A BEAKER (?) BURIAL MONUMENT AND A LATE BRONZE AGE ASSEMBLAGE FROM EAST NORTHDOWN, MARGATE*

G.H. SMITH

With contributions by
N.D. Balaam, J.D. Henderson, B.M. Johansson, B. Meddens, D.R.J. Perkins and K.D. Thomas

SUMMARY

Aerial photography has revealed a number of archaeological features in the Northdown area including a group of ring ditches. Excavation of one of these in August and September 1984 revealed a single continuous ring ditch of a possible disc barrow. No clearly primary deposit was found, but pottery in secondary positions suggests an early Beaker origin. Molluscan evidence suggests that the monument was constructed in an open, probably short-turfed grassland environment. Evidence from three possible cremation pits inside the ring ditch enclosure and an inhumation inserted in one of the lower fills of the ring ditch show that the monument was still in use in the Late Bronze Age. After the ring ditch had partially silted, a large quarry had been dug into one of its sides. Later, a layer of domestic refuse including pottery, flintwork and three bronzes was deposited in the ditch suggesting the presence nearby of a settlement of Late Bronze Age date. The monument was finally included in a boundary of a Romano-British or later field system and two inhumations were inserted into the top of the largely silted-up ditch, the molluscan evidence confirming the presence of an open, arable environment.

* Published with the aid of a grant from English Heritage (Historic Buildings and Monuments Commission for England).

INTRODUCTION

The Isle of Thanet is a plateau of Upper Chalk lying mostly around 30–50 m. O.D., dissected by shallow dry valleys. To the south-west it slopes gently to the Minster and Chislet marshes, the silted-up Wantsum Channel (Fig.1) which in Roman times and before separated the Isle from mainland Kent. Areas of prehistoric coastal occupation, potentially important for future research, may lie here to be discovered (Champion 1982). To its north and east, however, coastal erosion has created chalk cliffs and significant areas of land have been lost (Fig. 1, lower, shows the Wantsum Channel as it probably appeared in Roman times but does not try to extrapolate the extent of eroded coastline as this would have to rely upon cliff attrition rates; see Elworthy *et al.* 1986). East Northdown is part of the chalk plateau, here sloping gently towards the sea, and the site (N.G.R. TR 385704) lies at 35 m. O.D., about 750 m. from the present coastline. Until the beginning of this century the area was open farmland, which has since been gradually encroached upon by the expansion of Margate and Broadstairs. The land is fertile with a soil derived mainly from brickearth, which still survives in hollows and dry valleys.

Aerial photographs of the Northdown area have revealed a number of archaeological features including at least sixteen ring ditches together with linear ditches and sub-rectangular enclosures. These have been plotted by D.R.J. Perkins of the Thanet Archaeological Unit (Fig. 2). Attention was first drawn to the archaeological importance of the area through the work of the Kent Archaeological Rescue Unit, which carried out watching briefs during house building nearby as well as the rescue excavation of one ring ditch (Cambridge University Collection, A.R.R. 45, Fig. 2, A). Apart from ring ditches, other crop-marks, which have been identified, include one horse-shoe shaped ditch and henge-like ring ditches with causeways and internal features.

The crop-marks revealed on aerial photographs of the site under consideration, 274 (Cambridge University Collection B.I.W. 8 and B.I.W. 11, Plate IA) were originally interpreted as a possible henge monument with multiple concentric ditches and opposed entrances. The site was scheduled (S.A.M. Kent 384) and Scheduled Monument Consent was granted with excavation as a condition when application was made by the landowners for planning permission to build houses over the site. Excavation was regarded as vital because the majority of this interesting group of monuments (considering the absence of henges and the paucity of excavated barrow sites in Kent) had disappeared under housing development without any clear understanding of them.

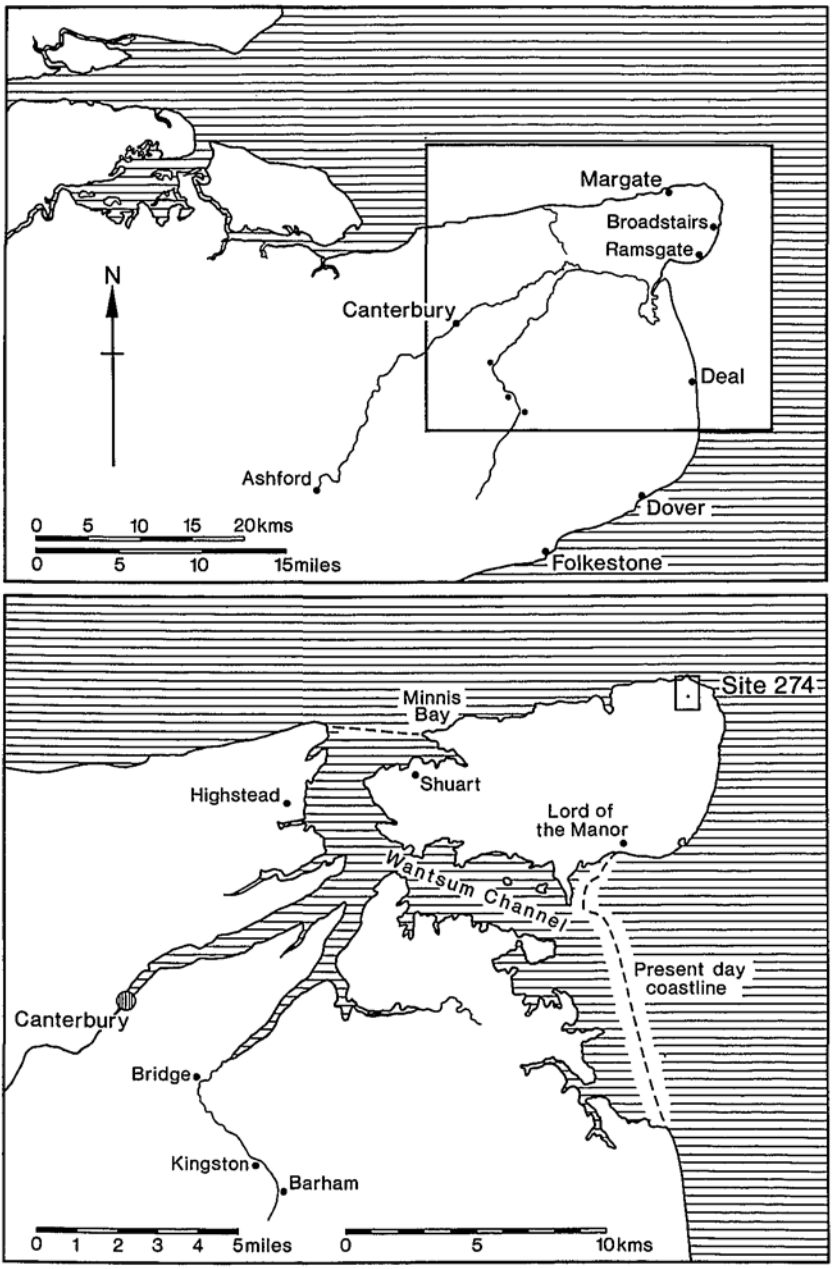


Fig. 1. Site Location and ancient Coastline.

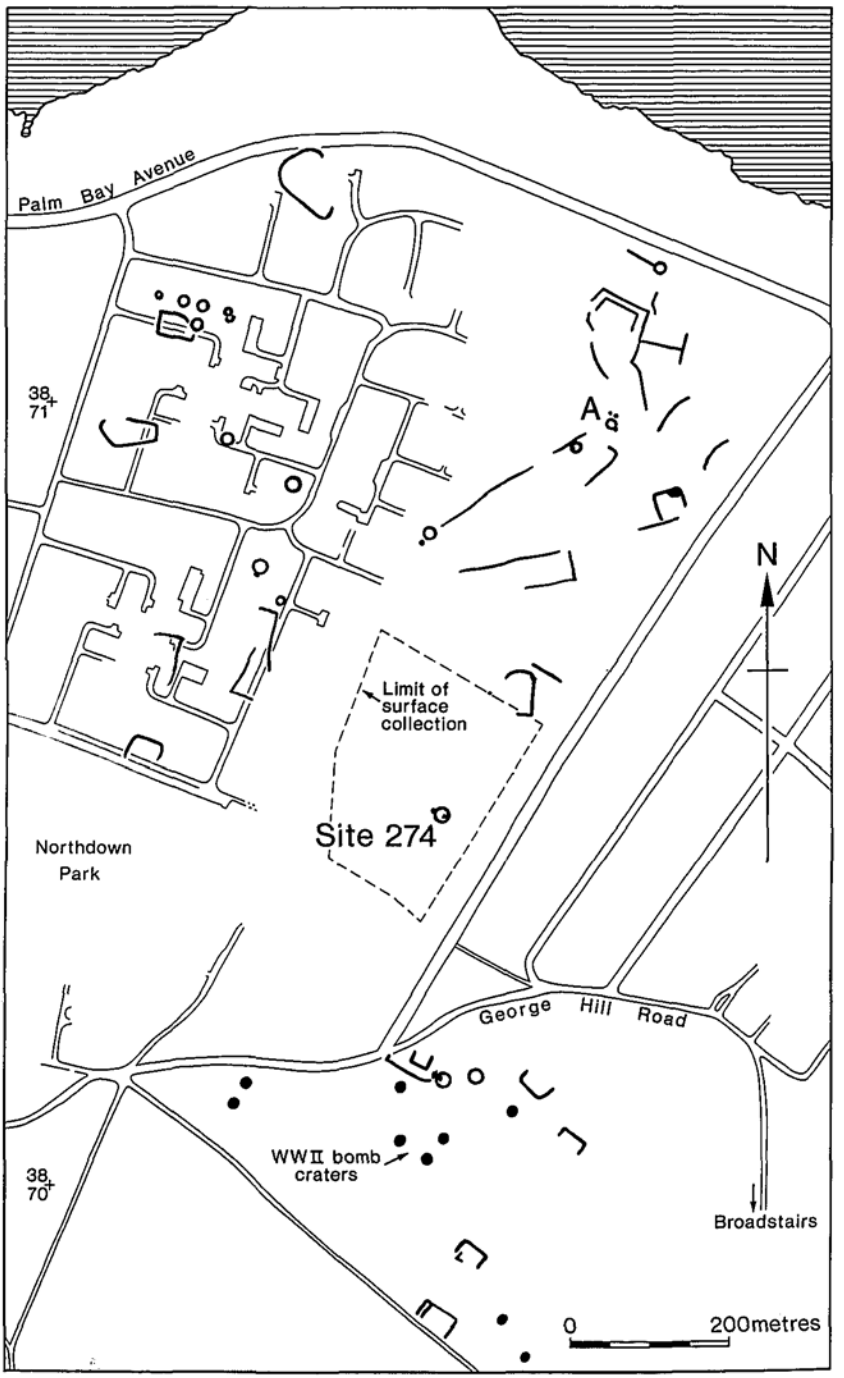


Fig. 2. Crop-marks in the Northdown Area.

The work was carried out by the Central Excavation Unit of the Historic Buildings and Monuments Commission in August and September 1984. The details of the excavation and post-excavation work are contained in an archive which is lodged with Kent County Museum Services, West Malling, together with all the finds, kindly donated by the landowners, Sunley Estates Ltd. The archive is also reproduced on microfiche, held at the National Monuments Record, 23 Savile Row, London, W1X 2HE, and at the C.E.U., Fort Cumberland, Eastney, Portsmouth, PO4 9LD.

ACKNOWLEDGEMENTS

Thanks must go to the farmers, Messrs. F.A. Steed and D.G. Nicholas, and to the landowners, Sunley Estates Ltd. for permission to excavate and for considerable assistance in organizing the work. Stuart Needham of the British Museum kindly offered comments on the bronze finds and report and Alan Saville of Cheltenham Museum on the flint report. Thanks must also go to D.R.J. Perkins for his advice and encouragement as well as to members of the Thanet Archaeological Unit, particularly J. Hirst and J. McCarthy and a team of young people, part of a local M.S.C. training scheme, who helped on the excavation. The excavation team was supervised by N. Appleton and P. Harrington, the finds recording by J. McKinley and A. Borrow, the planning carried out by M. Coxah and the section drawing by P. Fox and A.M. Lovatt. Geophysical surveying was carried out by A. Bartlett and A. David (Ancient Monuments Laboratory) and soil sampling by J. Ede. Conservation was carried out by G. Edwards and material analysis by J. Bayley and P. Wilthew (all of the Ancient Monuments Laboratory). The report and archive were produced by: C. Thorne (Ancient Monuments Drawing Office, artefact drawings), D. Goodger and P. Magrath (maps, plans, sections and diagrams), J. Humble (help with flint recording), B.K. Attewell (data processing), S. Keyte and S. Batten (typing), R. Bartkowiak (photo. processing). Lastly, thanks to all who carried out the excavation itself and to the local people for their generosity and hospitality.

THE EXCAVATION

Excavation was preceded by geophysical survey, gridded surface collection and sampling of the ploughsoil over the monument. The ploughsoil was then stripped by machine. The geophysical survey, by

magnetometer, allowed precise location of the monument and suggested it was a single continuous ring ditch (Bartlett 1984). Surface collection was restricted to an area of approximately 300 × 200 m. (Fig. 2), as the adjacent area to north and south was either by now built over or still under cultivation. The collection was carried out using a timed interval (one person collecting for ten minutes within each 20 m. grid square). This produced a light scatter of very damaged flint flakes in a distribution with a slight concentration in the general area of the field containing site 274 (Fig. 3). The ploughsoil sampling was carried out by means of one bucket (approx. 20L.) samples on a 5 m. grid over an area 40 m. sq. which were then dry sieved through $\frac{1}{4}$ in. and a $\frac{1}{8}$ in. meshes. Results from these surveys will be discussed further below. The ploughsoil sampling was designed to test the distribution of finds in the ploughsoil prior to its removal and to allow comparison with contents of excavated features. For future reference it should be noted that the results of the surface collection, ploughsoil sampling and excavation while controlled were still not directly comparable as the artefact recovery methods and rates would be different in each case.

Trial trenching of an area 100 m. sq. around the monument was carried out with ten machine-cut parallel trenches approximately 1 m. wide at 10 m. intervals. These revealed only two small linear features, possibly parts of a former field system, visible also as crop-marks (Fig. 2). Details of these can be referred to in the archive.

The Ring Ditch, 501 (Fig. 4)

This was sub-circular in plan with internal and external diameters of approximately 15 m. and 22 m., respectively. It was originally neatly cut with steep-sloping sides and a flat bottom. It was between 1.50–1.60 m. deep from the present chalk surface; its base was *c.* 0.50 m. wide and the width at the surface, when originally cut, of probably no more than 1.20 m. (Fig. 5). The fill of the ditch can be divided into six layers, from the top down: 522 and 1335–9, and these are used for reference in discussing the finds. The chalk silts, 1336–9, varied from fine to coarse, contained very few finds and were truncated on the west side by the excavation of a quarry (990, Fig. 6, Plate IIB). The quarry originally tunnelled into the chalk leaving an overhang which later collapsed. There were no artefacts on the floor or in the primary silts of the quarry. A dark humic layer between two phases of the quarry collapse probably resulted from an animal burrow. Layer 1336 in the ditch fill corresponding with layer 952 in the quarry was very rich in mollusca. Layer 1335 was a dark humus-rich layer incorporating pottery, worked flint, quern and clay

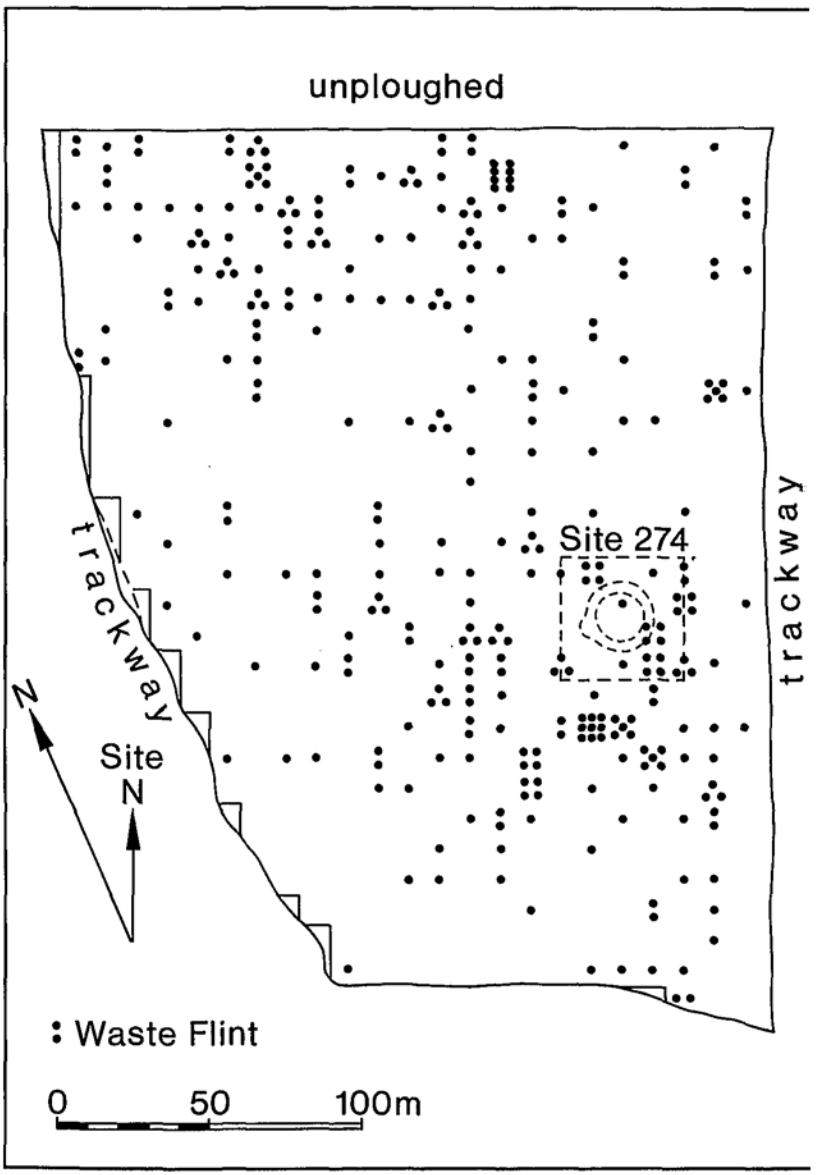


Fig. 3. Northdown. Plot of Surface Collection of Flint Waste Flakes.

