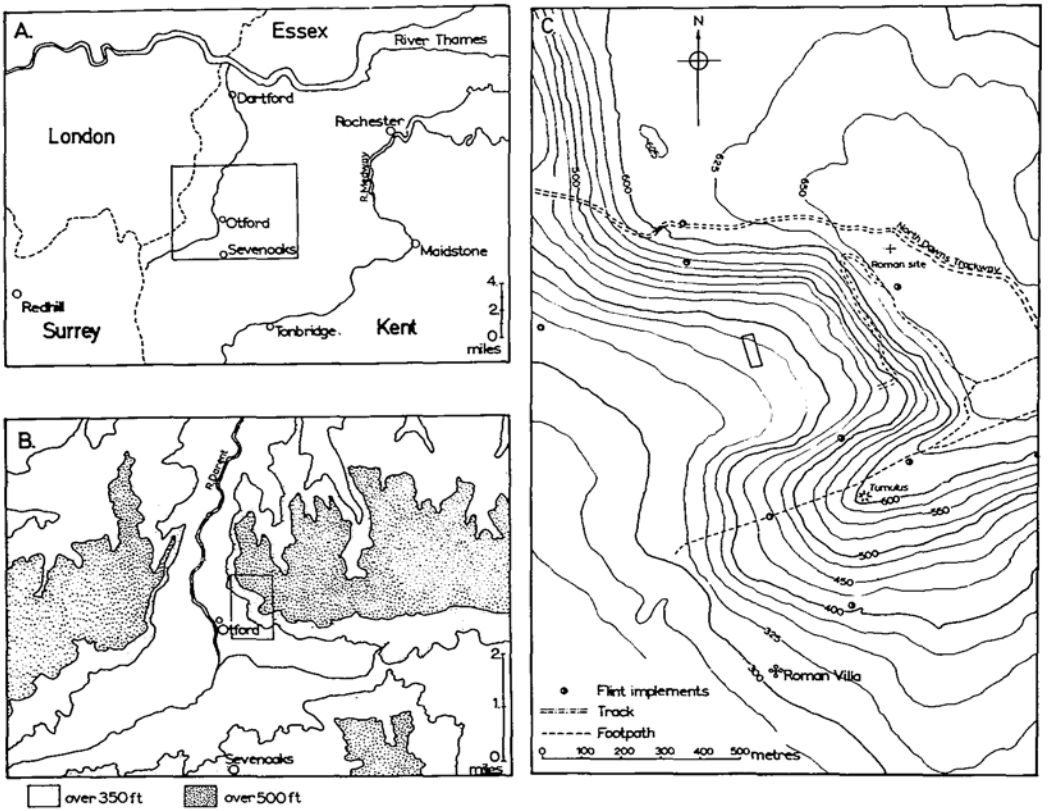
A.
Essex
River Thames
Dartford
London
Rochester
R. Medway
Otford
Sevenoaks
Maidstone
Redhill
Surrey
Tonbridge
Kent
4
2
0
miles
B.
R. Darent
Otford
Sevenoaks
2
1
0
miles
over 350 ft
over 500 ft
C.
N
North Downs Trackway
Roman site
Tumulus
Roman Villa
Flint implements
Track
Footpath
0 100 200 300 400 500 metres

Fig. 1

HISTORY

The coombe at Greenhill has a long history of land use prior to the houses being built in the 1930s. The tithe map shows 'La Combe' as being used for arable farming, and a detailed survey of the Archbishop's Manors in Kent and Sussex by Henry Lovel about 1284–5, quotes 664 acres of demesne arable land at Otford including 68 acres of 'La Coumbe'.[4] The siting of the Roman villa on Pilgrim's Way[5] and the Romano-British site at the top of Greenhill[6] both point to the use of the upper slopes of the valley during the Iron Age and indeed a number of lynchets can still be seen on the western slopes of Otford Mount.[7] Although lynchets are not easily dateable, by analogy with other areas of southern England they were probably formed during the Iron Age. The discovery of Iron Age pottery sherds in the coombe also suggests the use of the immediate area during this period.

In their *History of Otford*, Dennis Clarke and Anthony Stoyel suggest the coombe at Greenhill to be one of the likely sites where man first settled in Otford[8] and indeed over the years a number of worked flints have been found in the vicinity.[9] (Fig. 1, c). The first positive evidence came in 1970 while a bulldozer was moving earth to make a tennis court in the garden of 46 Greenhill Road, and uncovered a Middle Bronze Age burial.[10] At the time there was no evidence to suggest the burial had been under a mound or that it was part of a cemetery, and it was thought that the find represented an isolated burial. It was with this background and the kind co-operation of the owners of the land that an exploratory excavation was planned.

ACKNOWLEDGEMENTS

I would like to thank Mr. and Mrs. R. Pitcairn-Knowles, for allowing us to excavate in their garden throughout the summer months and also for their help and enthusiasm in making this excavation such a memorable one. I would also like to thank the members of the Otford and District Historical Society's Archaeological Group, and in particular David Gayfer, John Garrett, John Taylor and Cliff

[4] Dennis Clarke and Anthony Stoyel, *Otford in Kent — A History*, (1975), 57.
[5] *Arch. Cant.*, xlii (1930), 157–71.
[6] *Arch. Cant.*, lxi (1948), 182.
[7] Clarke and Stoyel, *op. cit.*, 8.
[8] *Ibid.*, 6.
[9] *O.S. Site Index.*
[10] *Arch. Cant.*, xci (1975), 185–7.