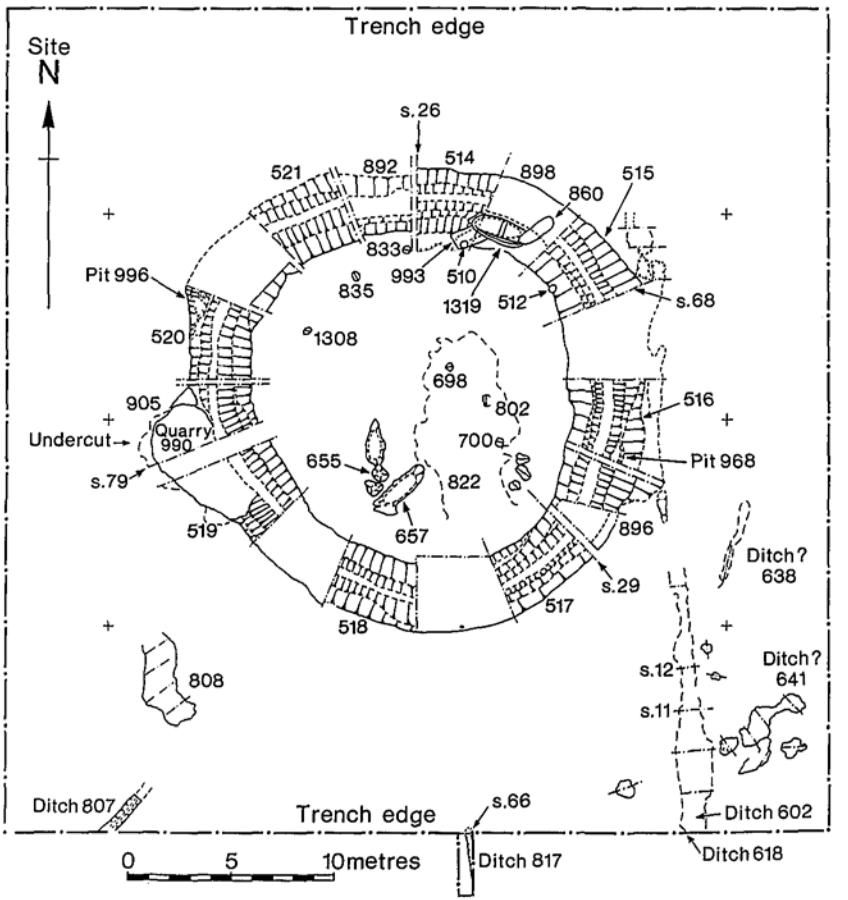


Fig. 4. Northdown. General Plan of Excavation.

weight fragments and animal bones suggesting domestic refuse from a nearby settlement. This merged with the top fill (522), which incorporated pottery from Beaker to medieval. Soil columns for molluscan analysis were taken through the section of quarry 990 and through three of the ditch sections. Mollusca from one of the latter (section 26, Fig. 5) were extracted and identified (Thomas and Johansson, below). A bulk sample from layer 1335 was processed by flotation for possible retrieval of carbonized botanical material but without result (Balaam). Charcoal from layer 1337 was identified (Balaam) and produced a radiocarbon date of 3020 ± 80 B.P. (HAR-7010).

The original excavation design was planned with the intention of excavating 50 per cent of the ring ditch in alternating segments (Plate IB). However, a further 25 per cent was excavated in the course of investigating features discovered and to retrieve a larger assemblage of artefacts from layer 1335.

The aerial photograph of the site prior to excavation (Plate IA) showed a lighter band around the ditch, which might have been the remnant of an external bank. Nothing was found during excavation which could have produced this crop-mark, not even a change in level of bedrock. It may be that the lighter band of the crop-mark was produced by improved drainage of the chalk adjacent to the ditch. However, all eighteen sections of the ring ditch (e.g. Plate IIA) show a slight bias in their silting. In all cases more of the primary silting had spilled into the ditch from outside it. This seems to have protected the outer edge of the ditch to some extent contrasting with the greater weathering of the inner edge (Fig. 5). Correspondingly, the upper layers (522 and 1335) of each ditch segment lay slightly off-centre from the ditch profile, towards the inner edge. There is some evidence, therefore, for the former existence of an external bank rather than an internal mound.

Apart from the quarry there was a number of other features associated with the ring ditch. On the west side a pit (996) had been dug into the ditch side, stratigraphically contemporary with the quarry. The pit was only partially excavated, contained no finds and appears to have silted in naturally, so it may, too, have been a small quarry.

In segment 517 at the junction of layers 1335 and 1336 there lay a group of human bones consisting of four long bones and a lower jaw. These may have been part of one skeleton of a young adult, 25–35 years (Henderson 1987), but which by their position, uneven representation and lack of grave pit suggest that they were disarticulated at the time of deposition.

In segments 516 and 896 a large pit, 3.40 m. long (968, Fig. 4) had been cut through the top of layer 1336 almost to the base of the ditch. It had vertical ends through the re-cut ditch fills, but its sides respected the original ditch. It must have been backfilled immediately after excavation because the ends, cut through ditch silt, were vertical and unweathered and because the fill was not silt but contained large pieces of chalk cut from the surrounding ditch edge, which was, therefore, somewhat wider here. There were no finds from the pit to suggest a function although its general size and elongated shape could suggest an inhumation burial of which no trace remained. Stratigraphically, the pit pre-dates layer 1335 but post-dates 1336.

In segments 514 and 898 an elongated oval pit 1319, 2.12 m. long,

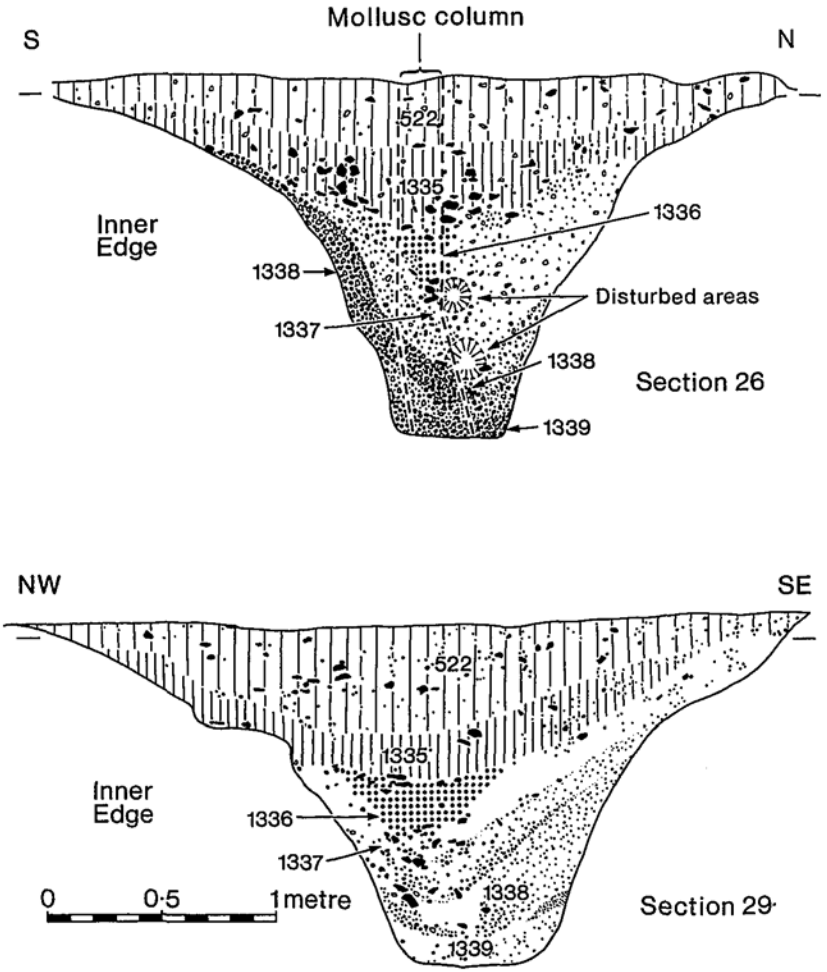


Fig. 5. Northdown. Examples of Sections of Ring Ditch.

0.70 m. wide and 1.20 m. deep, below the present chalk surface had been dug into the inner ditch side at the level of the junction of layers 1335 and 1336. By its size and shape this also appeared very like an extended inhumation grave, but there were no finds from the pit, which seemed to have been backfilled to a point where the fill was level with the lip of the ditch side.

Above pit 1319 in segments 514 and 898 were two extended inhumations (860 and 993, Fig. 4) inserted when the ditch was almost

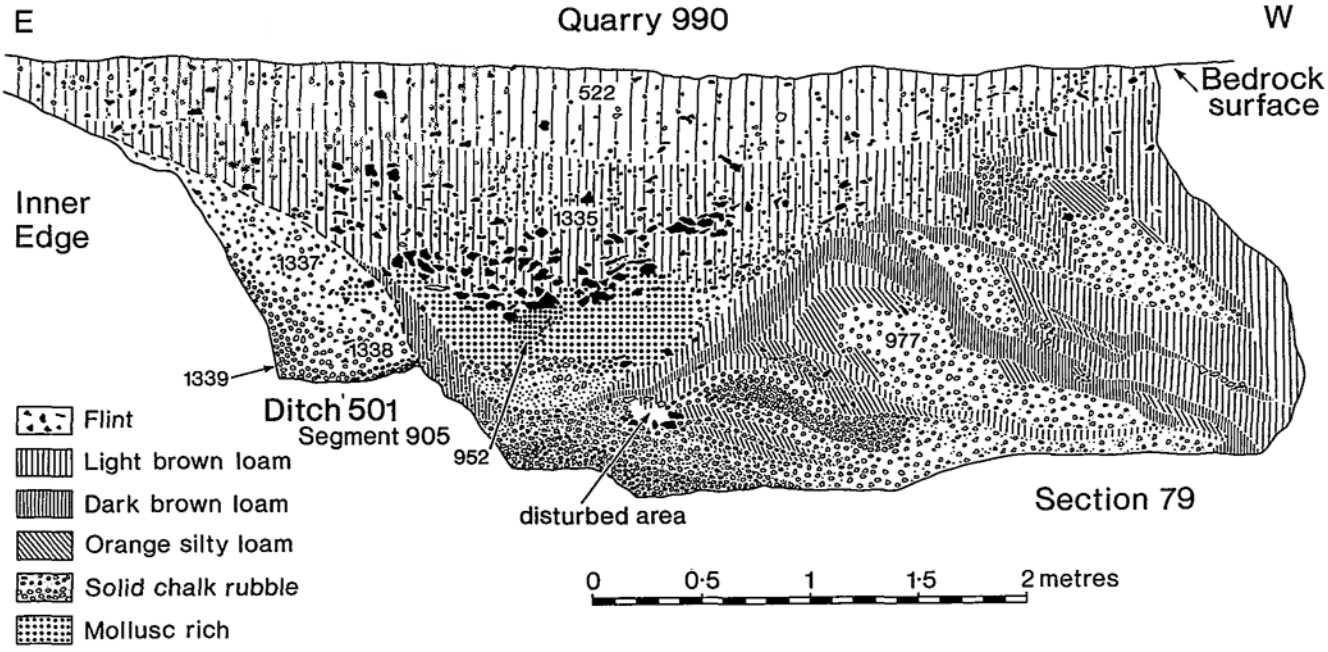


Fig. 6. Northdown. Section of Quarry 990 and Ring Ditch.

entirely silted. Both were poorly preserved but seem to have been female, 860 a young adult, 20–30 years, and 993 adult (Henderson 1987), laid approximately east–west with the head at the west end. 860 seemed to have been laid directly in a pit while 993 was laid in a coffin, which was outlined in the rubble backfill although without coffin-nails. The finds in the top fill of the ditch into which they are inserted indicate that the burials are likely to be Romano-British or later.

Features within the Ring Ditch Enclosure

The aerial photograph of the site (Plate IA) had suggested a large internal feature. This proved to be a natural brickearth-filled hollow or solution hole (822, Fig. 4) occupying a large part of the enclosure. The chalk bordering this feature was extensively altered by solution.

In the south-western quarter was an approximately rectangular pit (657, Fig. 4) 3.20 m. long, 0.84 m. wide and 0.45 m. deep (Fig. 7). This was the only internal feature located by the geophysical survey. Although apparently man-made, the pit was disturbed by animal burrows and produced no finds. In size and proportions it could be an inhumation grave, and it may be relevant that it lies at a similar orientation to the two burials 860 and 993 already described. Analysis of the pit fill (Balaam), however, suggested that it was insufficiently acid to have totally destroyed a skeleton. The three smaller pits adjacent to 657 appeared to be animal burrows although one, 655, produced a medieval potsherd.

There were eight small pits within the enclosure, varying from 0.22–0.78 m. in diameter and 0.05–0.12 m. deep (Fig. 7). Five of these, 510, 512, 833, 835 and 1308 may be related in that they fall into an arc on the north side of the enclosure. Two (510 and 512) were cut into the top fill of the ring ditch, 510 being above inhumation 993. These two pits, and perhaps all five, are no earlier than Romano-British although their layout is in some way related to the ring ditch. The only finds, a fragment of burnt bone and a fragment of a decorative bronze object (M7, below) of an alloy not occurring before the first century A.D., came from pit 833.

Three other small pits, 698, 700 and 802, all cut into the brick earth-filled solution hole 822, produced no artefacts. Since they might be cremations, sieving and flotation of the fills were carried out. These produced no bone although there was some charcoal from 698 which was identified (Balaam) and produced a radiocarbon date of 2910 ± 70 B.P. (HAR–7011).

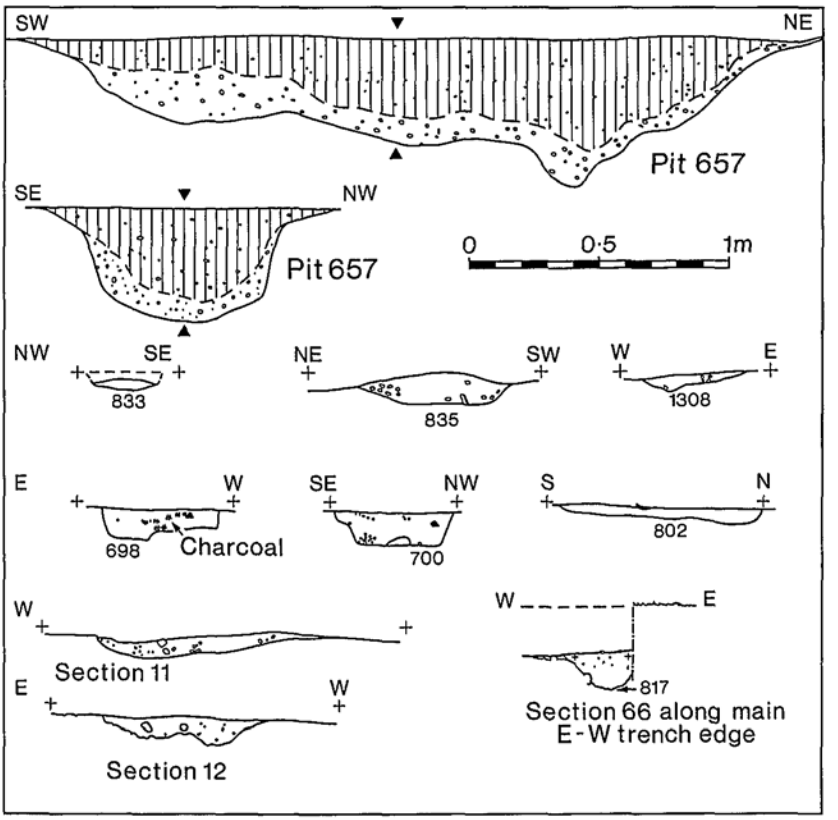


Fig. 7. Northdown. Sections of Pits and linear Features.

Features outside the Ring Ditch Enclosure

These consisted of six linear features, 602, 618, 638, 641, 807 and 817, which are all very slight ploughed-out remnants of small ditches, nowhere deeper than 0.16 m. (Fig. 7), 618 being a re-cut of 602. Only three small fragments of pottery, possibly local Romano-British coarse ware, came from these features. The fact that ditch 602 became shallower and faded out as it approached the ring ditch suggests that it may have been cutting through a remnant of an external bank here (a continuation of 602 was traced further north during trial trenching; see Archive). Likewise, 807 and 817 terminate before reaching the ring ditch and the shallow scoop 808 could be a remnant of a negative lynchet downslope from an external bank. Other features shown are natural brickearth-filled hollows.

THE ARTEFACTUAL EVIDENCE

Pottery

984 sherds (9.1 kg.) were recovered of which the majority, 919, came from the fill of the ring ditch. Ten pieces of pottery (all medieval and post-medieval) came from the surface collection and 55 pieces from other features. Twenty-five fabrics were distinguished, the greatest variety, seventeen, being represented in the top fill (522) of the ring ditch. These have been simplified for presentation into eight groups described below and Fig. 8 shows the stratigraphic occurrence of these fabric groups (by sherd count) within the ring ditch. Descriptions of the complete fabric range can be found in the archive.

Fabric Groups (with corresponding Archive fabric numbers)

A. Tyler Hill type ware (Roman and medieval). Well-fired, medium sandy (3, 4, 5).
B. Other medieval and post medieval (9, 16, 17, 22, 27).
C. Romano-British coarse ware and samian (7, 14, 20, 23).
D. Fine sandy with fine to coarse crushed calcined flint and quartz (1, 2).
E. Medium sandy with sparse crushed flint grits and some iron-stained inclusions (18, 19).
F. Fine silty with a few quartz or chalk fragments (6, 8).
G. Beaker: 1. Soft, fine sandy with a few small pieces of calcined flint and a few small pieces of grog (?) (10, 24, 26).

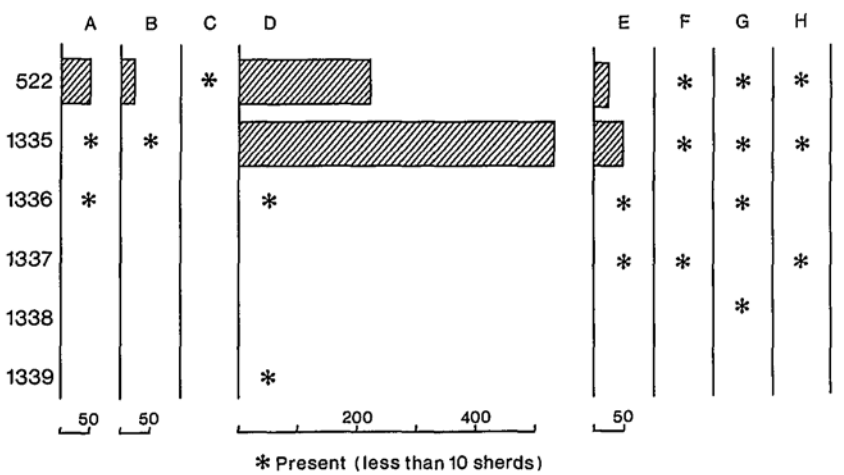


Fig. 8. Northdown. Pottery Fabric Groups by Sherd Count in Ring Ditch 501.

2. Soft, very fine sandy, slightly vesicular with scattered very small finely crushed flint and quartz (11).
3. Soft, fine silty, almost inclusion free. A very few angular crushed quartz grains, occasional rounded flint and a scatter of small dark inclusions (12).

H. Fine matrix with coarse angular dark grey flint inclusions (15, 25).

Description

Figs. 9–11 show examples of all the pottery forms and types of decoration found but not every diagnostic sherd.

The earliest recognisable pottery is the Beaker (Fig. 9) of which six certain and three possible sherds were found. Stylistically, P1 (Fabric G2, from layer 1335, ditch 501) is the earliest, probably coming from an all-over-corded vessel which is characteristic of the early Beaker phase, *c.* 2100–1950 B.C. (Harrison 1980). One plain sherd of the same fabric was found in the primary silts (layer 1338) of ditch 501 – the only piece of Beaker fabric which could be in a primary position. P2 (Fabric G3, layer 1336, ditch 501) is decorated with a square-toothed comb and P3 (Fabric G1, layer in quarry 990, equivalent to layer 1336 in ditch 501) with a pointed-tooth comb. These should fall into Harrison's Middle Beaker phase *c.* 1950–1700 B.C. Both are very fresh suggesting they may have eroded from a nearby primary context, e.g. a bank rather than being long-term residue.

Of the few other sherds in the primary silts (layers 1336–9) of ditch 501, the single sherd in 1339 is of the fabric (Group D) characteristic of layer 1335 and so is likely to be a recent accidental inclusion during excavation. Only two other pieces, although both plain body sherds, stand out as being of different fabric (Group H) to those characteristic of higher layers. One of the sherds is from a large, thick-walled urn-like pot.

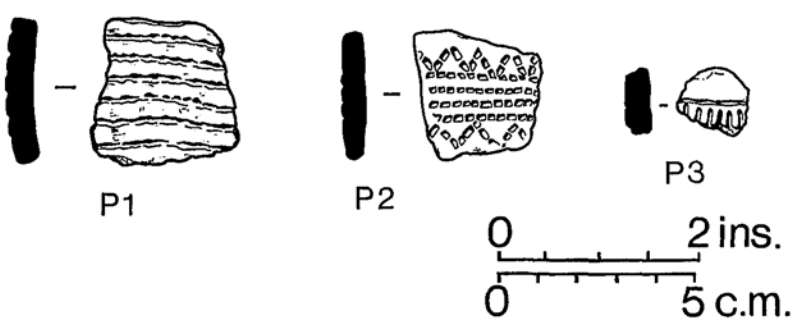


Fig. 9. Northdown. Beaker Pottery (Scale: ½).

The main group of pot is from layer 1335, ditch 501, and by identity of fabric and form and by association with metalwork and other domestic objects would seem to be a contemporary group covering a fairly short time-span. The majority is of fabric Group D which varies from fine to coarse depending on the size and quantity of inclusions. Fabric Group E is closely related to D. The forms represented among this group are:

1. Jars, varying from globular with everted rims, 17 examples, e.g. P4–7 to more open mouthed with upright rims, 5 examples, P8–12. Rims are mainly rounded but some are flat-topped, e.g. P9, P12, or fingered to produce a 'pie-crust', e.g. P6. Only one rim, P13, is markedly different, being thickened and well rounded as opposed to the rather rough hand-finish on the rest.
2. Bowls. All are small fragments so rim angles are uncertain. There are 8 examples, e.g. P14–20, rim diameters all 20 cm. or less, including an open bowl, P14, a carinated bowl, P15, and four with inturned rims, P16–19. P20 is distorted and may be a waster, if so showing local production.
3. The only other form represented is P21, which seems to be a fragment of a conical open bowl, the inside carefully rilled and burnished.

Light burnishing is fairly universal leaving slight surface marking as on P4 and P6. Decoration is confined to jars with pie-crusting on the rim and various forms of finger-work on the shoulder, as finger-nail impression, e.g. P9; finger-pinching, e.g. P23; finger-tip scooping, e.g. P6; and finger-tip impression, e.g. P22. There is also an applied (?) pinched cordon, e.g. P24; applied twisted cordon, e.g. P25; burnished rilling, e.g. P26; and vertical scratching, e.g. P27.

Very few base fragments occur compared to rims and are plain, e.g. P28, or slightly emphasised, e.g. P29, P30. One sherd, P31, has a flint (?) pierced hour-glass perforation.

This group of pottery is significant because it seems to have been deposited within a short period and to be associated with a range of other finds including bronzes. Stylistically, it is very similar to another group from Kent from the settlement at Kingston Downs (Fig. 1) where all the forms and most of the decorative styles of Northdown can be paralleled (MacPherson-Grant 1980, 146–51). The pottery from Kingston Downs was discussed at length by Cunliffe (*ibid.*, 174–9) who noted close parallels in Late Urnfield contexts on the Continent, including particularly a conical vessel (bowl or lid) similar to P21, and suggested a date within *c.* 1000–800 B.C. Affinities were noted with pottery from other sites in south-east England particularly Mill Hill, Deal, Runnymede Bridge, Surrey and Bridge, near Canter-

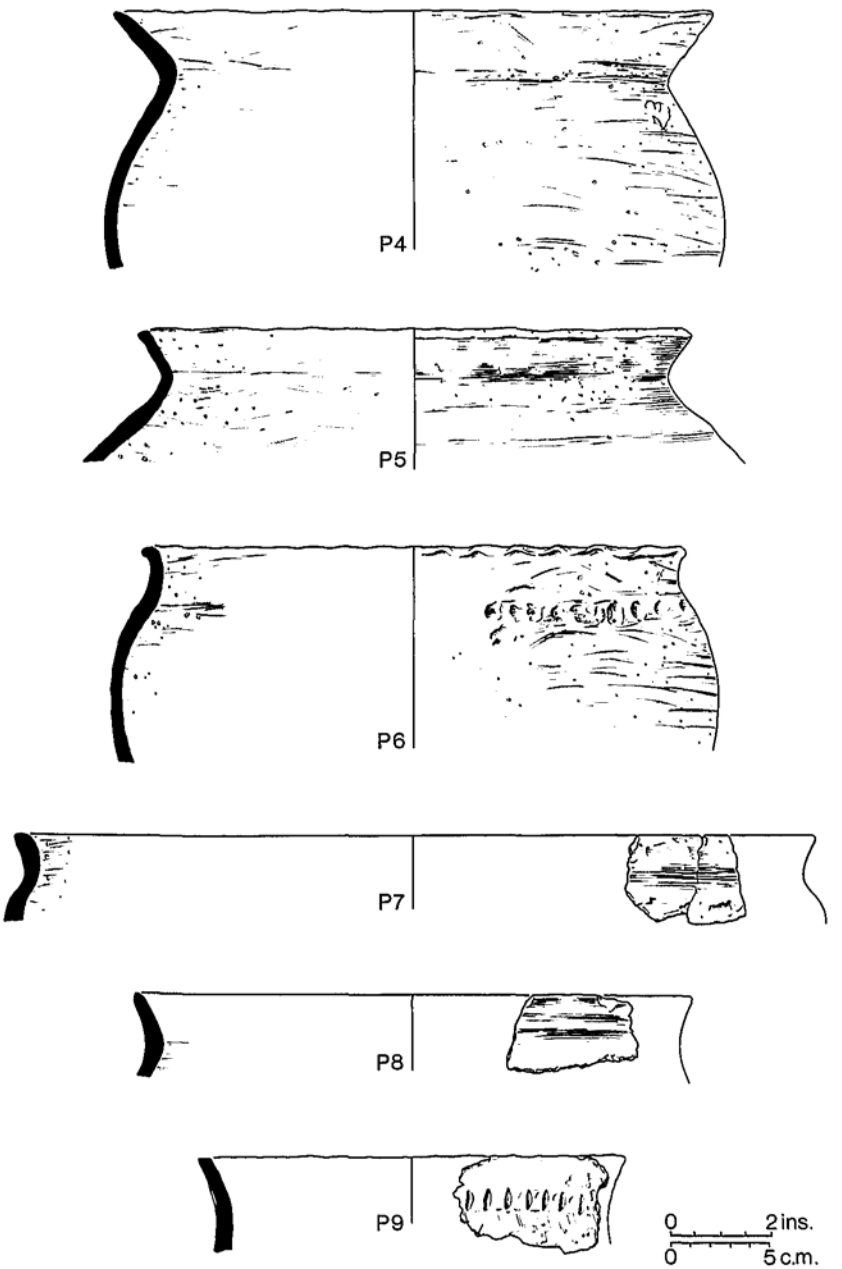


Fig. 10. Northdown. Pottery from Late Bronze Age Horizon in Ring Ditch (Scale: ¼).

bury. The settlement at Minnis Bay, Margate (Worsfold 1943) was suggested as dating to *c.* 800–600 B.C. on pottery styles. Rilling on the shoulder of jars found there can be paralleled at Northdown (P26), although this is also common in Urnfield contexts on the Continent. Close parallels can also be found between the Northdown pottery and that of Mucking North Ring which has produced radiocarbon dates of ninth-seventh century B.C. (Barrett and Bond in Bond forthcoming). Only one piece at Northdown seems out of place in the group and that is P13, the thickened everted rim. Vessels of this type were characteristic of an assemblage found at Barham Downs, Kent (Macpherson-Grant 1980, 134–46) and placed by Cunliffe within the period 500–300 B.C. Barrett, in discussing the development of the post-Deverel Rimbury pottery tradition from *c.* 1000 B.C. in the Thames Valley and south-east England suggests that a plain pottery tradition changed with use of decoration gradually increasing (Barrett 1980). The later material at Mucking North Ring, with radiocarbon dates of 2700 ± 80 B.P. (HAR–2911) and 2630 ± 110 B.P. (HAR–2893), has decoration on 19 per cent of coarse ware rims (Barrett and Bond in Bond forthcoming). Northdown has only a small sample but *c.* 24 per cent of individually recognisable jars have decoration on rim, shoulder or both, so clearly they should belong with the more decorated end of the post-Deverel Rimbury sequence. This assessment of the pottery from layer 1335 fits in well with the ditch silting sequence with the date of 3020 ± 80 B.P. (HAR–7010) from layer 1337.

It can be said in general of the prehistoric pottery fabrics in the ring ditch that most are likely to be of very local manufacture as evidenced by the use of flint-tempering. Only fabrics F and G3 do not have flint-tempering.

The upper fill (522) of the ring ditch was a layer accumulating slowly over a long period and includes both pottery characteristic of the assemblage described above as well as small amounts of later material including samian, a Romano-British cooking-pot in a Tyler Hill type fabric (P32) and two fragments of medieval cooking-pot (P33, P34) in a similar fabric (both medieval and Roman kilns have been found in the Tyler Hill area, near Canterbury).

Apart from the finds from the ring ditch the only other pottery finds were a few fragments of probable Romano-British coarse ware from the small (field ?) ditches outside the ring ditch and one piece of medieval cooking-pot similar to P34, in pit 655 (Fig. 4) all in Tyler Hill type fabric.