Ward. The pottery identification was kindly undertaken by Dr. I.H. Longworth, of the British Museum, the soil analysis by Dr. J.A. Catt, of the Rothamsted Experimental station, and the charcoal identification by Mrs. C.A. Keepax, of the Ancient Monuments Laboratory. Mr P.J. Tester visited the site and very kindly identified the flints. My gratitude is extended to all the above-mentioned specialists for their valuable help.

A financial contribution was kindly made to the Otford and District Historical Society's Archaeological Group by the Kent Archaeological Society and part of this was used to purchase equipment for this excavation.

EXCAVATION EVIDENCE

Excavation of the site consisted of a series of test holes dug within a grid system, close to the eastern boundary of the garden, approximately east of the Middle Bronze Age burial (Fig. 2). It was decided to concentrate on this area on the upper slope of the garden where a slight terrace was noticed in the lawn. An uninterrupted view of the whole length of the garden was possible and the main datum line was set up running north—south, from the edge of the road to the southern boundary of the garden.

Initial excavation of the main area, which included grid holes GR 1–4 (Fig. 2), revealed at a depth of approximately 40 cm. a change in soil colouration from a brown loam (Layer 2) to a dark brown silty loam (Layer 3). This distinctive horizon (Layer 3) contained pottery sherds, worked flints, bone fragments and charcoal, and appeared to be homogeneous with no evidence of features or stratification. The soil from this layer was dry-sieved through 5 mm. mesh sieves and all the artifacts were extracted. A controlled three-dimensional pottery plot over a two-metre square, every 5 cm. through the layer, showed an even distribution of sherds throughout the layer, with the possible exception of the last 5 cm. It was noticed during the trowelling of Layer 3 that evidence of worm action, in the form of pockets of 'pea grit' linings, was present.

After Layer 3 had been removed two distinct types of underlying soils were found. One was a pale brown hard packed silt (Layer 4) with rounded pellets of chalk, the other was a dark red-brown clay containing large numbers of flints. The clay-with-flints was set roughly in oval areas and appeared to be slightly raised above the adjoining hard packed silt. When these oval features were sectioned they were found to be hollows filled with the flint nodules set in a red-brown clay matrix. Apart from fragments of charcoal and visible

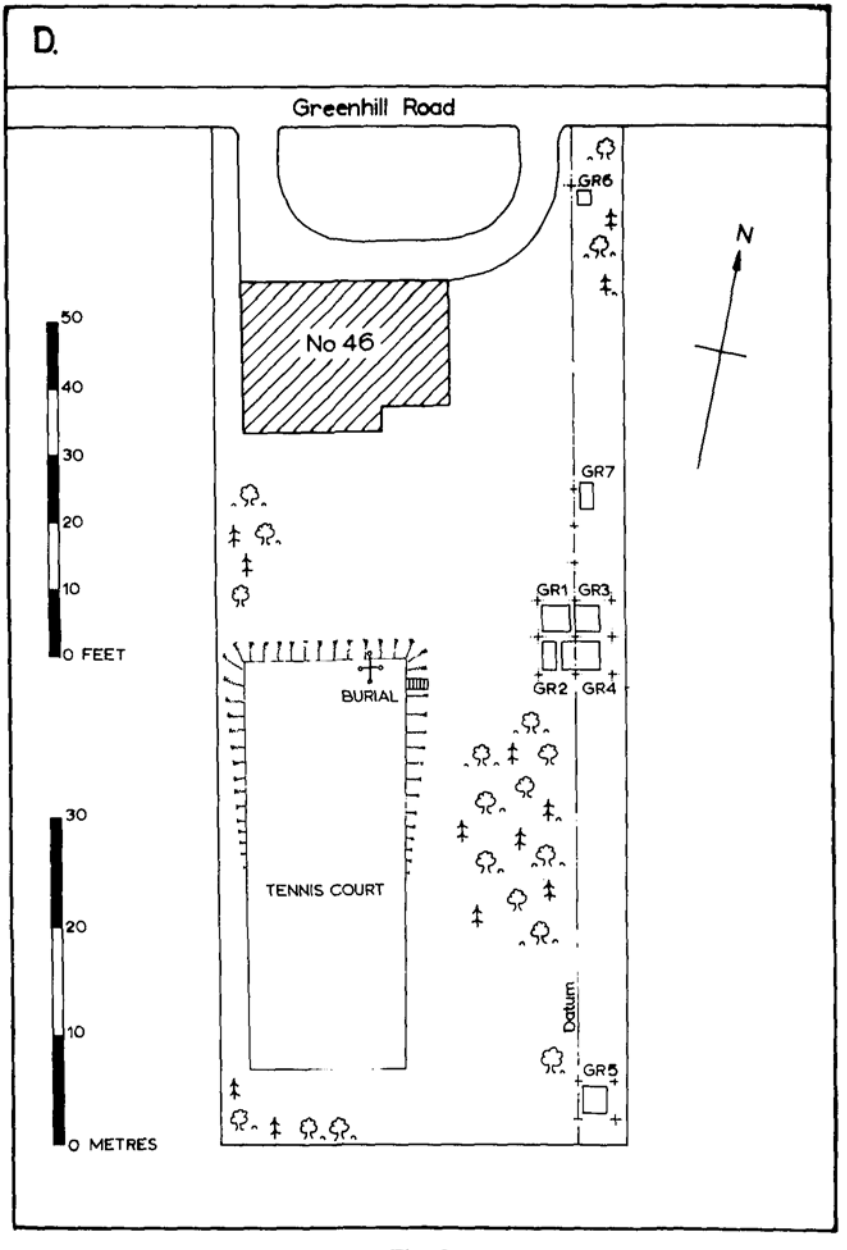
D.
Greenhill Road
No 46
GR6
GR7
GR1
GR3
GR2
GR4
GR5
N
BURIAL
TENNIS COURT
Datum
50
40
30
20
10
0 FEET
30
20
10
0 METRES

Fig. 2

snail shells (*Pomatias elegans*), the fill from these features was sterile. A post-hole (Feature 1) was found on the edge of one of these hollows cutting into Layer 4 and as half of this feature was in the east face of GR1 it was possible to see in section that this post-hole did not cut through the overlying Layer 3.