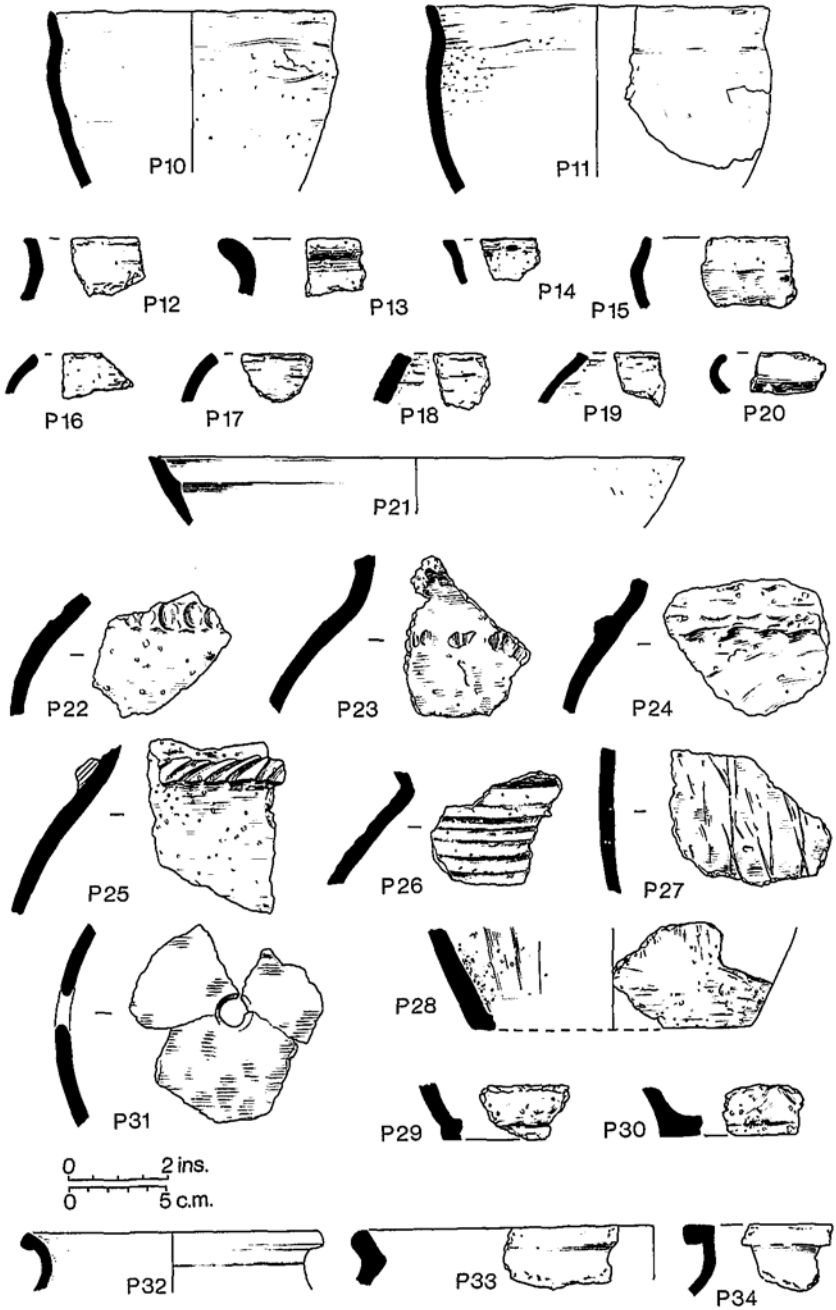


Fig. 11. Northdown. Pottery from Late Bronze Age Horizon. P10–31, and from upper Fill of Ring Ditch, P32–34 (Scale: ¼).

Flint

Material

All the worked flint was of a dark blue-grey colour when fresh. As found this was mostly corticated to a light blue to white surface. The flint used had two origins, quarried nodular and surface collected. The latter had irregular frost-fractured facets with marked white cortication and light (wind?) gloss. There is also some flint, not worked, which has a dark green colour and found only in smallish nodules. These derive from the 'Bullhead Bed' thought to be remnants of subaerial solution of the chalk redeposited on the sea-floor prior to the deposition of the Eocene marine sediments, the 'Thanet Beds' (Smart 1966). The occurrence of these green flints was useful as where they occurred in features without nodular flints it was likely that features were natural solution holes.

As flint was plentiful, it was used casually so there are many large waste pieces. The presence of many frost-fractured flakes sometimes made distinction of man-made flakes difficult. Apart from non-conchoidal frost-fractured flakes, there seem to be conchoidal natural fractures, which have a similar light gloss and white cortication with an emphasised bulb. These are presumably the result of direct contact between flint nodules in frost expanded ground. Naturally fractured nodules were used as blanks for cores and suitably shaped thermoclastic flakes as blanks for tools, e.g. F1 and F5.

Description

Table 1 summarizes the flint by main category and location. As with the pottery the great majority of worked flint came from the fill of ditch 501. In addition, there was a surface collection over the field containing site 274 (Fig. 3). All the material was sorted into secondarily worked pieces (including cores), waste flakes and fragments, and heavily burnt pieces. Items in the first category were individually recorded, those in the last two categories were treated as common objects and simply counted and weighed. However, a sample of waste flakes and fragments was also analysed in detail. All the data were entered on computer file, and this facilitated totalling, sorting and sub-totalling according to feature and stratigraphy, to types and attributes and the production of plots of flake sizes. Weights were recorded to the nearest 5 gm. unless the pieces weighed less than this. Length/breadth measurements were carried out by the method described by Saville (1980) and recorded to the nearest millimetre.

TABLE 1

Flint Summary (weight in gm.)

	Retouched Pieces		Cores		Hammer Stones		Waste Flakes and Fragments		Heavily Burnt pieces	
Location	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
Surface Collection	10	190	–	–	–	–	325	3816	14	195
Soil Sampling	–	–	–	–	–	–	72	300	3	23
164 (Cleaning layer over Ditch 501)	1	90	1	80	–	–	9	165	–	–
Ditch 501, 522	18	735	7	1150	2	840	1938	15278	79	1864
Ditch 501, 1335	14	480	17	3110	10	2360	709	9513	29	1195
Ditch 501, 1336	3	380	1	205	1	450	295	3015	34	10
Ditch 501, 1337	7	245	2	975	–	–	196	2728	1	5
Ditch 501, 1338	3	85	–	–	–	–	45	980	–	–
Ditch 501, 1339	–	–	–	–	–	–	9	387	–	–
Any other	2	75	–	–	–	–	13	65	–	–
Total	58	2280	28	5520	13	3650	3611	36247	160	3292

TABLE 2

Flint artefact categories by context

	Surface Collection	Ditch 501						Other	Total
		164	522	1335	1336	1337	1338		
Convex end scraper	5		9	6	1	5	1	1	28
Convex side scraper	1								1
Angular scraper	1								1
Scraper?	3			1					4
Convex knife								1	1
Heavy cutting tool			1	1	2				4
Serrated piece			1	1					2
Piercer			1	1					2
Double Awl			1				1		2
Notched piece			1	1					2
Miscellaneous retouched piece		1	4	3		2	1		11
Total	10	1	18	14	3	7	3	2	58

Retouched Pieces (Figs. 12–15)

Table 2 summarises the categories of retouched pieces found and their location.

Cutting Tools: These are varied and do not fall into a normal typology. Some have very strong edges and could equally be chopping tools, e.g. F1, a large natural thermoclastic flake with one edge produced by invasive unifacial flaking and retaining a cortex butt. F2 has an apparently deliberate rectangular shape similar to a gun-flint but much larger and corticated similar to the rest of the assemblage. There is also one thinner sharp-edged piece, F3, with a convex edge produced by careful retouch.

Scrapers: These are the predominant form (34 out of 58 pieces). Most are end-scrapers on flakes, longer than broad, e.g. F4, while one, F5, is made on a natural flake. Of 28 end-scrapers, 7 have retouch extending to the sides, e.g. F6–9. F6 (from layer 1337 in ditch 501) has retouch down the full length of each side and is significant in that the retouch, while certainly not recent, has much less cortication than the main flake surfaces and so must be a reworked piece. F7 has some inverse chipping on the working edge suggesting heavy use, perhaps as a push plane rather than a scraper. Five end-scrapers have easily recognisable abraded and rounded working edges. Three

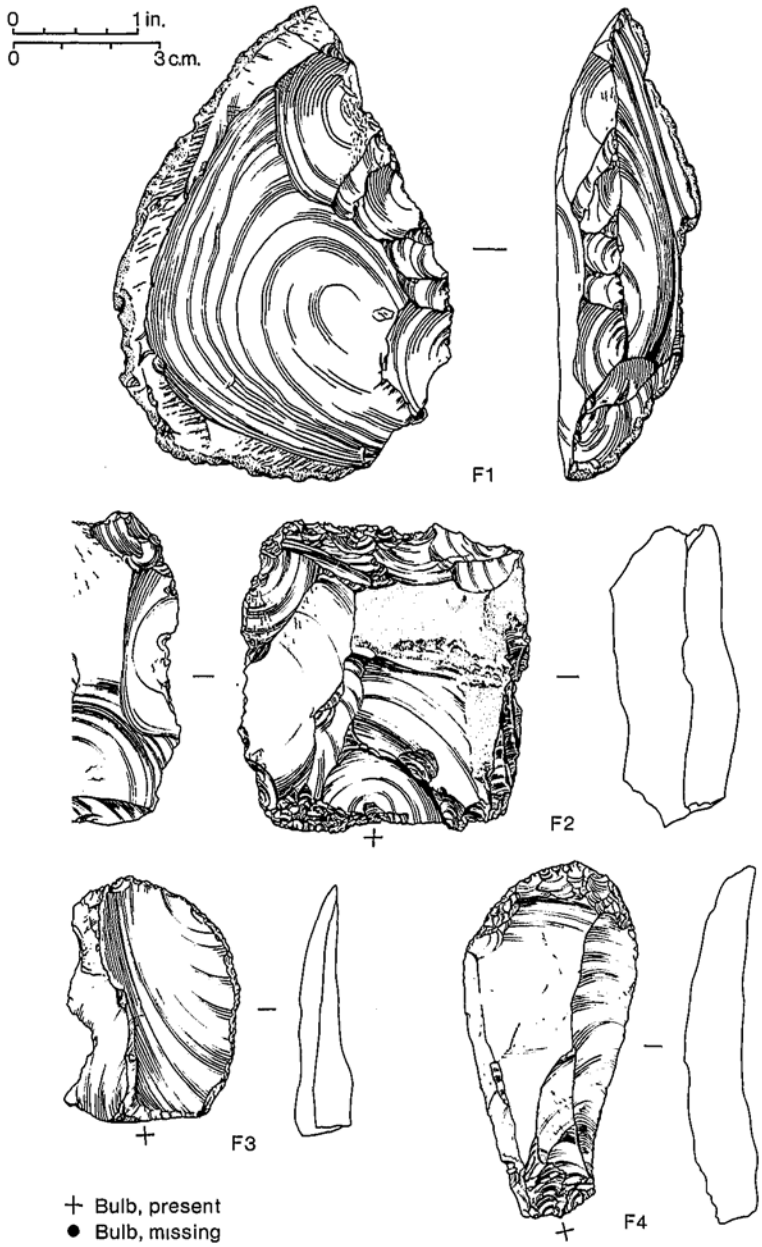


Fig. 12. Northdown. Flint Cutting Tools, F1–3; Scraper, F4 (Scale: $\frac{2}{3}$). N.B. On all flint illustrations + shows the position of a surviving bulb of percussion, • shows the proximal end of a flake where the bulb has been lost or removed.

end-scrapers (F8–10) have notches at the butt end which could be for hafting and lashing.

Notched-edge pieces: Two flakes with delicately notched edges, e.g. F11.

Piercing tools: Two, not illustrated, are small thin flakes each with two fine points produced by abrupt retouch. This form, double awl, has sometimes been called a 'spurred' piece.

Miscellaneous retouched pieces: Some are just flakes with a small amount of casual retouch. Others have a more definite if unclassified shape, e.g. F12, a flake with a thin sharp convex edge produced by invasive inverse retouch; F13 possibly a broken, unfinished backed blade; F14 a thick flake with a strong point produced by heavy denticulations on each side; and F15 a thick blunt point. Another piece, F16, has steep heavy retouch, partly inverse, to produce an acute point on one side and a concave, 'hooked' point on the other. It is unclear what the function of F16 might have been. Its general shape is like a '*petit tranchet* derivative' arrowhead, but it is much larger and thicker than any examples of this type.

Cores

The 28 cores are generally irregular in form, presumably a result of the abundance of raw material and the lack of need for long regular supports. Platforms were not prepared and often a natural facet was used to commence work. Table 3 shows the types of cores found divided into general classes: A – single platform; B – two platforms; C – three or more platforms. Within ditch 501 the overall core to waste flake/fragment ratio is 1:114.

TABLE 3

Flint cores by class and context

Context	Core Class A	B	C	Total
164	–	1	–	1
522	2	–	5	7
1335	7	2	8	17
1336	–	–	1	1
1337	1	–	1	2
Total	10	3	15	28

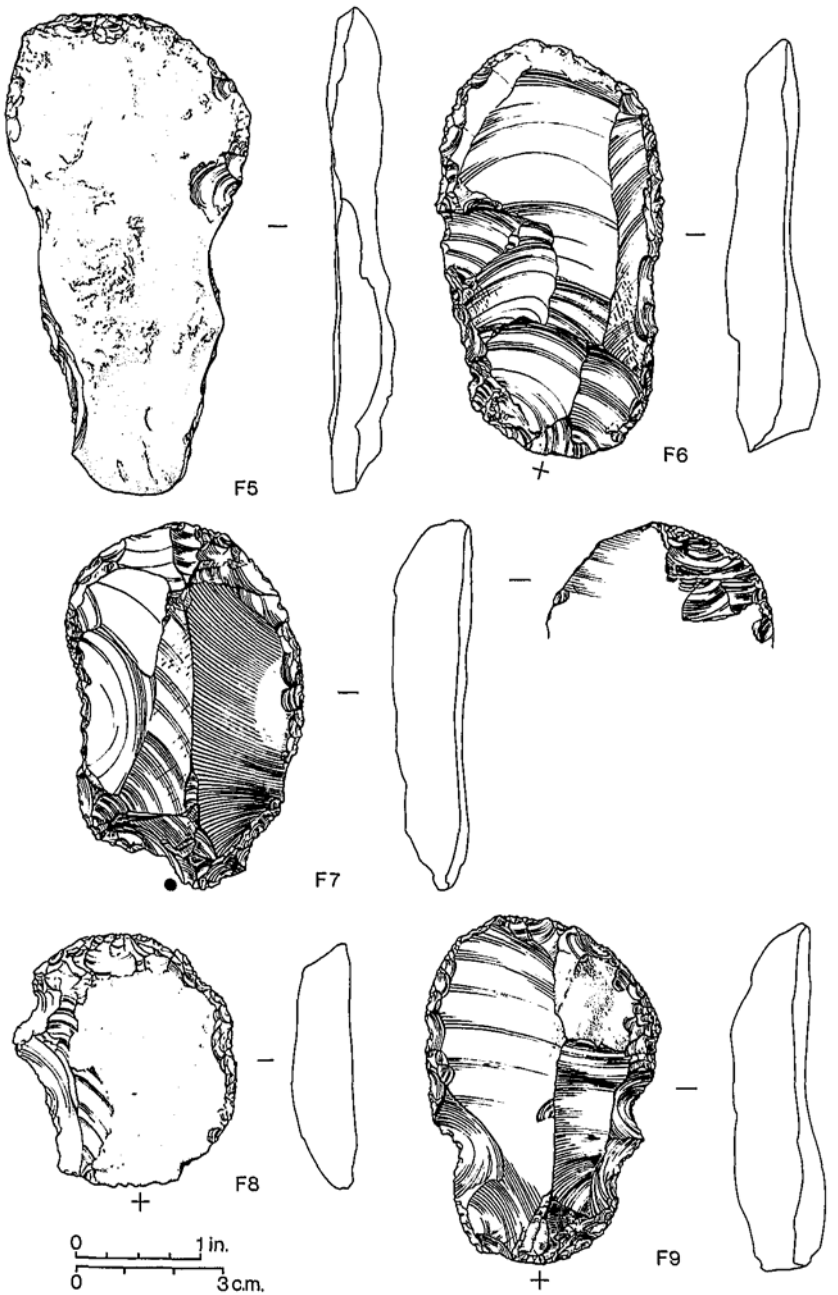


Fig. 13. Northdown. Flint, Scrapers, F5–9 (Scale: $\frac{2}{3}$).

Hammerstones (Table 1)

These are all of flint heavily reduced by percussion, some examples being close to spherical in shape. Of the thirteen, ten are complete and the average weight of these is 312 gm.

Heavily Burnt Pieces (Table 1).

These are pieces of flint so reduced by burning that they are not recognisable as to origin as worked or unworked (waste flakes or fragments affected by burning are not included). There were only 160 of these pieces overall and their distribution is similar to the distribution of waste flakes and fragments.

Unretouched Flakes and Fragments

Table 1 shows the overall totals and distribution of these by count and weight. A part of these was analysed in further detail. This was not a random sample or fixed proportion. All the contexts from the surface collection, most of the contexts from the top fill (522) of ditch 501 and all the contexts from the lower fills in two segments (515 and 520, Fig. 4) of the ditch were included. This gave six groups for comparison: surface and five overall layers within the ditch (the sixth, lowest had only one complete flake). These pieces were recorded individually by cortex removal class (primary, secondary, tertiary) by length and breadth (if complete), position of cortication (one side, both sides, nil) and presence/absence of recent damage. These attributes were chosen, from the many which could be recorded, not just to analyse the technology of the assemblage but rather to help understand how the material arrived in ditch 501, to ask if there is any chronological validity to its provenance and thus to look for any significant differences between the groups. This is a worthwhile task because much of the flint-work appears to be related to the pottery and other domestic artefacts in ditch 501 and if so is from a period (ninth-seventh century B.C.) when there is no certainty that a flint working industry survived (Saville, 1981a).

Fig. 16 shows the proportions of complete flakes to fragments and by cortex class amongst the analysed sample. The overall proportion of primary, secondary and tertiary flakes (i.e. Classes 1, 2 and 3) is very similar between the groups. There is a very close correspondence in both cortex class proportions and fragmentation rates between the surface collection and the upper layer (522) of ditch 501, the latter being residual and probably subject to the same effects, i.e. agriculture, as the surface collection. The proportion of complete

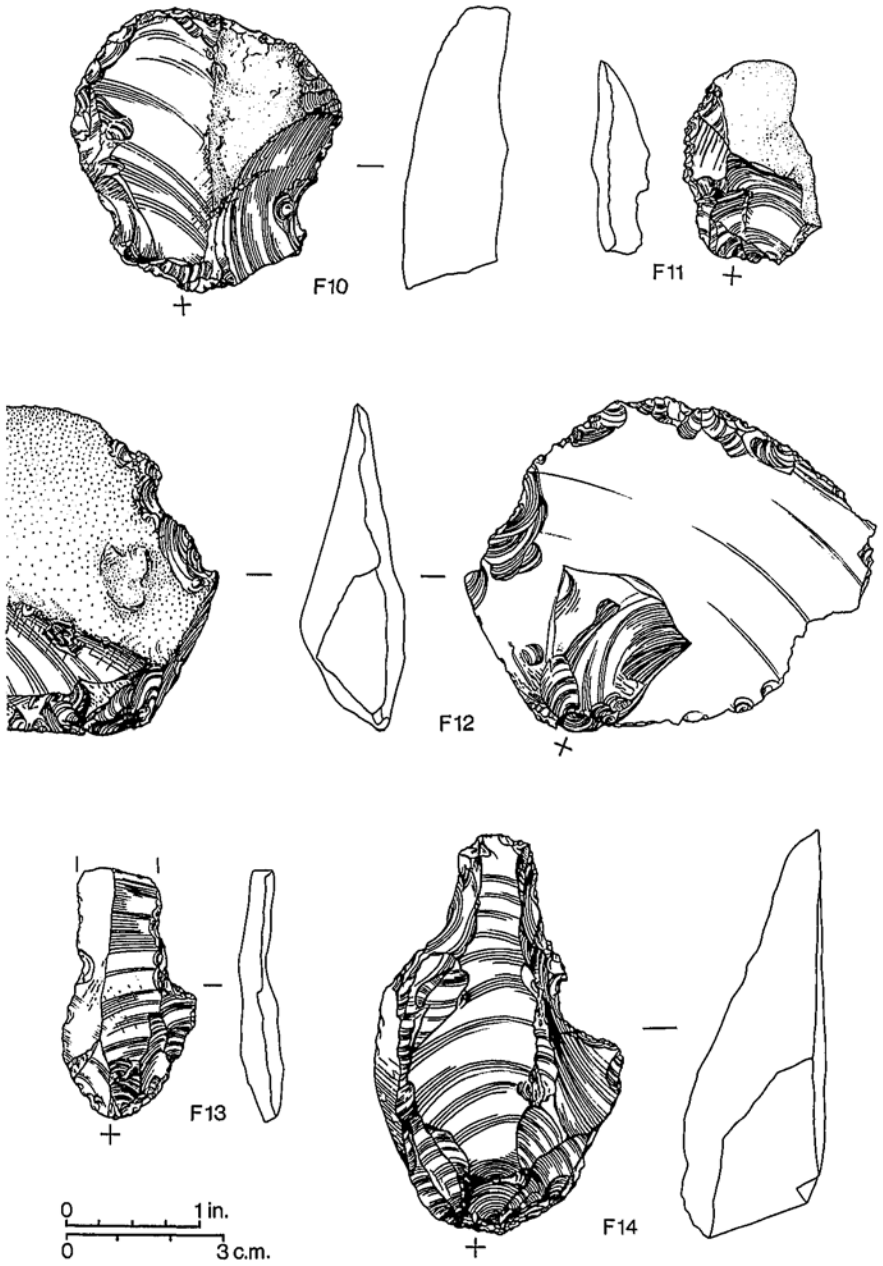


Fig. 14. Northdown. Flint, notched Scraper, F10; notched Edge Piece, F11; miscellaneous retouched Pieces, F12–14 (Scale: $\frac{2}{3}$).

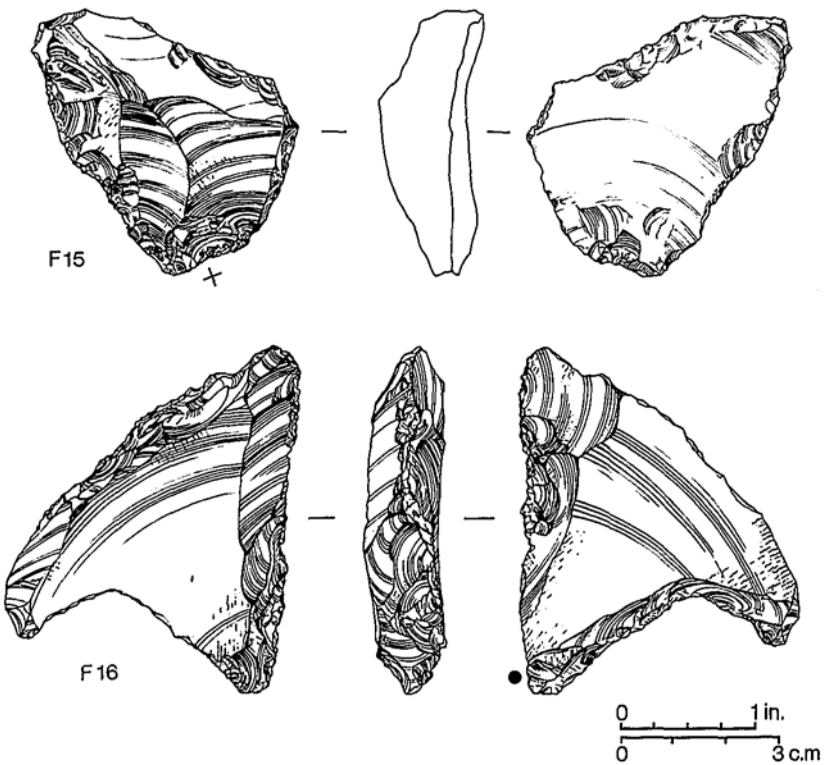


Fig. 15. Northdown. Flint, miscellaneous retouched Pieces (Scale: ⅔).

flakes in layer 1335 is higher than in both 522 and the layers below, providing fair evidence that the flint in 1335 is not just residual silted-in material.

Fig. 17 shows the distribution of sizes of complete waste flakes in the analysed samples. The samples from the primary silts of ditch 501 (layers 1336–8) have been combined. The samples are not large but the results seem to be consistent in that all show similar, regular scatter patterns, centring around a very broad flake with approximately equal length and breadth. This type of pattern might be expected from the surface and layer 522 samples as they derive from ploughsoil and so have high damage and breakage rates. Scatter patterns from this sort of context can be expected to progressively approach a 1:1 ratio because pieces longer (or broader) than 1:1 have a disproportionate chance of being broken. Despite this it can be seen that the scatter patterns for 1335 and 1336–8 centre around a somewhat broader flake than those of the surface and layer 522

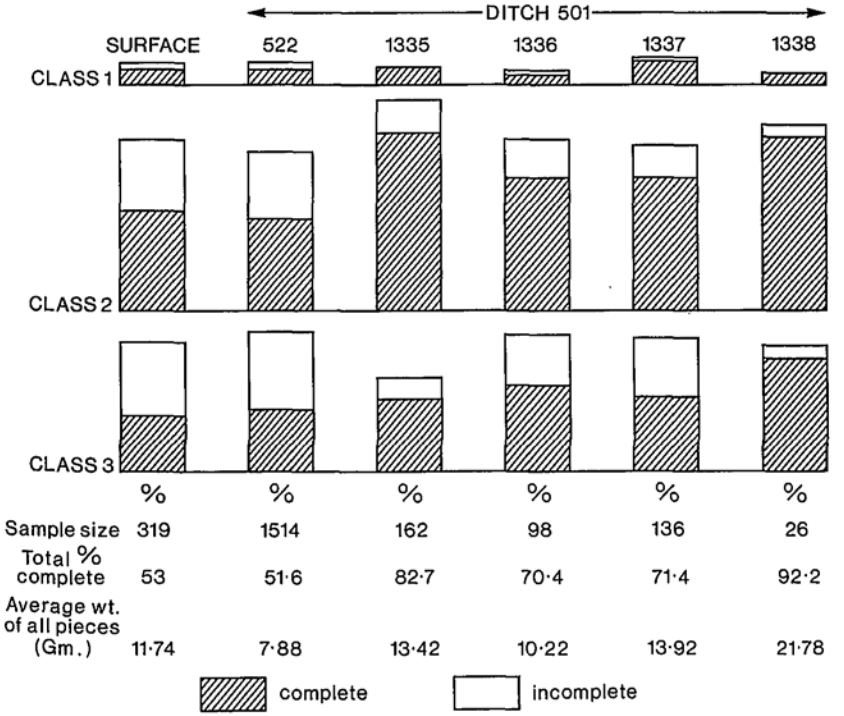


Fig. 16. Northdown. Flint Flakes and Fragments. Comparison of Proportions of complete/incomplete in Cortex Class (i.e. 1, primary; 2, secondary; 3, tertiary) by number.

samples. There is a gradient in the increase in breadth through the samples clearly shown in Table 4 which splits the distributions into length/breadth index groups as recommended by Saville (1980). Considering the effects of breakage patterns described above these results seem significant. The scatter pattern for layer 1335 which has a high completeness rate (see Fig. 16) should correspond more closely to an original flake size distribution and shows a tendency towards very broad flakes. Saville, (1981b, 40–4), has demonstrated that an increasing breadth of flint flakes through the Neolithic period seems to continue into the Bronze Age. In this respect the sample from layer 1335 at Northdown with 77.6 per cent over 4:5 breadth/length ratio shows greater flake broadness than Grimes Graves trench 8B (Middle Bronze Age) which has 64 per cent over 4:5. If the observed tendency to increasing breadth is correct, the natural conclusion is that the sample of flint from layer 1335 is Late Bronze Age. The surface collection and the residual material in layer 522 can be

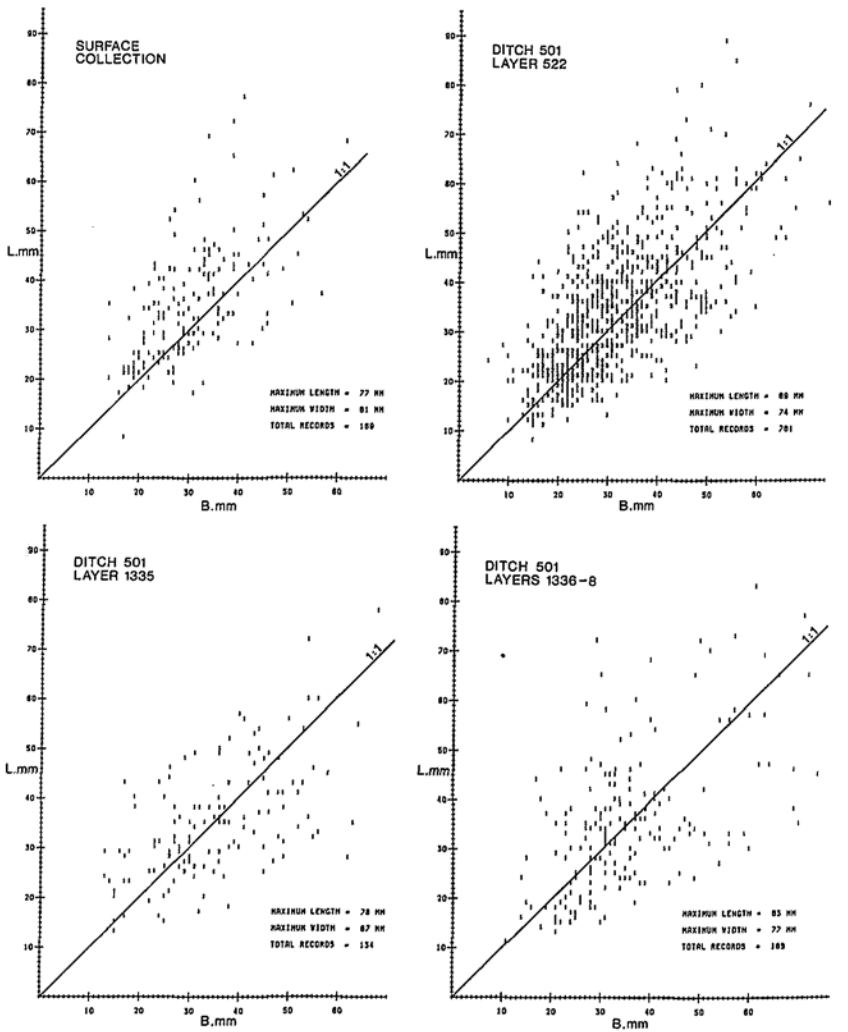


Fig. 17. Northdown. Samples of Flint complete waste Flakes, Length/Breadth Distribution.

expected to include a variety of periods of flint working and so the tendency to narrower flakes in these samples is understandable. The greater broadness in the sample from layers 1336–8, however, is puzzling.

Position of cortication did not prove to be a useful attribute as the great majority of flakes were equally corticated all over. Similarly, the presence of subsequent damage to flakes was closely related to

breakage patterns being present to any extent only in the surface collection and in the top layer of ditch 501.

Summary

The assemblage is impossible to date typologically as the types are all common. The majority of retouched pieces occurred in the upper fill of the ring ditch where they are plainly residual, a lesser number occurred in layer 1335 where the majority of Late Bronze Age pottery was found. The flint and pottery, therefore, may not be directly related. Flint and pottery recovery rates in relation to excavated soil volumes are considered in 'Discussion' below. End-scrapers were the main type in both layers. Thirteen retouched pieces came from lower in the ditch fill and of these, ten can be confidently regarded as separate from the main assemblage. Six of these are end-scrapers, which are closely comparable in size to those from the upper layers. The slight peak in numbers of retouched pieces in layer 1337 could indicate a separate phase of activity and there was also a slight peak in numbers of animal bones in this layer; however, there is no corresponding peak in presence of waste flakes (Table 1). Only one piece, F16, from the primary ditch silts, could be diagnostically useful, but it is unfortunately an odd type (however, Alan Saville believes that it must be a Late Neolithic piece). The end-scrapers at Northdown are quite large, averaging 54 mm. long, and this, together with the broad flakes, casual working and absence of finer pieces, is what would be expected of a Middle to Late Bronze Age assemblage.

TABLE 4

Length/Breadth index values for all complete unretouched flakes from analysed sample (0–0.5 very broad; 0.6–1.0 broad; 1.1–1.5 medium/broad; 1.6–2.0 medium/narrow; 2.1–2.5 narrow; 2.6+ very narrow).

Length/ breadth Index	Surface Collection		Ditch 501					
			522		1335		1336–8	
	No.	%	No.	%	No.	%	No.	%
0–0.5	1	0.6	4	0.5	2	1.5	5	2.6
0.6–1.0	61	36.1	361	46.2	64	47.8	106	56.1
1.1–1.5	81	48.0	320	41.0	53	39.6	57	30.2
1.6–2.0	25	14.8	78	10.0	12	9.0	15	7.9
2.1–2.5	1	0.6	14	1.8	3	2.2	5	2.6
2.6+	0	0	4	0.5	0	0	1	0.5
Total	169		781		134		189	

OTHER FINDS

Copper Alloy (Fig. 18)

M1, from the surface collection, is an item of horse gear, possibly a chariot fitting, abraded inside the ring. Analysis of the metal shows it to be an alloy, which has not been identified in items produced before the first century A.D. (J. Bayley, A.M.L., see Archive). Terrets with similar astragaloid decoration occur in Late Iron Age as well as in Roman contexts, e.g. at Colchester (Crummy 1983, 106). M2 and M3 came from the upper fill (522) of the ring ditch. M2 a fragmentary small ring or binding, M3 a *fibula* of a common La Tène III, 'Nauheim derivative' type, which appears in Britain towards the end of the first century B.C. and is still found in contexts from the second half of the first century A.D., e.g. at Colchester.