One of the most important features was found while excavating another hollow in GR 4. As the clay-with-flints was removed, a small area of burning was found set into Layer 4 in the base of the hollow. This feature (7) contained black soil with several burnt flints and a red crust around the southerly edge and had clearly been burnt *in situ* before the hollow had been filled in. The blackened soil from the fill of this feature was later subjected to a flotation process in the laboratory in the hope of finding charcoal or carbonized seeds, but only two fragments of charcoal were extracted from 10 kg. of soil.

A further three test holes were opened along the main datum; one adjacent to the road (GR 6), one between the road and the main area and the third (GR 5) close to the southern boundary of the garden. The test hole adjacent to the road proved to be sterile and the coombe rock was quickly reached 38 cm. from the ground surface. No evidence of the pottery layer was found and clearly the slope of the coombe was such as to prevent much wash accumulating at this point (Fig. 6). The intermediate test hole (GR 7) produced a similar stratigraphy to the main area, although it was noted that layer 3 was less thick and contained fewer pottery sherds and worked flints. The only feature in this area was a portion of a hollow which contained the distinctive clay-with-flints. The southern test hole (GR 5) adjacent to the boundary fence, also proved to be sterile, but here the coombe rock was deeper below much thicker layers. This was probably due to the fact that this test hole was close to the base of the coombe where the wash accumulation would be at its maximum. There was no evidence of the layer which contained the occupation debris or any hollows.

GENERAL CONCLUSIONS

If the site evidence is taken as a whole, the following sequence can be proposed for the prehistoric deposits in the coombe at Greenhill, Otford. Some time in the Late-glacial period a broad valley was cut into deposits of coombe rock at the foot of the chalk escarpment. As a result of this erosion a silty deposit, probably re-worked coombe rock, covered the surface of the valley over which, according to the molluscan evidence, woodland vegetation grew up. Over

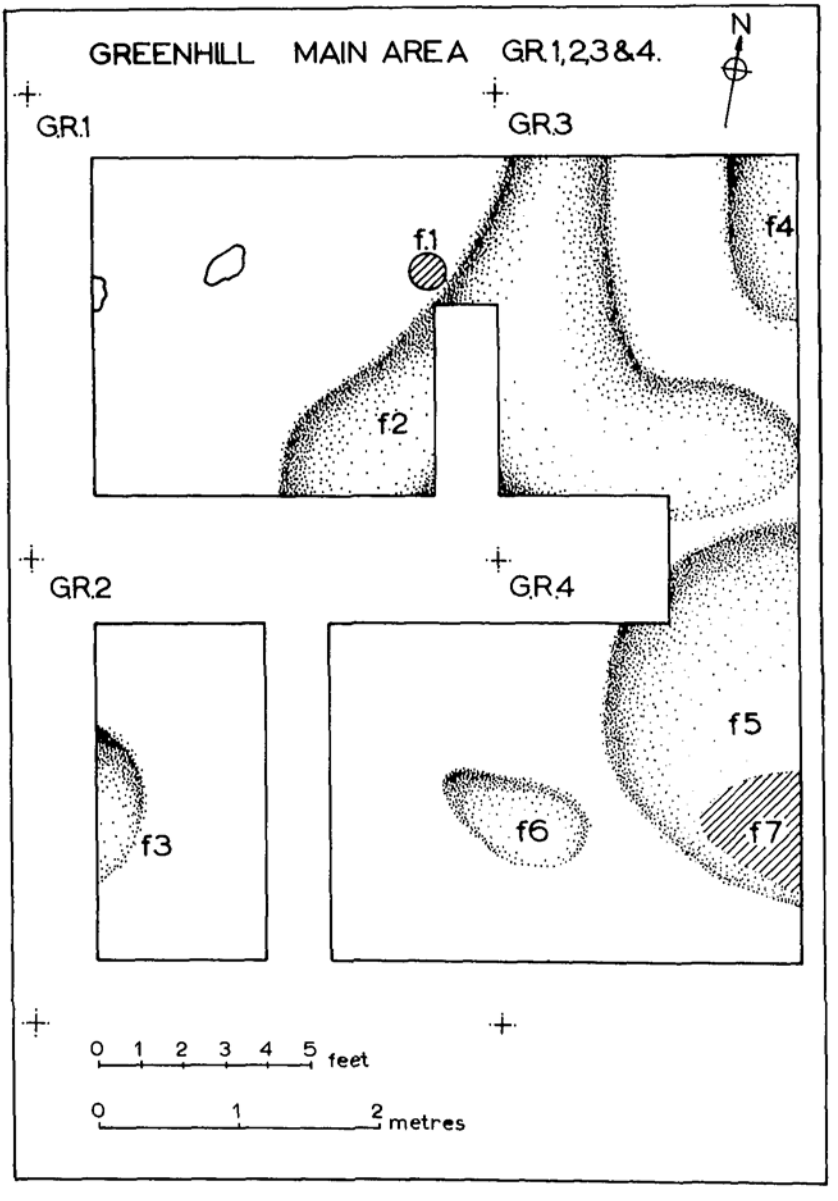
GREENHILL MAIN AREA GR.1,2,3&4.
N
GR.1
GR.3
f1
f2
f3
f4
f5
f6
f7
GR.2
GR.4
0 1 2 3 4 5 feet
0 1 2 metres