M4 is from the junction of the upper fill 522 and layer 1335 in the ring ditch. It is thin and tapering in section with a convex rounded-edge back with two punched holes and a straight fine edge which, where surviving intact, shows evidence of grinding. One end is more rounded than the other, but this could be a result of wear and corrosion. By its fineness, it is almost certainly a razor, but because it has a fairly straight edge could be a small knife. It does not fit into either of the two main groups of British razors described by Piggott (1946) and does not appear to have any parallels in Britain. The same shape does occur on the Continent with concentrations of finds in central and southern France dated to Early Hallstatt (Jockenhövel 1980, Figs. 38, 39, 58) but there are none precisely like the North-down example. Some do have perforations on the back, although set in protruding lugs, but have convex rather than straight edges.

The tweezers, M5, came from layer 1335 in the ring ditch and are a type with a long time-span although common in Late Bronze Age contexts. Similar items occur for instance at the Late Bronze Age site at Runnymede (Needham in Longley 1980, 20). M6, a hollow, thin cone with apex perforation also came from layer 1335. It is probably related to the various shapes of button found in Urnfield contexts on the Continent and the perforation would have held a (riveted ?) suspension loop. An identical pierced cone was found in a hoard with a coiled torsion bracelet at Monkswood, Somerset, suggested by Continental parallels as of Bronze D/Early Urnfield date (Smith 1959, Fig. 2, no. 13 and p. 150). The general comparative dating of M4 and M6 fits in well with the suggested dating of the associated pottery.

M7, a fragment of a small disc with raised concentric ridge came from Pit 833 within the ring ditch enclosure.The pit contained a

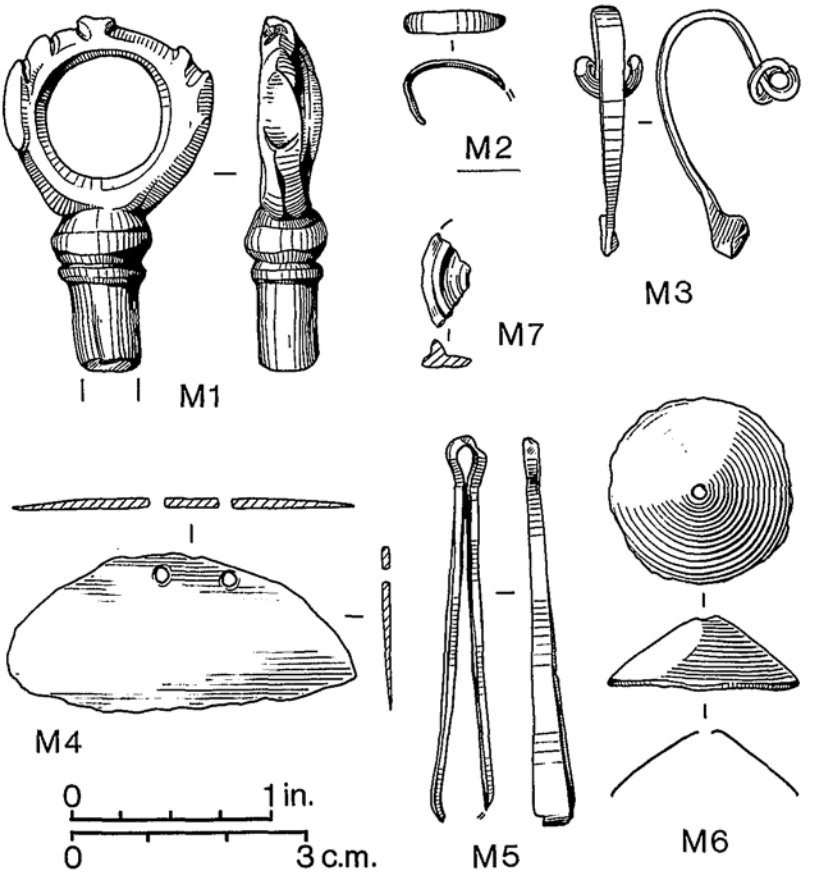


Fig. 18. Northdown. Copper Alloy Objects: M1, from surface collection; M2–3 from upper fill of ring ditch; M4–6 from Late Bronze Age horizon in ring ditch; M7, from pit 833 (Scale: ½).

fragment of burnt bone and so could have been a cremation. The disc could have been part of the head of a pin or body of a small brooch, but the metal analysis shows it to be of brass and, therefore, unlikely to be pre-Roman (J. Bayley, A.M.L., see Archive).

Iron

Five iron objects were found (not illustrated) all in the upper fill (layer 522) of the ring ditch. Two were nail fragments, two were sheet fragments and one was a tapering sheet fragment possibly the tip of a blade.

Fired Clay (Fig. 19)

Spindle-whorls: Two were found, both in the upper fill (522) of the ring ditch. One, now lost, was stolen from a site display, the other S1, is biconical, flattened around the midriff, fairly neatly made of flint-tempered fabric. Biconical spindle-whorls occur in Late Bronze Age and Iron Age contexts so this example could belong with the pottery in layer 1335.

Weights (not illustrated): Eight fragments were found, three in the upper fill of the ring ditch, five in layer 1335. Some had flat facets so were not from cylindrical weights. The fabric of all was the same, a fine, silty, slightly vesicular matrix with scattered rounded quartz grains, unlike any of the pottery fabrics.

Stone (Fig. 19)

Chalk: Three pierced chalk objects were found. Two, from layer 1335 in the ring ditch, have hour-glass perforations and together are part of a single larger pierced object (S2). This had a cylindrical perforation, which seems to have been slightly off-centre of a slightly asymmetric, flat, rounded object presumably a spindle-whorl. The broad hour-glass perforations of the two fragments seem likely to have been done with a flint piercer after the original object was broken. Another chalk object found (not illustrated) was a small angular fragment of chalk rubble with an hour-glass perforation from layer 1338 in the ring ditch.

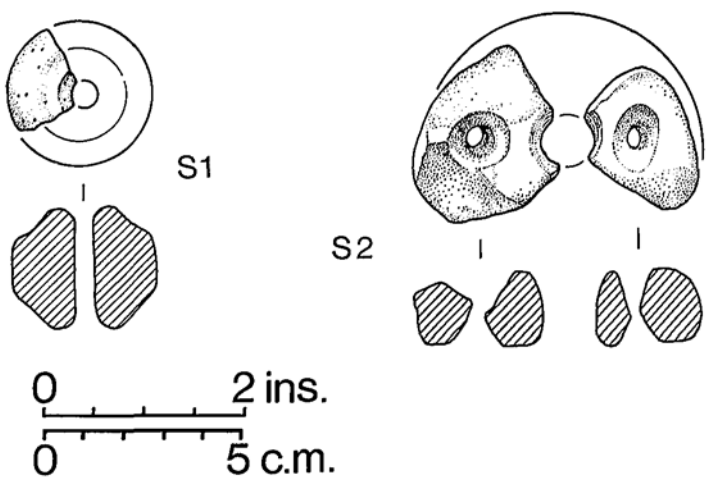


Fig. 19. Northdown. S1, Spindlewhorl, from upper Fill of Ring Ditch; S2 pierced Chalk Object, from Late Bronze Age Horizon in Ring Ditch (Scale: ½).

Quern/rubbing stone fragments: Four were found all in layer 1335 of the ring ditch. Three had flat facets and one concave. All were of different stone but all varieties of fine to medium grained sandstone. Pit 968 contained an unshaped fragment of possible Niedermendig basalt (Wilthew 1986).

Animal Bones

The small number of animal bones recovered were all fragmentary and in poor condition. Where possible they were identified to species and skeletal element (Meddens). Table 5 summarizes all the separate occurrences by overall layer in the ring ditch. Only a very few fragments came from elsewhere. The number of occurrences is small, but the concentration in layer 1335 is clear. Most of the identifications are of teeth or phalanges demonstrating that this is the residue of heavy weathering. The larger mammals will be over-represented, therefore, and the absence of sheep/goat in layer 1335 may be fortuitous, but the absence of pig bones is noteworthy.

TABLE 5

Ditch 501. Animal Bone. No. of occurrences

	522	1335	1336	1337
Bos sp.	1	13	1	7
?*Bos* sp.	–	1	1	–
Equus sp.	–	8	1	1
?*Equus* sp.	–	1	–	1
Cervus elaphus	–	1	–	–
Large Mammal	2	2	–	–
Ovicaprid	–	–	1	1
Small Ungulate	–	1	–	1
Canis sp.	–	1	–	1
Total	3	28	4	12

DISCUSSION

The molluscan evidence from the primary silts of the ring ditch suggests that it was constructed in an open, probably short-turfed grassland environment (Thomas and Johansson, below). The ring ditch seems to have deliberately enclosed the large natural solution hole, 822 (Fig. 4), and there may have been a slight depression in the

ground here when the barrow was built. Certainly, no similar natural features showed up nearby on aerial photographs or in trial trenching. If there were a depression, it must have been quite shallow, no more than the depth which ploughing has removed from the subsoil surface as the fill was entirely natural brickearth. There is no way of estimating the extent of surface erosion here but, considering the appearance of the ditch edges, it seems unlikely to be more than *c.* 0.30 m. A ploughed-out barrow on the chalk at Lord of the Manor, Ramsgate, could be shown to have had 0.20–0.40 m. eroded from the surface outside the barrow ditch in comparison to that inside, which had been protected by a mound or bank (Macpherson-Grant and Perkins 1980, Site II, 7).

The absence of a primary burial or of other features which can be definitely related to the construction of the ring ditch at Northdown is problematical. The date of 3020 ± 80 B.P. (HAR–7010) from the top layer of the primary chalk silts in the ring ditch provides only a guide but seems rather late at this level, if the monument is Beaker in origin. The radiocarbon date of 2910 ± 70 B.P. (HAR–7011) from pit 698 is, therefore, important. It shows that pits 698, 700 and 802 were part of the sepulchral/ceremonial use of the monument and that the monument was still in use at this late date. The possible graves 657 and 1319 provide no clues with neither grave goods nor skeletal remains. The soil analysis of the fill of 657 (Balaam) suggested that it may never have had a skeleton, but attention has been drawn to the poor survival of large animal bones in the ring ditch fill. Also, one of the presumed Romano-British skeletons inserted in the top of the ring ditch survived only marginally, so it is conceivable that much earlier skeletal remains might have totally disintegrated.

The quarry 990 was cut after considerable silting of the ring ditch but some time before the deposition of the Late Bronze Age material in layer 1335, which formed over the quarry when it was in turn partly silted in. At least two other ring ditches in the Northdown group (Fig. 2) appear to have similar, single, regular features cut into their outside edges and, although each has a different orientation, their function remains open to interpretation.

The presence of the Romano-British (?) graves in the top of the ring ditch in the north-east quadrant is not unusual considering that this was a small piece of unploughed land within an organized arable landscape, as suggested by the molluscan analysis (Thomas and Johansson, below). It may be coincidental, but at the excavation of another barrow at Ramsgate (Macpherson-Grant and Perkins 1980, Lord of the Manor III) four Jutish graves had been inserted, again in the north-east quadrant.

The ring ditch is likely to have had an external bank. If there were

also an internal mound, it was small and, even when weathered, did not extend sufficiently to protect the ditch's inner edge. It seems likely then that the monument was originally of a classic disc barrow shape, falling at the lower end of the range of diameters. It has been shown by Grinsell (1959) that some disc barrows are associated with beakers but most have 'Wessex' associations. At Northdown the presence of parts of three separate beakers, even if in secondary contexts, must be taken as the best evidence of date.

The general sparsity of known or excavated barrows in Kent has been noted in previous general works (Ashbee and Dunning 1960; Grinsell 1975). A recent summary (Champion 1982) puts this down to destruction through intensity of arable farming from an early date. The discovery of two new major barrow groups on Thanet at Northdown and at Lord of the Manor, Ramsgate, is, therefore, important. The Northdown group, along with a variety of enclosures, has now largely vanished under housing development, and it is fortunate that the Kent Archaeological Rescue Unit has been able to carry out some work. The barrow group at Lord of the Manor (Fig. 1) consisted of at least twenty-three monuments with a variety of forms, as at Northdown, including causewayed and multiple ring ditches. Six have been excavated by the Isle of Thanet Archaeological Unit (Macpherson-Grant and Perkins 1977 and 1980) revealing three with probable Beaker or earlier origins, one with a secondary series collared urn, another with a 'Wessex' period incense cup. One monument began as a ditch with internal bank, possibly associated with Neolithic flintwork and was subsequently remodelled three times, ending up as a bowl or bell barrow, and with a number of burials, both cremations and inhumations, spanning a considerable period. The primary value of the Northdown and Lord of the Manor barrow groups is in showing the likelihood of centres of continuous settlement nearby during the first half of the second millennium B.C., a period for which major interpretative evidence has so far been lacking in Kent.

The discovery of Late Bronze Age domestic material in layer 1335 in the ring ditch at Northdown shows the presence close by of a settlement and probably means that the Down had changed from being a mainly open pastoral to a mixed pastoral/arable landscape by this time. The molluscan evidence from layer 1335 suggests that the ditch was cleared of scrubby vegetation early on in this phase and was surrounded by open grassland which was interrupted occasionally by brief arable episodes (Thomas and Johansson, below).

The horizontal distribution of later Bronze Age pottery in the ring ditch (Fig. 20) shows a clear bias to the north-east, and the settlement from which the pottery derives probably lies in this direction beneath

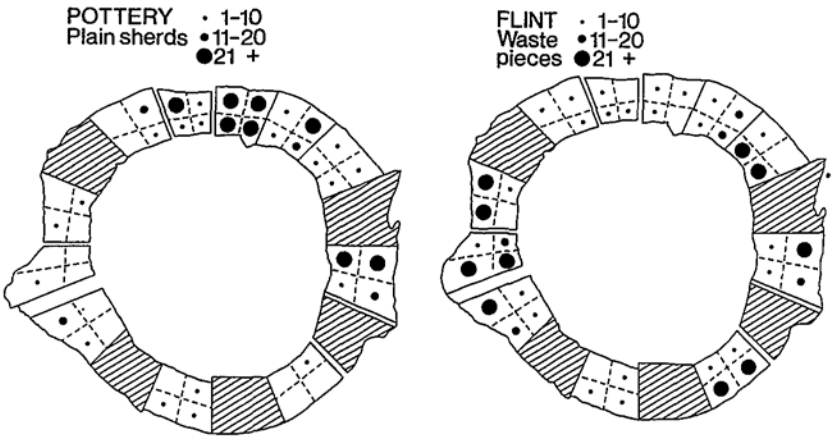


Fig. 20. Northdown. Comparison of Pottery and Flint Distribution in Late Bronze Age Horizon, Layer 1335, in Ring Ditch.

existing housing. The horizontal and vertical distribution of flint is different to that of pottery, so the pottery may have been dumped as refuse while the flint could have simply eroded in from a scatter perhaps deriving from working of flint nodules in the barrow bank. However, some of the scrapers are abraded by use so are not just knapping rejects. Estimates were made of the excavated volumes of the ring ditch to allow a better understanding of the flint data, and to allow comparison with the recovery rate from the controlled sample of ploughsoil from above the ring ditch. Unfortunately, an absolute comparison cannot be made as flints from the ring ditch were simply collected while the topsoil sample was sieved. However, the figures (Fig. 21) do show that there was actually more weight of flint per volume in layer 1335 than elsewhere in the ditch, a corollary of the low breakage rate and high average weight of waste pieces (Fig. 16). There is, therefore, reasonable evidence that there was some flint-working contemporary with the deposition of layer 1335. However, the figures from the topsoil sample show that there was a scatter of waste flint in the ploughsoil which, taken in conjunction with the surface collection (Fig. 3), suggests that there was also some flint-working on or around the barrow, now spread by ploughing. It is unfortunate that it has proved impossible to be certain of the attribution of the Northdown flint working as the continuation (or not) of flint working into the Late Bronze Age in Britain is still a matter of debate. Settlements of that period with flint assemblages include Carshalton, Surrey (Adkins and Needham 1984) and Mucking North Ring (Bond forthcoming). At the latter site a small

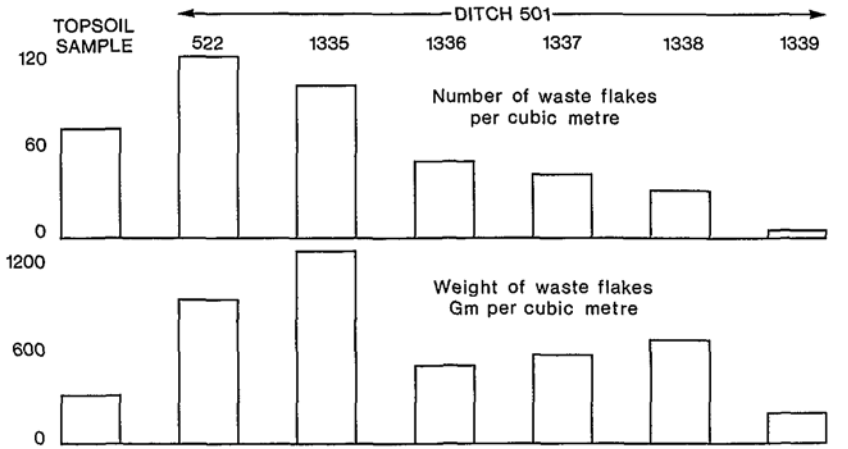


Fig. 21. Northdown. Comparison of Flint Recovery Rates by Number and Weight per cubic metre.

assemblage, mainly of scrapers, was regarded as fairly certainly of Late Bronze Age date because of its horizontal relation to features of that date and the absence of earlier features (Bond, pers. com.). Other contemporary settlements have negligible quantities of flintwork, e.g. Runnymede, Surrey (Longley 1980), Aldermaston and Knights Farm, Berkshire (Bradley *et al.* 1980) or as at Hayes Common, Kent, an assemblage regarded as simply residual (Healey 1973). Certainly, flints were still in use at Deverel-Rimbury settlements at the very end of the second millennium, e.g. at Itford Hill, Sussex (Burstow and Holleyman 1957) and Black Patch, Sussex (Drewett 1982) and some further continuation of use seems likely. The sequence in Kent should become clearer with the publication of the extensive work on the settlement complexes at Highstead, near Reculver (Erskine Riall 1977), which span the Late Bronze Age.

THE ENVIRONMENT OF THE BEAKER (?) BURIAL MONUMENT AT EAST NORTHDOWN, NEAR MARGATE, KENT

K.D. Thomas and B.M. Johansson

We discuss here the evidence from both sediments and land snails for the environmental setting of the ditched enclosure at Northdown, near Margate, at various times in the past.

The Samples

No buried soil profiles were preserved at the site, so all palaeo-environmental samples were obtained from the successive phases of infill of the ditch. Columns of soil samples for sediment and land snail analyses were taken from four different sections in the ditch. The results from only one of these columns of samples, from Section 26 (Figs. 5 and 22), are discussed here.

The samples of sediments from Section 26 were collected as a column of samples (numbers 1 to 16) taken at intervals of 10 cm. through the fill of the ditch; two 'spot samples' were taken from the same section but outside the limits of the sample column. No sample was taken from the column between 60–70 cm. below the top of the column because disturbance was suspected in the stratigraphy. The two spot samples at 60–80 cm. and 50–60 cm. (samples 17 and 18, respectively) covered this missing interval. In all, 17 samples were recovered and subsequently analysed in the laboratories of the Institute of Archaeology, London.

The stratigraphy of Section 26

1–30 cm. Ploughsoil with very fine stones of chalk and flint, 2–4 cm. in diameter. Clay silt matrix with fine pores, 1 mm. in diameter. Earthworm activity obvious.

30–60 cm. Highly chalky loam with 0.1 per cent micropores. Chalk and flint stones with some large flints up to

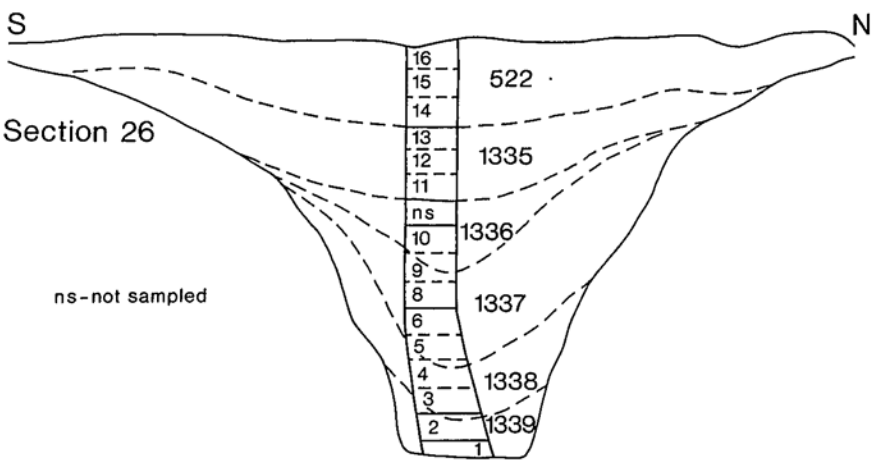


Fig. 22. Northdown. Soil Column through Section 26 of Ring Ditch 501, showing the position of mollusc samples (samples taken at ten centimetre intervals).

TABLE 6

Numbers of shells of various species extracted from the samples from section 26 of the ditch at Northdown, Margate, Kent. Numbers refer to intact shells or apices; species represented by non-apical fragments are recorded as +.

MARGATE	Sample no.	1	2	3	4	5	6	8	9	10	17	11	18	12	13	14	15	16
SECTION 26	Sample interval	158 149	149 140	140 130	130 120	120 110	110 100	100 90	90 80	80 70	80 60	60 50	60 50	50 40	40 30	30 20	20 10	10 0
Pomatias elegans (Müller)		–	–	–	1	8	13	96	389	475	3	86	18	22	20	9	13	4
Carychium tridentatum (Risso)		–	1	–	1	–	–	37	239	345	–	47	14	15	9	2	4	5
Carychium sp.		–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–
Cochlicopa lubrica (Müller)		–	–	–	–	–	–	–	–	–	–	2	–	–	2	1	1	1
Cochlicopa sp.		–	–	–	–	–	–	2	1	–	–	1	–	3	1	1	–	1
Truncatellina cylindrica (Férussac)		–	–	3	–	1	–	2	18	17	3	15	15	9	11	4	2	–
Vertigo pygmaea (Draparnaud)		1	–	–	2	–	–	5	2	3	–	18	–	4	2	–	5	4
Pupilla muscorum (Linnaeus)		2	2	4	4	1	5	4	22	18	7	97	21	49	66	59	60	40
Vallonia costata (Müller)		–	–	19	37	11	5	35	123	121	13	50	20	13	22	14	10	9
Vallonia excentrica Sterki		–	1	4	4	10	15	2	6	5	9	37	13	9	14	16	26	14
Vallonia spp.		2	–	17	41	34	46	89	293	214	61	143	100	106	81	63	51	47
Acanthinula aculeata (Müller)		–	–	–	–	–	–	1	14	10	–	–	–	–	–	–	–	–
Ena obscura (Müller)		–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–
Punctum pygmaeum (Draparnaud)		–	–	19	29	9	9	11	13	13	2	10	5	5	2	2	–	1
Vitrina pellucida (Müller)		–	–	–	1	2	7	1	–	–	–	–	7	–	–	–	–	–
Vitrea crystallina (Müller)		–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–
Vitrea contracta (Westerlund)		1	–	–	–	–	–	7	5	26	1	5	2	2	1	–	–	–
Nesovitrea hammonis (Ström)		–	–	2	1	–	1	4	21	11	–	1	–	1	2	–	1	–
Aegopinella pura (Alder)		–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–
Aegopinella sp.		–	–	–	–	–	–	4	42	31	–	1	–	–	–	–	–	–
Oxychilus cellarius (Müller)		–	–	–	2	–	2	1	–	–	–	–	–	–	–	–	–	–
Oxychilus sp.		–	–	4	21	1	7	9	3	–	1	1	1	–	1	1	–	–
Cecilioides acicula (Müller)		–	–	–	–	–	–	32	54	45	1	130	12	135	207	268	108	216
Candidula intersecta (Poiret)		–	–	–	–	–	–	–	–	5	–	–	–	–	–	–	–	6
Helicella itala (Linnaeus)		–	–	–	–	–	–	1	–	2	–	21	–	4	4	13	6	–
Helicella sp.		–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	11	8
Trichia hispida (Linnaeus)		–	5	–	2	2	–	1	–	–	–	1	–	–	–	–	–	–
Trichia striolata (Pfeiffer)		–	–	5	–	–	–	–	–	–	2	–	2	–	–	1	–	1
Cepaea nemoralis (Linnaeus)		–	–	1	3	–	–	7	4	7	–	+	–	–	1	–	–	–
Cepaea hortensis (Müller)		–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–
Cepaea sp.		–	–	6	3	5	2	9	7	13	2	2	+	+	2	1	1	+
Total individuals, excluding *C. acicula*		6	9	84	152	85	112	330	1203	1320	104	538	219	242	241	187	191	141

15 cm. in diameter. A darker band running through the section between 40–45 cm.; possibly some disturbed material in the lowest part.

60–70 cm. Brown-dark brown (10YR4/3) layer with roots. Apparently disturbed and not sampled.

70–100 cm. Clayey-silt (10YR6/6) with some flints wedged together, especially in the 70–80 cm. zone, making sampling difficult. Small roots common. Snails abundant, especially the large shells of *Pomatias elegans*. Larger flints at the bottom.

100–140 cm. A hard, more compact layer with many small and rounded chalk stones. Silty-clay matrix (10YR7/4). Below the 110–120 cm. interval the sediment is of clayey-silt (10YR7/3) with some sandy material.

140–158 cm. Primary fill of the ditch with abundant stones. Clayey-silt matrix (10YR8/3). Numerous rounded chalk stones at the bottom.

Laboratory analysis

1.0 kg. sub-samples of soil were used in the analysis of sediments and land snails. The method followed is outlined by Evans (1972). Disaggregated soil material was washed through a series of sieves down to 500 microns mesh-size. All material retained on the sieves was dried and sorted. All potentially identifiable fragments of molluscs were removed, along with any fragments of bones, teeth or charcoal. The mineral components coarser than 500 microns were divided into two size categories, those coarser than 2.0 mm. and those between 2.0 mm. and 500 microns, and the weights of each category obtained. This enabled the calculation of the particle-size characteristics of each sediment sample.

Results

The data for the recovered land snails are presented in Table 6. The numbers in this table refer to the minimum numbers of each taxon recovered from each sample, based on the numbers of apices. Taxa represented only by non-apical fragments are recorded as +. It was not possible to make all identifications to species level within the time available. The species of *Vallonia, Aegopinella, Oxychillus* and *Helicella* will be fully separated at a later date and published with the results of the analysis of the other columns. We do not think that the ecological conclusions which we have reached have been affected by this factor.

Cecilioides acicula occurs abundantly through much of the profile

(Table 6), but we do not include it in the present analysis because it is a subterranean species which is often found alive at depths of 1.5 m. or more in soils. It is almost certainly intrusive in most of the assemblages in which it is found; the species was probably brought into Britain in the medieval period.

The preservation of the snail shells was very good in almost all of the samples. Many of the shells of *Pomatias elegans* recovered from samples 8, 9 and 10 (Table 6) were intact and a few had their opercula in place. Very few specimens were worn or abraded and most are probably from animals which, either lived in the ditch at various times during its infill, or nearby. Very few of the shells recovered appear to be old 'residuals'.

In order to facilitate the ecological analysis of the data from the land snails, the species were organised into ecological groups. Table 7 shows the relative abundance of the various ecological groups recognised in each sample and the numbers of taxa in the different ecological groups. Five ecological groups were identified:

1. *Pomatias elegans*, on its own, as a species favouring rather shaded conditions but also thriving in loose calcareous soils or sediments;
2. Shade-loving species which, here, contained few 'woodland' species, with the possible exceptions of *Ena obscura* and *Acanthinula aculeata*;
3. The *Punctum* group (consisting here of *Punctum pygmaeum, Nesovitrea hammonis* and *Vitrina pellucida*) which Evans (1972, 195) notes to be abundant on bare chalk slopes and in the secondary calcareous fill of ditches. All members of this group could also be classed in the 'shade-loving' category;
4. Catholic species which can exist in a wide range of habitats;
5. Open-country species which are intolerant of shaded and moist conditions (included in this group is the obligate xerophile *Truncatellina cylindrica*).

Discussion

The samples can be conveniently divided into four stratigraphic groups for the purpose of discussion:

1. Samples 1 to 6 (from 158 to 100 cm.). These samples come from the lowest part of the fill of the ditch and include material from the primary fill. The sediments in this part of the sequence are coarse, particularly near the bottom, but they fine-out towards the top. This suggests an early phase of rapid infill with loose coarse chalk rubble weathering in from the sides of the ditch. As the sides of the ditch stabilised, infill processes slowed down and finer materials were

TABLE 7.

Relative frequences (%) and numbers of taxa of different ecological groups in the assemblage of land snails from Section 26.

Sample	1		2		3		4		5		6		8		9		10		17		11		18		12		13		14		15		16	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Pomatias elegans	–	–	–	–	–	–	1	.5	1	9	1	12	1	29	1	32	1	36	1	3	1	16	1	8	1	9	1	8	1	5	1	7	1	3
Shade-loving	1	17	1	11	1	5	2	16	2	2	1	8	5	18	6	25	6	31	2	2	4	10	3	8	2	7	3	5	2	2	1	2	1	3
Punctum group	–	–	–	–	2	25	3	20	2	13	2	15	3	5	2	3	2	2	1	2	2	20	2	5	2	2	2	2	1	1	1	.5	1	1
Catholic	–	–	1	56	2	14	2	5	2	8	1	2	3	5	2	1	2	2	2	4	3	11	2	1	2	1	2	2	3	2	2	1	3	2
Open-country	3	83	2	33	4	56	4	58	4	67	3	63	6	42	5	39	7	29	4	89	6	71	5	78	6	80	6	83	5	90	6	90	5	91
Total taxa	4		4		9		12		11		8		18		16		18		10		16		13		13		14		12		11		11	

N = Number of taxa

incorporated. Small assemblages of land snails were recovered from these deposits, probably reflecting the unstable nature of the ditch habitat at this time, and possibly the relatively rapid rates of infill.

The assemblages of land snails from these samples are mainly dominated by members of two ecological groups: the *Punctum* group and the open-country group (Table 7). It is likely that members of the *Punctum* group were thriving in the disturbed and unstable conditions in and around the ditch (perhaps on a bank, or on heaps of upcast material derived from the construction of the ditched enclosure). The open-country species probably represent the general environment in the vicinity around the ditched enclosure. This environment was probably of stable grassland: *Truncatellina cylindrica* and *Vertigo pygmaea* would be found co-existing in such an environment, along with *Pupilla muscorum* and the species of *Vallonia*. These early assemblages of land snails from the ditch contain no relict woodland elements; the enclosure appears to have been constructed in an open environment of short-turfed grassland.

2. Samples 8 to 10 (from 100 to 70 cm.). The sediments in these samples show a progressive change from coarse to fine, the upper sample being the finest. They indicate a phase of accelerated erosion of both coarse and fine material into the ditch, possibly as a consequence of man's activities (discussed below).

Large assemblages of land snails were recovered from these samples, being largest in the uppermost sample and decreasing with depth. All the shells recovered were in excellent condition. Many were intact and some of the shells of *Pomatias elegans* even had their opercula *in situ*, implying that they had died in the deposits of the ditch (and probably that they had been living in the ditch). The large numbers of shells of *P. elegans* from these deposits must mean that the ditch supported a thriving colony of this species during this phase. Shade-loving species are also abundant (Table 7) and we suspect that the ditch became overgrown with dense vegetation, creating suitable habitats for 'woodland' species such as *Acanthinula aculeata* and *Ena obscura*, which are only recorded from the site during this phase (Table 6). Possibly a scrubby vegetation had invaded the ditch. Such a habitat would also have favoured *Carychium tridentatum* and *Aegopinella* (Table 6).

The environment surrounding the ditch appears to have remained open and supported obligate xerophiles like *T. cylindrica* and *Helicella itala*, along with *Vertigo pygmaea* and *Pupilla muscorum*. The five specimens of *Candidula intersecta* found in sample 10 (Table 6) are interesting, if enigmatic. This xerophile species is thought to have been introduced into Britain in the Roman period, or even later (there is some dispute over this because the species has

been recorded from possible Bronze Age contexts in south-west England). However, although the horizon from which this sample was taken (context 1336) is dated to the Late Bronze Age or earlier, its proximity to the disturbance noted between 60–70 cm. depth must cast considerable doubt on the validity of this particular record. *C. intersecta* was present in the area of the site later in the sequence and was recovered from the uppermost sample of this column (Table 6, sample 16).