Fig. 3

a limited area of this horizon a number of hollows were formed which were subsequently filled with flints, set in a dark red-brown clay matrix. Unfortunately, there was no evidence to suggest the source of this fill, but the presence of a small oval area of burning in the base of one of these hollows, would suggest that this feature had been used by man, prior to the hollow being filled in. The molluscs from these hollows were predominantly of the woodland type and they included a relatively large number of *Pomatias elegans*, a species which Evans suggests if found in abundance generally indicates disturbed soil, for example after forest clearance.[11]

After the hollows had been filled in, the horizon was covered with a dark brown silty loam (Layer 3), which contained molluscs predominantly of the open country type, quite distinct from the woodland type in the underlying layer. While this layer contained much of the occupation débris in the form of pottery sherds, flint tools, bones and charcoal fragments, there appeared to be no stratification within it. The condition of the pottery sherds and the evidence from the soil analysis both point to this layer being a colluvial deposit, and the evidence of worm action found throughout the layer would also have contributed in homogenizing the soil. A three-dimensional pottery plot through Layer 3 in GR 4 confirmed a random distribution of sherds, with the possible exception of the 5 cm. above the underlying layer, where there appeared to be a concentration of sherds in the south-east corner. It is thought that this could represent a thin horizon of soil which formed across the site during its use and that the subsequent build-up of this layer occurred when soil, containing further débris, was transported down the slope after the site had been abandoned. The precise character of this disturbance is unknown, but the process would clearly have been accelerated by destabilization of the soil due to the removal of tree cover.

The direction of soil movement bringing down the débris would appear to have been along a south-west/north-east axis, following the natural slope of the hill. The pottery count points to a much higher concentration of sherds in GR 3 and GR 4 and the weight analysis would suggest there to be larger sherds in GR 3 than GR 4. It would seem probable, therefore, that the source of much of the débris would have been roughly north-east of GR 3 on the opposite side of the boundary fence.

It is suggested, therefore, that a limited area of forest on the south-facing slope of this coombe was cleared by man and the remaining stumps were grubbed out, thus forming a number of

[11] J.G. Evans, *Land Snails in Archaeology*, (1972), 134.

hollows. In one of the hollows a small fire was made, then shortly afterwards the hollows were filled in to level the site for human settlement. It would seem unlikely that such a clearing would have ever been used for arable farming, if the hollows had been filled in with flint-laden clay. Therefore the most likely function of such a clearing would seem to have been as a cattle enclosure or pound, indeed the subsequent build up of organic débris across such an area could well account for the distinctive characteristics of the soil within this layer (3). The location of the site, which is some distance away from the nearest source of water, is unlikely to have encouraged permanent settlement, and it would appear that this site represents the temporary settlement of a small group of people practising seasonal upland grazing. Such a hypothesis could account for the paucity of finds, as a temporary camp would clearly not involve any great need for pottery vessels or flint tools.

A somewhat similar sequence of coombe deposits was found at Pitstone in Buckinghamshire[12] where a buried soil containing charcoal fragments was found overlying a pale brown chalk gravel and clay matrix derived from coombe rock. The fauna suggested that the paleosol represented a clearance horizon which was dated by radiocarbon to 1960 b.c. ± 220 (HAR – 327). Above this paleosol was a ploughwash deposit which contained several Iron Age and Romano-British pottery sherds. The major differences between the Greenhill and Pitstone sequences were that the Pitstone clearance horizon spanned the complete coombe and no hollows were found below it. At Greenhill the clearance layer was confined to a small area of the slope which appeared to coincide with the area in which the hollows were found.

At the time of writing the C^{14} dates for the clearance horizon at Greenhill are not available and precise dating of the site is not possible. The pottery assemblage which contained Peterborough and Beaker wares, would point to an early second millenium date for the period of settlement and while the flints are too few in number to confirm this, they too could fit broadly into a late Neolithic/Early Bronze Age date.

There was no evidence to suggest that the Middle Bronze Age burial was enclosed under a barrow, and it would seem likely that this burial was an isolated one, inserted in the area after the settlement had gone out of use.

Some Iron Age activity in the coombe is indicated by the recovery of a small quantity of Iron Age pottery from the immediate area,

[12] J.G. Evans and K.W.G. Valentine, 'Ecological Changes induced by prehistoric Man at Pitstone, Buckinghamshire'. *Journ. Archaeol. Science*, 1 (1974), 343–52.

but the nature of this activity is as yet unknown. Several typical Late Iron Age sherds have been found in this particular garden by the present owners and several sherds of similar date, together with a portion of a blue glass bead of possible Romano-British date, were recovered from Layer 2 in GR 3 during this excavation. It could well be that a second, more extensive phase of forest clearance occurred at Greenhill during the Iron Age, similar to a number of other coombe sites along the North Downs,[13] but confirmation of this will have to await further investigation.

STRATIGRAPHY MAIN AREA GR 1, 2, 3, 4 AND 7

Layer	Description	Soil Colour Munsell	pH
Layer 1	Dark calcareous loam; occasional flint gravel and chalk fragments.	10 YR. 5/1.M.	9.0
Layer 2	Brown calcareous loam; chalk fragments with some flint gravel.	10 YR. 5/4.M.	9.4
Layer 3	Dark brown silty loam; a few chalk fragments; weakly calcareous; fragments of charcoal and pottery.	10 YR. 4/2.M.	8.9
Layer 4	Pale brown; rounded chalk gravel in calcareous silt matrix.	10 YR. 6/5.M.	9.65
Layer 5	Dark red/brown clay containing large flint nodules; some fragments of charcoal.	5YR. 4/4.M.	9.50
Layer 5 (a)	Black soil; small fragments of charcoal and burnt flints.	10 YR. 3/1.M.	
(b)	Red burnt clay crust around southern edge of 5(a).	5 YR. 4/6.M.	
Layer 6	Coombe rock.		

STRATIGRAPHY GR 5

Layer 1	Dark calcareous loam; occasional flint gravel and chalk fragments.	10 YR. 5/2.M.	8.0
Layer 2	Grey/brown loam; some small flint gravel.	10 YR. 6/3.M.	8.48
Layer 3	Yellow/brown loam; some flint gravel and chalk fragments.	10 YR. 5/5.M.	8.42
Layer 4	Pale brown loam; flint and chalk gravel.	10 YR. 6/4.M.	8.42
Layer 5	Coombe Rock		

[13] M.P. Kerney, E.H. Brown and T.J. Chandler, 'The Late-glacial and post-glacial History of the Chalk Escarpment near Brook, Kent', *Phil. Trans. Roy. Soc.*, B248 (1964), 135–204.

STRATIGRAPHY GR 6

Layer 1	Dark calcareous loam; occasional flint gravel.	10 YR. 5/2.M.	9.0
Layer 2	Brown loam; chalk fragments with some flint gravel.	10 YR. 5/4.M.	9.4
Layer 3	Coombe Rock		

FLINTS – P.J. Tester (Fig. 4)

Out of about 250 artifacts approximately 238 are simply waste material from flint working. Most flakes are thin and irregular in outline though a proportion are roughly pointed. Nearly all are densely patinated with the dull white surface usually found on flints in chalk country. Amongst this waste is a number of small blades, many truncated by snapping across and not by the classical mesolithic 'micro-burin' or notching technique. Such blades certainly appear in the secondary Neolithic and may extend beyond this in either direction.

Only eight certain tools can be recognised although some of the waste flakes may have been utilised without obvious retouching. The three round-edged scrapers (1, 2 and 3) could date anywhere from Mesolithic to Bronze Age; gravers or burins (7 and 8) are likely to be Mesolithic; the oval blade (4) is broken but may be a knife or even a large Neolithic leaf-shaped arrowhead. End-scrapers on blades are common in the Mesolithic (5 and 6).

There is no certainty that these flints all belong to a unitary assemblage and their manufacture may well cover a wide period. Such diagnostic features as occur indicate a possible range from the Mesolithic to the Bronze Age.

Against the possibility of a Mesolithic age for the atypical waste material is the fact that there are no micro-burins, core axes or axe-sharpening flakes, but such negative evidence in so small an assemblage is of doubtful value.

Implements	Round-edged scrapers ..	3	(Nos. 1–3)
	End-scrapers	2	(Nos. 5–6)
	Oval blade (? knife) ...	1	(No. 4)
	Burins	2	(Nos. 7–8)
Waste Material	Irregular flakes	194	
	Small blades	32 +	
	Chippings	12	
		246 +	artifacts

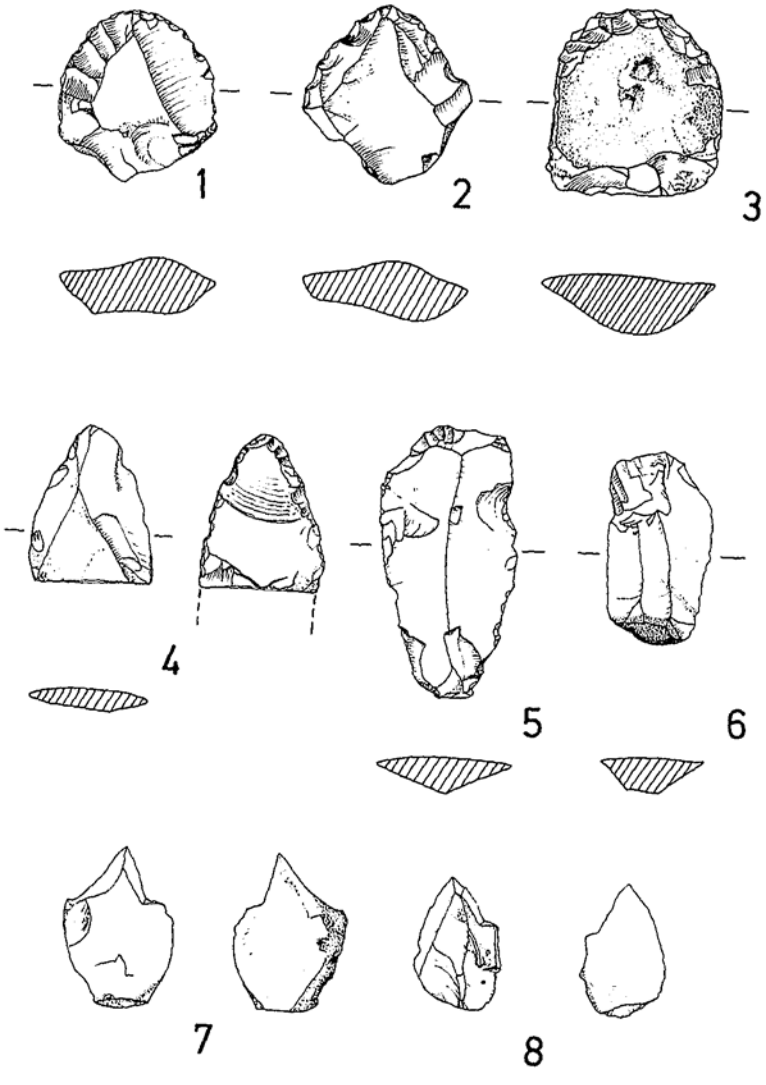

Fig. 4 (½)