The proportions of shade-loving species in these assemblages increase during this phase (Table 7), while the open-country species decline. This probably indicates the increasingly shaded microhabitat of the ditch rather than any increase in shaded habitats in the general vicinity of the site. The ditch, during this phase, contained a thriving and diverse fauna of shade-loving land snails.

Other inclusions in these sediments include fragments of the bones of large and small mammals, charcoal fragments and pieces of marine shells. Some of these inclusions appear to be directly attributable to human activity on and around the site. The fragments of marine shells could represent food debris, although it is not clear why, in that case, the shells of oysters (*Ostrea*) and mussels (*Mytilus*) should have become so fragmented. Possibly the fragments represent the use of shell as temper in pottery manufacture. An alternative explanation is that the shell fragments were accidentally brought to the site in sea-weed which might have been collected on the sea-shore for use as manure on fields. We have noted above that the sediments of this phase indicate accelerated erosion of material into the ditch. Perhaps tillage activities on adjacent fields (manured with sea-weed?) led to the erosion of materials into the ditch in this phase. Subsequent stability in the ditch led to the *in situ* sorting of the sediments by worm action, producing finer soils in the upper part of the sequence. The inference that a stable, worm-sorted soil developed in the ditch after a disturbance event is supported by the pattern of abundance of the land snails in these deposits, being very abundant near the supposed 'surface' and declining with depth. Stability in the ditch is also supported by the presence of a diverse fauna of shade-loving land snails.

3. Samples 11 to 13, including sample 18 (from 60 to 30 cm.). The sediments in these samples are fine in texture and vary little with depth. Quite large assemblages of land snails were recovered from the samples, but not as large as those from the samples of the preceding phase (Table 6). The ditch appears to have been cleared of its vegetation quite early in this phase and the deposits could have been rather unstable or disturbed for some time (as evidenced by the early abundance of *Pomatias elegans* and the *Punctum* group). The

shade-loving species, so abundant in the preceding phase, show a dramatic decline and open-country species come to dominate the assemblages (Table 7). *T. cylindrica, V. pygmaea* and *H. itala* are especially abundant and probably represent phases of stable, short-turfed grassland habitats in the vicinity of the ditch. However, some disturbance must have happened around the ditch to account for both the continued sedimentation and the incorporation of anthropogenic materials.

4. Samples 14 to 16 (from 30 to 0 cm.). The sediments remain fairly fine in the modern ploughsoil. There is a marked change in the composition of the assemblages of land snails; there are very few specimens of shade-loving species and the assemblages are dominated by open-country species (Table 7). *T. cylindrica* is rare, and is absent from the uppermost sample, *V. pygmaea* has declined in abundance, while *Vallonia excentrica* appears to be more abundant than *V. costata* (Table 6) – although the *Vallonia* species have not yet been fully separated. Such changes are consistent with increased soil disturbance in a fully open habitat and are probably the consequence of ploughing.

Conclusions

The sediments, and their contained biological remains, reveal a complex series of environmental events from the time the ditched enclosure was constructed to the present day ploughsoil. Some of the reconstructed palaeoenvironments relate to microhabitats within the ditch itself, but others reflect on the habitats around the ditch and on man's activities in the general vicinity. A possible sequence of events is as follows:

1. The ditched enclosure was constructed in an open environment which was probably dominated by short-turfed grassland. Such environments persisted around the ditch for much of the period of the early fill (158 to 100 cm.);
2. Later, localised tillage of the soils around the ditch (possibly involving manuring with seaweed) gave rise to a zone of coarse deposits in the ditch (associated with samples 8, 9 and 10). Fragments of marine shells were incorporated into the ditch in this period and *Pomatias elegans* thrived in the loose and coarse calcareous deposits;
3. This was followed by a phase of stability around and in the ditch, during which the ditch became progressively shaded. A diverse and abundant fauna of shade-loving land snails developed in the ditch. Earthworm action in the ditch-fill contributed to soil formation, with the production of a relatively stone-free horizon in the upper deposits of the fill at this time. The environment around the ditch remained

open, probably of short-turfed grassland (maintained by grazing animals such as sheep or cattle?), although short phases of arable activity could have occurred intermittently;
4. The ditch was later cleared of vegetation and sedimentation resumed. A brief phase of marked instability in the ditch is shown by the assemblage of land snails in sample 11 (Table 6). Continued arable land-use in the area around the ditch led to incorporation of sediments, but the assemblages of land snails are dominated by species preferring grassland habitats, suggesting that arable episodes were short-lived relative to pastoral ones;
5. This rather mixed pattern of land-use around the site was disrupted by the latest episode recorded in the sequence, which was one of intensive ploughing (Romano-British ?) and which produced marked changes in the assemblages of land snails.

These conclusions are based on an analysis of only one of the columns of samples from the ditch. It will be interesting to see how the results of analyses of the other columns of samples will relate to the conclusions presented here.

REFERENCES

Adkins and Needham 1984 — L. Adkins and S. Needham, 'New Research on a Late Bronze Age Enclosure at Queen Mary's Hospital, Carshalton', *Sy. Arch. Coll.*, lxxvi (1984), 11–50.

Ashbee and Dunning 1960 — P. Ashbee and G.C. Dunning, 'The Round Barrows of east Kent', *Arch. Cant.*, lxxiv (1960), 48–57.

Balaam archive — N.D. Balaam, *The Soil and Charcoal Samples*, Northdown, Margate, C.E.U. Site 274, Archive.

Barrett 1980 — J.C. Barrett, 'The Pottery of the later Bronze Age in Lowland England', *PPS*, xlvi (1980), 297–319.

Bartlett 1984 — A. Bartlett, *Magnetometer Survey at Northdown Henge Cropmark Site, Margate, 1984*, A.M.L. Report no. G4/84.

Bond forthcoming — D.M. Bond, *Excavations at the North Ring, Mucking, Essex*, forthcoming.

Bradley *et al.* 1980 — R. Bradley, S. Lobb, J. Richards and M. Robinson, 'Two Late Bronze Age Settlements on the Kennet Gravels: Excavations at Aldermaston Wharf and Knight's Farm, Burghfield, Berkshire', *PPS*, xlvi (1980), 217–96.

Burstow and Holleyman 1957 — G.P. Burstow and G.A. Holleyman, 'Late Bronze Age Settlement on Itford Hill, Sussex', *PPS*, xxiii (1957), 167–212.

Champion 1982 — T.C. Champion, 'The Bronze Age in Kent' in (Ed.) P.E. Leach, *Archaeology in Kent to A.D. 1500*, C.B.A. Research Report no. 68, 1982, 31–9.

Crummy 1983 — N. Crummy, *The Roman small Finds from Excavations in Colchester, 1971–79*, Colchester Archaeological Reports, ii, 1983.

Drewett 1982 — P.L. Drewett, 'Late Bronze Age Downland Economy and Excavations at Black Patch, East Sussex', *PPS*, xlviii (1982), 321–400.

Elworthy *et al.* 1986 — S. Elworthy, P. Boakes, D.R.J. Perkins and M. York, *Eroding History, The Archaeology of the Thanet Cliffs*, Survey and Report by the Manpower Services Commission Community Programme, 1986.

Erskine Riall 1977 — N.J. Erskine Riall, *Highstead, Chislet, Canterbury, Kent, An Interim Report*, Canterbury Archaeological Trust, 1977.

Evans 1972 — J.G. Evans, *Land Snails in Archaeology*, London, 1972.

Grinsell 1959 — L.V. Grinsell, *Dorset Barrows*, Dorchester, 1959.

Grinsell 1975 — L.V. Grinsell, *The ancient Burial Mounds of England*, reprint, 1975.

Harrison 1980 — R.J. Harrison, *The Beaker Folk*, London, 1980.

Healey 1973 — E. Healey, 'The Flint Assemblage, Site 5, A Bronze Age Site on Hayes Common, Hayes, Kent', in B.J. Philp, *Excavations in west Kent, 1960–1970*, 1973.

Henderson 1987 — J.D. Henderson, *Northdown, Margate, the Human Skeletal Remains*, A.M.L. Report no. 4967, 1987.

Jockenhövel 1980 — A. Jockenhövel, *Die Rasiermesser in Westeuropa*, Prähistorische Bronzefunde, Abt. VIII, 3, Münich, 1980.

Longley 1980 — D. Longley, *The Excavation of a Late Bronze Age Site at Runnymede Bridge, Surrey*, Surrey Archaeological Research Reports, no. 6, 1980.

Macpherson-Grant 1980 — N. Macpherson-Grant, 'Archaeological Work along the A2: 1966–1974, Part I: The Late Bronze Age and Early Iron Age Sites', *Arch. Cant.*, xcvi (1980), 133—82.

Macpherson-Grant and Perkins 1977 — N. Macpherson-Grant and D.R.J. Perkins, *The Excavation of a Neolithic/Bronze Age Site at the Lord of the Manor, Haine Road, Ramsgate*, Isle of Thanet Archaeological Unit, Publication no. 1, 1977.

Macpherson-Grant and — N. Macpherson-Grant and D.R.J. Perkins, *In-*

Perkins 1980 — *terim Excavation Reports, 1977–1980*, Isle of Thanet Archaeological Unit, 1980.

Piggott 1946 — C.M. Piggott, 'The Late Bronze Age Razors of the British Isles', *PPS*, xii (1946), 121–41.

Philp 1964 — B.J. Philp, *Rescue Archaeology in Kent, 1972–1974*, Kent Archaeological Rescue Unit, Dover, 1974.

Saville 1980 — A. Saville, 'On the Measurement of struck Flakes and Flake Tools', *Lithics*, i (1980), 16–20.

Saville 1981a — A. Saville, 'Iron Age Flintworking – Fact or Fiction?', *Lithics*, ii (1981), 6–9.

Saville 1981b — A. Saville, 'Report on the Flint Assemblage from the 1971–72 Excavations at Grimes Graves, Norfolk', in R.J. Mercer, *Excavations at Grimes Graves, 1971–72, II*, D.o.E. Archaeological Research Report no. 11, 1981.

Smart 1966 — J.G.O. Smart, *Geology of the Country around Canterbury and Folkestone*, London, 1966.

Smith 1959 — M.A. Smith, 'Some Somerset Hoards and their Place in the Bronze Age of southern Britain', *PPS*, xxv (1959), 144–87.

Wilthew 1986 — P. Wilthew, *Examination of Slag and other Material from various Sites excavated by the Central Excavation Unit*, A.M.L. Report no. 72/86, 1986.

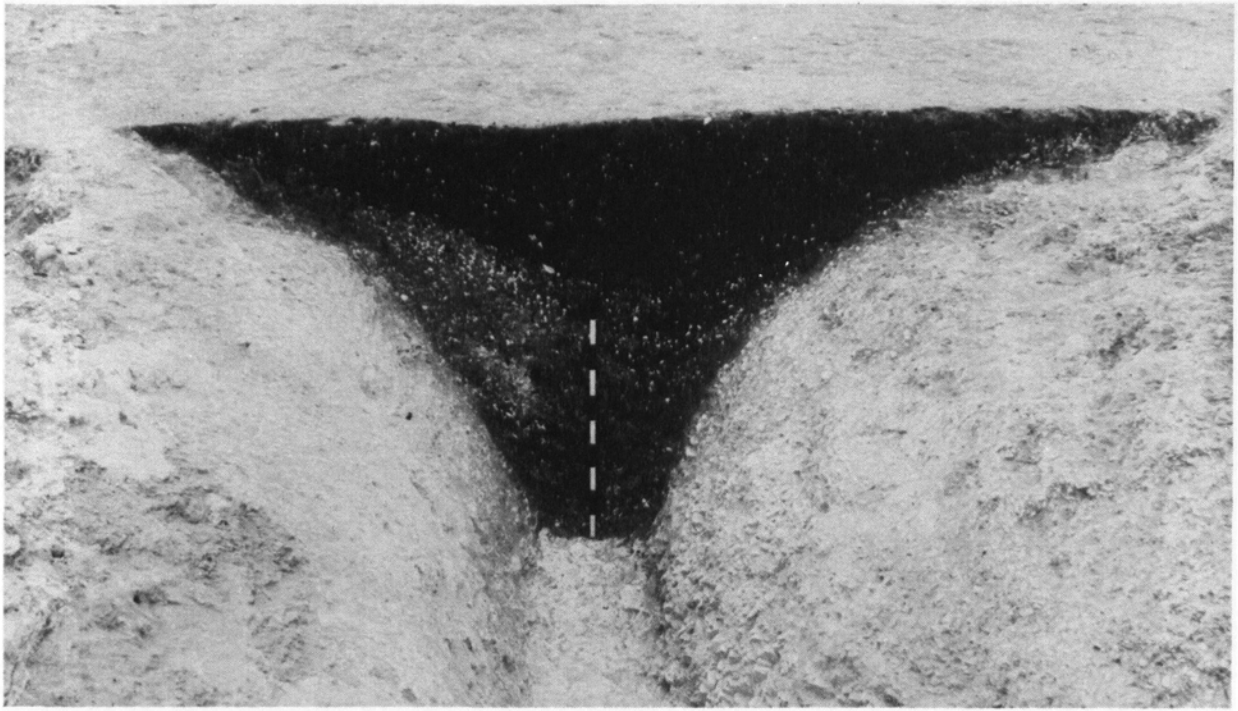
Worsfold 1943 — F.H. Worsfold, 'A Report on the Late Bronze Age Site excavated at Minnis Bay, Birchington, Kent, 1938–40', *PPS*, ix (1943), 28–47.

(*Copyright: Cambridge University Collection*).

Northdown, Aerial Photograph looking West.

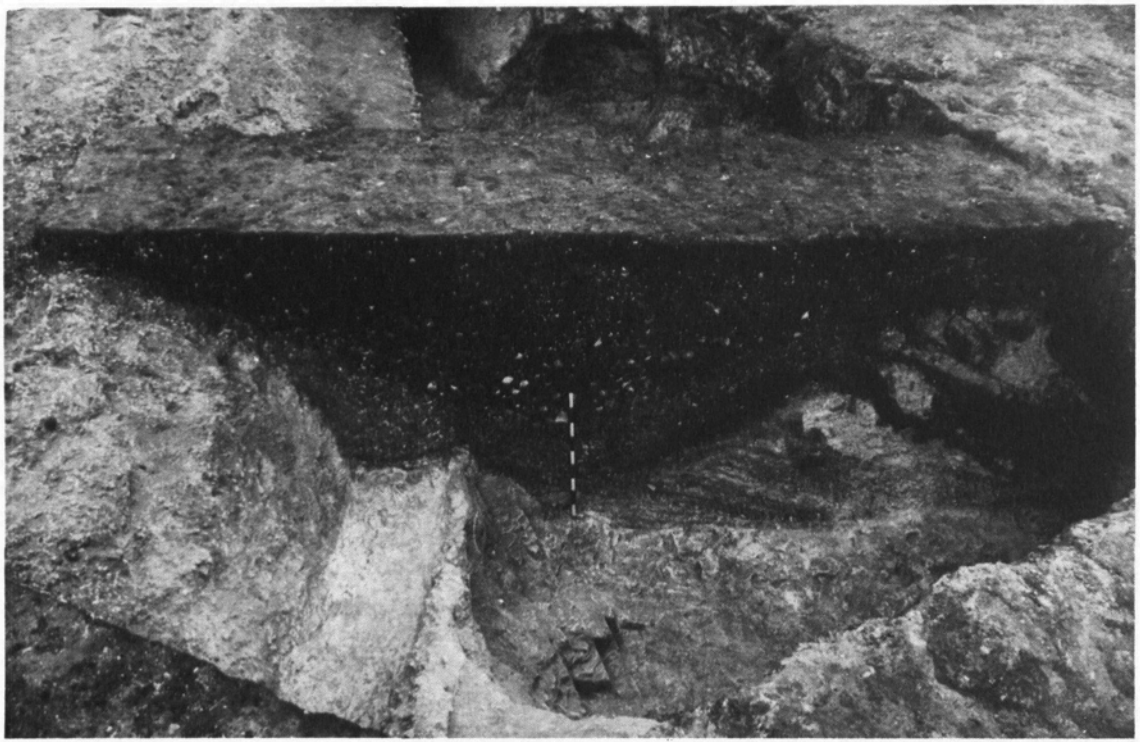
(*Photo.: P. Harrington*).

Northdown. General View of Excavation looking North. Scale with 50 cm. divisions.



(*Photo.: P. Harrington*).

Northdown. Ring Ditch, Section 68. Scale with 10 cm. divisions.



(*Photo.: P. Harrington*).

Northdown. Ring Ditch and Quarry 990, Section 79. Scale with 10 cm. divisions.