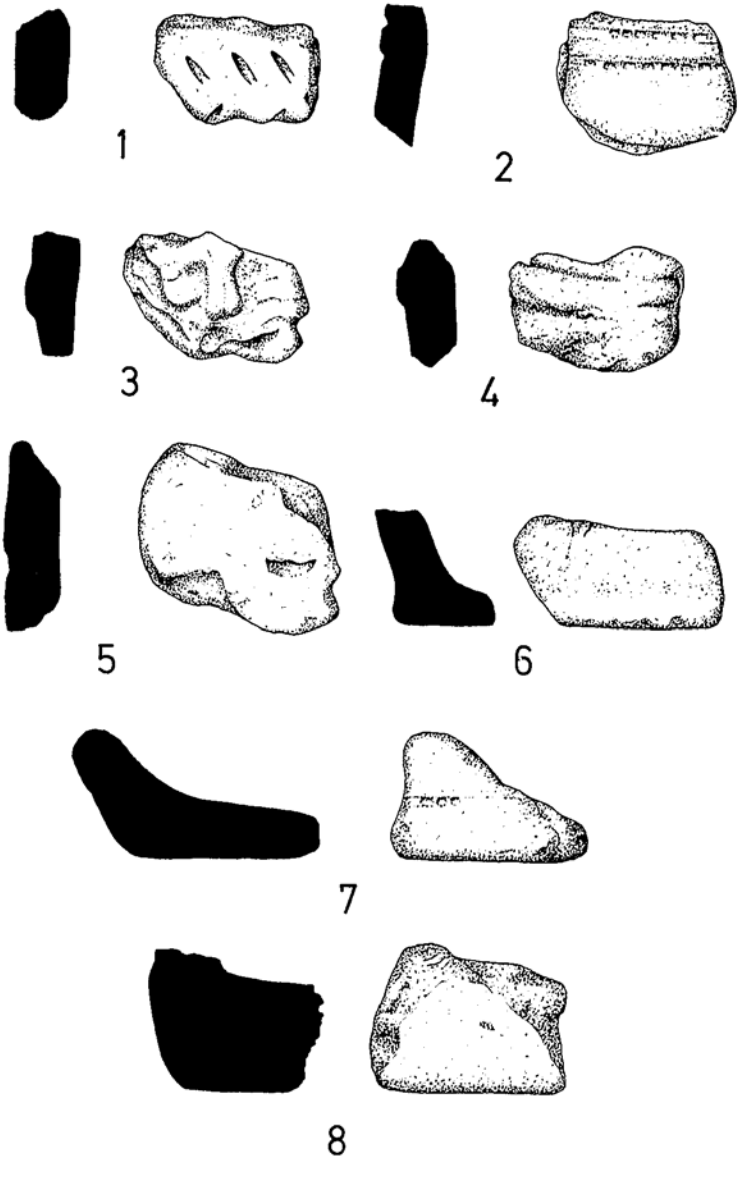

Fig. 5 (¼)

POTTERY – Dr. I H. Longworth (Fig. 5).

No. 1	Beaker with fine impressed herringbone decoration	(GR4. L3D)
No. 2	Beaker decorated with comb stamp lines	(GR1. L3)
No. 3	Rusticated decoration, Beaker or Peterborough ware	(GR3. L3)
No. 4	'Finger pinched' Beaker	(GR2. L3)
No. 5	'Finger pinched' Beaker	(GR3. L3)
No. 6	Base angle. Late Neolithic/E.B.A. fabric	(GR3. L3)
No. 7	Base angle of Beaker with comb stamp decoration	(GR2. L3)
No. 8	Base angle of Early Bronze/Middle Bronze Age fabric	(GR4. L3B)
	Early Bronze/Middle Bronze Age fabric	(GR2. L3)
	Bronze Age bucket urn fabric	(GR4. L3D)
	Peterborough ware	(GR1. L3)
	Late Neolithic/Early Bronze Age fabric	(GR4. L3B)

POTTERY COUNT FROM LAYER 3

Grid No.	Area (sq.m.)	Number of sherds	Weight gms.	Weight/ sq. metre
G R 1	5.94	44	115	19.3
G R 2	2.97	30	50	16.8
G R 3	5.20	190	330	63.5
G R 4	7.16	267	180	25.1
G R 7	2.97	36	55	18.5
Total	24.2	567	730	30.2

SOIL ANALYSIS OF PROFILE 1 — Dr. J.A. Catt

All horizons on the site are highly calcareous (Table 1) and the whole succession probably originated as a series of slope deposits incorporating chalk and other material from upslope.

From the abundance of coarse silt, the particle size analyses suggest the occurrence of some loess in all horizons. It is most abundant in Layer 6, though as in other samples it is mixed with a little sand of various sizes. This is typical of coombe deposits, which are

TABLE 1

∅ Divisions	μm Equivalent		Layer 1	Layer 2	Layer 3	Layer 4	Layer 5	Layer 6
0 to −1	1000 - 2000		1.1	0.9	1.0	0.5	0.3	0.8
+ to 0	500 - 1000		1.2	1.0	1.2	0.8	0.7	1.0
+2 to +1	250 - 500	Sand	3.5	3.6	3.5	3.2	2.8	5.2
+3 to +2	125 - 250		4.2	4.2	3.6	3.1	3.1	6.3
+4 to +3	63 - 125		5.3	5.3	5.2	4.1	5.2	7.6
+5 to +4	31 - 63		12.8	14.0	13.0	17.4	12.0	22.1
+6 to +5	16 - 31		12.0	10.8	14.3	16.1	14.7	17.5
+7 to +6	8 - 16	Silt	7.8	9.6	10.1	11.9	9.7	8.2
+8 to +7	4 - 8		5.7	4.4	5.3	5.0	5.6	3.1
+9 to +8	2 - 4		3.0	3.3	3.8	3.6	4.9	2.6
> +9	< 2	Clay	43.4	42.9	39.2	34.3	41.0	25.6
% $CaCO_3$			56.7	54.8	13.8	70.8	35.6	70.9

Particle size distribution (decalcified, over-dry <2 mm. basis) of samples from Greenhill Road, East Baulk in GR1
(∅ = $-\log_2$, where d is grain size in mm.)

TABLE 2 MOLLUSCS

Layer No.	Profile 1 (GR1) L1	L2	L3	L4	Profile 1 (GR1) Subsoil Hollow L5	Profile 2 (GR3) L1	L2	L3	I 4
Dry Weight (Kg.)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Pomatias elegans (Müller)	–	2	1	–	14	–	–	–	2
Carychium tridentatum (Risso)	–	–	1	3	14	1	–	–	–
Cochlicopa Lubricella (Müller)	–	–	–	–	1	1	1	–	–
Vertigo Pygmaea (Draparnaud)	–	1	–	–	–	2	6	1	–
Pupilla Muscorum (Linné)	–	18	3	4	1	2	5	3	1
Abida Secale (Draparnaud)	–	–	–	–	1	1	–	–	–
Lauria cylindracea (da costa)	1	–	–	–	–	–	–	–	–
Vallonia costata (Müller)	3	48	48	3	–	16	70	49	3
Vallonia excentrica (Sterki)	–	3	1	–	–	–	2	–	–
Vallonia pulchella (Müller)	–	–	–	2	4	–	–	–	–
Ena obscura (Müller)	–	–	–	2	–	–	–	–	–
Clausilia bidentata (Ström)	–	–	–	–	4	–	–	–	–
Ceciliodes acicula (Müller)	3	66	50	18	25	8	76	35	33
Hygromia striolata (C Pfeiffer)	3	4	1	–	–	5	1	1	2
Hygromia hispida (Linné)	11	10	–	–	4	34	12	1	–
Helicella itala (Linné)	12	64	8	1	2	23	45	20	3
Discus rotundatus (Müller)	–	–	–	2	24	2	–	–	–
Vitrea contracta (Westerlund)	4	–	–	–	1	1	–	–	–
Oxychilus cellarius (Müller)	1	1	–	1	9	3	1	–	1
O. alliarius (Miller)	–	–	–	1	–	–	–	–	–
Retinella pura (Alder)	–	–	–	–	–	1	–	–	–
Helicigona lapicida (Linné)	2	–	–	–	–	–	–	–	–

derived mainly from frost-shattered chalk and flint, but also tend to incorporate much loess which rained down during the cold periods (e.g. Late Devensian) when the frost-shattering and solifluction occurred. Layer 5 has some loess, but the larger amount of clay compared with Layer 6 suggests that clay deposits (possibly Clay-with-flints) were somehow being incorporated. This could have come in various ways, and there is little in the particle size evidence to suggest any particular mode of transport.

Layer 4 is very like Layer 6, apart from a little more clay and less sand in the non-calcareous fraction, and is probably derived from the coombe rock (Layer 6). Layer 3 is probably a colluvial deposit derived largely by erosion of soil formed on coombe deposits.

Layers 1 and 2 are somewhat similar, again derived mainly from slope deposits incorporating chalk and other material including clay from upslope.

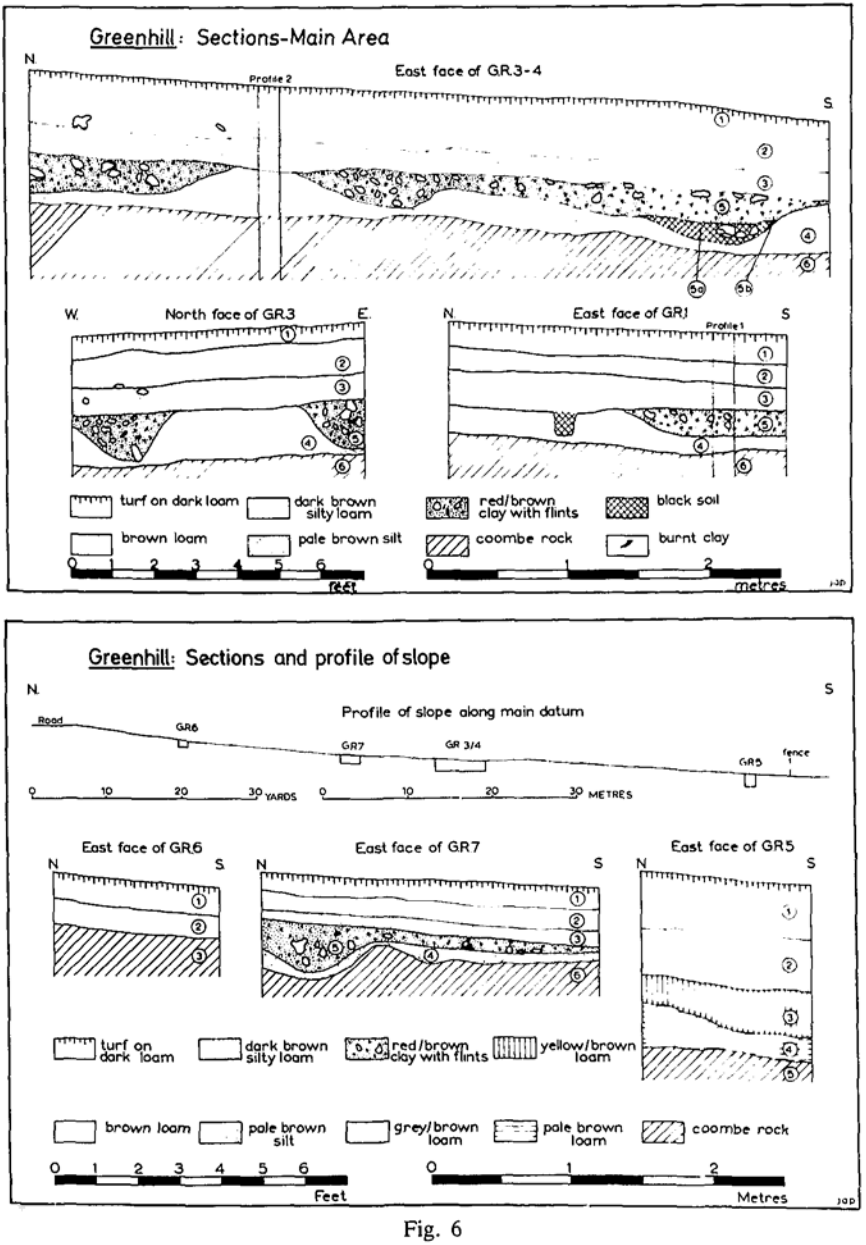

Fig. 6

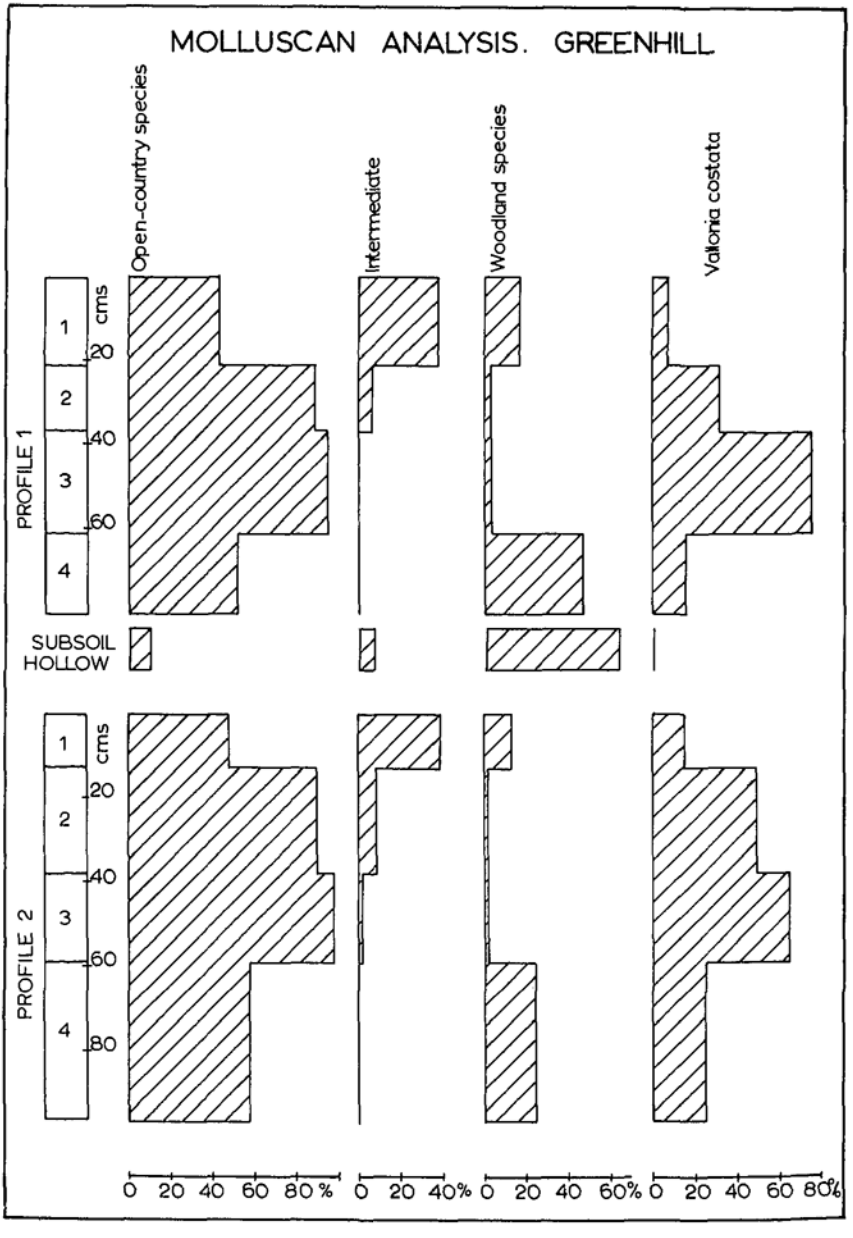
MOLLUSCAN ANALYSIS. GREENHILL
Open-country species
Intermediate
Woodland species
Valonia costata
PROFILE 1
cms
1
2
3
4
20
40
60
SUBSOIL HOLLOW
PROFILE 2
cms
1
2
3
4
20
40
60
80
0 20 40 60 80 %
0 20 40%
0 20 40 60%
0 20 40 60 80%

Fig. 7

CHARCOAL IDENTIFICATION – Mrs. C.A. Keepax

Sample 1 791625 Grid GR 3. Layer 3.
A small quantity of fragmented charcoal was present, consisting of the following taxa:-
Prunus sp. (e.g. Blackthorn)
Corylus/Alnus sp. (Hazel/Alder)
Fraxinus sp (Ash)

Sample 2 791626 Grid GR 3. Layer 3.
This was not wood charcoal, but seemed to be a type of lignified material.

Sample 3 791627 Grid GR 4. Layer 5a.
A single fragment of *Salix/Populus* sp. (Willow/Poplar) was present.

N.B. Identifications were from the examination of transverse sections only.